Report

of

Test No. 686-14

Toxicity of Portland Harbor RI/FS Freshwater Test Sediments (Batch 7) using a 10-day Midge, *Chironomus tentans*, Sediment Bioassay

Submitted to

Windward Environmental, Inc.
200 West Mercer Street, Suite 401
Seattle, WA 98119

Submitted by

Northwestern Aquatic Sciences
3814 Yaquina Bay Road
P.O. Box 1437
Newport, OR 97365

January 18, 2005

TOXICITY TEST REPORT

TEST IDENTIFICATION

Test No.: 686-14

Title: Toxicity of Portland Harbor RI/FS freshwater test sediments (batch 7) using a 10-day midge, *Chironomus tentans*, sediment bioassay.

Protocol No.: NAS-686-CT4b, June 24, 2004. Based on ASTM 2003, Standard Method No. E 1706-00 and U.S. EPA Method 100.2 (EPA/600/R-99/064, 2000) This protocol can be found in Appendix B of the Portland Harbor RI/FS Round 2 Quality Assurance Project Plan, June 24, 2004.

STUDY MANAGEMENT

Study Sponsor: Windward Environmental, Inc., 200 West Mercer Street, Suite 401, Seattle, WA 98119.

Sponsor's Study Monitor: Ms. Helle Andersen

Testing Laboratory: Northwestern Aquatic Sciences, P.O. Box 1437, Newport, OR 97365

Test Location: Newport laboratory

Laboratory's Study Personnel: G.J. Irissarri, B.S., Proj. Man./Study Dir.; L.K. Nemeth, M.B.A., QA Officer; R.S. Caldwell, PhD, Sr. Toxicol.; G.A. Buhler, B.S., Aq. Toxicol.; W.T. Montgomery, A.A., Sr. Tech.; G. Hayes, B.S., Tech.; S.J. Gage, B.A., Tech.; B.B. Pridgeon, Lab Assistant.

Study Schedule:

Test Beginning: 9-17-04, 1320 hrs.

Test Ending: 9-27-04, 1300 hrs.

Disposition of Study Records: All specimens, raw data, reports and other study records are stored according to Good Laboratory Practice regulations at Northwestern Aquatic Sciences, 3814 Yaquina Bay Rd., Newport, OR 97365.

Good Laboratory Practices: The test was conducted following the principles of Good Laboratory Practices (GLP) as defined in the EPA/TSCA Good Laboratory Practice regulations revised August 17, 1989 (40 CFR Part 792).

Statement of Quality Assurance: The test data were reviewed by the Quality Assurance Unit to assure that the study was performed in accordance with the protocol and standard operating procedures. This report is an accurate reflection of the raw data.

TEST MATERIAL

Test Sediments: Portland Harbor RI/FS freshwater test sediments (Batch 7). Details are as follows:

NAS Sample No.	9435F	9436F	9437F	9438F	9439F
Description	LW2-G207	LW2-G209	LW2-G198	LW2-G199	LW2-G204
Collection Date	9/7/04	9/7/04	9/7/04	9/7/04	9/7/04
Receipt Date	9/9/04	9/9/04	9/9/04	9/9/04	9/9/04
NAS Sample No.	9440F	9441F	9442F	9443F	9444F
Description	LW2-G202	LW2-G231	LW2-G234	LW2-G155	LW2-G166
Collection Date	9/7/04	9/7/04	9/7/04	9/8/04	9/8/04
Receipt Date	9/9/04	9/9/04	9/9/04	9/9/04	9/9/04
NAS Sample No.	9445F	9446F	9447F	9448F	9449F
Description	LW2-G163	LW2-G161	LW2-G160	LW2-G157	LW2-G038
Collection Date	9/8/04	9/8/04	9/8/04	9/8/04	9/8/04
Receipt Date	9/9/04	9/9/04	9/9/04	9/9/04	9/9/04
NAS Sample No.	9450F	9451F	9452F	9453F	
Description	LW2-G123	LW2-G244	LW2-G247	LW2-G254	
Collection Date	9/8/04	9/8/04	9/8/04	9/8/04	
Receipt Date	9/9/04	9/9/04	9/9/04	9/9/04	

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Control Sediment: The negative control sediment (NAS#9454F) was collected on 9-14-04 from an area approximately one mile east of the Hwy. 101 bridge at Beaver Creek, approx. 8 miles south of Newport, OR.
Treatments: Homogenized at test set up by mixing using stainless steel implements.
Storage: All test and control sediments were stored at 4°C in the dark in capped containers until used.

TEST WATER

Source: Dechlorinated Newport, OR tap water.
Dates of Collection: Eight batches of test water were collected between 9/15/04 and 9/26/04
Water Quality (mean ± SD):
pH: 7.0 ± 0.2(n=8)
conductivity: 161 ± 2 µmhos/cm (n=8)
hardness: 34 ± 0 mg/L as $CaCO_3$ (n=8)
alkalinity: 33 ± 4 mg/L as $CaCO_3$. (n=8)
chlorine: All batches were below 0.02 mg/L.
Pretreatment: Dechlorinated and aerated ≥24 hr.

TEST ORGANISMS

Species: *Chironomus tentans*, midge.
Size: 3rd instar, mean initial wt: 0.19 ± 0.01 mg
Source: NAS cultures, originally obtained from EPA, Duluth, MN.
Acclimation: Holding conditions prior to testing averaged: temperature, 23.2 ± 0.5°C; dissolved oxygen, 7.4 ± 0.7 mg/L; pH, 7.1 ± 0.4; conductivity, 274 ± 27 µmhos/cm; hardness, 73 ± 18 mg/L as $CaCO_3$; and alkalinity, 70 ± 8 mg/L as $CaCO_3$.

TEST PROCEDURES AND CONDITIONS

The following is an abbreviated statement of the test procedures and a statement of the test conditions actually employed. See the test protocol for a more detailed description of the test procedures used in this study.

Test Chambers: 300 ml high-form glass beakers
Test Volumes: 100 ml sediment layer; 175 ml test water.
Replicates/Treatment: 8
Organisms/Treatment: 80
Water Volume Changes: 2 water volumes per day
Aeration: None.
Feeding: Animals were fed 1.5 ml of Prime Tropical Flakes suspension (1.5 ml contains 6 mg dry solids) per beaker daily.
Effects Criteria: 1) survival after 10 days, and 2) average individual biomass (based on ash-free dry weight) after 10 days. Death is defined as no visible movement or response to tactile stimulation. Missing organisms were considered to be dead.
Water Quality and Other Test Conditions: The temperature, dissolved oxygen, conductivity, pH, hardness, alkalinity and ammonia-nitrogen were measured in the overlying water of one replicate test container per treatment on days 0 and 10 of the test. Temperature and dissolved oxygen were measured daily in the overlying water of one replicate test container per treatment. Interstitial ammonia was measured in the bulk sediment. Hardness and alkalinity were measured with titrimetric methods. Interstitial water samples were obtained by centrifugation, or by settling in the case of very sandy sediments. Total ammonia-N was measured using Hach reagents based on the salicylate (Clin. Chim. Acta 14:403, 1996) colorimetric method; samples were not distilled prior to analysis. The photoperiod was 16:8, L:D.

DATA ANALYSIS METHODS

Survival and individual biomass were calculated for each replicate as follows:

percent survival = 100 x (number surviving/initial number tested)
average individual ash-free dry wt. = (final wt. – ashed dry wt.)/number weighed,

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where:
ash-free dry wt. = dry weight of organisms recovered on day 10 – ashed dry weight, in mg

Means and standard deviations for the biological endpoints described above, and for water quality data, were computed using Microsoft Excel 2000.

PROTOCOL DEVIATIONS

1. Additional pH measurements were made in the overlying water on test day 3.

REFERENCE TOXICANT TEST

The reference toxicant test is a multi-concentration toxicity test using potassium chloride, to evaluate the performance of the test organisms used in the sediment toxicity test. The performance is evaluated by comparing the results of this test with historical results obtained at the laboratory. A summary of the reference toxicant test result is given below. The reference toxicant test raw data are found in Appendix II. The age of the test dilution water slightly exceeded EPA specifications. This deviation is not likely to have affected the test results.

Test No.: 999-1843
Reference Toxicant and Source: Potassium chloride (Fisher, Lot No. 006829).
Test Date: 9-17-04
Dilution Water Used: Moderately hard synthetic water prepared from Milli-Q® deionized water.
Result: 96-hr LC50, 5.74 g/L. This result is within the laboratory's control chart warning limits (2.84 to 7.51 g/L).

TEST RESULTS

Observations of water quality in the overlying water throughout the test are summarized in Table 1. A detailed tabulation of the water quality results by sample and test day can be found in Appendix I. Interstitial ammonia and pH measurements are listed in Table 2. The means and standard deviations of percent mortality and growth (ash-free dry weight) of midges exposed for 10 days to sediments are summarized in Table 3. Detailed data organized by sample and replicate, and summary statistics for these observations, are given in Appendix I.

All water quality observations of overlying water temperature and dissolved oxygen were within the protocol specified ranges. Ammonia-N in the overlying water ranged from 0.10 to 2.0 mg/L in all day 0 and day 10 observations. Interstitial bulk sediment values for ammonia-N ranged from 1.2 to 9.3 mg/L.
The test met the survival and weight acceptability criteria specified in the test protocol with 95.0% mean control survival (≥70% required) and a control individual mean ash-free dry weight of 0.89 mg per larvae (0.48 mg required). The reference toxicant (positive control) result was within the laboratory's control chart limits (5.74 g/L; control chart mean ± 2 S.D. = 5.17 ± 2.34). It is concluded, therefore, that the test has developed fully acceptable data for use in making management decisions.

REFERENCES

ASTM. 2003. Standard Test Methods for Measuring the Toxicity of Sediment-Associated Contaminants with Fresh Water Invertebrates. ASTM Standard Method No. E 1706-00. Am. Soc. Test. Mat., West Conshohocken, PA.

U.S. EPA. 2000. Section 12, Test Method 100.2, *Chironomus tentans* 10-d Survival and Growth Test for Sediments, pp 55-62 In: Methods for Measuring the Toxicity and Bioaccumulation of Sediment-associated Contaminants with Freshwater Invertebrates (Second Edition). EPA/600/R-99/064.

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STUDY APPROVAL

Gerald Lussier 1-20-05
Project Manager/Study Director Date

Linda K. Kemmerer 1/18/05
Quality Assurance Unit Date

Richard S. Caldwell 1/20/05
Laboratory Director Date

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Table 1. Summary of water quality conditions during tests of the midge, *Chironomus tentans*, exposed to freshwater sediments.

Water Quality Parameter	Mean ± S.D.	Minimum	Maximum	N
Temperature (°C)	22.8 ± 0.3	22.2	23.3	220
Dissolved oxygen (mg/L)	6.0 ± 0.8	4.0	7.7	220
Conductivity (µmhos/cm)	168 ± 12	160	240	40
pH	6.6 ± 0.1	6.5	6.8	60
Hardness (mg/L as $CaCO_3$)	44 ± 6	34	60	40
Alkalinity (mg/L as $CaCO_3$)	44 ± 5	40	50	40
Total ammonia (mg/L)	---	0.1	2.0	40

Table 2. Pore water ammonia-N and pH in bulk test sediments at the time of test setup.

NAS Sample No.	Sample Description	Ammonia (mg/L)	pH
9435F	LW2-G207	8.9	5.6
9436F	LW2-G209	1.4	5.8
9437F	LW2-G198	3.3	5.9
9438F	LW2-G199	4.1	6.0
9439F	LW2-G204	2.7	6.4
9440F	LW2-G202	3.9	6.3
9441F	LW2-G231	3.7	6.3
9442F	LW2-G234	3.3	6.1
9443F	LW2-G155	7.7	6.2
9444F	LW2-G166	3.7	6.2
9445F	LW2-G163	---	---
9446F	LW2-G161	2.9	6.3
9447F	LW2-G160	7.3	6.7
9448F	LW2-G157	9.3	6.5
9449F	LW2-G038	4.5	6.2
9450F	LW2-G123	3.6	6.3
9451F	LW2-G244	8.6	6.2
9452F	LW2-G247	1.7	6.4
9453F	LW2-G254	1.2	6.1

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Table 3. Mortality and growth[1] results of *Chironomus tentans* 10-day sediment toxicity test

Sample description		Average percent mortality (Mean ± SD)	Average ash-free dry wt/midge (mg)[1] (Mean ± SD)
9454F	Control	5.0 ± 7.6	0.89 ± 0.09
9435F	LW2-G207	13.8 ± 7.4	0.87 ± 0.08
9436F	LW2-G209	5.0 ± 10.7	1.01 ± 0.12
9437F	LW2-G198	0.0 ± 0.0	0.84 ± 0.10
9438F	LW2-G199	5.0 ± 10.7	0.91 ± 0.13
9439F	LW2-G204	8.8 ± 8.3	0.83 ± 0.07
9440F	LW2-G202	3.8 ± 5.2	0.95 ± 0.10
9441F	LW2-G231	3.8 ± 5.2	1.05 ± 0.08
9442F	LW2-G234	5.0 ± 5.3	0.96 ± 0.07
9443F	LW2-G155	11.3 ± 13.6	0.70 ± 0.10
9444F	LW2-G166	5.0 ± 7.6	0.87 ± 0.14
9445F	LW2-G163	2.5 ± 4.6	0.87 ± 0.09
9446F	LW2-G161	30.0 ± 29.3	0.33 ± 0.13
9447F	LW2-G160	58.8 ± 20.3	0.35 ± 0.15
9448F	LW2-G157	53.8 ± 18.5	0.28 ± 0.24
9449F	LW2-G038	0.0 ± 0.0	1.04 ± 0.09
9450F	LW2-G123	21.3 ± 9.9	0.99 ± 0.13
9451F	LW2-G244	2.5 ± 4.6	1.03 ± 0.08
9452F	LW2-G247	3.8 ± 7.4	0.95 ± 0.08
9453F	LW2-G254	8.8 ± 6.4	0.82 ± 0.09

[1] Pupae were not included in the sample to estimate ash-free dry weight (as per EPA/600/R-99/064, p. 59, section 12.3.8.2)

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APPENDIX I

RAW DATA

TEST DESCRIPTION, MONITORING, AND RESULTS BENCHSHEETS

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

REVIEWED PAGES 1-36 GJI 11-27-04

Test No. 686-14 Client Windward Environmental Investigator

STUDY MANAGEMENT

Client: Windward Enviromental, 200 West Mercer Street, Suite 401, Seattle, WA 98119

Client's Study Monitor: Ms. Helle Anderson GJI

Testing Laboratory: Northwestern Aquatic Sciences

Test Location: Newport Laboratory

Laboratory's Study Personnel:

Proj. Man./Study Dir. G.J. Irissarri GJI

QA Officer L.K. Nemeth LN

1. GA Buhler NB 2. William T. Montgomery WM

3. Susan Gage SG 4. G.C. Hayes GCH

Study Schedule: 5. Barley Pridgeon BBP 6. R.S. Caldwell

Test Beginning: 9-17-04 1320 Test Ending: 9-27-04 1300

TEST MATERIAL

General description (see sample logbook/chain-of-custody for details):

NAS Sample No.:	9454F	9435F	9436F	9437F	9438F
Description:	Control	LW2-G207	LW2-G209	LW2-G198	LW2-G199
Collection Date:	9/14/04	9/7/04	9/7/04	9/7/04	9/7/04
Receipt Date:	9/14/04	9/9/04	9/9/04	9/9/04	9/9/04
NAS Sample No.:	9439F	9440F	9441F	9442F	9443F
Description:	LW2-G204	LW2-G202	LW2-G231	LW2-G234	LW2-G155
Collection Date:	9/7/04	9/7/04	9/7/04	9/7/04	9/8/04
Receipt Date:	9/9/04	9/9/04	9/9/04	9/9/04	9/9/04
NAS Sample No.:	9444F	9445F	9446F	9447F	9448F
Description:	LW2-G166	LW2-G163	LW2-G161	LW2-G160	LW2-G157
Collection Date:	9/8/04	9/8/04	9/8/04	9/8/04	9/8/04
Receipt Date:	9/9/04	9/9/04	9/9/04	9/9/04	9/9/04
NAS Sample No.:	9449F	9450F	9451F	9452F	9453F
Description:	LW2-G038	LW2-G123	LW2-G244	LW2-G247	LW2-G254
Collection Date:	9/8/04	9/8/04	9/8/04	9/8/04	9/8/04
Receipt Date:	9/9/04	9/9/04	9/9/04	9/9/04	9/9/04
NAS Sample No.:					
Description:					
Collection Date:					
Receipt Date:					
NAS Sample No.:					
Description:					
Collection Date:					
Receipt Date:					

Error codes: 1) correction of handwriting error
2) written in wrong location; entry deleted
3) wrong date deleted, replaced with corrrect date
4) error found in measurement; measurement repeated

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-14 Client Windward Environmental Investigator

SEDIMENT DESCRIPTIONS -- SUPPLEMENTAL NOTES

Sample No.	Description
9454F	Black Fine mud.
9435F	Dark Brown mud with wood chips.
9436F	Dark gray sandy mud
9437F	Dark brown sandy mud.
9438F	Gray - Brown Sandy mud @ moth Ball odor
9439F	Dark Gray Muddy clay, ONE Chironomid found
9440F	Dark Brown mud with organic debris
9441F	Dark brown sandy mud
9442F	Dark gray - Brown Sand @ slight petroleum odor
9443F	Gray mud
9444F	Gray mud w chunks of clay
9445F	Brown dry coarse Sand
9446F	Dark gray Sandy mud @ sm. rocks and petroleum odor
9447F	Dark gray sandy mud with petroleum odor.
9448F	Gray Mud With Many rocks
9449F	Gray brown muddy sand w woody debris.
9450F	Dark Gray hard clay
9451F	Gray Sandy mud
9452F	Brown sandy mud w/ wood debris
9453F	Brown Mud with wood debris

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NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-14 Client Windward Environmental Investigator

TEST WATER

Source: Dechlorinated Newport, OR tap water

Date of Collection: 9-15-04, 9-17-04, 9-18-04, 9-20-04, 9-22-04, 9-23-04, 9-25-04, 9-26-04

pH 7.1, 7.3, 7.3, 6.9, 6.9, 6.9, 6.9, 6.9 ($\bar{X}$ = 7.0 ± 0.2)

Cond (umhos/cm²) 165, 160, 160, 165, 160, 160, 160, 160 ($\bar{X}$ = 161 ± 2) GS1

Hardness (mg/L) 34, 34, 34, 34, 34, 34, 34, 34 ($\bar{X}$ = 34 ± 0)

Alkalinity (mg/L) 30, 30, 30, 30, 30, 30, 40, 40 ($\bar{X}$ = 33 ± 4)

Treatments: Aerated ≥ 24 hrs

TEST ORGANISMS

Species: *Chironomus tentans* Age: 3rd instar Date received: –

Source: NAS cultures

Acclimation Data:

Date	Temp. (deg.C)	DO (mg/L)	pH	Cond umhos/cm	Feeding amount (ml)	Feeding description*	Water changes	Hardness (mg/L)	Alkalinity (mg/L)
9-3-04	23.2	7.4	7.0	280	ANIMALS FED TETRA		CULTURE	51	70
9-8-04	23.0	8.4	7.7	325	FIN AND	SELENASTRUM	TANKS	94	80
9-10-04	23.1	7.9	6.5	250			CHANGED	68	60
9-13-04	24.1	7.4	7.4	270	DETAILS	RECORDED	TWICE	–	–
9-15-04	23.0	7.0	7.0	260	IN CHIRONOMID		WEEKLY	77	70
9-17-04	22.8	6.4	6.8	260	CULTURE DATA			–	–
Mean	23.2	7.4	7.1	274	SHEETS			73	90
S.D.	0.5	0.7	0.4	27				18	8
(N)	6	6	6	6				4	4

Photoperiod during acclimation: 16:8, L:D *S=Selenastrum, T=Tetra Fin suspension

TEST PROCEDURES AND CONDITIONS

Test chambers: 300 ml glass beakers

Test volumes: 100 ml of test sediment; 275 ml total volume

Replicates/treatment: (8) 8 Organisms/treatment: (80) 80 (10/REP)

Test water changes: Twice daily

Aeration: only if DO falls below 2.5 mg/L Beaker placement: Total randomization

Feeding: everyday beginning with day zero Photoperiod: 16:8, L:D

Test temperature (deg.C): 23

Control Sediment:

Source: From an area approximately one mile east of the Hwy. 101 bridge at Beaver Creek, approx. 8 miles south of Newport, OR.

Date collected: 9/14/04

Sieved through 0.5 -mm screen NAS# 9454F

Storage: 4°C in the dark in closed containers.

MISCELLANEOUS NOTES

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NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No: 686-14 Client Windward Environmental Investigator _____

Test conducted in (circle one): room 1 (room 2) trailer water bath other: _____

Randomization chart:

5									160
4									159
3									158
2									157
1									156

Randomization chart:

Randomization chart:

Randomization chart:

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NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-14 Client Windward Environmental Investigator _____

DAILY RECORD SHEET

Day 0 (9/17/09) BB/BBP

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond.* umhos/cm	Ph*	Hardness* (mg/L)	Alkalinity* (mg/L)	S (ppm)	NH3* (ppm)	Comments
26	23.1	7.2	170	6.6	43	40			Each beaker fed 1.5 ml
31	23.1	7.4	160	6.5	43	40			Prime Tropical Flakes
37	23.1	6.8	160	6.5	43	40			suspension.
39	23.1	7.2	170	6.6	43	40			Initials: BBP
48	23.1	7.1	165	6.7	60	40			
66	23.1	7.5	160	6.6	43	40			
73	23.1	7.3	170	6.5	51	50			
74	23.1	7.4	160	6.6	43	40			
75	23.1	7.2	165	6.6	51	40			Water changed in all
84	23.1	7.2	170	6.6	51	50			beakers.
96	23.1	6.8	165	6.5	51	40			Time: 0645
99	23.1	7.3	165	6.5	43	40			Initials: BBP
104	23.0	7.4	240	6.5	43	50			
114	23.0	7.7	170	6.7	43	40			
117	23.0	7.6	170	6.6	51	50			
124	23.0	7.5	175	6.5	51	50			
128	23.0	7.4	165	6.5	43	40			Water changed in all
131	23.1	7.2	175	6.6	60	50			beakers.
146	23.1	7.5	165	6.6	43	40			Time: 1725
160	23.2	7.6	165	6.6	43	40			Initials: BBP

*Water quality measurements to be taken.

Day 1 9/18/09 BB

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. umhos/cm	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
26	23.0	6.6							Each beaker fed 1.5 ml
31	23.0	6.8							Prime Tropical Flakes
37	23.0	6.4							suspension.
39	23.0	6.5							Initials: UB
48	23.0	6.6							
66	23.0	6.9							
73	23.1	6.8							
74	23.1	6.5							
75	23.1	6.7							Water changed in all
84	23.1	6.4							beakers.
96	23.0	6.6							Time: 0710
99	23.0	6.3							Initials: UB
104	22.9	6.4							
114	22.9	6.9							
117	23.0	6.7							
124	22.9	6.8							
128	22.9	7.0							Water changed in all
131	23.0	6.8							beakers.
146	23.0	6.8							Time: 1835
160	23.1	6.9							Initials: BBP

*Water quality measurements to be taken.

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NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No 686-14 Client Windward Environmental Investigator _____

DAILY RECORD SHEET

Day 2 (9/19/2013)

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. umhos/cm	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
26	22.4	6.6							Each beaker fed 1.5 ml
31	22.4	6.8							Prime Tropical Flakes
37	22.4	6.4							suspension.
39	22.4	6.4							Initials: CB
48	22.4	6.1							
66	22.4	6.2							
73	22.4	6.3							
74	22.4	6.3							
75	22.4	6.4							Water changed in all
84	22.4	6.2							beakers.
96	22.3	6.9							Time: 0630
99	22.2	6.6							Initials: CB
104	22.2	6.5							
114	22.2	6.6							
117	22.2	6.4							
124	22.2	6.5							
128	22.2	6.3							Water changed in all
131	22.2	6.2							beakers.
146	22.4	6.4							Time: 1820
160	22.6	6.7							Initials: BBP

*Water quality measurements to be taken.

Day 3 (9/20/2013) warm

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. umhos/cm	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
26	22.6	6.7		6.7					Each beaker fed 1.5 ml
31	22.7	6.1		6.7					Prime Tropical Flakes
37	22.6	6.0		6.6					suspension.
39	22.6	6.0		6.6					Initials: CB
48	22.5	6.1		6.7					
66	22.6	5.9		6.6					
73	22.5	5.7		6.7					
74	22.5	6.4		6.7					
75	22.6	6.7		6.7					Water changed in all
84	22.6	6.2		6.7					beakers.
96	22.6	6.8		6.7					Time: 0650
99	22.5	5.9		6.6					Initials: CB
104	22.5	6.3		6.7					
114	22.5	6.5		6.7					
117	22.5	6.0		6.7					
124	22.5	5.7		6.7					
128	22.5	6.4		6.6					Water changed in all
131	22.8	6.1		6.6					beakers.
146	22.9	6.2		6.6					Time: 1715
160	22.9	6.2		6.6					Initials: AF

*Water quality measurements to be taken.

ANC08008
BZTO104(e)008008

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No 686-14 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 4 (9/21/04) AF/mm

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. umhos/cm	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
26	23.1	5.6							Each beaker fed 1.5 ml
31	23.1	4.8							Prime Tropical Flakes
37	23.0	5.1							suspension.
39	23.1	4.5							Initials: MTM
48	23.1	5.0							
66	23.1	5.0							
73	23.0	5.5							
74	23.0	5.6							
75	23.1	5.5							Water changed in all
84	23.1	5.4							beakers.
96	23.0	5.4							Time: 0710
99	23.0	4.9							Initials: ESL
104	22.9	5.3							
114	23.0	5.8							
117	23.0	5.3							
124	23.0	4.6							
128	23.0	5.5							Water changed in all
131	23.0	5.2							beakers.
146	23.3	5.6							Time: 1720
160	23.3	5.4							Initials: BBP

*Water quality measurements to be taken.

Day 5 (9/22/04) AF

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. umhos/cm	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
26	23.1	5.5		6.8 mm					Each beaker fed 1.5 ml
31	23.1	4.9							Prime Tropical Flakes
37	23.1	4.6							suspension.
39	23.1	4.8							Initials: MM
48	23.0	4.6							
66	23.0	4.6							
73	23.1	5.0							
74	23.0	5.1							
75	23.0	4.9							Water changed in all
84	23.1	4.9							beakers.
96	23.0	4.7							Time: 0705
99	23.0	5.0							Initials: ESL
104	22.9	4.9							
114	22.9	5.2							
117	23.0	5.1							
124	22.9	4.1							
128	22.9	5.0							Water changed in all
131	23.0	4.9							beakers.
146	23.2	5.4							Time: 1723
160	23.2	5.2							Initials: AF

*Water quality measurements to be taken.

ANC08009
BZTO104(e)008009

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-14 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 6 (9/23/04) WTM

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
26	22.8	6.5							Each beaker fed 1.5 ml
31	22.8	6.4							Prime Tropical Flakes
37	22.8	6.0							suspension.
39	22.8	6.1							Initials: WTM
48	22.7	6.1							
66	22.8	6.2							
73	22.7	6.3							
74	22.7	6.7							
75	22.8	6.7							Water changed in all
84	22.8	6.1							beakers.
96	22.8	6.1							Time: 0705
99	22.7	6.3							Initials: GSL
104	22.7	5.6							
114	22.7	6.4							
117	22.6	6.7							
124	22.6	6.3							
128	22.6	6.5							Water changed in all
131	22.9	6.3							beakers.
146	22.9	6.3							Time: 1710
160	23.0	6.7							Initials: BBP

*Water quality measurements to be taken.

Day 7 (9/24/04) VB

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
26	22.7	5.2							Each beaker fed 1.5 ml
31	22.7	5.2							Prime Tropical Flakes
37	22.7	5.3							suspension.
39	22.7	5.5							Initials: GSL
48	22.7	4.6							
66	22.7	5.2							
73	22.8	5.5							
74	22.8	5.2							
75	22.8	5.4							Water changed in all
84	22.8	5.1							beakers.
96	22.7	4.8							Time: 0645
99	22.7	5.0							Initials: VB
104	22.7	4.2							
114	22.7	5.3							
117	22.7	5.4							
124	22.7	5.3							
128	22.7	5.2							Water changed in all
131	22.6	5.1							beakers.
146	22.8	5.3							Time: 1755
160	22.9	5.5							Initials: BBP

*Water quality measurements to be taken.

ANC08010
BZTO104(e)008010

Test No. 686-14 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 8 (9 125 10a) [illegible]

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
26	22.4	6.0							Each beaker fed 1.5 ml
31	22.4	6.0							Prime Tropical Flakes
37	22.4	5.6							suspension.
39	22.4	5.8							Initials: [illegible]
48	22.4	5.6							
66	22.5	5.6							
73	22.4	5.8							
74	22.4	6.4							
75	22.4	6.0							Water changed in all
84	22.5	5.4							beakers.
96	22.4	5.2							Time: 0715
99	22.3	5.4							Initials: [illegible]
104	22.3	4.0							
114	22.3	4.3							
117	22.4	5.4							
124	22.4	5.0							
128	22.4	5.3							Water changed in all
131	22.6	5.2							beakers.
146	22.6	5.5							Time: 1905
160	22.8	4.6							Initials: [illegible]

*Water quality measurements to be taken.

Day 9 (9 126 10a) [illegible]

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
26	22.7	5.1							Each beaker fed 1.5 ml
31	22.7	5.6							Prime Tropical Flakes
37	22.7	5.4							suspension.
39	22.7	5.6							Initials: [illegible]
48	22.6	5.7							
66	22.7	5.7							
73	22.7	5.5							
74	22.6	6.0							
75	22.7	5.7							Water changed in all
84	22.7	5.1							beakers.
96	22.6	4.7							Time: 0730
99	22.6	5.4							Initials: [illegible]
104	22.6	4.2							
114	22.6	5.2							
117	22.6	5.1					~~0.0k~~ [illegible]		
124	22.6	5.6							
128	22.5	5.2							Water changed in all
131	22.8	5.6							beakers.
146	22.9	5.7							Time: 1745
160	23.0	5.8							Initials: [illegible]

*Water quality measurements to be taken.

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No 686-14 Client Windward Environmental Investigator _____

DAILY RECORD SHEET

Day 10 (9 /27 04) mm/BBP

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond.* umhos/cm	Pb*	Hardness* (mg/L)	Alkalinity* (mg/L)	S (ppm)	NH3* (ppm)	Comments
26	22.8	6.7	165	6.7	43	50			Each beaker fed 1.5 ml
31	22.9	6.7	165	6.6	43	40			Prime Tropical Flakes
37	22.9	6.8	165	6.8	34	50			suspension.
39	22.9	6.6	165	6.7	43	40			Initials: —
48	22.9	6.5	165	6.7	34	40			
66	23.0	6.6	165	6.7	43	40			
73	22.9	6.8	165	6.7	43	40			
74	22.9	6.5	165	6.7	43	50			
75	22.9	6.5	165	6.7	43	40			Water changed in all
84	22.9	6.1	165	6.7	43	50			beakers.
96	22.9	6.6	165	6.6	43	50			Time: 0650
99	22.9	5.9	165	6.6	43	40			Initials: 651
104	22.9	6.4	170	6.7	34	50			
114	22.9	6.6	165	6.6	43	40			
117	22.9	6.6	165	6.6	43	40			
124	22.9	6.6	165	6.6	34	40			
128	22.9	6.6	165	6.6	43	50			Water changed in all
131	23.0	6.5	165	6.6	43	40			beakers.
146	23.1	6.8	165	6.6	48 34	50			Time:
160	23.1	6.6	165	6.6	43	50			Initials:

*Water quality measurements to be taken.

Day _____(/ /)

Beaker No.	Temp. (deg.C)	DO (ppm)	Cond. umhos/cm	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
26									Each beaker fed 1.5 ml
31									Prime Tropical Flakes
37									suspension.
39									Initials:
48									
66									
73									
74									
75									Water changed in all
84									beakers.
96									Time:
99									Initials:
104									
114									
117									
124									
128									Water changed in all
131									beakers.
146									Time:
160									Initials:

*Water quality measurements to be taken.

ANC08012
BZTO104(e)008012

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-14 Client Windward Enviromental Investigator

DAY 20 TEST TERMINATION SHEET

Beaker No.	Number of survivors	Initials
1	10	GJL
2	9	CAB
3	9	CAB
4	10	GJL
5	9	GJL
6	10	GJL
7	9	CAB
8	9	CAB
9	10	GJL
10	8	CAB
11	9	GJL
12	10	CAB
13	10	CAB
14	10	CAB
15	9	CAB
16	10	GJL
17	10	CAB
18	10	GJL
19	8	CAB
20	10	CAB
21	10	CAB
22	8	GJL
23	10	CAB
24	9	GJL
25	9	GJL
26	8	CAB
27	9	GJL
28	10	CAB
29	8	CAB
30	9	GJL
31	9	CAB
32	10	GJL
33	4	CAB
34	6	GJL
35	9	CAB
36	9	GJL
37	7	CAB
38	10	GJL
39	10	GJL
40	10	CAB
41	9	GJL
42	10	CAB
43	10	WTM
44	5	GJL
45	2	CAB

Beaker No.	Number of survivors	Initials
46	2	GJL
47	9	CAB
48	10	GJL
49	7	WTM
50	4	GJL
51	10	CAB
52	1	WTM
53	9	GJL
54	9	CAB
55	9	GJL
56	10	CAB
57	10	WTM
58	10	GJL
59	9	CAB
60	10	GJL
61	@ WTM 10/11	WTM
62	10	CAB
63	10	GJL
64	10	WTM
65	10	GJL
66	10	WTM
67	9	GJL
68	9	WTM
69	10	GJL
70	8	CAB
71	9	GJL
72	9	CAB
73	8	WTM
74	10	CAB
75	9	GJL
76	8	WTM
77	10	CAB
78	10	GJL
79	10	CAB
80	8	GJL
81	10	WTM
82	10	CAB
83	10	GJL
84	9	BBP
85	9	CAB
86	10	GJL
87	6	WTM
88	10	CAB
89	9	GJL
90	1	CAB

ANC08013
BZTO104(e)008013

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-14 Client Windward Enviromental Investigator

DAY 20 TEST TERMINATION SHEET

Beaker No.	Number of survivors	Initials
91	10	MPM
92	10	AB
93	9	GJL
94	9	MPM
95	10	AB
96	10	GJL
97	10	MPM
98	10	AB
99	GJL 9 10	GJL
100	6	BBP
101	7	MPM
102	8	AB
103	8	GJL
104	8	MPM
105	8	AB
106	10	GJL
107	9	GJL
108	8	AB
109	10	AB
110	10	MPM
111	7	BBP
112	9	BBP
113	10	MPM
114	5	GJL
115	9	AB
116	10	MPM
117	10	AB
118	10	GJL
119	10	BBP
120	9	AB
121	4	GJL
122	9	MPM
123	10	AB
124	10	AB
125	10	GJL
126	10	MPM
127	10	BBP
128	10	GJL
129	4	AB
130	9	GJL
131	10	AB
132	8	GJL
133	4	BBP
134	8	AB
135	5	GJL

Beaker No.	Number of survivors	Initials
136	10	AB
137	10	MPM
138	8	AB
139	8	GJL
140	6	MPM
141	10	GJL
142	10	BBP
143	9	AB
144	10	MPM
145	8	AB
146	9	GJL
147	10	AB
148	10	AB
149	5	MPM
150	3	GJL
151	10	AB
152	3	BBP
153	10	AB
154	10	GJL
155	10	MPM
156	10	AB
157	9	GJL
158	10	AB
159	10	BBP
160	10	GJL
161		
162		
163		
164		
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179		
180		

ANC08014
BZTO104(e)008014

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-14 Client Windward Environmental Investigator

Tare: Date 9-17-04 Oven temp (C.) 62 Drying time (hr.) 24 Initials GJL
Standard Weights: 10 mg: 10.008 100mg: 100.019

Final #1 Date 9-18-04 Oven temp (C.) 66 Drying time (hr.) 24 Initials GJL
Standard Weights: 10 mg: 10.005 100mg: 100.010

Final: #2 Date 9-19-04 Oven temp (C.) 66 Drying time (hr.) 24 Initials GJL
Standard Weights: 10 mg: 10.006 100mg: 100.016

Equip. used: Oven: BLUE M #1 Balance: SARTORIUS M3P

(Dry overnight at 60-90 degrees C)

Pan #	Tare wt. (mg)	Total wt. (mg) 1	Total wt. (mg) 2	#weighed	Comments
1	90.45	94.47 GJL	94.40	20	
2	91.80	95.81	95.74	20	
3	96.24	99.91	99.85	20	

ANC08015
BZTO104(e)008015

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-14 Client Windward Environmental Investigator

WEIGHING DATA SHEET

Tare:	Date 9-13-04	Oven temp (C.) 550	Drying time (hr.) 2	Initials JRF
	Standard Weights:	10 mg: 10.003	100mg: 100.017	
Final #1:	Date 9-28-04	Oven temp (C.) 68	Drying time (hr.) 24	Initials GJZ
	Standard Weights:	10 mg: 10.005	100mg: 100.018	
Final #2:	Date 9-29-04	Oven temp (C.) 64	Drying time (hr.) 24	Initials JRF
	Standard Weights:	10 mg: 10.005	100mg: 100.015	
Final #3:	Date 9-30-04	Oven temp (C.) 550	Drying time (hr.) 2	Initials JRF
	Standard Weights:	10 mg: 10.007	100mg: 100.021	

Equip. used: Oven Blue M #1 Balance Sartorius M3P

Furnace FISHER MUFFLE FURNACE 650 SERIES

(Dry overnight at 60-90 degrees C) (Final ashing is at 550 degrees C for 2 hours)

Bkr. #	Pan #	Tare wt. (mg)	Total wt. (mg) 1	Total wt. (mg) 2	no. weighed	put into pans-initials	Ashed weight (mg)
1	1	99.10	110.12	110.09	10	AV	101.63
2	2	97.93	108.24	108.21	9	AV	100.77
3	3	92.85	102.27	102.23	9	AV	95.07
4	4	99.18	109.32	109.26	10	AV	101.01
5	5	96.13	104.29	104.24	9	AV	97.94
6	6	94.99	108.29	108.25	10	AV	98.90
7	7	93.02	102.50	102.46	9	AV	95.72
8	8	94.35	104.19	104.13	9	AV	97.11
9	9	91.70	107.03	106.95	10	AV	97.30
10	10	95.04	104.85	104.81	8	AV	97.47
11	11	92.64	102.35	102.29	9	AV	94.79
12	12	93.33	105.68	105.59	10	AV	95.38
13	13	96.82	110.02	109.93	10	AV	99.81
14	14	96.34	109.78	109.72	10	AV	99.26
15	15	95.16	106.44	106.38	9	AV	98.91
16	16	100.15	109.36	109.30	10	AV	102.27
17	17	95.43	104.87	104.80	10	AV	96.93
18	18	96.77	106.12	106.05	10	AV	98.45
19	19	95.76	105.28	105.23	8	AV	98.04
20	20	100.29	111.02	110.95	10	AV	103.07
21	21	91.77	98.72	98.69	10	GJZ	93.58
22	22	95.78	97.71	97.70	8	GJZ	96.06
23	23	90.95	101.29	101.20	10	GJZ	94.17
24	24	102.76	113.08	112.98	9	GJZ	105.53
25	25	92.41	103.77	103.65	9	GJZ	96.47
26	26	101.88	110.05	109.98	8	GJZ	104.15
27	27	96.92	107.08	106.97	9	GJZ	99.13
28	28	99.03	113.01	112.86	10	GJZ	103.29
29	29	89.64	101.08	100.93	8	GJZ	93.62
30	30	89.30	101.42	101.39	9	GJZ	92.07
31	31	89.31	101.37	101.31	9	GJZ	92.08
32	32	88.42	100.06	100.01	10	GJZ	91.14
33	33	95.61	96.74	96.75	4	GJZ	95.81

ANC08016
BZTO104(e)008016

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-14 Client Windward Environmental Investigator

WEIGHING DATA SHEET

See page _____ for information on drying times and temperatures, standard weights,etc.

Bkr. #	Pan #	Tare wt. (mg)	Total wt. (mg) 1	Total wt. (mg) 2	no. weighed	put into pans-initials	Ash weight (mg)
34	34	97.01	103.84	103.81	6	[illegible]	99.16
35	35	100.93	111.25	111.15	9	[illegible]	104.12
36	36	89.98	101.50	102.55	9	[illegible]	93.63
37	37	87.44	96.68	96.64	7	[illegible]	90.44
38	38	94.58	107.56	107.51	10	[illegible]	99.00
39	39	108.81	124.32	124.25	10	[illegible]	114.01
40	40	91.36	105.51	105.41	10	[illegible]	95.63
41	41	91.79	101.94	101.84	9	[illegible]	94.51
42	42	97.08	110.46	110.42	10	[illegible]	101.33
43	43	91.25	103.76	103.72	10	[illegible]	95.77
44	44	97.82	98.64	98.64	5	[illegible]	98.00
45	45	93.87	94.17	94.18	2	[illegible]	93.92
46	46	94.41	94.86	94.87	2	[illegible]	94.51
47	47	99.36	108.52	108.43	9	[illegible]	101.08
48	48	90.30	101.98	101.95	10	[illegible]	93.46
49	49	93.52	104.19	104.14	7	[illegible]	96.06
50	50	94.48	95.38	95.37	4	[illegible]	94.64
51	51	93.29	105.81	105.74	10	[illegible]	96.82
52	52	97.42	97.62	97.64	1	[illegible]	97.48
53	53	94.98	108.99	108.89	9	[illegible]	98.90
54	54	93.19	103.30	103.28	9	[illegible]	96.25
55	55	98.35	111.96	111.91	9	[illegible]	102.88
56	56	95.37	109.24	109.19	10	[illegible]	99.88
57	57	94.73	108.29	108.21	10	[illegible]	98.75
58	58	89.98	104.16	104.06	10	[illegible]	94.30
59	59	93.20	108.58	108.48	9	[illegible]	99.54
60	60	93.63	108.16	108.12	10	[illegible]	99.09
61	61	92.31	106.71	106.67	11	[illegible]	98.49
62	62	97.78	110.87	110.83	10	[illegible]	100.43
63	63	93.28	106.36	106.33	10	[illegible]	98.11
64	64	94.74	105.83	105.80	10	[illegible]	97.63
65	65	85.20	94.97	94.90	10	[illegible]	88.12
66	66	92.94	108.46	108.36	10	[illegible]	99.24
67	67	94.45	107.17	107.10	9	[illegible]	97.81
68	68	87.72	99.40	99.33	9	[illegible]	90.76
69	69	95.44	107.21	107.16	10	[illegible]	99.60
70	70	90.04	99.69	99.60	8	[illegible]	93.26
71	71	98.48	112.14	112.02	9	[illegible]	102.72
72	72	94.96	106.40	106.30	9	[illegible]	97.51
73	73	94.02	95.71	95.70	8	[illegible]	94.37
74	74	91.56	105.29	105.20	10	[illegible]	95.78
75	75	92.57	102.50	102.36	9	[illegible]	95.38
76	76	94.75	99.26	99.21	8	[illegible]	95.83

ANC08017
BZTO104(e)008017

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-14 Client Windward Environmental Investigator

WEIGHING DATA SHEET

See page _____ for information on drying times and temperatures, standard weights,etc.

Bkr. #	Pan #	Tare wt. (mg)	Total wt. (mg) 1	Total wt. (mg) 2	no. weighed	put into pans-initials	Ash weight (mg)
77	77	90.44	107.06	106.90	10		96.29
78	78	91.24	104.83	104.70	10		95.99
79	79	94.07	107.82	107.72	10		98.70
80	80	94.92	106.51	106.36	8		98.93
81	81	82.81	97.24	97.06	10		88.14
82	82	96.11	109.36	109.18	10		100.75
83	83	95.27	109.86	109.68	10		99.24
84	84	90.08	95.19	95.13	9		91.34
85	85	91.20	95.44	95.45	9		92.57
86	86	~~90~~.90.36	100.94	100.92	10		94.16
87	87	94.45	104.11	104.07	6		96.99
88	88	88.68	96.87	96.83	10		90.97
89	89	93.70	106.69	106.60	9		97.48
90	90	98.18	98.42	98.43	1		98.23
91	91	87.62	101.05	101.02	10		92.08
92	92	90.32	104.65	104.61	10		95.83
93	93	95.21	105.98	105.94	9		98.63
94	94	93.60	103.21	102.91	9		95.83
95	95	84.33	97.53	97.44	10		88.73
96	96	95.25	110.02	110.12	10		100.14
97	97	95.53	108.66	108.62	10		98.91
98	98	95.23	110.94	110.87	10		99.72
99	99	93.73	108.56	108.47	10		97.71
100	100	89.49	94.14	94.11	6		90.65
101	101	89.64	103.04	102.97	7		94.24
102	102	96.31	107.01	106.95	8		99.91
103	103	98.65	109.04	109.02	8		101.48
104	104	94.71	104.59	104.54	8		97.04
105	105	90.71	103.91	103.86	8		95.80
106	106	97.55	111.88	111.82	10		102.26
107	107	90.66	95.70	95.67	9		91.72
108	108	90.41	103.62	103.57	8		94.25
109	109	92.39	106.21	106.16	10		96.00
110	110	91.08	107.40	107.33	10		96.57
111	111	88.86	91.73	91.72	7		89.43
112	112	87.71	99.39	99.32	9		91.31
113	113	90.43	108.51	108.42	10		97.18
114	114	87.60	90.00	90.05	5		88.33
115	115	90.64	103.97	104.12	9		95.42
116	116	97.10	111.16	111.30	10		102.41
117	117	87.66	104.32	104.47	10		93.64
118	118	94.49	109.23	109.39	10		98.67
119	119	94.19	111.18	111.28	10		100.64

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-14 Client Windward Environmental Investigator

WEIGHING DATA SHEET

See page _____ for information on drying times and temperatures, standard weights,etc.

Bkr. #	Pan #	Tare wt. (mg)	Total wt. (mg) 1	Total wt. (mg) 2	no. weighed	put into pans-initials	Ash weight (mg)
120	120	93.21	103.98	103.99	9		96.95
121	121	89.20	90.30	90.30	4		89.44
122	122	88.12	102.85	102.87	9		92.87
123	123	100.50	117.09	117.10	10		106.84
124	124	103.31	120.32	120.52	10		109.39
125	125	93.48	109.05	109.10	10		98.99
126	126	101.18	113.48	113.49	10		105.92
127	127	97.16	112.55	112.57	9		103.16
128	128	94.68	107.46	107.45	10		99.35
129	129	94.89	97.82	97.82	4		95.68
130	130	93.55	107.36	107.38	9		99.52
131	131	90.96	102.17	102.18	10		94.55
132	132	88.49	99.43	99.42	8		92.27
133	133	96.61	111.68	111.68	9		101.67
134	134	90.21	95.50	95.49	8		91.53
135	135	97.87	100.27	100.49	5		98.45
136	136	89.63	102.04	102.01	10		93.90
137	137	94.42	110.57	110.60	10		100.06
138	138	~~93~~ 92.17	107.77	107.76	8		98.41
139	139	87.23	100.03	100.01	8		91.64
140	140	95.00	98.36	98.34	6		95.78
141	141	93.65	109.55	109.54	10		98.40
142	142	90.02	104.48	104.45	10		95.29
143	143	93.66	106.04	106.00	9		97.40
144	144	94.26	110.94	110.90	10		100.85
145	145	96.22	107.69	107.65	8		100.08
146	146	91.57	105.73	105.68	9		96.47
147	147	94.73	107.64	107.60	10		99.62
148	148	83.24	97.28	97.23	10		88.40
149	149	90.84	91.74	91.74	5		91.11
150	150	88.43	89.55	89.55	3		88.72
151	151	94.17	107.79	107.70	10		98.88
152	152	97.16	100.54	100.52	3		98.05
153	153	91.75	102.46	102.41	10		94.10
154	154	92.22	106.87	106.77	10		96.78
155	155	89.99	100.51	100.44	10		92.96
156	156	92.18	107.82	107.73	10		98.47
157	157	93.64	106.74	106.66	9		97.94
158	158	86.41	99.81	99.73	10		90.57
159	159	86.61	101.98	101.89	10		91.48
160	160	96.22	108.34	108.25	10		100.42
161	161	96.14					
162	162	96.65					

ANC08019
BZTO104(e)008019

Test Number: 686-14

Freshwater Sediment Test
10-Day Chironomus tentans

BKR	NAS SMPL	CLIENT DESCRIP	REPL	
97	9454F	Control	1	
72	9454F	Control	2	
4	9454F	Control	3	
109	9454F	Control	4	
17	9454F	Control	5	
94	9454F	Control	6	
64	9454F	Control	7	
104	9454F	Control	8	wq replicate
43	9435F	LW2-G207	1	
132	9435F	LW2-G207	2	
70	9435F	LW2-G207	3	
24	9435F	LW2-G207	4	
102	9435F	LW2-G207	5	
29	9435F	LW2-G207	6	
15	9435F	LW2-G207	7	
146	9435F	LW2-G207	8	wq replicate
9	9436F	LW2-G209	1	
59	9436F	LW2-G209	2	
81	9436F	LW2-G209	3	
101	9436F	LW2-G209	4	
113	9436F	LW2-G209	5	
60	9436F	LW2-G209	6	
28	9436F	LW2-G209	7	
39	9436F	LW2-G209	8	wq replicate
78	9437F	LW2-G198	1	
92	9437F	LW2-G198	2	
158	9437F	LW2-G198	3	
58	9437F	LW2-G198	4	
86	9437F	LW2-G198	5	
116	9437F	LW2-G198	6	
69	9437F	LW2-G198	7	
160	9437F	LW2-G198	8	wq replicate
123	9438F	LW2-G199	1	
91	9438F	LW2-G199	2	
38	9438F	LW2-G199	3	
82	9438F	LW2-G199	4	
42	9438F	LW2-G199	5	
49	9438F	LW2-G199	6	
41	9438F	LW2-G199	7	
131	9438F	LW2-G199	8	wq replicate
10	9439F	LW2-G204	1	
8	9439F	LW2-G204	2	
25	9439F	LW2-G204	3	
147	9439F	LW2-G204	4	
80	9439F	LW2-G204	5	
126	9439F	LW2-G204	6	
112	9439F	LW2-G204	7	
128	9439F	LW2-G204	8	wq replicate
12	9440F	LW2-G202	1	
157	9440F	LW2-G202	2	
125	9440F	LW2-G202	3	
36	9440F	LW2-G202	4	
68	9440F	LW2-G202	5	
16	9440F	LW2-G202	6	
142	9440F	LW2-G202	7	
96	9440F	LW2-G202	8	wq replicate

ANC08020
BZTO104(e)008020

Test Number: 686-14

Freshwater Sediment Test
10-Day Chironomus tentans

BKR	NAS SMPL	CLIENT DESCRIP	REPL	
137	9441F	LW2-G231	1	
95	9441F	LW2-G231	2	
159	9441F	LW2-G231	3	
53	9441F	LW2-G231	4	
110	9441F	LW2-G231	5	
30	9441F	LW2-G231	6	
133	9441F	LW2-G231	7	
117	9441F	LW2-G231	8	wq replicate
89	9442F	LW2-G234	1	
11	9442F	LW2-G234	2	
67	9442F	LW2-G234	3	
40	9442F	LW2-G234	4	
6	9442F	LW2-G234	5	
32	9442F	LW2-G234	6	
57	9442F	LW2-G234	7	
31	9442F	LW2-G234	8	wq replicate
7	9443F	LW2-G155	1	
155	9443F	LW2-G155	2	
21	9443F	LW2-G155	3	
34	9443F	LW2-G155	4	
5	9443F	LW2-G155	5	
54	9443F	LW2-G155	6	
88	9443F	LW2-G155	7	
26	9443F	LW2-G155	8	wq replicate
61	9444F	LW2-G166	1	
130	9444F	LW2-G166	2	
23	9444F	LW2-G166	3	
2	9444F	LW2-G166	4	
156	9444F	LW2-G166	5	
148	9444F	LW2-G166	6	
138	9444F	LW2-G166	7	
48	9444F	LW2-G166	8	wq replicate
1	9445F	LW2-G163	1	
18	9445F	LW2-G163	2	
47	9445F	LW2-G163	3	
20	9445F	LW2-G163	4	
51	9445F	LW2-G163	5	
27	9445F	LW2-G163	6	
62	9445F	LW2-G163	7	
74	9445F	LW2-G163	8	wq replicate
22	9446F	LW2-G161	1	
134	9446F	LW2-G161	2	
85	9446F	LW2-G161	3	
121	9446F	LW2-G161	4	
76	9446F	LW2-G161	5	
52	9446F	LW2-G161	6	
107	9446F	LW2-G161	7	
84	9446F	LW2-G161	8	wq replicate
129	9447F	LW2-G160	1	
135	9447F	LW2-G160	2	
90	9447F	LW2-G160	3	
45	9447F	LW2-G160	4	
100	9447F	LW2-G160	5	
111	9447F	LW2-G160	6	
150	9447F	LW2-G160	7	
114	9447F	LW2-G160	8	wq replicate

Test Number: 686-14

Freshwater Sediment Test
10-Day Chironomus tentans

BKR	NAS SMPL	CLIENT DESCRIP	REPL	
50	9448F	LW2-G157	1	
33	9448F	LW2-G157	2	
140	9448F	LW2-G157	3	
152	9448F	LW2-G157	4	
46	9448F	LW2-G157	5	
149	9448F	LW2-G157	6	
44	9448F	LW2-G157	7	
73	9448F	LW2-G157	8	wq replicate
13	9449F	LW2-G038	1	
14	9449F	LW2-G038	2	
118	9449F	LW2-G038	3	
98	9449F	LW2-G038	4	
153	9449F	LW2-G038	5	
83	9449F	LW2-G038	6	
141	9449F	LW2-G038	7	
99	9449F	LW2-G038	8	wq replicate
139	9450F	LW2-G123	1	
19	9450F	LW2-G123	2	
145	9450F	LW2-G123	3	
87	9450F	LW2-G123	4	
108	9450F	LW2-G123	5	
115	9450F	LW2-G123	6	
93	9450F	LW2-G123	7	
37	9450F	LW2-G123	8	wq replicate
56	9451F	LW2-G244	1	
122	9451F	LW2-G244	2	
77	9451F	LW2-G244	3	
154	9451F	LW2-G244	4	
79	9451F	LW2-G244	5	
71	9451F	LW2-G244	6	
119	9451F	LW2-G244	7	
124	9451F	LW2-G244	8	wq replicate
127	9452F	LW2-G247	1	
151	9452F	LW2-G247	2	
105	9452F	LW2-G247	3	
106	9452F	LW2-G247	4	
55	9452F	LW2-G247	5	
144	9452F	LW2-G247	6	
63	9452F	LW2-G247	7	
66	9452F	LW2-G247	8	wq replicate
65	9453F	LW2-G254	1	
136	9453F	LW2-G254	2	
103	9453F	LW2-G254	3	
35	9453F	LW2-G254	4	
3	9453F	LW2-G254	5	
143	9453F	LW2-G254	6	
120	9453F	LW2-G254	7	
75	9453F	LW2-G254	8	wq replicate

ANC08022
BZTO104(e)008022

TEST DATA ANALYSIS RECORDS

Endpoints Data Entry and Calculations File

BKR=beaker number
INIT=initial number
SURV=number survivors
MORT=number dead=INIT-SURV
PSURV=%survival=100(SURV/INIT)
PMORT=%mortality=100(MORT/INIT)

TARE WT= ashed weight of pan used for that replicate at test termination (mg), or dry weight of pan if ash-free dry weight is not an endpoint
WT COUNT= number of test organisms weighed at test end
DRY WT= TARE WT + dry weight of test organisms recovered at test termination (mg)
TWT=total biomass=DRY WT-TARE WT
WT=average individual biomass=TWT/WT COUNT

ASHED DRY WT= weight of ashed pan + weight of ashed test organisms recovered at test termination
TAFDW=DRY WT - ASHED DRY WT= total ash-free organism weight for given replicate
AFDW=average individual ash-free biomass=TAFDW/WT COUNT

INITIAL WEIGHT

pan #	tare wt (mg)	final wt (mg)	wt court	avg. wt/ organism
1	90.45	94.40	20	0.20
2	91.80	95.74	20	0.20
3	96.24	99.66	20	0.18

INDEX	BKR	NAS SMPL	CLIENT DESCRIP	REPL		INIT	SURV	MORT	PSURV	PMORT	TARE WT (mg)	WT COUNT	DRY WT (mg)	ASHED DRY WT (mg)	TWT (mg)	WT (mg)	TAFDW (mg)	AFDW (mg)
1	97	9454F	Control	1		10	10	0	100.0	0.0	95.53	10	108.62	98.91	13.09	1.31	9.71	0.97
2	72	9454F	Control	2		10	9	1	90.0	10.0	94.96	9	106.30	97.51	11.34	1.26	8.79	0.98
3	4	9454F	Control	3		10	10	0	100.0	0.0	99.18	10	109.26	101.01	10.08	1.01	8.25	0.83
4	109	9454F	Control	4		10	10	0	100.0	0.0	92.39	10	106.16	96.00	13.77	1.38	10.16	1.02
5	17	9454F	Control	5		10	10	0	100.0	0.0	95.43	10	104.80	96.93	9.37	0.94	7.87	0.79
6	94	9454F	Control	6		10	9	1	90.0	10.0	93.60	9	102.91	95.83	9.31	1.03	7.08	0.79
7	64	9454F	Control	7		10	10	0	100.0	0.0	94.74	10	105.80	97.63	11.06	1.11	8.17	0.82
8	104	9454F	Control	8	wq replicate	10	8	2	80.0	20.0	94.71	8	104.54	97.04	9.83	1.23	7.50	0.94
9	43	9435F	LW2-G207	1		10	10	0	100.0	0.0	91.25	10	103.72	95.77	12.47	1.25	7.95	0.80
10	132	9435F	LW2-G207	2		10	8	2	80.0	20.0	88.49	8	99.42	92.27	10.93	1.37	7.15	0.89
11	70	9435F	LW2-G207	3		10	8	2	80.0	20.0	90.04	8	99.60	93.26	9.56	1.20	6.34	0.79
12	24	9435F	LW2-G207	4		10	9	1	90.0	10.0	102.76	9	112.98	105.53	10.22	1.14	7.45	0.83
13	102	9435F	LW2-G207	5		10	8	2	80.0	20.0	96.31	8	106.95	99.91	10.64	1.33	7.04	0.88
14	29	9435F	LW2-G207	6		10	8	2	80.0	20.0	89.84	8	100.93	93.62	11.29	1.41	7.31	0.91
15	15	9435F	LW2-G207	7		10	9	1	90.0	10.0	95.16	9	106.38	98.91	11.22	1.25	7.47	0.83
16	146	9435F	LW2-G207	8	wq replicate	10	9	1	90.0	10.0	91.57	9	105.68	96.47	14.11	1.57	9.21	1.02
17	9	9436F	LW2-G209	1		10	10	0	100.0	0.0	91.70	10	108.95	97.30	15.25	1.53	9.65	0.97
18	59	9436F	LW2-G209	2		10	9	1	90.0	10.0	93.20	9	108.48	99.54	15.28	1.70	8.94	0.99
19	81	9436F	LW2-G209	3		10	10	0	100.0	0.0	82.81	10	97.06	88.14	14.25	1.43	8.92	0.89
20	101	9436F	LW2-G209	4		10	7	3	70.0	30.0	89.64	7	102.97	94.24	13.33	1.90	8.73	1.25
21	113	9436F	LW2-G209	5		10	10	0	100.0	0.0	90.43	10	108.42	97.18	17.99	1.80	11.24	1.12
22	60	9436F	LW2-G209	6		10	10	0	100.0	0.0	93.63	10	108.12	99.09	14.49	1.45	9.03	0.90
23	28	9436F	LW2-G209	7		10	10	0	100.0	0.0	99.03	10	112.86	103.29	13.83	1.38	9.57	0.96
24	39	9436F	LW2-G209	8	wq replicate	10	10	0	100.0	0.0	108.81	10	124.25	114.01	15.44	1.54	10.24	1.02
25	78	9437F	LW2-G196	1		10	10	0	100.0	0.0	91.24	10	104.70	95.99	13.46	1.35	8.71	0.87
26	92	9437F	LW2-G196	2		10	10	0	100.0	0.0	90.32	10	104.61	95.83	14.29	1.43	8.78	0.88
27	158	9437F	LW2-G196	3		10	10	0	100.0	0.0	86.41	10	99.73	90.57	13.32	1.33	9.16	0.92
28	58	9437F	LW2-G196	4		10	10	0	100.0	0.0	89.98	10	104.06	94.30	14.08	1.41	9.76	0.98
29	86	9437F	LW2-G196	5		10	10	0	100.0	0.0	90.36	10	100.92	94.16	10.56	1.06	6.76	0.68
30	116	9437F	LW2-G196	6		10	10	0	100.0	0.0	97.10	10	111.30	102.41	14.20	1.42	8.89	0.89
31	69	9437F	LW2-G196	7		10	10	0	100.0	0.0	95.44	10	107.16	99.60	11.72	1.17	7.56	0.76
32	160	9437F	LW2-G196	8	wq replicate	10	10	0	100.0	0.0	96.22	10	108.25	100.42	12.03	1.20	7.83	0.78
33	123	9438F	LW2-G199	1		10	10	0	100.0	0.0	100.50	10	117.10	106.84	16.60	1.66	10.26	1.03
34	91	9438F	LW2-G199	2		10	10	0	100.0	0.0	87.62	10	101.02	92.08	13.40	1.34	8.94	0.89
35	38	9438F	LW2-G199	3		10	10	0	100.0	0.0	94.58	10	107.51	99.00	12.93	1.29	8.51	0.85
36	82	9438F	LW2-G199	4		10	10	0	100.0	0.0	96.11	10	109.18	100.75	13.07	1.31	8.43	0.84
37	42	9438F	LW2-G199	5		10	10	0	100.0	0.0	97.06	10	110.42	101.33	13.34	1.33	9.09	0.91
38	49	9438F	LW2-G199	6		10	7	3	70.0	30.0	93.52	7	104.14	96.06	10.62	1.52	8.06	1.15
39	41	9438F	LW2-G199	7		10	9	1	90.0	10.0	91.79	9	101.84	94.51	10.05	1.12	7.33	0.81
40	131	9438F	LW2-G199	8	wq replicate	10	10	0	100.0	0.0	90.46	10	102.18	94.55	11.72	1.17	7.63	0.76

	SURV	MORT	PSURV	PMORT	WT	AFDW
Mean	9.5	0.5	95.0	5.0	1.16	0.89
SD	0.8	0.8	7.6	7.6	0.16	0.09
n	8	8	8	8	8	8
Mean	8.6	1.4	86.3	13.8	1.31	0.87
SD	0.7	0.7	7.4	7.4	0.14	0.08
n	8	8	8	8	8	8
Mean	9.5	0.5	95.0	5.0	1.59	1.01
SD	1.1	1.1	10.7	10.7	0.19	0.12
n	8	8	8	8	8	8
Mean	10.0	0.0	100.0	0.0	1.30	0.84
SD	0.0	0.0	0.0	0.0	0.14	0.10
n	8	8	8	8	8	8
Mean	9.5	0.5	95.0	5.0	1.34	0.91
SD	1.1	1.1	10.7	10.7	0.18	0.13
n	8	8	8	8	8	8

ANC08024
BZTO104(e)008024

Test Number: 686-14

Freshwater Sediment Test
10-Day Chironomus tentans

INDEX	BKR	NAS SMPL	CLIENT DESCRIP	REPL		INIT	SURV	MORT	PSURV	PMORT	TARE WT (mg)	WT COUNT	DRY WT (mg)	ASHED DRY WT (mg)	TWT (mg)	WT (mg)	TAFDW (mg)	AFDW (mg)		SURV	MORT	PSURV	PMORT	WT	AFDW
41	10	9439F	LW2-G204	1		10	8	2	80.0	20.0	95.04	8	104.81	97.47	9.77	1.22	7.34	0.92							
42	8	9439F	LW2-G204	2		10	9	1	90.0	10.0	94.35	9	104.13	97.11	9.78	1.09	7.02	0.78							
43	25	9439F	LW2-G204	3		10	9	1	90.0	10.0	92.41	9	103.65	96.47	11.24	1.25	7.18	0.80							
44	147	9439F	LW2-G204	4		10	10	0	100.0	0.0	94.73	10	107.60	99.62	12.87	1.29	7.98	0.80							
45	80	9439F	LW2-G204	5		10	8	2	80.0	20.0	94.92	8	106.36	98.83	11.44	1.43	7.43	0.93	Mean	9.1	0.9	91.3	8.8	1.26	0.83
46	126	9439F	LW2-G204	6		10	10	0	100.0	0.0	101.18	10	113.49	105.92	12.31	1.23	7.57	0.76	SD	0.8	0.8	8.3	8.3	0.10	0.07
47	112	9439F	LW2-G204	7		10	9	1	90.0	10.0	87.71	9	99.32	91.31	11.61	1.29	8.01	0.89	n	8	8	8	8	8	8
48	128	9439F	LW2-G204	8	wq replicate	10	10	0	100.0	0.0	94.68	10	107.45	99.35	12.77	1.28	8.10	0.81							
49	12	9440F	LW2-G202	1		10	10	0	100.0	0.0	93.33	10	105.59	95.38	12.26	1.23	10.21	1.02							
50	157	9440F	LW2-G202	2		10	9	1	90.0	10.0	93.64	9	106.66	97.94	13.02	1.45	8.72	0.97							
51	125	9440F	LW2-G202	3		10	10	0	100.0	0.0	93.48	10	109.10	98.99	15.62	1.56	10.11	1.01							
52	36	9440F	LW2-G202	4		10	9	1	90.0	10.0	89.98	9	102.55	93.63	12.57	1.40	8.92	0.99							
53	68	9440F	LW2-G202	5		10	9	1	90.0	10.0	87.72	9	99.33	90.76	11.61	1.29	8.57	0.95	Mean	9.6	0.4	96.3	3.8	1.35	0.95
54	16	9440F	LW2-G202	6		10	10	0	100.0	0.0	100.15	10	109.30	102.27	9.15	0.91	7.03	0.70	SD	0.5	0.5	5.2	5.2	0.20	0.10
55	142	9440F	LW2-G202	7		10	10	0	100.0	0.0	90.02	10	104.45	95.29	14.43	1.44	9.16	0.92	n	8	8	8	8	8	8
56	96	9440F	LW2-G202	8	wq replicate	10	10	0	100.0	0.0	95.25	10	110.12	100.14	14.87	1.49	9.96	1.00							
57	137	9441F	LW2-G231	1		10	10	0	100.0	0.0	94.42	10	110.60	100.06	16.18	1.62	10.54	1.05							
58	95	9441F	LW2-G231	2		10	10	0	100.0	0.0	84.33	10	97.44	88.73	13.11	1.31	8.71	0.87							
59	159	9441F	LW2-G231	3		10	10	0	100.0	0.0	86.61	10	101.89	91.48	15.28	1.53	10.41	1.04							
60	53	9441F	LW2-G231	4		10	9	1	90.0	10.0	94.98	9	108.89	98.90	13.91	1.55	9.99	1.11							
61	110	9441F	LW2-G231	5		10	10	0	100.0	0.0	91.08	10	107.33	96.57	16.25	1.63	10.76	1.08	Mean	9.6	0.4	96.3	3.8	1.54	1.05
62	30	9441F	LW2-G231	6		10	9	1	90.0	10.0	89.30	9	101.39	92.07	12.09	1.34	9.32	1.04	SD	0.5	0.5	5.2	5.2	0.14	0.08
63	133	9441F	LW2-G231	7		10	9	1	90.0	10.0	96.61	9	111.68	101.67	15.07	1.67	10.01	1.11	n	8	8	8	8	8	8
64	117	9441F	LW2-G231	8	wq replicate	10	10	0	100.0	0.0	87.66	10	104.47	93.64	16.81	1.68	10.83	1.08							
65	89	9442F	LW2-G234	1		10	9	1	90.0	10.0	93.70	9	106.60	97.48	12.90	1.43	9.12	1.01							
66	11	9442F	LW2-G234	2		10	9	1	90.0	10.0	92.64	9	102.29	94.79	9.65	1.07	7.60	0.83							
67	67	9442F	LW2-G234	3		10	9	1	90.0	10.0	94.45	9	107.10	97.81	12.65	1.41	9.29	1.03							
68	40	9442F	LW2-G234	4		10	10	0	100.0	0.0	91.36	10	105.41	95.63	14.05	1.41	9.78	0.98							
69	6	9442F	LW2-G234	5		10	10	0	100.0	0.0	94.99	10	108.25	98.90	13.26	1.33	9.35	0.93	Mean	9.5	0.5	95.0	5.0	1.31	0.96
70	32	9442F	LW2-G234	6		10	10	0	100.0	0.0	88.42	10	100.01	91.14	11.59	1.16	8.87	0.89	SD	0.5	0.5	5.3	5.3	0.13	0.07
71	57	9442F	LW2-G234	7		10	10	0	100.0	0.0	94.73	10	108.21	98.75	13.48	1.35	9.46	0.95	n	8	8	8	8	8	8
72	31	9442F	LW2-G234	8	wq replicate	10	9	1	90.0	10.0	89.31	9	101.31	92.08	12.00	1.33	9.23	1.03							
73	7	9443F	LW2-G155	1		10	9	1	90.0	10.0	93.02	9	102.46	95.72	9.44	1.05	6.74	0.75							
74	155	9443F	LW2-G155	2		10	10	0	100.0	0.0	89.99	10	100.44	92.96	10.45	1.05	7.48	0.75							
75	21	9443F	LW2-G155	3		10	10	0	100.0	0.0	91.77	10	98.69	93.58	6.92	0.69	5.11	0.51							
76	34	9443F	LW2-G155	4		10	6	4	60.0	40.0	97.01	6	103.81	99.16	6.80	1.13	4.65	0.78							
77	5	9443F	LW2-G155	5		10	9	1	90.0	10.0	96.13	9	104.24	97.94	8.11	0.90	6.30	0.70	Mean	8.9	1.1	88.8	11.3	0.97	0.70
78	54	9443F	LW2-G155	6		10	9	1	90.0	10.0	93.19	9	103.28	96.25	10.09	1.12	7.03	0.78	SD	1.4	1.4	13.6	13.6	0.16	0.10
79	88	9443F	LW2-G155	7		10	10	0	100.0	0.0	88.68	10	96.83	90.97	8.15	0.81	5.86	0.59	n	8	8	8	8	8	8
80	26	9443F	LW2-G155	8	wq replicate	10	8	2	80.0	20.0	101.88	8	109.98	104.15	8.10	1.01	5.83	0.73							
81	61	9444F	LW2-G166	1		11	11	0	100.0	0.0	92.31	11	106.67	98.49	14.36	1.31	8.18	0.74							
82	130	9444F	LW2-G166	2		10	9	1	90.0	10.0	93.55	9	107.38	99.52	13.83	1.54	7.86	0.87							
83	23	9444F	LW2-G166	3		10	10	0	100.0	0.0	90.95	10	101.20	94.17	10.25	1.03	7.03	0.70							
84	2	9444F	LW2-G166	4		10	9	1	90.0	10.0	97.93	9	108.21	100.77	10.28	1.14	7.44	0.83							
85	156	9444F	LW2-G166	5		10	10	0	100.0	0.0	92.18	10	107.73	98.47	15.55	1.56	9.26	0.93	Mean	9.6	0.5	95.0	5.0	1.38	0.87
86	148	9444F	LW2-G166	6		10	10	0	100.0	0.0	83.24	10	97.23	88.40	13.99	1.40	8.83	0.88	SD	0.8	0.8	7.6	7.6	0.30	0.14
87	138	9444F	LW2-G166	7		10	8	2	80.0	20.0	92.17	8	107.76	98.41	15.59	1.95	9.35	1.17	n	8	8	8	8	8	8
88	48	9444F	LW2-G166	8	wq replicate	10	10	0	100.0	0.0	90.30	10	101.95	93.46	11.65	1.17	8.49	0.85							
89	1	9445F	LW2-G163	1		10	10	0	100.0	0.0	99.10	10	110.09	101.63	10.99	1.10	8.46	0.85							
90	18	9445F	LW2-G163	2		10	10	0	100.0	0.0	96.77	10	106.05	98.45	9.28	0.93	7.60	0.76							
91	47	9445F	LW2-G163	3		10	9	1	90.0	10.0	99.36	9	108.43	101.08	9.07	1.01	7.35	0.82							
92	20	9445F	LW2-G163	4		10	10	0	100.0	0.0	100.29	10	110.95	103.07	10.66	1.07	7.88	0.79							
93	51	9445F	LW2-G163	5		10	10	0	100.0	0.0	93.29	10	105.74	96.82	12.45	1.25	8.92	0.89	Mean	9.8	0.3	97.5	2.5	1.14	0.87
94	27	9445F	LW2-G163	6		10	9	1	90.0	10.0	96.92	9	106.97	99.13	10.05	1.12	7.84	0.87	SD	0.5	0.5	4.6	4.6	0.15	0.09
95	62	9445F	LW2-G163	7		10	10	0	100.0	0.0	97.78	10	110.83	100.43	13.05	1.31	10.40	1.04	n	8	8	8	8	8	8
96	74	9445F	LW2-G163	8	wq replicate	10	10	0	100.0	0.0	91.58	10	105.20	95.78	13.64	1.36	9.42	0.94							

ANC08025
BZTO104(e)008025

Test Number: 686-14

Freshwater Sediment Test
10-Day Chironomus tentans

INDEX	BKR	NAS SMPL	CLIENT DESCRIP	REPL		INIT	SURV	MORT	PSURV	PMORT	TARE WT (mg)	WT COUNT	DRY WT (mg)	ASHED DRY WT (mg)	TWT (mg)	WT (mg)	TAFDW (mg)	AFDW (mg)		SURV	MORT	PSURV	PMORT	WT	AFDW
97	22	9446F	LW2-G161	1		10	8	2	80.0	20.0	95.78	8	97.70	96.06	1.92	0.24	1.64	0.21							
98	134	9446F	LW2-G161	2		10	8	2	80.0	20.0	90.21	8	95.49	91.53	5.28	0.66	3.96	0.49							
99	85	9446F	LW2-G161	3		10	9	1	90.0	10.0	91.20	9	95.45	92.57	4.25	0.47	2.88	0.32							
100	121	9446F	LW2-G161	4		10	4	6	40.0	60.0	89.20	4	90.30	89.44	1.10	0.27	0.86	0.22							
101	76	9446F	LW2-G161	5		10	8	2	80.0	20.0	94.75	8	99.21	95.83	4.46	0.56	3.38	0.42	Mean	7.0	3.0	70.0	30.0	0.44	0.33
102	52	9446F	LW2-G161	6		10	1	9	10.0	90.0	97.42	1	97.64	97.48	0.22	0.22	0.16	0.16	SD	2.9	2.9	29.3	29.3	0.17	0.13
103	107	9446F	LW2-G161	7		10	9	1	90.0	10.0	90.66	9	95.67	91.72	5.01	0.56	3.95	0.44	n	8	8	8	8	8	8
104	84	9446F	LW2-G161	8	wq replicate	10	9	1	90.0	10.0	90.08	9	95.13	91.34	5.05	0.56	3.79	0.42							
105	129	9447F	LW2-G160	1		10	4	6	40.0	60.0	94.89	4	97.82	95.68	2.93	0.73	2.14	0.53							
106	135	9447F	LW2-G160	2		10	5	5	50.0	50.0	97.87	5	100.49	98.45	2.62	0.52	2.04	0.41							
107	90	9447F	LW2-G160	3		10	1	9	10.0	90.0	98.18	1	98.43	98.23	0.25	0.25	0.20	0.20							
108	45	9447F	LW2-G160	4		10	2	8	20.0	80.0	93.87	2	94.18	93.92	0.31	0.18	0.26	0.13							
109	100	9447F	LW2-G160	5		10	6	4	60.0	40.0	89.49	6	94.11	90.65	4.62	0.77	3.46	0.58	Mean	4.1	5.9	41.3	58.8	0.46	0.35
110	111	9447F	LW2-G160	6		10	7	3	70.0	30.0	88.86	7	91.72	89.43	2.86	0.41	2.29	0.33	SD	2.0	2.0	20.3	20.3	0.21	0.15
111	150	9447F	LW2-G160	7		10	3	7	30.0	70.0	88.43	3	89.55	88.72	1.12	0.37	0.83	0.28	n	8	8	8	8	8	8
112	114	9447F	LW2-G160	8	wq replicate	10	5	5	50.0	50.0	87.60	5	90.05	88.33	2.45	0.49	1.72	0.34							
113	50	9448F	LW2-G157	1		10	4	6	40.0	60.0	94.48	4	95.37	94.64	0.89	0.22	0.73	0.18							
114	33	9448F	LW2-G157	2		10	4	6	40.0	60.0	95.61	4	96.75	95.81	1.14	0.29	0.94	0.23							
115	140	9448F	LW2-G157	3		10	6	4	60.0	40.0	95.00	6	98.34	95.78	3.34	0.56	2.56	0.43							
116	152	9448F	LW2-G157	4		10	3	7	30.0	70.0	97.16	3	100.52	98.05	3.36	1.12	2.47	0.82							
117	46	9448F	LW2-G157	5		10	2	8	20.0	80.0	94.41	2	94.87	94.51	0.46	0.23	0.36	0.18	Mean	4.6	5.4	46.3	53.8	0.37	0.26
118	149	9448F	LW2-G157	6		10	5	5	50.0	50.0	90.84	5	91.74	91.11	0.90	0.18	0.63	0.13	SD	1.8	1.8	18.5	18.5	0.33	0.24
119	44	9448F	LW2-G157	7		10	5	5	50.0	50.0	97.82	5	98.64	98.00	0.82	0.16	0.64	0.13	n	8	8	8	8	8	8
120	73	9448F	LW2-G157	8	wq replicate	10	8	2	80.0	20.0	94.02	8	95.70	94.37	1.68	0.21	1.33	0.17							
121	13	9449F	LW2-G038	1		10	10	0	100.0	0.0	96.82	10	109.93	99.81	13.11	1.31	10.12	1.01							
122	14	9449F	LW2-G038	2		10	10	0	100.0	0.0	96.34	10	109.72	99.26	13.38	1.34	10.48	1.05							
123	118	9449F	LW2-G038	3		10	10	0	100.0	0.0	94.49	10	109.39	98.67	14.90	1.49	10.72	1.07							
124	98	9449F	LW2-G038	4		10	10	0	100.0	0.0	95.23	10	110.87	99.72	15.64	1.56	11.15	1.12							
125	153	9449F	LW2-G038	5		10	10	0	100.0	0.0	91.75	10	102.41	94.10	10.66	1.07	8.31	0.83	Mean	10.0	0.0	100.0	0.0	1.41	1.04
126	83	9449F	LW2-G038	6		10	10	0	100.0	0.0	95.27	10	109.68	99.24	14.41	1.44	10.44	1.04	SD	0.0	0.0	0.0	0.0	0.17	0.09
127	141	9449F	LW2-G038	7		10	10	0	100.0	0.0	93.65	10	109.54	98.40	15.89	1.59	11.14	1.11	n	8	8	8	8	8	8
128	99	9449F	LW2-G038	8	wq replicate	10	10	0	100.0	0.0	93.73	10	108.47	97.71	14.74	1.47	10.78	1.08							
129	139	9450F	LW2-G123	1		10	8	2	80.0	20.0	87.23	8	100.01	91.64	12.78	1.60	8.37	1.05							
130	19	9450F	LW2-G123	2		10	8	2	80.0	20.0	95.76	8	105.23	98.04	9.47	1.18	7.19	0.90							
131	145	9450F	LW2-G123	3		10	8	2	80.0	20.0	96.22	8	107.65	100.08	11.43	1.43	7.57	0.95							
132	87	9450F	LW2-G123	4		10	6	4	60.0	40.0	94.45	6	104.07	96.99	9.62	1.60	7.08	1.18							
133	108	9450F	LW2-G123	5		10	8	2	80.0	20.0	90.41	8	103.57	94.25	13.16	1.65	9.32	1.17	Mean	7.9	2.1	78.8	21.3	1.43	0.99
134	115	9450F	LW2-G123	6		10	9	1	90.0	10.0	90.64	9	104.12	95.42	13.48	1.50	8.70	0.97	SD	1.0	1.0	9.9	9.9	0.18	0.13
135	93	9450F	LW2-G123	7		10	9	1	90.0	10.0	95.21	9	105.94	98.63	10.73	1.19	7.31	0.81	n	8	8	8	8	8	8
136	37	9450F	LW2-G123	8	wq replicate	10	7	3	70.0	30.0	87.44	7	96.64	90.44	9.20	1.31	6.20	0.89							
137	56	9451F	LW2-G244	1		10	10	0	100.0	0.0	95.37	10	109.19	99.88	13.82	1.38	9.31	0.93							
138	122	9451F	LW2-G244	2		10	9	1	90.0	10.0	88.12	9	102.87	92.87	14.75	1.64	10.00	1.11							
139	77	9451F	LW2-G244	3		10	10	0	100.0	0.0	90.44	10	106.90	96.29	16.46	1.65	10.61	1.06							
140	154	9451F	LW2-G244	4		10	10	0	100.0	0.0	92.22	10	106.77	96.78	14.55	1.46	9.99	1.00							
141	79	9451F	LW2-G244	5		10	10	0	100.0	0.0	94.07	10	107.72	98.70	13.65	1.37	9.02	0.90	Mean	9.8	0.3	97.5	2.5	1.55	1.03
142	71	9451F	LW2-G244	6		10	9	1	90.0	10.0	98.48	9	112.02	102.72	13.54	1.50	9.30	1.03	SD	0.5	0.5	4.6	4.6	0.14	0.06
143	119	9451F	LW2-G244	7		10	10	0	100.0	0.0	94.19	10	111.28	100.64	17.09	1.71	10.64	1.06	n	8	8	8	8	8	8
144	124	9451F	LW2-G244	8	wq replicate	10	10	0	100.0	0.0	103.31	10	120.52	109.39	17.21	1.72	11.13	1.11							
145	127	9452F	LW2-G247	1		10	10	0	100.0	0.0	97.16	9	112.57	103.16	15.41	1.71	9.41	1.05							
146	151	9452F	LW2-G247	2		10	10	0	100.0	0.0	94.17	10	107.70	98.88	13.53	1.35	8.82	0.88							
147	105	9452F	LW2-G247	3		10	8	2	80.0	20.0	90.71	8	103.86	95.80	13.15	1.64	8.06	1.01							
148	106	9452F	LW2-G247	4		10	10	0	100.0	0.0	97.55	10	111.62	102.26	14.27	1.43	9.56	0.96							
149	55	9452F	LW2-G247	5		10	9	1	90.0	10.0	98.35	9	111.91	102.88	13.56	1.51	9.03	1.00	Mean	9.6	0.4	98.3	3.8	1.52	0.95
150	144	9452F	LW2-G247	6		10	10	0	100.0	0.0	94.26	10	110.90	100.85	16.64	1.66	10.05	1.01	SD	0.7	0.7	7.4	7.4	0.15	0.08
151	63	9452F	LW2-G247	7		10	10	0	100.0	0.0	93.28	10	106.33	98.11	13.05	1.31	8.22	0.82	n	8	8	8	8	8	8
152	68	9452F	LW2-G247	8	wq replicate	10	10	0	100.0	0.0	92.94	10	108.38	99.24	15.44	1.54	9.14	0.91							

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Test Number: 686-14

Freshwater Sediment Test
10-Day Chironomus tentans

	NAS	CLIENT								TARE	WT	DRY	ASHED	TWT	WT	TAFDW	AFDW								
INDEX	BKR SMPL	DESCRIP	REPL		INIT	SURV	MORT	PSURV	PMORT	WT (mg)	COUNT	WT (mg)	DRY WT (mg)	(mg)	(mg)	(mg)	(mg)			SURV	MORT	PSURV	PMORT	WT	AFDW
153	65 9453F	LW2-G254	1		10	10	0	100.0	0.0	85.20	10	94.90	88.12	9.70	0.97	6.78	0.68								
154	136 9453F	LW2-G254	2		10	10	0	100.0	0.0	89.63	10	102.01	93.90	12.38	1.24	8.11	0.81								
155	103 9453F	LW2-G254	3		10	8	2	80.0	20.0	98.65	8	109.02	101.48	10.37	1.30	7.54	0.94								
156	35 9453F	LW2-G254	4		10	9	1	90.0	10.0	100.93	9	111.15	104.12	10.22	1.14	7.03	0.78								
157	3 9453F	LW2-G254	5		10	9	1	90.0	10.0	92.85	9	102.23	95.07	9.38	1.04	7.16	0.80	Mean	9.1	0.9	91.3	8.8	1.17	0.82
158	143 9453F	LW2-G254	6		10	9	1	90.0	10.0	93.66	9	106.00	97.40	12.34	1.37	8.80	0.96	SD	0.6	0.6	6.4	6.4	0.13	0.09
159	120 9453F	LW2-G254	7		10	9	1	90.0	10.0	93.21	9	103.99	96.95	10.78	1.20	7.04	0.78	n	8	8	8	8	8	8
160	75 9453F	LW2-G254	8	wq replicate	10	9	1	90.0	10.0	92.57	9	102.38	95.38	9.81	1.09	7.00	0.78								
	Bkr # 127 lost one animal in transfer to weigh pan.																								

Data entry verified
10/19/04 JM

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Water Quality Data

NAS SMPL	CLIENT DESCRIP	Bulk Sediment Interstitial water NH3	pH
9435F	LW2-G207	8.9	5.6
9436F	LW2-G209	1.4	5.8
9437F	LW2-G198	3.3	5.9
9438F	LW2-G199	4.1	6.0
9439F	LW2-G204	2.7	6.4
9440F	LW2-G202	3.9	6.3
9441F	LW2-G231	3.7	6.3
9442F	LW2-G234	3.3	6.1
9443F	LW2-G155	7.7	6.2
9444F	LW2-G166	3.7	6.2
9445F	LW2-G163	---	---
9446F	LW2-G161	2.9	6.3
9447F	LW2-G160	7.3	6.7
9448F	LW2-G157	9.3	6.5
9449F	LW2-G038	4.5	6.2
9450F	LW2-G123	3.6	6.3
9451F	LW2-G244	8.6	6.2
9452F	LW2-G247	1.7	6.4
9453F	LW2-G254	1.2	6.1

BKR	NAS SMPL	CLIENT DESCRIP	REPL	DAY	Overlying water TEMP	DO	COND	pH	NH3	HARD	ALK
26	9443F	LW2-G155	8	0	23.1	7.2	170	6.6	1.0	43	40
31	9442F	LW2-G234	8	0	23.1	7.4	160	6.5	0.3	43	40
37	9450F	LW2-G123	8	0	23.1	6.5	160	6.5	0.4	43	40
39	9436F	LW2-G209	8	0	23.1	7.2	170	6.6	0.2	43	40
48	9444F	LW2-G166	8	0	23.1	7.1	165	6.7	0.2	60	40
66	9452F	LW2-G247	8	0	23.1	7.5	160	6.6	0.2	43	40
73	9448F	LW2-G157	8	0	23.1	7.3	170	6.5	0.8	51	50
74	9445F	LW2-G163	8	0	23.1	7.4	160	6.6	0.3	43	40
75	9453F	LW2-G254	8	0	23.1	7.2	165	6.6	0.1	51	40
84	9446F	LW2-G161	8	0	23.1	7.2	170	6.6	0.3	51	50
96	9440F	LW2-G202	8	0	23.1	6.8	165	6.5	0.8	51	40
99	9449F	LW2-G038	8	0	23.1	7.3	165	6.5	0.6	43	40
104	9454F	Control	8	0	23.0	7.4	240	6.5	0.3	43	50
114	9447F	LW2-G160	8	0	23.0	7.7	170	6.7	0.7	43	40
117	9441F	LW2-G231	8	0	23.0	7.6	170	6.6	0.4	51	50
124	9451F	LW2-G244	8	0	23.0	7.5	175	6.5	0.8	51	50
128	9439F	LW2-G204	8	0	23.0	7.4	165	6.5	0.4	43	40
131	9438F	LW2-G199	8	0	23.1	7.2	175	6.6	0.6	60	50
146	9435F	LW2-G207	8	0	23.1	7.5	165	6.6	2.0	43	40
160	9437F	LW2-G198	8	0	23.2	7.6	165	6.6	0.5	43	40
26	9443F	LW2-G155	8	1	23.0	6.6					
31	9442F	LW2-G234	8	1	23.0	6.8					
37	9450F	LW2-G123	8	1	23.0	6.4					
39	9436F	LW2-G209	8	1	23.0	6.5					
48	9444F	LW2-G166	8	1	23.0	6.6					
66	9452F	LW2-G247	8	1	23.0	6.9					
73	9448F	LW2-G157	8	1	23.1	6.8					
74	9445F	LW2-G163	8	1	23.1	6.5					
75	9453F	LW2-G254	8	1	23.1	6.7					
84	9446F	LW2-G161	8	1	23.1	6.4					
96	9440F	LW2-G202	8	1	23.0	6.6					
99	9449F	LW2-G038	8	1	23.0	6.3					
104	9454F	Control	8	1	22.9	6.4					
114	9447F	LW2-G160	8	1	22.9	6.9					
117	9441F	LW2-G231	8	1	23.0	6.7					
124	9451F	LW2-G244	8	1	22.9	6.8					
128	9439F	LW2-G204	8	1	22.9	7.0					
131	9438F	LW2-G199	8	1	23.0	6.8					
146	9435F	LW2-G207	8	1	23.0	6.8					
160	9437F	LW2-G198	8	1	23.1	6.7					
26	9443F	LW2-G155	8	2	22.4	6.6					
31	9442F	LW2-G234	8	2	22.4	6.8					
37	9450F	LW2-G123	8	2	22.4	6.4					
39	9436F	LW2-G209	8	2	22.4	6.4					
48	9444F	LW2-G166	8	2	22.4	6.1					
66	9452F	LW2-G247	8	2	22.4	6.2					
73	9448F	LW2-G157	8	2	22.4	6.3					
74	9445F	LW2-G163	8	2	22.4	6.3					
75	9453F	LW2-G254	8	2	22.4	6.4					
84	9446F	LW2-G161	8	2	22.4	6.2					

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96	9440F	LW2-G202	8	2	22.3	6.9									
99	9449F	LW2-G038	8	2	22.2	6.6									
104	9454F	Control	8	2	22.2	6.5									
114	9447F	LW2-G160	8	2	22.2	6.6									
117	9441F	LW2-G231	8	2	22.2	6.4									
124	9451F	LW2-G244	8	2	22.2	6.5									
128	9439F	LW2-G204	8	2	22.2	6.3									
131	9438F	LW2-G199	8	2	22.2	6.2									
146	9435F	LW2-G207	8	2	22.4	6.4									
160	9437F	LW2-G198	8	2	22.6	6.7									
26	9443F	LW2-G155	8	3	22.6	6.7	6.7								
31	9442F	LW2-G234	8	3	22.7	6.1	6.7								
37	9450F	LW2-G123	8	3	22.6	6.0	6.6								
39	9436F	LW2-G209	8	3	22.6	6.0	6.6								
48	9444F	LW2-G166	8	3	22.5	6.1	6.7								
66	9452F	LW2-G247	8	3	22.6	5.9	6.6								
73	9448F	LW2-G157	8	3	22.5	5.7	6.7								
74	9445F	LW2-G163	8	3	22.5	6.4	6.7								
75	9453F	LW2-G254	8	3	22.6	6.3	6.7								
84	9446F	LW2-G161	8	3	22.6	6.2	6.7								
96	9440F	LW2-G202	8	3	22.6	6.8	6.7								
99	9449F	LW2-G038	8	3	22.5	5.9	6.6								
104	9454F	Control	8	3	22.5	6.3	6.7								
114	9447F	LW2-G160	8	3	22.5	6.5	6.7								
117	9441F	LW2-G231	8	3	22.5	6.0	6.7								
124	9451F	LW2-G244	8	3	22.5	5.7	6.7								
128	9439F	LW2-G204	8	3	22.5	6.4	6.6								
131	9438F	LW2-G199	8	3	22.8	6.1	6.6								
146	9435F	LW2-G207	8	3	22.9	6.2	6.6								
160	9437F	LW2-G198	8	3	22.9	6.2	6.6								
26	9443F	LW2-G155	8	4	23.1	5.6									
31	9442F	LW2-G234	8	4	23.1	4.8									
37	9450F	LW2-G123	8	4	23.0	5.1									
39	9436F	LW2-G209	8	4	23.1	4.5									
48	9444F	LW2-G166	8	4	23.1	5.0									
66	9452F	LW2-G247	8	4	23.1	5.0									
73	9448F	LW2-G157	8	4	23.0	5.5									
74	9445F	LW2-G163	8	4	23.0	5.6									
75	9453F	LW2-G254	8	4	23.1	5.5									
84	9446F	LW2-G161	8	4	23.1	5.4									
96	9440F	LW2-G202	8	4	23.0	5.4									
99	9449F	LW2-G038	8	4	23.0	4.9									
104	9454F	Control	8	4	22.9	5.3									
114	9447F	LW2-G160	8	4	23.0	5.8									
117	9441F	LW2-G231	8	4	23.0	5.3									
124	9451F	LW2-G244	8	4	23.0	4.6									
128	9439F	LW2-G204	8	4	23.0	5.5									
131	9438F	LW2-G199	8	4	23.0	5.2									
146	9435F	LW2-G207	8	4	23.3	5.6									
160	9437F	LW2-G198	8	4	23.3	5.4									
26	9443F	LW2-G155	8	5	23.1	5.5									
31	9442F	LW2-G234	8	5	23.1	4.9									
37	9450F	LW2-G123	8	5	23.1	4.6									
39	9436F	LW2-G209	8	5	23.1	4.8									
48	9444F	LW2-G166	8	5	23.0	4.6									
66	9452F	LW2-G247	8	5	23.0	4.6									
73	9448F	LW2-G157	8	5	23.1	5.0									
74	9445F	LW2-G163	8	5	23.0	5.1									
75	9453F	LW2-G254	8	5	23.0	4.9									
84	9446F	LW2-G161	8	5	23.1	4.9									
96	9440F	LW2-G202	8	5	23.0	4.7									
99	9449F	LW2-G038	8	5	23.0	5.0									
104	9454F	Control	8	5	22.9	4.9									
114	9447F	LW2-G160	8	5	22.9	5.2									
117	9441F	LW2-G231	8	5	23.0	5.1									
124	9451F	LW2-G244	8	5	22.9	4.1									
128	9439F	LW2-G204	8	5	22.9	5.0									
131	9438F	LW2-G199	8	5	23.0	4.9									
146	9435F	LW2-G207	8	5	23.2	5.4									
160	9437F	LW2-G198	8	5	23.2	5.2									
26	9443F	LW2-G155	8	6	22.8	6.5									
31	9442F	LW2-G234	8	6	22.8	6.4									
37	9450F	LW2-G123	8	6	22.8	6.0									
39	9436F	LW2-G209	8	6	22.8	6.1									
48	9444F	LW2-G166	8	6	22.7	6.1									
66	9452F	LW2-G247	8	6	22.8	6.2									
73	9448F	LW2-G157	8	6	22.7	6.3									
74	9445F	LW2-G163	8	6	22.7	6.7									
75	9453F	LW2-G254	8	6	22.8	6.3									
84	9446F	LW2-G161	8	6	22.8	6.1									

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96	9440F	LW2-G202	8	6	22.8	6.1								
99	9449F	LW2-G038	8	6	22.7	6.3								
104	9454F	Control	8	6	22.7	5.6								
114	9447F	LW2-G160	8	6	22.7	6.4								
117	9441F	LW2-G231	8	6	22.6	6.7								
124	9451F	LW2-G244	8	6	22.6	6.3								
128	9439F	LW2-G204	8	6	22.6	6.5								
131	9438F	LW2-G199	8	6	22.9	6.3								
146	9435F	LW2-G207	8	6	22.9	6.3								
160	9437F	LW2-G198	8	6	23.0	6.7								
26	9443F	LW2-G155	8	7	22.7	5.2								
31	9442F	LW2-G234	8	7	22.7	5.2								
37	9450F	LW2-G123	8	7	22.7	5.3								
39	9436F	LW2-G209	8	7	22.7	5.5								
48	9444F	LW2-G166	8	7	22.7	4.6								
66	9452F	LW2-G247	8	7	22.7	5.2								
73	9448F	LW2-G157	8	7	22.8	5.5								
74	9445F	LW2-G163	8	7	22.8	5.2								
75	9453F	LW2-G254	8	7	22.8	5.4								
84	9446F	LW2-G161	8	7	22.8	5.1								
96	9440F	LW2-G202	8	7	22.7	4.8								
99	9449F	LW2-G038	8	7	22.7	5.0								
104	9454F	Control	8	7	22.7	4.2								
114	9447F	LW2-G160	8	7	22.7	5.3								
117	9441F	LW2-G231	8	7	22.7	5.4								
124	9451F	LW2-G244	8	7	22.7	5.3								
128	9439F	LW2-G204	8	7	22.7	5.2								
131	9438F	LW2-G199	8	7	22.6	5.1								
146	9435F	LW2-G207	8	7	22.8	5.3								
160	9437F	LW2-G198	8	7	22.9	5.5								
26	9443F	LW2-G155	8	8	22.4	6.0								
31	9442F	LW2-G234	8	8	22.4	6.0								
37	9450F	LW2-G123	8	8	22.4	5.6								
39	9436F	LW2-G209	8	8	22.4	5.8								
48	9444F	LW2-G166	8	8	22.4	5.6								
66	9452F	LW2-G247	8	8	22.5	5.6								
73	9448F	LW2-G157	8	8	22.4	5.8								
74	9445F	LW2-G163	8	8	22.4	6.4								
75	9453F	LW2-G254	8	8	22.4	6.0								
84	9446F	LW2-G161	8	8	22.5	5.4								
96	9440F	LW2-G202	8	8	22.4	5.2								
99	9449F	LW2-G038	8	8	22.3	5.4								
104	9454F	Control	8	8	22.3	4.0								
114	9447F	LW2-G160	8	8	22.3	4.3								
117	9441F	LW2-G231	8	8	22.4	5.4								
124	9451F	LW2-G244	8	8	22.4	5.0								
128	9439F	LW2-G204	8	8	22.4	5.3								
131	9438F	LW2-G199	8	8	22.6	5.2								
146	9435F	LW2-G207	8	8	22.6	5.5								
160	9437F	LW2-G198	8	8	22.8	4.6								
26	9443F	LW2-G155	8	9	22.7	5.1								
31	9442F	LW2-G234	8	9	22.7	5.6								
37	9450F	LW2-G123	8	9	22.7	5.4								
39	9436F	LW2-G209	8	9	22.7	5.6								
48	9444F	LW2-G166	8	9	22.6	5.7								
66	9452F	LW2-G247	8	9	22.7	5.7								
73	9448F	LW2-G157	8	9	22.7	5.5								
74	9445F	LW2-G163	8	9	22.6	6.0								
75	9453F	LW2-G254	8	9	22.7	5.7								
84	9446F	LW2-G161	8	9	22.7	5.1								
96	9440F	LW2-G202	8	9	22.6	4.7								
99	9449F	LW2-G038	8	9	22.6	5.4								
104	9454F	Control	8	9	22.6	4.2								
114	9447F	LW2-G160	8	9	22.6	5.2								
117	9441F	LW2-G231	8	9	22.6	5.1								
124	9451F	LW2-G244	8	9	22.6	5.6								
128	9439F	LW2-G204	8	9	22.5	5.2								
131	9438F	LW2-G199	8	9	22.8	5.6								
146	9435F	LW2-G207	8	9	22.9	5.7								
160	9437F	LW2-G198	8	9	23.0	5.8								
26	9443F	LW2-G155	8	10	22.8	6.7	165	6.6	0.6	43	50			
31	9442F	LW2-G234	8	10	22.9	6.7	165	6.6	0.4	43	40			
37	9450F	LW2-G123	8	10	22.9	6.8	165	6.8	0.5	34	50			
39	9436F	LW2-G209	8	10	22.9	6.6	165	6.7	0.3	43	40			
48	9444F	LW2-G166	8	10	22.9	6.5	165	6.7	0.5	34	40			
66	9452F	LW2-G247	8	10	23.0	6.6	165	6.7	0.3	43	40			
73	9448F	LW2-G157	8	10	22.9	6.8	165	6.7	0.6	43	40			
74	9445F	LW2-G163	8	10	22.9	6.5	165	6.7	0.4	43	50			
75	9453F	LW2-G254	8	10	22.9	6.5	165	6.7	0.4	43	40			
84	9446F	LW2-G161	8	10	22.9	6.1	165	6.7	0.5	43	50			

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96	9440F	LW2-G202	8	10	22.9	6.6	165	6.6	0.7	43	50			
99	9449F	LW2-G038	8	10	22.9	5.9	165	6.6	0.4	43	40			
104	9454F	Control	8	10	22.9	6.4	170	6.7	0.5	34	50			
114	9447F	LW2-G160	8	10	22.9	6.6	165	6.6	0.7	43	40			
117	9441F	LW2-G231	8	10	22.9	6.6	165	6.6	0.5	43	40			
124	9451F	LW2-G244	8	10	22.9	6.6	165	6.6	0.6	34	40			
128	9439F	LW2-G204	8	10	22.9	6.6	165	6.6	0.5	43	50			
131	9438F	LW2-G199	8	10	23.0	6.5	165	6.6	0.5	43	40			
146	9435F	LW2-G207	8	10	23.1	6.8	165	6.6	0.9	34	50			
160	9437F	LW2-G198	8	10	23.1	6.6	165	6.6	0.4	43	50			
				Mean	22.8	6.0	168	6.6	—	44	44		---	---
				SD	0.3	0.8	12	0.1	—	6	5		---	—
				n	220	220	40	60	40	40	40		19	19
				Min	22.2	4.0	160	6.5	0.1	34	40		1.2	5.6
				Max	23.3	7.7	240	6.8	2.0	60	50		9.3	6.7

data entry verified
initials

ANC08031
BZTO104(e)008031

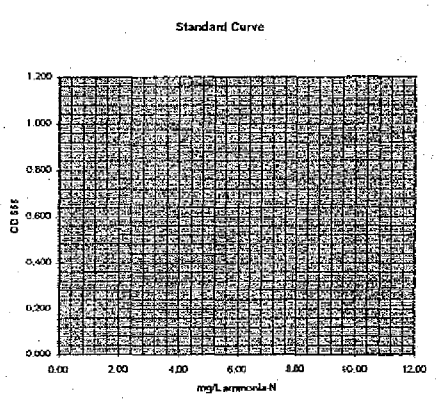
AMMONIA EXPOSURE BENCHSHEETS AND ANALYSIS

Total Ammonia-N in Sediment Pore Water: Computation Worksheet

Salicylate Method (SOP #5492)

Result

	Sample description	Dilution factor	OD655	NH_3-N (mg/L)	pH	Salinity (ppt)
	Blank	----	----	----		
	1.0 mg/L NH_3-N Std.	----	.097	1.00		
	3.0 mg/L NH_3-N Std.	----	.282	3.00		
	6.0 mg/L NH_3-N Std.	----	.514	6.00		
	10.0 mg/L NH_3-N Std.	----	.870	10.00		
	3.0 mg/L spike	----	.280			
	3.0 mg/L spike dupl.	----	.272			
1.	9435F	5	.155		5.6	
2.	9436F	5	.025		5.8	
3.	9437F	5	.057		5.9	
4.	9438F	5	.071		6.0	
5.	9439F	5	.042		6.4	
6.	9440F	5	.068		6.3	
7.	9441F	5	.064		6.3	
8.	9442F	5	.057		6.1	
9.	9443F	5	.135		6.2	
10.	9444F	5	.264		6.2	
11.	9445F	5	-		-	
12.	9446F	5	.050		6.3	
13.	9447F	5	.127		6.7	
14.	9448F	5	.162		6.5	
15.	9449F	5	.078		6.2	
16.	9450F	5	.062		6.3	
17.	9451F	5	.150		6.2	
18.	9452F	5	.030		6.4	
19.	9453F	5	.022		6.1	
20.		5				
21.		5				
22.		5				
23.		5				
24.		5				
25.		5				
26.		5				
27.		5				
28.		5				
29.		5				
30.		5				
31.		5				
32.		5				
33.		5				
34.		5				
35.		5				
36.		5				



Reporting limit (mg/L) =	0.5
Recovery (%) =	#VALUE!
Precision (RPD) =	#VALUE!
Sample volume (ml):	0.10
Dilution factor	5

Sample Set Description:

Proj. No.:	686
Bulk sediment porewaters	
Batch 7	

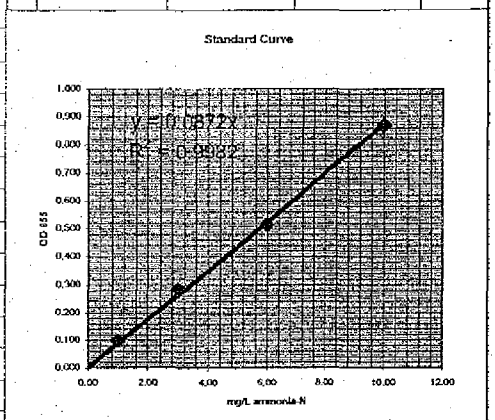
Analyst:	RSC
Date analysed:	9/16/2004

Total Ammonia-N in Sediment Pore Water: Computation Worksheet

Salicylate Method (SOP #5492)

Result

	Sample description	Dilution factor	OD_{655}	NH_3-N (mg/L)	pH	Salinity (ppt)
	Blank	-----	-----	-----		
	1.0 mg/L NH_3-N Std.	-----	0.097	1.00		
	3.0 mg/L NH_3-N Std.	-----	0.282	3.00		
	6.0 mg/L NH_3-N Std.	-----	0.514	6.00		
	10.0 mg/L NH_3-N Std.	-----	0.870	10.00		
	3.0 mg/L spike	-----	0.280	3.21		
	3.0 mg/L spike dupl.	-----	0.272	3.12		
1.	9435F	5	0.155	8.89		
2.	9436F	5	0.025	1.43		
3.	9437F	5	0.057	3.27		
4.	9438F	5	0.071	4.07		
5.	9439F	5	0.047	2.69		
6.	9440F	5	0.068	3.90		
7.	9441F	5	0.064	3.67		
8.	9442F	5	0.057	3.27		
9.	9443F	5	0.135	7.74		
10.	9444F	5	0.064	3.67		
11.	9445F	5	--*	---*		
12.	9446F	5	0.050	2.87		
13.	9447F	5	0.127	7.28		
14.	9448F	5	0.162	9.29		
15.	9449F	5	0.078	4.47		
16.	9450F	5	0.062	3.55		
17.	9451F	5	0.150	8.60		
18.	9452F	5	0.030	1.72		
19.	9453F	5	0.021	1.20		
20.		5				
21.		5				
22.		5				
23.		5	* insufficient sample size for analysis			
24.		5				
25.		5				
26.		5				
27.		5				
28.		5				
29.		5				
30.		5				
31.		5				
32.		5				
33.		5				
34.		5				
35.		5				
36.		5				



Reporting limit (mg/L) =	0.5
Recovery (%) =	105.5
Precision (RPD) =	2.90
Sample volume (ml):	0.10
Dilution factor	5

Sample Set Description:

Proj. No.: 686
Bulk sediment porewaters
Batch 7

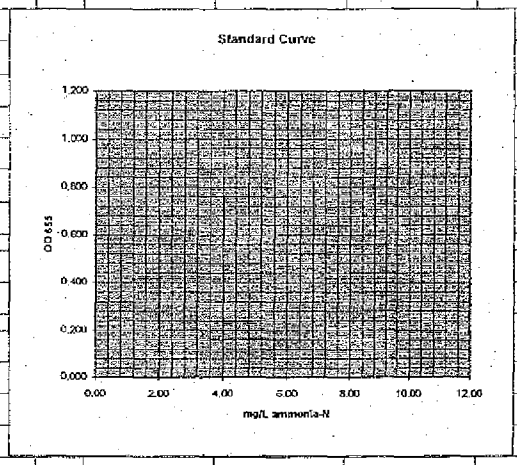
Analyst: RSC
Date analysed: 9/16/2004

Total Ammonia-N in Water: Computation Worksheet

Salicylate Method (SOP #5492)

Result

	Sample description	Dilution factor	OD_{655}	NH_3-N (mg/L)
	Blank	-----	-----	-----
	1.0 mg/L NH_3-N Std.	-----	.117	1.00
	3.0 mg/L NH_3-N Std.	-----	.282	3.00
	6.0 mg/L NH_3-N Std.	-----	.565	6.00
	10.0 mg/L NH_3-N Std.	-----	.910	10.00
	3.0 mg/L spike	-----	.287	
	3.0 mg/L spike dupl.	-----	.282	
1.	26	1	.068	
2.	31	1	.029	
3.	34	1	.037	
4.	39	1	.018	
5.	48	1	.021	
6.	66	1	.017	
7.	73	1	.020	
8.	74	1	.026	
9.	75	1	.011	
10.	84	1	.028	
11.	96	1	.021	
12.	99	1	.056	
13.	104	1	.025	
14.	114	1	.043	
15.	117	1	.039	
16.	124	1	.049	
17.	128	1	.040	
18.	131	1	.057	
19.	146	1	.188	
20.	160	1	.094	
21.		1		
22.		1		
23.		1		
24.		1		
25.		1		
26.		1		
27.		1		
28.		1		
29.		1		
30.		1		
31.		1		
32.		1		
33.		1		
34.		1		
35.		1		
36.		1		



Reporting limit (mg/L) =	0.1
Recovery (%) =	#VALUE!
Precision (RPD) =	#VALUE!
Sample volume (ml):	0.50
Dilution factor	1

Sample Set Description:

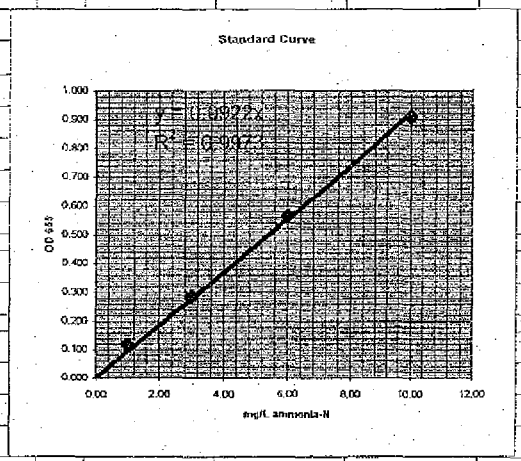
Test No.:	686-14
Test Day:	0 (9-17-04)
Species:	*Chironomus*
Overlying water	
Analyst:	RSC
Date analysed:	9/25/2004

Total Ammonia-N in Water: Computation Worksheet

Salicylate Method (SOP #5492)

Result

	Sample description	Dilution factor	OD_{655}	NH_3-N (mg/L)
	Blank	-----	-----	-----
	1.0 mg/L NH_3-N Std.	-----	0.117	1.00
	3.0 mg/L NH_3-N Std.	-----	0.286	3.00
	6.0 mg/L NH_3-N Std.	-----	0.565	6.00
	10.0 mg/L NH_3-N Std.	-----	0.910	10.00
	3.0 mg/L spike	-----	0.283	3.07
	3.0 mg/L spike dupl.	-----	0.282	3.06
1.	26	1	0.088	0.95
2.	31	1	0.024	0.26
3.	34	1	0.037	0.40
4.	39	1	0.018	0.20
5.	48	1	0.021	0.23
6.	66	1	0.017	0.18
7.	73	1	0.070	0.76
8.	74	1	0.026	0.28
9.	75	1	0.011	0.12
10.	84	1	0.028	0.30
11.	96	1	0.071	0.77
12.	99	1	0.056	0.61
13.	104	1	0.026	0.28
14.	114	1	0.063	0.68
15.	117	1	0.039	0.42
16.	124	1	0.069	0.75
17.	128	1	0.040	0.43
18.	131	1	0.057	0.62
19.	146	1	0.188	2.04
20.	160	1	0.044	0.48
21.				
22.				
23.				
24.				
25.				
26.				
27.				
28.				
29.				
30.				
31.				
32.				
33.				
34.				
35.				
36.				



Reporting limit (mg/L) =	0.1
Recovery (%) =	102.0
Precision (RPD) =	0.35
Sample volume (ml):	0.50
Dilution factor	1

Sample Set Description:

Test No.:	686-14
Test Day:	0 (9-17-04)
Species:	*Chironomus*

Overlying water

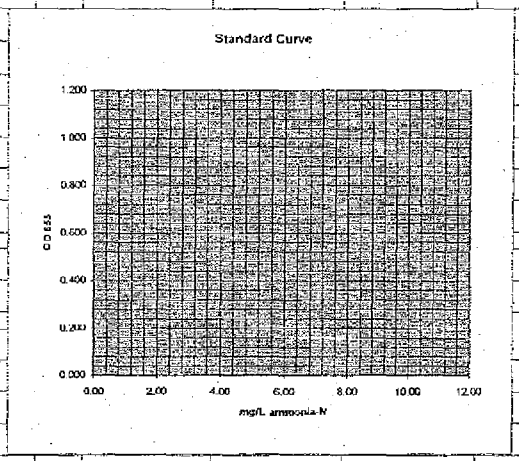
Analyst:	RSC
Date analysed:	9/25/2004

Total Ammonia-N in Water: Computation Worksheet

Salicylate Method (SOP #5492)

Result

	Sample description	Dilution factor	OD_{655}	NH_3-N (mg/L)
	Blank	-----	----	----
	1.0 mg/L NH_3-N Std.	-----	.126	1.00
	3.0 mg/L NH_3-N Std.	-----	.290	3.00
	6.0 mg/L NH_3-N Std.	-----	.565	6.00
	10.0 mg/L NH_3-N Std.	-----	.940	10.00
	3.0 mg/L spike	-----	.269	
	3.0 mg/L spike dupl.	-----	.290	
1.	26	1	.060	
2.	31	1	.041	
3.	34	1	.046	
4.	39	1	.029	
5.	48	1	.048	
6.	66	1	.032	
7.	73	1	.060	
8.	74	1	.038	
9.	75	1	.038	
10.	84	1	.048	
11.	96	1	.066	
12.	99	1	.042	
13.	104	1	.051	
14.	114	1	.069	
15.	117	1	.049	
16.	124	1	.059	
17.	128	1	.050	
18.	131	1	.047	
19.	146	1	.059	
20.	160	1	.037	
21.				
22.				
23.				
24.				
25.				
26.				
27.				
28.				
29.				
30.				
31.				
32.				
33.				
34.				
35.				
36.				



Reporting limit (mg/L) =	0.1
Recovery (%) =	#VALUE!
Precision (RPD) =	#VALUE!
Sample volume (ml):	0.50
Dilution factor	1

Sample Set Description:

Test No.:	686-14
Test Day:	10 (9-27-04)
Species:	*Chironomus*
	Overlying water
Analyst:	RSC
Date analysed:	10/4/2004

ANC08037
BZTO104(e)008037

Total Ammonia-N in Water: Computation Worksheet

Salicylate Method (SOP #5492)

Result

	Sample description	Dilution factor	OD_{655}	NH_3-N (mg/L)
	Blank	-----	-----	-----
	1.0 mg/L NH_3-N Std.	-----	0.126	1.00
	3.0 mg/L NH_3-N Std.	-----	0.290	3.00
	6.0 mg/L NH_3-N Std.	-----	0.585	6.00
	10.0 mg/L NH_3-N Std.	-----	0.940	10.00
	3.0 mg/L spike	-----	0.289	3.03
	3.0 mg/L spike dupl.	-----	0.290	3.04
1.	26	1	0.060	0.63
2.	31	1	0.041	0.43
3.	34	1	0.046	0.48
4.	39	1	0.029	0.30
5.	48	1	0.048	0.50
6.	66	1	0.032	0.34
7.	73	1	0.060	0.63
8.	74	1	0.038	0.40
9.	75	1	0.038	0.40
10.	84	1	0.048	0.50
11.	96	1	0.066	0.69
12.	99	1	0.042	0.44
13.	104	1	0.051	0.53
14.	114	1	0.069	0.72
15.	117	1	0.049	0.51
16.	124	1	0.059	0.62
17.	128	1	0.050	0.52
18.	131	1	0.047	0.49
19.	146	1	0.089	0.93
20.	160	1	0.037	0.39
21.				
22.				
23.				
24.				
25.				
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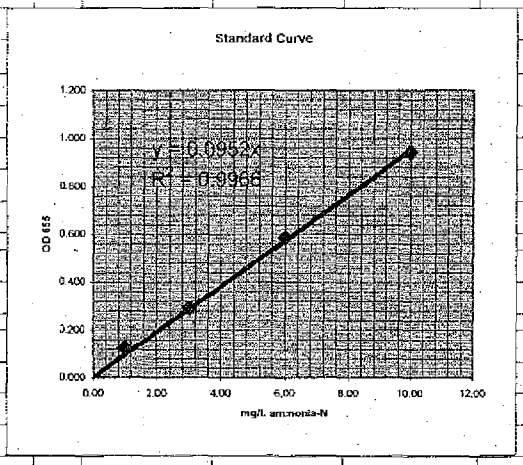
36.				



Reporting limit (mg/L) =	0.1
Recovery (%) =	101.2
Precision (RPD) =	-0.35
Sample volume (ml):	0.50
Dilution factor	1

Sample Set Description:

Test No.:	686-14
Test Day:	10 (9-27-04)
Species:	*Chironomus*
Overlying water	
Analyst:	RSC
Date analysed:	10/4/2004

CHAIN-OF-CUSTODY RECORDS

Windward Environmental

CHAIN-OF-CUSTODY/TEST REQUEST FORM

1327

Project/Client Name: PORTLAND HARBOR RI/FS ROUND 2
Windward Project No: 03.28.04.28
Contact Name: HELLE ANDERSEN
Sampled By: THAI DO

Ship to: NORTHWESTERN AQUATIC SCIENCES
Attn: GERALD IRISSARRI
Shipping address: NEWPORT, OREGON

Shipping Date: HAND DEL'D
Airbill Number:

Sample Collection Date (m/d/y)	Time	Sample Identification	Volume of Sample / # of Containers	Matrix	Test(s) Requested (check test(s) required)							Comments / Instructions [Jar tag number(s)]
					10-d Chir.	28-d Hya.		NAS Sample #				
09.07.04	10:48	LW2-G207	4L/4	SEDIMENT	✓	✓		9435	F			INTERNAL TEMP OF
09.07.04	11:16	LW2-G209	4L/4	SEDIMENT	✓	✓		9436	F			ICE SHEETS UPON
09.07.04	11:57	LW2-G198	4L/4	SEDIMENT	✓	✓		9437	F			ARRIVAL AT LAB:
09.07.04	12:15	LW2-G199	4L/4	SEDIMENT	✓	✓		9438	F			#1 0.5°C
09.07.04	12:32	LW2-G204	4L/4	SEDIMENT	✓	✓		9439	F			#2 0.5°C
09.07.04	13:02	LW2-G202	4L/4	SEDIMENT	✓	✓		9440	F			#3 0.0°C
09.07.04	13:23	LW2-G231	4L/4	SEDIMENT	✓	✓		9441	F			#4 1.0°C
09.07.04	13:39	LW2-G234	4L/4	SEDIMENT	✓	✓		9442	F			#5 1.0°C
09.08.04	09:01	LW2-G155	4L/4	SEDIMENT	✓	✓		9443	F			#6 0.5°C
09.08.04	10:09	LW2-G166	4L/4	SEDIMENT	✓	✓		9444	F			
09.08.04	10:51	LW2-G163	4L/4	SEDIMENT	✓	✓		9445	F			
09.08.04	11:24	LW2-G161	4L/4	SEDIMENT	✓	✓		9446	F			
09.08.04	11:44	LW2-G160	4L/4	SEDIMENT	✓	✓		9447	F			
Total Number of Containers			52/76	Purchase Order / Statement of Work #								

1) Released by:	1) Rec'd by:	2) Released by:	1) Rec'd by:
Print name: THAI DO	GERALD IRISSARRI	Print name:	
Signature:	Signature:	Signature:	
Company: WINDWARD ENVIRONMENTAL LLC	Company: NORTHWESTERN AQUATIC SCIENCES	Company:	Company:
Date/Time: 09.09.04/10:05	Date/Time: 9-9-04 10:05	Date/Time:	Date/Time:

* Distribution: White and yellow copies accompany shipment; pink-consignor's copy; white-consignee return with results; yellow-consignee's copy.
* Instructions for completion of Chain-of-Custody/Test Request Form on back.

Wind Ward environmental LLC
• 200 West Mercer Street
Suite 401
Seattle, WA 98119
Tel: 206.378.1364
Fax: 206.217.0089

To be completed by Laboratory upon sample receipt:

Date of receipt:	Laboratory W.O.#:
Condition upon receipt:	Time of receipt:
Cooler temperature:	Received by:

ANC08040
BZT0104(e)008040

Windward Environmental

CHAIN-OF-CUSTODY/TEST REQUEST FORM

1328

Project/Client Name: PORTLAND HARBOR RI/FS ROUND 2
Windward Project No: 03.28.04.28
Contact Name: HELLE ANDERSEN
Sampled By: THAI DO

Ship to: NORTHWESTERN AQUATIC SCIENCES
Attn: GERALD IRISSARRI
Shipping address: NEWPORT, OREGON

Shipping Date: HAND DEL'D
Airbill Number:

Sample Collection Date (m/d/y)	Time	Sample Identification	Volume of Sample / # of Containers	Matrix	Test(s) Requested (check test(s) required)							Comments / Instructions [Jar tag number(s)]
					10-d Chir.	28-d Hya		MAS Sample #				
09.08.04	12:09	LW2-G157	4L/4	SEDIMENT	✓	✓		9448F				
09.08.04	13:35	LW2-G038	4L/4	SEDIMENT	✓	✓		9449F				
09.08.04	14:10	LW2-G123	4L/4	SEDIMENT	✓	✓		9450F				
09.08.04	15:41	LW2-G244	4L/4	SEDIMENT	✓	✓		9451F				
09.08.04	15:55	LW2-G247	4L/4	SEDIMENT	✓	✓		9452F				
09.08.04	17:09	LW2 G254	4L/4	SEDIMENT	✓	✓		9453F				
		Total Number of Containers	24/76	Purchase Order / Statement of Work #								

1) Released by:	1) Rec'd by:	2) Released by:	1) Rec'd by:
Print name: THAI DO	GERALD IRISSARRI	Print name:	
Signature:	Signature:	Signature:	
Company: WINDWARD ENVIRONMENTAL LLC	Company: NORTHWESTERN AQUATIC SCIENCES	Company:	Company:
Date/Time: 09.09.04/10:05	Date/Time: 09-09-04 10:05	Date/Time:	Date/Time:

* Distribution: White and yellow copies accompany shipment; pink-consignor's copy, white-consignee return with results; yellow-consignee's copy.
* Instructions for completion of Chain-of-Custody/Test Request Form on back.

To be completed by Laboratory upon sample receipt:

Date of receipt:	Laboratory W.O. #:
Condition upon receipt:	Time of receipt:
Cooler temperature:	Received by:

Wind Ward environmental LLC
• 200 West Mercer Street
Suite 401
Seattle, WA 98119
Tel: 206.378.1364
Fax: 206.217.0089

ANC08041
BZTO104(e)008041

APPENDIX II

RAW DATA – REFERENCE TOXICANT TEST

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS- ____

ACUTE TOXICITY TEST (ALL SPECIES)

REVIEWED PAGES 1-7 -GJI 11-26-04

Test No. 999-1843 Client: QC Test Investigator ____

Test Type (rangefinding/definitive) ____ Test Length (hr) 96

Species *Chironomus tentans*

STUDY MANAGEMENT

Client: QC test

Client's Study Monitor: QC test

Testing Laboratory: Northwestern Aquatic Sciences

Test Location: Newport Laboratory

Laboratory's Study Personnel:

Proj. Man./Study Dir. G.J. Irissarri GJI

QA Officer L. K. Nemeth

1. GA Burton GAB 2. Susan Gaye SG

3. M.S. Redmond MSR 4. William T. Montgomery WTM

Study Schedule:

Test Beginning: 9-17-04 1250 Test Ending: 9-21-04 1345

TEST MATERIAL

Description: Potassium Chloride Crystals - Lot No.: FISHER 006829

NAS Sample No.				
Date of Collection:				
Date of Receipt:				
Temperature (deg C):				
Dissolved oxygen (mg/L):				
pH:				
Conductivity (umhos/cm):				
Hardness (mg/L):				
Alkalinity (mg/L):				
Salinity (ppt):				
Total chlorine (mg/L):				
Total ammonia-N (mg/L):				
____: *				

DILUTION WATER

Description: Moderately hard synthetic water

Date of Preparation/Collection: 9-2-04

Water Quality: Cond. (umhos/cm): 290 Salinity (ppt) ____ pH 7.5

Hardness (mg/L as $CaCO_3$): 85 Alkalinity (mg/L as $CaCO_3$): 70

Treatments: Aerated ≥ 24 hrs

AGE OF DILUTION WATER SLIGHTLY EXCEEDED EPA SPECIFICATIONS. -GJI

TEST LOCATION

Test conducted in (circle one): room 1 (room 2) trailer water bath other: ____

Randomization chart:

10	20	ϕ	1.25	2.5	1.25	ϕ	10	10	20
2.5	1.25	20	ϕ	5	10	20	5	1.25	2.5
5	ϕ	1.25	10	20	2.5	5	1.25	ϕ	5
ϕ	5	2.5	5	1.25	20	10	ϕ	20	10
1.25	2.5	10	2.5	10	ϕ	2.5	20	2.5	1.25
20	10	5	20	ϕ	5	1.25	2.5	5	ϕ

Error codes: 1) Correction of handwriting error
2) Written in wrong location; entry deleted
3) Wrong date deleted; replaced with correct date
4) Error found in measurement; measurement repeated

ANC08043
BZTO104(e)008043

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-_____

ACUTE TOXICITY TEST (ALL SPECIES)

Test No. 999-1843 Client QC Test Investigator _____

TEST ORGANISMS

Species: *Chironomus tentans* Age: - Size: 3rd instar

Source: NAS cultures Date received: -

Acclimation Data:

Date	Temp. (deg.C)	DO (mg/L)	pH	Cond. umhos/cm	Hardness (mg/L)	Alkalinity (mg/L)	Feeding Amount	Feeding description*	Water changes
9-3-04	23.2	7.4	7.0	250	51	70	ANIMALS FED		CULTURE
9-8-04	23.0	8.4	7.7	325	94	80	TETRA FIN AND		TANKS
9-10-04	23.1	7.9	6.5	250	68	60	SELENASTRUM		CHANGED
9-13-04	24.1	7.4	7.4	270	-	-			TWICE
9-15-04	23.0	7.0	7.0	260	77	70	DETAILS RECORDED		WEEKLY
9-17-04	22.8	6.4	6.8	260	-	-	ON CHIRONOMID		
Mean	23.2	7.4	7.1	274	73	70	CULTURE DATA		
S.D.	0.5	0.7	0.4	27	18	8	SHEET		
(N)	6	6	6	6	4	4			

Photoperiod during acclimation: _____ *S=*Selenastrum*, T=Tetra Fin suspension

TEST PROCEDURES AND CONDITIONS

Test concentrations (50% series recommended): 20, 10, 5, 2.5, 1.25, 0 g/L

Test chamber: 30 ml plastic cups Test volume: 20 ml

Replicates/treatment: 10 Organisms/treatment: 10 (1/rep)

Test water changes: None Aeration during test: None

Feeding: 0.25 ml Prime Tropical Flakes (4g/L) suspension per cup on days 0 and 2

Duration: 24-hr, 48-hr, (96-hr) Test temperature (deg.C): 23 ± 1

Beaker placement: Stratified randomization Photoperiod: 16:8, L:D

MISCELLANEOUS NOTES

Test solution preparation:

Working stock: Dissolve 10g KCl crystals in dilution water and dilute to 500 mL.
Final conc.: 20 g/L.

Test concentration (g/L)	KCl working stock (ml/200ml)	ml of dilution water per 200 ml
20	200	0
10	100	100
5	50	150
2.5	25	175
1.25	12.5	187.5
0	0	0

60 L
9-17-04

ANC08044
BZTO104(e)008044

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-_____

ACUTE TOXICITY TEST (ALL SPECIES)

Test No. 999-1843 Client QC Test

DAILY RECORD SHEET

Day 0 (9/17/04) VB Temp Beaker (°C): 23.4

Conc. (g/L)	Temp. (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	Comments
1. 20	23.7	8.4	>20,000	7.7	85	70	
2. 10	23.7	8.5	14,170	7.7			
3. 5	23.7	8.6	7,740	7.6			
4. 2.5	23.6	8.6	4,150	7.6			
5. 1.25	23.6	8.6	2,290	7.6			
6. 0	23.6	8.6	280	7.5	85	70	
All animals fed 0.25 ml Prime Tropical Flakes suspension. Initials: ~~23.9~~ GJI							

Day 1 (9/18/04) VB Temp Beaker (°C): 22.9

Conc. (g/L)	Temp. (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	Comments
1. 20							
2. 10							
3. 5							
4. 2.5							
5. 1.25							
6. 0							

Day 2 (9/19/04) VB Temp Beaker (°C): 22.9

Conc. (g/L)	Temp. (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	Comments
1. 20							
2. 10							
3. 5							
4. 2.5							
5. 1.25							
6. 0							
All animals fed 0.25 ml Prime Tropical Flakes suspension. Initials: GJI							

Day 3 (9/20/04) [illegible] Temp Beaker (°C): 23.0

Conc. (g/L)	Temp. (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	Comments
1. 20							
2. 10							
3. 5							
4. 2.5							
5. 1.25							
6. 0							

Day 4 (9/21/04) GJI Temp Beaker (°C): 23.5

Conc. (g/L)	Temp. (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	Comments
1. 20	–	–	–	–	–	–	
2. 10	–	–	–	–			
3. 5	23.2	7.5	7730	7.6			
4. 2.5	23.2	7.8	4310	7.5			
5. 1.25	23.3	7.5	2400	7.5			
6. 0	23.3	7.4	335	7.1	85	80	
Mean	23.5	8.2	308	7.5	85	73	
SD	0.2	0.5	–	0.2	0.0	6	
n	10	10	2	10	3	3	

Revised 12-5-01

ANC08045
BZTO104(e)008045

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-_____

ACUTE TOXICITY TEST (ALL SPECIES)

Test No. 999-1843 Client QC Test Investigator _____

DAILY RECORD SHEET - Survivors

Day 0 (9/17/04) 632

Conc. (g/L)	Survivors in Replicate: 1	2	3	4	5	6	7	8	9	10	Total
1. 20	1	1	1	1	1	1	1	1	1	1	10
2. 10	1	1	1	1	1	1	1	1	1	1	10
3. 5	1	1	1	1	1	1	1	1	1	1	10
4. 2.5	1	1	1	1	1	1	1	1	1	1	10
5. 1.25	1	1	1	1	1	1	1	1	1	1	10
6. 0	1	1	1	1	1	1	1	1	1	1	10

Day 1 (9/18/04) 632

Conc. (g/L)	Survivors in Replicate: 1	2	3	4	5	6	7	8	9	10	Total
1. 20	X	X	X	X	X	X	X	X	X	X	0 (10D)
2. 10	X	X	X	X	1	1	X	X	X	X	2 (8D)
3. 5	1	1	1	1	1	1	1	1	1	1	10
4. 2.5	1	1	1	1	1	1	1	1	1	1	10
5. 1.25	1	1	1	1	1	1	1	1	1	1	10
6. 0	1	1	1	1	1	1	1	1	1	1	10

Day 2 (9/19/04) 632

Conc. (g/L)	Survivors in Replicate: 1	2	3	4	5	6	7	8	9	10	Total
1. 20	X	X	X	X	X	X	X	X	X	X	0
2. 10	X	X	X	X	X	X	X	X	X	X	0 (2D)
3. 5	1	1	1	1	1	1	1	1	1	X	9 (1D)
4. 2.5	1	1	1	1	1	1	1	1	1	1	10
5. 1.25	1	1	1	1	1	1	1	1	1	1	10
6. 0	1	1	1	1	1	1	1	1	1	1	10

Day 3 (9/20/04) 632

Conc. (g/L)	Survivors in Replicate: 1	2	3	4	5	6	7	8	9	10	Total
1. 20	X	X	X	X	X	X	X	X	X	X	0
2. 10	X	X	X	X	X	X	X	X	X	X	0
3. 5	1	1	1	1	1	1	1	1	1	X	9
4. 2.5	1	1	1	1	1	1	1	1	1	1	10
5. 1.25	1	1	1	1	1	1	1	1	1	1	10
6. 0	1	1	1	1	1	1	1	1	1	1	10

Day 4 (9/21/04) 632

Conc. (g/L)	Survivors in Replicate: 1	2	3	4	5	6	7	8	9	10	Total
1. 20	X	X	X	X	X	X	X	X	X	X	0
2. 10	X	X	X	X	X	X	X	X	X	X	0
3. 5	1	X	X	1	1	1	1	1	1	X	7 (2D)
4. 2.5	1	1	1	1	1	1	1	1	1	1	10
5. 1.25	1	1	1	1	1	1	1	1	1	1	10
6. 0	1	1	1	1	1	1	1	1	1	1	10

ANC08046
BZTO104(e)008046

Acute 96-hr Toxicity Test-96 Hr Survival

Start Date:	9/17/04 12:50	Test ID:	999-1843	Sample ID:	REF-Ref Toxicant
End Date:	9/21/04 13:45	Lab ID:	ORNAS-Northwestern Aquati	Sample Type:	KCL-Potassium chloride
Sample Date:		Protocol:	EPAF 91-EPA Freshwater	Test Species:	CT-Chironomus tentans
Comments:					

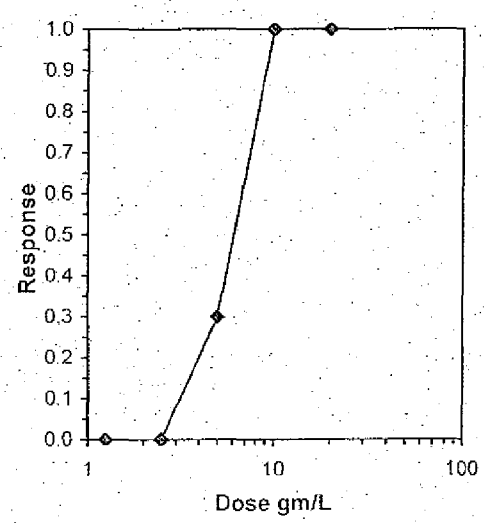
Conc-gm/L	1
D-Control	1.0000
1.25	1.0000
2.5	1.0000
5	0.7000
10	0.0000
20	0.0000

Conc-gm/L	Mean	N-Mean	Resp	Not Resp	Total	N	Fisher's Exact P	1-Tailed Critical	Number Resp	Total Number
D-Control	1.0000	1.0000	0	10	10	1			0	10
1.25	1.0000	1.0000	0	10	10	1	1.0000	0.0500	0	10
2.5	1.0000	1.0000	0	10	10	1	1.0000	0.0500	0	10
5	0.7000	0.7000	3	7	10	1	0.1053	0.0500	3	10
10	0.0000	0.0000	10	0	10	1			10	10
20	0.0000	0.0000	10	0	10	1			10	10

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU
Fisher's Exact Test	5	10	7.07107	

Trimmed Spearman-Karber

Trim Level	EC50	95% CL	
0.0%	5.7435	4.6982	7.0214
5.0%	5.8220	4.6455	7.2964
10.0%	5.8972	4.5356	7.6674
20.0%	6.0284	4.0589	8.9534
Auto-0.0%	5.7435	4.6982	7.0214



ANC08047
BZTO104(e)008047

Acute 96-hr Toxicity Test-96 Hr Survival

Start Date:	9/17/04 12:50	Test ID:	999-1843	Sample ID:	REF-Ref Toxicant
End Date:	9/21/04 13:45	Lab ID:	ORNAS-Northwestern Aquati	Sample Type:	KCL-Potassium chloride
Sample Date:		Protocol:	EPAF 91-EPA Freshwater	Test Species:	CT-Chironomus tentans
Comments:					

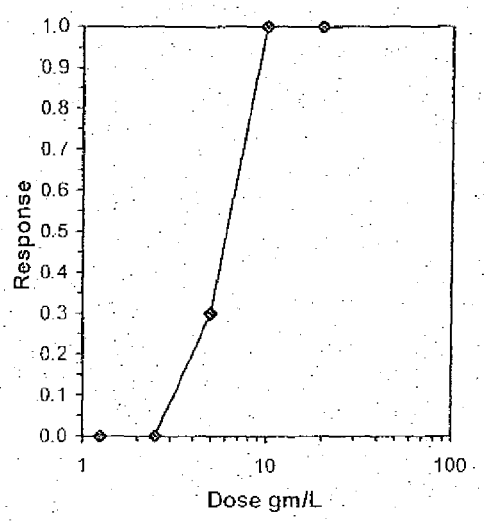
Conc-gm/L	1
D-Control	1.0000
1.25	1.0000
2.5	1.0000
5	0.7000
10	0.0000
20	0.0000

Conc-gm/L	Mean	N-Mean	Resp	Not Resp	Total	N	Fisher's Exact P	1-Tailed Critical	Number Resp	Total Number
D-Control	1.0000	1.0000	0	10	10	1			0	10
1.25	1.0000	1.0000	0	10	10	1	1.0000	0.0500	0	10
2.5	1.0000	1.0000	0	10	10	1	1.0000	0.0500	0	10
5	0.7000	0.7000	3	7	10	1	0.1053	0.0500	3	10
10	0.0000	0.0000	10	0	10	1			10	10
20	0.0000	0.0000	10	0	10	1			10	10

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU
Fisher's Exact Test	5	10	7.07107	

Trimmed Spearman-Karber

Trim Level	EC50	95% CL	
0.0%	5.7435	4.6982	7.0214
5.0%	5.8220	4.6455	7.2964
10.0%	5.8972	4.5356	7.6674
20.0%	6.0284	4.0589	8.9534
Auto-0.0%	5.7435	4.6982	7.0214



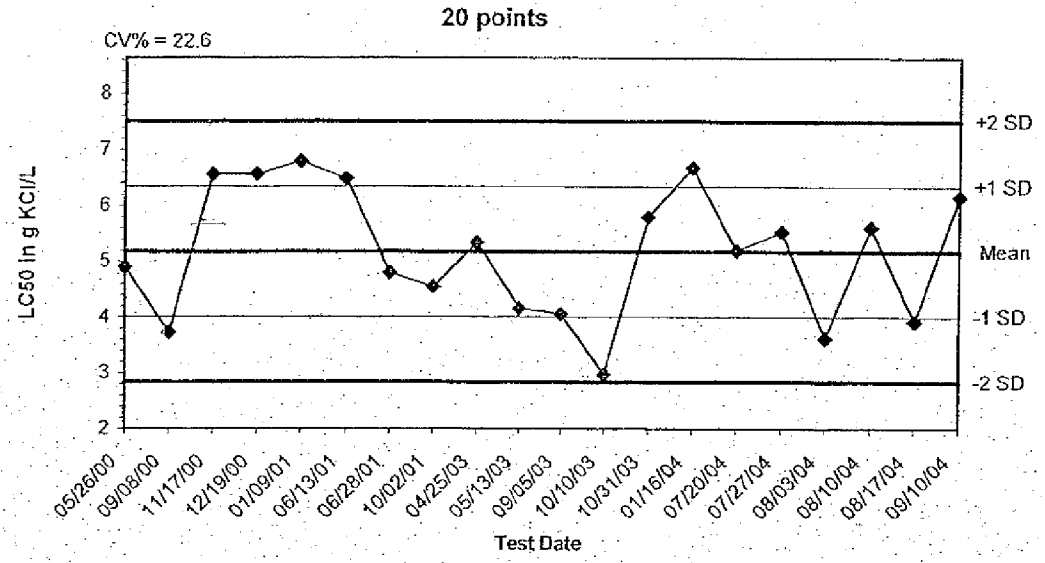
ANC08048
BZTO104(e)008048

Test: AT-Acute 96-hr Toxicity Test							Test ID: 999-1843		
Species: CT-Chironomus tentans							Protocol: EPAF 91-EPA Freshwater		
Sample ID: REF-Ref Toxicant							Sample Type: KCL-Potassium chloride		
Start Date: 9/17/04 12:50			End Date: 9/21/04 13:45				Lab ID: ORNAS-Northwestern Aquatic Sciences		
Pos	ID	Rep	Group	Start	24 Hr	48 Hr	72 Hr	96 Hr	Notes
	1	1	D-Control	10				10	
	2	1	1.250	10				10	
	3	1	2.500	10				10	
	4	1	5.000	10				7	
	5	1	10.000	10				0	
	6	1	20.000	10				0	

Comments: Data entry verified against laboratory bench sheets
MSR
9-29-04

ANC08049
BZTO104(e)008049

Chironomus tentans THIRD INSTAR 96-hr reference toxicant test - last 20 points



Dates	Values	Mean	-1 SD	-2 SD	+1 SD	+2 SD
05/26/00	4.9000	5.1730	4.0049	2.8368	6.3411	7.5092
09/08/00	3.7300	5.1730	4.0049	2.8368	6.3411	7.5092
11/17/00	6.5600	5.1730	4.0049	2.8368	6.3411	7.5092
12/19/00	6.5700	5.1730	4.0049	2.8368	6.3411	7.5092
01/09/01	6.7900	5.1730	4.0049	2.8368	6.3411	7.5092
06/13/01	6.4900	5.1730	4.0049	2.8368	6.3411	7.5092
06/28/01	4.8000	5.1730	4.0049	2.8368	6.3411	7.5092
10/02/01	4.5500	5.1730	4.0049	2.8368	6.3411	7.5092
04/25/03	5.3400	5.1730	4.0049	2.8368	6.3411	7.5092
05/13/03	4.1600	5.1730	4.0049	2.8368	6.3411	7.5092
09/05/03	4.0600	5.1730	4.0049	2.8368	6.3411	7.5092
10/10/03	2.9800	5.1730	4.0049	2.8368	6.3411	7.5092
10/31/03	5.8000	5.1730	4.0049	2.8368	6.3411	7.5092
01/16/04	6.6800	5.1730	4.0049	2.8368	6.3411	7.5092
07/20/04	5.2000	5.1730	4.0049	2.8368	6.3411	7.5092
07/27/04	5.5300	5.1730	4.0049	2.8368	6.3411	7.5092
08/03/04	3.6200	5.1730	4.0049	2.8368	6.3411	7.5092
08/10/04	5.6100	5.1730	4.0049	2.8368	6.3411	7.5092
08/17/04	3.9300	5.1730	4.0049	2.8368	6.3411	7.5092
09/10/04	6.1600	5.1730	4.0049	2.8368	6.3411	7.5092

MSR
9-17-04

ANC08050
BZTO104(e)008050

Report

of

Test No. 686-15

Toxicity of Portland Harbor RI/FS Freshwater Test Sediments (Batch 8) using a 28-day Amphipod, *Hyalella azteca*, Sediment Bioassay

Submitted to

Windward Environmental, Inc.
200 West Mercer Street, Suite 401
Seattle, WA 98119

Submitted by

Northwestern Aquatic Sciences
3814 Yaquina Bay Road
P.O. Box 1437
Newport, OR 97365

January 18, 2005

ANC08051
BZTO104(e)008051

TOXICITY TEST REPORT

TEST IDENTIFICATION

Test No.: 686-15

Title: Toxicity of Portland Harbor RI/FS freshwater test sediments (Batch 8) using a 28-day amphipod, *Hyalella azteca*, sediment bioassay.

Protocol No.: NAS-686-HA4c, June 24, 2004. Based on ASTM Method E 1706-00 (ASTM 2003) and EPA Method 100.4 (EPA/600/R-99/064, 2000). This protocol can be found in Appendix B of the Portland Harbor RI/FS Round 2 Quality Assurance Project Plan, June 24, 2004.

STUDY MANAGEMENT

Study Sponsor: Windward Environmental, Inc., 200 West Mercer Street, Suite 401, Seattle, WA 98119.

Sponsor's Study Monitor: Ms. Helle Andersen

Testing Laboratory: Northwestern Aquatic Sciences, P.O. Box 1437, Newport, OR 97365.

Test Location: Newport laboratory

Laboratory's Study Personnel: G.J. Irissarri, B.S., Proj. Man./Study Dir.; L.K. Nemeth, M.B.A., QA Officer; R.S. Caldwell, Ph.D., Sr. Toxicol.; M.S. Redmond, M.S., Aq. Toxicol.; G.A. Buhler, B.S., Aq. Toxicol.; W.T. Montgomery, A.A., Sr. Tech.; G. Hayes, B.S., Tech.; S.J. Gage, B.A., Tech.; B.B. Pridgeon, Lab Asst.

Study Schedule:

Test Beginning: 9-24-04, 1300 hrs.

Test Ending: 10-22-04, 1130 hrs.

Disposition of Study Records: All specimens, raw data, reports and other study records are stored according to Good Laboratory Practice regulations at Northwestern Aquatic Sciences, 3814 Yaquina Bay Rd., Newport, OR 97365.

Good Laboratory Practices: The test was conducted following the principles of Good Laboratory Practices (GLP) as defined in the EPA/TSCA Good Laboratory Practice regulations revised August 17, 1989 (40 CFR Part 792).

Statement of Quality Assurance: The test data were reviewed by the Quality Assurance Unit to assure that the study was performed in accordance with the protocol and standard operating procedures. This report is an accurate reflection of the raw data.

TEST MATERIAL

Test Sediments: Portland Harbor RI/FS freshwater test sediments (Batch 8). Details are as follows:

NAS Sample No.	9456F	9457F	9458F	9459F	9460F
Description	LW2-G301	LW2-G302	LW2-G308	LW2-G288	LW2-G292
Collection Date	9/13/04	9/13/04	9/13/04	9/13/04	9/13/04
Receipt Date	9/15/04	9/15/04	9/15/04	9/15/04	9/15/04

NAS Sample No.	9461F	9462F	9463F	9464F	9465F
Description	LW2-G298	LW2-G315	LW2-G316	LW2-G260	LW2-G268
Collection Date	9/13/04	9/13/04	9/13/04	9/14/04	9/14/04
Receipt Date	9/15/04	9/15/04	9/15/04	9/15/04	9/15/04

NAS Sample No.	9466F	9467F	9468F	9469F	9470F
Description	LW2-G318	LW2-G320	LW2-G323	LW2-G327	LW2-G331
Collection Date	9/14/04	9/14/04	9/14/04	9/14/04	9/14/04
Receipt Date	9/15/04	9/15/04	9/15/04	9/15/04	9/15/04

NAS Sample No.	9471F	9472F	9473F	9474F	9475F
Description	LW2-G333	LW2-G335	LW2-G336	LW2-G348	LW2-G350
Collection Date	9/14/04	9/14/04	9/14/04	9/14/04	9/14/04
Receipt Date	9/15/04	9/15/04	9/15/04	9/15/04	9/15/04

ANC08052
BZTO104(e)008052

Control Sediment: The negative control sediment (NAS#9454F) was collected on 9-14-04 from an area approximately one mile east of the Hwy. 101 bridge at Beaver Creek, approx. 8 miles south of Newport, OR.
Treatments: Homogenized at test set up by mixing using stainless steel implements.
Storage: All test and control sediments were stored at 4°C in the dark in capped containers until used.

TEST WATER

Source: Dechlorinated Newport, OR tap water.
Dates of Collection: Thirteen batches of test water were collected between 9-22-04 and 10-20-04
Water Quality (mean ± S.D.):
pH: 6.9 ± 0.0 (n=13)
conductivity: 162 ± 4 µmhos/cm (n=13)
hardness: 34 ± 0 mg/L as $CaCO_3$ (n=13)
alkalinity: 34 ± 5 mg/L as $CaCO_3$ (n=13)
chlorine: All batches were <0.02 mg/L.
Pretreatment: Dechlorinated and aerated ≥24 hr.

TEST ORGANISMS

Species: *Hyalella azteca,* amphipod.
Age/Size: 6-7 days old
Source: Chesapeake Cultures, Hayes, VA; received 9-22-04
Acclimation: Holding conditions prior to testing averaged (n=3): temperature, 21.9 ± 0.3°C; dissolved oxygen, 10.7 ± 3.8 mg/L; pH, 7.7 ± 0.6; conductivity, 362 ± 90 µmhos/cm; hardness, 143 ± 42 mg/L as $CaCO_3$; and alkalinity, 150 ± 52 mg/L as $CaCO_3$. Half of the water was replaced daily with dechlorinated Newport, OR tap water during holding. Animals were fed YTC daily during holding.

TEST PROCEDURES AND CONDITIONS

The following is an abbreviated statement of the test procedures and a statement of the test conditions actually employed. See the test protocol for a more detailed description of the test procedures used in this study.

Test Chambers: 300 ml high-form glass beakers
Test Volumes: 100 ml sediment layer; 175 ml test water.
Replicates/Treatment: 8
Organisms/Treatment: 80
Water Volume Changes: 2 water volumes per day
Aeration: None.
Feeding: Animals are fed 1.0 ml of YTC suspension per beaker daily.
Effects Criteria: 1) survival after 28 days, and 2) average individual biomass (based on dry weight) after 28 days. Death is defined as no visible movement or response to tactile stimulation. Missing organisms were considered to be dead.
Water Quality and Other Test Conditions: The temperature, dissolved oxygen, conductivity, pH, hardness, alkalinity and ammonia-nitrogen were measured in the overlying water of one replicate test container per treatment on days 0 and 28 of the test. Temperature was measured daily, dissolved oxygen and pH three times per week, and conductivity weekly, in the overlying water of one replicate test container per treatment. Interstitial ammonia and pH were measured in the bulk sediment. Hardness and alkalinity were measured with titrimetric methods. Interstitial water samples from bulk sediments were obtained by centrifugation, or by settling in the case of very sandy sediments. Total ammonia-N was measured using Hach reagents based on the salicylate (Clin. Chim. Acta 14:403, 1996) colorimetric method. Samples were not distilled prior to analysis. The photoperiod was 16:8, L:D.

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DATA ANALYSIS METHODS

Survival and mortality were calculated for each replicate as follows:

percent survival = 100 x (number surviving/initial number tested)
percent mortality = 100 x (number dead/initial number tested)

average individual biomass = (final wt. - tare wt.)/number weighed,
where:
final wt. = tare wt. + dry weight of organisms recovered on day 28, in mg

Means and standard deviations for the biological endpoints described above, and for water quality data, were computed using Microsoft Excel 2000.

PROTOCOL DEVIATIONS

1. Test organisms were 6-7 days old at test initiation. The protocol specifies 7-8 days old.

REFERENCE TOXICANT TEST

The reference toxicant test is a multi-concentration toxicity test using cadmium chloride, to evaluate the performance of the test organisms used in the sediment toxicity test. The performance is evaluated by comparing the results of this test with historical results obtained at the laboratory. A summary of the reference toxicant test result is given below. The reference toxicant test raw data are found in Appendix II. The age of the test dilution water slightly exceeded EPA specifications. This deviation is not likely to have affected the test results.

Test No.: 999- 1846
Reference Toxicant and Source: Cadmium as $CdCl_2 \bullet 2½ H_2O$, Mallinckrodt Lot #TNZ, 1.0 mg/ml stock prepared 7-13-04.
Test Date: 9-24-04.
Dilution Water Used: Moderately hard synthetic water prepared from Milli-Q® deionized water.
Result: 96-hr LC50, 5.10 µg/L. This result is within the laboratory's control chart warning limits (3.56 – 13.2 µg/L).

TEST RESULTS

Observations of water quality in the overlying water throughout the test are summarized in Table 1. A detailed tabulation of the water quality results by sample and test day can be found in Appendix I. Interstitial ammonia measurements and pH for bulk sediments are listed in Table 2. The means and standard deviations of percent mortality of *Hyalella* exposed for 28 days to sediments, and the growth measured as dry weight are summarized in Table 3. Detailed data organized by sample and replicate, and summary statistics for these observations, are given in Appendix I.

All water quality observations of overlying water temperature and dissolved oxygen were within the protocol specified ranges. Ammonia-N in the overlying water ranged from <0.1 to 4.8 mg/L in all day 0 and day 28 observations. Interstitial bulk sediment values for ammonia-N ranged from 1.4 to 16.1 mg/L.

The test met the acceptability criteria specified in the test protocol with 95.0% control survival (≥80% required). The reference toxicant (positive control) result was within the laboratory's control chart limits (5.10 µg/L; control chart mean ± 2 S.D. = 8.39 ± 4.83). It is concluded, therefore, that the test has developed fully acceptable data for use in making management decisions.

REFERENCES

ASTM. 2003. Standard Test Methods for Measuring the Toxicity of Sediment-Associated Contaminants with Fresh Water Invertebrates. ASTM Standard Method No. E 1706-00. Am. Soc. Test. Mat., West Conshohocken, PA.

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U.S. EPA. 2000. Section 11, Test Method 100.1, *Hyalella azteca* 10-d Survival and Growth Test for Sediments, pp 47-54 In: Methods for Measuring the Toxicity and Bioaccumulation of Sediment-associated Contaminants with Freshwater Invertebrates (Second Edition). EPA/600/R-99/064.

STUDY APPROVAL

Project Manager/Study Director — Date: 1-20-05

Quality Assurance Unit — Date: 1/19/05

Laboratory Director — Date: 1/21/05

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Table 1. Summary of water quality conditions during tests of the amphipod, *Hyalella azteca*, exposed to freshwater sediments.

Water Quality Parameter	Mean ± S.D.	Minimum	Maximum	N
Temperature (°C)	22.8 ± 0.2	22.4	23.4	609
Dissolved oxygen (mg/L)	6.2 ± 0.8	3.6	7.7	273
Conductivity (µmhos/cm)	174 ± 32	155	390	105
pH	6.5 ± 0.2	6.1	7.5	273
Hardness (mg/L as $CaCO_3$)	43 ± 7	34	77	42
Alkalinity (mg/L as $CaCO_3$)	44 ± 6	40	60	42
Total ammonia (mg/L)	---	<0.1	4.8	42

Table 2. Pore water ammonia-N and pH in bulk test sediments at the time of test setup.

NAS Sample No.	Sample Description	Ammonia (mg/L)	pH
9454F	Control	9.6	6.5
9456F	LW2-G301	5.5	6.4
9457F	LW2-G302	7.0	6.4
9458F	LW2-G308	5.3	6.3
9459F	LW2-G288	---*	---*
9460F	LW2-G292	5.4	6.4
9461F	LW2-G298	11.8	5.9
9462F	LW2-G315	6.1	6.2
9463F	LW2-G316	1.6	6.4
9464F	LW2-G260	1.4	6.2
9465F	LW2-G268	1.4	6.5
9466F	LW2-G318	4.8	6.5
9467F	LW2-G320	16.1	6.2
9468F	LW2-G323	1.8	6.5
9469F	LW2-G327	13.5	6.4
9470F	LW2-G331	---*	---*
9471F	LW2-G333	3.7	6.5
9472F	LW2-G335	4.7	6.8
9473F	LW2-G336	6.5	6.0
9474F	LW2-G348	11.3	6.9
9475F	LW2-G350	13.5	6.8

* Insufficient sample for analysis

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Table 3. Mortality and growth results of *Hyalella* 28-day sediment toxicity test.

NAS Sample No.	Sample Description	Average percent mortality (Mean ± SD)	Average dry wt/amphipod (mg) (Mean ± SD)
9454F	Control	5.0 ± 5.3	0.26 ± 0.03
9456F	LW2-G301	7.5 ± 11.6	0.24 ± 0.04
9457F	LW2-G302	98.8 ± 3.5	---
9458F	LW2-G308	21.3 ± 8.3	0.23 ± 0.04
9459F	LW2-G288	100.0 ± 0.0	---
9460F	LW2-G292	12.5 ± 18.3	0.27 ± 0.06
9461F	LW2-G298	100.0 ± 0.0	---
9462F	LW2-G315	7.5 ± 13.9	0.23 ± 0.03
9463F	LW2-G316	3.8 ± 7.4	0.28 ± 0.02
9464F	LW2-G260	5.0 ± 7.6	0.30 ± 0.05
9465F	LW2-G268	7.5 ± 7.1	0.21 ± 0.01
9466F	LW2-G318	1.3 ± 3.5	0.24 ± 0.04
9467F	LW2-G320	6.3 ± 7.4	0.22 ± 0.04
9468F	LW2-G323	12.5 ± 8.9	0.29 ± 0.03
9469F	LW2-G327	11.3 ± 8.3	0.22 ± 0.04
9470F	LW2-G331	7.5 ± 4.6	0.28 ± 0.06
9471F	LW2-G333	2.5 ± 4.6	0.27 ± 0.04
9472F	LW2-G335	8.8 ± 8.3	0.23 ± 0.04
9473F	LW2-G336	7.5 ± 7.1	0.23 ± 0.05
9474F	LW2-G348	8.8 ± 8.3	0.26 ± 0.03
9475F	LW2-G350	7.5 ± 10.4	0.23 ± 0.03

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APPENDIX I

RAW DATA

TEST DESCRIPTION, MONITORING, AND RESULTS BENCHSHEETS

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-15 Client Windward Environmental Investigator

STUDY MANAGEMENT

Client: Windward Enviromental, 200 West Mercer Street, Suite 401, Seattle, WA 98119

Client's Study Monitor: Ms. Helle Anderson

Testing Laboratory: Northwestern Aquatic Sciences

Test Location: Newport Laboratory

Laboratory's Study Personnel:

Proj. Man./Study Dir. G.J. Irissarri GJI

QA Officer L.K. Nemeth

1. [illegible] 2. G.C. Hayes [illegible]

3. Susan Gage [illegible] 4. [illegible]

Study Schedule: 5. B.B. Pridgeon BBP 6. R.S. Caldwell [illegible] 7. M.S. Redmond

Test Beginning: 9-24-04 1300 Test Ending: 10-22-04 1130

TEST MATERIAL

General description (see sample logbook/chain-of-custody for details):

NAS Sample No.:	9454F	9456F	9457F	9458F	9459F
Description:	Control	LW2-G301	LW2-G302	LW2-G308	LW2-G288
Collection Date:	9/14/04	9/13/04	9/13/04	9/13/04	9/13/04
Receipt Date:	9/14/04	9/15/04	9/15/04	9/15/04	9/15/04
NAS Sample No.:	9460F	9461F	9462F	9463F	9464F
Description:	LW2-G292	LW2-G298	LW2-G315	LW2-G316	LW2-G260
Collection Date:	9/13/04	9/13/04	9/13/04	9/13/04	9/14/04
Receipt Date:	9/15/04	9/15/04	9/15/04	9/15/04	9/15/04
NAS Sample No.:	9465F	9466F	9467F	9468F	9469F
Description:	LW2-G268	LW2-G318	LW2-G320	LW2-G323	LW2-G327
Collection Date:	9/14/04	9/14/04	9/14/04	9/14/04	9/14/04
Receipt Date:	9/15/04	9/15/04	9/15/04	9/15/04	9/15/04
NAS Sample No.:	9470F	9471F	9472F	9473F	9474F
Description:	LW2-G331	LW2-G333	LW2-G335	LW2-G336	LW2-G348
Collection Date:	9/14/04	9/14/04	9/14/04	9/14/04	9/14/04
Receipt Date:	9/15/04	9/15/04	9/15/04	9/15/04	9/15/04
NAS Sample No.:	9475F				
Description:	LW2-G350				
Collection Date:	9/14/04				
Receipt Date:	9/15/04				
NAS Sample No.:					
Description:					
Collection Date:					
Receipt Date:					

Error codes: 1) correction of handwriting error
2) written in wrong location; entry deleted
3) wrong date deleted, replaced with corrrect date
4) error found in measurement; measurement repeated

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-15 Client Windward Environmental Investigator

SEDIMENT DESCRIPTIONS -- SUPPLEMENTAL NOTES

Sample No.	Description
9454F	Black mud
9456F	Dark Brown - sandy mud
9457F	Dark gray mud w/ Creosote odor & woody debris
9458F	Gray brown sandy mud
9459F	Dark gray mud w/ petroleum odor
9460F	Dark gray sandy mud.
9461F	thick dark gray mud w/ heavy petroleum odor
9462F	Gray brown sandy mud
9463F	Black and gray sand with pebbles
9464F	Dark Brown gravel and sm. rocks - Sandy.
9465F	Brown mud w/ woody debris
9466F	Gray brown sandy mud
9467F	Dark gray sandy mud
9468F	Dark Brown Sand
9469F	Gray brown Clay like mud
9470F	Dark sand w/ occasional stones
9471F	Dark gray sandy mud
9472F	Dark Brown sand w/ gravel (pebbles)
9473F	Dark gray sandy mud
9474F	Gray brown clay like mud
9475F	Dark gray mud

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NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-15 Client Windward Environmental Investigator

TEST WATER

Source: Dechlorinated Newport, OR Tap Water

Date of Collection:

pH (See Attached chart)

Cond (umhos/cm2)

Hardness (mg/La0

Alkalinity (mg/L)

Treatments: Aerated ≥24 hrs

TEST ORGANISMS

Species: *Hyalella azteca* Age: 6-7 days Date received: 9/22/04

Source: Chesapeake Cultures, Hayes, VA

Acclimation Data:

Date	Temp. (deg.C)	DO (mg/L)	pH	Cond umhos/cm	Feeding amount	Feeding description	Water changes	Hardness (mg/L)	Alkalinity (mg/L)
9/22/04	21.8	5.4	6.8	198	Transcribed wrong records			51	50
9/24/04	22.5	6.0	6.7	190	(RE 11/24/04			—	—
9/22/04	21.C	715.0	7.2	430	10ml/pan*	YTC	yes	163	180
9/23/04	21.9	8.4	7.4	395	"	"	yes	171	189
9/24/04	22.2	8.6	7.4	260	"	"		94	90
Mean	21.9	10.7	7.7	362				143	150
S.D.	0.3	3.8	0.6	90				42	52
(N)	3	3	3	3				3	3

*animals divided into 3 pans

Photoperiod during acclimation: 16:8, L:D

TEST PROCEDURES AND CONDITIONS

Test chambers: 300 ml glass beakers

Test volumes: 100 ml of test sediment; 275 ml total volume

Replicates/treatment: (8) 8 Organisms/treatment: (80) 80 (10/repl.)

Test water changes: Twice daily

Aeration: only if DO falls below 2.5 mg/L

Feeding: everyday beginning with day zero

Test temperature (deg.C): 23

Beaker placement: Total randomization

Photoperiod: 16:8, L:D

Control Sediment:

Source: From an area approximately one mile east of the Hwy. 101 bridge at Beaver Creek, approx. 8 miles south of Newport, OR.

Date collected: 9/14/04

Sieved through ____-mm screen NAS# 9454F

Storage: 4°C in the dark in closed containers.

MISCELLANEOUS NOTES

LIGHT INTENSITY RECORDS:

	SITE A	SITE
10-3-04	34 FT-CANDLES (366 LUX)	67 FT-CANDLES (721 LUX)

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HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-15 Client Windward Environmental Investigator

Test Dilution Water: Dechlorinated Newport, OR Tap Water

Date of Collection	Total Chlorine (mg/L)	Hardness (mg/L)	Alkalinity (mg/L)	Conductivity (µmhos/cm)	pH
9/22/04	<0.02	34	30	160	6.9
9/23/04	<0.02	34	30	160	6.9
9/25/04	<0.02	34	40	160	6.9
9/26/04	<0.02	34	40	160	6.9
9/27/04	<0.02	34	30	165	6.9
9/29/04	<0.02	34	40	160	6.9
9/30/04	<0.02	34	40	160	6.9
10/2/04	<0.02	34	30	170	6.9
10/4/04	<0.02	34	40	165	6.9
10/7/04	<0.02	34	30	165	6.9
10/8/04	<0.02	34	30	160	7.0
10/12/04	<0.02	34	30	165	7.0
10/20/04	<0.02	34	30	155	6.9
	Data transcribed from lab master record				
	11/21/04 [illegible]				
	$\bar{X}$	34	34	162	6.9
	SD	0	5	4	0.0
	N	13	13	13	13

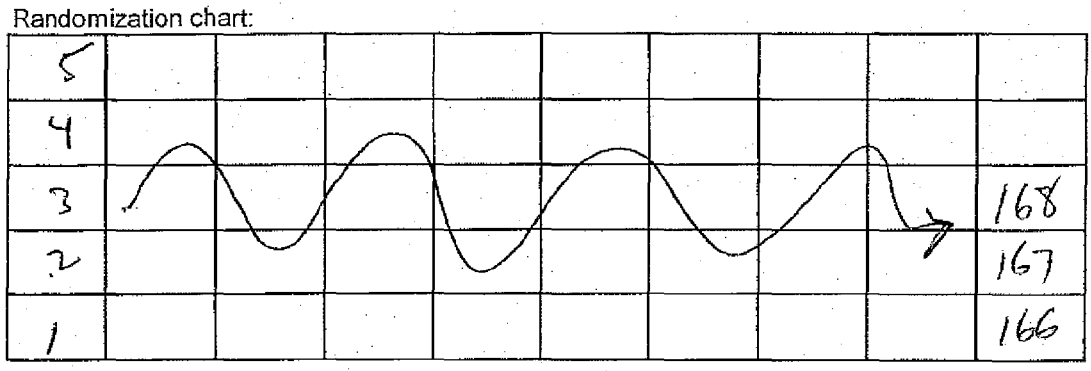
NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-15 Client Windward Environmental Investigator _____

Test conducted in (circle one): room 1 (room 2) trailer water bath other:_____

Randomization chart:



Randomization chart:

Randomization chart:

Randomization chart:

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No 686-15 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 0 (9 12 14) NS/BBP

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond.* umhos/cm	pH*	Hardness* (mg/L)	Alkalinity* (mg/L)	S (ppm)	NH3* (ppm)	Comments
11	22.9	7.2	175	6.5	51	50			Each beaker fed 1.0 ml
13	22.9	6.8	165	6.5	43	40			YTC suspension
16	22.9	6.9	190	6.4	43	50			Initials: GJ
25	23.1	6.6	190	6.5	43	50			
40	23.1	6.5	265	6.4	71	50			
53	23.1	6.2	190	6.5	51	50			
60	22.9	6.6	170	6.5	43	40			
74	22.9	6.8	190	6.4	43	60			
87	22.9	6.9	280	6.4	43	40			Water changed in all
90	22.9	6.7	255	6.4	51	40			beakers.
92	22.9	6.8	170	6.4	43	40			Time: 0645
118	22.8	6.7	390	6.5	43	60			Initials: GJ
120	22.8	6.8	240	6.6	43	50			
123	22.8	7.2	170	6.6	43	40			
132	22.8	6.8	175	6.5	43	50			
135	22.9	6.9	170	6.4	34	50			
137	22.9	6.2	205	6.3	43	50			Water changed in all
146	22.8	6.6	175	6.4	51	50			beakers.
151	22.8	6.6	300	6.3	43	50			Time: 1755
152	22.8	6.7	175	6.3	43	50			Initials: BBP
163	22.7	6.8	165	6.3	34	50			

*Water quality measurements to be taken.

Day 1 (9 15 14) NS/AF

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. umhos/cm	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
11	22.8								Each beaker fed 1.0 ml
13	22.6								YTC suspension
16	22.8								Initials: AF
25	22.8								
40	22.8								
53	22.4								
60	22.6								
74	22.5								
87	22.5								Water changed in all
90	22.5								beakers.
92	22.4								Time: 0715
118	22.4								Initials: GJ
120	22.5								
123	22.5								
132	22.4								
135	22.5								
137	22.4								Water changed in all
146	22.4								beakers.
151	22.4								Time: 1905
152	22.4								Initials: BBP
163	22.4								

*Water quality measurements to be taken.

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NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No 686-15 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 2 (9/26/09 WTM

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. umhos/cm	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
11	22.9								Each beaker fed 1.0 ml
13	22.7								YTC suspension
16	22.9								Initials: WTM
25	22.9								
40	22.9								
53	22.6								
60	22.7								
74	22.6								
87	22.5								Water changed in all
90	22.6								beakers.
92	22.4								Time: 0930
118	22.5								Initials: WTM
120	22.6								
123	22.5								
132	22.6								
135	22.6								
137	22.6								Water changed in all
146	22.7								beakers.
151	22.7								Time: 1725
152	22.5								Initials: AJ
163	22.5								

*Water quality measurements to be taken.

Day 3 (9/27/09) WTM

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. umhos/cm	pH*	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
11	23.2	7.4		6.6					Each beaker fed 1.0 ml
13	23.1	7.3		6.6					YTC suspension
16	23.1	7.2		6.6					Initials: GJ
25	23.2	7.3		6.6					
40	23.2	7.3		6.6					
53	22.9	7.1		6.6					
60	23.0	7.4		6.6					
74	23.0	7.1		6.6					
87	22.9	6.1		6.5					Water changed in all
90	23.0	5.8		6.4					beakers.
92	22.9	7.0		6.5					Time: 0650
118	22.9	7.3		6.6					Initials: GJ
120	22.9	7.0		6.6					
123	22.9	7.4		6.7					
132	22.9	7.1		6.6					
135	23.0	7.1		6.6					
137	22.9	6.9		6.6					Water changed in all
146	23.0	6.5		6.5					beakers.
151	22.0	6.9		6.5					Time: 1715
152	22.9	6.9		6.5					Initials: AJ
163	22.9	6.8		6.5					

*Water quality measurements to be taken.

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NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No 686-15 Client Windward Environmental Investigator _____

DAILY RECORD SHEET

Day 4 (9 /28 /04)

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. (mhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
11	22.9								Each beaker fed 1.0 ml
13	22.8								YTC suspension
16	22.9								Initials: MTM
25	22.9								
40	22.9								
53	22.7								
60	22.7								
74	22.7								
87	22.7								Water changed in all
90	22.8								beakers.
92	22.7								Time: 0705
118	22.7								Initials: GSL
120	22.8								
123	22.7								
132	22.7								
135	22.8								
137	22.8								Water changed in all
146	22.8								beakers.
151	22.8								Time: 1720
152	22.8								Initials: AF
163	22.8								

*Water quality measurements to be taken.

Day 5 (9 /29 /04) AF/MTM

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond.* (mhos/cm)	pH*	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
11	23.2	6.6	225	6.8					Each beaker fed 1.0 ml
13	23.2	6.2	215	6.5					YTC suspension
16	23.2	6.3	220	6.4					Initials: GS
25	23.1	6.4	220	6.5					
40	23.1	6.4	225	6.5					
53	23.1	6.3	215	6.4					
60	23.1	6.4	215	6.5					
74	23.1	6.4	220	6.5					
87	22.9	4.9	220	6.5					Water changed in all
90	23.1	5.3	285	6.6					beakers.
92	23.0	5.9	220	6.6					Time: 0720
118	23.1	7.1	295	6.9					Initials: GSL
120	23.1	6.8	235	6.8					
123	23.0	6.4	215	6.7					
132	23.1	5.7	215	6.7					
135	23.2	5.9	220	6.6					
137	23.1	5.6	220	6.5					Water changed in all
146	23.2	5.2	220	6.5					beakers.
151	23.2	5.9	240	6.5					Time: 1730
152	23.2	5.7	220	6.5					Initials: BBP
163	23.1	5.6	210	6.5					

Re: Conductivity See Attached deviation form page 30 of 62 RSL 11/22/04

*Water quality measurements to be taken.

ANC08067
BZTO104(e)008067

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No 686-15 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 6 (9/30/04) [illegible]

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. (mhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
11	23.0								Each beaker fed 1.0 ml
13	22.9								YTC suspension
16	22.9								Initials: GJL
25	22.9								
40	22.8								
53	22.7								
60	22.7								
74	22.7								
87	22.7								Water changed in all
90	22.6								beakers.
92	22.7								Time: 0720
118	22.6								Initials: [illegible]
120	22.6								
123	22.7								
132	22.6								
135	22.6								
137	22.6								Water changed in all
146	22.7								beakers.
151	22.7								Time: 1730
152	22.7								Initials: [illegible]
163	22.6								

*Water quality measurements to be taken.

Day 7 (10/1/04) [illegible]

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. (mhos/cm)	pH*	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
11	23.2	6.4		6.5					Each beaker fed 1.0 ml
13	23.1	6.0		6.4					YTC suspension
16	23.1	5.8		6.4					Initials: [illegible]
25	23.2	5.8		6.3					
40	23.0	6.0		6.4					
53	22.8	5.6		6.3					
60	23.0	5.8		6.4					
74	23.0	5.8		6.3					
87	22.9	5.4		6.3					Water changed in all
90	22.8	4.8		6.3					beakers.
92	22.9	5.4		6.3					Time: 0635
118	22.9	6.0		6.5					Initials: GJL
120	23.0	5.8		6.5					
123	22.9	5.8		6.4					
132	22.9	5.4		6.4					
135	22.8	5.4		6.3					
137	22.9	5.2		6.3					Water changed in all
146	22.9	5.2		6.3					beakers.
151	22.8	5.5		6.3					Time: 1750
152	22.8	5.3		6.3					Initials: BBP
163	22.9	5.4		6.3					

*Water quality measurements to be taken.

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No 686-15 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 8 (10/2 64) MB

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
11	22.5								Each beaker fed 1.0 ml
13	22.5								YTC suspension
16	22.5								Initials: MBM
25	22.6								
40	22.6								
53	22.5								
60	22.5								
74	22.4								
87	22.4								Water changed in all
90	22.5								beakers.
92	22.4								Time: 0620
118	22.5								Initials: MB
120	22.5								
123	22.5								
132	22.4								
135	22.5								
137	22.5								Water changed in all
146	22.5								beakers.
151	22.5								Time: 1800
152	22.5								Initials: BB
163	22.5								

*Water quality measurements to be taken.

Day 9 (10/3 64) GJ

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
11	23.3								Each beaker fed 1.0 ml
13	23.2								YTC suspension
16	23.3								Initials: GJ
25	23.3								
40	23.2								
53	23.1								
60	23.2								
74	23.1								
87	23.2								Water changed in all
90	23.2								beakers.
92	23.1								Time: 0750
118	23.0								Initials: GJ
120	23.2								
123	23.0								
132	23.0								
135	23.2								
137	23.0								Water changed in all
146	23.1								beakers.
151	23.1								Time: 1740
152	23.0								Initials: GJ
163	23.0								

*Water quality measurements to be taken.

ANC08069
BZTO104(e)008069

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-15 Client Windward Environmental Investigator _____

DAILY RECORD SHEET

Day 10 (10/4/04) DF

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. (mhos/cm)	pH*	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
11	23.1	4.7		6.6					Each beaker fed 1.0 ml
13	23.0	6.3		6.5					YTC suspension
16	23.0	5.9		6.5					Initials: MB
25	23.0	6.3		6.5					
40	22.9	4.2		6.5					
53	22.8	6.0		6.5					
60	22.8	6.3		6.5					
74	22.8	5.5		6.4					
87	22.8	4.9		6.4					Water changed in all
90	22.8	4.2		6.4					beakers.
92	22.8	5.9		6.4					Time: 0635
118	22.7	6.1		6.5					Initials: GJL
120	22.8	5.9		6.7					
123	22.8	6.0		6.5					
132	22.7	5.4		6.5					
135	22.8	5.6		6.5					
137	22.7	5.7		6.5					Water changed in all
146	22.7	5.2		6.4					beakers.
151	22.8	5.7		6.4					Time: 1720
152	22.8	5.3		6.4					Initials: DF
163	22.8	5.8		6.5					

*Water quality measurements to be taken.

Day 11 (10/5/04) MB/BBP

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. (mhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
11	23.2								Each beaker fed 1.0 ml
13	23.2								YTC suspension
16	23.1								Initials: GJL
25	23.2								
40	23.1								
53	23.0								
60	22.9								
74	22.9								
87	22.9								Water changed in all
90	22.9								beakers.
92	22.9								Time: 0740
118	22.9								Initials: MB
120	22.9								
123	23.0								
132	22.9								
135	22.9								
137	23.0								Water changed in all
146	22.9								beakers.
151	22.9								Time: 1735
152	23.0								Initials: DF
163	22.9								

BBP

*Water quality measurements to be taken.

ANC08070
BZTO104(e)008070

Test No 686-15 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 12 (10/6/04) [illegible]

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond.* (mhos/cm)	pH*	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
11	23.3	5.8	165	6.6					Each beaker fed 1.0 ml
13	23.2	5.8	165	6.6					YTC suspension
16	23.2	5.3	165	6.5					Initials: GJI
25	23.2	5.6	165	6.5					
40	23.1	5.2	165	6.5					
53	23.1	~~5.8~~ 5.3	160	6.4					
60	23.1	5.8	165	6.6					
74	23.1	5.0	160	6.5					
87	23.1	4.6	165	6.4					Water changed in all
90	23.1	3.8	160	6.4					beakers.
92	23.1	5.6	165	6.5					Time: 0645
118	23.1	5.7	180	6.6					Initials: GJI
120	23.2	5.6	180	7.5					
123	23.2	5.6	165	6.7					
132	23.2	5.5	160	6.7					
135	23.2	4.7	170	6.7					
137	23.2	5.2	160	6.6					Water changed in all
146	23.2	5.4	165	6.6					beakers.
151	23.2	5.4	165	6.7					Time: 1715
152	23.1	5.0	160	6.6					Initials: BBP
163	23.1	5.6	160	6.7					

*Water quality measurements to be taken.

Day 13 (10/7/04) [illegible]

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. (mhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
11	23.2								Each beaker fed 1.0 ml
13	23.2								YTC suspension
16	23.1								Initials: GJI
25	23.2								
40	23.2								
53	23.2								
60	23.1								
74	23.2								
87	23.2								Water changed in all
90	23.1								beakers.
92	23.2								Time: 0705
118	23.1								Initials: GJI
120	23.1								
123	23.1								
132	23.1								
135	23.1								
137	23.2								Water changed in all
146	23.2								beakers.
151	23.2								Time: 1730
152	23.2								Initials: GBH
163	23.2								

*Water quality measurements to be taken.

ANC08071
BZTO104(e)008071

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No 686-15 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 14 (10/8 6:4) CB/AJ

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. (umhos/cm)	pH*	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
11	23.4	6.9		6.8					Each beaker fed 1.0 ml
13	23.4	6.9		6.6					YTC suspension
16	23.2	6.9		6.5					Initials: CB
25	23.1	7.1		6.5					
40	23.2	7.2		6.5					
53	23.0	6.4		6.5					
60	23.2	7.0		6.5					
74	23.1	6.5		6.5					
87	23.1	6.3		6.5					Water changed in all
90	23.1	7.0		6.4					beakers.
92	23.0	6.4		6.4					Time: 0600
118	23.0	6.7		6.5					Initials: CB
120	23.0	6.5		7.5					
123	23.0	6.8		6.8					
132	22.9	6.3		6.7					
135	22.9	6.4		6.6					
137	23.0	6.1		6.6					Water changed in all
146	22.9	6.5		6.6					beakers.
151	23.0	6.3		6.6					Time: 1745
152	23.0	6.2		6.6					Initials: CB
163	23.0	6.4		6.6					

*Water quality measurements to be taken.

Day 15 (10/9/CB AJ

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
11	23.2								Each beaker fed 1.0 ml
13	23.2								YTC suspension
16	23.2								Initials: CB
25	23.2								
40	23.3								
53	23.2								
60	23.1								
74	23.2								
87	23.2								Water changed in all
90	23.1								beakers.
92	23.1								Time: 0655
118	23.1								Initials: CB
120	23.2								
123	23.1								
132	23.1								
135	23.2								
137	23.1								Water changed in all
146	23.2								beakers.
151	23.2								Time: 1730
152	23.2								Initials: AJ
163	23.2								

*Water quality measurements to be taken.

ANC08072
BZTO104(e)008072

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No 686-15 Client Windward Environmental Investigator _____

DAILY RECORD SHEET

Day 16 (10/10/04) [illegible]

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
11	22.8								Each beaker fed 1.0 ml
13	22.7								YTC suspension
16	22.7								Initials: [illegible]
25	22.8								
40	22.8								
53	22.7								
60	22.7								
74	22.7								
87	22.7								Water changed in all
90	22.8								beakers.
92	22.7								Time: 0700
118	22.8								Initials: [illegible]
120	22.8								
123	22.8								
132	22.7								
135	22.8								
137	22.9								Water changed in all
146	22.9								beakers.
151	22.9								Time: 1800
152	22.8								Initials: BBP
163	22.8								

*Water quality measurements to be taken.

Day 17 (10/11/04 [illegible] / [illegible] / BBP

Beaker No.	Temp.* (deg.C)	~~DO*~~ PH (ppm)	Cond. (umhos/cm)	~~pH*~~ DO	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
11	23.0	6.7		7.0					Each beaker fed 1.0 ml
13	22.9	6.7		7.0					YTC suspension
16	23.0	6.6		6.8					Initials: [illegible]
25	23.1	6.6		6.9					
40	22.9	6.7		7.0					
53	22.7	6.7		6.3					
60	22.7	6.7		7.0					
74	22.7	6.6		6.4					
87	22.6	6.5		5.6					Water changed in all
90	22.6	6.5		4.4					beakers.
92	22.7	6.7		6.4					Time: 0710
118	22.6	6.7		6.2					Initials: [illegible]
120	22.8	7.3		6.4					
123	22.6	6.7		6.7					
132	22.6	6.6		6.4					
135	22.8	6.8		6.2					
137	22.7	6.7		6.2					Water changed in all
146	22.7	6.7		5.6					beakers.
151	22.7	6.6		6.4					Time: 1720
152	22.6	6.5		6.0					Initials: [illegible]
163	22.5	6.6		6.6					

*Water quality measurements to be taken.

Test No 686-15 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 18 (10/12 [illegible]) CAB/AJ

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
11	23.2								Each beaker fed 1.0 ml
13	23.1								YTC suspension
16	23.1								Initials: CAB
25	23.2								
40	23.2								
53	22.9								
60	23.1								
74	23.1								
87	23.0								Water changed in all
90	23.1								beakers.
92	22.9								Time: 0650
118	22.9								Initials: CAB
120	23.0								
123	22.9								
132	22.9								
135	23.1								
137	23.1								Water changed in all
146	23.0								beakers.
151	23.0								Time: 1715
152	23.0								Initials: BBP
163	22.9								

*Water quality measurements to be taken.

Day 19 (10/13 [illegible]) CAB/BBP

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond.* (umhos/cm)	pH*	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
11	23.0	7.0	175	6.6					Each beaker fed 1.0 ml
13	23.0	6.6	170	6.6					YTC suspension
16	23.0	6.4	170	6.6					Initials: CAB
25	22.9	6.5	170	6.6					
40	23.0	6.8	170	6.6					
53	22.8	5.3	165	6.5					
60	22.9	6.7	170	6.6					
74	23.0	5.0	165	6.9					
87	22.9	4.8	170	6.5					Water changed in all
90	22.9	3.6	170	6.5					beakers.
92	22.9	5.6	165	6.4					Time: 0640
118	22.9	5.0	180	6.5					Initials: CAB
120	23.0	4.9	200	7.3					
123	23.0	5.8	165	6.5					
132	23.0	5.2	160	6.5					
135	23.0	5.0	175	6.5					
137	23.0	4.6	160	6.5					Water changed in all
146	23.0	4.6	160	6.4					beakers.
151	23.0	5.0	170	6.4					Time: 1715
152	23.0	4.6	170	6.5					Initials: BBP
163	22.9	4.3	160	6.4					

*Water quality measurements to be taken.

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No 686-15 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 20 (10/14/04 BBP

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. (mhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
11	23.0								Each beaker fed 1.0 ml
13	22.9								YTC suspension
16	22.9								Initials: CAS
25	22.9								
40	22.9								
53	22.8								
60	22.9								
74	22.9								
87	22.8								Water changed in all
90	22.9								beakers.
92	22.8								Time: 0710
118	22.9								Initials: CAS
120	22.9								
123	22.9								
132	22.9								
135	22.9								
137	22.9								Water changed in all
146	22.9								beakers.
151	23.0								Time: 1710
152	22.9								Initials: CAS
163	22.9								

*Water quality measurements to be taken.

Day 21 (10/15/04 BBP

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. (mhos/cm)	pH*	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
11	22.9	7.5		6.6					Each beaker fed 1.0 ml
13	22.9	7.3		6.5					YTC suspension
16	22.8	7.3		6.5					Initials:
25	22.9	7.1		6.5					
40	22.8	7.4		6.5					
53	22.7	6.9		6.4					
60	22.8	7.2		6.4					
74	22.8	6.7		6.4					
87	22.8	6.2		6.3					Water changed in all
90	22.9	5.6		6.3					beakers.
92	22.9	7.1		6.4					Time: 0630
118	22.9	6.8		6.5					Initials: CAS
120	22.9	6.8		6.5					
123	22.9	7.2		6.6					
132	22.8	7.0		6.4					
135	22.9	6.9		6.5					
137	22.9	6.9		6.4					Water changed in all
146	22.9	6.7		6.4					beakers.
151	22.9	6.9		6.4					Time: 1710
152	22.9	6.9		6.5					Initials: CAS
163	22.9	6.8		6.4					

*Water quality measurements to be taken.

ANC08075
BZTO104(e)008075

Test No 686-15 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 22 (10/16/04) [illegible]

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
11	22.5								Each beaker fed 1.0 ml
13	22.7								YTC suspension
16	22.8								Initials: [illegible]
25	22.9								
40	22.8								
53	22.8								
60	22.7								
74	22.8								
87	22.7								Water changed in all
90	22.8								beakers.
92	22.7								Time: 0700
118	22.7								Initials: [illegible]
120	22.7								
123	22.7								
132	22.7								
135	22.8								
137	22.7								Water changed in all
146	22.7								beakers.
151	22.8								Time: 1350
152	22.8								Initials: [illegible]
163	22.7								

*Water quality measurements to be taken.

Day 23 (10/17/04) [illegible]

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
11	22.7								Each beaker fed 1.0 ml
13	22.6								YTC suspension
16	22.6								Initials: [illegible]
25	22.7								
40	22.7								
53	22.6								
60	22.6								
74	22.5								
87	22.5								Water changed in all
90	22.5								beakers.
92	22.5								Time: 0700
118	22.5								Initials: [illegible]
120	22.6								
123	22.6								
132	22.6								
135	22.6								
137	22.6								Water changed in all
146	22.6								beakers.
151	22.7								Time: 1720
152	22.6								Initials: BBP
163	22.6								

*Water quality measurements to be taken.

ANC08076
BZTO104(e)008076

Test No 686-15 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 24 (10/18/04) JB / GOA

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. (mhos/cm)	pH*	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
11	22.5	6.2		6.5					Each beaker fed 1.0 ml
13	22.7	6.2		6.2					YTC suspension
16	22.7	6.0		6.3					Initials: JB
25	22.9	6.2		6.4					
40	22.8	5.2		6.3					
53	22.4	6.2		6.1					
60	22.7	5.1		6.3					
74	22.7	5.2		6.2					
87	22.5	4.4		6.2					Water changed in all
90	22.7	4.0		6.2					beakers.
92	22.5	5.6		6.3					Time: 0615
118	22.5	5.0		6.6					Initials: JB
120	22.7	5.3		6.7					
123	22.5	5.7		6.4					
132	22.5	5.5		6.4					
135	22.7	5.2		6.7					
137	22.5	5.3		6.3					Water changed in all
146	22.6	5.3		6.3					beakers.
151	22.7	5.4		6.5					Time: 1710
152	22.5	5.0		6.5					Initials: BBP
163	22.5	5.4		6.6					

*Water quality measurements to be taken.

Day 25 (10/19/04) JB

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. (mhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
11	22.8								Each beaker fed 1.0 ml
13	22.8								YTC suspension
16	22.7								Initials: JB
25	22.8								
40	22.9								
53	22.8								
60	22.6								
74	22.7								
87	22.7								Water changed in all
90	22.6								beakers.
92	22.6								Time: 0700
118	22.5								Initials: JB
120	22.6								
123	22.6								
132	22.5								
135	22.5								
137	22.6								Water changed in all
146	22.6								beakers.
151	22.6								Time: 1700
152	22.5								Initials: JJ
163	22.4								

*Water quality measurements to be taken.

Test No 686-15 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 26 (10/20/04) [illegible]/BBP

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond.* (umhos/cm)	pH*	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
11	22.8	7.1	175	6.4					Each beaker fed 1.0 ml
13	22.7	7.0	170	6.5					YTC suspension
16	22.7	7.0	165	6.5					Initials: [illegible]
25	22.8	7.0	170	6.5					
40	22.7	6.9	165	6.5					
53	22.5	6.2	165	6.5					
60	22.5	6.9	165	6.5					
74	22.6	6.4	165	6.5					
87	22.5	5.8	165	6.4					Water changed in all
90	22.6	5.0	165	6.3					beakers.
92	22.5	6.5	165	6.4					Time: 0730
118	22.5	6.6	170	6.5					Initials: [illegible]
120	22.6	6.6	175	6.8					
123	22.5	6.8	165	6.5					
132	22.5	6.3	165	6.5					
135	22.6	6.2	165	6.5					
137	22.5	6.2	165	6.4					Water changed in all
146	22.5	6.2	165	6.4					beakers.
151	22.6	6.4	170	6.5					Time: 1710
152	22.5	6.0	165	6.5					Initials: BBP
163	22.5	6.5	165	6.5					

*Water quality measurements to be taken.

Day 27 (10/21/04) [illegible]/[illegible]

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
11	23.1								Each beaker fed 1.0 ml
13	23.1								YTC suspension
16	23.2								Initials: [illegible]
25	23.2								
40	22.9								
53	23.0								
60	22.9								
74	22.9								
87	22.9								Water changed in all
90	23.0								beakers.
92	22.8								Time: 0645
118	22.8								Initials: [illegible]
120	22.9								
123	22.9								
132	22.8								
135	22.8								
137	22.9								Water changed in all
146	22.8								beakers.
151	22.9								Time: 1705
152	22.8								Initials: BBP
163	22.8								

*Water quality measurements to be taken.

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No 686-15 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 28 (10 12 14 16 18 20 22 24 26 28)

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond.* umhos/cm)	pH*	Hardness* (mg/L)	Alkalinity* (mg/L)	S (ppm)	NH3* (ppm)	Comments
11	22.8	7.7	165	6.6	43	40			Each beaker fed 1.0 ml
13	22.7	7.7	165	6.5	43	40			YTC suspension
16	22.7	7.3	160	6.5	43	40			Initials: —
25	22.7	7.3	160	6.5	43	40			
40	22.6	7.6	160	6.6	43	40			
53	22.5	7.0	155	6.5	43	40			
60	22.5	7.4	160	6.5	34	40			
74	22.5	6.8	160	6.5	43	40			
87	22.4	6.1	160	6.3	43	50			Water changed in all
90	22.5	5.4	158	6.3	43	40			beakers.
92	22.4	7.3	160	6.5	43	40			Time: 0555
118	22.4	7.0	160	6.5	34	40			Initials: UB
120	22.5	7.1	165	6.9	43	40			
123	22.4	7.2	160	6.6	34	40			
132	22.4	6.9	160	6.5	43	40			
135	22.5	6.7	160	6.5	43	40			
137	22.4	6.7	155	6.4	34	40			Water changed in all
146	22.4	6.6	155	6.4	34	40			beakers.
151	22.5	6.6	160	6.5	34	40			Time:
152	22.5	6.8	160	6.5	34	40			Initials:
163	22.4	7.1	160	6.5	43	40			

*Water quality measurements to be taken.

Day _____(/ /)

Beaker No.	Temp. (deg.C)	DO (ppm)	Cond. umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
11									Each beaker fed 1.0 ml
13									YTC suspension
16									Initials:
25									
40									
53									
60									
74									
87									Water changed in all
90									beakers.
92									Time:
118									Initials:
120									
123									
132									
135									
137									Water changed in all
146									beakers.
151									Time:
152									Initials:
163									

*Water quality measurements to be taken.

ANC08079
BZTO104(e)008079

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-15 Client Windward Environmental Investigator

DAY 28 TEST TERMINATION SHEET

Beaker No.	Number of survivors	Initials
1	10	UB
2	10	UB
3	8	UB
4	9	UB
5	9	UB
6	0	UB
7	10	UB
8	10	UB
9	0	UB
10	10	UB
11	9	UB
12	0	UB
13	10	UB
14	0	UB
15	10	UB
16	10	UB
17	9	UB
18	10	UB
19	1	UB
20	9	UB
21	10	UB
22	10	UB
23	0	UB
24	10	UB
25	10	UB
26	10	UB
27	10	UB
28	10	UB
29	9	UB
30	9	UB
31	9	
32	0	
33	0	
34	9	
35	9	
36	10	
37	10	
38	9	UB
39	9	
40	8	UB
41	10	
42	10	UB
43	10	
44	0	
45	9	UB

Beaker No.	Number of survivors	Initials
46	0	
47	9	
48	10	
49	10	UB
50	10	
51	10	UB
52	10	
53	10	UB
54	9	
55	10	
56	10	UB
57	10	BBP
58	0	UB
59	9	
60	9	
61	10	BBP
62	10	UB
63	9	BBP
64	10	UB
65	8	
66	10	
67	10	UB
68	10	
69	11	
70	10	
71	9	UB
72	0	
73	0	BBP
74	8	
75	8	UB
76	9	
77	10	BBP
78	8	BBP
79	10	BBP
80	9	UB
81	9	
82	10	UB
83	8	BBP
84	8	
85	10	UB
86	9	UB
87	0	
88	9	
89	9	UB
90	0	

ANC08080
BZTO104(e)008080

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-15 Client Windward Environmental Investigator _____

DAY 28 TEST TERMINATION SHEET

Beaker No.	Number of survivors	Initials
91	9	BBP
92	9	VB
93	9	WDM
94	9	GDL
95	10	VB
96	10	WDM
97	7	WDM
98	9	GDL
99	10	VB
100	10	WDM
101	10	BBP
102	9	VB
103	10	BBP
104	10	WDM
105	9	GDL
106	10	VB
107	9	BBP
108	9	WDM
109	Ø	GDL
110	8	VB
111	9	GDL
112	Ø	VB
113	7	VB
114	10	WDM
115	10	BBP
116	9	VB
117	9	VB
118	8	BBP
119	9	GDL
120	10	VB
121	11	WDM
122	0	VB
123	10	WDM
124	10	BBP
125	GDL 10	GDL
126	7	WDM
127	Ø	VB
128	9	BBP
129	7	VB
130	5	GDL
131	9	VB
132	7	WDM
133	9	VB
134	10	BBP
135	8	GDL

Beaker No.	Number of survivors	Initials
136	9	VB
137	10	VB
138	10	BBP
139	7	VB
140	8	GDL
141	9	BBP
142	Ø	VB
143	9	VB
144	10	VB
145	7	GDL
146	Ø	VB
147	8	VB
148	8	BBP
149	10	VB
150	6	VB
151	9	GDL
152	10	VB
153	8	VB
154	9	GDL
155	8	BBP
156	9	VB
157	10	VB
158	10	VB
159	Ø	VB
160	Ø	GDL
161	9	VB
162	10	BBP
163	9	GDL
164	BBP 10 11	BBP
165	8	VB
166	9	GDL
167	Ø	VB
168	9	VB
169		
170		
171		
172		
173		
174		
175		
176		
177		
178		
179		
180		

ANC08081
BZTO104(e)008081

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-15 Client Windward Environmental Investigator

WEIGHING DATA SHEET

Tare: Date 10-14-04 Oven temp (C.) 67 Drying time (hr.) 24 Initials JRF
Standard Weights: 10 mg: 10.005 100mg: 100.015

Final #1: Date 10-25-04 Oven temp (C.) 61 Drying time (hr.) 71 Initials JRF
Standard Weights: 10 mg: 10.006 100mg: 100.024

Final #2: Date 10-27-04 Oven temp (C.) 62 Drying time (hr.) 22 Initials JRF
Standard Weights: 10 mg: 10.006 100mg: 100.015

Equip. used: Oven Blue M #1 Balance Sartorius M3P
(Dry overnight at 60-90 degrees C)

Bkr. #	Pan #	Tare wt. (mg)	Total wt. (mg) 1	Total wt. (mg) 2	no. weighed	put into pans-initials	Comments
1	1	28.282	30.145	30.130	10		
2	2	29.748	31.887	31.876	10		
3	3	28.639	30.507	30.493	8		
4	4	28.690	30.725	30.712	9		
5	5	29.419	31.222	31.239	9		
6	6	28.614	—	—	0		
7	7	29.013	30.890	30.890	10		
8	8	28.940	30.857	30.854	10		
9	9	28.750	—	—	0		
10	10	27.533	29.537	29.535	10		
11	11	30.141	32.031	32.036	9		
12	12	29.505	—	—	0		
13	13	29.495	32.809	32.810	10		
14	14	27.387	—	—	0		
15	15	28.734	31.145	31.148	10		
16	16	29.143	31.856	31.868	10		
17	17	29.946	32.698	32.713	9		
18	18	27.683	30.381	30.389	10		
19	19	28.987	29.221	29.236	1		
20	20	26.937	29.362	29.377	9		
21	21	31.009	34.064	34.077	10		
22	22	31.418	34.226	34.246	10		
23	23	30.835	—	—	0		
24	24	28.239	30.160	30.172	10		
25	25	28.502	30.677	30.695	10		
26	26	29.242	31.606	31.629	10		
27	27	28.856	30.525	30.540	10		
28	28	28.995	31.050	31.057	10		
29	29	29.992	32.341	32.349	9		
30	30	28.450	30.638	30.646	8		
31	31	28.768	30.760	30.768	9		
32	32	29.965	—	—	0		
33	33	29.022	—	—	0		

ANC08082
BZTO104(e)008082

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-15 Client Windward Environmental Investigator

WEIGHING DATA SHEET

See page _____ for information on drying times and temperatures, standard weights,etc.

Bkr. #	Pan #	Tare wt. (mg)	Total wt. (mg) 1	Total wt. (mg) 2	no. weighed	put into pans-initials	Comments
34	34	29.283	31.181	31.159	9		
35	35	28.340	30.700	30.680	9		
36	36	30.082	33.210	33.188	10		
37	37	28.591	31.133	31.109	10		
38	38	28.346	30.443	30.410	9		
39	39	29.698	32.150	32.120	9		
40	40	30.132	32.344	32.317	8		
41	41	30.252	32.666	32.631	10		
42	42	31.053	33.601	33.574	10		
43	43	28.939	31.456	31.434	10		
44	44	30.224	—	—	0		
45	45	26.733	28.434	28.414	9		
46	46	29.427	—	—	0		
47	47	28.759	31.177	31.147	9		
48	48	28.816	31.379	31.347	10		
49	49	29.357	31.792	31.759	10		
50	50	32.474	35.216	35.150	10		
51	51	29.721	31.901	31.866	10		
52	52	27.854	30.672	30.635	10		
53	53	31.203	33.636	33.604	10		
54	54	28.475	30.879	30.849	9		
55	55	28.250	30.785	30.753	10		
56	56	30.508	33.167	33.144	10		
57	57	29.387	32.533	32.506	10		
58	58	30.186	—	—	0		
59	59	29.818	31.667	31.656	9		
60	60	28.019	30.044	30.029	9		
61	61	30.669	33.225	33.198	10		
62	62	30.443	33.272	33.250	10		
63	63	30.753	33.557	33.526	9		
64	64	29.367	31.416	31.392	10		
65	65	29.386	31.134	31.129	8		
66	66	28.671	31.132	31.136	10		
67	67	27.152	29.877	29.882	10		
68	68	28.451	30.736	30.738	10		
69	69	28.221	30.281	30.282	11		
70	70	29.456	31.389	31.396	10		
71	71	27.594	30.179	30.184	9		
72	72	28.637	—	—	0		
73	73	30.588	—	—	0		
74	74	30.465	32.549	32.556	8		
75	75	29.106	31.375	31.385	8		
76	76	28.626	31.527	31.537	9		

ANC08083
BZTO104(e)008083

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-15 Client Windward Environmental Investigator

WEIGHING DATA SHEET

See page _____ for information on drying times and temperatures, standard weights,etc.

Bkr. #	Pan #	Tare wt. (mg)	Total wt. (mg) 1	Total wt. (mg) 2	no. weighed	put into pans-initials	Comments
77	77	28.902	31.844	31.861	10		
78	78	29.292	31.183	31.190	8		
79	79	31.254	33.553	33.564	10		
80	80	28.115	30.322	30.331	9		
81	81	29.891	31.894	31.892	9		
82	82	29.314	32.018	32.016	10		
83	83	27.960	29.397	29.401	8		
84	84	30.147	32.113	32.111	8		
85	85	31.344	33.758	33.774	10		
86	86	30.130	31.836	31.834	9		
87	87	30.735	—	—	0		
88	88	28.574	30.758	30.752	9		
89	89	30.015	31.651	31.661	9		
90	90	29.957	—	—	0		
91	91	29.480	31.555	31.563	9		
92	92	28.060	30.445	30.454	9		
93	93	29.859	31.539	31.548	9		
94	94	29.200	31.561	31.577	9		
95	95	28.996	31.372	31.382	10		
96	96	27.244	30.818	30.829	10		
97	97	30.677	32.146	32.147	7		
98	98	28.886	30.370	30.370	9		
99	99	28.889	30.630	30.637	10		
100	100	29.221	31.776	31.776	10		
101	101	29.490	31.265	31.262	10		
102	102	28.923	31.641	31.649	9		
103	103	29.031	31.699	31.699	10		
104	104	29.221	31.661	31.660	10		
105	105	28.146	30.635	30.638	9		
106	106	28.137	31.247	31.242	10		
107	107	29.7835	31.782	31.782	9		
108	108	30.056	32.352	32.360	9		
109	109	29.102	—	—	0		
110	110	29.536	31.530	31.531	8		
111	111	26.794	29.149	29.137	9		
112	112	28.630	—	—	0		
113	113	29.844	31.703	31.683	7		
114	114	29.302	31.668	31.658	10		
115	115	28.772	30.347	30.346	10		
116	116	29.539	32.354	32.355	9		
117	117	29.190	32.019	32.018	9		
118	118	29.047	31.203	31.205	8		
119	119	27.330	29.968	29.967	9		

ANC08084
BZTO104(e)008084

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-15 Client Windward Environmental Investigator

WEIGHING DATA SHEET

See page _____ for information on drying times and temperatures, standard weights,etc.

Bkr. #	Pan #	Tare wt. (mg)	Total wt. (mg) 1	Total wt. (mg) 2	no. weighed	put into pans-initials	Comments
120	120	30.039	32.678	32.862	10		
121	121	29.519	32.251	32.251	11		
122	122	29.274	—	—	0		
123	123	28.128	30.950	30.948	10		
124	124	29.520	31.725	31.698	10		
125	125	30.327	31.929	31.933	10		
126	126	29.633	31.710	31.704	7		
127	127	29.508	—	—	0		
128	128	28.818	31.618	31.590	9		
129	129	29.353	31.855	31.830	7		
130	130	31.237	32.914	32.942	5		
131	131	28.243	30.166	30.190	9		
132	132	28.873	30.148	30.182	7		
133	133	29.762	32.287	32.316	9		
134	134	29.155	31.652	31.682	10		
135	135	28.485	30.235	30.256	8		
136	136	30.238	33.274	33.300	9		
137	137	29.235	32.019	32.045	10		
138	138	28.466	31.655	31.680	10		
139	139	29.005	31.218	31.250	7		
140	140	30.087	31.708	31.739	8		
141	141	29.512	32.411	→ Rec 11/24/04	9		
142	142	30.829	—	—	0		
143	143	28.328	29.917	29.945	9		
144	144	30.835	33.345	33.376	10		
145	145	28.049	29.788	29.815	7		
146	146	30.628	—	—	0		
147	147	29.657	32.000	32.030	8		
148	148	30.140	32.001	32.026	8		
149	149	30.147	32.142	32.169	10		
150	150	31.162	32.734	32.763	6		
151	151	28.837	30.918	30.949	9		
152	152	30.435	33.097	33.127	10		
153	153	29.366	31.961	31.993	8		
154	154	29.084	31.071	31.102	9		
155	155	30.527	31.839	31.865	8		
156	156	28.206	30.762	30.785	9		
157	157	28.308	30.530	30.551	10		
158	158	27.949	29.805	29.832	10		
159	159	28.385	—	—	0		
160	160	27.857	—	—	0		
161	161	29.142	31.064	31.096	9		
162	162	28.746	31.086	31.118	10		

ANC08085
BZTO104(e)008085

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-15 Client Windward Environmental Investigator

WEIGHING DATA SHEET

See page _____ for information on drying times and temperatures, standard weights,etc.

Bkr. #	Pan #	Tare wt. (mg)	Total wt. (mg) 1	Total wt. (mg) 2	no. weighed	put into pans-initials	Comments
163	163	29.493	32.745	32.785	9	AW	
164	164	30.898	33.161	33.189	11		
165	165	29.791	31.926	31.965	8		
166	166	28.503	30.672	30.703	9		
167	167	30.451	—	—	0		
168	168	28.443	30.463	30.501	9		
169	169						
170	170						
171	171						
172	172						
173	173						
174	174						
175	175						
176	176						
177	177						
178	178						
179	179						
180	180						
181	181						
182	182						
183	183						
184	184						
185	185						
186	186						
187	187						
188	188						
189	189						
190	190						
191	191						
192	192						
193	193						
194	194						
195	195						
196	196						
197	197						
198	198						
199	199						
200	200						
201	201						
202	202						
203	203						
204	204						
205	205						

ANC08086
BZTO104(e)008086

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c
HYALELLA AZTECA 14-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-15 Client Windward Environmental Investigator

ZERO-TIME WEIGHING DATA SHEET

Tare: Date 9-23-04 Oven temp (C.) 67 Drying time (hr.) 24 Initials GJL
Standard Weights: 10 mg: 10.005 100mg: 100.016

Final: Date 9-25-04 Oven temp (C.) 67 Drying time (hr.) 24 Initials GJL
Standard Weights: 10 mg: 10.006 100mg: 100.015

Equip. used: Oven: BLUE M #1 Balance: SARTORIUS M3P

(Dry overnight at 60-90 degrees C)

Pan #	Tare wt. (mg)	Total wt. (mg)	#weighed	Comments
1	29.649	30.313	20	
2	29.351	30.035	20	
3	29.770	30.326	20	
4	28.930	29.616	20	
5	31.044	31.690	20	

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Chesapeake Cultures

P.O. Box 507 Hayes, VA 23072 (804) 693-4046 (804)694-4704 fax
www.c-cultures.com
e-mail growfish@c-cultures.com

NAS

Shipment Information

Species Hyalella azteca Date 9/21/04

Age ~3-4 days 1.2-1.5 mm P.O. No. verbal

Quanitity 2,400+ Invoice No. 4832

Temperature 27°C Salinity — pH 7.94

Notes RECEIVED 9-22-04
-6S1

Biologist SJ Mane

Please inspect shipment and report any problem immediately

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DEVIATION FORM

Project Number 686 **Test Number &Description** 686-9, 686-11, 686-13, 686-15

Study Director or Project Manager G.J. Irissarri

Recorded By R.S. Caldwell **Date** 10-21-04

Description of Deviation (attach additional pages and/or documentation as needed)
Routine conductivity readings taken on 9-29-04 in Tests No. 686-9 686-11, 686-13, and 686-15 all were found to be 50-60 µmhos/cm higher than all other readings for these tests. All batches of test water prepared on or around 9-29-04 were found to have a normal level of conductivity. We conclude, therefore, that the 9-29-04 conductance readings in test containers are all erroneous, probably due to the calibration setting having been accidentally altered and unnoticed. Because test water batches were normal, it is concluded that the actual test container conductances were also normal.

Potential Impact on Project
None

Corrective Action
Test container conductance readings in Tests No. 686-9 686-11, 686-13, and 686-15 were invalidated and not used in the water quality summary statistics for these tests.

Anticipated Completion Date NA Actual Completion Date NA

Approval: Richard D. Caldwell Date: 10-20-04
SD/PM (R.S. Caldwell for G.J. Irissarri)

QA Representative Comments

Approval: Linda K. Hemstad Date: 10/21/04
QA Representative

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RAW DATA DIVIDER PAGE
Test No. 686-15

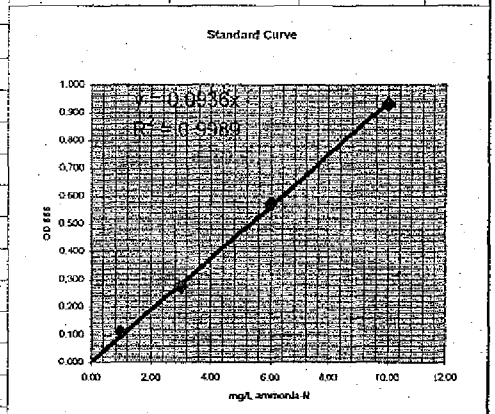
AMMONIA EXPOSURE BENCHSHEETS AND ANALYSIS

Total Ammonia-N in Sediment Pore Water: Computation Worksheet

Salicylate Method (SOP #5492)

Result

	Sample description	Dilution factor	OD_{655}	NH_3-N (mg/L)	pH	Salinity (ppt)
	Blank	-----	-----	-----		
	1.0 mg/L NH_3-N Std.	-----	0.108	1.00		
	3.0 mg/L NH_3-N Std.	-----	0.273	3.00		
	6.0 mg/L NH_3-N Std.	-----	0.573	6.00		
	10.0 mg/L NH_3-N Std.	-----	0.930	10.00		
	3.0 mg/L spike	----	0.289	3.09		
	3.0 mg/L spike dupl.	-----	0.282	3.01		
1.	9454F	5	0.180	9.61		
2.	9456F	5	0.103	5.50		
3.	9457F	5	0.131	7.00		
4.	9458F	5	0.100	5.34		
5.	9459F	5	—	— *		
6.	9460F	5	0.101	5.39		
7.	9461F	5	0.220	11.75		
8.	9462F	5	0.115	6.14		
9.	9463F	5	0.029	1.55		
10.	9464F	5	0.027	1.44		
11.	9465F	5	0.027	1.44		
12.	9466F	5	0.089	4.75		
13.	9467F	5	0.301	16.07		
14.	9468F	5	0.033	1.76		
15.	9469F	5	0.252	13.46		
16.	9470F	5	—	— *		
17.	9471F	5	0.070	3.74		
18.	9472F	5	0.087	4.65		
19.	9473F	5	0.122	6.52		
20.	9474F	5	0.212	11.32		
21.	9475F	5	0.252	13.46		
22.		5				
23.		5				
24.		5				
25.		5				
26.		5				
27.		5	* Insufficient sample for analysis			
28.		5				
29.		5				
30.		5				
31.		5				
32.		5				
33.		5				
34.		5				
35.		5				
36.		5				



Reporting limit (mg/L) =	0.5
Recovery (%) =	101.6
Precision (RPD) =	2.45
Sample volume (ml):	0.10
Dilution factor	5

Sample Set Description:

Proj. No.: 686

Bulk sediment porewaters

Batch 8

Analyst: RSC

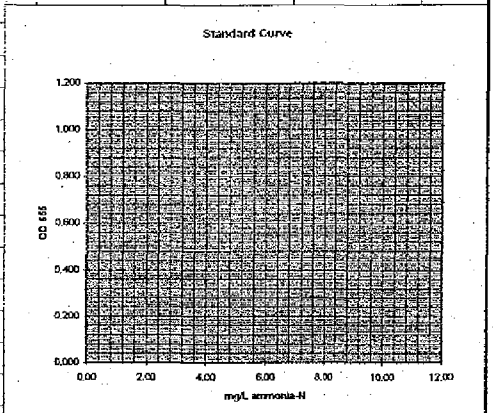
Date analysed: 9/23/2004

Total Ammonia-N in Sediment Pore Water: Computation Worksheet

Salicylate Method (SOP #5492)

Result

	Sample description	Dilution factor	OD655	NH3-N (mg/L)	pH	Salinity (ppt)
	Blank	-----	-----	-----		
	1.0 mg/L NH3-N Std.	-----	.104	1.00		
	3.0 mg/L NH3-N Std.	-----	.273	3.00		
	6.0 mg/L NH3-N Std.	-----	.573	6.00		
	10.0 mg/L NH3-N Std.	-----	.930	10.00		
	3.0 mg/L spike	-----	.289			
	3.0 mg/L spike dupl.	-----	.282			
1.	9454F	5	.190		6.5	
2.	9456F	5	.103		6.4	
3.	9457F	5	.131		6.4	
4.	9458F	5	.100		6.5	
5.	9459F	5	—		—	
6.	9460F	5	.108		6.4	
7.	9461F	5	.220		5.9	
8.	9462F	5	.115		6.2	
9.	9463F	5	.019		6.4	
10.	9464F	5	.023		6.2	
11.	9465F	5	.027		6.5	
12.	9466F	5	.084		6.5	
13.	9467F	5	.301		6.2	
14.	9468F	5	.033		6.5	
15.	9469F	5	.252		6.4	
16.	9470F	5	—		—	
17.	9471F	5	.070		6.5	
18.	9472F	5	.087		6.8	
19.	9473F	5	.122		6.0	
20.	9474F	5	.212		6.9	
21.	9475F	5	.252		6.8	
22.	~~9476F~~ Rep	5				
23.		5				
24.		5				
25.		5				
26.		5				
27.		5				
28.		5				
29.		5				
30.		5				
31.		5				
32.		5				
33.		5				
34.		5				
35.		5				
36.		5				



Reporting limit (mg/L) =	0.5
Recovery (%) =	#VALUE!
Precision (RPD) =	#VALUE!
Sample volume (ml):	0.10
Dilution factor	5

Sample Set Description:

Proj. No.: 686

Bulk sediment porewaters

Batch 8

Analyst:	RSC
Date analysed:	9/23/2004

Total Ammonia-N in Water: Computation Worksheet

Salicylate Method (SOP #5492)

Result

	Sample description	Dilution factor	OD655	NH_3-N (mg/L)
	Blank	-----	----	----
	1.0 mg/L NH_3-N Std.	-----	0.108	1.00
	3.0 mg/L NH_3-N Std.	-----	0.273	3.00
	6.0 mg/L NH_3-N Std.	-----	0.573	6.00
	10.0 mg/L NH_3-N Std.	-----	0.930	10.00
	3.0 mg/L spike	-----	0.289	3.09
	3.0 mg/L spike dupl.	-----	0.282	3.01
1.	11	1	0.010	0.11
2.	13	1	0.024	0.26
3.	16	1	0.062	0.66
4.	25	1	0.052	0.56
5.	40	1	0.081	0.87
6.	53	1	0.166	1.77
7.	60	1	0.039	0.42
8.	74	1	0.450	4.81
9.	87	1	0.252	2.69
10.	90	1	0.250	2.67
11.	92	1	0.090	0.96
12.	118	1	0.090	0.96
13.	120	1	0.022	0.23
14.	123	1	0.017	0.18
15.	132	1	0.090	0.96
16.	135	1	0.100	1.07
17.	137	1	0.212	2.26
18.	146	1	0.172	1.84
19.	151	1	0.192	2.05
20.	152	1	0.120	1.28
21.	163	1	0.027	0.29
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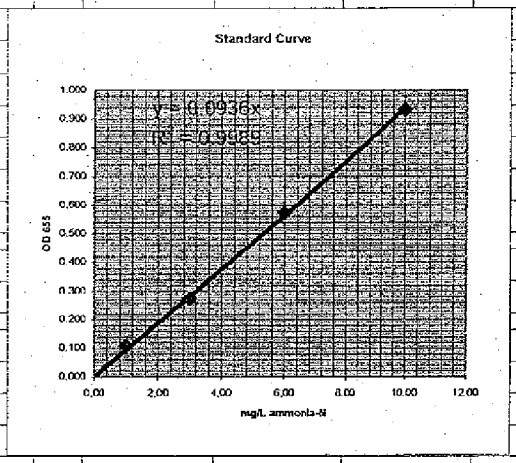

Reporting limit (mg/L) =	0.1
Recovery (%) =	101.6
Precision (RPD) =	2.45
Sample volume (ml):	0.50
Dilution factor	1

Sample Set Description:

Test No.:	686-15
Test Day:	0 (9-24-04)
Species:	*Hyalella*
Overlying water	
Analyst:	RSC
Date analysed:	9/24/2004

Total Ammonia-N in Water: Computation Worksheet

Salicylate Method (SOP #5492)

Result

	Sample description	Dilution factor	OD655	NH_3-N (mg/L)
	Blank	-----	----	----
	1.0 mg/L NH_3-N Std.	-----	.105	1.00
	3.0 mg/L NH_3-N Std.	-----	.273	3.00
	6.0 mg/L NH_3-N Std.	-----	.573	6.00
	10.0 mg/L NH_3-N Std.	-----	.930	10.00
	3.0 mg/L spike	-----	.289	
	3.0 mg/L spike dupl.	-----	.282	
1.	11	1	.010	
2.	13	1	.024	
3.	16	1	.062	
4.	25	1	.052	
5.	40	1	.091	
6.	53	1	.166	
7.	60	1	.039	
8.	74	1	.050	
9.	87	1	.252	
10.	90	1	.250	
11.	92	1	.010	
12.	118	1	.090	
13.	120	1	.022	
14.	123	1	.017	
15.	132	1	.040	
16.	135	1	.100	
17.	137	1	.212	
18.	146	1	.172	
19.	151	1	.192	
20.	152	1	.120	
21.	163	1	.027	
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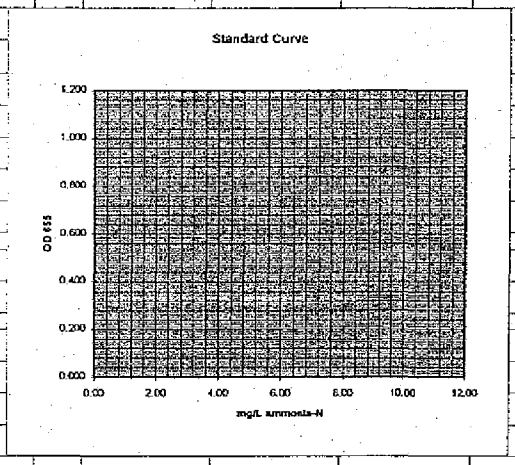

Reporting limit (mg/L) =	0.1
Recovery (%) =	#VALUE!
Precision (RPD) =	#VALUE!
Sample volume (ml):	0.50
Dilution factor	1

Sample Set Description:

Test No.:	686-15
Test Day:	0 (9-24-04)
Species:	*Hyalella*
Overlying water	
Analyst:	RSC
Date analysed:	9/24/2004

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Total Ammonia-N in Water: Computation Worksheet

Salicylate Method (SOP #5492)

Result

	Sample description	Dilution factor	OD_{655}	NH_3-N (mg/L)
	Blank	-----	-----	-----
	1.0 mg/L NH_3-N Std.	-----	0.167	1.00
	3.0 mg/L NH_3-N Std.	-----	0.312	3.00
	6.0 mg/L NH_3-N Std.	-----	0.660	6.00
	10.0 mg/L NH_3-N Std.	-----	1.100	10.00
	3.0 mg/L spike	-----	0.316	2.87
	3.0 mg/L spike dupl.	-----	0.312	2.83
1.	11	1	0.007	ND
2.	13	1	0.001	ND
3.	16	1	0.012	0.11
4.	25	1	0.012	0.11
5.	40	1	0.009	ND
6.	53	1	0.008	ND
7.	60	1	0.007	ND
8.	74	1	0.007	ND
9.	87	1	0.010	ND
10.	90	1	0.008	ND
11.	92	1	0.008	ND
12.	118	1	0.009	ND
13.	120	1	0.007	ND
14.	123	1	0.018	0.16
15.	132	1	0.008	ND
16.	135	1	0.001	ND
17.	137	1	0.006	ND
18.	146	1	0.009	ND
19.	151	1	0.007	ND
20.	152	1	0.005	ND
21.	163	1	0.008	ND
22.				
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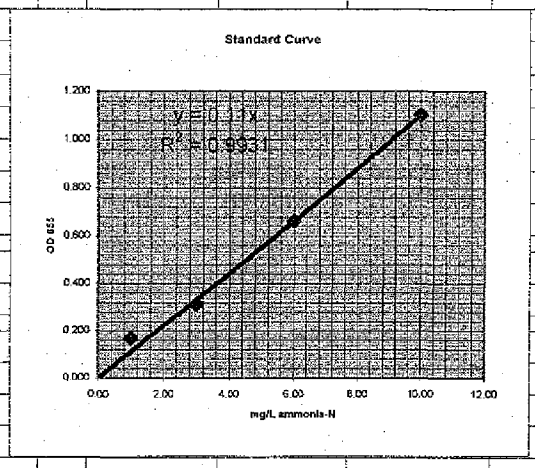

Reporting limit (mg/L) =	0.1
Recovery (%) =	94.9
Precision (RPD) =	1.27
Sample volume (ml):	0.50
Dilution factor	1

Sample Set Description:

Test No.:	686-15
Test Day:	28 (10-22-04)
Species:	*Hyalella*
Overlying water	
Analyst:	RSC
Date analysed:	10/30/2004

Total Ammonia-N in Water: Computation Worksheet

Salicylate Method (SOP #5492)

Result

	Sample description	Dilution factor	OD655	NH_3-N (mg/L)
	Blank	-----	----	----
	1.0 mg/L NH_3-N Std.	-----	.167	1.00
	3.0 mg/L NH_3-N Std.	-----	.512	3.00
	6.0 mg/L NH_3-N Std.	-----	.960	6.00
	10.0 mg/L NH_3-N Std.	-----	1.710	10.00
	3.0 mg/L spike	-----	.316	
	3.0 mg/L spike dupl.	-----	.312	
1.	11	1	.007	
2.	13	1	.007	
3.	16	1	.012	
4.	25	1	.012	
5.	40	1	.009	
6.	53	1	.008	
7.	60	1	.007	
8.	74	1	.007	
9.	87	1	.010	
10.	90	1	.008	
11.	92	1	.008	
12.	118	1	.009	
13.	120	1	.007	
14.	123	1	.018	
15.	132	1	.008	
16.	135	1	.001	
17.	137	1	.006	
18.	146	1	.009	
19.	151	1	.007	
20.	152	1	.005	
21.	163	1	.008	
22.				
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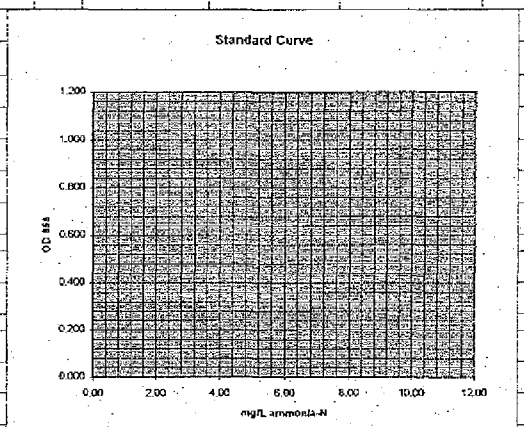

Reporting limit (mg/L) =	0.1
Recovery (%) =	#VALUE!
Precision (RPD) =	#VALUE!
Sample volume (ml):	0.50
Dilution factor	1

Sample Set Description:

Test No.:	686-15
Test Day:	28 (10-22-04)
Species:	*Hyalella*
Overlying water	
Analyst:	RSC
Date analysed:	10/30/2004

TEST DATA ANALYSIS RECORDS

Test Number: P686-15

Freshwater Sediment Test
28-day Hyalella azteca
Randomization Chart

BKR	NAS SMPL	CLIENT DESCRIP	REPL	
105	9454F	Control	1	
20	9454F	Control	2	
93	9454F	Control	3	
26	9454F	Control	4	
62	9454F	Control	5	
56	9454F	Control	6	
47	9454F	Control	7	
120	9454F	Control	8	wq replicate
149	9456F	LW2-G301	1	
5	9456F	LW2-G301	2	
134	9456F	LW2-G301	3	
49	9456F	LW2-G301	4	
28	9456F	LW2-G301	5	
139	9456F	LW2-G301	6	
114	9456F	LW2-G301	7	
135	9456F	LW2-G301	8	wq replicate
19	9457F	LW2-G302	1	
6	9457F	LW2-G302	2	
159	9457F	LW2-G302	3	
12	9457F	LW2-G302	4	
127	9457F	LW2-G302	5	
33	9457F	LW2-G302	6	
72	9457F	LW2-G302	7	
146	9457F	LW2-G302	8	wq replicate
113	9458F	LW2-G308	1	
78	9458F	LW2-G308	2	
83	9458F	LW2-G308	3	
45	9458F	LW2-G308	4	
111	9458F	LW2-G308	5	
145	9458F	LW2-G308	6	
84	9458F	LW2-G308	7	
132	9458F	LW2-G308	8	wq replicate
109	9459F	LW2-G288	1	
9	9459F	LW2-G288	2	
14	9459F	LW2-G288	3	
160	9459F	LW2-G288	4	
112	9459F	LW2-G288	5	
32	9459F	LW2-G288	6	
167	9459F	LW2-G288	7	
87	9459F	LW2-G288	8	wq replicate
130	9460F	LW2-G292	1	
67	9460F	LW2-G292	2	
129	9460F	LW2-G292	3	
76	9460F	LW2-G292	4	
164	9460F	LW2-G292	5	
91	9460F	LW2-G292	6	
158	9460F	LW2-G292	7	
152	9460F	LW2-G292	8	wq replicate
142	9461F	LW2-G298	1	
44	9461F	LW2-G298	2	
46	9461F	LW2-G298	3	
122	9461F	LW2-G298	4	
58	9461F	LW2-G298	5	
23	9461F	LW2-G298	6	
73	9461F	LW2-G298	7	
90	9461F	LW2-G298	8	wq replicate

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Test Number: P686-15

Freshwater Sediment Test
28-day Hyalella azteca

BKR	NAS SMPL	CLIENT DESCRIP	REPL	
2	9462F	LW2-G315	1	
27	9462F	LW2-G315	2	
38	9462F	LW2-G315	3	
150	9462F	LW2-G315	4	
162	9462F	LW2-G315	5	
108	9462F	LW2-G315	6	
70	9462F	LW2-G315	7	
53	9462F	LW2-G315	8	wq replicate
52	9463F	LW2-G316	1	
57	9463F	LW2-G316	2	
77	9463F	LW2-G316	3	
165	9463F	LW2-G316	4	
156	9463F	LW2-G316	5	
104	9463F	LW2-G316	6	
55	9463F	LW2-G316	7	
123	9463F	LW2-G316	8	wq replicate
31	9464F	LW2-G260	1	
138	9464F	LW2-G260	2	
96	9464F	LW2-G260	3	
21	9464F	LW2-G260	4	
136	9464F	LW2-G260	5	
15	9464F	LW2-G260	6	
75	9464F	LW2-G260	7	
13	9464F	LW2-G260	8	wq replicate
64	9465F	LW2-G268	1	
8	9465F	LW2-G268	2	
4	9465F	LW2-G268	3	
95	9465F	LW2-G268	4	
161	9465F	LW2-G268	5	
59	9465F	LW2-G268	6	
140	9465F	LW2-G268	7	
11	9465F	LW2-G268	8	wq replicate
82	9466F	LW2-G318	1	
144	9466F	LW2-G318	2	
7	9466F	LW2-G318	3	
143	9466F	LW2-G318	4	
124	9466F	LW2-G318	5	
43	9466F	LW2-G318	6	
48	9466F	LW2-G318	7	
16	9466F	LW2-G318	8	wq replicate
99	9467F	LW2-G320	1	
157	9467F	LW2-G320	2	
24	9467F	LW2-G320	3	
89	9467F	LW2-G320	4	
148	9467F	LW2-G320	5	
29	9467F	LW2-G320	6	
154	9467F	LW2-G320	7	
137	9467F	LW2-G320	8	wq replicate
81	9468F	LW2-G323	1	
39	9468F	LW2-G323	2	
36	9468F	LW2-G323	3	
126	9468F	LW2-G323	4	
117	9468F	LW2-G323	5	
102	9468F	LW2-G323	6	
153	9468F	LW2-G323	7	
92	9468F	LW2-G323	8	wq replicate

ANC08099
BZTO104(e)008099

Test Number: P686-15

Freshwater Sediment Test
28-day Hyalella azteca

BKR	NAS SMPL	CLIENT DESCRIP	REPL	
18	9469F	LW2-G327	1	
86	9469F	LW2-G327	2	
110	9469F	LW2-G327	3	
155	9469F	LW2-G327	4	
69	9469F	LW2-G327	5	
34	9469F	LW2-G327	6	
54	9469F	LW2-G327	7	
74	9469F	LW2-G327	8	wq replicate
98	9470F	LW2-G331	1	
17	9470F	LW2-G331	2	
85	9470F	LW2-G331	3	
128	9470F	LW2-G331	4	
37	9470F	LW2-G331	5	
35	9470F	LW2-G331	6	
141	9470F	LW2-G331	7	
163	9470F	LW2-G331	8	wq replicate
100	9471F	LW2-G333	1	
121	9471F	LW2-G333	2	
106	9471F	LW2-G333	3	
41	9471F	LW2-G333	4	
116	9471F	LW2-G333	5	
103	9471F	LW2-G333	6	
63	9471F	LW2-G333	7	
25	9471F	LW2-G333	8	wq replicate
88	9472F	LW2-G335	1	
3	9472F	LW2-G335	2	
50	9472F	LW2-G335	3	
133	9472F	LW2-G335	4	
65	9472F	LW2-G335	5	
125	9472F	LW2-G335	6	
68	9472F	LW2-G335	7	
60	9472F	LW2-G335	8	wq replicate
80	9473F	LW2-G336	1	
10	9473F	LW2-G336	2	
101	9473F	LW2-G336	3	
131	9473F	LW2-G336	4	
115	9473F	LW2-G336	5	
30	9473F	LW2-G336	6	
94	9473F	LW2-G336	7	
40	9473F	LW2-G336	8	wq replicate
42	9474F	LW2-G348	1	
166	9474F	LW2-G348	2	
71	9474F	LW2-G348	3	
119	9474F	LW2-G348	4	
51	9474F	LW2-G348	5	
147	9474F	LW2-G348	6	
79	9474F	LW2-G348	7	
118	9474F	LW2-G348	8	wq replicate
1	9475F	LW2-G350	1	
107	9475F	LW2-G350	2	
168	9475F	LW2-G350	3	
97	9475F	LW2-G350	4	
66	9475F	LW2-G350	5	
22	9475F	LW2-G350	6	
61	9475F	LW2-G350	7	
151	9475F	LW2-G350	8	wq replicate

ANC08100
BZTO104(e)008100

Test No.: 686-15

Freshwater.Sediment Test
28-day Hyalella azteca

Endpoints Data Entry and Calculations File

BKR=beaker number
INIT=initial number
SURV=number survivors
MORT=number dead=INIT-SURV
PSURV=%survival=100(SURV/INIT)
PMORT=%mortality=100(MORT/INIT)

TARE WT= ashed weight of pan used for that replicate at test termination (mg), or
dry weight of pan if ash-free dry weight is not an endpoint
WT COUNT= number of test organisms weighed at test end
DRY WT= TARE WT + dry weight of test organisms recovered at test termination (mg)
TWT=total biomass=DRY WT-TARE WT
WT=average individual biomass=TWT/WT COUNT

INITIAL WEIGHT

pan #	tare wt (mg)	final wt (mg)	wt count	avg. wt/ organism
1	29.649	30.313	20	0.033
2	29.351	30.035	20	0.034
3	29.770	30.326	20	0.028
4	28.930	29.616	20	0.034
5	31.044	31.690	20	0.032

INDEX	BKR	NAS SMPL	CLIENT DESCRIP	REPL		INIT	SURV	MORT	PSURV	PMORT	TARE WT (mg)	WT COUNT	DRY WT (mg)	TWT (mg)	WT (mg)
1	105	9454F	Control	1		10	9	1	90.0	10.0	28.146	9	30.638	2.49	0.28
2	20	9454F	Control	2		10	9	1	90.0	10.0	26.937	9	29.377	2.44	0.27
3	93	9454F	Control	3		10	9	1	90.0	10.0	29.859	9	31.548	1.69	0.19
4	26	9454F	Control	4		10	10	0	100.0	0.0	29.242	10	31.629	2.39	0.24
5	62	9454F	Control	5		10	10	0	100.0	0.0	30.443	10	33.250	2.81	0.28
6	56	9454F	Control	6		10	10	0	100.0	0.0	30.508	10	33.144	2.64	0.26
7	47	9454F	Control	7		10	9	1	90.0	10.0	28.759	9	31.147	2.39	0.27
8	120	9454F	Control	8	wq replicate	10	10	0	100.0	0.0	30.039	10	32.862	2.82	0.28
9	149	9456F	LW2-G301	1		10	10	0	100.0	0.0	30.147	10	32.169	2.02	0.20
10	5	9456F	LW2-G301	2		10	9	1	90.0	10.0	29.419	9	31.239	1.82	0.20
11	134	9456F	LW2-G301	3		10	10	0	100.0	0.0	29.155	10	31.682	2.53	0.25
12	49	9456F	LW2-G301	4		10	10	0	100.0	0.0	29.357	10	31.759	2.40	0.24
13	28	9456F	LW2-G301	5		10	10	0	100.0	0.0	28.995	10	31.057	2.06	0.21
14	139	9456F	LW2-G301	6		10	7	3	70.0	30.0	29.005	7	31.250	2.25	0.32
15	114	9456F	LW2-G301	7		10	10	0	100.0	0.0	29.302	10	31.658	2.36	0.24
16	135	9456F	LW2-G301	8	wq replicate	10	8	2	80.0	20.0	28.485	8	30.256	1.77	0.22
17	19	9457F	LW2-G302	1		10	1	9	10.0	90.0	28.987	1	29.236	0.25	0.25
18	6	9457F	LW2-G302	2		10	0	10	0.0	100.0	28.614	0			
19	159	9457F	LW2-G302	3		10	0	10	0.0	100.0	28.385	0			
20	12	9457F	LW2-G302	4		10	0	10	0.0	100.0	29.505	0			
21	127	9457F	LW2-G302	5		10	0	10	0.0	100.0	29.508	0			
22	33	9457F	LW2-G302	6		10	0	10	0.0	100.0	29.022	0			
23	72	9457F	LW2-G302	7		10	0	10	0.0	100.0	28.637	0			
24	146	9457F	LW2-G302	8	wq replicate	10	0	10	0.0	100.0	30.628	0			
25	113	9458F	LW2-G308	1		10	7	3	70.0	30.0	29.844	7	31.683	1.84	0.26
26	78	9458F	LW2-G308	2		10	8	2	80.0	20.0	29.292	8	31.190	1.90	0.24
27	83	9458F	LW2-G308	3		10	8	2	80.0	20.0	27.960	8	29.401	1.44	0.18
28	45	9458F	LW2-G308	4		10	9	1	90.0	10.0	26.733	9	28.414	1.68	0.19
29	111	9458F	LW2-G308	5		10	9	1	90.0	10.0	26.794	9	29.137	2.34	0.26
30	145	9458F	LW2-G308	6		10	7	3	70.0	30.0	28.049	7	29.815	1.77	0.25
31	84	9458F	LW2-G308	7		10	8	2	80.0	20.0	30.147	8	32.111	1.96	0.25
32	132	9458F	LW2-G308	8	wq replicate	10	7	3	70.0	30.0	28.873	7	30.182	1.31	0.19

	SURV	MORT	PSURV	PMORT	WT
Mean	9.5	0.5	95.0	5.0	0.26
SD	0.5	0.5	5.3	5.3	0.03
n	8	8	8	8	8
Mean	9.3	0.8	92.5	7.5	0.24
SD	1.2	1.2	11.6	11.6	0.04
n	8	8	8	8	8
Mean	0.1	9.9	1.3	98.8	0.25
SD	0.4	0.4	3.5	3.5	
n	8	8	8	8	1
Mean	7.9	2.1	78.8	21.3	0.23
SD	0.8	0.8	8.3	8.3	0.04
n	8	8	8	8	8

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ANC08101
BZTO104(e)008101

Test No.: 686-15

Freshwater Sediment Test
28-day Hyalella azteca

INDEX	BKR	NAS SMPL	CLIENT DESCRIP	REPL		INIT	SURV	MORT	PSURV	PMORT	TARE WT (mg)	WT COUNT	DRY WT (mg)	TWT (mg)	WT (mg)		SURV	MORT	PSURV	PMORT	WT
33	109	9459F	LW2-G288	1		10	0	10	0.0	100.0	29.102	0									
34	9	9459F	LW2-G288	2		10	0	10	0.0	100.0	28.750	0									
35	14	9459F	LW2-G288	3		10	0	10	0.0	100.0	27.387	0									
36	160	9459F	LW2-G288	4		10	0	10	0.0	100.0	27.857	0									
37	112	9459F	LW2-G288	5		10	0	10	0.0	100.0	28.630	0				Mean	0.0	10.0	0.0	100.0	
38	32	9459F	LW2-G288	6		10	0	10	0.0	100.0	29.965	0				SD	0.0	0.0	0.0	0.0	
39	167	9459F	LW2-G288	7		10	0	10	0.0	100.0	30.451	0				n	8	8	8	8	0
40	87	9459F	LW2-G288	8	wq replicate	10	0	10	0.0	100.0	30.735	0									
41	130	9460F	LW2-G292	1		10	5	5	50.0	50.0	31.237	5	32.942	1.71	0.34						
42	67	9460F	LW2-G292	2		10	10	0	100.0	0.0	27.152	10	29.882	2.73	0.27						
43	129	9460F	LW2-G292	3		10	7	3	70.0	30.0	29.353	7	31.830	2.48	0.35						
44	76	9460F	LW2-G292	4		10	9	1	90.0	10.0	28.626	9	31.537	2.91	0.32						
45	164	9460F	LW2-G292	5		11	11	0	100.0	0.0	30.898	11	33.189	2.29	0.21	Mean	8.9	1.3	87.5	12.5	0.27
46	91	9460F	LW2-G292	6		10	9	1	90.0	10.0	29.460	9	31.563	2.08	0.23	SD	2.0	1.8	18.3	18.3	0.06
47	158	9460F	LW2-G292	7		10	10	0	100.0	0.0	27.949	10	29.832	1.88	0.19	n	8	8	8	8	8
48	152	9460F	LW2-G292	8	wq replicate	10	10	0	100.0	0.0	30.435	10	33.127	2.69	0.27						
49	142	9461F	LW2-G298	1		10	0	10	0.0	100.0	30.829	0									
50	44	9461F	LW2-G298	2		10	0	10	0.0	100.0	30.224	0									
51	46	9461F	LW2-G298	3		10	0	10	0.0	100.0	29.427	0									
52	122	9461F	LW2-G298	4		10	0	10	0.0	100.0	29.274	0									
53	58	9461F	LW2-G298	5		10	0	10	0.0	100.0	30.186	0				Mean	0.0	10.0	0.0	100.0	
54	23	9461F	LW2-G298	6		10	0	10	0.0	100.0	30.835	0				SD	0.0	0.0	0.0	0.0	
55	73	9461F	LW2-G298	7		10	0	10	0.0	100.0	30.588	0				n	8	8	8	8	0
56	90	9461F	LW2-G298	8	wq replicate	10	0	10	0.0	100.0	29.957	0									
57	2	9462F	LW2-G315	1		10	10	0	100.0	0.0	29.748	10	31.876	2.13	0.21						
58	27	9462F	LW2-G315	2		10	10	0	100.0	0.0	28.856	10	30.540	1.68	0.17						
59	38	9462F	LW2-G315	3		10	9	1	90.0	10.0	28.346	9	30.410	2.06	0.23						
60	150	9462F	LW2-G315	4		10	6	4	60.0	40.0	31.162	6	32.763	1.60	0.27						
61	162	9462F	LW2-G315	5		10	10	0	100.0	0.0	28.746	10	31.118	2.37	0.24	Mean	9.3	0.8	92.5	7.5	0.23
62	108	9462F	LW2-G315	6		10	9	1	90.0	10.0	30.056	9	32.360	2.30	0.26	SD	1.4	1.4	13.9	13.9	0.03
63	70	9462F	LW2-G315	7		10	10	0	100.0	0.0	29.456	10	31.396	1.94	0.19	n	8	8	8	8	8
64	53	9462F	LW2-G315	8	wq replicate	10	10	0	100.0	0.0	31.203	10	33.604	2.40	0.24						
65	52	9463F	LW2-G316	1		10	10	0	100.0	0.0	27.854	10	30.635	2.78	0.28						
66	57	9463F	LW2-G316	2		10	10	0	100.0	0.0	29.387	10	32.506	3.12	0.31						
67	77	9463F	LW2-G316	3		10	10	0	100.0	0.0	28.902	10	31.861	2.96	0.30						
68	165	9463F	LW2-G316	4		10	8	2	80.0	20.0	29.791	8	31.965	2.17	0.27						
69	156	9463F	LW2-G316	5		10	9	1	90.0	10.0	28.206	9	30.785	2.58	0.29	Mean	9.6	0.4	96.3	3.8	0.28
70	104	9463F	LW2-G316	6		10	10	0	100.0	0.0	29.221	10	31.660	2.44	0.24	SD	0.7	0.7	7.4	7.4	0.02
71	55	9463F	LW2-G316	7		10	10	0	100.0	0.0	28.250	10	30.753	2.50	0.25	n	8	8	8	8	8
72	123	9463F	LW2-G316	8	wq replicate	10	10	0	100.0	0.0	28.128	10	30.948	2.82	0.28						

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ANC08102
BZTO104(e)008102

Test No.: 686-15

Freshwater Sediment Test
28-day Hyalella azteca

INDEX	BKR	NAS SMPL	CLIENT DESCRIP	REPL		INIT	SURV	MORT	PSURV	PMORT	TARE WT (mg)	WT COUNT	DRY WT (mg)	TWT (mg)	WT (mg)			SURV	MORT	PSURV	PMORT	WT
73	31	9464F	LW2-G260	1		10	9	1	90.0	10.0	28.768	9	30.768	2.00	0.22							
74	138	9464F	LW2-G260	2		10	10	0	100.0	0.0	28.466	10	31.680	3.21	0.32							
75	96	9464F	LW2-G260	3		10	10	0	100.0	0.0	27.244	10	30.829	3.59	0.36							
76	21	9464F	LW2-G260	4		10	10	0	100.0	0.0	31.009	10	34.077	3.07	0.31							
77	136	9464F	LW2-G260	5		10	9	1	90.0	10.0	30.238	9	33.300	3.06	0.34		Mean	9.5	0.5	95.0	5.0	0.30
78	15	9464F	LW2-G260	6		10	10	0	100.0	0.0	28.734	10	31.148	2.41	0.24		SD	0.8	0.8	7.6	7.6	0.05
79	75	9464F	LW2-G260	7		10	8	2	80.0	20.0	29.106	8	31.385	2.28	0.28		n	8	8	8	8	8
80	13	9464F	LW2-G260	8	wq replicate	10	10	0	100.0	0.0	29.495	10	32.810	3.32	0.33							
81	64	9465F	LW2-G268	1		10	10	0	100.0	0.0	29.367	10	31.392	2.03	0.20							
82	8	9465F	LW2-G268	2		10	10	0	100.0	0.0	28.940	10	30.854	1.91	0.19							
83	4	9465F	LW2-G268	3		10	9	1	90.0	10.0	28.690	9	30.712	2.02	0.22							
84	95	9465F	LW2-G268	4		10	10	0	100.0	0.0	28.996	10	31.382	2.39	0.24							
85	161	9465F	LW2-G268	5		10	9	1	90.0	10.0	29.142	9	31.096	1.95	0.22		Mean	9.3	0.8	92.5	7.5	0.21
86	59	9465F	LW2-G268	6		10	9	1	90.0	10.0	29.818	9	31.656	1.84	0.20		SD	0.7	0.7	7.1	7.1	0.01
87	140	9465F	LW2-G268	7		10	8	2	80.0	20.0	30.087	8	31.739	1.65	0.21		n	8	8	8	8	8
88	11	9465F	LW2-G268	8	wq replicate	10	9	1	90.0	10.0	30.141	9	32.036	1.90	0.21							
89	82	9466F	LW2-G318	1		10	10	0	100.0	0.0	29.314	10	32.016	2.70	0.27							
90	144	9466F	LW2-G318	2		10	10	0	100.0	0.0	30.835	10	33.376	2.54	0.25							
91	7	9466F	LW2-G318	3		10	10	0	100.0	0.0	29.013	10	30.890	1.88	0.19							
92	143	9466F	LW2-G318	4		10	9	1	90.0	10.0	28.328	9	29.945	1.62	0.18							
93	124	9466F	LW2-G318	5		10	10	0	100.0	0.0	29.520	10	31.698	2.18	0.22		Mean	9.9	0.1	98.8	1.3	0.24
94	43	9466F	LW2-G318	6		10	10	0	100.0	0.0	28.939	10	31.434	2.50	0.25		SD	0.4	0.4	3.5	3.5	0.04
95	48	9466F	LW2-G318	7		10	10	0	100.0	0.0	28.816	10	31.347	2.53	0.25		n	8	8	8	8	8
96	16	9466F	LW2-G318	8	wq replicate	10	10	0	100.0	0.0	29.143	10	31.868	2.73	0.27							
97	99	9467F	LW2-G320	1		10	10	0	100.0	0.0	28.889	10	30.637	1.75	0.17							
98	157	9467F	LW2-G320	2		10	10	0	100.0	0.0	28.308	10	30.551	2.24	0.22							
99	24	9467F	LW2-G320	3		10	10	0	100.0	0.0	28.239	10	30.172	1.93	0.19							
100	89	9467F	LW2-G320	4		10	9	1	90.0	10.0	30.015	9	31.661	1.65	0.18							
101	148	9467F	LW2-G320	5		10	8	2	80.0	20.0	30.140	8	32.026	1.89	0.24		Mean	9.4	0.6	93.8	6.3	0.22
102	29	9467F	LW2-G320	6		10	9	1	90.0	10.0	29.992	9	32.349	2.36	0.26		SD	0.7	0.7	7.4	7.4	0.04
103	154	9467F	LW2-G320	7		10	9	1	90.0	10.0	29.084	9	31.102	2.02	0.22		n	8	8	8	8	8
104	137	9467F	LW2-G320	8	wq replicate	10	10	0	100.0	0.0	29.235	10	32.045	2.81	0.28							
105	81	9468F	LW2-G323	1		10	9	1	90.0	10.0	29.891	9	31.892	2.00	0.22							
106	39	9468F	LW2-G323	2		10	9	1	90.0	10.0	29.698	9	32.120	2.42	0.27							
107	36	9468F	LW2-G323	3		10	10	0	100.0	0.0	30.082	10	33.188	3.11	0.31							
108	126	9468F	LW2-G323	4		10	7	3	70.0	30.0	29.633	7	31.704	2.07	0.30							
109	117	9468F	LW2-G323	5		10	9	1	90.0	10.0	29.190	9	32.018	2.83	0.31		Mean	8.8	1.3	87.5	12.5	0.29
110	102	9468F	LW2-G323	6		10	9	1	90.0	10.0	28.923	9	31.649	2.73	0.30		SD	0.9	0.9	8.9	8.9	0.03
111	153	9468F	LW2-G323	7		10	8	2	80.0	20.0	29.366	8	31.993	2.63	0.33		n	8	8	8	8	8
112	92	9468F	LW2-G323	8	wq replicate	10	9	1	90.0	10.0	28.060	9	30.454	2.39	0.27							

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ANC08103
BZTO104(e)008103

Test No.: 686-15

Freshwater Sediment Test
28-day Hyalella azteca

INDEX	BKR	NAS SMPL	CLIENT DESCRIP	REPL		INIT	SURV	MORT	PSURV	PMORT	TARE WT (mg)	WT COUNT	DRY WT (mg)	TWT (mg)	WT (mg)		SURV	MORT	PSURV	PMORT	WT
113	18	9469F	LW2-G327	1		10	10	0	100.0	0.0	27.683	10	30.389	2.71	0.27						
114	86	9469F	LW2-G327	2		10	9	1	90.0	10.0	30.130	9	31.834	1.70	0.19						
115	110	9469F	LW2-G327	3		10	8	2	80.0	20.0	29.536	8	31.531	2.00	0.25						
116	155	9469F	LW2-G327	4		10	8	2	80.0	20.0	30.527	8	31.865	1.34	0.17						
117	69	9469F	LW2-G327	5		11	11	0	100.0	0.0	28.221	11	30.282	2.08	0.19	Mean	9.0	1.1	88.8	11.3	0.22
118	34	9469F	LW2-G327	6		10	9	1	90.0	10.0	29.283	9	31.159	1.88	0.21	SD	1.1	0.8	8.3	8.3	0.04
119	54	9469F	LW2-G327	7		10	9	1	90.0	10.0	28.475	9	30.849	2.37	0.26	n	8	8	8	8	8
120	74	9469F	LW2-G327	8	wq replicate	10	8	2	80.0	20.0	30.465	8	32.556	2.09	0.26						
121	98	9470F	LW2-G331	1		10	9	1	90.0	10.0	28.886	9	30.370	1.48	0.16						
122	17	9470F	LW2-G331	2		10	9	1	90.0	10.0	29.946	9	32.713	2.77	0.31						
123	85	9470F	LW2-G331	3		10	10	0	100.0	0.0	31.344	10	33.774	2.43	0.24						
124	128	9470F	LW2-G331	4		10	9	1	90.0	10.0	28.818	9	31.590	2.77	0.31						
125	37	9470F	LW2-G331	5		10	10	0	100.0	0.0	28.591	10	31.109	2.52	0.25	Mean	9.3	0.8	92.5	7.5	0.28
126	35	9470F	LW2-G331	6		10	9	1	90.0	10.0	28.340	9	30.680	2.34	0.26	SD	0.5	0.5	4.6	4.6	0.06
127	141	9470F	LW2-G331	7		10	9	1	90.0	10.0	29.512	9	32.411	2.90	0.32	n	8	8	8	8	8
128	163	9470F	LW2-G331	8	wq replicate	10	9	1	90.0	10.0	29.493	9	32.785	3.29	0.37						
129	100	9471F	LW2-G333	1		10	10	0	100.0	0.0	29.221	10	31.776	2.56	0.26						
130	121	9471F	LW2-G333	2		11	11	0	100.0	0.0	29.519	11	32.251	2.73	0.25						
131	106	9471F	LW2-G333	3		10	10	0	100.0	0.0	28.137	10	31.242	3.11	0.31						
132	41	9471F	LW2-G333	4		10	10	0	100.0	0.0	30.252	10	32.631	2.38	0.24						
133	116	9471F	LW2-G333	5		10	9	1	90.0	10.0	29.539	9	32.355	2.82	0.31	Mean	9.9	0.3	97.5	2.5	0.27
134	103	9471F	LW2-G333	6		10	10	0	100.0	0.0	29.031	10	31.699	2.67	0.27	SD	0.6	0.5	4.6	4.6	0.04
135	63	9471F	LW2-G333	7		10	9	1	90.0	10.0	30.753	9	33.526	2.77	0.31	n	8	8	8	8	8
136	25	9471F	LW2-G333	8	wq replicate	10	10	0	100.0	0.0	28.502	10	30.695	2.19	0.22						
137	88	9472F	LW2-G335	1		10	9	1	90.0	10.0	28.574	9	30.752	2.18	0.24						
138	3	9472F	LW2-G335	2		10	8	2	80.0	20.0	28.639	8	30.493	1.85	0.23						
139	50	9472F	LW2-G335	3		10	10	0	100.0	0.0	32.474	10	35.150	2.68	0.27						
140	133	9472F	LW2-G335	4		10	9	1	90.0	10.0	29.762	9	32.316	2.55	0.28						
141	65	9472F	LW2-G335	5		10	8	2	80.0	20.0	29.386	8	31.129	1.74	0.22	Mean	9.1	0.9	91.3	8.8	0.23
142	125	9472F	LW2-G335	6		10	10	0	100.0	0.0	30.327	10	31.933	1.61	0.16	SD	0.8	0.8	8.3	8.3	0.04
143	68	9472F	LW2-G335	7		10	10	0	100.0	0.0	28.451	10	30.738	2.29	0.23	n	8	8	8	8	8
144	60	9472F	LW2-G335	8	wq replicate	10	9	1	90.0	10.0	28.019	9	30.029	2.01	0.22						
145	80	9473F	LW2-G336	1		10	9	1	90.0	10.0	28.115	9	30.331	2.22	0.25						
146	10	9473F	LW2-G336	2		10	10	0	100.0	0.0	27.533	10	29.535	2.00	0.20						
147	101	9473F	LW2-G336	3		10	10	0	100.0	0.0	29.490	10	31.262	1.77	0.18						
148	131	9473F	LW2-G336	4		10	9	1	90.0	10.0	28.243	9	30.190	1.95	0.22						
149	115	9473F	LW2-G336	5		10	10	0	100.0	0.0	28.772	10	30.346	1.57	0.16	Mean	9.3	0.8	92.5	7.5	0.23
150	30	9473F	LW2-G336	6		10	9	1	90.0	10.0	28.450	8	30.646	2.20	0.27	SD	0.7	0.7	7.1	7.1	0.05
151	94	9473F	LW2-G336	7		10	9	1	90.0	10.0	29.200	9	31.577	2.38	0.26	n	8	8	8	8	8
152	40	9473F	LW2-G336	8	wq replicate	10	8	2	80.0	20.0	30.132	8	32.317	2.19	0.27						

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BZTO104(e)008104

Test No.: 686-15

Freshwater Sediment Test
28-day Hyalella azteca

INDEX	BKR	NAS SMPL	CLIENT DESCRIP	REPL		INIT	SURV	MORT	PSURV	PMORT	TARE WT (mg)	WT COUNT	DRY WT (mg)	TWT (mg)	WT (mg)		SURV	MORT	PSURV	PMORT	WT
153	42	9474F	LW2-G348	1		10	10	0	100.0	0.0	31.053	10	33.574	2.52	0.25						
154	166	9474F	LW2-G348	2		10	9	1	90.0	10.0	28.503	9	30.703	2.20	0.24						
155	71	9474F	LW2-G348	3		10	9	1	90.0	10.0	27.594	9	30.184	2.59	0.29						
156	119	9474F	LW2-G348	4		10	9	1	90.0	10.0	27.330	9	29.967	2.64	0.29						
157	51	9474F	LW2-G348	5		10	10	0	100.0	0.0	29.721	10	31.866	2.15	0.21	Mean	9.1	0.9	91.3	8.8	0.26
158	147	9474F	LW2-G348	6		10	8	2	80.0	20.0	29.657	8	32.030	2.37	0.30	SD	0.8	0.8	8.3	8.3	0.03
159	79	9474F	LW2-G348	7		10	10	0	100.0	0.0	31.254	10	33.564	2.31	0.23	n	8	8	8	8	8
160	118	9474F	LW2-G348	8	wq replicate	10	8	2	80.0	20.0	29.047	8	31.205	2.16	0.27						
161	1	9475F	LW2-G350	1		10	10	0	100.0	0.0	28.282	10	30.130	1.85	0.18						
162	107	9475F	LW2-G350	2		10	9	1	90.0	10.0	29.735	9	31.782	2.05	0.23						
163	168	9475F	LW2-G350	3		10	9	1	90.0	10.0	28.443	9	30.501	2.06	0.23						
164	97	9475F	LW2-G350	4		10	7	3	70.0	30.0	30.677	7	32.147	1.47	0.21						
165	66	9475F	LW2-G350	5		10	10	0	100.0	0.0	28.671	10	31.136	2.47	0.25	Mean	9.3	0.8	92.5	7.5	0.23
166	22	9475F	LW2-G350	6		10	10	0	100.0	0.0	31.418	10	34.246	2.83	0.28	SD	1.0	1.0	10.4	10.4	0.03
167	61	9475F	LW2-G350	7		10	10	0	100.0	0.0	30.669	10	33.198	2.53	0.25	n	8	8	8	8	8
168	151	9475F	LW2-G350	8	wq replicate	10	9	1	90.0	10.0	28.837	9	30.949	2.11	0.23						

Note: Beaker #30 lost one animal in transfer to weigh pan

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BZTO104(e)008105

Water Quality Data

	NAS	CLIENT			Overlying water							Interstitial water	
BKR	SMPL	DESCRIP	REPL	DAY	TEMP	DO	COND	pH	HARD	ALK	NH3	NH3	pH
BULK SEDIMENT POREWATER													
	9454F	Control										9.6	6.5
	9456F	LW2-G301										5.5	6.4
	9457F	LW2-G302										7.0	6.4
	9458F	LW2-G308										5.3	6.3
	9459F	LW2-G288										---*	---*
	9460F	LW2-G292										5.4	6.4
	9461F	LW2-G298										11.8	5.9
	9462F	LW2-G315										6.1	6.2
	9463F	LW2-G316										1.6	6.4
	9464F	LW2-G260										1.4	6.2
	9465F	LW2-G268										1.4	6.5
	9466F	LW2-G318										4.8	6.5
	9467F	LW2-G320										16.1	6.2
	9468F	LW2-G323										1.8	6.5
	9469F	LW2-G327										13.5	6.4
	9470F	LW2-G331										---*	---*
	9471F	LW2-G333										3.7	6.5
	9472F	LW2-G335										4.7	6.8
	9473F	LW2-G336										6.5	6.0
	9474F	LW2-G348										11.3	6.9
	9475F	LW2-G350										13.5	6.8

* Insuficient sample for analysis

Water Quality Data

	NAS	CLIENT			Overlying water							Interstitial water	
BKR	SMPL	DESCRIP	REPL	DAY	TEMP	DO	COND	pH	HARD	ALK	NH3	NH3	pH
TEST OVERLYING WATER													
11	9465F	LW2-G268	8	0	22.9	7.2	175	6.5	51	50	0.1		
13	9464F	LW2-G260	8	0	22.9	6.8	165	6.5	43	40	0.3		
16	9466F	LW2-G318	8	0	22.9	6.9	190	6.4	43	50	0.7		
25	9471F	LW2-G333	8	0	23.1	6.6	190	6.5	43	50	0.6		
40	9473F	LW2-G336	8	0	23.1	6.5	265	6.4	77	50	0.9		
53	9462F	LW2-G315	8	0	23.1	6.2	190	6.5	51	50	1.8		
60	9472F	LW2-G335	8	0	22.9	6.6	170	6.5	43	40	0.4		
74	9469F	LW2-G327	8	0	22.9	6.8	190	6.4	43	60	4.8		
87	9459F	LW2-G288	8	0	22.9	6.9	280	6.4	43	40	2.7		
90	9461F	LW2-G298	8	0	22.9	6.7	255	6.4	51	40	2.7		
92	9468F	LW2-G323	8	0	22.9	6.8	170	6.4	43	40	1.0		
118	9474F	LW2-G348	8	0	22.8	6.7	390	6.5	43	60	1.0		
120	9454F	Control	8	0	22.8	6.8	240	6.6	43	50	0.2		
123	9463F	LW2-G316	8	0	22.8	7.2	170	6.6	43	40	0.2		
132	9458F	LW2-G308	8	0	22.8	6.8	175	6.5	43	50	1.0		
135	9456F	LW2-G301	8	0	22.9	6.9	170	6.4	34	50	1.1		
137	9467F	LW2-G320	8	0	22.9	6.2	205	6.3	43	50	2.3		
146	9457F	LW2-G302	8	0	22.8	6.6	175	6.4	51	50	1.8		
151	9475F	LW2-G350	8	0	22.8	6.6	300	6.3	43	50	2.1		
152	9460F	LW2-G292	8	0	22.8	6.7	175	6.3	43	50	1.3		
163	9470F	LW2-G331	8	0	22.7	6.8	165	6.3	34	50	0.3		
11	9465F	LW2-G268	8	1	22.8								
13	9464F	LW2-G260	8	1	22.6								
16	9466F	LW2-G318	8	1	22.8								
25	9471F	LW2-G333	8	1	22.8								
40	9473F	LW2-G336	8	1	22.8								
53	9462F	LW2-G315	8	1	22.4								
60	9472F	LW2-G335	8	1	22.6								
74	9469F	LW2-G327	8	1	22.5								
87	9459F	LW2-G288	8	1	22.5								
90	9461F	LW2-G298	8	1	22.5								
92	9468F	LW2-G323	8	1	22.4								
118	9474F	LW2-G348	8	1	22.4								
120	9454F	Control	8	1	22.5								
123	9463F	LW2-G316	8	1	22.5								
132	9458F	LW2-G308	8	1	22.4								
135	9456F	LW2-G301	8	1	22.5								
137	9467F	LW2-G320	8	1	22.4								
146	9457F	LW2-G302	8	1	22.4								
151	9475F	LW2-G350	8	1	22.4								
152	9460F	LW2-G292	8	1	22.4								
163	9470F	LW2-G331	8	1	22.4								

Test No.: 686-15

Freshwater Sediment Test
28-Day Hyalella azteca

Water Quality Data

					Overlying water							Interstitial water	
BKR	NAS SMPL	CLIENT DESCRIP	REPL	DAY	TEMP	DO	COND	pH	HARD	ALK	NH3	NH3	pH
11	9465F	LW2-G268	8	2	22.9								
13	9464F	LW2-G260	8	2	22.7								
16	9466F	LW2-G318	8	2	22.9								
25	9471F	LW2-G333	8	2	22.9								
40	9473F	LW2-G336	8	2	22.9								
53	9462F	LW2-G315	8	2	22.5								
60	9472F	LW2-G335	8	2	22.7								
74	9469F	LW2-G327	8	2	22.6								
87	9459F	LW2-G288	8	2	22.5								
90	9461F	LW2-G298	8	2	22.6								
92	9468F	LW2-G323	8	2	22.4								
118	9474F	LW2-G348	8	2	22.5								
120	9454F	Control	8	2	22.6								
123	9463F	LW2-G316	8	2	22.5								
132	9458F	LW2-G308	8	2	22.6								
135	9456F	LW2-G301	8	2	22.6								
137	9467F	LW2-G320	8	2	22.6								
146	9457F	LW2-G302	8	2	22.7								
151	9475F	LW2-G350	8	2	22.7								
152	9460F	LW2-G292	8	2	22.5								
163	9470F	LW2-G331	8	2	22.5								
11	9465F	LW2-G268	8	3	23.2	7.4		6.6					
13	9464F	LW2-G260	8	3	23.1	7.3		6.6					
16	9466F	LW2-G318	8	3	23.1	7.2		6.6					
25	9471F	LW2-G333	8	3	23.2	7.3		6.6					
40	9473F	LW2-G336	8	3	23.2	7.3		6.6					
53	9462F	LW2-G315	8	3	22.9	7.1		6.6					
60	9472F	LW2-G335	8	3	23.0	7.4		6.6					
74	9469F	LW2-G327	8	3	23.0	7.1		6.6					
87	9459F	LW2-G288	8	3	22.9	6.1		6.5					
90	9461F	LW2-G298	8	3	23.0	5.8		6.4					
92	9468F	LW2-G323	8	3	22.9	7.0		6.5					
118	9474F	LW2-G348	8	3	22.9	7.3		6.6					
120	9454F	Control	8	3	22.9	7.0		6.6					
123	9463F	LW2-G316	8	3	22.9	7.4		6.7					
132	9458F	LW2-G308	8	3	22.9	7.1		6.6					
135	9456F	LW2-G301	8	3	23.0	7.1		6.6					
137	9467F	LW2-G320	8	3	22.9	6.9		6.6					
146	9457F	LW2-G302	8	3	23.0	6.5		6.5					
151	9475F	LW2-G350	8	3	23.0	6.9		6.5					
152	9460F	LW2-G292	8	3	22.9	6.9		6.5					
163	9470F	LW2-G331	8	3	22.9	6.8		6.5					

ANC08108
BZTO104(e)008108

Test No.: 686-15

Freshwater Sediment Test
28-Day Hyalella azteca

Water Quality Data

	NAS	CLIENT			Overlying water							Interstitial water	
BKR	SMPL	DESCRIP	REPL	DAY	TEMP	DO	COND	pH	HARD	ALK	NH3	NH3	pH
11	9465F	LW2-G268	8	4	22.9								
13	9464F	LW2-G260	8	4	22.8								
16	9466F	LW2-G318	8	4	22.9								
25	9471F	LW2-G333	8	4	22.9								
40	9473F	LW2-G336	8	4	22.9								
53	9462F	LW2-G315	8	4	22.7								
60	9472F	LW2-G335	8	4	22.7								
74	9469F	LW2-G327	8	4	22.7								
87	9459F	LW2-G288	8	4	22.7								
90	9461F	LW2-G298	8	4	22.8								
92	9468F	LW2-G323	8	4	22.7								
118	9474F	LW2-G348	8	4	22.7								
120	9454F	Control	8	4	22.8								
123	9463F	LW2-G316	8	4	22.7								
132	9458F	LW2-G308	8	4	22.7								
135	9456F	LW2-G301	8	4	22.8								
137	9467F	LW2-G320	8	4	22.8								
146	9457F	LW2-G302	8	4	22.8								
151	9475F	LW2-G350	8	4	22.8								
152	9460F	LW2-G292	8	4	22.8								
163	9470F	LW2-G331	8	4	22.8								
11	9465F	LW2-G268	8	5	23.2	6.6		6.8					
13	9464F	LW2-G260	8	5	23.2	6.2		6.5					
16	9466F	LW2-G318	8	5	23.2	6.3		6.4					
25	9471F	LW2-G333	8	5	23.1	6.4		6.5					
40	9473F	LW2-G336	8	5	23.1	6.4		6.5					
53	9462F	LW2-G315	8	5	23.1	6.3		6.4					
60	9472F	LW2-G335	8	5	23.1	6.4		6.5					
74	9469F	LW2-G327	8	5	23.1	6.4		6.5					
87	9459F	LW2-G288	8	5	22.9	4.9		6.5					
90	9461F	LW2-G298	8	5	23.1	5.3		6.6					
92	9468F	LW2-G323	8	5	23.0	5.9		6.6					
118	9474F	LW2-G348	8	5	23.1	7.1		6.9					
120	9454F	Control	8	5	23.1	6.8		6.8					
123	9463F	LW2-G316	8	5	23.0	6.4		6.7					
132	9458F	LW2-G308	8	5	23.1	5.7		6.7					
135	9456F	LW2-G301	8	5	23.2	5.9		6.6					
137	9467F	LW2-G320	8	5	23.1	5.6		6.5					
146	9457F	LW2-G302	8	5	23.2	5.2		6.5					
151	9475F	LW2-G350	8	5	23.2	5.9		6.5					
152	9460F	LW2-G292	8	5	23.2	5.7		6.5					
163	9470F	LW2-G331	8	5	23.1	5.6		6.5					

Test No.: 686-15

Freshwater Sediment Test
28-Day Hyalella azteca

Water Quality Data

	NAS	CLIENT			Overlying water							Interstitial water	
BKR	SMPL	DESCRIP	REPL	DAY	TEMP	DO	COND	pH	HARD	ALK	NH3	NH3	pH
11	9465F	LW2-G268	8	6	23.0								
13	9464F	LW2-G260	8	6	22.9								
16	9466F	LW2-G318	8	6	22.9								
25	9471F	LW2-G333	8	6	22.9								
40	9473F	LW2-G336	8	6	22.8								
53	9462F	LW2-G315	8	6	22.7								
60	9472F	LW2-G335	8	6	22.7								
74	9469F	LW2-G327	8	6	22.7								
87	9459F	LW2-G288	8	6	22.7								
90	9461F	LW2-G298	8	6	22.6								
92	9468F	LW2-G323	8	6	22.7								
118	9474F	LW2-G348	8	6	22.6								
120	9454F	Control	8	6	22.6								
123	9463F	LW2-G316	8	6	22.7								
132	9458F	LW2-G308	8	6	22.6								
135	9456F	LW2-G301	8	6	22.6								
137	9467F	LW2-G320	8	6	22.6								
146	9457F	LW2-G302	8	6	22.7								
151	9475F	LW2-G350	8	6	22.7								
152	9460F	LW2-G292	8	6	22.7								
163	9470F	LW2-G331	8	6	22.6								
11	9465F	LW2-G268	8	7	23.2	6.4		6.5					
13	9464F	LW2-G260	8	7	23.1	6.0		6.4					
16	9466F	LW2-G318	8	7	23.1	5.8		6.4					
25	9471F	LW2-G333	8	7	23.2	5.8		6.3					
40	9473F	LW2-G336	8	7	23.0	6.0		6.4					
53	9462F	LW2-G315	8	7	22.8	5.6		6.3					
60	9472F	LW2-G335	8	7	23.0	5.8		6.4					
74	9469F	LW2-G327	8	7	23.0	5.8		6.3					
87	9459F	LW2-G288	8	7	22.9	5.4		6.3					
90	9461F	LW2-G298	8	7	22.8	4.8		6.3					
92	9468F	LW2-G323	8	7	22.9	5.4		6.3					
118	9474F	LW2-G348	8	7	22.9	6.0		6.5					
120	9454F	Control	8	7	23.0	5.8		6.5					
123	9463F	LW2-G316	8	7	22.9	5.8		6.4					
132	9458F	LW2-G308	8	7	22.9	5.4		6.4					
135	9456F	LW2-G301	8	7	22.8	5.4		6.3					
137	9467F	LW2-G320	8	7	22.9	5.2		6.3					
146	9457F	LW2-G302	8	7	22.9	5.2		6.3					
151	9475F	LW2-G350	8	7	22.8	5.5		6.3					
152	9460F	LW2-G292	8	7	22.8	5.3		6.3					
163	9470F	LW2-G331	8	7	22.9	5.4		6.3					

ANC08110
BZTO104(e)008110

Water Quality Data

	NAS	CLIENT			Overlying water							Interstitial water	
BKR	SMPL	DESCRIP	REPL	DAY	TEMP	DO	COND	pH	HARD	ALK	NH3	NH3	pH
11	9465F	LW2-G268	8	8	22.5								
13	9464F	LW2-G260	8	8	22.5								
16	9466F	LW2-G318	8	8	22.5								
25	9471F	LW2-G333	8	8	22.6								
40	9473F	LW2-G336	8	8	22.6								
53	9462F	LW2-G315	8	8	22.5								
60	9472F	LW2-G335	8	8	22.5								
74	9469F	LW2-G327	8	8	22.4								
87	9459F	LW2-G288	8	8	22.4								
90	9461F	LW2-G298	8	8	22.5								
92	9468F	LW2-G323	8	8	22.4								
118	9474F	LW2-G348	8	8	22.5								
120	9454F	Control	8	8	22.5								
123	9463F	LW2-G316	8	8	22.5								
132	9458F	LW2-G308	8	8	22.4								
135	9456F	LW2-G301	8	8	22.5								
137	9467F	LW2-G320	8	8	22.5								
146	9457F	LW2-G302	8	8	22.5								
151	9475F	LW2-G350	8	8	22.5								
152	9460F	LW2-G292	8	8	22.5								
163	9470F	LW2-G331	8	8	22.5								
11	9465F	LW2-G268	8	9	23.3								
13	9464F	LW2-G260	8	9	23.2								
16	9466F	LW2-G318	8	9	23.3								
25	9471F	LW2-G333	8	9	23.3								
40	9473F	LW2-G336	8	9	23.2								
53	9462F	LW2-G315	8	9	23.1								
60	9472F	LW2-G335	8	9	23.2								
74	9469F	LW2-G327	8	9	23.1								
87	9459F	LW2-G288	8	9	23.2								
90	9461F	LW2-G298	8	9	23.2								
92	9468F	LW2-G323	8	9	23.1								
118	9474F	LW2-G348	8	9	23.0								
120	9454F	Control	8	9	23.2								
123	9463F	LW2-G316	8	9	23.0								
132	9458F	LW2-G308	8	9	23.0								
135	9456F	LW2-G301	8	9	23.2								
137	9467F	LW2-G320	8	9	23.0								
146	9457F	LW2-G302	8	9	23.1								
151	9475F	LW2-G350	8	9	23.1								
152	9460F	LW2-G292	8	9	23.0								
163	9470F	LW2-G331	8	9	23.0								

Test No.: 686-15

Freshwater Sediment Test
28-Day Hyalella azteca

Water Quality Data

	NAS	CLIENT			Overlying water							Interstitial water	
BKR	SMPL	DESCRIP	REPL	DAY	TEMP	DO	COND	pH	HARD	ALK	NH3	NH3	pH
11	9465F	LW2-G268	8	10	23.1	6.7		6.6					
13	9464F	LW2-G260	8	10	23.0	6.3		6.5					
16	9466F	LW2-G318	8	10	23.0	5.9		6.5					
25	9471F	LW2-G333	8	10	23.0	6.3		6.5					
40	9473F	LW2-G336	8	10	22.9	6.2		6.5					
53	9462F	LW2-G315	8	10	22.8	6.0		6.5					
60	9472F	LW2-G335	8	10	22.8	6.3		6.5					
74	9469F	LW2-G327	8	10	22.8	5.5		6.4					
87	9459F	LW2-G288	8	10	22.8	4.9		6.4					
90	9461F	LW2-G298	8	10	22.8	4.2		6.4					
92	9468F	LW2-G323	8	10	22.8	5.9		6.4					
118	9474F	LW2-G348	8	10	22.7	6.1		6.5					
120	9454F	Control	8	10	22.8	5.9		6.7					
123	9463F	LW2-G316	8	10	22.8	6.0		6.5					
132	9458F	LW2-G308	8	10	22.7	5.4		6.5					
135	9456F	LW2-G301	8	10	22.8	5.6		6.5					
137	9467F	LW2-G320	8	10	22.7	5.7		6.5					
146	9457F	LW2-G302	8	10	22.7	5.2		6.4					
151	9475F	LW2-G350	8	10	22.8	5.7		6.4					
152	9460F	LW2-G292	8	10	22.8	5.3		6.4					
163	9470F	LW2-G331	8	10	22.8	5.8		6.5					
11	9465F	LW2-G268	8	11	23.2								
13	9464F	LW2-G260	8	11	23.2								
16	9466F	LW2-G318	8	11	23.1								
25	9471F	LW2-G333	8	11	23.2								
40	9473F	LW2-G336	8	11	23.1								
53	9462F	LW2-G315	8	11	23.0								
60	9472F	LW2-G335	8	11	22.9								
74	9469F	LW2-G327	8	11	22.9								
87	9459F	LW2-G288	8	11	22.9								
90	9461F	LW2-G298	8	11	22.9								
92	9468F	LW2-G323	8	11	22.9								
118	9474F	LW2-G348	8	11	22.9								
120	9454F	Control	8	11	22.9								
123	9463F	LW2-G316	8	11	23.0								
132	9458F	LW2-G308	8	11	22.9								
135	9456F	LW2-G301	8	11	22.9								
137	9467F	LW2-G320	8	11	23.0								
146	9457F	LW2-G302	8	11	22.9								
151	9475F	LW2-G350	8	11	22.9								
152	9460F	LW2-G292	8	11	23.0								
163	9470F	LW2-G331	8	11	22.9								

ANC08112
BZTO104(e)008112

Test No.: 686-15

Freshwater Sediment Test
28-Day Hyalella azteca

Water Quality Data

	NAS	CLIENT			Overlying water							Interstitial water	
BKR	SMPL	DESCRIP	REPL	DAY	TEMP	DO	COND	pH	HARD	ALK	NH3	NH3	pH
11	9465F	LW2-G268	8	12	23.3	5.8	165	6.6					
13	9464F	LW2-G260	8	12	23.2	5.8	165	6.6					
16	9466F	LW2-G318	8	12	23.2	5.3	165	6.5					
25	9471F	LW2-G333	8	12	23.2	5.6	165	6.5					
40	9473F	LW2-G336	8	12	23.1	5.2	165	6.5					
53	9462F	LW2-G315	8	12	23.1	5.3	160	6.4					
60	9472F	LW2-G335	8	12	23.1	5.8	165	6.6					
74	9469F	LW2-G327	8	12	23.1	5.0	160	6.5					
87	9459F	LW2-G288	8	12	23.1	4.6	165	6.4					
90	9461F	LW2-G298	8	12	23.1	3.8	160	6.4					
92	9468F	LW2-G323	8	12	23.1	5.6	165	6.5					
118	9474F	LW2-G348	8	12	23.1	5.7	180	6.6					
120	9454F	Control	8	12	23.2	5.6	180	7.5					
123	9463F	LW2-G316	8	12	23.2	5.6	165	6.7					
132	9458F	LW2-G308	8	12	23.2	5.5	160	6.7					
135	9456F	LW2-G301	8	12	23.2	4.7	170	6.7					
137	9467F	LW2-G320	8	12	23.2	5.2	160	6.6					
146	9457F	LW2-G302	8	12	23.2	5.4	165	6.6					
151	9475F	LW2-G350	8	12	23.2	5.4	165	6.7					
152	9460F	LW2-G292	8	12	23.1	5.0	160	6.6					
163	9470F	LW2-G331	8	12	23.1	5.6	160	6.7					
11	9465F	LW2-G268	8	13	23.2								
13	9464F	LW2-G260	8	13	23.2								
16	9466F	LW2-G318	8	13	23.1								
25	9471F	LW2-G333	8	13	23.2								
40	9473F	LW2-G336	8	13	23.2								
53	9462F	LW2-G315	8	13	23.2								
60	9472F	LW2-G335	8	13	23.1								
74	9469F	LW2-G327	8	13	23.2								
87	9459F	LW2-G288	8	13	23.2								
90	9461F	LW2-G298	8	13	23.1								
92	9468F	LW2-G323	8	13	23.2								
118	9474F	LW2-G348	8	13	23.1								
120	9454F	Control	8	13	23.1								
123	9463F	LW2-G316	8	13	23.1								
132	9458F	LW2-G308	8	13	23.1								
135	9456F	LW2-G301	8	13	23.1								
137	9467F	LW2-G320	8	13	23.2								
146	9457F	LW2-G302	8	13	23.2								
151	9475F	LW2-G350	8	13	23.2								
152	9460F	LW2-G292	8	13	23.2								
163	9470F	LW2-G331	8	13	23.2								

ANC08113
BZTO104(e)008113

Water Quality Data

	NAS	CLIENT			Overlying water							Interstitial water	
BKR	SMPL	DESCRIP	REPL	DAY	TEMP	DO	COND	pH	HARD	ALK	NH3	NH3	pH
11	9465F	LW2-G268	8	14	23.4	6.9		6.8					
13	9464F	LW2-G260	8	14	23.4	6.9		6.6					
16	9466F	LW2-G318	8	14	23.2	6.9		6.5					
25	9471F	LW2-G333	8	14	23.1	7.1		6.5					
40	9473F	LW2-G336	8	14	23.2	7.2		6.5					
53	9462F	LW2-G315	8	14	23.0	6.4		6.5					
60	9472F	LW2-G335	8	14	23.2	7.0		6.5					
74	9469F	LW2-G327	8	14	23.1	6.5		6.5					
87	9459F	LW2-G288	8	14	23.1	6.3		6.5					
90	9461F	LW2-G298	8	14	23.1	4.0		6.4					
92	9468F	LW2-G323	8	14	23.0	6.4		6.4					
118	9474F	LW2-G348	8	14	23.0	6.7		6.5					
120	9454F	Control	8	14	23.0	6.5		7.5					
123	9463F	LW2-G316	8	14	23.0	6.8		6.8					
132	9458F	LW2-G308	8	14	22.9	6.3		6.7					
135	9456F	LW2-G301	8	14	22.9	6.4		6.6					
137	9467F	LW2-G320	8	14	23.0	6.1		6.6					
146	9457F	LW2-G302	8	14	22.9	6.5		6.6					
151	9475F	LW2-G350	8	14	23.0	6.3		6.6					
152	9460F	LW2-G292	8	14	23.0	6.2		6.6					
163	9470F	LW2-G331	8	14	23.0	6.4		6.6					
11	9465F	LW2-G268	8	15	23.2								
13	9464F	LW2-G260	8	15	23.2								
16	9466F	LW2-G318	8	15	23.2								
25	9471F	LW2-G333	8	15	23.2								
40	9473F	LW2-G336	8	15	23.3								
53	9462F	LW2-G315	8	15	23.2								
60	9472F	LW2-G335	8	15	23.1								
74	9469F	LW2-G327	8	15	23.2								
87	9459F	LW2-G288	8	15	23.2								
90	9461F	LW2-G298	8	15	23.1								
92	9468F	LW2-G323	8	15	23.1								
118	9474F	LW2-G348	8	15	23.1								
120	9454F	Control	8	15	23.2								
123	9463F	LW2-G316	8	15	23.1								
132	9458F	LW2-G308	8	15	23.1								
135	9456F	LW2-G301	8	15	23.2								
137	9467F	LW2-G320	8	15	23.1								
146	9457F	LW2-G302	8	15	23.2								
151	9475F	LW2-G350	8	15	23.2								
152	9460F	LW2-G292	8	15	23.2								
163	9470F	LW2-G331	8	15	23.2								

Water Quality Data

					Overlying water							Interstitial water	
BKR	NAS SMPL	CLIENT DESCRIP	REPL	DAY	TEMP	DO	COND	pH	HARD	ALK	NH3	NH3	pH
11	9465F	LW2-G268	8	16	22.8								
13	9464F	LW2-G260	8	16	22.7								
16	9466F	LW2-G318	8	16	22.7								
25	9471F	LW2-G333	8	16	22.8								
40	9473F	LW2-G336	8	16	22.8								
53	9462F	LW2-G315	8	16	22.7								
60	9472F	LW2-G335	8	16	22.7								
74	9469F	LW2-G327	8	16	22.7								
87	9459F	LW2-G288	8	16	22.7								
90	9461F	LW2-G298	8	16	22.8								
92	9468F	LW2-G323	8	16	22.7								
118	9474F	LW2-G348	8	16	22.8								
120	9454F	Control	8	16	22.8								
123	9463F	LW2-G316	8	16	22.8								
132	9458F	LW2-G308	8	16	22.7								
135	9456F	LW2-G301	8	16	22.8								
137	9467F	LW2-G320	8	16	22.9								
146	9457F	LW2-G302	8	16	22.9								
151	9475F	LW2-G350	8	16	22.9								
152	9460F	LW2-G292	8	16	22.8								
163	9470F	LW2-G331	8	16	22.8								
11	9465F	LW2-G268	8	17	23.0	7.0		6.7					
13	9464F	LW2-G260	8	17	22.9	7.0		6.7					
16	9466F	LW2-G318	8	17	23.0	6.8		6.6					
25	9471F	LW2-G333	8	17	23.1	6.9		6.6					
40	9473F	LW2-G336	8	17	22.9	7.0		6.7					
53	9462F	LW2-G315	8	17	22.7	6.3		6.7					
60	9472F	LW2-G335	8	17	22.7	7.0		6.7					
74	9469F	LW2-G327	8	17	22.7	6.4		6.6					
87	9459F	LW2-G288	8	17	22.6	5.6		6.5					
90	9461F	LW2-G298	8	17	22.6	4.4		6.5					
92	9468F	LW2-G323	8	17	22.7	6.4		6.7					
118	9474F	LW2-G348	8	17	22.6	6.2		6.7					
120	9454F	Control	8	17	22.8	6.4		7.3					
123	9463F	LW2-G316	8	17	22.6	6.7		6.7					
132	9458F	LW2-G308	8	17	22.6	6.4		6.6					
135	9456F	LW2-G301	8	17	22.8	6.2		6.8					
137	9467F	LW2-G320	8	17	22.7	6.2		6.7					
146	9457F	LW2-G302	8	17	22.7	5.6		6.7					
151	9475F	LW2-G350	8	17	22.7	6.4		6.6					
152	9460F	LW2-G292	8	17	22.6	6.0		6.5					
163	9470F	LW2-G331	8	17	22.5	6.6		6.6					

ANC08115
BZTO104(e)008115

Water Quality Data

	NAS	CLIENT			Overlying water							Interstitial water	
BKR	SMPL	DESCRIP	REPL	DAY	TEMP	DO	COND	pH	HARD	ALK	NH3	NH3	pH
11	9465F	LW2-G268	8	18	23.2								
13	9464F	LW2-G260	8	18	23.1								
16	9466F	LW2-G318	8	18	23.1								
25	9471F	LW2-G333	8	18	23.2								
40	9473F	LW2-G336	8	18	23.2								
53	9462F	LW2-G315	8	18	22.9								
60	9472F	LW2-G335	8	18	23.1								
74	9469F	LW2-G327	8	18	23.1								
87	9459F	LW2-G288	8	18	23.0								
90	9461F	LW2-G298	8	18	23.1								
92	9468F	LW2-G323	8	18	22.9								
118	9474F	LW2-G348	8	18	22.9								
120	9454F	Control	8	18	23.0								
123	9463F	LW2-G316	8	18	22.9								
132	9458F	LW2-G308	8	18	22.9								
135	9456F	LW2-G301	8	18	23.1								
137	9467F	LW2-G320	8	18	23.1								
146	9457F	LW2-G302	8	18	23.0								
151	9475F	LW2-G350	8	18	23.0								
152	9460F	LW2-G292	8	18	23.0								
163	9470F	LW2-G331	8	18	22.9								
11	9465F	LW2-G268	8	19	23.0	7.0	175	6.6					
13	9464F	LW2-G260	8	19	23.0	6.6	170	6.6					
16	9466F	LW2-G318	8	19	23.0	6.4	170	6.6					
25	9471F	LW2-G333	8	19	22.9	6.5	170	6.6					
40	9473F	LW2-G336	8	19	23.0	6.8	170	6.6					
53	9462F	LW2-G315	8	19	22.8	5.3	165	6.5					
60	9472F	LW2-G335	8	19	22.9	6.7	170	6.6					
74	9469F	LW2-G327	8	19	23.0	5.0	165	6.9					
87	9459F	LW2-G288	8	19	22.9	4.8	170	6.5					
90	9461F	LW2-G298	8	19	22.9	3.6	170	6.5					
92	9468F	LW2-G323	8	19	22.9	5.6	165	6.4					
118	9474F	LW2-G348	8	19	22.9	5.0	180	6.5					
120	9454F	Control	8	19	23.0	4.9	200	7.3					
123	9463F	LW2-G316	8	19	23.0	5.8	165	6.5					
132	9458F	LW2-G308	8	19	23.0	5.2	160	6.5					
135	9456F	LW2-G301	8	19	23.0	5.0	175	6.5					
137	9467F	LW2-G320	8	19	23.0	4.6	160	6.5					
146	9457F	LW2-G302	8	19	23.0	4.6	160	6.4					
151	9475F	LW2-G350	8	19	23.0	5.0	170	6.4					
152	9460F	LW2-G292	8	19	23.0	4.6	170	6.5					
163	9470F	LW2-G331	8	19	22.9	4.3	160	6.4					

Test No.: 686-15

Freshwater Sediment Test
28-Day Hyalella azteca

Water Quality Data

	NAS	CLIENT			Overlying water							Interstitial water	
BKR	SMPL	DESCRIP	REPL	DAY	TEMP	DO	COND	pH	HARD	ALK	NH3	NH3	pH
11	9465F	LW2-G268	8	20	23.0								
13	9464F	LW2-G260	8	20	22.9								
16	9466F	LW2-G318	8	20	22.9								
25	9471F	LW2-G333	8	20	22.9								
40	9473F	LW2-G336	8	20	22.9								
53	9462F	LW2-G315	8	20	22.8								
60	9472F	LW2-G335	8	20	22.9								
74	9469F	LW2-G327	8	20	22.9								
87	9459F	LW2-G288	8	20	22.8								
90	9461F	LW2-G298	8	20	22.9								
92	9468F	LW2-G323	8	20	22.8								
118	9474F	LW2-G348	8	20	22.9								
120	9454F	Control	8	20	22.9								
123	9463F	LW2-G316	8	20	22.9								
132	9458F	LW2-G308	8	20	22.9								
135	9456F	LW2-G301	8	20	22.9								
137	9467F	LW2-G320	8	20	22.9								
146	9457F	LW2-G302	8	20	22.9								
151	9475F	LW2-G350	8	20	23.0								
152	9460F	LW2-G292	8	20	22.9								
163	9470F	LW2-G331	8	20	22.9								
11	9465F	LW2-G268	8	21	22.9	7.5		6.6					
13	9464F	LW2-G260	8	21	22.9	7.3		6.5					
16	9466F	LW2-G318	8	21	22.8	7.3		6.5					
25	9471F	LW2-G333	8	21	22.9	7.1		6.5					
40	9473F	LW2-G336	8	21	22.8	7.4		6.5					
53	9462F	LW2-G315	8	21	22.7	6.9		6.4					
60	9472F	LW2-G335	8	21	22.8	7.2		6.4					
74	9469F	LW2-G327	8	21	22.8	6.7		6.4					
87	9459F	LW2-G288	8	21	22.8	6.2		6.3					
90	9461F	LW2-G298	8	21	22.9	5.6		6.3					
92	9468F	LW2-G323	8	21	22.9	7.1		6.4					
118	9474F	LW2-G348	8	21	22.9	6.8		6.5					
120	9454F	Control	8	21	22.9	6.8		6.5					
123	9463F	LW2-G316	8	21	22.9	7.2		6.6					
132	9458F	LW2-G308	8	21	22.8	7.0		6.4					
135	9456F	LW2-G301	8	21	22.9	6.9		6.5					
137	9467F	LW2-G320	8	21	22.9	6.9		6.4					
146	9457F	LW2-G302	8	21	22.9	6.7		6.4					
151	9475F	LW2-G350	8	21	22.9	6.9		6.4					
152	9460F	LW2-G292	8	21	22.9	6.9		6.5					
163	9470F	LW2-G331	8	21	22.9	6.8		6.4					

ANC08117
BZTO104(e)008117

Test No.: 686-15

Freshwater Sediment Test
28-Day Hyalella azteca

Water Quality Data

	NAS	CLIENT			Overlying water							Interstitial water	
BKR	SMPL	DESCRIP	REPL	DAY	TEMP	DO	COND	pH	HARD	ALK	NH3	NH3	pH
11	9465F	LW2-G268	8	22	22.8								
13	9464F	LW2-G260	8	22	22.7								
16	9466F	LW2-G318	8	22	22.8								
25	9471F	LW2-G333	8	22	22.9								
40	9473F	LW2-G336	8	22	22.8								
53	9462F	LW2-G315	8	22	22.8								
60	9472F	LW2-G335	8	22	22.7								
74	9469F	LW2-G327	8	22	22.8								
87	9459F	LW2-G288	8	22	22.7								
90	9461F	LW2-G298	8	22	22.8								
92	9468F	LW2-G323	8	22	22.7								
118	9474F	LW2-G348	8	22	22.7								
120	9454F	Control	8	22	22.7								
123	9463F	LW2-G316	8	22	22.7								
132	9458F	LW2-G308	8	22	22.7								
135	9456F	LW2-G301	8	22	22.8								
137	9467F	LW2-G320	8	22	22.7								
146	9457F	LW2-G302	8	22	22.7								
151	9475F	LW2-G350	8	22	22.8								
152	9460F	LW2-G292	8	22	22.8								
163	9470F	LW2-G331	8	22	22.7								
11	9465F	LW2-G268	8	23	22.7								
13	9464F	LW2-G260	8	23	22.6								
16	9466F	LW2-G318	8	23	22.6								
25	9471F	LW2-G333	8	23	22.7								
40	9473F	LW2-G336	8	23	22.7								
53	9462F	LW2-G315	8	23	22.6								
60	9472F	LW2-G335	8	23	22.6								
74	9469F	LW2-G327	8	23	22.5								
87	9459F	LW2-G288	8	23	22.5								
90	9461F	LW2-G298	8	23	22.5								
92	9468F	LW2-G323	8	23	22.5								
118	9474F	LW2-G348	8	23	22.5								
120	9454F	Control	8	23	22.6								
123	9463F	LW2-G316	8	23	22.6								
132	9458F	LW2-G308	8	23	22.6								
135	9456F	LW2-G301	8	23	22.6								
137	9467F	LW2-G320	8	23	22.6								
146	9457F	LW2-G302	8	23	22.6								
151	9475F	LW2-G350	8	23	22.7								
152	9460F	LW2-G292	8	23	22.6								
163	9470F	LW2-G331	8	23	22.6								

ANC08118
BZTO104(e)008118

Test No.: 686-15

Freshwater Sediment Test
28-Day Hyalella azteca

Water Quality Data

					Overlying water							Interstitial water	
BKR	NAS SMPL	CLIENT DESCRIP	REPL	DAY	TEMP	DO	COND	pH	HARD	ALK	NH3	NH3	pH
11	9465F	LW2-G268	8	24	22.5	6.2		6.5					
13	9464F	LW2-G260	8	24	22.7	6.2		6.2					
16	9466F	LW2-G318	8	24	22.7	6.0		6.3					
25	9471F	LW2-G333	8	24	22.9	6.2		6.4					
40	9473F	LW2-G336	8	24	22.8	5.2		6.3					
53	9462F	LW2-G315	8	24	22.4	6.2		6.1					
60	9472F	LW2-G335	8	24	22.7	5.1		6.3					
74	9469F	LW2-G327	8	24	22.7	5.2		6.2					
87	9459F	LW2-G288	8	24	22.5	4.4		6.2					
90	9461F	LW2-G298	8	24	22.7	4.0		6.2					
92	9468F	LW2-G323	8	24	22.5	5.6		6.3					
118	9474F	LW2-G348	8	24	22.5	5.0		6.6					
120	9454F	Control	8	24	22.7	5.3		6.7					
123	9463F	LW2-G316	8	24	22.5	5.7		6.4					
132	9458F	LW2-G308	8	24	22.5	5.5		6.4					
135	9456F	LW2-G301	8	24	22.7	5.2		6.7					
137	9467F	LW2-G320	8	24	22.5	5.3		6.3					
146	9457F	LW2-G302	8	24	22.6	5.3		6.3					
151	9475F	LW2-G350	8	24	22.7	5.4		6.5					
152	9460F	LW2-G292	8	24	22.5	5.0		6.5					
163	9470F	LW2-G331	8	24	22.5	5.4		6.6					
11	9465F	LW2-G268	8	25	22.8								
13	9464F	LW2-G260	8	25	22.8								
16	9466F	LW2-G318	8	25	22.7								
25	9471F	LW2-G333	8	25	22.8								
40	9473F	LW2-G336	8	25	22.9								
53	9462F	LW2-G315	8	25	22.8								
60	9472F	LW2-G335	8	25	22.6								
74	9469F	LW2-G327	8	25	22.7								
87	9459F	LW2-G288	8	25	22.7								
90	9461F	LW2-G298	8	25	22.6								
92	9468F	LW2-G323	8	25	22.6								
118	9474F	LW2-G348	8	25	22.5								
120	9454F	Control	8	25	22.6								
123	9463F	LW2-G316	8	25	22.6								
132	9458F	LW2-G308	8	25	22.5								
135	9456F	LW2-G301	8	25	22.5								
137	9467F	LW2-G320	8	25	22.6								
146	9457F	LW2-G302	8	25	22.6								
151	9475F	LW2-G350	8	25	22.6								
152	9460F	LW2-G292	8	25	22.5								
163	9470F	LW2-G331	8	25	22.4								

ANC08119
BZTO104(e)008119

Test No.: 686-15

Freshwater Sediment Test
28-Day Hyalella azteca

Water Quality Data

	NAS	CLIENT			Overlying water							Interstitial water	
BKR	SMPL	DESCRIP	REPL	DAY	TEMP	DO	COND	pH	HARD	ALK	NH3	NH3	pH
11	9465F	LW2-G268	8	26	22.8	7.1	175	6.4					
13	9464F	LW2-G260	8	26	22.7	7.0	170	6.5					
16	9466F	LW2-G318	8	26	22.7	7.0	165	6.5					
25	9471F	LW2-G333	8	26	22.8	7.0	170	6.5					
40	9473F	LW2-G336	8	26	22.7	6.9	165	6.5					
53	9462F	LW2-G315	8	26	22.5	6.2	165	6.5					
60	9472F	LW2-G335	8	26	22.5	6.9	165	6.5					
74	9469F	LW2-G327	8	26	22.6	6.4	165	6.5					
87	9459F	LW2-G288	8	26	22.5	5.8	165	6.4					
90	9461F	LW2-G298	8	26	22.6	5.0	165	6.3					
92	9468F	LW2-G323	8	26	22.5	6.5	165	6.4					
118	9474F	LW2-G348	8	26	22.5	6.6	170	6.5					
120	9454F	Control	8	26	22.6	6.6	175	6.8					
123	9463F	LW2-G316	8	26	22.5	6.8	165	6.5					
132	9458F	LW2-G308	8	26	22.5	6.3	165	6.5					
135	9456F	LW2-G301	8	26	22.6	6.2	165	6.5					
137	9467F	LW2-G320	8	26	22.5	6.2	165	6.4					
146	9457F	LW2-G302	8	26	22.5	6.2	165	6.4					
151	9475F	LW2-G350	8	26	22.6	6.4	170	6.5					
152	9460F	LW2-G292	8	26	22.5	6.0	165	6.5					
163	9470F	LW2-G331	8	26	22.5	6.5	165	6.5					
11	9465F	LW2-G268	8	27	23.1								
13	9464F	LW2-G260	8	27	23.1								
16	9466F	LW2-G318	8	27	23.2								
25	9471F	LW2-G333	8	27	23.2								
40	9473F	LW2-G336	8	27	22.9								
53	9462F	LW2-G315	8	27	23.0								
60	9472F	LW2-G335	8	27	22.9								
74	9469F	LW2-G327	8	27	22.9								
87	9459F	LW2-G288	8	27	22.9								
90	9461F	LW2-G298	8	27	23.0								
92	9468F	LW2-G323	8	27	22.8								
118	9474F	LW2-G348	8	27	22.8								
120	9454F	Control	8	27	22.9								
123	9463F	LW2-G316	8	27	22.9								
132	9458F	LW2-G308	8	27	22.8								
135	9456F	LW2-G301	8	27	22.8								
137	9467F	LW2-G320	8	27	22.9								
146	9457F	LW2-G302	8	27	22.8								
151	9475F	LW2-G350	8	27	22.9								
152	9460F	LW2-G292	8	27	22.8								
163	9470F	LW2-G331	8	27	22.8								

ANC08120
BZTO104(e)008120

Test No.: 686-15

Freshwater Sediment Test
28-Day Hyalella azteca

Water Quality Data

	NAS	CLIENT			Overlying water							Interstitial water	
BKR	SMPL	DESCRIP	REPL	DAY	TEMP	DO	COND	pH	HARD	ALK	NH3	NH3	pH
11	9465F	LW2-G268	8	28	22.8	7.7	165	6.6	43	40	<0.1		
13	9464F	LW2-G260	8	28	22.7	7.7	165	6.5	43	40	<0.1		
16	9466F	LW2-G318	8	28	22.7	7.3	160	6.5	43	40	0.1		
25	9471F	LW2-G333	8	28	22.7	7.3	160	6.5	43	40	0.1		
40	9473F	LW2-G336	8	28	22.6	7.6	160	6.6	43	40	<0.1		
53	9462F	LW2-G315	8	28	22.5	7.0	155	6.5	43	40	<0.1		
60	9472F	LW2-G335	8	28	22.5	7.4	160	6.5	34	40	<0.1		
74	9469F	LW2-G327	8	28	22.5	6.8	160	6.5	43	40	<0.1		
87	9459F	LW2-G288	8	28	22.4	6.1	160	6.3	43	50	<0.1		
90	9461F	LW2-G298	8	28	22.5	5.4	155	6.3	43	40	<0.1		
92	9468F	LW2-G323	8	28	22.4	7.3	160	6.5	43	40	<0.1		
118	9474F	LW2-G348	8	28	22.4	7.0	160	6.5	34	40	<0.1		
120	9454F	Control	8	28	22.5	7.1	165	6.9	43	40	<0.1		
123	9463F	LW2-G316	8	28	22.4	7.2	160	6.6	34	40	0.2		
132	9458F	LW2-G308	8	28	22.4	6.9	160	6.5	43	40	<0.1		
135	9456F	LW2-G301	8	28	22.5	6.7	160	6.5	43	40	<0.1		
137	9467F	LW2-G320	8	28	22.4	6.7	155	6.4	34	40	<0.1		
146	9457F	LW2-G302	8	28	22.4	6.6	155	6.4	34	40	<0.1		
151	9475F	LW2-G350	8	28	22.5	6.6	160	6.5	34	40	<0.1		
152	9460F	LW2-G292	8	28	22.5	6.8	160	6.5	34	40	<0.1		
163	9470F	LW2-G331	8	28	22.4	7.1	160	6.5	43	40	<0.1		
				Mean	22.8	6.2	174	6.5	43	44	---	6.9	6.4
				SD	0.2	0.8	32	0.2	7	6	---	4.5	0.3
				n	609	273	105	273	42	42	42	21	21
				Min	22.4	3.6	155	6.1	34	40	<0.1	1.4	5.9
				Max	23.4	7.7	390	7.5	77	60	4.8	16.1	6.9

ANC08121
BZTO104(e)008121

CHAIN-OF-CUSTODY RECORDS

Windward Environmental

CHAIN-OF-CUSTODY/TEST REQUEST FORM

1330

Project/Client Name: PORTLAND HARBOR RI/FS ROUND 2
Windward Project No: 03.28.04.28
Contact Name: HELLE ANDERSEN
Sampled By: THAI DO

Ship to: NORTHWESTERN AQUATIC SCIENCES
Attn: GERALD IRISSARRI
Shipping address: NEWPORT, OREGON

Shipping Date: HAND DEL'D
Airbill Number:

Sample Collection Date (m/d/y)	Time	Sample Identification	Volume of Sample / # of Containers	Matrix	Test(s) Requested (check test(s) required)							Comments / Instructions [Jar tag number(s)]
					10-d Chir.	28-d Hya.						
09.13.04	10:20	LW2-G301	4L/4	SEDIMENT	✓	✓			NAS*	9456	F	INTERNAL COOLER TEMP
09.13.04	10:36	LW2-G302	4L/4	SEDIMENT	✓	✓				9457	F	AT LAB RECEIPT:
09.13.04	11:04	LW2-G308	4L/4	SEDIMENT	✓	✓				9458	F	#1 0.5°C
09.13.04	11:25	LW2-G288	4L/4	SEDIMENT	✓	✓				9459	F	#2 0.0°C
09.13.04	11:48	LW2-G292	4L/4	SEDIMENT	✓	✓				9460	F	#3 0.0°C
09.13.04	12:09	LW2-G298	4L/4	SEDIMENT	✓	✓				9461	F	#4 0.5°C
09.13.04	12:56	LW2-G315	4L/4	SEDIMENT	✓	✓				9462	F	#5 0.0°C
09.13.04	13:16	LW2-G316	4L/4	SEDIMENT	✓	✓				9463	F	
09.14.04	08:29	LW2-G260	4L/4	SEDIMENT	✓	✓				9464	F	
09.14.04	09:17	LW2-G268	4L/4	SEDIMENT	✓	✓				9465	F	
09.14.04	09:53	LW2-G318	4L/4	SEDIMENT	✓	✓				9466	F	
09.14.04	10:07	LW2-G320	4L/4	SEDIMENT	✓	✓				9467	F	
09.14.04	10:26	LW2-G323	4L/4	SEDIMENT	✓	✓				9468	F	
		Total Number of Containers	52/80	Purchase Order / Statement of Work #								

2 of 2

1) Released by:	1) Rec'd by:	2) Released by:	1) Rec'd by:
Print name: THAI DO	GERALD IRISSARRI	Print name:	
Signature:	Signature:	Signature:	
Company: WINDWARD ENVIRONMENTAL LLC	Company: NORTHWESTERN AQUATIC SCIENCES	Company:	Company:
Date/Time: 09.15.04/10:00	Date/Time: 9-15-04 1000 HRS	Date/Time:	Date/Time:

* Distribution: White and yellow copies accompany shipment; pink-consignor's copy; white-consignee return with results; yellow-consignee's copy

* Instructions for completion of Chain-of-Custody/Test Request Form on back.

Wind Ward environmental LLC
200 West Mercer Street
Suite 401
Seattle, WA 98119
Tel: 206.378.1364
Fax: 206.217.0089

To be completed by Laboratory upon sample receipt:

Date of receipt:	Laboratory W.O. #:
Condition upon receipt:	Time of receipt:
Cooler temperature:	Received by:

ANC08123
BZTO104(e)008123

2 of 2

Windward Environmental

CHAIN-OF-CUSTODY/TEST REQUEST FORM

1331

Project/Client Name: PORTLAND HARBOR RI/FS ROUND 2
Windward Project No: 03.28.04.28
Contact Name: HELLE ANDERSEN
Sampled By: THAI DO

Ship to: NORTHWESTERN AQUATIC SCIENCES
Attn: GERALD IRISSARRI
Shipping address: NEWPORT, OREGON

Shipping Date: HAND DEL'D
Airbill Number:

Sample Collection Date (m/d/y)	Time	Sample Identification	Volume of Sample / # of Containers	Matrix	Test(s) Requested (check test(s) required)							Comments / instructions [Jar tag number(s)]
					10-d. Chr.	28-d. Hyz						
09.14.04	10:45	LWZ-G327 ·	4L/4	SEDIMENT	✓	✓			NAS#	9469	F	
09.14.04	11:03	LWZ-G331 ·	4L/4	SEDIMENT	✓	✓				9470	F	
09.14.04	11:22	LWZ-G333 ·	4L/4	SEDIMENT	✓	✓				9471	F	
09.14.04	11:38	LWZ-G335 ·	4L/4	SEDIMENT	✓	✓				9472	F	
09.14.04	11:53	LWZ-G336 ·	4L/4	SEDIMENT	✓	✓				9473	F	
09.14.04	12:15	LWZ-G348 ·	4L/4	SEDIMENT	✓	✓				9474	F	
09.14.04	12:31	LWZ-G350 ·	4L/4	SEDIMENT	✓	✓				9475	F	

Total Number of Containers: 28/80

Purchase Order / Statement of Work #:

1) Released by:	1) Rec'd by:	2) Released by:	1) Rec'd by:
Print name: THAI DO	GERALD IRISSARRI	Print name:	
Signature:	Signature:	Signature:	
Company: WINDWARD ENVIRONMENTAL LLC	Company: NORTHWESTERN AQUATIC SCIENCES	Company:	Company:
Date/Time: 09.15.04/10:00	Date/Time: 9-15-04 1000 HRS	Date/Time:	Date/Time:

* Distribution: White and yellow copies accompany shipment; pink-consignor's copy; white-consignee return with results; yellow-consignee's copy.
* Instructions for completion of Chain-of-Custody/Test Request Form on back.

To be completed by Laboratory upon sample receipt:

Date of receipt:	Laboratory W.O. #:
Condition upon receipt:	Time of receipt:
Cooler temperature:	Received by:

Wind Ward environmental LLC
• 200 West Mercer Street
Suite 401
Seattle, WA 98119
Tel: 206.378.1364
Fax: 206.217.0089

ANC08124
BZTO104(e)008124

APPENDIX II

RAW DATA – REFERENCE TOXICANT TEST

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS- _____

ACUTE TOXICITY TEST (ALL SPECIES)

Test No. 999-1846 Client: QC Test Investigator _____

Test Type (rangefinding/definitive) _____ Test Length (hr) 96

Species *Hyalella azteca*

STUDY MANAGEMENT

Client: QC test

Client's Study Monitor: QC test

Testing Laboratory: Northwestern Aquatic Sciences

Test Location: Newport Laboratory

Laboratory's Study Personnel:

Proj. Man./Study Dir. G.J. Irissarri 6JI

QA Officer L. K. Nemeth

1. [illegible] 2. Susan Gale

3. William T. Montgomery 4. M.S. Redmond MSR

Test Beginning: 1220 9-24-04 Test Ending: 9-28-04 1230

TEST MATERIAL Lot No.: MALLINCKRODT TNZ

Description: Cadmium as $CdCl_2 \cdot 2.5H_2O$ (1.0 mg/ml) Prepared: 7-13-04

NAS Sample No.				
Date of Collection:				
Date of Receipt:				
Temperature (deg C):				
Dissolved oxygen (mg/L):				
pH:				
Conductivity (umhos/cm):				
Hardness (mg/L):				
Alkalinity (mg/L):				
Salinity (ppt):				
Total chlorine (mg/L):				
Total ammonia-N (mg/L):				

DILUTION WATER

Description: Moderately hard synthetic water

Date of Preparation/Collection: 9-2-04

Water Quality: Cond. (umhos/cm): 290 Salinity (ppt) _____ pH 7.5

Hardness (mg/L as $CaCO_3$): 95 Alkalinity (mg/L as $CaCO_3$): 70

Treatments: Aerated ≥ 24 hrs

TEST LOCATION

Test conducted in (circle one): room 1 (room 2) trailer water bath other: _____

Randomization chart:

A	30	60	15	Ø	7.5	3.75				
B	Ø	75	30	3.75	15	60				

Error codes: 1) Correction of handwriting error
2) Written in wrong location; entry deleted
[illegible] date deleted; replaced with correct date

Revised 12-5-01

ANC08126
BZTO104(e)008126

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-_____

ACUTE TOXICITY TEST (ALL SPECIES)

Test No. 999-1846 Client QC Test Investigator _____

TEST ORGANISMS

Species: *Hyalella azteca* Age: 6-7 dy Size: _____

Source: Chesapeake Cultures, Hayes, VA Date received: 9/22/04

Acclimation Data:

Date	Temp. (deg.C)	DO (mg/L)	pH	Cond. umhos/cm	Hardness (mg/L)	Alkalinity (mg/L)	Feeding Amount	Feeding description	Water changes
9/22/04	21.6	>15	7.2	430	163	180	10 ml/pan	YTC	yes
9/23/04	21.9	8.4	8.4	395	171	180	↓	↓	↓
9/24/04	22.2	8.6	7.4	260	94	90	↓	↓	↓
Mean	21.9	10.7	7.4	362	143	150			
S.D.	0.3	3.8	0.6	90	42	52			
(N)	3	3	3	3	3	3			

Photoperiod during acclimation: 16:8, L:D

TEST PROCEDURES AND CONDITIONS

Test concentrations (50% series recommended): 60, 30, 15, 7.5, 3.75, 0 ug/L

Test chamber: 250 ml glass beakers Test volume: 100 ml

Replicates/treatment: 10 Organisms/treatment: 20 (10/rep)

Test water changes: None Aeration during test: None

Feeding: 0.5 ml YTC suspension per beaker on days 0 and 2

Duration: 24-hr, 48-hr, 96-hr Test temperature (deg.C): 23 ± 1 or 20 ± 1

Beaker placement: Stratified randomization Photoperiod: 16:8, L:D

MISCELLANEOUS NOTES

Test solution preparation:

1st working stock made by 1:99 (1ml ↑ 100 ml) dilution of concentrated 1.0 mg/ml Cd stock.
Final conc.: 10 ug/L.

2nd working stock made by 10:90 (10ml ↑ 100 ml) dilution of concentrated 1st working stock.
Final conc.: 1ug/L.

Test concentration (ug/L)	ml of 2nd working stock per **200** ml	Dilution water
60	12	Brought up to
30	6	final volume of
15	3	200 ml with
7.5	1.5	dilution water
3.75	0.75	and distributed
0	0	evenly between
		two replicates

GSI 9-24-04

ANC08127
BZTO104(e)008127

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-_____

ACUTE TOXICITY TEST (ALL SPECIES)

Test No. 999-1846 Client QC Test

DAILY RECORD SHEET

Day 0 (9/24/04) MB

Conc. (ug/L)	Temp. (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	Survivors A	Survivors B
1. 60	23.2	8.8	270	7.5	85	70	10	10
2. 30	23.2	8.8	275	7.5			10	10
3. 15	23.2	8.8	280	7.5			10	10
4. 7.5	23.2	8.8	280	7.5			10	10
5. 3.75	23.1	8.8	280	7.5			10	10
6. 0	23.1	8.8	280	7.5	85	70	10	10
All animals fed 0.5 ml YTC suspension. Initials: GJ								

Day 1 (9/25/04) MB/DF/GJ

Conc. (ug/L)	Temp. (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	Survivors A	Survivors B
1. 60	23.5	7.3	275	7.4			10	10
2. 30	23.5	7.5	280	7.4			10	10
3. 15	23.5	7.5	285	7.4			10	10
4. 7.5	23.5	7.3	285	7.2			10	10
5. 3.75	23.5	7.4	290	7.5			10	10
6. 0	23.5	7.5	280	7.5			10	10

Day 2 (9/26/04) GJ/MB

Conc. (ug/L)	Temp. (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	Survivors A	Survivors B
1. 60	22.7	7.7	280	7.2			Ø (10D)	Ø (10D)
2. 30	22.6	7.7	285	7.2			Ø (10D)	Ø (10D)
3. 15	23.0	7.8	290	7.2			2 (8D)	4 (6D)
4. 7.5	23.0	7.8	290	7.2			7 (3D)	8 (2D)
5. 3.75	23.0	7.9	290	7.2			10	10
6. 0	22.9	7.8	280	7.2			10	10
All animals fed 0.5 ml YTC suspension. Initials: GJ								

Day 3 (9/27/04) MB/DF

Conc. (ug/L)	Temp. (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	Survivors A	Survivors B
1. 60	–	–	–	–			Ø	Ø
2. 30	–	–	–	–			Ø	Ø
3. 15	23.4	7.8	285	7.1			Ø (2D)	Ø (4D)
4. 7.5	23.4	7.8	285	7.0			4 (3D)	6 (2D)
5. 3.75	23.4	7.8	290	7.1			10	10
6. 0	23.4	7.6	290	7.0			10	10

Day 4 (9/28/04) MB/DF

Conc. (ug/L)	Temp. (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	Survivors A	Survivors B
1. 60	–	–	–	–	–	–	Ø	Ø
2. 30	–	–	–	–			Ø	Ø
3. 15	–	–	–	–			Ø	Ø
4. 7.5	23.2	8.0	290	7.2			Ø (4D)	Ø (6D)
5. 3.75	23.1	8.0	285	7.2			8 (2D)	10
6. 0	23.0	8.0	285	7.1	103	90	10	10
Mean	23.2	8.0	283	7.1	91	77		
SD	0.3	0.5	6	0.2	10	12		
n	25	25	25	25	3	3		

Revised 12-5-01

ANC08128
BZTO104(e)008128

Chesapeake Cultures

P.O. Box 507 Hayes, VA 23072 (804) 693-4046 (804)694-4704 fax
www.c-cultures.com
e-mail growfish@c-cultures.com

NAS

Shipment Information

Species Hyalella azteca Date 9/21/04

Age ~3-4 days 1.2-1.5 mm P.O. No. verbal

Quanitity 2,400+ Invoice No. 4832

Temperature 24°C Salinity — pH 7.94

Notes RECEIVED 9-22-04
-6S1

Biologist SJ Mane

Please inspect shipment and report any problem immediately

page 4 of 7

Acute 96-hr Toxicity Test-96 Hr Survival

Start Date:	9/24/04 12:20	Test ID:	999-1846	Sample ID:	REF-Ref Toxicant
End Date:	9/28/04 12:30	Lab ID:	ORNAS Northwestern Aquati	Sample Type:	CDCL-Cadmium chloride
Sample Date:		Protocol:	EPAA 91-EPA Acute	Test Species:	HA-Hyalella azteca
Comments:					

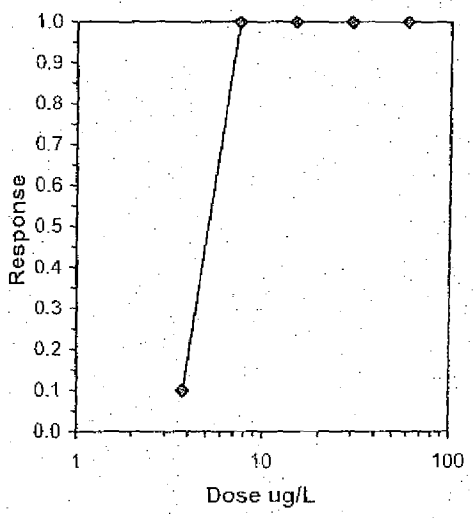
Conc-ug/L	1	2
D-Control	1.0000	1.0000
3.75	0.8000	1.0000
7.5	0.0000	0.0000
15	0.0000	0.0000
30	0.0000	0.0000
60	0.0000	0.0000

			Transform: Arcsin Square Root					Number	Total
Conc-ug/L	Mean	N-Mean	Mean	Min	Max	CV%	N	Resp	Number
D-Control	1.0000	1.0000	1.4120	1.4120	1.4120	0.000	2	0	20
3.75	0.9000	0.9000	1.2596	1.1071	1.4120	17.115	2	2	20
7.5	0.0000	0.0000	0.1588	0.1588	0.1588	0.000	2	20	20
15	0.0000	0.0000	0.1588	0.1588	0.1588	0.000	2	20	20
30	0.0000	0.0000	0.1588	0.1588	0.1588	0.000	2	20	20
60	0.0000	0.0000	0.1588	0.1588	0.1588	0.000	2	20	20

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Normality of the data set cannot be confirmed				
Equality of variance cannot be confirmed				

Trimmed Spearman-Karber

Trim Level	EC50	95% CL	
0.0%			
5.0%			
10.0%	5.1030	4.8183	5.4045
20.0%	5.1030	4.8183	5.4045
Auto-10.0%	5.1030	4.8183	5.4045



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BZTO104(e)008130

Test: AT-Acute 96-hr Toxicity Test							Test ID: 999-1846		
Species: HA-Hyalella azteca							Protocol: EPAA 91-EPA Acute		
Sample ID: REF-Ref Toxicant							Sample Type: CDCL-Cadmium chloride		
Start Date: 9/24/04 12:20			End Date: 9/28/04 12:30				Lab ID: ORNAS-Northwestern Aquatic Sciences		
Pos	ID	Rep	Group	Start	24 Hr	48 Hr	72 Hr	96 Hr	Notes
	1	1	D-Control	10				10	
	2	2	D-Control	10				10	
	3	1	3.750	10				8	
	4	2	3.750	10				10	
	5	1	7.500	10				0	
	6	2	7.500	10				0	
	7	1	15.000	10				0	
	8	2	15.000	10				0	
	9	1	30.000	10				0	
	10	2	30.000	10				0	
	11	1	60.000	10				0	
	12	2	60.000	10				0	

Comments: Data entry verified against laboratory bench sheets.
MSR 10-20-04

ANC08131
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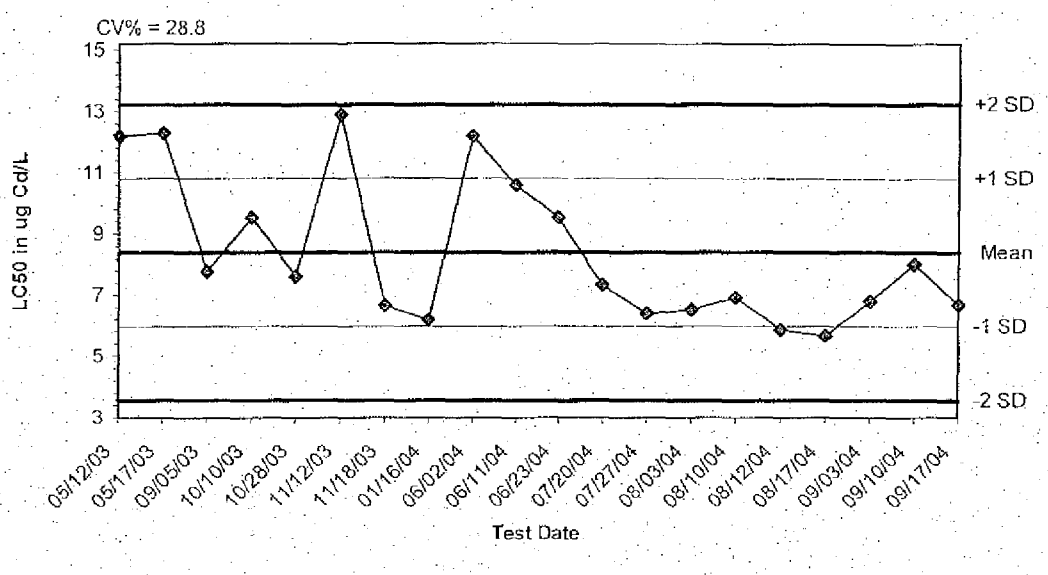
Hyalella azteca 96-hr reference toxicant test - last 20 points



Dates	Values	Mean	-1 SD	-2 SD	+1 SD	+2 SD
05/12/03	12.2000	8.3945	5.9794	3.5644	10.8096	13.2246
05/17/03	12.3000	8.3945	5.9794	3.5644	10.8096	13.2246
09/05/03	7.7900	8.3945	5.9794	3.5644	10.8096	13.2246
10/10/03	9.5600	8.3945	5.9794	3.5644	10.8096	13.2246
10/28/03	7.6200	8.3945	5.9794	3.5644	10.8096	13.2246
11/12/03	12.9000	8.3945	5.9794	3.5644	10.8096	13.2246
11/18/03	6.6700	8.3945	5.9794	3.5644	10.8096	13.2246
01/16/04	6.1900	8.3945	5.9794	3.5644	10.8096	13.2246
06/02/04	12.2000	8.3945	5.9794	3.5644	10.8096	13.2246
06/11/04	10.6000	8.3945	5.9794	3.5644	10.8096	13.2246
06/23/04	9.5600	8.3945	5.9794	3.5644	10.8096	13.2246
07/20/04	7.3500	8.3945	5.9794	3.5644	10.8096	13.2246
07/27/04	6.4100	8.3945	5.9794	3.5644	10.8096	13.2246
08/03/04	6.5300	8.3945	5.9794	3.5644	10.8096	13.2246
08/10/04	6.9300	8.3945	5.9794	3.5644	10.8096	13.2246
08/12/04	5.8800	8.3945	5.9794	3.5644	10.8096	13.2246
08/17/04	5.6800	8.3945	5.9794	3.5644	10.8096	13.2246
09/03/04	6.8000	8.3945	5.9794	3.5644	10.8096	13.2246
09/10/04	8.0300	8.3945	5.9794	3.5644	10.8096	13.2246
09/17/04	6.6900	8.3945	5.9794	3.5644	10.8096	13.2246

MSR
9-29-04

ANC08132
BZTO104(e)008132

Report

of

Test No. 686-16

Toxicity of Portland Harbor RI/FS Freshwater Test Sediments (Batch 8) using a 10-day Midge, *Chironomus tentans*, Sediment Bioassay

Submitted to

Windward Environmental, Inc.
200 West Mercer Street, Suite 401
Seattle, WA 98119

Submitted by

Northwestern Aquatic Sciences
3814 Yaquina Bay Road
P.O. Box 1437
Newport, OR 97365

January 18, 2005

ANC08133
BZTO104(e)008133

TOXICITY TEST REPORT

TEST IDENTIFICATION

Test No.: 686-16

Title: Toxicity of Portland Harbor RI/FS freshwater test sediments (batch 8) using a 10-day midge, *Chironomus tentans*, sediment bioassay.

Protocol No.: NAS-686-CT4b, June 24, 2004. Based on ASTM 2003, Standard Method No. E 1706-00 and U.S. EPA Method 100.2 (EPA/600/R-99/064, 2000) This protocol can be found in Appendix B of the Portland Harbor RI/FS Round 2 Quality Assurance Project Plan, June 24, 2004.

STUDY MANAGEMENT

Study Sponsor: Windward Environmental, Inc., 200 West Mercer Street, Suite 401, Seattle, WA 98119.

Sponsor's Study Monitor: Ms. Helle Andersen

Testing Laboratory: Northwestern Aquatic Sciences, P.O. Box 1437, Newport, OR 97365

Test Location: Newport laboratory

Laboratory's Study Personnel: G.J. Irissarri, B.S., Proj. Man./Study Dir.; L.K. Nemeth, M.B.A., QA Officer; R.S. Caldwell, PhD, Sr. Toxicologist; M.S. Redmond, M.S., Aq. Toxicologist; G.A. Buhler, B.S., Aq. Toxicologist; W.T. Montgomery, A.A., Sr. Tech.; G. Hayes, B.S., Tech.; S.J. Gage, B.A., Tech.; B.B. Pridgeon, Lab Assistant.

Study Schedule:

Test Beginning: 9-24-04, 1600 hrs.

Test Ending: 10-4-04, 1300 hrs.

Disposition of Study Records: All specimens, raw data, reports and other study records are stored according to Good Laboratory Practice regulations at Northwestern Aquatic Sciences, 3814 Yaquina Bay Rd., Newport, OR 97365.

Good Laboratory Practices: The test was conducted following the principles of Good Laboratory Practices (GLP) as defined in the EPA/TSCA Good Laboratory Practice regulations revised August 17, 1989 (40 CFR Part 792).

Statement of Quality Assurance: The test data were reviewed by the Quality Assurance Unit to assure that the study was performed in accordance with the protocol and standard operating procedures. This report is an accurate reflection of the raw data.

TEST MATERIAL

Test Sediments: Portland Harbor RI/FS freshwater test sediments (Batch 8). Details are as follows:

NAS Sample No.	9456F	9457F	9458F	9459F	9460F
Description	LW2-G301	LW2-G302	LW2-G308	LW2-G288	LW2-G292
Collection Date	9/13/04	9/13/04	9/13/04	9/13/04	9/13/04
Receipt Date	9/15/04	9/15/04	9/15/04	9/15/04	9/15/04
NAS Sample No.	9461F	9462F	9463F	9464F	9465F
Description	LW2-G298	LW2-G315	LW2-G316	LW2-G260	LW2-G268
Collection Date	9/13/04	9/13/04	9/13/04	9/14/04	9/14/04
Receipt Date	9/15/04	9/15/04	9/15/04	9/15/04	9/15/04
NAS Sample No.	9466F	9467F	9468F	9469F	9470F
Description	LW2-G318	LW2-G320	LW2-G323	LW2-G327	LW2-G331
Collection Date	9/14/04	9/14/04	9/14/04	9/14/04	9/14/04
Receipt Date	9/15/04	9/15/04	9/15/04	9/15/04	9/15/04
NAS Sample No.	9471F	9472F	9473F	9474F	9475F
Description	LW2-G333	LW2-G335	LW2-G336	LW2-G348	LW2-G350
Collection Date	9/14/04	9/14/04	9/14/04	9/14/04	9/14/04
Receipt Date	9/15/04	9/15/04	9/15/04	9/15/04	9/15/04

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Control Sediment: The negative control sediment (NAS#9454F) was collected on 9-14-04 from an area approximately one mile east of the Hwy. 101 bridge at Beaver Creek, approx. 8 miles south of Newport, OR.
Treatments: Homogenized at test set up by mixing using stainless steel implements.
Storage: All test and control sediments were stored at 4°C in the dark in capped containers until used.

TEST WATER

Source: Dechlorinated Newport, OR tap water.
Dates of Collection: Eight batches of test water were collected between 9/22/04 and 10/2/04
Water Quality (mean ± SD):
pH: 6.9 ± 0.0 (n=8)
conductivity: 162 ± 4 µmhos/cm (n=8)
hardness: 34 ± 0 mg/L as $CaCO_3$ (n=8)
alkalinity: 33 ± 5 mg/L as $CaCO_3$. (n=8)
chlorine: All batches were below 0.02 mg/L.
Pretreatment: Dechlorinated and aerated ≥24 hr.

TEST ORGANISMS

Species: *Chironomus tentans*, midge.
Size: 3rd instar, mean initial wt: 0.17 ± 0.01 mg
Source: NAS cultures, originally obtained from EPA, Duluth, MN.
Acclimation: Holding conditions prior to testing averaged: temperature, 23.2 ± 0.7°C; dissolved oxygen, 6.4 ± 1.4 mg/L; pH, 6.9 ± 0.3; conductivity, 273 ± 17 µmhos/cm; hardness, 81mg/L as $CaCO_3$; and alkalinity, 70 mg/L as $CaCO_3$.

TEST PROCEDURES AND CONDITIONS

The following is an abbreviated statement of the test procedures and a statement of the test conditions actually employed. See the test protocol for a more detailed description of the test procedures used in this study.

Test Chambers: 300 ml high-form glass beakers
Test Volumes: 100 ml sediment layer; 175 ml test water.
Replicates/Treatment: 8
Organisms/Treatment: 80
Water Volume Changes: 2 water volumes per day
Aeration: None.
Feeding: Animals were fed 1.5 ml of Prime Tropical Flakes suspension (1.5 ml contains 6 mg dry solids) per beaker daily.
Effects Criteria: 1) survival after 10 days, and 2) average individual biomass (based on ash-free dry weight) after 10 days. Death is defined as no visible movement or response to tactile stimulation. Missing organisms were considered to be dead.
Water Quality and Other Test Conditions: The temperature, dissolved oxygen, conductivity, pH, hardness, alkalinity and ammonia-nitrogen were measured in the overlying water of one replicate test container per treatment on days 0 and 10 of the test. Temperature and dissolved oxygen were measured daily in the overlying water of one replicate test container per treatment. Interstitial ammonia was measured in the bulk sediment. Hardness and alkalinity were measured with titrimetric methods. Interstitial water samples were obtained by centrifugation, or by settling in the case of very sandy sediments. Total ammonia-N was measured using Hach reagents based on the salicylate (Clin. Chim. Acta 14:403, 1996) colorimetric method; samples were not distilled prior to analysis. The photoperiod was 16:8, L:D.

DATA ANALYSIS METHODS

Survival and individual biomass were calculated for each replicate as follows:

percent survival = 100 x (number surviving/initial number tested)
average individual ash-free dry wt. = (final wt. – ashed dry wt.)/number weighed,

ANC08135
BZTO104(e)008135

where:
ash-free dry wt. = dry weight of organisms recovered on day 10 – ashed dry weight, in mg

Means and standard deviations for the biological endpoints described above, and for water quality data, were computed using Microsoft Excel 2000.

PROTOCOL DEVIATIONS

None

REFERENCE TOXICANT TEST

The reference toxicant test is a multi-concentration toxicity test using potassium chloride, to evaluate the performance of the test organisms used in the sediment toxicity test. The performance is evaluated by comparing the results of this test with historical results obtained at the laboratory. A summary of the reference toxicant test result is given below. The reference toxicant test raw data are found in Appendix II. The age of the test dilution water exceeded EPA specifications. This deviation is not likely to have affected the test results.

Test No.: 999-1847
Reference Toxicant and Source: Potassium chloride (Fisher, Lot No. 006829).
Test Date: 9-24-04
Dilution Water Used: Moderately hard synthetic water prepared from Milli-Q® deionized water.
Result: 96-hr LC50, 5.52 g/L. This result is within the laboratory's control chart warning limits (2.87 to 7.56 g/L).

TEST RESULTS

Observations of water quality in the overlying water throughout the test are summarized in Table 1. A detailed tabulation of the water quality results by sample and test day can be found in Appendix I. Interstitial ammonia and pH measurements are listed in Table 2. The means and standard deviations of percent mortality and growth (ash-free dry weight) of midges exposed for 10 days to sediments are summarized in Table 3. Detailed data organized by sample and replicate, and summary statistics for these observations, are given in Appendix I.

All water quality observations of overlying water temperature and dissolved oxygen were within the protocol specified ranges. Ammonia-N in the overlying water ranged from 0.2 to 2.9 mg/L in all day 0 and day 10 observations. Interstitial bulk sediment values for ammonia-N ranged from 1.4 to 16.1 mg/L.
The test met the survival and weight acceptability criteria specified in the test protocol with 91.3% mean control survival (≥70% required) and a control individual mean ash-free dry weight of 0.97 mg per larvae (0.48 mg required). The reference toxicant (positive control) result was within the laboratory's control chart limits (5.52 g/L; control chart mean ± 2 S.D. = 5.22 ± 2.35). It is concluded, therefore, that the test has developed fully acceptable data for use in making management decisions.

REFERENCES

ASTM. 2003. Standard Test Methods for Measuring the Toxicity of Sediment-Associated Contaminants with Fresh Water Invertebrates. ASTM Standard Method No. E 1706-00. Am. Soc. Test. Mat., West Conshohocken, PA.

U.S. EPA. 2000. Section 12, Test Method 100.2, *Chironomus tentans* 10-d Survival and Growth Test for Sediments, pp 55-62 In: Methods for Measuring the Toxicity and Bioaccumulation of Sediment-associated Contaminants with Freshwater Invertebrates (Second Edition). EPA/600/R-99/064.

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BZTO104(e)008136

STUDY APPROVAL

Gerald Lussiani 1-20-05
Project Manager/Study Director Date

Linda K. Nemitz 1/18/05
Quality Assurance Unit Date

Richard S. Caldwell 1/21/05
Laboratory Director Date

ANC08137
BZTO104(e)008137

Table 1. Summary of water quality conditions during tests of the midge, *Chironomus tentans*, exposed to freshwater sediments.

Water Quality Parameter	Mean ± S.D.	Minimum	Maximum	N
Temperature (°C)	22.8 ± 0.3	22.1	23.2	231
Dissolved oxygen (mg/L)	6.0 ± 0.8	3.0	7.4	231
Conductivity (µmhos/cm)	187 ± 82	155	680	42
pH	6.4 ± 0.1	6.2	6.6	42
Hardness (mg/L as $CaCO_3$)	44 ± 6	34	77	42
Alkalinity (mg/L as $CaCO_3$)	46 ± 9	40	80	42
Total ammonia (mg/L)	0.8 ± 0.7	0.2	2.9	42

Table 2. Pore water ammonia-N and pH in bulk test sediments at the time of test setup.

NAS Sample No.	Sample Description	Ammonia (mg/L)	pH
9454F	Control	9.6	6.5
9456F	LW2-G301	5.5	6.4
9457F	LW2-G302	7.0	6.4
9458F	LW2-G308	5.3	6.3
9459F	LW2-G288	---	---
9460F	LW2-G292	5.4	6.4
9461F	LW2-G298	11.8	5.9
9462F	LW2-G315	6.1	6.2
9463F	LW2-G316	1.6	6.4
9464F	LW2-G260	1.4	6.2
9465F	LW2-G268	1.4	6.5
9466F	LW2-G318	4.8	6.5
9467F	LW2-G320	16.1	6.2
9468F	LW2-G323	1.8	6.5
9469F	LW2-G327	13.5	6.4
9470F	LW2-G331	---	---
9471F	LW2-G333	3.7	6.5
9472F	LW2-G335	4.7	6.8
9473F	LW2-G336	6.5	6.0
9474F	LW2-G348	11.3	6.9
9475F	LW2-G350	13.5	6.8

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Table 3. Mortality and growth[1] results of *Chironomus tentans* 10-day sediment toxicity test

Sample description		Average percent mortality (Mean ± SD)	Average ash-free dry wt/midge (mg)[1] (Mean ± SD)
9454F	Control	8.8 ± 11.3	0.97 ± 0.18
9456F	LW2-G301	7.5 ± 4.6	1.04 ± 0.11
9457F	LW2-G302	100.0 ± 0.0	---
9458F	LW2-G308	35.0 ± 10.7	0.81 ± 0.21
9459F	LW2-G288	100.0 ± 0.0	---
9460F	LW2-G292	17.5 ± 11.6	1.13 ± 0.16
9461F	LW2-G298	100.0 ± 0.0	---
9462F	LW2-G315	13.8 ± 10.6	1.05 ± 0.19
9463F	LW2-G316	12.5 ± 10.4	1.14 ± 0.14
9464F	LW2-G260	7.5 ± 8.9	1.20 ± 0.21
9465F	LW2-G268	12.5 ± 10.4	1.08 ± 0.12
9466F	LW2-G318	12.5 ± 11.6	0.96 ± 0.15
9467F	LW2-G320	38.8 ± 16.4	0.82 ± 0.21
9468F	LW2-G323	11.3 ± 9.9	1.24 ± 0.13
9469F	LW2-G327	17.5 ± 17.5	0.53 ± 0.13
9470F	LW2-G331	5.0 ± 7.6	1.05 ± 0.18
9471F	LW2-G333	13.8 ± 14.1	1.13 ± 0.16
9472F	LW2-G335	13.8 ± 9.2	1.03 ± 0.16
9473F	LW2-G336	18.8 ± 11.3	1.14 ± 0.24
9474F	LW2-G348	36.3 ± 27.2	0.87 ± 0.29
9475F	LW2-G350	12.5 ± 20.5	0.99 ± 0.13

[1] Pupae were not included in the sample to estimate ash-free dry weight (as per EPA/600/R-99/064, p. 59, section 12.3.8.2)

ANC08139
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APPENDIX I

RAW DATA

TEST DESCRIPTION, MONITORING, AND RESULTS BENCHSHEETS

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-16 Client Windward Environmental Investigator

STUDY MANAGEMENT

Client: Windward Enviromental, 200 West Mercer Street, Suite 401, Seattle, WA 98119

Client's Study Monitor: Ms. Helle Andersøn 651

Testing Laboratory: Northwestern Aquatic Sciences

Test Location: Newport Laboratory

Laboratory's Study Personnel:

Proj. Man./Study Dir. G.J. Irissarri 651

QA Officer L.K. Nemeth

1. GA Buhler 2. G. C Hayes

3. M.S. Redmond 4. Susan Cage

5. B.B. Middecott 6. William T. Montgomery

Study Schedule: R.S. Caldwell

Test Beginning: 9-24-04 1600 Test Ending: 10-4-04 1300

TEST MATERIAL

General description (see sample logbook/chain-of-custody for details):

NAS Sample No.:	9454F	9456F	9457F	9458F	9459F
Description:	Control	LW2-G301	LW2-G302	LW2-G308	LW2-G288
Collection Date:	9/14/04	9/13/04	9/13/04	9/13/04	9/13/04
Receipt Date:	9/14/04	9/15/04	9/15/04	9/15/04	9/15/04
NAS Sample No.:	9460F	9461F	9462F	9463F	9464F
Description:	LW2-G292	LW2-G298	LW2-G315	LW2-G316	LW2-G260
Collection Date:	9/13/04	9/13/04	9/13/04	9/13/04	9/14/04
Receipt Date:	9/15/04	9/15/04	9/15/04	9/15/04	9/15/04
NAS Sample No.:	9465F	9466F	9467F	9468F	9469F
Description:	LW2-G268	LW2-G318	LW2-G320	LW2-G323	LW2-G327
Collection Date:	9/14/04	9/14/04	9/14/04	9/14/04	9/14/04
Receipt Date:	9/15/04	9/15/04	9/15/04	9/15/04	9/15/04
NAS Sample No.:	9470F	9471F	9472F	9473F	9474F
Description:	LW2-G331	LW2-G333	LW2-G335	LW2-G336	LW2-G348
Collection Date:	9/14/04	9/14/04	9/14/04	9/14/04	9/14/04
Receipt Date:	9/15/04	9/15/04	9/15/04	9/15/04	9/15/04
NAS Sample No.:	9475F				
Description:	LW2-G350				
Collection Date:	9/14/04				
Receipt Date:	9/15/04				
NAS Sample No.:					
Description:					
Collection Date:					
Receipt Date:					

Error codes: 1) correction of handwriting error
2) written in wrong location; entry deleted
3) wrong date deleted, replaced with corrrect date
4) error found in measurement; measurement repeated

ANC08142
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NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-16 Client Windward Environmental Investigator _____

SEDIMENT DESCRIPTIONS -- SUPPLEMENTAL NOTES

Sample No.	Description
9454F	Black Mud.
9456F	Dark Brown sandy mud
9457F	Dark gray mud w/ creosote odor + woody debris
9458F	Gray brown Sandy Mud
9459F	Dark gray mud (w) heavy Petroleum odor
9460F	Dark gray sandy mud
9461F	Thick dary gray mud w/ heavy petroleum odor
9462F	Gray brown Sandy Mud
9463F	Black and Gray sand with pebbles.
9464F	Dark brown with Sand a/ sm. rocks w/Sand
9465F	Brown mud w/ Woody debris
9466F	Gray brown Sandy Mud
9467F	Dark Gray sandy mud
9468F	Dark ~~Gray~~ Brown Sand
9469F	Gray brown Clay like mud
9470F	Dark Sand w/ occasional stones
9471F	Dark Gray sandy mud.
9472F	Dark Brown Sand a/ gravel (pebbles)
9473F	Dark gray Sandy mud
9474F	Gray-brown clay like mud
9475F	Dark gray mud

ANC08143
BZTO104(e)008143

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-16 Client Windward Environmental Investigator

TEST WATER

Source: Dechlorinated Newport, OR tap water

Date of Collection: 9-22-04, 9-23-04, 9-25-04, 9-26-04, 9-27-04, 9-29-04, 9-30-04, 10-2-04

pH 6.9, 6.9, 6.9, 6.9, 6.9, 6.9, 6.9, 6.9 ($\bar{x}$ = 6.9 ± 0.0)

Cond (umhos/cm^2) 160, 160, 160, 160, 165, 160, 160, 170 ($\bar{x}$ = 162 ± 4)

Hardness (mg/L) 34, 34, 34, 34, 34, 34, 34, 34 ($\bar{x}$ = 34 ± 0.0)

Alkalinity (mg/L) 30, 30, 30, 30, 30, 40, 40, 30 ($\bar{x}$ = 33 ± 5)

Treatments: Aerated ≥ 24 hrs

TEST ORGANISMS

Species: *Chironomus tentans* Age: 3rd instar Date received: –

Source: NAS cultures

Acclimation Data:

Date	Temp. (deg.C)	DO (mg/L)	pH	Cond umhos/cm	Feeding amount (ml)	Feeding description*	Water changes	Hardness (mg/L)	Alkalinity (mg/L)
9-13-04	24.1	7.4	7.4	270	ANIMALS	FED TETRA	CULTURE	–	–
9-15-04	23.0	7.0	7.0	260	FIN AND	SELENASTRUM	TANKS	77	70
9-17-04	22.8	6.4	6.8	260			CHANGED	–	–
9-20-04	22.0	5.8	6.8	305	DETAILS	RECORDED	TWICE	–	–
9-22-04	23.6	4.0	6.6	270	IN CHIRONOMID		WEEKLY	85	70
9-24-04	23.5	7.8	6.6	270	CULTURE	DATA		–	–
Mean	23.2	6.4	6.9	273	SHEETS			81	70
S.D.	0.7	1.4	0.3	17				–	–
(N)	6	6	6	6				2	2

Photoperiod during acclimation: 16:8, L:D *S=Selenastrum, T=Tetra Fin suspension

TEST PROCEDURES AND CONDITIONS

Test chambers: 300 ml glass beakers

Test volumes: 100 ml of test sediment; 275 ml total volume

Replicates/treatment: (8) 8 Organisms/treatment: (80) 80

Test water changes: Twice daily

Aeration: only if DO falls below 2.5 mg/L

Feeding: everyday beginning with day zero

Test temperature (deg.C): 23

Beaker placement: Total randomization

Photoperiod: 16:8, L:D

Control Sediment:

Source: From an area approximately one mile east of the Hwy. 101 bridge at Beaver Creek, approx. 8 miles south of Newport, OR.

Date collected: 9/14/04

Sieved through 0.5 -mm screen NAS# 9454F

Storage: 4°C in the dark in closed containers.

MISCELLANEOUS NOTES

LIGHT INTENSITY MEASUREMENTS:

10-3-04

SITE A: 41 FT-CANDLES (441 LUX)

SITE B: 63 FT-CANDLES (678 LUX)

ANC08144
BZTO104(e)008144

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-16 Client Windward Environmental Investigator _____

Test conducted in (circle one): room 1 (room 2) trailer water bath other: _____

Randomization chart:

5								165	
4								164	
3							→	163	168
2								162	167
1								161	166

Randomization chart:

Randomization chart:

Randomization chart:

ANC08145
BZTO104(e)008145

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No 686-16 Client Windward Environmental Investigator _____

DAILY RECORD SHEET

Day 0 (9/24/16) NB/BBP

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond.* umhos/cm	Ph*	Hardness* (mg/L)	Alkalinity* (mg/L)	S (ppm)	NH3* (ppm)	Comments
2	23.0	6.4	180	6.6	43	50			Each beaker fed 1.5 ml
13	22.8	6.7	205	6.4	43	50			Prime Tropical Flakes
14	22.8	6.8	260	6.3	77	50			suspension.
15	22.8	6.5	185	6.3	43	50			Initials: BJ
16	22.8	6.2	200	6.3	51	60			
32	22.9	6.8	180	6.3	43	60			
36	22.8	6.6	170	6.5	43	40			
45	22.8	6.0	225	6.6	34	40			
56	22.8	7.4	165	6.5	43	40			Water changed in all
66	22.8	6.6	175	6.4	43	40			beakers.
70	22.8	6.8	185	6.3	51	60			Time: 0645
74	22.8	6.6	190	6.3	43	50			Initials: NB
77	22.7	6.8	160	6.4	34	40			
83	22.8	6.9	175	6.3	43	40			
91	22.7	7.0	175	6.3	43	50			
102	22.8	6.6	680	6.2	43	80			
107	22.7	6.6	180	6.3	51	50			Water changed in all
108	22.7	6.8	165	6.3	43	40			beakers.
156	22.7	6.6	285	6.4	43	60			Time: 1800
159	22.7	6.9	175	6.4	43	50			Initials: [illegible]
165	22.6	6.5	190	6.3	43	50			

*Water quality measurements to be taken.

Day 1 (9/25/16) NB/BBP

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. umhos/cm	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
2	23.0	6.4							Each beaker fed 1.5 ml
13	22.9	6.4							Prime Tropical Flakes
14	22.8	6.1							suspension.
15	22.9	6.4							Initials: NB
16	22.8	6.4							
32	22.6	6.5							
36	22.6	6.4							
45	22.6	6.0							
56	22.7	6.6							Water changed in all
66	22.7	6.4							beakers.
70	22.6	6.5							Time: 0715
74	22.6	6.6							Initials: NB
77	22.5	6.2							
83	22.5	6.6							
91	22.6	4.7							
102	22.6	6.4							
107	22.5	6.6							Water changed in all
108	22.5	6.8							beakers.
156	22.5	6.4							Time: 1905
159	22.4	6.6							Initials: [illegible]
165	22.4	6.7							

*Water quality measurements to be taken.

ANC08146
BZTO104(e)008146

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No 686-16 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 2 (9 /26/04) mm/631

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. (mhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
2	22.7	6.7							Each beaker fed 1.5 ml
13	22.7	7.1	631 9-26-04						Prime Tropical Flakes
14	22.6	5.9	6.3 ⊕						suspension.
15	22.7	6.3	5.9						Initials: MM
16	22.8	6.1							
32	22.7	6.1							
36	22.7	6.4							
45	22.8	6.3							
56	22.8	6.3							Water changed in all
66	22.8	6.8							beakers.
70	22.8	6.4							Time: 0930
74	22.7	6.6							Initials: MM
77	22.7	6.5							
83	22.8	7.0							
91	22.9	3.8							
102	22.8	6.6							
107	22.8	6.8							Water changed in all
108	22.7	6.2							beakers.
156	22.7	6.4							Time: 17:50
159	22.6	6.4							Initials: MM
165	22.6	6.7							

*Water quality measurements to be taken.

Day 3 (9 /27/04) mm

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. (mhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
2	23.0	5.6							Each beaker fed 1.5 ml
13	23.0	6.8							Prime Tropical Flakes
14	23.0	5.6							suspension.
15	23.0	5.0							Initials: 631
16	23.1	5.3							
32	23.0	5.0							
36	23.1	5.6							
45	23.0	5.3							
56	23.0	5.0							Water changed in all
66	23.1	5.7							beakers.
70	23.1	5.2							Time: 0650
74	23.0	5.1							Initials: 631
77	23.0	4.8							
83	23.0	5.4							
91	23.0	3.0							
102	23.0	5.8							
107	23.0	4.8							Water changed in all
108	22.9	4.9							beakers.
156	22.9	6.6							Time: 1725
159	22.9	5.7							Initials: BBP
165	22.9	5.7							

*Water quality measurements to be taken.

ANC08147
BZTO104(e)008147

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No 686-16 Client Windward Environmental Investigator _____

DAILY RECORD SHEET

Day 4 (9/28/04) WTM

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. umhos/cm	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
2	22.7	6.3							Each beaker fed 1.5 ml
13	22.6	6.7							Prime Tropical Flakes
14	22.6	6.9							suspension.
15	22.7	6.9							Initials: WTM
16	22.7	6.7							
32	22.7	6.8							
36	22.7	6.8							
45	22.8	6.3							
56	22.8	7.1							Water changed in all
66	22.7	7.1							beakers.
70	22.7	6.7							Time: 0705
74	22.7	6.1							Initials: BSL
77	22.7	6.6							
83	22.7	6.9							
91	22.8	5.8							
102	22.8	6.8							
107	22.8	6.7							Water changed in all
108	22.7	6.3							beakers.
156	22.7	6.8							Time: 1725
159	22.7	7.2							Initials: BBP
165	22.7	6.7							

*Water quality measurements to be taken.

Day 5 (9/29/04) WTM

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. umhos/cm	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
2	23.0	6.6							Each beaker fed 1.5 ml
13	23.0	6.6							Prime Tropical Flakes
14	23.0	6.9							suspension.
15	23.0	6.4							Initials: CBS
16	23.1	6.7							
32	23.0	6.9							
36	23.1	6.8							
45	23.1	6.9							
56	23.1	7.0							Water changed in all
66	23.1	6.8							beakers.
70	23.1	7.0							Time: 0720
74	23.1	6.9							Initials: BSL
77	23.1	7.1							
83	23.1	7.0							
91	23.1	7.062							
102	23.1	6.3							
107	23.1	6.7							Water changed in all
108	23.1	6.8							beakers.
156	23.1	6.7							Time: 1725
159	23.0	6.7							Initials: BBP
165	23.0	6.6							

*Water quality measurements to be taken.

ANC08148
BZTO104(e)008148

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No 686-16 Client Windward Environmental Investigator _____

DAILY RECORD SHEET

Day 6 (9/30/04) CB/mm/AS

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. (mhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
2	22.7	5.3							Each beaker fed 1.5 ml
13	22.5	5.3							Prime Tropical Flakes
14	22.5	5.2							suspension.
15	22.5	5.4							Initials: CB
16	22.7	5.7 5.1							
32	22.6	5.7							
36	22.6	6.5							
45	22.6	5.5							
56	22.6	6.7							Water changed in all
66	22.6	6.3							beakers.
70	22.6	6.0							Time: 0720
74	22.6	6.1							Initials: CB
77	22.5	6.2							
83	22.6	6.3							
91	22.6	5.5							
102	22.7	6.0							
107	22.6	6.1							Water changed in all
108	22.6	6.5							beakers.
156	22.6	5.9							Time: 1735
159	22.6	6.1							Initials: CB
165	22.5	6.1							

*Water quality measurements to be taken.

Day 7 (10/1/04) CB

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. (mhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
2	730	5.8							Each beaker fed 1.5 ml
13	22.8	6.2							Prime Tropical Flakes
14	22.8	5.7							suspension.
15	22.9	6.0							Initials: MM
16	22.9	5.8							
32	22.8	6.2							
36	22.9	6.1							
45	22.9	5.9							
56	22.9	6.4							Water changed in all
66	22.9	6.3							beakers.
70	22.9	5.9							Time: 0635
74	22.8	6.1							Initials: CB
77	22.9	6.1							
83	22.9	6.6							
91	23.0	6.1							
102	22.9	5.9							
107	22.9	6.1							Water changed in all
108	22.8	6.3							beakers.
156	22.9	6.1							Time: 1750
159	22.8	5.9							Initials: BBP
165	22.8	6.3							

*Water quality measurements to be taken.

ANC08149
BZTO104(e)008149

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No 686-16 Client Windward Environmental Investigator _____

DAILY RECORD SHEET

Day 8 (10/2 1041) CB

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
2	22.2	5.9							Each beaker fed 1.5 ml
13	22.2	6.8							Prime Tropical Flakes
14	22.1	6.1							suspension.
15	22.2	6.2							Initials: CB
16	22.2	6.1							
32	22.2	5.2							
36	22.1	5.9							
45	22.2	5.4							
56	22.2	6.5							Water changed in all
66	22.2	5.9							beakers.
70	22.2	6.1							Time: 0620
74	22.2	6.1							Initials: CB
77	22.2	6.2							
83	22.2	6.3							
91	22.2	4.7							
102	22.1	5.7							
107	22.1	6.2							Water changed in all
108	22.1	6.7							beakers.
156	22.1	6.5							Time: 1800
159	22.1	6.2							Initials: BB
165	22.1	6.4							

*Water quality measurements to be taken.

Day 9 (10/3 04) GJI

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
2	23.2	3.9							Each beaker fed 1.5 ml
13	23.0	4.2							Prime Tropical Flakes
14	23.0	4.0							suspension.
15	22.9	4.2							Initials: GJI
16	23.1	4.6							
32	23.0	3.7							
36	23.1	4.4							
45	23.0	3.2							
56	23.1	4.9							Water changed in all
66	23.1	5.0							beakers.
70	22.9	4.0							Time: 0750
74	22.9	4.2							Initials: GJI
77	23.0	4.2							
83	23.0	4.9							
91	23.1	3.8							
102	23.0	4.2							
107	23.0	3.9							Water changed in all
108	23.0	4.4							beakers.
156	23.0	4.2							Time: 1740
159	22.8	4.7							Initials: GJI
165	22.8	3.8							

*Water quality measurements to be taken.

ANC08150
BZTO104(e)008150

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No 686-16 Client Windward Environmental Investigator _____

DAILY RECORD SHEET

Day 10 (10/4 10/4) BBP/lwm

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond.* umhos/cm	Ph*	Hardness* (mg/L)	Alkalinity* (mg/L)	S (ppm)	NH3* (ppm)	Comments
2	22.8	6.5	155	6.4	43	40			Each beaker fed 1.5 ml
13	22.8	5.8	160	6.4	43	40			Prime Tropical Flakes
14	22.7	6.3	160	6.4	34	50			suspension.
15	22.7	5.9	160	6.4	43	40			Initials: —
16	22.8	6.6	155	6.4	43	40			
32	22.8	6.2	155	6.4	43	50			
36	22.8	6.3	160	6.4	43	40			
45	22.7	5.9	160	6.4	43	40			
56	22.8	6.9	160	6.5	43	40			Water changed in all
66	22.8	6.9	160	6.5	43	40			beakers.
70	22.7	6.4	155	6.5	43	40			Time: 0635
74	22.7	6.3	160	6.4	43	40			Initials: GJL
77	22.7	6.4	155	6.4	43	40			
83	22.7	6.3	160	6.4	43	40			
91	22.7	5.0	160	6.4	43	40			
102	22.9	6.1	185	6.4	34	50			
107	22.8	6.3	160	6.4	43	40			Water changed in all
108	22.8	6.4	160	6.4	43	40			beakers.
156	22.8	6.2	160	6.5	43	40			Time:
159	22.7	6.0	160	6.4	43	40			Initials:
165	22.6	6.3	160	6.5	43	40			

*Water quality measurements to be taken.

Day _____(/ /)

Beaker No.	Temp. (deg.C)	DO (ppm)	Cond. umhos/cm	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
2									Each beaker fed 1.5 ml
13									Prime Tropical Flakes
14									suspension.
15									Initials:
16									
32									
36									
45									
56									Water changed in all
66									beakers.
70									Time:
74									Initials:
77									
83									
91									
102									
107									Water changed in all
108									beakers.
156									Time:
159									Initials:
165									

*Water quality measurements to be taken.

ANC08151
BZTO104(e)008151

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-16 Client Windward Environmental Investigator _____

Tare: Date 9-23-04 Oven temp (C.) 67 Drying time (hr.) 24 Initials GJL
Standard Weights: 10 mg: 10.005 100mg: 100.016

Final #1 Date 9-25-04 Oven temp (C.) 67 Drying time (hr.) 24 Initials GJL
Standard Weights: 10 mg: 10.006 100mg: 100.018

Final: #2 Date 9-26-04 Oven temp (C.) 68 Drying time (hr.) 24 Initials GJL
Standard Weights: 10 mg: 10.007 100mg: 100.018

Equip. used: Oven: BLUE M #1 Balance: SARTORIUS M3P

(Dry overnight at 60-90 degrees C)

Pan #	Tare wt. (mg)	Total wt. (mg) 1	Total wt. (mg) 2	#weighed	Comments
1	91.75	95.56	95.40	20	
2	97.17	101.07	100.65	20	
3	88.60	92.16	91.78	20	

ANC08152
BZTO104(e)008152

Test No. 686-16 Client Windward Enviromental Investigator

DAY 20 TEST TERMINATION SHEET

Beaker No.	Number of survivors	Initials
1	Ø	GJL
2	7	CB
3	Ø	CB
4	9	GJL
5	10	CB
6	7	CB
7	9	CB
8	8	GJL
9	9	CB
10	9	GJL
11	9	CB
12	8	GJL
13	5	CB
14	10	GJL
15	Ø	CB
16	6	GJL
17	5	GJL
18	5	CB
19	9	CB
20	Ø	GJL
21	9	GJL
22	9	CB
23	6	GJL
24	10	CB
25	9	GJL
26	10	CB
27	7	CB
28	8	GJL
29	10	CB
30	8	GJL
31	8	CB
32	9	CB
33	7	GJL
34	8	CB
35	7	CB
36	7	CB
37	7	GJL
38	6	GJL
39	10	CB
40	8	CB
41	8	GJL
42	7	CB
43	9	GJL
44	9	CB
45	10	GJL

Beaker No.	Number of survivors	Initials
46	Ø	CB
47	Ø	GJL
48	9	CB
49	9	GJL
50	10	CB
51	10	GJL
52	10	GJL
53	Ø	GJL
54	10	GJL
55	9 + 1 PUPA	GJL
56	9	GJL
57	Ø	GJL
58	8	GJL
59	5 6 CB	CB
60	8	CB
61	10	GJL
62	10	CB
63	10	GJL
64	7	CB
65	Ø	GJL
66	Ø	CB
67	8	GJL
68	9	CB
69	9	GJL
70	10	CB
71	10	WTM
72	8	GJL
73	Ø	CB
74	8	CB
75	10	GJL
76	9	WTM
77	10	GJL
78	9	CB
79	9	GJL
80	9	GJL
81	9	WTM
82	9	CB
83	7	GJL
84	Ø	WTM
85	8	CB
86	9	WTM
87	9	CB
88	10	GJL
89	10	CB
90	7	GJL

ANC08153
BZTO104(e)008153

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-16 Client Windward Enviromental Investigator

DAY 20 TEST TERMINATION SHEET

Beaker No.	Number of survivors	Initials
91	Ø	WTM
92	Ø	GJL
93	9	CAB
94	9	WTM
95	8	GJL
96	Ø	GJL
97	Ø	CAB
98	9	GJL
99	9	CAB
100	10	WTM
101	10	CAB
102	7	GJL
103	7	WTM
104	7	CAB
105	8	GJL
106	10	WTM
107	7	GJL
108	9	CAB
109	9	WTM
110	9	GJL
111	Ø	GJL
112	7 8 [illegible] +1	CAB
113	Ø	WTM
114	Ø	GJL
115	5	CAB
116	9	GJL
117	7	WTM
118	9	CAB
119	7	GJL
120	Ø	CAB
121	10	WTM
122	9	CAB
123	8	GJL
124	10	WTM
125	7	GJL
126	7	WTM
127	10	GJL
128	2	CAB
129	9	GJL
130	8	CAB
131	Ø	WTM
132	10	WTM
133	10	WTM
134	10	GJL
135	7 8 [illegible]	CAB

Beaker No.	Number of survivors	Initials
136	10	GJL
137	7 8 [illegible]	WTM
138	10	CAB
139	9	GJL
140	9	GJL
141	7 +1 APA	CAB
142	9	WTM
143	4	GJL
144	8	CAB
145	8	GJL
146	WTM 7 8	WTM
147	8 + 1 APA	GJL
148	Ø	CAB
149	10	CAB
150	7	WTM
151	8	WTM
152	10	CAB
153	4	GJL
154	8	GJL
155	9	CAB
156	10	WTM
157	10	CAB
158	4	GJL
159	10	WTM
160	5	GJL
161	9	CAB
162	10	GJL
163	Ø	CAB
164	Ø	CAB
165	10	WTM
166	6	CAB
167	8	GJL
168	4	CAB
169		
170		
171		
172		
173		
174		
175		
176		
177		
178		
179		
180		

ANC08154
BZTO104(e)008154

NORTHWESTERN AQUATIC SCIENCES — PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-16 Client Windward Environmental Investigator

WEIGHING DATA SHEET

Tare: Date 9-30-04 Oven temp (C.) 550 Drying time (hr.) 2 Initials YMR
Standard Weights: 10 mg: 10.007 100mg: 100.021

Final #1: Date 10-4-04 (3) 10-5-04 Oven temp (C.) 64 Drying time (hr.) 24 Initials GJI
Standard Weights: 10 mg: 10.006 100mg: 100.020

Final #2: Date 10-6-04 Oven temp (C.) 64 Drying time (hr.) 24 Initials JMF
Standard Weights: 10 mg: 10.006 100mg: 100.022

Final #3: Date 10-7-04 Oven temp (C.) 550 Drying time (hr.) 2 Initials JMF
Standard Weights: 10 mg: 10.006 100mg: 100.018

Equip. used: Oven BLUE M #1 Balance SARTORIUS M3P
Furnace FISHER MUFFLE FURNACE 650 SERIES

(Dry overnight at 60-90 degrees C) (Final ashing is at 550 degrees C for 2 hours)

Bkr. #	Pan #	Tare wt. (mg)	Total wt. (mg) 1	Total wt. (mg) 2	no. weighed	put into pans-initials	Ashed weight (mg)
1	1	91.60	—	—	0		—
2	2	88.77	95.61	95.62	7		90.12
3	3	90.26	—	—	0		—
4	4	88.43	96.62	96.66	9		89.98
5	5	97.46	110.23	110.31	10		101.50
6	6	95.90	107.88	107.92	7		98.16
7	7	92.12	106.90	106.94	9		96.22
8	8	93.83	104.47	104.51	8		97.02
9	9	92.36	107.39	107.49	9		97.40
10	10	97.06	110.54	110.57	9		100.67
11	11	84.59	98.69	98.73	9		88.46
12	12	94.08	108.09	108.15	8		97.67
13	13	93.45	99.04	99.06	5		94.99
14	14	94.92	108.69	108.79	10		98.87
15	15	102.33	—	—	0		—
16	16	94.74	105.58	105.61	6		98.37
17	17	95.34	98.30	98.30	5		95.98
18	18	94.40	97.06	97.05	5		94.98
19	19	96.24	112.03	112.10	9		101.20
20	20	91.28	—	—	0		—
21	21	89.11	102.84	102.87	9		92.82
22	22	96.76	110.81	110.66	9		101.00
23	23	104.11	108.62	108.63	6		105.40
24	24	85.23	100.62	100.71	10		89.77
25	25	104.95	118.35	118.39	9		108.74
26	26	95.81	110.56	110.83	10		100.09
27	27	87.77	102.27	102.36	7		91.87
28	28	87.15	102.27	102.38	8		91.14
29	29	94.54	105.16	105.13	10		97.06
30	30	93.76	98.84	98.80	8		95.07
31	31	97.75	112.55	112.50	8		101.98
32	32	93.82	107.67	107.62	9		98.47
33	33	95.76	103.71	103.69	7		97.78

ANC08155
BZTO104(e)008155

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-16 Client Windward Environmental Investigator

WEIGHING DATA SHEET

See page _____ for information on drying times and temperatures, standard weights,etc.

Bkr. #	Pan #	Tare wt. (mg)	Total wt. (mg) 1	Total wt. (mg) 2	no. weighed	put into pans-initials	Ash weight (mg)
34	34	90.57	105.79	105.77	8		95.94
35	35	95.86	111.60	111.58	7		101.57
36	36	93.31	105.10	105.07	7		97.66
37	37	95.41	103.48	103.45	7		97.76
38	38	98.06	104.21	104.19	6		99.53
39	39	90.48	105.57	105.56	10		95.91
40	40	99.67	104.51	104.49	8		100.94
41	41	91.79	106.00	105.97	8		97.43
42	42	94.98	106.83	106.81	7		98.18
43	43	92.01	106.77	106.78	9		95.67
44	44	87.58	97.79	97.74	9		69.70
45	45	91.00	103.23	103.16	10		93.61
46	46	97.41	—	—	0		—
47	47	87.83	—	—	0		—
48	48	98.01	105.84	105.76	9		99.91
49	49	92.39	103.54	103.49	9		95.21
50	50	91.55	102.86	102.79	10		94.22
51	51	87.83	100.68	100.59	10		91.71
52	52	94.41	105.05	104.95	10		97.38
53	53	98.05	—	—	0		994. —
54	54	91.72	99.74	99.71	10		94.00
55	55	87.54	98.62	98.57	9		90.28
56	56	96.72	110.86	110.79	9		101.22
57	57	90.55	—	—	0		—
58	58	89.01	104.91	104.80	8		95.71
59	59	88.48	97.71	97.68	6		90.94
60	60	87.20	104.57	104.52	8		92.26
61	61	91.74	108.49	108.41	10		98.14
62	62	96.06	115.20	115.10	10		102.60
63	63	90.44	105.47	105.38	10		95.39
64	64	89.75	103.47	103.45	7		94.19
65	65	97.63	—	—	0		—
66	66	93.07	—	—	0		—
67	67	89.57	105.07	104.97	8		94.31
68	68	97.86	115.45	115.34	9		104.63
69	69	81.92	93.50	93.46	9		86.07
70	70	87.12	100.80	100.73	10		92.22
71	71	91.13	107.26	107.16	10		97.38
72	72	91.42	102.86	102.76	8		95.19
73	73	91.71	—	—	0		—
74	74	90.08	104.14	104.11	8		95.08
75	75	93.41	102.33	102.29	10		95.83
76	76	95.18	112.55	112.50	9		101.65

ANC08156
BZTO104(e)008156

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-16 Client Windward Environmental Investigator

WEIGHING DATA SHEET

See page _____ for information on drying times and temperatures, standard weights,etc.

Bkr. #	Pan #	Tare wt. (mg)	Total wt. (mg) 1	Total wt. (mg) 2	no. weighed	put into pans-initials	Ash weight (mg)
77	77	91.78	105.64	105.59	10	GSH6	95.74
78	78	102.26	116.09	116.03	9	GSH6	107.07
79	79	89.94	103.91	103.87	9	GSH6	94.10
80	80	97.63	114.53	114.50	9	GSH6	103.45
81	81	90.49	108.34	108.32	9	GSH6	97.38
82	82	93.64	109.58	109.50	9	GSH6	98.55
83	83	91.76	104.80	104.73	7	GSH6	96.46
84	84	92.54	—	—	0	GSH6	—
85	85	90.52	99.57	99.52	8	GSH6	93.65
86	86	88.49	102.70	102.64	9	GSH6	93.55
87	87	95.47	108.78	108.71	9	GSH6	100.06
88	88	89.23	101.68	101.61	10	GSH6	93.29
89	89	88.86	103.41	103.25	10	AM	92.45
90	90	94.13	106.87	106.76	7	AM	98.58
91	91	94.10	—	—	0	AM	—
92	92	89.39	—	—	0	AM	—
93	93	88.67	104.36	104.18	9	AM	94.68
94	94	91.39	109.37	108.92	9	AM	97.98
95	95	89.90	102.15	102.05	8	AM	94.28
96	96	92.20	—	—	0	AM	—
97	97	91.41	—	—	0	AM	—
98	98	91.89	104.74	104.62	8	AM	96.44
99	99	90.94	107.93	107.76	9	AM	96.14
100	100	96.01	113.69	113.51	10	AM	102.27
101	101	91.74	110.54	110.42	10	AM	99.06
102	102	95.72	103.99	103.92	7	AM	98.39
103	103	86.97	99.11	99.01	7	AM	90.94
104	104	88.23	103.95	103.84	7	AM	94.15
105	105	94.13	110.24	110.12	8	AM	98.74
106	106	89.58	101.51	101.42	10	AM	94.17
107	107	83.36	93.92	93.87	7	AM	87.19
108	108	80.67	96.99	96.90	9	AM	86.42
109	109	93.40	109.36	109.26	9	AM	99.06
110	110	88.24	102.89	102.80	9	AM	93.03
111	111	90.37	—	—	0	AM	—
112	112	93.15	106.67	106.55	8	AM	97.91
113	113	92.85	—	—	0	AM	—
114	114	93.83	—	—	0	AM	—
115	115	94.94	100.37	100.33	5	AM	96.39
116	116	89.01	104.42	104.34	9	AM	94.56
117	117	90.63	106.04	105.92	7	AM	96.70
118	118	88.39	106.33	106.17	9	AM	94.88
119	119	99.99	108.59	108.50	7	AM	102.79

ANC08157
BZTO104(e)008157

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-16 Client Windward Environmental Investigator

WEIGHING DATA SHEET

See page _____ for information on drying times and temperatures, standard weights,etc.

Bkr. #	Pan #	Tare wt. (mg)	Total wt. (mg) 1	2	no. weighed	put into pans-initials	Ash weight (mg)
120	120	93.38	~~105.55~~	—	0		—
121	121	88.70	~~108.59~~	105.25	10		94.80
122	122	94.93	113.03	112.74	9		102.08
123	123	100.02	117.66	117.43	8		106.81
124	124	93.45	106.81	106.62	10		98.16
125	125	96.41	102.82	102.68	7		98.26
126	126	89.51	98.65	98.51	7		92.46
127	127	92.94	106.27	106.08	10		96.23
128	128	100.96	105.14	105.06	2		102.36
129	129	97.79	111.21	111.05	9		101.60
130	130	91.90	99.70	99.59	8		94.22
131	131	86.35	—	—	0		—
132	132	86.15	99.02	98.86	10		~~90~~ 89.99
133	133	89.79	103.55	103.41	10		93.88
134	134	96.33	109.69	109.54	10		100.72
135	135	92.63	105.47	105.34	8		96.88
136	136	84.29	99.45	99.30	9		89.58
137	137	89.95	103.14	103.02	7		94.66
138	138	87.09	105.59	105.46	10		94.23
139	139	95.61	107.29	107.18	9		98.61
140	140	91.82	106.74	106.61	9		96.65
141	141	90.38	104.33	104.21	7		95.89
142	142	88.14	105.18	105.05	9		94.50
143	143	90.02	97.01	96.95	4		92.83
144	144	88.49	101.65	101.59	8		92.45
145	145	87.81	101.67	101.61	8		92.49
146	146	86.60	99.38	99.30	8		90.04
147	147	88.31	101.02	100.94	8		92.85
148	148	87.74	—	—	0		—
149	149	98.27	111.80	111.75	10		101.79
150	150	88.06	103.03	102.98	7		93.49
151	151	93.66	107.38	107.32	8		98.57
152	152	84.17	99.70	99.64	10		89.74
153	153	91.75	95.33	95.29	4		92.71
154	154	94.72	107.97	107.92	8		99.12
155	155	93.78	107.23	107.19	9		98.37
156	156	84.73	97.54	97.51	10		89.71
157	157	90.07	103.63	103.58	10		93.09
158	158	92.09	98.74	98.69	4		94.23
159	159	90.88	102.74	102.70	10		93.66
160	160	88.41	92.32	92.29	5		89.08
161	161	98.37	110.81	110.76	9		102.40
162	162	85.88	90.76	90.73	10		87.09

ANC08158
BZTO104(e)008158

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-16 Client Windward Environmental Investigator

WEIGHING DATA SHEET

See page _____ for information on drying times and temperatures, standard weights,etc.

Bkr. #	Pan #	Tare wt. (mg)	Total wt. (mg) 1	Total wt. (mg) 2	no. weighed	put into pans-initials	Ash weight (mg)
163	163	85.11	—	—	0	AY	
164	164	90.55	—	—	0	AY	
165	165	92.87	99.92	99.90	10	AY	94.66
166	166	86.38	91.12	91.08	6	AY	87.54
167	167	85.92	95.35	95.30	8	AY	87.85
168	168	92.02	94.77	94.71	4	AY	92.76
169	169						
170	170						
171	171						
172	172						
173	173						
174	174						
175	175						
176	176						
177	177						
178	178						
179	179						
180	180						
181	181						
182	182						
183	183						
184	184						
185	185						
186	186						
187	187						
188	188						
189	189						
190	190						
191	191						
192	192						
193	193						
194	194						
195	195						
196	196						
197	197						
198	198						
199	199						
200	200						
201	201						
202	202						
203	203						
204	204						
205	205						

ANC08159
BZTO104(e)008159

Test Number: 686-16

Freshwater Sediment Test
10-Day Chironomus tentans

BKR	NAS SMPL	CLIENT DESCRIP	REPL	
18	9469F	LW2-G327	1	
85	9469F	LW2-G327	2	
162	9469F	LW2-G327	3	
75	9469F	LW2-G327	4	
125	9469F	LW2-G327	5	
40	9469F	LW2-G327	6	
30	9469F	LW2-G327	7	
165	9469F	LW2-G327	8	wq replicate
63	9470F	LW2-G331	1	
132	9470F	LW2-G331	2	
28	9470F	LW2-G331	3	
136	9470F	LW2-G331	4	
49	9470F	LW2-G331	5	
55	9470F	LW2-G331	6	
19	9470F	LW2-G331	7	
77	9470F	LW2-G331	8	wq replicate
68	9471F	LW2-G333	1	
104	9471F	LW2-G333	2	
142	9471F	LW2-G333	3	
109	9471F	LW2-G333	4	
5	9471F	LW2-G333	5	
161	9471F	LW2-G333	6	
138	9471F	LW2-G333	7	
16	9471F	LW2-G333	8	wq replicate
78	9472F	LW2-G335	1	
22	9472F	LW2-G335	2	
67	9472F	LW2-G335	3	
4	9472F	LW2-G335	4	
41	9472F	LW2-G335	5	
147	9472F	LW2-G335	6	
152	9472F	LW2-G335	7	
36	9472F	LW2-G335	8	wq replicate
58	9473F	LW2-G336	1	
48	9473F	LW2-G336	2	
117	9473F	LW2-G336	3	
10	9473F	LW2-G336	4	
35	9473F	LW2-G336	5	
90	9473F	LW2-G336	6	
123	9473F	LW2-G336	7	
14	9473F	LW2-G336	8	wq replicate
130	9474F	LW2-G348	1	
112	9474F	LW2-G348	2	
168	9474F	LW2-G348	3	
72	9474F	LW2-G348	4	
143	9474F	LW2-G348	5	
128	9474F	LW2-G348	6	
54	9474F	LW2-G348	7	
102	9474F	LW2-G348	8	wq replicate
95	9475F	LW2-G350	1	
158	9475F	LW2-G350	2	
61	9475F	LW2-G350	3	
155	9475F	LW2-G350	4	
81	9475F	LW2-G350	5	
134	9475F	LW2-G350	6	
39	9475F	LW2-G350	7	
156	9475F	LW2-G350	8	wq replicate

ANC08160
BZTO104(e)008160

Test Number: 686-16

Freshwater Sediment Test
10-Day Chironomus tentans

BKR	NAS SMPL	CLIENT DESCRIP	REPL	
6	9454F	Control	1	
139	9454F	Control	2	
50	9454F	Control	3	
167	9454F	Control	4	
127	9454F	Control	5	
44	9454F	Control	6	
29	9454F	Control	7	
45	9454F	Control	8	wq replicate
101	9456F	LW2-G301	1	
93	9456F	LW2-G301	2	
76	9456F	LW2-G301	3	
88	9456F	LW2-G301	4	
25	9456F	LW2-G301	5	
129	9456F	LW2-G301	6	
87	9456F	LW2-G301	7	
32	9456F	LW2-G301	8	wq replicate
73	9457F	LW2-G302	1	
131	9457F	LW2-G302	2	
53	9457F	LW2-G302	3	
113	9457F	LW2-G302	4	
46	9457F	LW2-G302	5	
120	9457F	LW2-G302	6	
92	9457F	LW2-G302	7	
66	9457F	LW2-G302	8	wq replicate
166	9458F	LW2-G308	1	
146	9458F	LW2-G308	2	
126	9458F	LW2-G308	3	
115	9458F	LW2-G308	4	
119	9458F	LW2-G308	5	
17	9458F	LW2-G308	6	
37	9458F	LW2-G308	7	
107	9458F	LW2-G308	8	wq replicate
148	9459F	LW2-G288	1	
20	9459F	LW2-G288	2	
114	9459F	LW2-G288	3	
163	9459F	LW2-G288	4	
1	9459F	LW2-G288	5	
97	9459F	LW2-G288	6	
164	9459F	LW2-G288	7	
15	9459F	LW2-G288	8	wq replicate
7	9460F	LW2-G292	1	
79	9460F	LW2-G292	2	
31	9460F	LW2-G292	3	
26	9460F	LW2-G292	4	
42	9460F	LW2-G292	5	
103	9460F	LW2-G292	6	
82	9460F	LW2-G292	7	
2	9460F	LW2-G292	8	wq replicate
47	9461F	LW2-G298	1	
65	9461F	LW2-G298	2	
96	9461F	LW2-G298	3	
84	9461F	LW2-G298	4	
3	9461F	LW2-G298	5	
57	9461F	LW2-G298	6	
111	9461F	LW2-G298	7	
91	9461F	LW2-G298	8	wq replicate

ANC08161
BZTO104(e)008161

Test Number: 686-16

Freshwater Sediment Test
10-Day Chironomus tentans

BKR	NAS SMPL	CLIENT DESCRIP	REPL	
135	9462F	LW2-G315	1	
140	9462F	LW2-G315	2	
110	9462F	LW2-G315	3	
151	9462F	LW2-G315	4	
145	9462F	LW2-G315	5	
150	9462F	LW2-G315	6	
106	9462F	LW2-G315	7	
70	9462F	LW2-G315	8	wq replicate
144	9463F	LW2-G316	1	
64	9463F	LW2-G316	2	
99	9463F	LW2-G316	3	
34	9463F	LW2-G316	4	
157	9463F	LW2-G316	5	
51	9463F	LW2-G316	6	
21	9463F	LW2-G316	7	
56	9463F	LW2-G316	8	wq replicate
60	9464F	LW2-G260	1	
11	9464F	LW2-G260	2	
89	9464F	LW2-G260	3	
149	9464F	LW2-G260	4	
43	9464F	LW2-G260	5	
62	9464F	LW2-G260	6	
105	9464F	LW2-G260	7	
159	9464F	LW2-G260	8	wq replicate
86	9465F	LW2-G268	1	
141	9465F	LW2-G268	2	
9	9465F	LW2-G268	3	
122	9465F	LW2-G268	4	
154	9465F	LW2-G268	5	
124	9465F	LW2-G268	6	
121	9465F	LW2-G268	7	
83	9465F	LW2-G268	8	wq replicate
137	9466F	LW2-G318	1	
69	9466F	LW2-G318	2	
71	9466F	LW2-G318	3	
133	9466F	LW2-G318	4	
33	9466F	LW2-G318	5	
52	9466F	LW2-G318	6	
98	9466F	LW2-G318	7	
74	9466F	LW2-G318	8	wq replicate
38	9467F	LW2-G320	1	
59	9467F	LW2-G320	2	
116	9467F	LW2-G320	3	
23	9467F	LW2-G320	4	
153	9467F	LW2-G320	5	
160	9467F	LW2-G320	6	
8	9467F	LW2-G320	7	
13	9467F	LW2-G320	8	wq replicate
118	9468F	LW2-G323	1	
27	9468F	LW2-G323	2	
12	9468F	LW2-G323	3	
94	9468F	LW2-G323	4	
100	9468F	LW2-G323	5	
80	9468F	LW2-G323	6	
24	9468F	LW2-G323	7	
108	9468F	LW2-G323	8	wq replicate

ANC08162
BZTO104(e)008162

TEST DATA ANALYSIS RECORDS

Endpoints Data Entry and Calculations File

BKR=beaker number
INIT=initial number
SURV=number survivors
MORT=number dead=INIT-SURV
PSURV=%survival=100(SURV/INIT)
PMORT=%mortality=100(MORT/INIT)

TARE WT= ashed weight of pan used for that replicate at test termination (mg), or dry weight of pan if ash-free dry weight is not an endpoint
WT COUNT= number of test organisms weighed at test end
DRY WT= TARE WT + dry weight of test organisms recovered at test termination (mg)
TWT=total biomass=DRY WT-TARE WT
WT=average individual biomass=TWT/WT COUNT

ASHED DRY WT= weight of ashed pan + weight of ashed test organisms recovered at test termination
TAFDW=DRY WT - ASHED DRY WT= total ash-free organism weight for given replicate
AFDW=average individual ash-free biomass=TAFDW/WT COUNT

INITIAL WEIGHT

pan #	tare wt (mg)	final wt (mg)	wt count	avg. wt/ organism
1	91.75	95.40	20	0.18
2	97.17	100.65	20	0.17
3	88.80	91.78	20	0.16

INDEX	BKR	NAS SMPL	CLIENT DESCRIP	REPL		INIT	SURV	MORT	PSURV	PMORT	TARE WT (mg)	WT COUNT	DRY WT (mg)	ASHED DRY WT (mg)	TWT (mg)	WT (mg)	TAFDW (mg)	AFDW (mg)
1	6	9454F	Control	1		10	7	3	70.0	30.0	95.60	7	107.92	98.16	12.02	1.72	9.76	1.39
2	139	9454F	Control	2		10	9	1	90.0	10.0	95.61	9	107.18	98.61	11.57	1.29	8.57	0.95
3	50	9454F	Control	3		10	10	0	100.0	0.0	91.55	10	102.79	94.22	11.24	1.12	8.57	0.86
4	167	9454F	Control	4		10	8	2	80.0	20.0	85.92	8	95.30	87.85	9.38	1.17	7.45	0.93
5	127	9454F	Control	5		10	10	0	100.0	0.0	92.84	10	106.08	96.23	13.14	1.31	9.85	0.98
6	44	9454F	Control	6		10	9	1	90.0	10.0	87.58	9	97.74	89.70	10.16	1.13	8.04	0.89
7	29	9454F	Control	7		10	10	0	100.0	0.0	94.54	10	105.13	97.06	10.59	1.06	8.07	0.81
8	45	9454F	Control	8	wq replicate	10	10	0	100.0	0.0	91.00	10	103.16	93.61	12.16	1.22	9.55	0.96
9	101	9456F	LW2-G301	1		10	10	0	100.0	0.0	91.74	10	110.42	99.06	18.68	1.87	11.36	1.14
10	93	9456F	LW2-G301	2		10	9	1	90.0	10.0	88.67	9	104.18	94.68	15.51	1.72	9.50	1.06
11	76	9456F	LW2-G301	3		10	9	1	90.0	10.0	95.18	9	112.50	101.65	17.32	1.92	10.85	1.21
12	88	9456F	LW2-G301	4		10	10	0	100.0	0.0	89.23	10	101.61	93.29	12.38	1.24	8.32	0.83
13	25	9456F	LW2-G301	5		10	9	1	90.0	10.0	104.95	9	118.39	108.74	13.44	1.49	9.65	1.07
14	129	9456F	LW2-G301	6		10	9	1	90.0	10.0	97.79	9	111.05	101.60	13.26	1.47	9.45	1.05
15	87	9456F	LW2-G301	7		10	9	1	90.0	10.0	95.47	9	108.71	100.06	13.24	1.47	8.65	0.96
16	32	9456F	LW2-G301	8	wq replicate	10	9	1	90.0	10.0	93.62	9	107.62	98.47	13.80	1.53	9.15	1.02
17	73	9457F	LW2-G302	1		10	0	10	0.0	100.0	91.71	0						
18	131	9457F	LW2-G302	2		10	0	10	0.0	100.0	86.35	0						
19	53	9457F	LW2-G302	3		10	0	10	0.0	100.0	98.05	0						
20	113	9457F	LW2-G302	4		10	0	10	0.0	100.0	92.65	0						
21	46	9457F	LW2-G302	5		10	0	10	0.0	100.0	97.41	0						
22	120	9457F	LW2-G302	6		10	0	10	0.0	100.0	93.38	0						
23	92	9457F	LW2-G302	7		10	0	10	0.0	100.0	89.39	0						
24	66	9457F	LW2-G302	8	wq replicate	10	0	10	0.0	100.0	93.07	0						
25	166	9458F	LW2-G308	1		10	6	4	60.0	40.0	86.38	6	91.08	87.54	4.70	0.78	3.54	0.59
26	146	9458F	LW2-G308	2		10	8	2	80.0	20.0	86.60	8	99.30	90.04	12.70	1.59	9.26	1.16
27	126	9458F	LW2-G308	3		10	7	3	70.0	30.0	89.51	7	98.51	92.46	9.00	1.29	6.05	0.86
28	115	9458F	LW2-G308	4		10	5	5	50.0	50.0	94.64	5	100.33	96.39	5.39	1.08	3.94	0.79
29	119	9458F	LW2-G308	5		10	7	3	70.0	30.0	99.99	7	108.50	102.79	8.51	1.22	5.71	0.82
30	17	9458F	LW2-G308	6		10	5	5	50.0	50.0	95.34	5	98.30	95.98	2.96	0.59	2.32	0.46
31	37	9458F	LW2-G308	7		10	7	3	70.0	30.0	95.41	7	103.45	97.76	8.04	1.15	5.69	0.81
32	107	9458F	LW2-G308	8	wq replicate	10	7	3	70.0	30.0	83.36	7	93.87	87.19	10.51	1.50	6.68	0.95
33	148	9459F	LW2-G288	1		10	0	10	0.0	100.0	87.74	0						
34	20	9459F	LW2-G288	2		10	0	10	0.0	100.0	91.26	0						
35	114	9459F	LW2-G288	3		10	0	10	0.0	100.0	93.83	0						
36	163	9459F	LW2-G288	4		10	0	10	0.0	100.0	85.11	0						
37	1	9459F	LW2-G288	5		10	0	10	0.0	100.0	91.60	0						
38	97	9459F	LW2-G288	6		10	0	10	0.0	100.0	91.41	0						
39	164	9459F	LW2-G288	7		10	0	10	0.0	100.0	90.55	0						
40	15	9459F	LW2-G288	8	wq replicate	10	0	10	0.0	100.0	102.33	0						
41	7	9460F	LW2-G292	1		10	9	1	90.0	10.0	92.12	9	105.94	96.22	14.82	1.65	10.72	1.19
42	79	9460F	LW2-G292	2		10	9	1	90.0	10.0	89.94	9	103.87	94.10	13.93	1.55	9.77	1.09
43	31	9460F	LW2-G292	3		10	8	2	80.0	20.0	97.75	8	112.50	101.98	14.75	1.84	10.52	1.32
44	26	9460F	LW2-G292	4		10	10	0	100.0	0.0	95.81	10	110.83	100.09	15.02	1.50	10.74	1.07
45	42	9460F	LW2-G292	5		10	7	3	70.0	30.0	94.98	7	106.81	98.18	11.83	1.69	8.63	1.23
46	103	9460F	LW2-G292	6		10	7	3	70.0	30.0	86.97	7	99.01	90.94	12.04	1.72	8.07	1.15
47	82	9460F	LW2-G292	7		10	9	1	90.0	10.0	93.64	9	109.50	98.55	15.86	1.76	10.95	1.22
48	2	9460F	LW2-G292	8	wq replicate	10	7	3	70.0	30.0	88.77	7	95.62	90.12	6.85	0.98	5.50	0.79

	SURV	MORT	PSURV	PMORT	WT	AFDW
Mean	9.1	0.9	91.3	8.8	1.25	0.97
SD	1.1	1.1	11.3	11.3	0.21	0.18
n	8	8	8	8	8	8
Mean	9.3	0.8	92.5	7.5	1.59	1.04
SD	0.5	0.5	4.6	4.6	0.23	0.11
n	8	8	8	8	8	8
Mean	0.0	10.0	0.0	100.0		
SD	0.0	0.0	0.0	0.0		
n	8	8	8	8	0	0
Mean	6.5	3.5	65.0	35.0	1.15	0.81
SD	1.1	1.1	10.7	10.7	0.34	0.21
n	8	8	8	8	8	8
Mean	0.0	10.0	0.0	100.0		
SD	0.0	0.0	0.0	0.0		
n	8	8	8	8	0	0
Mean	8.3	1.8	82.5	17.5	1.59	1.13
SD	1.2	1.2	11.6	11.6	0.27	0.16
n	8	8	8	8	8	8

ANC08164
BZTO104(e)008164

Test Number: 666-16

Freshwater Sediment Test
10-Day Chironomus tentans

INDEX	BKR	NAS SMPL	CLIENT DESCRIP	REPL		INIT	SURV	MORT	PSURV	PMORT	TARE WT (mg)	WT COUNT	DRY WT (mg)	ASHED DRY WT (mg)	TWT (mg)	AWT (mg)	TAFDW (mg)	AFDW (mg)		SURV	MORT	PSURV	PMORT	WT	AFDW
49	47	9461F	LW2-G298	1		10	0	10	0.0	100.0	87.83	0													
50	65	9461F	LW2-G298	2		10	0	10	0.0	100.0	97.63	0													
51	98	9461F	LW2-G298	3		10	0	10	0.0	100.0	92.20	0													
52	84	9461F	LW2-G298	4		10	0	10	0.0	100.0	92.54	0													
53	3	9461F	LW2-G298	5		10	0	10	0.0	100.0	90.26	0							Mean	0.0	10.0	0.0	100.0		
54	57	9461F	LW2-G298	6		10	0	10	0.0	100.0	90.55	0							SD	0.0	0.0	0.0	0.0		
55	111	9461F	LW2-G298	7		10	0	10	0.0	100.0	90.37	0							n	8	8	8	8	0	0
56	91	9461F	LW2-G298	8	wq replicate	10	0	10	0.0	100.0	94.10	0													
57	135	9462F	LW2-G315	1		10	8	2	80.0	20.0	92.63	8	105.34	96.88	12.71	1.59	8.46	1.08							
58	140	9462F	LW2-G315	2		10	9	1	90.0	10.0	91.82	9	106.81	98.65	14.79	1.64	9.96	1.11							
59	110	9462F	LW2-G315	3		10	9	1	90.0	10.0	86.24	9	102.80	93.03	14.56	1.62	9.77	1.09							
60	151	9462F	LW2-G315	4		10	8	2	80.0	20.0	93.66	8	107.32	98.57	13.66	1.71	8.75	1.09							
61	145	9462F	LW2-G315	5		10	8	2	80.0	20.0	87.81	8	101.61	92.49	13.80	1.73	9.12	1.14	Mean	8.6	1.4	86.3	13.8	1.62	1.05
62	150	9462F	LW2-G315	6		10	7	3	70.0	30.0	88.06	7	102.98	93.49	14.92	2.13	9.49	1.36	SD	1.1	1.1	10.6	10.6	0.26	0.19
63	106	9462F	LW2-G315	7		10	10	0	100.0	0.0	89.58	10	101.42	94.17	11.84	1.18	7.25	0.73	n	8	8	8	8	8	8
64	70	9462F	LW2-G315	8	wq replicate	10	10	0	100.0	0.0	87.12	10	100.73	92.22	13.61	1.36	8.51	0.85							
65	144	9463F	LW2-G316	1		10	8	2	80.0	20.0	88.49	8	101.59	92.45	13.10	1.64	9.14	1.14							
66	64	9463F	LW2-G316	2		10	7	3	70.0	30.0	86.75	7	103.45	94.19	13.70	1.96	9.26	1.32							
67	99	9463F	LW2-G316	3		10	9	1	90.0	10.0	90.94	9	107.76	96.14	16.82	1.87	11.62	1.29							
68	34	9463F	LW2-G316	4		10	8	2	80.0	20.0	90.57	8	105.77	95.94	15.20	1.90	9.83	1.23							
69	157	9463F	LW2-G316	5		10	10	0	100.0	0.0	90.07	10	103.56	93.09	13.51	1.35	10.49	1.05	Mean	8.8	1.3	87.5	12.5	1.64	1.14
70	51	9463F	LW2-G316	6		10	10	0	100.0	0.0	87.83	10	100.59	91.71	12.76	1.28	8.88	0.69	SD	1.0	1.0	10.4	10.4	0.25	0.14
71	21	9463F	LW2-G316	7		10	9	1	90.0	10.0	89.11	9	102.87	92.82	13.76	1.53	10.05	1.12	n	8	8	8	8	8	8
72	56	9463F	LW2-G316	8	wq replicate	10	9	1	90.0	10.0	96.72	9	116.79	101.22	14.07	1.56	9.57	1.06							
73	60	9464F	LW2-G260	1		10	8	2	80.0	20.0	87.20	8	104.52	92.26	17.32	2.17	12.26	1.53							
74	11	9464F	LW2-G260	2		10	9	1	90.0	10.0	84.59	9	98.73	88.46	14.14	1.57	10.27	1.14							
75	89	9464F	LW2-G260	3		10	10	0	100.0	0.0	88.86	10	103.26	92.45	14.39	1.44	10.60	1.06							
76	149	9464F	LW2-G260	4		10	10	0	100.0	0.0	98.27	10	111.75	101.79	13.48	1.35	9.96	1.00							
77	43	9464F	LW2-G260	5		10	9	1	90.0	10.0	92.01	9	106.78	95.67	14.77	1.64	11.11	1.23	Mean	9.3	0.8	92.5	7.5	1.66	1.20
78	62	9464F	LW2-G260	6		10	10	0	100.0	0.0	96.06	10	115.10	102.60	19.04	1.90	12.50	1.25	SD	0.9	0.9	8.9	8.9	0.34	0.21
79	105	9464F	LW2-G260	7		10	8	2	80.0	20.0	94.13	8	110.12	98.74	15.99	2.00	11.38	1.42	n	8	8	8	8	8	8
80	159	9464F	LW2-G260	8	wq replicate	10	10	0	100.0	0.0	90.88	10	102.70	93.66	11.82	1.18	9.04	0.90							
81	86	9465F	LW2-G268	1		10	9	1	90.0	10.0	88.49	9	102.64	93.55	14.15	1.57	9.09	1.01							
82	141	9465F	LW2-G268	2		10	8	2	80.0	20.0	90.36	7	104.21	95.89	13.83	1.98	8.32	1.19							
83	9	9465F	LW2-G268	3		10	9	1	90.0	10.0	92.36	9	107.49	97.40	15.13	1.68	10.09	1.12							
84	122	9465F	LW2-G268	4		10	9	1	90.0	10.0	94.93	9	112.74	102.08	17.81	1.98	10.68	1.18							
85	154	9465F	LW2-G268	5		10	8	2	80.0	20.0	94.72	8	107.92	99.12	13.20	1.65	8.80	1.10	Mean	8.6	1.3	87.5	12.5	1.71	1.08
86	124	9465F	LW2-G268	6		10	10	0	100.0	0.0	93.45	10	106.62	98.16	13.17	1.32	8.46	0.65	SD	1.0	1.0	10.4	10.4	0.22	0.12
87	121	9465F	LW2-G268	7		10	10	0	100.0	0.0	88.70	10	105.26	94.80	16.56	1.66	10.48	1.05	n	8	8	8	8	8	8
88	83	9465F	LW2-G268	8	wq replicate	10	7	3	70.0	30.0	91.76	7	104.73	96.46	12.97	1.85	8.27	1.18							
89	137	9466F	LW2-G318	1		10	8	2	80.0	20.0	89.95	7	103.02	94.66	13.07	1.87	8.36	1.19							
90	69	9466F	LW2-G318	2		10	9	1	90.0	10.0	81.92	9	93.46	86.07	11.54	1.28	7.39	0.82							
91	71	9466F	LW2-G318	3		10	10	0	100.0	0.0	91.13	10	107.16	97.38	16.03	1.60	9.78	0.98							
92	133	9466F	LW2-G318	4		10	10	0	100.0	0.0	89.79	10	103.41	93.86	13.62	1.36	9.53	0.95							
93	33	9466F	LW2-G318	5		10	7	3	70.0	30.0	95.76	7	103.69	97.78	7.93	1.13	5.91	0.84	Mean	8.8	1.3	87.5	12.5	1.46	0.96
94	52	9466F	LW2-G318	6		10	10	0	100.0	0.0	94.41	10	104.95	97.38	10.54	1.05	7.57	0.76	SD	1.2	1.2	11.6	11.6	0.29	0.15
95	98	9466F	LW2-G318	7		10	8	2	80.0	20.0	91.89	8	104.62	96.44	12.73	1.59	8.18	1.02	n	8	8	8	8	8	8
96	74	9466F	LW2-G318	8	wq replicate	10	8	2	80.0	20.0	90.06	8	104.11	95.09	14.03	1.75	9.03	1.13							
97	38	9467F	LW2-G320	1		10	6	4	60.0	40.0	96.06	6	104.19	99.53	6.13	1.02	4.66	0.78							
98	59	9467F	LW2-G320	2		10	6	4	60.0	40.0	88.48	6	97.66	90.94	9.20	1.53	5.74	1.02							
99	116	9467F	LW2-G320	3		10	9	1	90.0	10.0	89.01	9	104.34	94.56	15.33	1.70	9.78	1.09							
100	23	9467F	LW2-G320	4		10	6	4	60.0	40.0	104.11	6	108.63	105.40	4.52	0.75	3.23	0.54							
101	153	9467F	LW2-G320	5		10	4	6	40.0	60.0	91.75	4	96.29	92.71	3.54	0.89	2.58	0.65	Mean	6.1	3.9	61.3	38.8	1.14	0.82
102	180	9467F	LW2-G320	6		10	5	5	50.0	50.0	88.41	5	92.29	89.08	3.88	0.78	3.21	0.64	SD	1.6	1.6	16.4	16.4	0.35	0.21
103	8	9467F	LW2-G320	7		10	8	2	80.0	20.0	93.83	8	104.51	97.02	10.68	1.34	7.49	0.94	n	8	8	8	8	8	8
104	13	9467F	LW2-G320	8	wq replicate	10	5	5	50.0	50.0	93.45	5	99.06	94.99	5.61	1.12	4.07	0.81							
105	116	9468F	LW2-G323	1		10	9	1	90.0	10.0	88.39	9	106.17	94.88	17.78	1.98	11.29	1.25							
106	27	9468F	LW2-G323	2		10	7	3	70.0	30.0	87.77	7	102.36	91.87	14.59	2.08	10.49	1.50							
107	12	9468F	LW2-G323	3		10	8	2	80.0	20.0	94.06	8	106.15	97.67	14.07	1.76	10.48	1.31							
108	94	9468F	LW2-G323	4		10	9	1	90.0	10.0	91.39	9	108.92	97.98	17.53	1.95	10.94	1.22							
109	100	9468F	LW2-G323	5		10	10	0	100.0	0.0	96.01	10	113.51	102.27	17.50	1.75	11.24	1.12	Mean	8.9	1.1	88.8	11.3	1.84	1.24
110	80	9468F	LW2-G323	6		10	9	1	90.0	10.0	97.63	9	114.50	103.45	16.87	1.67	11.05	1.23	SD	1.0	1.0	9.9	9.9	0.17	0.13
111	24	9468F	LW2-G323	7		10	10	0	100.0	0.0	85.23	10	100.71	89.77	15.48	1.55	10.94	1.09	n	8	8	8	8	8	8
112	108	9468F	LW2-G323	8	wq replicate	10	9	1	90.0	10.0	80.67	9	96.90	86.42	16.23	1.80	10.48	1.16							

ANC08165
BZTO104(e)008165

Test Number: 686-16

Freshwater Sediment Test
10-Day Chironomus tentans

INDEX	BKR	NAS SMPL	CLIENT DESCRIP	REPL		INIT	SURV	MORT	PSURV	PMORT	TARE WT (mg)	WT COUNT	DRY WT (mg)	ASHED DRY WT (mg)	TWT (mg)	WT (mg)	TAFDW (mg)	AFDW (mg)		SURV	MORT	PSURV	PMORT	WT	AFDW
113	18	9469F	LW2-G327	1		10	5	5	50.0	50.0	94.40	5	97.05	94.96	2.65	0.53	2.07	0.41							
114	85	9469F	LW2-G327	2		10	8	2	80.0	20.0	90.52	8	98.52	93.65	9.00	1.13	5.87	0.73							
115	162	9469F	LW2-G327	3		10	10	0	100.0	0.0	85.68	10	90.73	87.09	4.85	0.49	3.64	0.36							
116	75	9469F	LW2-G327	4		10	10	0	100.0	0.0	93.41	10	102.29	95.83	6.86	0.69	6.46	0.65							
117	125	9469F	LW2-G327	5		10	7	3	70.0	30.0	96.41	7	102.68	98.26	6.27	0.90	4.42	0.63	Mean	8.3	1.8	82.5	17.5	0.73	0.53
118	40	9469F	LW2-G327	6		10	8	2	80.0	20.0	99.67	8	104.49	100.94	4.82	0.60	3.55	0.44	SD	1.8	1.8	17.5	17.5	0.22	0.13
119	30	9469F	LW2-G327	7		10	8	2	80.0	20.0	93.76	8	98.80	95.07	5.04	0.63	3.73	0.47	n	8	8	8	8	8	8
120	165	9469F	LW2-G327	8	wq replicate	10	10	0	100.0	0.0	92.67	10	99.90	94.66	7.03	0.70	5.24	0.52							
121	63	9470F	LW2-G331	1		10	10	0	100.0	0.0	90.44	10	105.38	95.39	14.94	1.49	9.99	1.00							
122	132	9470F	LW2-G331	2		10	10	0	100.0	0.0	86.15	10	98.86	89.99	12.71	1.27	8.87	0.89							
123	28	9470F	LW2-G331	3		10	8	2	80.0	20.0	87.15	8	102.38	91.14	15.23	1.90	11.24	1.41							
124	136	9470F	LW2-G331	4		10	10	0	100.0	0.0	84.29	9	99.30	89.58	15.01	1.67	9.72	1.08							
125	49	9470F	LW2-G331	5		10	9	1	90.0	10.0	92.39	9	103.49	95.21	11.10	1.23	8.28	0.92	Mean	9.5	0.5	95.0	5.0	1.49	1.05
126	55	9470F	LW2-G331	6		10	10	0	100.0	0.0	87.54	9	98.57	90.28	11.03	1.23	8.29	0.92	SD	0.8	0.8	7.6	7.6	0.26	0.18
127	19	9470F	LW2-G331	7		10	9	1	90.0	10.0	96.24	9	112.10	101.20	15.86	1.76	10.90	1.21	n	8	8	8	8	8	8
128	77	9470F	LW2-G331	8	wq replicate	10	10	0	100.0	0.0	91.78	10	105.59	95.74	13.81	1.38	9.85	0.99							
129	68	9471F	LW2-G333	1		10	9	1	90.0	10.0	97.86	9	115.34	104.63	17.48	1.94	10.71	1.19							
130	104	9471F	LW2-G333	2		10	7	3	70.0	30.0	88.23	7	103.84	94.15	15.61	2.23	9.68	1.38							
131	142	9471F	LW2-G333	3		10	9	1	90.0	10.0	88.14	9	105.05	94.50	16.91	1.88	10.55	1.17							
132	109	9471F	LW2-G333	4		10	9	1	90.0	10.0	93.40	9	109.26	99.06	15.86	1.76	10.20	1.13							
133	5	9471F	LW2-G333	5		10	10	0	100.0	0.0	97.46	10	110.31	101.50	12.85	1.29	8.81	0.88	Mean	8.6	1.4	86.3	13.8	1.77	1.13
134	161	9471F	LW2-G333	6		10	9	1	90.0	10.0	98.37	9	110.76	102.40	12.39	1.38	8.38	0.93	SD	1.4	1.4	14.1	14.1	0.30	0.16
135	138	9471F	LW2-G333	7		10	10	0	100.0	0.0	87.09	10	105.46	94.23	18.37	1.84	11.23	1.12	n	8	8	8	8	8	8
136	16	9471F	LW2-G333	8	wq replicate	10	6	4	60.0	40.0	94.74	6	105.61	98.37	10.87	1.81	7.24	1.21							
137	78	9472F	LW2-G335	1		10	9	1	90.0	10.0	102.26	9	116.03	107.07	13.77	1.53	8.96	1.00							
138	22	9472F	LW2-G335	2		10	9	1	90.0	10.0	96.76	9	110.66	101.00	13.90	1.54	9.66	1.07							
139	67	9472F	LW2-G335	3		10	8	2	80.0	20.0	89.57	8	104.97	94.31	15.40	1.93	10.66	1.33							
140	4	9472F	LW2-G335	4		10	9	1	90.0	10.0	88.43	9	98.66	89.98	8.23	0.91	6.69	0.74							
141	41	9472F	LW2-G335	5		10	8	2	80.0	20.0	91.79	8	105.97	97.43	14.18	1.77	8.54	1.07	Mean	8.6	1.4	86.3	13.8	1.56	1.03
142	147	9472F	LW2-G335	6		10	9	1	90.0	10.0	88.31	8	100.94	92.85	12.63	1.58	8.09	1.01	SD	0.9	0.9	9.2	9.2	0.30	0.16
143	152	9472F	LW2-G335	7		10	10	0	100.0	0.0	84.17	10	99.64	89.74	15.47	1.55	9.90	0.99	n	8	8	8	8	8	8
144	36	9472F	LW2-G335	8	wq replicate	10	7	3	70.0	30.0	93.31	7	105.07	97.66	11.76	1.68	7.41	1.06							
145	58	9473F	LW2-G336	1		10	8	2	80.0	20.0	89.01	8	104.80	95.71	15.79	1.97	9.09	1.14							
146	48	9473F	LW2-G336	2		10	9	1	90.0	10.0	98.01	9	105.76	99.91	7.75	0.86	5.85	0.65							
147	117	9473F	LW2-G336	3		10	7	3	70.0	30.0	90.63	7	105.92	96.70	15.29	2.18	9.22	1.32							
148	10	9473F	LW2-G336	4		10	9	1	90.0	10.0	97.06	9	110.57	100.67	13.51	1.50	9.90	1.10							
149	35	9473F	LW2-G336	5		10	7	3	70.0	30.0	95.86	7	111.58	101.57	15.72	2.25	10.01	1.43	Mean	8.1	1.9	81.3	18.8	1.77	1.14
150	90	9473F	LW2-G336	6		10	7	3	70.0	30.0	94.13	7	106.76	98.58	12.63	1.80	8.18	1.17	SD	1.1	1.1	11.3	11.3	0.49	0.24
151	123	9473F	LW2-G336	7		10	8	2	80.0	20.0	100.02	8	117.43	105.81	17.41	2.18	10.62	1.33	n	8	8	8	8	8	8
152	14	9473F	LW2-G336	8	wq replicate	10	10	0	100.0	0.0	94.92	10	108.79	98.87	13.87	1.39	9.92	0.99							
153	130	9474F	LW2-G348	1		10	8	2	80.0	20.0	91.90	8	99.59	94.22	7.69	0.96	5.37	0.67							
154	112	9474F	LW2-G348	2		10	8	2	80.0	20.0	93.15	8	106.55	97.91	13.40	1.68	8.64	1.08							
155	166	9474F	LW2-G348	3		10	4	6	40.0	60.0	92.02	4	94.71	92.76	2.69	0.67	1.95	0.49							
156	72	9474F	LW2-G348	4		10	8	2	80.0	20.0	91.42	8	102.76	95.19	11.34	1.42	7.57	0.95							
157	143	9474F	LW2-G348	5		10	4	6	40.0	60.0	90.02	4	96.95	92.63	6.93	1.73	4.12	1.03	Mean	6.4	3.6	63.8	36.3	1.31	0.87
158	120	9474F	LW2-G348	6		10	2	8	20.0	80.0	100.98	2	106.06	102.36	4.10	2.05	2.70	1.35	SD	2.7	2.7	27.2	27.2	0.49	0.29
159	54	9474F	LW2-G348	7		10	10	0	100.0	0.0	91.72	10	99.71	94.00	7.99	0.80	5.71	0.57	n	8	8	8	8	8	8
160	102	9474F	LW2-G348	8	wq replicate	10	7	3	70.0	30.0	95.72	7	103.92	98.39	8.20	1.17	5.53	0.79							
161	95	9475F	LW2-G350	1		10	8	2	80.0	20.0	89.90	8	102.05	94.28	12.15	1.52	7.77	0.97							
162	158	9475F	LW2-G350	2		10	4	6	40.0	60.0	92.09	4	96.69	94.23	6.60	1.65	4.46	1.12							
163	61	9475F	LW2-G350	3		10	10	0	100.0	0.0	91.74	10	108.41	98.14	16.67	1.67	10.27	1.03							
164	155	9475F	LW2-G350	4		10	9	1	90.0	10.0	93.78	9	107.19	98.37	13.41	1.49	8.82	0.98							
165	81	9475F	LW2-G350	5		10	9	1	90.0	10.0	90.49	9	108.32	97.38	17.83	1.98	10.94	1.22	Mean	8.8	1.3	87.5	12.6	1.55	0.99
166	134	9475F	LW2-G350	6		10	10	0	100.0	0.0	96.33	10	109.54	100.72	13.21	1.32	8.62	0.68	SD	2.1	2.1	20.5	20.5	0.22	0.13
167	39	9475F	LW2-G350	7		10	10	0	100.0	0.0	90.48	10	105.56	95.91	15.08	1.51	9.65	0.97	n	8	8	8	8	8	8
168	156	9475F	LW2-G350	8	wq replicate	10	10	0	100.0	0.0	84.73	10	97.51	89.71	12.78	1.28	7.80	0.78							

8kr # 136 & 137 each lost one animal in transfer to weigh pans.

Bkrs # 55, 141, & 147 each had one pupa. Pupae are not included in weight calculations (EPA/600/R-94/064, p. 59, section 12.3.6.2).

data entry verified 10/20/04 JM

ANC08166
BZT0104(e)008166

Water Quality Data

NAS SMPL	CLIENT DESCRIP	Bulk Sediment Interstitial water NH3	pH
9454F	Control	9.6	6.5
9456F	LW2-G301	5.5	6.4
9457F	LW2-G302	7.0	6.4
9458F	LW2-G308	5.3	6.3
9459F	LW2-G288	---	---
9460F	LW2-G292	5.4	6.4
9461F	LW2-G298	11.8	5.9
9462F	LW2-G315	6.1	6.2
9463F	LW2-G316	1.6	6.4
9464F	LW2-G260	1.4	6.2
9465F	LW2-G268	1.4	6.5
9466F	LW2-G318	4.8	6.5
9467F	LW2-G320	16.1	6.2
9468F	LW2-G323	1.8	6.5
9469F	LW2-G327	13.5	6.4
9470F	LW2-G331	---	---
9471F	LW2-G333	3.7	6.5
9472F	LW2-G335	4.7	6.8
9473F	LW2-G336	6.5	6.0
9474F	LW2-G348	11.3	6.9
9475F	LW2-G350	13.5	6.8

BKR	NAS SMPL	CLIENT DESCRIP	REPL	DAY	Overlying water TEMP	DO	COND	pH	NH3	HARD	ALK
2	9460F	LW2-G292	8	0	23.0	6.4	180	6.6	1.4	43	50
13	9467F	LW2-G320	8	0	22.8	6.7	205	6.4	2.3	43	50
14	9473F	LW2-G336	8	0	22.8	6.8	260	6.3	1.0	77	50
15	9459F	LW2-G288	8	0	22.8	6.5	185	6.3	2.9	43	50
16	9471F	LW2-G333	8	0	22.8	6.2	200	6.3	0.7	51	60
32	9456F	LW2-G301	8	0	22.9	6.8	180	6.3	1.1	43	60
36	9472F	LW2-G335	8	0	22.8	6.6	170	6.5	0.4	43	40
45	9454F	Control	8	0	22.8	6.0	225	6.6	0.3	34	40
56	9463F	LW2-G316	8	0	22.8	7.4	165	6.5	0.2	43	40
66	9457F	LW2-G302	8	0	22.8	6.6	175	6.4	2.0	43	40
70	9462F	LW2-G315	8	0	22.8	6.8	185	6.3	1.5	51	60
74	9466F	LW2-G318	8	0	22.8	6.6	190	6.3	0.8	43	50
77	9470F	LW2-G331	8	0	22.7	6.8	160	6.4	0.2	34	40
83	9465F	LW2-G268	8	0	22.8	6.9	175	6.3	0.2	43	40
91	9461F	LW2-G298	8	0	22.7	7.0	175	6.3	1.5	43	50
102	9474F	LW2-G348	8	0	22.8	6.6	680	6.2	1.0	43	80
107	9458F	LW2-G308	8	0	22.7	6.6	180	6.3	1.1	51	50
108	9468F	LW2-G323	8	0	22.7	6.8	165	6.3	0.3	43	40
156	9475F	LW2-G350	8	0	22.7	6.6	285	6.4	1.9	43	60
159	9464F	LW2-G260	8	0	22.7	6.9	175	6.4	0.2	43	50
165	9469F	LW2-G327	8	0	22.6	6.5	190	6.3	2.6	43	50
2	9460F	LW2-G292	8	1	23.0	6.4					
13	9467F	LW2-G320	8	1	22.9	6.4					
14	9473F	LW2-G336	8	1	22.8	6.1					
15	9459F	LW2-G288	8	1	22.9	6.4					
16	9471F	LW2-G333	8	1	22.8	6.4					
32	9456F	LW2-G301	8	1	22.6	6.5					
36	9472F	LW2-G335	8	1	22.6	6.4					
45	9454F	Control	8	1	22.6	6.0					
56	9463F	LW2-G316	8	1	22.7	6.6					
66	9457F	LW2-G302	8	1	22.7	6.4					
70	9462F	LW2-G315	8	1	22.6	6.5					
74	9466F	LW2-G318	8	1	22.6	6.6					
77	9470F	LW2-G331	8	1	22.5	6.2					
83	9465F	LW2-G268	8	1	22.5	6.6					
91	9461F	LW2-G298	8	1	22.6	4.7					
102	9474F	LW2-G348	8	1	22.6	6.4					
107	9458F	LW2-G308	8	1	22.5	6.6					
108	9468F	LW2-G323	8	1	22.5	6.8					
156	9475F	LW2-G350	8	1	22.5	6.4					
159	9464F	LW2-G260	8	1	22.4	6.6					
165	9469F	LW2-G327	8	1	22.4	6.7					
2	9460F	LW2-G292	8	2	22.7	6.7					
13	9467F	LW2-G320	8	2	22.7	7.1					
14	9473F	LW2-G336	8	2	22.6	6.3					
15	9459F	LW2-G288	8	2	22.7	5.9					
16	9471F	LW2-G333	8	2	22.8	6.1					
32	9456F	LW2-G301	8	2	22.7	6.1					
36	9472F	LW2-G335	8	2	22.7	6.4					

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45	9454F	Control	8	2	22.8	6.3									
56	9463F	LW2-G316	8	2	22.8	6.3									
66	9457F	LW2-G302	8	2	22.8	6.8									
70	9462F	LW2-G315	8	2	22.8	6.4									
74	9466F	LW2-G318	8	2	22.7	6.6									
77	9470F	LW2-G331	8	2	22.7	6.5									
83	9465F	LW2-G268	8	2	22.8	7.0									
91	9461F	LW2-G298	8	2	22.9	3.8									
102	9474F	LW2-G348	8	2	22.8	6.6									
107	9458F	LW2-G308	8	2	22.8	6.8									
108	9468F	LW2-G323	8	2	22.7	6.2									
156	9475F	LW2-G350	8	2	22.7	6.4									
159	9464F	LW2-G260	8	2	22.6	6.4									
165	9469F	LW2-G327	8	2	22.6	6.7									
2	9460F	LW2-G292	8	3	23.0	5.6									
13	9467F	LW2-G320	8	3	23.0	5.8									
14	9473F	LW2-G336	8	3	23.0	5.6									
15	9459F	LW2-G288	8	3	23.0	5.0									
16	9471F	LW2-G333	8	3	23.1	5.3									
32	9456F	LW2-G301	8	3	23.0	5.0									
36	9472F	LW2-G335	8	3	23.1	5.6									
45	9454F	Control	8	3	23.0	5.3									
56	9463F	LW2-G316	8	3	23.0	5.8									
66	9457F	LW2-G302	8	3	23.1	5.7									
70	9462F	LW2-G315	8	3	23.1	5.2									
74	9466F	LW2-G318	8	3	23.0	5.1									
77	9470F	LW2-G331	8	3	23.0	4.8									
83	9465F	LW2-G268	8	3	23.0	5.4									
91	9461F	LW2-G298	8	3	23.0	3.0									
102	9474F	LW2-G348	8	3	23.0	5.8									
107	9458F	LW2-G308	8	3	23.0	4.8									
108	9468F	LW2-G323	8	3	22.9	4.9									
156	9475F	LW2-G350	8	3	22.9	5.6									
159	9464F	LW2-G260	8	3	22.9	5.7									
165	9469F	LW2-G327	8	3	22.9	5.7									
2	9460F	LW2-G292	8	4	22.7	6.3									
13	9467F	LW2-G320	8	4	22.6	6.7									
14	9473F	LW2-G336	8	4	22.6	6.9									
15	9459F	LW2-G288	8	4	22.7	6.9									
16	9471F	LW2-G333	8	4	22.7	6.7									
32	9456F	LW2-G301	8	4	22.7	6.8									
36	9472F	LW2-G335	8	4	22.7	6.8									
45	9454F	Control	8	4	22.8	6.3									
56	9463F	LW2-G316	8	4	22.8	7.1									
66	9457F	LW2-G302	8	4	22.7	7.1									
70	9462F	LW2-G315	8	4	22.7	6.7									
74	9466F	LW2-G318	8	4	22.7	6.1									
77	9470F	LW2-G331	8	4	22.7	6.6									
83	9465F	LW2-G268	8	4	22.7	6.9									
91	9461F	LW2-G298	8	4	22.8	5.8									
102	9474F	LW2-G348	8	4	22.8	6.5									
107	9458F	LW2-G308	8	4	22.8	6.7									
108	9468F	LW2-G323	8	4	22.7	6.3									
156	9475F	LW2-G350	8	4	22.7	6.8									
159	9464F	LW2-G260	8	4	22.7	7.2									
165	9469F	LW2-G327	8	4	22.7	6.7									
2	9460F	LW2-G292	8	5	23.0	6.6									
13	9467F	LW2-G320	8	5	23.0	6.6									
14	9473F	LW2-G336	8	5	23.0	6.9									
15	9459F	LW2-G288	8	5	23.0	6.4									
16	9471F	LW2-G333	8	5	23.1	6.7									
32	9456F	LW2-G301	8	5	23.0	6.9									
36	9472F	LW2-G335	8	5	23.1	6.8									
45	9454F	Control	8	5	23.1	6.9									
56	9463F	LW2-G316	8	5	23.1	7.0									
66	9457F	LW2-G302	8	5	23.1	6.8									
70	9462F	LW2-G315	8	5	23.1	7.0									
74	9466F	LW2-G318	8	5	23.1	6.9									
77	9470F	LW2-G331	8	5	23.1	7.1									
83	9465F	LW2-G268	8	5	23.1	7.0									
91	9461F	LW2-G298	8	5	23.1	6.2									
102	9474F	LW2-G348	8	5	23.1	6.3									
107	9458F	LW2-G308	8	5	23.1	6.7									
108	9468F	LW2-G323	8	5	23.1	6.8									
156	9475F	LW2-G350	8	5	23.1	6.7									
159	9464F	LW2-G260	8	5	23.0	6.7									
165	9469F	LW2-G327	8	5	23.0	6.6									
2	9460F	LW2-G292	8	6	22.7	5.3									
13	9467F	LW2-G320	8	6	22.5	5.3									
14	9473F	LW2-G336	8	6	22.5	5.2									

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15	9459F	LW2-G288	8	6	22.5	5.4								
16	9471F	LW2-G333	8	6	22.7	5.1								
32	9456F	LW2-G301	8	6	22.6	5.7								
36	9472F	LW2-G335	8	6	22.6	6.5								
45	9454F	Control	8	6	22.6	5.5								
56	9463F	LW2-G316	8	6	22.6	6.7								
66	9457F	LW2-G302	8	6	22.6	6.3								
70	9462F	LW2-G315	8	6	22.6	6.0								
74	9466F	LW2-G318	8	6	22.6	6.1								
77	9470F	LW2-G331	8	6	22.5	6.2								
83	9465F	LW2-G268	8	6	22.6	6.3								
91	9461F	LW2-G298	8	6	22.6	5.5								
102	9474F	LW2-G348	8	6	22.7	6.0								
107	9458F	LW2-G308	8	6	22.6	6.1								
108	9468F	LW2-G323	8	6	22.6	6.5								
156	9475F	LW2-G350	8	6	22.6	5.9								
159	9464F	LW2-G260	8	6	22.6	6.1								
165	9469F	LW2-G327	8	6	22.5	6.1								
2	9460F	LW2-G292	8	7	23.0	5.8								
13	9467F	LW2-G320	8	7	22.8	6.2								
14	9473F	LW2-G336	8	7	22.8	5.7								
15	9459F	LW2-G288	8	7	22.9	6.0								
16	9471F	LW2-G333	8	7	22.9	5.8								
32	9456F	LW2-G301	8	7	22.8	6.2								
36	9472F	LW2-G335	8	7	22.9	6.1								
45	9454F	Control	8	7	22.9	5.9								
56	9463F	LW2-G316	8	7	22.9	6.4								
66	9457F	LW2-G302	8	7	22.9	6.3								
70	9462F	LW2-G315	8	7	22.9	5.9								
74	9466F	LW2-G318	8	7	22.8	6.1								
77	9470F	LW2-G331	8	7	22.9	6.1								
83	9465F	LW2-G268	8	7	22.9	6.6								
91	9461F	LW2-G298	8	7	23.0	6.1								
102	9474F	LW2-G348	8	7	22.9	5.9								
107	9458F	LW2-G308	8	7	22.9	6.1								
108	9468F	LW2-G323	8	7	22.8	6.3								
156	9475F	LW2-G350	8	7	22.9	6.1								
159	9464F	LW2-G260	8	7	22.8	5.9								
165	9469F	LW2-G327	8	7	22.8	6.3								
2	9460F	LW2-G292	8	8	22.2	5.9								
13	9467F	LW2-G320	8	8	22.2	6.1								
14	9473F	LW2-G336	8	8	22.1	6.1								
15	9459F	LW2-G288	8	8	22.2	5.2								
16	9471F	LW2-G333	8	8	22.2	6.1								
32	9456F	LW2-G301	8	8	22.2	5.2								
36	9472F	LW2-G335	8	8	22.1	5.9								
45	9454F	Control	8	8	22.2	5.4								
56	9463F	LW2-G316	8	8	22.2	6.5								
66	9457F	LW2-G302	8	8	22.2	5.9								
70	9462F	LW2-G315	8	8	22.2	6.1								
74	9466F	LW2-G318	8	8	22.2	6.1								
77	9470F	LW2-G331	8	8	22.2	6.2								
83	9465F	LW2-G268	8	8	22.2	6.3								
91	9461F	LW2-G298	8	8	22.2	4.7								
102	9474F	LW2-G348	8	8	22.1	5.7								
107	9458F	LW2-G308	8	8	22.1	6.2								
108	9468F	LW2-G323	8	8	22.1	6.7								
156	9475F	LW2-G350	8	8	22.1	6.5								
159	9464F	LW2-G260	8	8	22.1	6.2								
165	9469F	LW2-G327	8	8	22.1	6.4								
2	9460F	LW2-G292	8	9	23.2	3.9								
13	9467F	LW2-G320	8	9	23.0	4.2								
14	9473F	LW2-G336	8	9	23.0	4.0								
15	9459F	LW2-G288	8	9	22.9	4.2								
16	9471F	LW2-G333	8	9	23.1	4.6								
32	9456F	LW2-G301	8	9	23.0	3.7								
36	9472F	LW2-G335	8	9	23.1	4.4								
45	9454F	Control	8	9	23.0	3.2								
56	9463F	LW2-G316	8	9	23.1	4.9								
66	9457F	LW2-G302	8	9	23.1	5.0								
70	9462F	LW2-G315	8	9	22.9	4.0								
74	9466F	LW2-G318	8	9	22.9	4.2								
77	9470F	LW2-G331	8	9	23.0	4.2								
83	9465F	LW2-G268	8	9	23.0	4.9								
91	9461F	LW2-G298	8	9	23.1	3.8								
102	9474F	LW2-G348	8	9	23.0	4.2								
107	9458F	LW2-G308	8	9	23.0	3.9								
108	9468F	LW2-G323	8	9	23.0	4.4								
156	9475F	LW2-G350	8	9	23.0	4.2								
159	9464F	LW2-G260	8	9	22.8	4.4								

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165	9469F	LW2-G327	8	9	22.8	3.8									
2	9460F	LW2-G292	8	10	22.8	6.5	155	6.4	0.4	43	40				
13	9467F	LW2-G320	8	10	22.8	5.8	160	6.4	0.6	43	40				
14	9473F	LW2-G336	8	10	22.7	6.3	160	6.4	0.3	34	50				
15	9459F	LW2-G288	8	10	22.7	5.9	160	6.4	0.6	43	40				
16	9471F	LW2-G333	8	10	22.8	6.6	155	6.4	0.3	43	40				
32	9456F	LW2-G301	8	10	22.8	6.2	155	6.4	0.5	43	50				
36	9472F	LW2-G335	8	10	22.8	6.3	160	6.4	0.3	43	40				
45	9454F	Control	8	10	22.7	5.9	160	6.4	0.3	43	40				
56	9463F	LW2-G316	8	10	22.8	6.9	160	6.5	0.2	43	40				
66	9457F	LW2-G302	8	10	22.8	6.9	160	6.5	0.5	43	40				
70	9462F	LW2-G315	8	10	22.7	6.4	155	6.5	0.7	43	40				
74	9466F	LW2-G318	8	10	22.7	6.3	160	6.4	0.7	43	40				
77	9470F	LW2-G331	8	10	22.7	6.4	155	6.4	0.3	43	40				
83	9465F	LW2-G268	8	10	22.7	6.3	160	6.4	0.3	43	40				
91	9461F	LW2-G298	8	10	22.7	5.0	160	6.4	0.4	43	40				
102	9474F	LW2-G348	8	10	22.9	6.1	185	6.4	0.4	34	50				
107	9458F	LW2-G308	8	10	22.8	6.3	160	6.4	0.4	43	40				
108	9468F	LW2-G323	8	10	22.8	6.4	160	6.4	0.4	43	40				
156	9475F	LW2-G350	8	10	22.8	6.2	160	6.5	0.6	43	40				
159	9464F	LW2-G260	8	10	22.7	6.0	160	6.4	0.3	43	40				
165	9469F	LW2-G327	8	10	22.6	6.3	160	6.5	0.6	43	40				
				Mean	22.8	6.0	187	6.4	---	44	46			---	---
				SD	0.3	0.8	82	0.1	---	6	9			---	---
				n	231	231	42	42	42	42	42			21	21
				Min	22.1	3.0	155	6.2	0.2	34	40			1.4	5.9
				Max	23.2	7.4	680	6.6	2.9	77	80			15.1	6.9

data entry verified 10/20/04 JR

ANC08170
BZTO104(e)008170

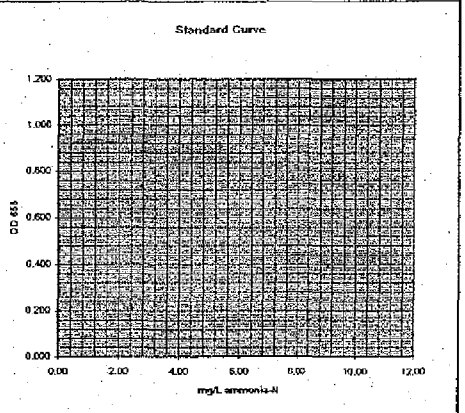
AMMONIA EXPOSURE BENCHSHEETS AND ANALYSIS

Total Ammonia-N in Sediment Pore Water: Computation Worksheet

Salicylate Method (SOP #5492)

Result

	Sample description	Dilution factor	OD655	NH3-N (mg/L)	pH	Salinity (ppt)
	Blank	----	----	----		
	1.0 mg/L NH3-N Std.	----	.107	1.00		
	3.0 mg/L NH3-N Std.	----	.273	3.00		
	6.0 mg/L NH3-N Std.	----	.573	6.00		
	10.0 mg/L NH3-N Std.	----	.930	10.00		
	3.0 mg/L spike	----	.289			
	3.0 mg/L spike dupl.	----	.282			
1.	9454F	5	.180		6.5	
2.	9456F	5	.103		6.4	
3.	9457F	5	.131		6.4	
4.	9458F	5	.100		6.5	
5.	9459F	5	—		—	
6.	9460F	5	.101		6.4	
7.	9461F	5	.220		5.9	
8.	9462F	5	.115		6.2	
9.	9463F	5	.029		6.4	
10.	9464F	5	.027		6.4	
11.	9465F	5	.027		6.5	
12.	9466F	5	.089		6.5	
13.	9467F	5	.301		6.2	
14.	9468F	5	.073		6.5	
15.	9469F	5	.252		6.4	
16.	9470F	5	—		—	
17.	9471F	5	.070		6.5	
18.	9472F	5	.087		6.8	
19.	9473F	5	.122		6.0	
20.	9474F	5	.212		6.9	
21.	9475F	5	.252		6.8	
22.	~~9476F~~ Rej	5				
23.		5				
24.		5				
25.		5				
26.		5				
27.		5				
28.		5				
29.		5				
30.		5				
31.		5				
32.		5				
33.		5				
34.		5				
35.		5				
36.		5				



Reporting limit (mg/L) =	0.5
Recovery (%) =	#VALUE!
Precision (RPD) =	#VALUE!
Sample volume (ml):	0.10
Dilution factor	5

Sample Set Description:

Proj. No.: 686

Bulk sediment porewaters

Batch 8

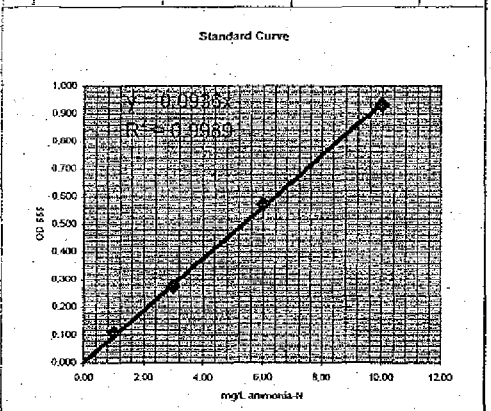
Analyst:	RSC
Date analysed:	9/23/2004

Total Ammonia-N in Sediment Pore Water: Computation Worksheet

Salicylate Method (SOP #5492)

Result

	Sample description	Dilution factor	OD655	NH_3-N (mg/L)	pH	Salinity (ppt)
	Blank	-----	-----	-----		
	1.0 mg/L NH_3-N Std.	-----	0.108	1.00		
	3.0 mg/L NH_3-N Std.	-----	0.273	3.00		
	6.0 mg/L NH_3-N Std.	-----	0.573	6.00		
	10.0 mg/L NH_3-N Std.	-----	0.930	10.00		
	3.0 mg/L spike	-----	0.289	3.09		
	3.0 mg/L spike dupl.	-----	0.282	3.01		
1.	9454F	5	0.180	9.61		
2.	9456F	5	0.103	5.50		
3.	9457F	5	0.131	7.00		
4.	9458F	5	0.100	5.34		
5.	9459F	5	—	— *		
6.	9460F	5	0.101	5.39		
7.	9461F	5	0.220	11.75		
8.	9462F	5	0.115	6.14		
9.	9463F	5	0.029	1.55		
10.	9464F	5	0.027	1.44		
11.	9465F	5	0.027	1.44		
12.	9466F	5	0.089	4.75		
13.	9467F	5	0.301	16.07		
14.	9468F	5	0.033	1.76		
15.	9469F	5	0.252	13.46		
16.	9470F	5	—	— *		
17.	9471F	5	0.070	3.74		
18.	9472F	5	0.087	4.65		
19.	9473F	5	0.122	6.52		
20.	9474F	5	0.212	11.32		
21.	9475F	5	0.252	13.46		
22.		5				
23.		5				
24.		5				
25.		5				
26.		5				
27.		5	* Insufficient sample for analysis			
28.		5				
29.		5				
30.		5				
31.		5				
32.		5				
33.		5				
34.		5				
35.		5				
36.		5				



Reporting limit (mg/L) =	0.5
Recovery (%) =	101.6
Precision (RPD) =	2.45
Sample volume (ml):	0.10
Dilution factor	5

Sample Set Description:

Proj. No.: 686

Bulk sediment porewaters

Batch 8

Analyst:	RSC
Date analysed:	9/23/2004

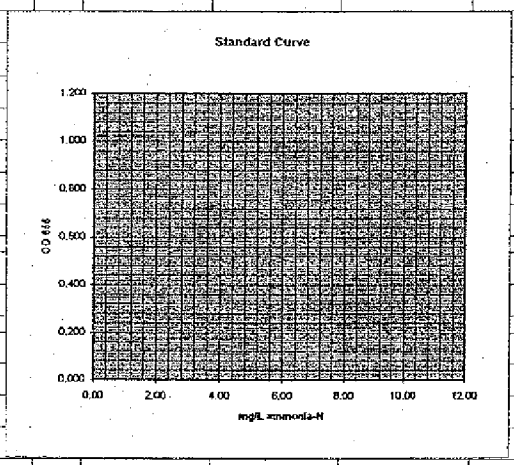
ANC08173
BZTO104(e)008173

Total Ammonia-N in Water: Computation Worksheet

Salicylate Method (SOP #5492)

Result

	Sample description	Dilution factor	OD655	NH_3-N (mg/L)
	Blank	-----	----	----
	1.0 mg/L NH_3-N Std.	-----	.108	1.00
	3.0 mg/L NH_3-N Std.	-----	.273	3.00
	6.0 mg/L NH_3-N Std.	-----	.513	6.00
	10.0 mg/L NH_3-N Std.	-----	.930	10.00
	3.0 mg/L spike	-----	.269	
	3.0 mg/L spike dupl.	-----	.287	
1.	2	1	.129	
2.	13	1	.219	
3.	14	1	.091	
4.	15	1	.221	
5.	16	1	.064	
6.	32	1	.098	
7.	36	1	.037	
8.	45	1	.025	
9.	56	1	.021	
10.	66	1	.184	
11.	70	1	.138	
12.	74	1	.073	
13.	77	1	.022	
14.	82	1	.020	
15.	91	1	.142	
16.	102	1	.096	
17.	107	1	.100	
18.	108	1	.030	
19.	156	1	.175	
20.	159	1	.021	
21.	165	1	.240	
22.		1		
23.		1		
24.		1		
25.		1		
26.		1		
27.		1		
28.		1		
29.		1		
30.		1		
31.		1		
32.		1		
33.		1		
34.		1		
35.		1		
36.		1		



Reporting limit (mg/L) =	0.1
Recovery (%) =	#VALUE!
Precision (RPD) =	#VALUE!
Sample volume (ml):	0.50
Dilution factor	1

Sample Set Description:

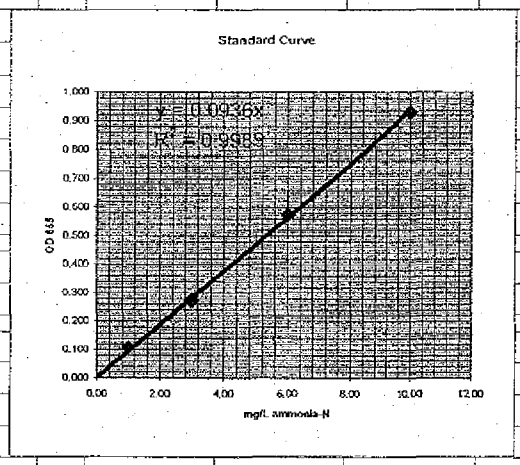
Test No.:	686-16
Test Day:	0 (9-24-04)
Species:	*Chironomus*
Overlying water	
Analyst:	RSC
Date analysed:	9/24/2004

Total Ammonia-N in Water: Computation Worksheet

Salicylate Method (SOP #5492)

Result

	Sample description	Dilution factor	OD_{655}	NH_3-N (mg/L)
	Blank	----	----	----
	1.0 mg/L NH_3-N Std.	----	0.108	1.00
	3.0 mg/L NH_3-N Std.	----	0.273	3.00
	6.0 mg/L NH_3-N Std.	----	0.573	6.00
	10.0 mg/L NH_3-N Std.	----	0.930	10.00
	3.0 mg/L spike	----	0.289	3.09
	3.0 mg/L spike dupl.	----	0.282	3.01
1.	2	1	0.129	1.38
2.	13	1	0.219	2.34
3.	14	1	0.091	0.97
4.	15	1	0.271	2.89
5.	16	1	0.064	0.68
6.	32	1	0.098	1.05
7.	36	1	0.037	0.40
8.	45	1	0.027	0.29
9.	56	1	0.021	0.22
10.	66	1	0.184	1.97
11.	70	1	0.138	1.47
12.	74	1	0.073	0.78
13.	77	1	0.022	0.23
14.	82	1	0.020	0.21
15.	91	1	0.142	1.52
16.	102	1	0.096	1.03
17.	107	1	0.100	1.07
18.	108	1	0.030	0.32
19.	156	1	0.175	1.87
20.	159	1	0.021	0.22
21.	165	1	0.240	2.56
22.				
23.				
24.				
25.				
26.				
27.				
28.				
29.				
30.				
31.				
32.				
33.				
34.				
35.				
36.				



Reporting limit (mg/L) =	0.1
Recovery (%) =	101.6
Precision (RPD) =	2.45
Sample volume (ml):	0.50
Dilution factor	1

Sample Set Description:

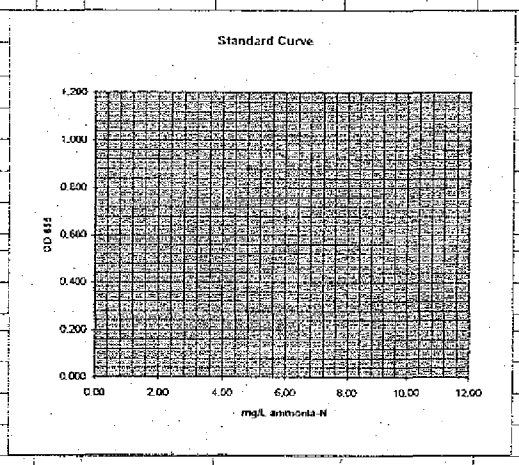
Test No.:	686-16
Test Day:	0 (9-24-04)
Species:	*Chironomus*
Overlying water	
Analyst:	RSC
Date analysed:	9/24/2004

Total Ammonia-N in Water: Computation Worksheet

Salicylate Method (SOP #5492)

Result

	Sample description	Dilution factor	OD655	NH_3-N (mg/L)
	Blank	----	-----	----
	1.0 mg/L NH_3-N Std.	----	.126	1.00
	3.0 mg/L NH_3-N Std.	----	.290	3.00
	6.0 mg/L NH_3-N Std.	-----	.585	6.00
	10.0 mg/L NH_3-N Std.	-----	.941	10.00
	3.0 mg/L spike	-----	.259	
	3.0 mg/L spike dupl.	-----	.290	
1.	2	1	.019	
2.	13	1	.059	
3.	14	1	.031	
4.	15	1	.058	
5.	16	1	.030	
6.	32	1	.048	
7.	36	1	.027	
8.	45	1	.028	
9.	56	1	.522	
10.	66	1	.046	
11.	70	1	.069	
12.	74	1	.071	
13.	77	1	.027	
14.	83	1	.027	
15.	91	1	.038	
16.	102	1	.041	
17.	107	1	.042	
18.	108	1	.034	
19.	156	1	.058	
20.	159	1	.024	
21.	165	1	.058	
22.				
23.				
24.				
25.				
26.				
27.				
28.				
29.				
30.				
31.				
32.				
33.				
34.				
35.				
36.				



Reporting limit (mg/L) =	0.1
Recovery (%) =	#VALUE!
Precision (RPD) =	#VALUE!
Sample volume (ml):	0.50
Dilution factor	1

Sample Set Description:

Test No.:	686-16
Test Day:	10 (10-4-04)
Species:	*Chironomus*
Overlying water	
Analyst:	RSC
Date analysed:	10/4/2004

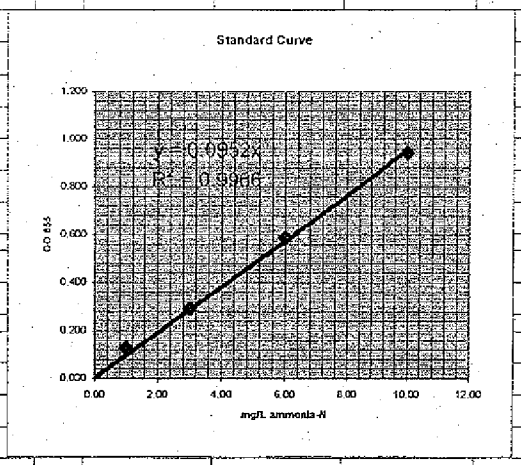
ANC08176
BZTO104(e)008176

Total Ammonia-N in Water: Computation Worksheet

Salicylate Method (SOP #5492)

Result

	Sample description	Dilution factor	OD_{655}	NH_3-N (mg/L)
	Blank	-----	----	----
	1.0 mg/L NH_3-N Std.	-----	0.126	1.00
	3.0 mg/L NH_3-N Std.	-----	0.290	3.00
	6.0 mg/L NH_3-N Std.	-----	0.585	6.00
	10.0 mg/L NH_3-N Std.	-----	0.940	10.00
	3.0 mg/L spike	-----	0.289	3.03
	3.0 mg/L spike dupl.	-----	0.290	3.04
1.	2	1	0.039	0.41
2.	13	1	0.059	0.62
3.	14	1	0.031	0.33
4.	15	1	0.058	0.61
5.	16	1	0.030	0.31
6.	32	1	0.048	0.50
7.	36	1	0.027	0.28
8.	45	1	0.028	0.29
9.	56	1	0.022	0.23
10.	66	1	0.046	0.48
11.	70	1	0.069	0.72
12.	74	1	0.071	0.74
13.	77	1	0.027	0.28
14.	83	1	0.027	0.28
15.	91	1	0.038	0.40
16.	102	1	0.041	0.43
17.	107	1	0.042	0.44
18.	108	1	0.034	0.36
19.	156	1	0.058	0.61
20.	159	1	0.024	0.25
21.	165	1	0.058	0.61
22.				
23.				
24.				
25.				
26.				
27.				
28.				
29.				
30.				
31.				
32.				
33.				
34.				
35.				
36.				



Reporting limit (mg/L) =	0.1
Recovery (%) =	101.2
Precision (RPD) =	-0.35
Sample volume (ml):	0.50
Dilution factor	1

Sample Set Description:

Test No.:	686-16
Test Day:	10 (10-4-04)
Species:	*Chironomus*
Overlying water	
Analyst:	RSC
Date analysed:	10/4/2004

ANC08177
BZTO104(e)008177

CHAIN-OF-CUSTODY RECORDS

Windward Environmental

CHAIN-OF-CUSTODY/TEST REQUEST FORM

1330

Project/Client Name: PORTLAND HARBOR RI/FS ROUND 2
Windward Project No: 03.28.04.28
Contact Name: HELLE ANDERSEN
Sampled By: THAI DO

Ship to: NORTHWESTERN AQUATIC SCIENCES
Attn: GERALD IRISSARRI
Shipping address: NEWPORT, OREGON

Shipping Date: HAND DEL'D
Airbill Number:

Sample Collection Date (m/d/y)	Time	Sample Identification	Volume of Sample / # of Containers	Matrix	Test(s) Requested (check test(s) required)							Comments / Instructions [Jar tag number(s)]
					10-d. Chr.	28-d. Hya.						
09.13.04	10:20	LWZ-G301	4L/4	SEDIMENT	✓	✓			NAS*	9456	F	INTERNAL COOLER TEMP
09.13.04	10:36	LWZ-G302	4L/4	SEDIMENT	✓	✓				9457	F	AT LAB RECEIPT:
09.13.04	11:04	LWZ-G308	4L/4	SEDIMENT	✓	✓				9458	F	#1 0.5°C
09.13.04	11:25	LWZ-G288	4L/4	SEDIMENT	✓	✓				9459	F	#2 0.0°C
09.13.04	11:48	LWZ-G292	4L/4	SEDIMENT	✓	✓				9460	F	#3 0.0°C
09.13.04	12:09	LWZ-G298	4L/4	SEDIMENT	✓	✓				9461	F	#4 0.5°C
09.13.04	12:56	LWZ-G315	4L/4	SEDIMENT	✓	✓				9462	F	#5 0.0°C
09.13.04	13:16	LWZ-G316	4L/4	SEDIMENT	✓	✓				9463	F	
09.14.04	08:29	LWZ-G260	4L/4	SEDIMENT	✓	✓				9464	F	
09.14.04	09:17	LWZ-G268	4L/4	SEDIMENT	✓	✓				9465	F	
09.14.04	09:53	LWZ-G318	4L/4	SEDIMENT	✓	✓				9466	F	
09.14.04	10:07	LWZ-G320	4L/4	SEDIMENT	✓	✓				9467	F	
09.14.04	10:26	LWZ-G323	4L/4	SEDIMENT	✓	✓				9468	F	
		Total Number of Containers	52/80	Purchase Order / Statement of Work #								

1) Released by:	1) Rec'd by:	2) Released by:	1) Rec'd by:
Print name: THAI DO	Print name: GERALD IRISSARRI	Print name:	
Signature:	Signature:	Signature:	
Company: WINDWARD ENVIRONMENTAL LLC	Company: NORTHWESTERN AQUATIC SCIENCES	Company:	Company:
Date/Time: 09.15.04/10:00	Date/Time: 9-15-04 1000 HRS	Date/Time:	Date/Time:

* Distribution: White and yellow copies accompany shipment; pink-consignor's copy; white-consignee return with results; yellow-consignee's copy.
* Instructions for completion of Chain-of-Custody/Test Request Form on back.

Wind Ward environmental LLC
200 West Mercer Street
Suite 401
Seattle, WA 98119
Tel: 206.378.1364
Fax: 206.217.0089

To be completed by Laboratory upon sample receipt:

Date of receipt:	Laboratory W.O. #:
Condition upon receipt:	Time of receipt:
Cooler temperature:	Received by:

ANC08179
BZT0104(e)008179

2 of 2

Windward Environmental

CHAIN-OF-CUSTODY/TEST REQUEST FORM

1331

Project/Client Name: PORTLAND HARBOR RI/FS ROUND 2
Windward Project No: 03.28.04.28
Contact Name: HELLE ANDERSEN
Sampled By: THAI DO

Ship to: NORTHWESTERN AQUATIC SCIENCES
Attn: GERALD IRISSARRI
Shipping address: NEWPORT, OREGON

Shipping Date: HAND DEL'D
Airbill Number:

Sample Collection Date (m/d/y)	Time	Sample Identification	Volume of Sample / # of Containers	Matrix	Test(s) Requested (check test(s) required) 10-d. Chem	28-d. Hyp						Comments / Instructions [Jar tag number(s)]
09.14.04	10:45	LW2-G327 ·	4L/4	SEDIMENT	✓	✓			NAS#	9469	F	
09.14.04	11:03	LW2-G331 ·	4L/4	SEDIMENT	✓	✓				9470	F	
09.14.04	11:22	LW2-G333 ·	4L/4	SEDIMENT	✓	✓				9471	F	
09.14.04	11:38	LW2-G335 ·	4L/4	SEDIMENT	✓	✓				9472	F	
09.14.04	11:53	LW2-G336 ·	4L/4	SEDIMENT	✓	✓				9473	F	
09.14.04	12:15	LW2-G348 ·	4L/4	SEDIMENT	✓	✓				9474	F	
09.14.04	12:31	LW2-G350 ·	4L/4	SEDIMENT	✓	✓				9475	F	
		Total Number of Containers	28/80	Purchase Order / Statement of Work #								

1) Released by:
Print name: THAI DO
Signature:
Company: WINDWARD ENVIRONMENTAL LLC
Date/Time: 09.15.04/10:00

1) Rec'd by: GERALD IRISSARRI
Company: NORTHWESTERN AQUATIC SCIENCES
Date/Time: 9-15-04 1000 HRS

2) Released by:
Print name:
Signature:
Company:
Date/Time:

1) Rec'd by:
Company:
Date/Time:

* Distribution: White and yellow copies accompany shipment; pink-consignor's copy; white-consignee return with results; yellow-consignee's copy.
* Instructions for completion of Chain-of-Custody/Test Request Form on back.

Wind Ward environmental LLC
• 200 West Mercer Street
Suite 401
Seattle, WA 98119
Tel: 206.378.1364
Fax: 206.217.0089

To be completed by Laboratory upon sample receipt:

Date of receipt:	Laboratory W.O. #:
Condition upon receipt:	Time of receipt:
Cooler temperature:	Received by:

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BZTO104(e)008180

APPENDIX II

RAW DATA – REFERENCE TOXICANT TEST

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-

ACUTE TOXICITY TEST (ALL SPECIES)

REVIEWED PAGES 1-7 GJI 11-15-04

Test No. 999-1847 Client: QC Test Investigator

Test Type (rangefinding/definitive) Test Length (hr) 96

Species *Chironomus tentans*

STUDY MANAGEMENT

Client: QC test

Client's Study Monitor: QC test

Testing Laboratory: Northwestern Aquatic Sciences

Test Location: Newport Laboratory

Laboratory's Study Personnel:

Proj. Man./Study Dir. G.J. Irissarri GJI

QA Officer L. K. Nemeth LKN

1. [illegible] 2. Susan Gogel SG

3. William T. Montgomery WTM 4. M.S. Redmond MSR

Study Schedule:

Test Beginning: 9-24-04 1240 Test Ending: 9-28-04 1300

TEST MATERIAL

Description: Potassium Chloride Crystals - Lot No.: FISHER 006829

NAS Sample No.				
Date of Collection:				
Date of Receipt:				
Temperature (deg C):				
Dissolved oxygen (mg/L):				
pH:				
Conductivity (umhos/cm):				
Hardness (mg/L):				
Alkalinity (mg/L):				
Salinity (ppt):				
Total chlorine (mg/L):				
Total ammonia-N (mg/L):				
:				

DILUTION WATER

Description: Moderately hard synthetic water

Date of Preparation/Collection: 9-2-04

Water Quality: Cond. (umhos/cm): 290 Salinity (ppt) pH 7.5

Hardness (mg/L as $CaCO_3$): 85 Alkalinity (mg/L as $CaCO_3$): 70

Treatments: Aerated ≥ 24 hrs

THE AGE OF THE TEST DILUTION WATER EXCEEDED EPA SPECIFICATIONS - GJI

TEST LOCATION

Test conducted in (circle one): room 1 (room 2) trailer water bath other:

Randomization chart:

2.5	1.25	10	1.25	2.5	Ø	1.25	1.25	20	20
20	10	Ø	10	20	2.5	2.5	5	Ø	10
5	Ø	1.25	2.5	Ø	1.25	5	10	5	2.5
10	20	5	Ø	1.25	20	10	20	2.5	1.25
Ø	2.5	20	5	10	5	20	Ø	1.25	5
1.25	5	2.5	20	5	10	Ø	2.5	10	Ø

Error codes: 1) Correction of handwriting error
2) Written in wrong location; entry deleted
3) Wrong date deleted; replaced with correct date
4) Error found in measurement; measurement repeated

Revised 12-5-01

ANC08182
BZTO104(e)008182

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-_____

ACUTE TOXICITY TEST (ALL SPECIES)

Test No. 999-1847 Client QC Test Investigator _____

TEST ORGANISMS

Species: *Chironomus tentans* Age: _____ Size: 3rd instar

Source: NAS cultures Date received: —

Acclimation Data:

Date	Temp. (deg.C)	DO (mg/L)	pH	Cond. umhos/cm	Hardness (mg/L)	Alkalinity (mg/L)	Feeding Amount	Feeding description*	Water changes
9-13-04	24.1	7.4	7.4	270	—	—	ANIMALS FED		CULTURE
9-15-04	23.0	7.0	7.0	260	77	70	TETRA FIN AND		TANKS
9-17-04	22.8	6.4	6.8	260	—	—	SELENASTRUM		CHANGED
9-20-04	22.0	5.8	6.8	305	—	—			TWICE
9-22-04	23.6	4.0	6.6	270	85	70	DETAILS RECORDED		WEEKLY
9-24-04	23.5	7.8	6.6	270	—	—	IN CHIRONOMID		
Mean	23.2	6.4	6.9	273	81	70	CULTURE DATA		
S.D.	0.7	1.4	0.3	17	—	—	SHEET		
(N)	6	6	6	6	2	2			

Photoperiod during acclimation: 16:8, L:D *S=*Selenastrum*, T=Tetra Fin suspension

TEST PROCEDURES AND CONDITIONS

Test concentrations (50% series recommended): 20, 10, 5, 2.5, 1.25, 0 g/L

Test chamber: 30 ml plastic cups Test volume: 20 ml

Replicates/treatment: 10 Organisms/treatment: 10 (1/rep)

Test water changes: None Aeration during test: None

Feeding: 0.25 ml Prime Tropical Flakes (4g/L) suspension per cup on days 0 and 2

Duration: 24-hr, 48-hr, (96-hr) Test temperature (deg.C): 23 ± 1

Beaker placement: Stratified randomization Photoperiod: 16:8, L:D

MISCELLANEOUS NOTES

Test solution preparation:

Working stock: Dissolve 10g KCl crystals in dilution water and dilute to 500 mL.
Final conc.: 20 g/L.

Test concentration (g/L)	KCl working stock (ml/200ml)	ml of dilution water per 200 ml
20	200	0
10	100	100
5	50	150
2.5	25	175
1.25	12.5	187.5
0	0	0

GJ2
9-24-04

ANC08183
BZTO104(e)008183

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-_____

ACUTE TOXICITY TEST (ALL SPECIES)

Test No. 999-1847 Client QC Test

DAILY RECORD SHEET

Day 0 (9/24/04) MB Temp Beaker (°C): 23.1

Conc. (g/L)	Temp. (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	Comments
1. 20	23.2	8.8	>20,000	7.5	85	70	
2. 10	23.2	8.8	14,300	7.5			
3. 5	23.3	8.7	7,650	7.5			
4. 2.5	23.3	8.9	4,380	7.5			
5. 1.25	23.2	8.8	2,350	7.5			
6. 0	23.2	8.8	280	7.5	85	70	
All animals fed 0.25 ml Prime Tropical Flakes suspension. Initials: GJJ							

Day 1 (9/25/04) MB/DF Temp Beaker (°C): 23.3

Conc. (g/L)	Temp. (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	Comments
1. 20							
2. 10							
3. 5							
4. 2.5							
5. 1.25							
6. 0							

Day 2 (9/26/04) GJJ Temp Beaker (°C): 22.7

Conc. (g/L)	Temp. (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	Comments
1. 20							
2. 10							
3. 5							
4. 2.5							
5. 1.25							
6. 0							
All animals fed 0.25 ml Prime Tropical Flakes suspension. Initials: GJJ							

Day 3 (9/27/04) MB Temp Beaker (°C): 23.5

Conc. (g/L)	Temp. (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	Comments
1. 20							
2. 10							
3. 5							
4. 2.5							
5. 1.25							
6. 0							

Day 4 (9/28/04) DF Temp Beaker (°C): 23.5

Conc. (g/L)	Temp. (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	Comments
1. 20	—	—	—	—	—	—	
2. 10	—	—	—	—			
3. 5	23.6	7.4	7520	7.6			
4. 2.5	23.6	7.1	4,150	7.5			
5. 1.25	23.6	7.3	2,360	7.3			
6. 0	23.5	6.7	330	7.0	103	90	
Mean	23.4	8.1	305	7.4	91	77	
SD	0.2	0.9	—	0.2	10	12	
n	10	10	2	10	3	3	

Revised 12-5-01

ANC08184
BZTO104(e)008184

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-_____

ACUTE TOXICITY TEST (ALL SPECIES)

Test No. 999-1847 Client QC Test Investigator _____

DAILY RECORD SHEET - Survivors

Day 0 (9/24/04) GJL

Conc. (g/L)	Survivors in Replicate: 1	2	3	4	5	6	7	8	9	10	Total
1. 20	1	1	1	1	1	1	1	1	1	1	10
2. 10	1	1	1	1	1	1	1	1	1	1	10
3. 5	1	1	1	1	1	1	1	1	1	1	10
4. 2.5	1	1	1	1	1	1	1	1	1	1	10
5. 1.25	1	1	1	1	1	1	1	1	1	1	10
6. 0	1	1	1	1	1	1	1	1	1	1	10

Day 1 (9/25/04) GJL

Conc. (g/L)	Survivors in Replicate: 1	2	3	4	5	6	7	8	9	10	Total
1. 20	X	X	X	X	X	X	X	X	X	X	∅ (10D)
2. 10	X	X	X	X	X	X	X	X	X	X	∅ (10D)
3. 5	1	1	X	X	1	1	1	1	X	1	7 (3D)
4. 2.5	1	1	1	1	1	1	1	1	1	1	10
5. 1.25	1	1	1	X	1	1	1	1	1	1	9 (1D)
6. 0	1	1	X	1	1	1	1	1	1	1	9 (1D)

Day 2 (9/26/04) GJL

Conc. (g/L)	Survivors in Replicate: 1	2	3	4	5	6	7	8	9	10	Total
1. 20	X	X	X	X	X	X	X	X	X	X	∅
2. 10	X	X	X	X	X	X	X	X	X	X	∅
3. 5	1	1	X	X	1	1	1	1	X	1	7
4. 2.5	1	1	1	1	1	1	1	1	1	1	10
5. 1.25	1	1	1	X	1	1	1	1	1	1	9
6. 0	1	1	X	1	1	1	1	1	1	1	9

Day 3 (9/27/04) GJL

Conc. (g/L)	Survivors in Replicate: 1	2	3	4	5	6	7	8	9	10	Total
1. 20	X	X	X	X	X	X	X	X	X	X	∅
2. 10	X	X	X	X	X	X	X	X	X	X	∅
3. 5	1	1	X	X	1	1	X	1	X	1	6 (1D)
4. 2.5	1	1	1	1	1	1	1	1	1	1	10
5. 1.25	1	1	1	X	1	1	1	1	1	1	9
6. 0	1	1	X	1	1	1	1	1	1	1	9

Day 4 (9/28/04) GJL

Conc. (g/L)	Survivors in Replicate: 1	2	3	4	5	6	7	8	9	10	Total
1. 20	X	X	X	X	X	X	X	X	X	X	∅
2. 10	X	X	X	X	X	X	X	X	X	X	∅
3. 5	1	1	X	X	1	1	X	1	X	1	6
4. 2.5	1	1	1	1	1	1	1	1	1	1	10
5. 1.25	1	1	1	X	1	1	1	1	1	1	9
6. 0	1	1	X	1	1	1	1	1	1	1	9

ANC08185
BZTO104(e)008185

Acute 96-hr Toxicity Test-96 Hr Survival

Start Date:	9/24/04 12:40	Test ID:	999-1847	Sample ID:	REF-Ref Toxicant
End Date:	9/28/04 13:00	Lab ID:	ORNAS-Northwestern Aquati	Sample Type:	KCL-Potassium chloride
Sample Date:		Protocol:	EPAF 91-EPA Freshwater	Test Species:	CT-Chironomus tentans
Comments:					

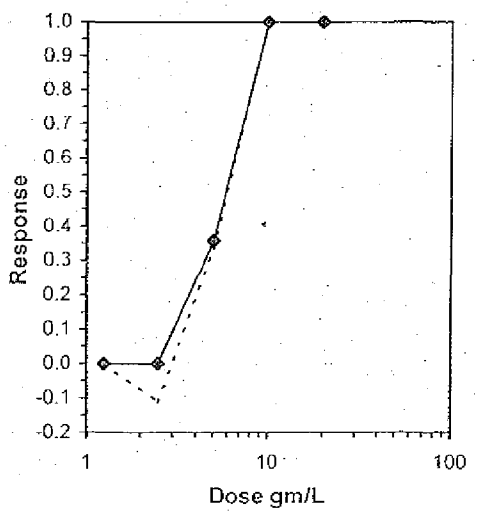
Conc-gm/L	1
D-Control	0.9000
1.25	0.9000
2.5	1.0000
5	0.6000
10	0.0000
20	0.0000

Conc-gm/L	Mean	N-Mean	Resp	Not Resp	Total	N	Fisher's Exact P	1-Tailed Critical	Number Resp	Total Number
D-Control	0.9000	1.0000	1	9	10	1			1	10
1.25	0.9000	1.0000	1	9	10	1	0.7632	0.0500	1	10
2.5	1.0000	1.1111	0	10	10	1	0.5000	0.0500	0	10
5	0.6000	0.6667	4	6	10	1	0.1517	0.0500	4	10
10	0.0000	0.0000	10	0	10	1			10	10
20	0.0000	0.0000	10	0	10	1			10	10

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU
Fisher's Exact Test	5	10	7.07107	

Trimmed Spearman-Karber

Trim Level	EC50	95% CL	
0.0%	5.5204	4.4745	6.8108
5.0%	5.5748	4.4074	7.0515
10.0%	5.6284	4.2979	7.3707
20.0%	5.7300	3.8872	8.4466
Auto-0.0%	5.5204	4.4745	6.8108



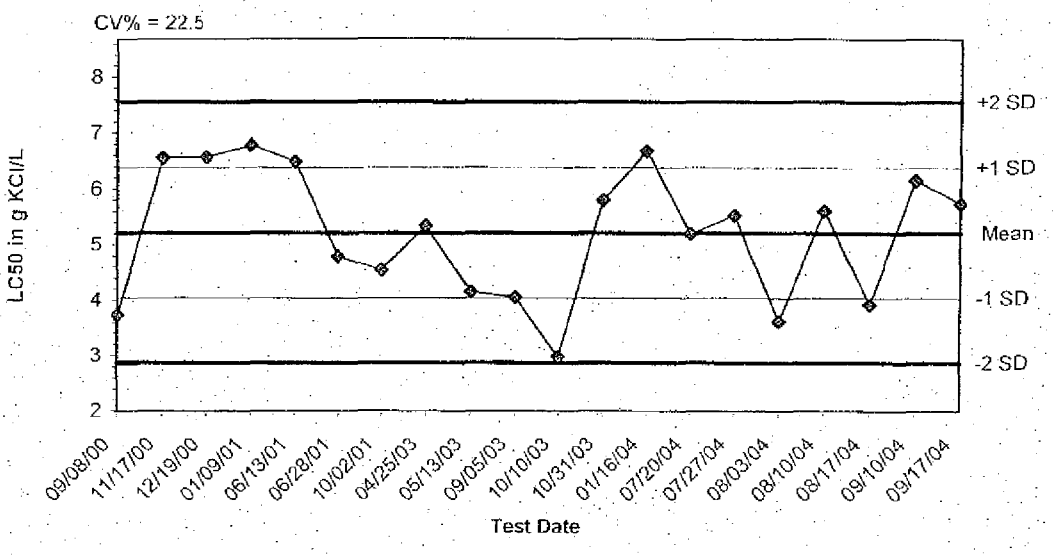
ANC08186
BZTO104(e)008186

Test: AT-Acute 96-hr Toxicity Test						Test ID: 999-1847			
Species: CT-Chironomus tentans						Protocol: EPAF 91-EPA Freshwater			
Sample ID: REF-Ref Toxicant						Sample Type: KCL-Potassium chloride			
Start Date: 9/24/04 12:40			End Date: 9/28/04 13:00			Lab ID: ORNAS-Northwestern Aquatic Sciences			
Pos	ID	Rep	Group	Start	24 Hr	48 Hr	72 Hr	96 Hr	Notes
	1	1	D-Control	10				9	
	2	1	1.250	10				9	
	3	1	2.500	10				10	
	4	1	5.000	10				6	
	5	1	10.000	10				0	
	6	1	20.000	10				0	

Comments: Data entry verified against laboratory bench sheets
MSR 10-20-04

ANC08187
BZTO104(e)008187

Chironomus tentans 96-hr reference toxicant test - last 20 points



Dates	Values	Mean	-1 SD	-2 SD	+1 SD	+2 SD
09/08/00	3.7300	5.2150	4.0421	2.8693	6.3879	7.5607
11/17/00	6.5600	5.2150	4.0421	2.8693	6.3879	7.5607
12/19/00	6.5700	5.2150	4.0421	2.8693	6.3879	7.5607
01/09/01	6.7900	5.2150	4.0421	2.8693	6.3879	7.5607
06/13/01	6.4900	5.2150	4.0421	2.8693	6.3879	7.5607
06/28/01	4.8000	5.2150	4.0421	2.8693	6.3879	7.5607
10/02/01	4.5500	5.2150	4.0421	2.8693	6.3879	7.5607
04/25/03	5.3400	5.2150	4.0421	2.8693	6.3879	7.5607
05/13/03	4.1600	5.2150	4.0421	2.8693	6.3879	7.5607
09/05/03	4.0600	5.2150	4.0421	2.8693	6.3879	7.5607
10/10/03	2.9800	5.2150	4.0421	2.8693	6.3879	7.5607
10/31/03	5.8000	5.2150	4.0421	2.8693	6.3879	7.5607
01/16/04	6.6800	5.2150	4.0421	2.8693	6.3879	7.5607
07/20/04	5.2000	5.2150	4.0421	2.8693	6.3879	7.5607
07/27/04	5.5300	5.2150	4.0421	2.8693	6.3879	7.5607
08/03/04	3.6200	5.2150	4.0421	2.8693	6.3879	7.5607
08/10/04	5.6100	5.2150	4.0421	2.8693	6.3879	7.5607
08/17/04	3.9300	5.2150	4.0421	2.8693	6.3879	7.5607
09/10/04	6.1600	5.2150	4.0421	2.8693	6.3879	7.5607
09/17/04	5.7400	5.2150	4.0421	2.8693	6.3879	7.5607

mrk
9-29-04

ANC08188
BZTO104(e)008188

Report

of

Test No. 686-17

Toxicity of Portland Harbor RI/FS Freshwater Test Sediments (Batch 9) using a 28-day *Hyalella azteca*, Sediment Bioassay

Submitted to

Windward Environmental, Inc.
200 West Mercer Street, Suite 401
Seattle, WA 98119

Submitted by

Northwestern Aquatic Sciences
3814 Yaquina Bay Road
P.O. Box 1437
Newport, OR 97365

January 19, 2005

ANC08189
BZTO104(e)008189

TOXICITY TEST REPORT

TEST IDENTIFICATION

Test No.: 686-17

Title: Toxicity of Portland Harbor RI/FS freshwater test sediments (Batch 9) using a 28-day amphipod, *Hyalella azteca*, sediment bioassay.

Protocol No.: NAS-XXX-HA4c, June 24, 2004. Based on ASTM Method E 1706-00 (ASTM 2003) and EPA Method 100.4 (EPA/600/R-99/064, 2000). This protocol can be found in Appendix B of the Portland Harbor RI/FS Round 2 Quality Assurance Project Plan, June 24, 2004.

STUDY MANAGEMENT

Study Sponsor: Windward Environmental, Inc., 200 West Mercer Street, Suite 401, Seattle, WA 98119.

Sponsor's Study Monitor: Ms. Helle Andersen

Testing Laboratory: Northwestern Aquatic Sciences, P.O. Box 1437, Newport, OR 97365

Test Location: Newport laboratory

Laboratory's Study Personnel: G.J. Irissarri, B.S., Proj. Man./Study Dir.; L.K. Nemeth, B.S., M.B.A., QA Officer; R.S. Caldwell, Ph.D., Sr. Toxicol.; M.S. Redmond, M.S., Aq. Toxicol.; G.A. Buhler, B.S., Aq. Toxicol.; W.T. Montgomery, A.A., Sr. Tech.; G. Hayes, B.S., Tech.; S.J. Gage, B.A., Tech.; B.B. Pridgeon, Lab Asst.

Study Schedule:

Test Beginning: 10-19-04, 1330 hrs.

Test Ending: 11-16-04, 1100 hrs.

Disposition of Study Records: All specimens, raw data, reports and other study records are stored according to Good Laboratory Practice regulations at Northwestern Aquatic Sciences, 3814 Yaquina Bay Rd., Newport, OR 97365.

Good Laboratory Practices: The test was conducted following the principles of Good Laboratory Practices (GLP) as defined in the EPA/TSCA Good Laboratory Practice regulations revised August 17, 1989 (40 CFR Part 792).

Statement of Quality Assurance: The test data were reviewed by the Quality Assurance Unit to assure that the study was performed in accordance with the protocol and standard operating procedures. This report is an accurate reflection of the raw data.

TEST MATERIAL

Test Sediments: Portland Harbor RI/FS freshwater test sediments (Batch 9). Details are as follows:

NAS Sample No.	9514F	9515F	9516F	9517F	9518F
Description	LW2-G273	LW2-G124	LW2-G425	LW2-G364	LW2-G420
Collection Date	10/7/04	10/7/04	10/7/04	10/8/04	10/8/04
Receipt Date	10/12/04	10/12/04	10/12/04	10/12/04	10/12/04
NAS Sample No.	9519F	9520F	9521F	9522F	9523F
Description	LW2-G409	LW2-G383	LW2-G368	LW2-G382	LW2-G392
Collection Date	10/8/04	10/8/04	10/8/04	10/8/04	10/8/04
Receipt Date	10/12/04	10/12/04	10/12/04	10/12/04	10/12/04
NAS Sample No.	9524F	9525F	9526F	9527F	9528F
Description	LW2-G346	LW2-G347	LW2-G342	LW2-G352	LW2-G396
Collection Date	10/11/04	10/11/04	10/11/04	10/11/04	10/11/04
Receipt Date	10/12/04	10/12/04	10/12/04	10/12/04	10/12/04
NAS Sample No.	9529F	9530F	9531F	9532F	9533F
Description	LW2-G405	LW2-G426	LW2-G277	LW2-G295	LW2-G280
Collection Date	10/11/04	10/11/04	10/11/04	10/11/04	10/11/04
Receipt Date	10/12/04	10/12/04	10/12/04	10/12/04	10/12/04

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Control Sediment: The negative control sediment (NAS#9534F) was collected on 10-14-04 from an area approximately one mile east of the Hwy. 101 bridge at Beaver Creek, approx. 8 miles south of Newport, OR.
Treatments: Homogenized at test set up by mixing using stainless steel implements.
Storage: All test and control sediments were stored at 4°C in the dark in capped containers until used.

TEST WATER

Source: Dechlorinated Newport, OR tap water.
Dates of Collection: Sixteen batches of test water were collected between 10-12-04 and 11-14-04
Water Quality (mean ± S.D.):
pH: 7.0 ± 0.2 (n=16)
conductivity: 146 ± 35 (n=16)
hardness: 34 ± 0 (n=16)
alkalinity: 35 ± 5 (n=16)
chlorine: All batches were <0.02 mg/L.
Pretreatment: Aerated ≥24 hr.

TEST ORGANISMS

Species: *Hyalella azteca,* amphipod.
Age/Size: 7-8 days old
Source: Chesapeake Cultures, Hayes, VA; received 10-15-04
Acclimation: Holding conditions prior to testing averaged (n=5): temperature, 21.4 ± 1.1°C; dissolved oxygen, 9.7 ± 3.0 mg/L; pH, 7.5 ± 0.2; conductivity, 289 ± 88 µmhos/cm; hardness, 93 ± 37 mg/L as $CaCO_3$; and alkalinity, 122 ± 69 mg/L as $CaCO_3$. Half of the water was replaced daily with dechlorinated Newport, OR tap water during holding. Animals were fed YTC daily during holding.

TEST PROCEDURES AND CONDITIONS

The following is an abbreviated statement of the test procedures and a statement of the test conditions actually employed. See the test protocol for a more detailed description of the test procedures used in this study.

Test Chambers: 300 ml high-form glass beakers
Test Volumes: 100 ml sediment layer; 175 ml test water.
Replicates/Treatment: 8
Organisms/Treatment: 80
Water Volume Changes: 2 water volumes per day
Aeration: None.
Feeding: Animals are fed 1.0 ml of YTC suspension per beaker daily.
Effects Criteria: Effects Criteria: 1) survival after 28 days, and 2) average individual biomass (based on dry weight) after 28 days. Death is defined as no visible movement or response to tactile stimulation. Missing organisms were considered to be dead.
Water Quality and Other Test Conditions: The temperature, dissolved oxygen, conductivity, pH, hardness, alkalinity and ammonia-nitrogen were measured in the overlying water of one replicate test container per treatment on days 0 and 28 of the test. Temperature was measured daily, dissolved oxygen and pH three times per week, and conductivity weekly, in the overlying water of one replicate test container per treatment. Interstitial ammonia was measured in the bulk sediment. Hardness and alkalinity were measured with titrimetric methods. Interstitial water samples from bulk sediments were obtained by centrifugation, or by settling in the case of very sandy sediments. Total ammonia-N was measured using Hach reagents based on the salicylate (Clin. Chim. Acta 14:403, 1996) colorimetric method. Samples were not distilled prior to analysis. The photoperiod was 16:8, L:D.

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BZTO104(e)008191

DATA ANALYSIS METHODS

Survival and mortality were calculated for each replicate as follows:

percent survival = 100 x (number surviving/initial number tested)
percent mortality = 100 x (number dead/initial number tested)

average individual biomass = (final wt. - tare wt.)/number weighed,
where:
final wt. = tare wt. + dry weight of organisms recovered on day 28, in mg

Means and standard deviations for the biological endpoints described above, and for water quality data, were computed using Microsoft Excel 2000.

PROTOCOL DEVIATIONS

Temperature measurements were mistakenly not taken on beaker #90 on day 7 and on beaker #168 on day 25.

REFERENCE TOXICANT TEST

The reference toxicant test is a multi-concentration toxicity test using cadmium chloride, to evaluate the performance of the test organisms used in the sediment toxicity test. The performance is evaluated by comparing the results of this test with historical results obtained at the laboratory. A summary of the reference toxicant test result is given below. The reference toxicant test raw data are found in Appendix III.

Test No.: 999- 1851
Reference Toxicant and Source: Cadmium as $CdCl_2 \bullet 2½ H_2O$, Mallinckrodt Lot #TNZ, 1.0 mg/ml stock prepared 7-13-04
Test Date: 10-19-04
Dilution Water Used: Moderately hard synthetic water prepared from Milli-Q® deionized water.
Result: 96-hr LC50, 6.43 µg/L. This result is within the laboratory's control chart warning limits (3.35 – 12.7 µg/L).

TEST RESULTS

Observations of water quality in the overlying water throughout the test are summarized in Table 1. A detailed tabulation of the water quality results by sample and test day can be found in Appendix II. Interstitial ammonia measurements and pH for bulk sediments are listed in Table 2. The means and standard deviations of percent mortality of *Hyalella* exposed for 28 days to sediments, and the growth measured as dry weight are summarized in Table 3. Detailed data organized by sample and replicate, and summary statistics for these observations, are given in Appendix I.

All water quality observations of overlying water temperature and dissolved oxygen were within the protocol specified ranges. Ammonia-N in the overlying water ranged from <0.1 to 2.0 mg/L in all day 0 and day 28 observations. Interstitial bulk sediment values for ammonia-N ranged from 0.9 to 22.9 mg/L.

The test met the acceptability criteria specified in the test protocol with 98.8% mean control survival (≥80% required). The reference toxicant (positive control) result was within the laboratory's control chart limits (6.43 µg/L; control chart mean ± 2 S.D. = 8.04 ± 4.69). It is concluded, therefore, that the test has developed fully acceptable data for use in making management decisions.

REFERENCES

ASTM. 2003. Standard Test Methods for Measuring the Toxicity of Sediment-Associated Contaminants with Fresh Water Invertebrates. ASTM Standard Method No. E 1706-00. Am. Soc. Test. Mat., West Conshohocken, PA.

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BZTO104(e)008192

U.S. EPA. 2000. Section 11, Test Method 100.1, *Hyalella azteca* 10-d Survival and Growth Test for Sediments, pp 47-54 In: Methods for Measuring the Toxicity and Bioaccumulation of Sediment-associated Contaminants with Freshwater Invertebrates (Second Edition). EPA/600/R-99/064.

STUDY APPROVAL

Gerald Iussarri 1-21-05
Project Manager/Study Director Date

Linda K. Nemetz 1/20/05
Quality Assurance Unit Date

Richard L. Caldwell 1/21/05
Laboratory Director Date

ANC08193
BZTO104(e)008193

Table 1. Summary of water quality conditions during tests of the amphipod, *Hyalella azteca*, exposed to freshwater sediments.

Water Quality Parameter	Mean ± S.D.	Minimum	Maximum	N
Temperature (°C)	22.6 ± 0.2	22.0	23.2	607
Dissolved oxygen (mg/L)	6.6 ± 0.6	4.6	8.2	294
Conductivity (µmhos/cm)	223 ± 464	145	4750	126
pH	6.6 ± 0.2	6.2	7.5	294
Hardness (mg/L as $CaCO_3$)	40 ± 7	34	68	42
Alkalinity (mg/L as $CaCO_3$)	41 ± 5	40	70	42
Total ammonia (mg/L)	---	<0.1	2.0	42

Table 2. Pore water ammonia-N and pH in bulk test sediments at the time of test setup.

NAS Sample No.	Sample Description	Ammonia (mg/L)	pH
9534F	Control	1.5	6.6
9514F	LW2-G273	11.6	6.2
9515F	LW2-G124	3.2	5.6
9516F	LW2-G425	0.9	5.3
9517F	LW2-G364	2.6	5.7
9518F	LW2-G420	4.6	6.0
9519F	LW2-G409	5.0	6.1
9520F	LW2-G383	---	---
9521F	LW2-G368	22.9	6.9
9522F	LW2-G382	3.8	7.0
9523F	LW2-G392	4.8	7.2
9524F	LW2-G346	3.4	7.0
9525F	LW2-G347	2.4	6.8
9526F	LW2-G342	1.9	6.6
9527F	LW2-G352	3.2	6.5
9528F	LW2-G396	4.3	6.7
9529F	LW2-G405	1.6	6.3
9530F	LW2-G426	5.0	6.2
9531F	LW2-G277	2.5	6.3
9532F	LW2-G295	2.1	6.4
9533F	LW2-G280	2.4	6.3

ANC08194
BZTO104(e)008194

APPENDIX I

RAW DATA

RAW DATA DIVIDER PAGE
Test No. 686-17

TEST DESCRIPTION, MONITORING, AND RESULTS BENCHSHEETS

NORTHWESTERN AQUATIC SCIENCES — PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-17 Client Windward Environmental Investigator

STUDY MANAGEMENT

Client: Windward Enviromental, 200 West Mercer Street, Suite 401, Seattle, WA 98119

Client's Study Monitor: Ms. Helle Andersen GJI

Testing Laboratory: Northwestern Aquatic Sciences

Test Location: Newport Laboratory

Laboratory's Study Personnel:

Proj. Man./Study Dir. G.J. Irissarri GJI

QA Officer L.K. Nemeth

1. G.A. Bethke GAB
2. Susan Gage SG
3. William T. Montgomery WTM
4. G.C. Hayes GCH
5. B.B. Pridgeon BBP
6. M.S. Redmond MSR
7. R.S. Caldwell RSC
8.

Study Schedule:

Test Beginning: 10/9/04 1330 Test Ending: 11-16-04 1100

TEST MATERIAL

General description (see sample logbook/chain-of-custody for details):

NAS Sample No.:	9534F	9514F	9515F	9516F	9517F
Description:	Control	LW2-G273	LW2-G124	LW2-G425	LW2-G364
Collection Date:	10-14-04	10/7/04	10/7/04	10/7/04	10/8/04
Receipt Date:	10-14-04	10/12/04	10/12/04	10/12/04	10/12/04

NAS Sample No.:	9518F	9519F	9520F	9521F	9522F
Description:	LW2-G420	LW2-G409	LW2-G383	LW2-G368	LW2-G382
Collection Date:	10/8/04	10/8/04	10/8/04	10/8/04	10/8/04
Receipt Date:	10/12/04	10/12/04	10/12/04	10/12/04	10/12/04

NAS Sample No.:	9523F	9524F	9525F	9526F	9527F
Description:	LW2-G392	LW2-G346	LW2-G347	LW2-G342	LW2-G352
Collection Date:	10/8/04	10/11/04	10/11/04	10/11/04	10/11/04
Receipt Date:	10/12/04	10/12/04	10/12/04	10/12/04	10/12/04

NAS Sample No.:	9528F	9529F	9530F	9531F	9532F
Description:	LW2-G396	LW2-G405	LW2-G426	LW2-G277	LW2-G295
Collection Date:	10/11/04	10/11/04	10/11/04	10/11/04	10/11/04
Receipt Date:	10/12/04	10/12/04	10/12/04	10/12/04	10/12/04

NAS Sample No.:	9533F
Description:	LW2-G280
Collection Date:	10/11/04
Receipt Date:	10/12/04

Error codes: 1) correction of handwriting error
2) written in wrong location; entry deleted
3) wrong date deleted, replaced with corrrect date

ANC08197
BZTO104(e)008197

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-17 Client Windward Environmental Investigator

SEDIMENT DESCRIPTIONS -- SUPPLEMENTAL NOTES

Sample No.	Description
9514F	Smooth dark gray mud
9515F	gray muddy sand w/ rocks and wood debris
9516F	dark gray sand w/ organic debris
9517F	gray fine mud.
9518F	gray brown mud
9519F	watery gray mud
9520F	course sand w/ debris
9521F	gray mud
9522F	smooth gray mud
9523F	smooth brown mud
9524F	SMOOth gray mud
9525F	smooth brown mud
9526F	Smooth gray mud
9527F	smooth gray mud
9528F	SMOOth gray mud
9529F	brown sand w/ woody & grassy debris
9530F	Smooth brown gray mud
9531F	SMOOth gray mud, 1 chironomid Found
9532F	DARK GRAY GREEN SMOOTH MUD
9533F	Smooth brown mud
9534F	Black fine grain mud

ANC08198
BZTO104(e)008198

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-17 Client Windward Environmental Investigator

TEST WATER

Source: Dechlorinated Newport, OR Tap Water

Date of Collection:

pH

Cond (umhos/cm2) (SEE NEXT PAGE)

Hardness (mg/La0

Alkalinity (mg/L)

Treatments: Aerated ≥24 hrs

TEST ORGANISMS

Species: *Hyalella azteca* Age: 7-8 DAYS Date received: 10-15-04

Source: Chesapeake Cultures, Hayes, VA

Acclimation Data:

Date	Temp. (deg.C)	DO (mg/L)	pH	Cond umhos/cm	Feeding* amount	Feeding* description	Water changes	Hardness (mg/L)	Alkalinity (mg/L)
10-15-04	20.5	>15.0	7.4	395	10 mL	YTC	50% TAP WATER	136	200
10-16-04	20.7	8.7	7.8	370	"	"	"	119	190
10-17-04	20.4	8.9	7.5	255	"	"	"	102	100
10-18-04	22.8	8.2	7.2	225	"	"	"	58	70
10-19-04	22.4	7.9	7.7	200	"	"	—	51	50
Mean	21.4	9.7	7.5	289				93	122
S.D.	1.1	3.0	0.2	88				37	69
(N)	5	5	5	5				5	5

Photoperiod during acclimation: 16:8, L:D

*ANIMALS WERE DIVIDED INTO 3 PANS. FEEDING IS PER PAN.

TEST PROCEDURES AND CONDITIONS

Test chambers: 300 ml glass beakers

Test volumes: 100 ml of test sediment; 275 ml total volume

Replicates/treatment: (8) 8 Organisms/treatment: (80) 80 (10/REP)

Test water changes: Twice daily

Aeration: only if DO falls below 2.5 mg/L

Feeding: everyday beginning with day zero

Test temperature (deg.C): 23

Beaker placement: Total randomization

Photoperiod: 16:8, L:D

Control Sediment:

Source: From an area approximately one mile east of the Hwy. 101 bridge at Beaver Creek, approx. 8 miles south of Newport, OR.

Date collected: 10-14-04

Sieved through 0.5 -mm screen NAS# 9534F

Storage: 4°C in the dark in closed containers.

MISCELLANEOUS NOTES

LIGHT INTENSITY MEASUREMENTS:

	SITE A	SITE B
10-23-04	67 FT-CANDLES (721 LUX)	66 FT-CANDLES (710 LUX)
11-5-04	75 FT-CANDLES (807 LUX)	57 FT-CANDLES (614 LUX)
11-11-04	82 FT-CANDLES (883 LUX)	48 FT-CANDLES (517 LUX)

ANC08199
BZTO104(e)008199

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4b

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-17 Client Windward Environmental Investigator

Test Dilution Water: Dechlorinated Newport, OR Tap Water

Date of Collection	Total Chlorine (mg/L)	Hardness (mg/L)	Alkalinity (mg/L)	Conductivity (µmhos/cm)	pH
10-12-04	<0.02	34	30	165	7.0
10-26-04	<0.02	34	30	155	6.9
10-23-04	<0.02	34	30	155	6.9
10-26-04	<0.02	34	40	160	6.9
10-26-04 (2ND BATCH)	<0.02	34	40	165	6.9
10-29-04	<0.02	34	30	155	7.3
10-30-04	<0.02	34	30	155	7.2
11-2-04	<0.02	34	30	155	7.0
11-4-04	<0.02	34	30	150	6.9
11-4-04 (2ND BATCH)	<0.02	34	30	155	6.9
11-6-04	<0.02	34	40	150	7.2
11-9-04	<0.02	34	40	155	7.1
11-10-04	<0.02	34	40	150	7.3
11-11-04	<0.02	34	40	150	6.6
11-13-04	<0.02	34	40	150	6.8
11-14-04	<0.02	34	40	150	6.8
		$\bar{X}$ = 34 ± 0	$\bar{X}$ = 35 ± 5	$\bar{X}$ = 146 ± 35	7.0 ± 0.2

ANC08200
BZTO104(e)008200

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-17 Client Windward Environmental Investigator _____

Test conducted in (circle one): room 1 (room 2) trailer water bath other:_____

Randomization chart:

5								165	
4								164	
3							→	163	168
2								162	167
1								161	166

Randomization chart:

Randomization chart:

Randomization chart:

ANC08201
BZTO104(e)008201

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No 586-17 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 0 (10/19/04) UB, BBP

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond.* umhos/cm	pH*	Hardness* (mg/L)	Alkalinity* (mg/L)	S (ppm)	NH3 * (ppm)	Comments
9	22.4	6.8	165	6.8	34	40			Each beaker fed 1.0 ml
11	22.4	6.5	160	6.6	43	40			YTC suspension
12	22.4	6.3	160	6.5	34	40			Initials: UB
21	22.4	6.7	4750	6.4	68	70			
22	22.4	6.6	175	7.0	43	40			
30	22.3	6.6	160	6.5	43	40			
38	22.3	6.0	170	6.6	43	40			
40	22.3	6.3	170	6.5	43	50			
46	22.3	6.4	160	6.3	51	40			Water changed in all
76	22.3	6.2	170	6.3	51	40			beakers.
88	22.3	6.5	165	6.5	51	40			Time: 0720
90	22.3	6.9	160	6.4	34	40			Initials: UB
111	22.4	6.7	170	6.5	43	40			
116	22.3	6.8	165	6.5	43	40			
119	22.3	6.4	160	6.6	34	40			
150	22.1	6.2	175	6.5	43	40			
151	22.3	6.3	165	6.4	43	40			Water changed in all
153	22.2	6.3	175	6.5	43	40			beakers.
160	22.4	6.2	230	6.6	43	40			Time: 1700
161	22.3	6.7	180	6.5	51	40			Initials: BBP
168	22.5	6.6	165	6.6	43	40			

*Water quality measurements to be taken.

Day 1 (10/20/04) UB/BBP

Beaker No.	Temp.* (deg.C)	DO * (ppm)	Cond.* umhos/cm	pH *	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
9	22.4	7.6	165	6.4					Each beaker fed 1.0 ml
11	22.4	7.5	165	6.5					YTC suspension
12	22.4	7.4	165	6.4					Initials: UB
21	22.5	6.8	2580	6.5					
22	22.4	7.4	175	6.4					
30	22.4	7.5	170	6.5					
38	22.3	7.5	165	6.5					
40	22.4	7.6	170	6.5					
46	22.4	7.6	165	6.5					Water changed in all
76	22.4	7.4	170	6.5					beakers.
88	22.5	7.3	165	6.5					Time: 0730
90	22.6	7.5	165	6.5					Initials: UB
111	22.5	7.3	170	6.5					
116	22.5	7.4	165	6.5					
119	22.5	7.4	165	6.5					
150	22.4	7.4	170	6.6					
151	22.4	7.3	165	6.5					Water changed in all
153	22.5	7.2	170	6.5					beakers.
160	22.5	7.4	210	6.6					Time: 1710
161	22.4	7.6	170	6.6					Initials: BBP
168	22.5	7.4	165	6.6					

*Water quality measurements to be taken.

ANC08202
BZTO104(e)008202

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No 686-17 Client Windward Environmental Investigator _____

DAILY RECORD SHEET

Day 2 (10 mL 6% NB/form

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. umhos/cm	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
9	22.7								Each beaker fed 1.0 ml
11	22.7								YTC suspension
12	22.6								Initials: wm
21	22.7								
22	22.7								
30	22.7								
38	22.7								
40	22.7								
46	22.7								Water changed in all
76	22.8								beakers.
88	22.8								Time: 0645
90	22.9								Initials: VB
111	22.8								
116	22.8								
119	22.8								
150	22.7								
151	22.7								Water changed in all
153	22.7								beakers.
160	22.7								Time: 1706
161	22.7								Initials: GAB
168	22.8								

*Water quality measurements to be taken.

Day 3 (10 mL 6% NB/form

Beaker No.	Temp.* (deg.C)	DO * (ppm)	Cond. umhos/cm	pH *	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
9	22.6	7.2		6.4					Each beaker fed 1.0 ml
11	22.4	7.4		6.4					YTC suspension
12	22.3	7.4		6.4					Initials: GAB
21	22.4	7.4		6.7					
22	22.3	7.5		6.5					
30	22.5	7.7		6.6					
38	22.4	7.7		6.5					
40	22.4	7.6		6.5					
46	22.4	7.7		6.6					Water changed in all
76	22.4	7.4		6.5					beakers.
88	22.5	6.9		6.4					Time: 0555
90	22.6	7.4		6.5					Initials: VB
111	22.6	7.1		6.5					
116	22.5	7.3		6.5					
119	22.4	7.1		6.5					
150	22.5	7.1		6.5					
151	22.3	7.4		6.6					Water changed in all
153	22.3	7.5		6.5					beakers.
160	22.6	7.5		6.6					Time: 1700
161	22.6	7.5		6.5					Initials: GAB
168	22.6	7.4		6.5					

*Water quality measurements to be taken.

ANC08203
BZTO104(e)008203

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No 686-17 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 4 (10/23/04) MB

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
9	22.5								Each beaker fed 1.0 ml
11	22.5								YTC suspension
12	22.5								Initials: MB
21	22.4								
22	22.5								
30	22.4								
38	22.4								
40	22.4								
46	22.5								Water changed in all
76	22.5								beakers.
88	22.5								Time: 0650
90	22.3								Initials: MB
111	22.4								
116	22.4								
119	22.5								
150	22.4								
151	22.6								Water changed in all
153	22.5								beakers.
160	22.4								Time: 1720
161	22.5								Initials: BBP
168	22.7								

*Water quality measurements to be taken.

Day 5 (10/24/04) MB

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
9	22.6								Each beaker fed 1.0 ml
11	22.6								YTC suspension
12	22.6								Initials: MB
21	22.5								
22	22.5								
30	22.5								
38	22.6								
40	22.6								
46	22.6								Water changed in all
76	22.6								beakers.
88	22.6								Time: 0715
90	22.6								Initials: MB
111	22.6								
116	22.6								
119	22.6								
150	22.6								
151	22.6								Water changed in all
153	22.5								beakers.
160	22.6								Time: 1730
161	22.6								Initials: BBP
168	22.7								

*Water quality measurements to be taken.

ANC08204
BZTO104(e)008204

Test No 686-17 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 6 (10/25/00) [illegible]

Beaker No.	Temp.* (deg.C)	DO * (ppm)	Cond. (umhos/cm)	pH *	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
9	22.5	5.5		6.6					Each beaker fed 1.0 ml
11	22.5	6.1		6.6					YTC suspension
12	22.4	6.0		6.6					Initials: [illegible]
21	22.4	5.5		6.8					
22	22.4	6.3		6.9					
30	22.3	6.0		6.7					
38	22.4	5.9		6.7					
40	22.4	5.9		6.7					
46	22.5	6.3		6.7					Water changed in all
76	22.5	6.2		6.7					beakers.
88	22.5	6.3		6.7					Time: 0645
90	22.5	6.8		6.7					Initials: [illegible]
111	22.5	6.2		6.7					
116	22.5	6.1		6.7					
119	22.5	5.8		6.7					
150	22.4	6.1		6.7					
151	22.4	6.1		6.7					Water changed in all
153	22.4	5.9		6.7					beakers.
160	22.4	6.5		6.7					Time: 1705
161	22.5	6.0		6.7					Initials: [illegible]
168	22.6	6.5		6.7					

*Water quality measurements to be taken.

Day 7 (10/26/00) [illegible]

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
9	22.2								Each beaker fed 1.0 ml
11	22.2								YTC suspension
12	22.1								Initials: [illegible]
21	22.2								
22	22.0								
30	22.0								
38	22.1								
40	22.0								
46	22.2								Water changed in all
76	22.2								beakers.
88	22.0								Time: 0620
90									Initials: [illegible]
111	22.1								
116	22.2								
119	22.1								
150	22.0								
151	22.1								Water changed in all
153	22.2								beakers.
160	22.2								Time: 1715
161	22.1								Initials: [illegible]
168	22.0								

*Water quality measurements to be taken.

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No 686-17 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 8 (10/27/04) NB/BBP

Beaker No.	Temp.* (deg.C)	DO * (ppm)	Cond.* (mhos/cm)	pH *	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
9	22.5	7.4	150	6.7					Each beaker fed 1.0 ml
11	22.4	7.5	155	6.7					YTC suspension
12	22.4	7.4	155	6.7					Initials: NB
21	22.4	7.6	820	7.1					
22	22.4	7.4	160	6.8					
30	22.4	7.6	155	6.7					
38	22.4	7.6	155	6.7					
40	22.6	7.6	155	6.7					
46	22.5	7.6	155	6.8					Water changed in all
76	22.5	7.4	155	6.8					beakers.
88	22.5	7.4	155	6.8					Time: 0705
90	22.7	7.6	155	6.8					Initials: NB
111	22.7	7.8	160	6.9					
116	22.7	7.5	160	6.8					
119	22.7	7.4	155	6.8					
150	22.6	7.4	160	6.7					
151	22.4	7.4	155	6.8					Water changed in all
153	22.4	7.0	155	6.8					beakers.
160	22.5	7.4	160	6.8	90				Time: 1700
161	22.6	7.0	160	6.8					Initials: BBP
168	22.6	7.5	155	6.8					

*Water quality measurements to be taken.

Day 9 (10/28/04) NB/BBP

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. (mhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
9	23.1								Each beaker fed 1.0 ml
11	23.0								YTC suspension
12	23.0								Initials: NB
21	22.9								
22	22.9								
30	22.9								
38	23.0								
40	23.0								
46	23.0								Water changed in all
76	23.1								beakers.
88	23.1								Time: 0700
90	23.1								Initials: NB
111	23.2								
116	23.2								
119	23.2								
150	23.1								
151	23.1								Water changed in all
153	22.9								beakers.
160	22.9								Time: 1715
161	23.0								Initials: BBP
168	23.0								

*Water quality measurements to be taken.

ANC08206
BZTO104(e)008206

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No 686-17 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 10 (10/29/04) VB/JMM

Beaker No.	Temp.* (deg.C)	DO * (ppm)	Cond. umhos/cm	pH *	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
9	22.7	6.2		6.2					Each beaker fed 1.0 ml
11	22.7	6.4		6.2					YTC suspension
12	22.7	6.4		6.2					Initials: JMM
21	22.7	6.8		6.5					
22	22.7	6.8		6.2					
30	22.7	6.4		6.2					
38	22.7	6.4		6.2					
40	22.7	6.2		6.2					
46	22.7	6.6		6.3					Water changed in all
76	22.7	6.4		6.2					beakers.
88	22.7	6.8		6.3					Time: 0655
90	22.8	7.0		6.3					Initials: VB
111	22.8	6.5		6.3					
116	22.7	6.8		6.3					
119	22.7	6.4		6.3					
150	22.7	6.6		6.3					
151	22.6	6.6		6.3					Water changed in all
153	22.6	6.0		6.3					beakers.
160	22.6	6.5		6.3					Time: 1715
161	22.6	6.4		6.4					Initials: BBP
168	22.7	6.5		6.4					

*Water quality measurements to be taken.

Day 11 (10/30/04) JB

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. umhos/cm	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
9	22.7								Each beaker fed 1.0 ml
11	22.7								YTC suspension
12	22.6								Initials: CMB
21	22.7								
22	22.6								
30	22.7								
38	22.6								
40	22.8								
46	22.6								Water changed in all
76	22.6								beakers.
88	22.8								Time: 0720
90	22.9								Initials: JB
111	22.8								
116	22.7								
119	22.7								
150	22.7								
151	22.6								Water changed in all
153	22.5								beakers.
160	22.7								Time: 1310
161	22.6								Initials: GCH
168	22.7								

*Water quality measurements to be taken.

ANC08207
BZTO104(e)008207

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-17 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 12 (P / 31 / 08 JB

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. umhos/cm	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
9	22.7								Each beaker fed 1.0 ml
11	22.7								YTC suspension
12	22.7								Initials: JB
21	22.6								
22	22.6								
30	22.7								
38	22.6								
40	22.7								
46	22.8								Water changed in all
76	22.7								beakers.
88	22.7								Time: 0650
90	22.8								Initials: JB
111	22.9								
116	22.8								
119	22.7								
150	22.7								
151	22.7								Water changed in all
153	22.6								beakers.
160	22.7								Time: 1800
161	22.7								Initials: BEP
168	22.7								

*Water quality measurements to be taken.

Day 13 (11 / 1 / 08 JB 1 of 168

Beaker No.	Temp.* (deg.C)	DO * (ppm)	Cond. umhos/cm	pH *	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
9	22.7	6.2		6.2					Each beaker fed 1.0 ml
11	22.7	6.2		6.2					YTC suspension
12	22.7	6.0		6.2					Initials: GJ
21	22.6	5.2		6.6					
22	22.6	6.2		6.4					
30	22.7	6.0		6.3					
38	22.6	5.8		6.2					
40	22.6	6.2		6.2					
46	22.7	6.2		6.3					Water changed in all
76	22.7	6.0		6.3					beakers.
88	22.7	6.0		6.3					Time: 0655
90	22.9	6.2		6.3					Initials: GJ
111	22.8	6.2		6.4					
116	22.8	6.0		6.4					
119	22.8	5.9		6.4					
150	22.8	5.4		6.3					
151	22.7	5.7		6.3					Water changed in all
153	22.6	5.4		6.3					beakers.
160	22.7	6.0		6.4					Time: 1705
161	22.7	5.9		6.4					Initials: BEP
168	22.7	5.8		6.4					

*Water quality measurements to be taken.

ANC08208
BZTO104(e)008208

Test No. 686-17 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 14 (11/2/04) UB/[illegible]

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
9	22.9								Each beaker fed 1.0 ml
11	22.8								YTC suspension
12	22.8								Initials: UB
21	22.7								
22	22.8								
30	22.8								
38	22.8								
40	22.8								
46	22.9								Water changed in all
76	22.8								beakers.
88	22.8								Time: 0655
90	22.8								Initials: GJL
111	23.0								
116	22.9								
119	22.8								
150	22.8								
151	22.6								Water changed in all
153	22.6								beakers.
160	22.7								Time: 1710
161	22.7								Initials: AJ
168	22.7								

*Water quality measurements to be taken.

Day 15 (11/3/04) [illegible]/BBP

Beaker No.	Temp.* (deg.C)	DO * (ppm)	Cond.* (umhos/cm)	pH *	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
9	22.7	6.4	155	6.4					Each beaker fed 1.0 ml
11	22.7	6.5	155	7.5					YTC suspension
12	22.7	6.4	155	6.4					Initials: UB
21	22.7	6.4	465	6.5					
22	22.7	6.2	160	6.4					
30	22.8	6.6	160	6.4					
38	22.7	6.6	155	6.4					
40	22.9	6.4	155	6.3					
46	22.8	6.4	155	6.4					Water changed in all
76	22.8	6.6	155	6.4					beakers.
88	22.8	6.6	155	6.4					Time: 0710
90	23.1	6.7	155	6.4					Initials: GJL
111	22.9	6.6	160	6.4					
116	22.9	6.4	160	6.4					
119	22.9	6.5	155	6.4					
150	22.8	5.8	155	6.3					
151	22.7	6.3	155	6.4					Water changed in all
153	22.7	6.0	155	6.4					beakers.
160	22.7	6.2	160	6.4					Time: 1715
161	22.8	6.4	160	6.4					Initials: [illegible]
168	22.8	6.3	160	6.5					

*Water quality measurements to be taken.

Test No. 686-17 Client Windward Environmental Investigator _____

DAILY RECORD SHEET

Day 16 (11/4/04 JB/BBP

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
9	22.3								Each beaker fed 1.0 ml
11	22.2								YTC suspension
12	22.2								Initials: GJ1
21	22.2								
22	22.1								
30	22.1								
38	22.1								
40	22.1								
46	22.2								Water changed in all
76	22.2								beakers.
88	22.2								Time: 0740
90	22.5								Initials: JB
111	22.3								
116	22.3								
119	22.3								
150	22.3								
151	22.2								Water changed in all
153	22.1								beakers.
160	22.2								Time: 1710
161	22.2								Initials: BBP
168	22.3								

*Water quality measurements to be taken.

Day 17 (11/5 04) JB/GOLD/AJ

Beaker No.	Temp.* (deg.C)	DO * (ppm)	Cond. (umhos/cm)	pH *	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
9	22.3	6.2		6.6					Each beaker fed 1.0 ml
11	22.2	6.4		6.6					YTC suspension
12	22.2	6.2		6.8					Initials: GJ1
21	22.1	6.2		6.8					
22	22.1	6.3		6.7					
30	22.2	6.4		6.7					
38	22.3	6.5		6.7					
40	22.2	6.1		6.7					
46	22.2	6.5		6.7					Water changed in all
76	22.2	6.4		6.6					beakers.
88	22.3	6.2		6.6					Time: 0645
90	22.5	6.6		6.7					Initials: GJ1
111	22.4	6.2		6.6					
116	22.4	6.4		6.7					
119	22.4	6.4		6.7					
150	22.3	6.2		6.7					
151	22.2	6.3		6.7					Water changed in all
153	22.1	5.8		6.7					beakers.
160	22.2	6.2		6.7					Time: 1715
161	22.2	6.3		6.7					Initials: AJ
168	22.3	6.4		6.7					

*Water quality measurements to be taken.

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-17 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 18 (11/6/04 VB

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
9	22.2								Each beaker fed 1.0 ml
11	22.3								YTC suspension
12	22.3								Initials: VB
21	22.3								
22	22.3								
30	22.4								
38	22.4								
40	22.3								
46	22.5								Water changed in all
76	22.4								beakers.
88	22.5								Time: 0715
90	22.7								Initials: VB
111	22.6								
116	22.6								
119	22.6								
150	22.5								
151	22.5								Water changed in all
153	22.4								beakers. 0 11-6-04
160	22.3								Time: 1600 1800
161	22.4								Initials: BBF
168	22.4								

*Water quality measurements to be taken.

Day 19 (11/7/04 GJ

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/l)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
9	22.9								Each beaker fed 1.0 ml
11	22.9								YTC suspension
12	22.8								Initials: GJ
21	22.8								
22	22.7								
30	22.9								
38	22.7								
40	23.0								
46	22.8								Water changed in all
76	22.8								beakers.
88	23.0								Time: 0715
90	23.2								Initials: GJ
111	22.8								
116	22.8								
119	23.0								
150	23.1								
151	22.7								Water changed in all
153	22.7								beakers.
160	23.0								Time: 1730
161	22.9								Initials: BBF
168	23.0								

*Water quality measurements to be taken.

ANC08211
BZTO104(e)008211

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-17 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 20 (11 / 8 /04) MM/mm

Beaker No.	Temp.* (deg.C)	DO * (ppm)	Cond. umhos/cm	pH *	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3, (ppm)	Comments
9	22.8	6.9		6.8					Each beaker fed 1.0 ml
11	22.8	6.5		6.8					YTC suspension
12	22.7	6.4		6.7					Initials: MM
21	22.7	6.4		6.8					
22	22.6	@ 6.84		6.8					
30	22.8	6.8		6.8					
38	22.7	6.5		6.7					
40	22.9	6.8		6.7					
46	22.6	6.4		6.7					Water changed in all
76	22.6	6.4		6.7					beakers.
88	22.8	6.6		6.7					Time: 0715
90	23.1	7.0		6.6					Initials: GSJ
111	22.8	6.3		6.7					
116	22.7	6.5		6.7					
119	22.9	6.6		6.7					
150	22.9	6.3		6.7					
151	22.6	6.0		6.7					Water changed in all
153	22.5	5.7		6.7					beakers.
160	22.7	6.1		6.7					Time: 1720
161	22.6	6.3		6.6					Initials:
168	22.6	6.3		6.7					

*Water quality measurements to be taken.

Day 21 (11 / 9 / 04) GSJ

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. umhos/cm	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
9	22.6								Each beaker fed 1.0 ml
11	22.6								YTC suspension
12	22.6								Initials: MM
21	22.5								
22	22.6								
30	22.6								
38	22.6								
40	22.7								
46	22.7								Water changed in all
76	22.6								beakers.
88	22.6								Time: 0705
90	22.7								Initials: GSJ
111	22.6								
116	22.5								
119	22.6								
150	22.7								
151	22.6								Water changed in all
153	22.5								beakers.
160	22.6								Time: 1715
161	22.6								Initials: GSJ
168	22.6								

*Water quality measurements to be taken.

ANC08212
BZTO104(e)008212

Test No. 686-17 Client Windward Environmental Investigator _____

DAILY RECORD SHEET

Day 22 (11/10/64) JB/AJ/GAG

Beaker No.	Temp.* (deg.C)	DO * (ppm)	Cond.* (umhos/cm)	pH *	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
9	23.0	6.5	160	6.7					Each beaker fed 1.0 ml
11	22.9	6.4	160	6.7					YTC suspension
12	22.9	6.2	155	6.7					Initials: GJL
21	22.9	6.3	205	6.9					
22	22.8	6.6	160	6.8					
30	23.0	6.2	160	6.8					
38	23.0	~~6.7~~ 6.2	160	6.7					
40	23.2	~~6.4~~ 6.7	160	6.7					
46	23.0	6.4	155	6.7					Water changed in all
76	22.9	6.2	155	6.6					beakers.
88	23.0	6.6	155	6.7					Time: 0710
90	23.2	7.0	155	6.7					Initials: JB
111	22.9	6.0	155	6.7					
116	22.8	5.9	160	6.7					
119	23.1	5.9	160	6.7					
150	23.0	6.1	155	6.7					
151	22.8	6.0	155	6.6					Water changed in all
153	22.7	5.7	150	6.6					beakers.
160	22.9	5.9	155	6.6					Time: 1715
161	22.9	5.9	150	6.6					Initials: GAG
168	23.0	6.3	155	6.7					

*Water quality measurements to be taken.

Day 23 (11/11/64) BBA

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
9	22.9								Each beaker fed 1.0 ml
11	22.9								YTC suspension
12	22.7								Initials: NTM
21	22.7								
22	22.6								
30	22.6								
38	22.9								
40	23.0								
46	23.1								Water changed in all
76	22.7								beakers.
88	22.9								Time: 0650
90	22.9								Initials: GJL
111	22.8								
116	22.7								
119	22.7								
150	22.9								
151	22.9								Water changed in all
153	22.7								beakers.
160	22.7								Time: 1705
161	22.8								Initials: AJ
168	22.7								

*Water quality measurements to be taken.

Test No. 686-17 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 24 (11/12/04) VB/GGH/BBP

Beaker No.	Temp.* (deg.C)	DO * (ppm)	Cond. (umhos/cm)	pH *	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
9	22.7	6.8		6.5					Each beaker fed 1.0 ml
11	22.5	6.6		6.6					YTC suspension
12	22.4	6.6		6.6					Initials: GJI
21	22.4	6.6		6.6					
22	22.3	6.6		6.6					
30	22.6	7.2		6.6					
38	22.5	6.8		6.6					
40	22.9	7.2		6.6					
46	22.5	7.0		6.6					Water changed in all
76	22.5	6.4		6.5					beakers.
88	22.7	7.0		6.6					Time: 0650
90	23.0	7.4		6.6					Initials: VB
111	22.6	6.9		6.6					
116	22.5	6.9		6.7					
119	22.7	6.7		6.6					
150	22.7	6.5		6.6					
151	22.4	6.4		6.7					Water changed in all
153	22.2	6.0		6.6					beakers.
160	22.5	6.2		6.7					Time: 1725
161	22.5	6.4		6.6					Initials: GGH
168	22.6	6.6		6.7					

*Water quality measurements to be taken.

Day 25 (11/13/04) WTM/BP

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
9	22.6								Each beaker fed 1.0 ml
11	22.5								YTC suspension
12	22.4								Initials: WTM
21	22.4								
22	22.5								
30	22.5								
38	22.4								
40	22.4								
46	22.7								Water changed in all
76	22.5								beakers.
88	22.5								Time: 0745
90	22.7								Initials: WTM
111	22.5								
116	22.5								
119	22.5								
150	22.5								
151	22.5								Water changed in all
153	22.5								beakers.
160	22.5								Time: 17:15
161	22.4								Initials: MLR
168									

*Water quality measurements to be taken.

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-17 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 26 (11 14 04) GJL

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
9	22.9								Each beaker fed 1.0 ml
11	22.8								YTC suspension
12	22.7								Initials: GJL
21	22.7								
22	22.7								
30	22.8								
38	22.8								
40	23.0								
46	22.8								Water changed in all
76	22.8								beakers.
88	22.8								Time: 0715
90	23.0								Initials: GJL
111	22.7								
116	22.7								
119	22.7								
150	22.9								
151	22.7								Water changed in all
153	22.6								beakers.
160	22.9								Time: 1715
161	22.8								Initials: GJL
168	22.9								

*Water quality measurements to be taken.

Day 27 (11 15 04) BBP

Beaker No.	Temp.* (deg.C)	DO * (ppm)	Cond. (umhos/cm)	pH *	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
9	22.8	6.2		6.7					Each beaker fed 1.0 ml
11	22.6	5.8		6.7					YTC suspension
12	22.6	6.0		6.7					Initials: WTM
21	22.6	4.6		6.7					
22	22.7	5.6		6.7					
30	22.6	6.4		6.7					
38 @	~~22.9~~ 22.8	6.1		6.7					
40	22.9	6.5		6.7					
46	22.6	6.1		6.7					Water changed in all
76	22.6	5.7		6.7					beakers.
88	22.7	6.2		6.7					Time: 0725
90	22.7	6.8		6.7					Initials: GJL
111	22.6	6.2		6.8					
116	22.5	6.4		6.8					
119	22.7	6.0		6.7					
150	22.6	5.6		6.7					
151	22.6	5.5		6.7					Water changed in all
153	22.5	5.0		6.7					beakers.
160	22.5	5.2		6.7					Time: 1705
161	22.6	5.4		6.7					Initials: BBP
168	22.7	5.8		6.8					

*Water quality measurements to be taken.

ANC08215
BZTO104(e)008215

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-17 Client Windward Environmental Investigator _____

DAILY RECORD SHEET

Day 28 (11 / 14 / 08) BBP

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond.* (umhos/cm)	pH *	Hardness* (mg/L)	Alkalinity* (mg/L)	S (ppm)	NH3* (ppm)	Comments
9	22.5	7.7	145	6.6	34	40			Each beaker fed 1.0 ml
11	22.4	7.6	150	6.6	34	40			YTC suspension
12	22.4	7.1	145	6.6	34	40			Initials: —
21	22.4	7.4	160	6.6	34	40			
22	22.3	7.6	150	6.6	34	40			
30	22.4	7.6	150	6.6	34	40			
38	22.4	7.5	145	6.6	34	40			
40	22.4	8.0	150	6.6	43	40			
46	22.5	7.9	145	6.6	43	40			Water changed in all
76	22.4	7.3	150	6.6	34	40			beakers.
88	22.4	7.8	150	6.5	43	40			Time: 0700
90	22.6	8.2	150	6.6	34	40			Initials: GJL
111	22.6	7.9	150	6.6	34	40			
116	22.4	7.9	150	6.6	51	40			
119	22.4	7.8	150	6.6	34	40			
150	22.5	7.4	150	6.6	34	40			
151	22.4	7.0	150	6.6	34	40			Water changed in all
153	22.3	6.9	150	6.6	34	40			beakers.
160	22.4	6.7	155	6.6	34	40			Time:
161	22.4	6.9	145	6.5	43	40			Initials:
168	22.5	7.2	155	6.8	43	40			

*Water quality measurements to be taken.

Day _____(/ /)

Beaker No.	Temp.* (deg.C)	DO * (ppm)	Cond. (umhos/cm)	pH *	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
									Each beaker fed 1.0 ml
									YTC suspension
									Initials:
									Water changed in all
									beakers.
									Time:
									Initials:
									Water changed in all
									beakers.
									Time:
									Initials:

*Water quality measurements to be taken.

ANC08216
BZTO104(e)008216

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-17 Client Windward Environmental Investigator _____

DAY 28 TEST TERMINATION SHEET

Beaker No.	Number of survivors	Initials
1	8	CB
2	8	GJL
3	10	CB
4	10	GJL
5	8	CB
6	6	GJL
7	9	CB
8	10	GJL
9	10	CB
10	6	GJL
11	8	GJL
12	10	GJL
13	10	GJL
14	10	GJL
15	9	GJL
16	10	CB
17	10	CB
18	10	GJL
19	8	CB
20	10	GJL
21	9	CB
22	10	CB
23	10	GJL
24	10	CB
25	10	GJL
26	9	CB
27	10	GJL
28	9	CB
29	1	GJL
30	10	GJL
31	8	GJL
32	8	CB
33	10	GJL
34	5	CB
35	10	GJL
36	10	CB
37	10	GJL
38	9	CB
39	10	GJL
40	10	GJL
41	9	CB
42	9	GJL
43	10	CB
44	9	GJL
45	10	CB

Beaker No.	Number of survivors	Initials
46	7	CB
47	8	GJL
48	10	CB
49	9	GJL
50	10	CB
51	10	CB
52	10	GJL
53	10	CB
54	10	CB
55	9	GJL
56	9	CB
57	10	CB
58	10	CB
59	9	GJL
60	9	CB
61	10	CB
62	10	CB
63	9	GJL
64	9	CB
65	10	CB
66	9	GJL
67	10	CB
68	9	CB
69	9	GJL
70	10	CB
71	10	CB
72	8	GJL
73	10	CB
74	9	CB
75	9	GJL
76	9	CB
77	3	GJL
78	10	MM
79	7	CB
80	9	GJL
81	10	MM
82	9	CB
83	7	CB
84	GJL 8 9	GJL
85	8	CB
86	9	CB
87	9	MM
88	9	GJL
89	1	CB
90	9	CB

ANC08217
BZTO104(e)008217

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-17 Client Windward Environmental Investigator _____

DAY 28 TEST TERMINATION SHEET

Beaker No.	Number of survivors	Initials
91	2	
92	9	
93	9	
94	8	
95	10	
96	8	
97	10	
98	8	
99	10	
100	9	
101	8	
102	10	
103	8	
104	10	
105	10 9	
106	9	
107	10	
108	8	
109	10	
110	10	
111	9	
112	10	
113	9	
114	10	
115	9	
116	9	
117	10	
118	10	
119	10	
120	10	
121	9	
122	6	
123	9	
124	10	
125	9	
126	10	
127	10	
128	10	
129	8	
130	10	
131	10	
132	10	
133	9	
134	8	
135	10	

Beaker No.	Number of survivors	Initials
136	10	
137	8	
138	10	
139	8	
140	10	
141	3	
142	9	
143	8	
144	9	
145	8	
146	10	
147	8	
148	9	
149	9	
150	8	
151	10	
152	10	
153	10	
154	10	
155	7	
156	9	
157	10	
158	10	
159	10	
160	10	
161	10	
162	10	
163	10	
164	10	
165	10	
166	9	
167	9	
168	10	

ANC08218
BZTO104(e)008218

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c
HYALELLA AZTECA 14-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-17 Client Windward Environmental Investigator _____

ZERO-TIME WEIGHING DATA SHEET

Tare: Date 10-14-04 Oven temp (C.) 53-65 Drying time (hr.) 25 Initials JMF
Standard Weights: 10 mg: 10.005 100mg: 100.015

Final: Date 10-21-04 Oven temp (C.) 62 Drying time (hr.) 22 Initials JMF
Standard Weights: 10 mg: 10.004 100mg: 10.015

Equip. used: Oven: Blue M #1 Balance: SARTORIUS MSP

(Dry overnight at 60-90 degrees C)

Pan #	Tare wt. (mg)	Total wt. (mg)	#weighed	Comments
1	29.504	30.097	20	
2	30.695	31.216	20	
3	30.595	31.113	20	
4	28.705	29.362	20	
5	28.559	29.248	20	

ANC08219
BZTO104(e)008219

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-17 Client Windward Environmental Investigator

WEIGHING DATA SHEET

Tare: Date 10·21·04 Oven temp (C.) 63 Drying time (hr.) 24 Initials JRF
Standard Weights: 10 mg: 10.004 100mg: 100.015

Final #1: Date 11·17·04 Oven temp (C.) 71 Drying time (hr.) 22 Initials JRF
Standard Weights: 10 mg: 10.009 100mg: 100.004

Final #2: Date 11·18·04 Oven temp (C.) 70 Drying time (hr.) 24 Initials JRF
Standard Weights: 10 mg: 10.007 100mg: 100.007

Equip. used: Oven Blue M #1 Balance Sartorius M3P
(Dry overnight at 60-90 degrees C)

Bkr. #	Pan #	Tare wt. (mg)	Total wt. (mg) 1	Total wt. (mg) 2	no. weighed	put into pans-initials	Comments
1	1	27.047	28.299	28.292	8		
2	2	28.924	—	—	0		
3	3	29.500	31.416	31.409	10		
4	4	26.777	29.969	29.963	10		
5	5	29.022	31.190	31.175	8		
6	6	28.744	30.620	30.622	6		
7	7	28.981	31.360	31.370	9		
8	8	27.140	30.569	30.561	10		
9	9	27.349	*30.624 28.921 JF	28.932	10		
10	10	28.184	29.751	29.758	6		
11	11	27.661	29.650	29.663	8		
12	12	27.842	30.433	30.436	10		
13	13	29.247	31.214	31.223	10		
14	14	31.950	33.783	33.794	10		
15	15	28.273	30.024	30.040	9		
16	16	28.702	30.959	30.978	10		
17	17	31.021	32.966	32.986	10		
18	18	29.135	31.003	31.018	10		
19	19	27.416	28.913	28.924	8		
20	20	31.300	33.534	33.549	10		
21	21	29.116	—	—	0		
22	22	26.998	29.064	29.075	10		
23	23	28.756	32.527	32.538	10		
24	24	32.167	34.541	34.549	10		
25	25	28.698	32.282	32.292	10		
26	26	28.910	30.633	30.642	9		
27	27	28.450	31.253	31.264	10		
28	28	29.074	30.574	30.583	8		
29	29	31.404	32.018	32.030	1		
30	30	33.860	35.876	35.885	10		
31	31	27.784	30.303	30.289	8	BBP	
32	32	29.300	31.009	31.011	8	BBP	
33	33	29.489	32.241	32.223	10	BBP	

ANC08220
BZTO104(e)008220

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-17 Client Windward Environmental Investigator

WEIGHING DATA SHEET

See page _____ for information on drying times and temperatures, standard weights,etc.

Bkr. #	Pan #	Tare wt. (mg)	Total wt. (mg) 1	Total wt. (mg) 2	no. weighed	put into pans-initials	Comments
34	34	29.354	31.497	31.485	5	BBP	
35	35	28.188	30.318	30.309	9	BBP	1 missing
36	36	28.556	31.306	31.300	10	BBP	
37	37	31.587	35.242	35.222	10	BBP	
38	38	30.869	32.981	32.976	9	BBP	
39	39	30.318	32.776	32.772	10	BBP	
40	40	28.981	31.116	31.112	10	BBP	
41	41	29.203	31.833	31.827	9	BBP	
42	42	29.824	31.872	31.867	9	BBP	
43	43	28.784	31.140	31.129	10	BBP	
44	44	28.668	30.351	30.351	9	BBP	
45	45	28.321	30.079	30.082	10	BBP	
46	46	30.780	32.880	32.895	7	BBP	
47	47	29.074	31.511	31.524	8	BBP	
48	48	30.950	33.424	33.450	10	BBP	
49	49	28.928	30.721	30.746	9	BBP	
50	50	27.220	29.143	29.163	10	BBP	
51	51	28.458	31.460	31.477	10	BBP	
52	52	29.012	31.710	31.725	10	BBP	
53	53	29.188	32.225	32.243	10	BBP	
54	54	28.244	30.972	30.982	10	BBP	
55	55	29.248	31.733	31.759	9	BBP	
56	56	26.953	29.653	29.670	9	BBP	
57	57	29.474	31.800	31.819	10	BBP	
58	58	30.805	33.683	33.696	10	BBP	
59	59	29.530	32.137	JF ~~30.486~~ 32.155	9	BBP	
60	60	28.394	30.473	30.486	9	BBP	
61	61	27.774	30.983	30.996	10	BBP	
62	62	28.090	30.546	30.559	10	BBP	
63	63	29.162	30.941	30.943	9	SJ	
64	64	34.208	36.412	36.414	9	SJ	
65	65	28.310	30.453	30.454	10	SJ	
66	66	28.023	30.950	30.958	9	AH	
67	67	28.744	30.906	30.920	10	AH	
68	68	27.431	29.349	29.356	9	AH	
69	69	30.753	34.001	34.001	9	AH	
70	70	28.568	30.314	30.311	10	AH	
71	71	29.578	32.908	JF ~~31.382~~ 32.910	10	AH	
72	72	28.241	31.376	31.382	8	AH	
73	73	28.598	31.274	31.279	10	AH	
74	74	30.911	33.880	33.879	9	AH	
75	75	30.190	32.233	32.234	9	AH	
76	76	27.768	30.640	30.641	9	AH	

ANC08221
BZTO104(e)008221

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-17 Client Windward Environmental Investigator

WEIGHING DATA SHEET

See page _____ for information on drying times and temperatures, standard weights,etc.

Bkr. #	Pan #	Tare wt. (mg)	Total wt. (mg) 1	Total wt. (mg) 2	no. weighed	put into pans-initials	Comments
77	77	30.289	32.049	32.050	3	AM	
78	78	28.457	30.639	30.637	10	AM	
79	79	29.093	31.155	31.157	7	AM	
80	80	29.863	31.930	31.936	9	AM	
81	81	28.037	30.905	30.902	10	AM	
82	82	30.649	33.407	33.400	9	AM	
83	83	27.974	30.060	30.054	7	AM	
84	84	28.303	30.854	30.845	9	AM	one more than survivors recorded CORRECTED - 631
85	85	28.101	29.866	29.870	8	AM	
86	86	28.750	30.678	30.676	9	AM	
87	87	29.812	31.865	31.863	9	AM	
88	88	29.673	31.886	31.885	9	AM	
89	89	29.453	30.229	30.230	1	AM	
90	90	29.206	31.155	31.149	9	BBP	
91	91	28.810	29.642	29.644	2	BBP	
92	92	29.844	30.221	30.214	9	BBP	
93	93	28.296	32.248	32.234	9	BBP	
94	94	26.748	30.526	30.507	8	BBP	
95	95	28.763	30.742	30.711	10	BBP	
96	96	27.584	30.980	30.962	8	BBP	
97	97	27.8581	30.921	30.881	10	BBP	
98	98	27.355	28.747	28.724	8	BBP	
99	99	28.894	31.137	31.104	10	BBP	
100	100	29.873	31.830	31.792	9	BBP	
101	101	29.636	32.247	32.209	8	BBP	
102	102	27.835	30.055	30.030	10	BBP	
103	103	28.791	30.459	30.419	8	BBP	
104	104	29.742	32.250	32.215	10	BBP	
105	105	28.047	29.886	29.867	9	BBP	
106	106	28.739 3259	30.922	30.892	9	BBP	
107	107	29.492737	31.770	31.751	10	BBP	
108	108	29.192	30.414	30.396	8	BBP	
109	109	29.900	32.524	32.487	10	BBP	
110	110	30.315	34.034	34.003	10	BBP	
111	111	28.374	29.673	29.652	9	BBP	
112	112	27.977	30.470	30.441	10	BBP	
113	113	30.759	33.338	33.307	9	BBP	
114	114	30.396	33.932	33.896	10	BBP	
115	115	28.5826	29.933	29.916	9	BBP	
116	116	28.679	31.011	30.980	9	BBP	
117	117	26.593	29.325	29.287	10	BBP	
118	118	28.670	32.401	32.356	10	BBP	
119	119	28.917	31.373	31.332	10	BBP	

ANC08222
BZTO104(e)008222

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST.

Test No. 686-17 Client Windward Environmental Investigator

WEIGHING DATA SHEET

See page _____ for information on drying times and temperatures, standard weights,etc.

Bkr. #	Pan #	Tare wt. (mg)	Total wt. (mg) 1	Total wt. (mg) 2	no. weighed	put into pans-initials	Comments
120	120	28.383	29.974	29.947	10	BBP	
121	121	28.765	30.754	30.726	4	BBP	
122	122	28.972	29.759	29.742	6	BBP	
123	123	28.599	31.271	31.237	9	BBP	
124	124	29.818	33.242	33.198	10	BBP	
125	125	29.129	30.938	30.969	9		
126	126	30.871	32.497	32.485	10		
127	127	29.381	31.947	31.976	10		
128	128	27.648	30.861	30.876	10		
129	129	28.212	30.388	30.407	8		
130	130	28.070	29.725	29.742	10		
131	131	27.745	29.843	29.849	10		
132	132	29.690	31.739	31.744	10		
133	133	27.644	30.246	30.242	9		
134	134	29.192	30.651	30.674	8		
135	135	29.056	31.578	31.621	10		
136	136	28.919	31.438 175	31.192	10		
137	137	29.193	31.430	31.445	8		
138	138	30.864	32.443	32.468	6		
139	139	28.553	31.539	31.549	8		
140	140	29.104	31.607	31.618	10		
141	141	28.082	30.093	30.108	3		
142	142	28.356	30.830	30.844	9		
143	143	30.097	31.855	31.877	8		
144	144	30.232	32.564	32.579	9		
145	145	29.739	32.571	32.586	8		
146	146	27.893	30.224	30.234	10		
147	147	28.270	29.929	29.946	8		
148	148	31.894	33.495	33.509	9		
149	149	29.938	31.954	31.975	9		
150	150	28.270	30.256	30.284	8		
151	151	30.279	32.402	32.426	10		
152	152	27.575	30.199	30.220	10		
153	153	33.329	36.372	36.372	10		
154	154	28.147	31.375	31.388	10		
155	155	29.450	31.002	31.037	7		
156	156	28.062	29.622	29.650	9		
157	157	29.505	31.749	31.772	10		
158	158	27.881	30.510	30.507	10		
159	159	28.146	31.128	31.123	10		
160	160	31.424	34.284	34.304	10		
161	161	27.922	29.970	29.980	10		
162	162	30.434	33.068	33.071	10		

ANC08223
BZTO104(e)008223

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-17 Client Windward Environmental Investigator

WEIGHING DATA SHEET

See page _____ for information on drying times and temperatures, standard weights,etc.

Bkr. #	Pan #	Tare wt. (mg)	Total wt. (mg) 1	Total wt. (mg) 2	no. weighed	put into pans-initials	Comments
163	163	30.523	33.154	33.149	10		
164	164	28.555	30.402	30.415	10		
165	165	29.063	31.206	31.214	10		
166	166	27.966	29.512	29.525	9		
167	167	28.966	30.504	30.519	8		1 missing
168	168	29.349	31.297	31.310	10		

ANC08224
BZTO104(e)008224

BKR	NAS SMPL	CLIENT DESCRIP	REPL	
23	9534F	Control	1	
74	9534F	Control	2	
4	9534F	Control	3	
114	9534F	Control	4	
159	9534F	Control	5	
8	9534F	Control	6	
124	9534F	Control	7	
160	9534F	Control	8	wq replicate
129	9514F	LW2-G273	1	
122	9514F	LW2-G273	2	
113	9514F	LW2-G273	3	
34	9514F	LW2-G273	4	
143	9514F	LW2-G273	5	
138	9514F	LW2-G273	6	
6	9514F	LW2-G273	7	
150	9514F	LW2-G273	8	wq replicate
120	9515F	LW2-G124	1	
154	9515F	LW2-G124	2	
41	9515F	LW2-G124	3	
62	9515F	LW2-G124	4	
145	9515F	LW2-G124	5	
146	9515F	LW2-G124	6	
142	9515F	LW2-G124	7	
90	9515F	LW2-G124	8	wq replicate
95	9516F	LW2-G425	1	
81	9516F	LW2-G425	2	
71	9516F	LW2-G425	3	
97	9516F	LW2-G425	4	
27	9516F	LW2-G425	5	
110	9516F	LW2-G425	6	
158	9516F	LW2-G425	7	
12	9516F	LW2-G425	8	wq replicate
68	9517F	LW2-G364	1	
32	9517F	LW2-G364	2	
125	9517F	LW2-G364	3	
85	9517F	LW2-G364	4	
51	9517F	LW2-G364	5	
15	9517F	LW2-G364	6	
24	9517F	LW2-G364	7	
38	9517F	LW2-G364	8	wq replicate
99	9518F	LW2-G420	1	
135	9518F	LW2-G420	2	
69	9518F	LW2-G420	3	
152	9518F	LW2-G420	4	
123	9518F	LW2-G420	5	
127	9518F	LW2-G420	6	
53	9518F	LW2-G420	7	
161	9518F	LW2-G420	8	wq replicate
117	9519F	LW2-G409	1	
42	9519F	LW2-G409	2	
52	9519F	LW2-G409	3	
86	9519F	LW2-G409	4	
100	9519F	LW2-G409	5	
163	9519F	LW2-G409	6	
5	9519F	LW2-G409	7	
153	9519F	LW2-G409	8	wq replicate

ANC08225
BZTO104(e)008225

BKR	NAS SMPL	CLIENT DESCRIP	REPL	
33	9520F	LW2-G383	1	
82	9520F	LW2-G383	2	
37	9520F	LW2-G383	3	
139	9520F	LW2-G383	4	
118	9520F	LW2-G383	5	
162	9520F	LW2-G383	6	
39	9520F	LW2-G383	7	
119	9520F	LW2-G383	8	wq replicate
89	9521F	LW2-G368	1	
121	9521F	LW2-G368	2	
29	9521F	LW2-G368	3	
91	9521F	LW2-G368	4	
141	9521F	LW2-G368	5	
2	9521F	LW2-G368	6	
77	9521F	LW2-G368	7	
21	9521F	LW2-G368	8	wq replicate
28	9522F	LW2-G382	1	
26	9522F	LW2-G382	2	
157	9522F	LW2-G382	3	
1	9522F	LW2-G382	4	
164	9522F	LW2-G382	5	
57	9522F	LW2-G382	6	
31	9522F	LW2-G382	7	
151	9522F	LW2-G382	8	wq replicate
136	9523F	LW2-G392	1	
87	9523F	LW2-G392	2	
149	9523F	LW2-G392	3	
55	9523F	LW2-G392	4	
78	9523F	LW2-G392	5	
80	9523F	LW2-G392	6	
65	9523F	LW2-G392	7	
9	9523F	LW2-G392	8	wq replicate
60	9524F	LW2-G346	1	
131	9524F	LW2-G346	2	
165	9524F	LW2-G346	3	
92	9524F	LW2-G346	4	
130	9524F	LW2-G346	5	
14	9524F	LW2-G346	6	
19	9524F	LW2-G346	7	
22	9524F	LW2-G346	8	wq replicate
3	9525F	LW2-G347	1	
61	9525F	LW2-G347	2	
35	9525F	LW2-G347	3	
67	9525F	LW2-G347	4	
56	9525F	LW2-G347	5	
134	9525F	LW2-G347	6	
98	9525F	LW2-G347	7	
111	9525F	LW2-G347	8	wq replicate
137	9526F	LW2-G342	1	
54	9526F	LW2-G342	2	
156	9526F	LW2-G342	3	
44	9526F	LW2-G342	4	
133	9526F	LW2-G342	5	
48	9526F	LW2-G342	6	
126	9526F	LW2-G342	7	
30	9526F	LW2-G342	8	wq replicate

ANC08226
BZTO104(e)008226

BKR	NAS SMPL	CLIENT DESCRIP	REPL	
73	9527F	LW2-G352	1	
105	9527F	LW2-G352	2	
58	9527F	LW2-G352	3	
49	9527F	LW2-G352	4	
18	9527F	LW2-G352	5	
20	9527F	LW2-G352	6	
102	9527F	LW2-G352	7	
76	9527F	LW2-G352	8	wq replicate
83	9528F	LW2-G396	1	
75	9528F	LW2-G396	2	
108	9528F	LW2-G396	3	
96	9528F	LW2-G396	4	
79	9528F	LW2-G396	5	
132	9528F	LW2-G396	6	
64	9528F	LW2-G396	7	
46	9528F	LW2-G396	8	wq replicate
101	9529F	LW2-G405	1	
140	9529F	LW2-G405	2	
94	9529F	LW2-G405	3	
128	9529F	LW2-G405	4	
72	9529F	LW2-G405	5	
66	9529F	LW2-G405	6	
25	9529F	LW2-G405	7	
88	9529F	LW2-G405	8	wq replicate
112	9530F	LW2-G426	1	
155	9530F	LW2-G426	2	
7	9530F	LW2-G426	3	
43	9530F	LW2-G426	4	
106	9530F	LW2-G426	5	
167	9530F	LW2-G426	6	
109	9530F	LW2-G426	7	
40	9530F	LW2-G426	8	wq replicate
93	9531F	LW2-G277	1	
36	9531F	LW2-G277	2	
45	9531F	LW2-G277	3	
50	9531F	LW2-G277	4	
10	9531F	LW2-G277	5	
84	9531F	LW2-G277	6	
13	9531F	LW2-G277	7	
116	9531F	LW2-G277	8	wq replicate
103	9532F	LW2-G295	1	
104	9532F	LW2-G295	2	
17	9532F	LW2-G295	3	
166	9532F	LW2-G295	4	
47	9532F	LW2-G295	5	
147	9532F	LW2-G295	6	
70	9532F	LW2-G295	7	
11	9532F	LW2-G295	8	wq replicate
16	9533F	LW2-G280	1	
144	9533F	LW2-G280	2	
148	9533F	LW2-G280	3	
115	9533F	LW2-G280	4	
107	9533F	LW2-G280	5	
63	9533F	LW2-G280	6	
59	9533F	LW2-G280	7	
168	9533F	LW2-G280	8	wq replicate

ANC08227
BZTO104(e)008227

Chesapeake Cultures

P.O. Box 507 Hayes, VA 23072 (804) 693-4046 (804)694-4704 fax
www.c-cultures.com
e-mail growfish@c-cultures.com

N.A.S.
Shipment Information

Species Hyalella azteca Date 10/14/04

Age 2-3d. / u 1.0-1.3 mm P.O. No. verbal

Quanitity 2400 + Invoice No. 4853

Temperature 23.5°C Salinity — pH 7.97

Notes Thankyou!

Received by WTM 10-15-04

Biologist

* *Please inspect shipment and report any problem immediately* *

ANC08228
BZTO104(e)008228

TEST DATA ANALYSIS RECORDS

Freshwater Sediment Test
28-day Hyalella azteca

Endpoints Data Entry and Calculations File

BKR=beaker number
INIT=initial number
SURV=number survivors
MORT=number dead=INIT-SURV
PSURV=%survival=100(SURV/INIT)
PMORT=%mortality=100(MORT/INIT)

TARE WT= ashed weight of pan used for that replicate at test termination (mg), or
dry weight of pan if ash-free dry weight is not an endpoint
WT COUNT= number of test organisms weighed at test end
DRY WT= TARE WT + dry weight of test organisms recovered at test termination (mg)
TWT=total biomass=DRY WT-TARE WT
WT=average individual biomass=TWT/WT COUNT

Data entry verified against laboratory bench sheets
MSR 12/9/04

pan #	INITIAL WEIGHT tare wt (mg)	final wt (mg)	wt count	avg. wt/ organism
1	29.504	30.097	20	0.030
2	30.695	31.216	20	0.026
3	30.595	31.113	20	0.026
4	28.705	29.362	20	0.033
5	28.559	29.248	20	0.034

INDEX	BKR	SMPL	CLIENT DESCRIP	REPL		INIT	SURV	MORT	PSURV	PMORT	TARE WT (mg)	WT COUNT	DRY WT (mg)	TWT (mg)	WT (mg)		SURV	MORT	PSURV	PMORT	WT
1	23	9534F	Control	1		10	10	0	100.0	0.0	28.756	10	32.538	3.78	0.38						
2	74	9534F	Control	2		10	9	1	90.0	10.0	30.911	9	33.879	2.97	0.33						
3	4	9534F	Control	3		10	10	0	100.0	0.0	26.777	10	29.963	3.19	0.32						
4	114	9534F	Control	4		10	10	0	100.0	0.0	30.396	10	33.896	3.50	0.35						
5	159	9534F	Control	5		10	10	0	100.0	0.0	28.146	10	31.123	2.98	0.30	Mean	9.9	0.1	98.8	1.3	0.33
6	8	9534F	Control	6		10	10	0	100.0	0.0	27.140	10	30.561	3.42	0.34	SD	0.4	0.4	3.5	3.5	0.03
7	124	9534F	Control	7		10	10	0	100.0	0.0	29.818	10	33.198	3.38	0.34	n	8	8	8	8	8
8	160	9534F	Control	8	wq replicate	10	10	0	100.0	0.0	31.424	10	34.304	2.88	0.29						
9	129	9514F	LW2-G273	1		10	8	2	80.0	20.0	28.212	8	30.407	2.20	0.27						
10	122	9514F	LW2-G273	2		10	6	4	60.0	40.0	28.972	6	29.742	0.77	0.13						
11	113	9514F	LW2-G273	3		10	9	1	90.0	10.0	30.759	9	33.307	2.55	0.28						
12	34	9514F	LW2-G273	4		10	5	5	50.0	50.0	29.354	5	31.485	2.13	0.43						
13	143	9514F	LW2-G273	5		10	8	2	80.0	20.0	30.097	8	31.877	1.78	0.22	Mean	7.0	3.0	70.0	30.0	0.27
14	138	9514F	LW2-G273	6		10	6	4	60.0	40.0	30.864	6	32.468	1.60	0.27	SD	1.4	1.4	14.1	14.1	0.08
15	6	9514F	LW2-G273	7		10	6	4	60.0	40.0	28.744	6	30.622	1.88	0.31	n	8	8	8	8	8
16	150	9514F	LW2-G273	8	wq replicate	10	8	2	80.0	20.0	28.270	8	30.284	2.01	0.25						
17	120	9515F	LW2-G124	1		10	10	0	100.0	0.0	28.383	10	29.947	1.56	0.16						
18	154	9515F	LW2-G124	2		10	10	0	100.0	0.0	28.147	10	31.388	3.24	0.32						
19	41	9515F	LW2-G124	3		10	9	1	90.0	10.0	29.203	9	31.827	2.62	0.29						
20	62	9515F	LW2-G124	4		10	10	0	100.0	0.0	28.090	10	30.559	2.47	0.25						
21	145	9515F	LW2-G124	5		10	8	2	80.0	20.0	29.739	8	32.576	2.84	0.35	Mean	9.4	0.6	93.8	6.3	0.26
22	148	9515F	LW2-G124	6		10	10	0	100.0	0.0	27.893	10	30.234	2.34	0.23	SD	0.7	0.7	7.4	7.4	0.06
23	142	9515F	LW2-G124	7		10	9	1	90.0	10.0	28.356	9	30.844	2.49	0.28	n	8	8	8	8	8
24	90	9515F	LW2-G124	8	wq replicate	10	9	1	90.0	10.0	29.206	9	31.149	1.94	0.22						
25	95	9516F	LW2-G425	1		10	10	0	100.0	0.0	28.763	10	30.711	1.95	0.19						
26	81	9516F	LW2-G425	2		10	10	0	100.0	0.0	28.037	10	30.902	2.87	0.29						
27	71	9516F	LW2-G425	3		10	10	0	100.0	0.0	29.578	10	32.910	3.33	0.33						
28	97	9516F	LW2-G425	4		10	10	0	100.0	0.0	27.581	10	30.881	3.30	0.33						
29	27	9516F	LW2-G425	5		10	10	0	100.0	0.0	28.450	10	31.264	2.81	0.28	Mean	10.0	0.0	100.0	0.0	0.29
30	110	9516F	LW2-G425	6		10	10	0	100.0	0.0	30.315	10	34.003	3.69	0.37	SD	0.0	0.0	0.0	0.0	0.05
31	158	9516F	LW2-G425	7		10	10	0	100.0	0.0	27.881	10	30.507	2.63	0.26	n	8	8	8	8	8
32	12	9516F	LW2-G425	8	wq replicate	10	10	0	100.0	0.0	27.842	10	30.436	2.59	0.26						
33	68	9517F	LW2-G364	1		10	9	1	90.0	10.0	27.431	9	29.356	1.93	0.21						
34	32	9517F	LW2-G364	2		10	8	2	80.0	20.0	29.300	8	31.011	1.71	0.21						
35	125	9517F	LW2-G364	3		10	9	1	90.0	10.0	29.129	9	30.969	1.84	0.20						
36	85	9517F	LW2-G364	4		10	8	2	80.0	20.0	28.101	8	29.870	1.77	0.22						
37	51	9517F	LW2-G364	5		10	10	0	100.0	0.0	28.458	10	31.477	3.02	0.30	Mean	9.0	1.0	90.0	10.0	0.23
38	15	9517F	LW2-G364	6		10	9	1	90.0	10.0	28.273	9	30.040	1.77	0.20	SD	0.8	0.8	7.6	7.6	0.03
39	24	9517F	LW2-G364	7		10	10	0	100.0	0.0	32.167	10	34.548	2.38	0.24	n	8	8	8	8	8
40	38	9517F	LW2-G364	8	wq replicate	10	9	1	90.0	10.0	30.869	9	32.976	2.11	0.23						

ANC08230
BZTO104(e)008230

Test Number: P686-17

Freshwater Sediment Test
28-day Hyalella azteca

INDEX	BKR	NAS SMPL	CLIENT DESCRIP	REPL		INIT	SURV	MORT	PSURV	PMORT	TARE WT (mg)	WT COUNT	DRY WT (mg)	TWT (mg)	WT (mg)		SURV	MORT	PSURV	PMORT	WT
41	99	9518F	LW2-G420	1		10	10	0	100.0	0.0	28.894	10	31.104	2.21	0.22						
42	135	9518F	LW2-G420	2		10	10	0	100.0	0.0	29.056	10	31.621	2.57	0.26						
43	69	9518F	LW2-G420	3		10	9	1	90.0	10.0	30.753	9	34.001	3.25	0.36						
44	152	9518F	LW2-G420	4		10	10	0	100.0	0.0	27.575	10	30.220	2.65	0.26						
45	123	9518F	LW2-G420	5		10	9	1	90.0	10.0	28.599	9	31.237	2.64	0.29	Mean	9.6	0.3	97.5	2.5	0.27
46	127	9518F	LW2-G420	6		10	10	0	100.0	0.0	29.381	10	31.976	2.60	0.26	SD	0.5	0.5	4.6	4.6	0.05
47	53	9518F	LW2-G420	7		10	10	0	100.0	0.0	29.188	10	32.243	3.06	0.31	n	8	8	8	8	8
48	161	9518F	LW2-G420	8	wq replicate	10	10	0	100.0	0.0	27.822	10	29.960	2.06	0.21						
49	117	9519F	LW2-G409	1		10	10	0	100.0	0.0	26.593	10	29.267	2.69	0.27						
50	42	9519F	LW2-G409	2		10	9	1	90.0	10.0	29.824	9	31.867	2.04	0.23						
51	52	9519F	LW2-G409	3		10	10	0	100.0	0.0	29.012	10	31.725	2.71	0.27						
52	86	9519F	LW2-G409	4		10	9	1	90.0	10.0	28.750	9	30.676	1.93	0.21						
53	100	9519F	LW2-G409	5		10	9	1	90.0	10.0	29.873	9	31.792	1.92	0.21	Mean	9.4	0.6	93.8	6.3	0.25
54	163	9519F	LW2-G409	6		10	10	0	100.0	0.0	30.523	10	33.149	2.63	0.26	SD	0.7	0.7	7.4	7.4	0.03
55	5	9519F	LW2-G409	7		10	8	2	80.0	20.0	29.022	8	31.175	2.15	0.27	n	8	8	8	8	8
56	153	9519F	LW2-G409	8	wq replicate	10	10	0	100.0	0.0	33.329	10	36.372	3.04	0.30						
57	33	9520F	LW2-G383	1		10	10	0	100.0	0.0	29.469	10	32.223	2.73	0.27						
58	82	9520F	LW2-G383	2		10	9	1	90.0	10.0	30.649	9	33.400	2.75	0.31						
59	37	9520F	LW2-G383	3		10	10	0	100.0	0.0	31.587	10	35.222	3.64	0.36						
60	139	9520F	LW2-G383	4		10	8	2	80.0	20.0	28.553	8	31.549	3.00	0.37						
61	118	9520F	LW2-G383	5		10	10	0	100.0	0.0	28.670	10	32.356	3.69	0.37	Mean	9.6	0.4	96.3	3.8	0.30
62	162	9520F	LW2-G383	6		10	10	0	100.0	0.0	30.434	10	33.071	2.64	0.26	SD	0.7	0.7	7.4	7.4	0.08
63	39	9520F	LW2-G383	7		10	10	0	100.0	0.0	30.318	10	32.772	2.45	0.25	n	8	8	8	8	8
64	119	9520F	LW2-G383	8	wq replicate	10	10	0	100.0	0.0	28.917	10	31.332	2.42	0.24						
65	89	9521F	LW2-G368	1		10	1	9	10.0	90.0	29.453	1	30.230	0.78	0.78						
66	121	9521F	LW2-G368	2		10	4	6	40.0	60.0	28.765	4	30.726	1.96	0.49						
67	29	9521F	LW2-G368	3		10	1	9	10.0	90.0	31.404	1	32.030	0.63	0.63						
68	91	9521F	LW2-G368	4		10	2	8	20.0	80.0	28.810	2	29.644	0.83	0.42						
69	141	9521F	LW2-G368	5		10	3	7	30.0	70.0	28.082	3	30.108	2.03	0.68	Mean	1.8	8.3	17.5	82.5	0.60
70	2	9521F	LW2-G368	6		10	0	10	0.0	100.0	28.924	0				SD	1.5	1.5	14.9	14.9	0.13
71	77	9521F	LW2-G368	7		10	3	7	30.0	70.0	30.289	3	32.050	1.76	0.59	n	8	8	8	8	6
72	21	9521F	LW2-G368	8	wq replicate	10	0	10	0.0	100.0	29.116	0									
73	28	9522F	LW2-G382	1		10	8	2	80.0	20.0	29.074	8	30.583	1.51	0.19						
74	26	9522F	LW2-G382	2		10	9	1	90.0	10.0	28.910	9	30.642	1.73	0.19						
75	157	9522F	LW2-G382	3		10	10	0	100.0	0.0	29.505	10	31.772	2.27	0.23						
76	1	9522F	LW2-G382	4		10	8	2	80.0	20.0	27.047	8	28.292	1.25	0.16						
77	164	9522F	LW2-G382	5		10	10	0	100.0	0.0	28.555	10	30.415	1.86	0.19	Mean	9.1	0.9	91.3	8.8	0.21
78	57	9522F	LW2-G382	6		10	10	0	100.0	0.0	29.474	10	31.819	2.35	0.23	SD	1.0	1.0	9.9	9.9	0.05
79	31	9522F	LW2-G382	7		10	8	2	80.0	20.0	27.784	8	30.289	2.51	0.31	n	8	8	8	8	8
80	151	9522F	LW2-G382	8	wq replicate	10	10	0	100.0	0.0	30.279	10	32.426	2.15	0.21						
81	136	9523F	LW2-G392	1		10	10	0	100.0	0.0	28.919	10	31.192	2.27	0.23						
82	87	9523F	LW2-G392	2		10	9	1	90.0	10.0	29.812	9	31.863	2.05	0.23						
83	149	9523F	LW2-G392	3		10	9	1	90.0	10.0	29.938	9	31.975	2.04	0.23						
84	55	9523F	LW2-G392	4		10	9	1	90.0	10.0	29.248	9	31.759	2.51	0.26						
85	78	9523F	LW2-G392	5		10	10	0	100.0	0.0	28.457	10	30.637	2.18	0.22	Mean	9.5	0.5	95.0	5.0	0.22
86	80	9523F	LW2-G392	6		10	9	1	90.0	10.0	29.003	9	31.936	2.07	0.23	SD	0.5	0.5	5.3	5.3	0.03
87	65	9523F	LW2-G392	7		10	10	0	100.0	0.0	28.310	10	30.454	2.14	0.21	n	8	8	8	8	8
88	9	9523F	LW2-G392	8	wq replicate	10	10	0	100.0	0.0	27.349	10	28.932	1.58	0.16						

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ANC08231
BZTO104(e)008231

Test Number: P686-17

Freshwater Sediment Test
28-day Hyalella azteca

INDEX	BKR	NAS SMPL	CLIENT DESCRIP	REPL		INIT	SURV	MORT	PSURV	PMORT	TARE WT (mg)	WT COUNT	DRY WT (mg)	TWT (mg)	WT (mg)			SURV	MORT	PSURV	PMORT	WT
89	60	9524F	LW2-G346	1		10	9	1	90.0	10.0	28.394	9	30.486	2.09	0.23							
90	131	9524F	LW2-G346	2		10	10	0	100.0	0.0	27.745	10	29.849	2.10	0.21							
91	165	9524F	LW2-G346	3		10	10	0	100.0	0.0	29.063	10	31.214	2.15	0.22							
92	92	9524F	LW2-G346	4		10	9	1	90.0	10.0	29.844	9	30.214	0.37	0.04							
93	130	9524F	LW2-G346	5		10	10	0	100.0	0.0	28.070	10	29.742	1.67	0.17	Mean	9.5	0.5	95.0	5.0	0.18	
94	14	9524F	LW2-G346	6		10	10	0	100.0	0.0	31.950	10	33.794	1.84	0.18	SD	0.8	0.8	7.6	7.6	0.06	
95	19	9524F	LW2-G346	7		10	8	2	80.0	20.0	27.416	8	28.924	1.51	0.19	n	8	8	8	8	8	
96	22	9524F	LW2-G346	8	wq replicate	10	10	0	100.0	0.0	26.998	10	29.075	2.08	0.21							
97	3	9525F	LW2-G347	1		10	10	0	100.0	0.0	29.500	10	31.409	1.91	0.19							
98	61	9525F	LW2-G347	2		10	10	0	100.0	0.0	27.774	10	30.996	3.22	0.32							
99	35	9525F	LW2-G347	3		10	10	0	100.0	0.0	26.188	9	30.309	2.12	0.24							
100	67	9525F	LW2-G347	4		10	10	0	100.0	0.0	28.744	10	30.920	2.18	0.22							
101	56	9525F	LW2-G347	5		10	9	1	90.0	10.0	26.953	9	29.670	2.72	0.30	Mean	9.3	0.8	92.5	7.5	0.22	
102	134	9525F	LW2-G347	6		10	8	2	80.0	20.0	29.192	8	30.674	1.48	0.19	SD	0.9	0.9	8.9	8.9	0.06	
103	98	9525F	LW2-G347	7		10	8	2	80.0	20.0	27.355	8	28.724	1.37	0.17	n	8	8	8	8	8	
104	111	9525F	LW2-G347	8	wq replicate	10	9	1	90.0	10.0	28.374	9	29.652	1.28	0.14							
105	137	9526F	LW2-G342	1		10	8	2	80.0	20.0	29.193	8	31.445	2.25	0.28							
106	54	9526F	LW2-G342	2		10	10	0	100.0	0.0	28.244	10	30.982	2.74	0.27							
107	156	9526F	LW2-G342	3		10	9	1	90.0	10.0	28.062	9	29.650	1.59	0.18							
108	44	9526F	LW2-G342	4		10	9	1	90.0	10.0	28.668	9	30.351	1.68	0.19							
109	133	9526F	LW2-G342	5		10	9	1	90.0	10.0	27.644	9	30.242	2.60	0.29	Mean	9.4	0.6	93.8	6.3	0.23	
110	48	9526F	LW2-G342	6		10	10	0	100.0	0.0	30.950	10	33.450	2.50	0.25	SD	0.7	0.7	7.4	7.4	0.05	
111	126	9526F	LW2-G342	7		10	10	0	100.0	0.0	30.871	10	32.485	1.61	0.16	n	8	8	8	8	8	
112	30	9526F	LW2-G342	8	wq replicate	10	10	0	100.0	0.0	33.860	10	35.885	2.03	0.20							
113	73	9527F	LW2-G352	1		10	10	0	100.0	0.0	28.598	10	31.279	2.68	0.27							
114	105	9527F	LW2-G352	2		10	9	1	90.0	10.0	28.047	9	29.867	1.82	0.20							
115	58	9527F	LW2-G352	3		10	10	0	100.0	0.0	30.805	10	33.696	2.89	0.29							
116	49	9527F	LW2-G352	4		10	9	1	90.0	10.0	26.926	9	30.746	1.82	0.20							
117	18	9527F	LW2-G352	5		10	10	0	100.0	0.0	29.135	10	31.018	1.88	0.19	Mean	9.6	0.4	96.3	3.8	0.24	
118	20	9527F	LW2-G352	6		10	10	0	100.0	0.0	31.300	10	33.549	2.25	0.22	SD	0.5	0.5	5.2	5.2	0.05	
119	102	9527F	LW2-G352	7		10	10	0	100.0	0.0	27.835	10	30.030	2.20	0.22	n	8	8	8	8	8	
120	76	9527F	LW2-G352	8	wq replicate	10	9	1	90.0	10.0	27.768	9	30.641	2.87	0.32							
121	83	9528F	LW2-G396	1		10	7	3	70.0	30.0	27.974	7	30.054	2.08	0.30							
122	75	9528F	LW2-G396	2		10	9	1	90.0	10.0	30.190	9	32.234	2.04	0.23							
123	108	9528F	LW2-G396	3		10	8	2	80.0	20.0	29.192	8	30.396	1.20	0.15							
124	96	9528F	LW2-G396	4		10	8	2	80.0	20.0	27.584	8	30.962	3.38	0.42							
125	79	9528F	LW2-G396	5		10	7	3	70.0	30.0	29.093	7	31.157	2.06	0.29	Mean	8.1	1.9	81.3	18.8	0.27	
126	132	9528F	LW2-G396	6		10	10	0	100.0	0.0	29.690	10	31.744	2.05	0.21	SD	1.1	1.1	11.3	11.3	0.08	
127	64	9528F	LW2-G396	7		10	9	1	90.0	10.0	34.208	9	36.414	2.21	0.25	n	8	8	8	8	8	
128	46	9528F	LW2-G396	8	wq replicate	10	7	3	70.0	30.0	30.780	7	32.895	2.12	0.30							
129	101	9529F	LW2-G405	1		10	8	2	80.0	20.0	29.636	8	32.209	2.57	0.32							
130	140	9529F	LW2-G405	2		10	10	0	100.0	0.0	29.104	10	31.618	2.51	0.25							
131	94	9529F	LW2-G405	3		10	8	2	80.0	20.0	26.748	8	30.507	3.76	0.47							
132	128	9529F	LW2-G405	4		10	10	0	100.0	0.0	27.648	10	30.876	3.23	0.32							
133	72	9529F	LW2-G405	5		10	8	2	80.0	20.0	28.241	8	31.382	3.14	0.39	Mean	9.0	1.0	90.0	10.0	0.34	
134	66	9529F	LW2-G405	6		10	9	1	90.0	10.0	26.023	9	30.958	2.94	0.33	SD	0.9	0.9	9.3	9.3	0.07	
135	25	9529F	LW2-G405	7		10	10	0	100.0	0.0	28.698	10	32.292	3.59	0.36	n	8	8	8	8	8	
136	88	9529F	LW2-G405	8	wq replicate	10	9	1	90.0	10.0	29.673	9	31.885	2.21	0.25							

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ANC08232
BZTO104(e)008232

Test Number: P686-17

Freshwater Sediment Test
28-day Hyalella azteca

INDEX	BKR	NAS SMPL	CLIENT DESCRIP	REPL		INIT	SURV	MORT	PSURV	PMORT	TARE WT (mg)	WT COUNT	DRY WT (mg)	TWT (mg)	WT (mg)		SURV	MORT	PSURV	PMORT	WT
137	112	9530F	LW2-G426	1		10	10	0	100.0	0.0	27.977	10	30.441	2.46	0.25						
138	155	9530F	LW2-G426	2		10	7	3	70.0	30.0	29.450	7	31.037	1.59	0.23						
139	7	9530F	LW2-G426	3		10	9	1	90.0	10.0	28.981	9	31.370	2.39	0.27						
140	43	9530F	LW2-G426	4		10	10	0	100.0	0.0	28.784	10	31.129	2.35	0.23						
141	106	9530F	LW2-G426	5		10	9	1	90.0	10.0	28.328	9	30.892	2.56	0.28	Mean	9.3	0.8	92.5	7.5	0.24
142	167	9530F	LW2-G426	6		10	9	1	90.0	10.0	28.966	8	30.519	1.55	0.19	SD	1.0	1.0	10.4	10.4	0.03
143	109	9530F	LW2-G426	7		10	10	0	100.0	0.0	29.900	10	32.487	2.59	0.26	n	8	8	8	8	8
144	40	9530F	LW2-G426	8	wq replicate	10	10	0	100.0	0.0	28.881	10	31.112	2.23	0.22						
145	93	9531F	LW2-G277	1		10	9	1	90.0	10.0	28.296	9	32.234	3.94	0.44						
146	36	9531F	LW2-G277	2		10	10	0	100.0	0.0	28.556	10	31.300	2.74	0.27						
147	45	9531F	LW2-G277	3		10	10	0	100.0	0.0	28.321	10	30.082	1.76	0.18						
148	50	9531F	LW2-G277	4		10	10	0	100.0	0.0	27.220	10	29.163	1.94	0.19						
149	10	9531F	LW2-G277	5		10	6	4	60.0	40.0	28.184	6	29.758	1.57	0.26	Mean	9.1	0.9	91.3	8.8	0.26
150	84	9531F	LW2-G277	6		10	9	1	90.0	10.0	28.303	9	30.845	2.54	0.28	SD	1.4	1.4	13.6	13.6	0.08
151	13	9531F	LW2-G277	7		10	10	0	100.0	0.0	29.247	10	31.223	1.98	0.20	n	8	8	8	8	8
152	116	9531F	LW2-G277	8	wq replicate	10	9	1	90.0	10.0	28.679	9	30.980	2.30	0.26						
153	103	9532F	LW2-G295	1		10	8	2	80.0	20.0	28.791	8	30.419	1.63	0.20						
154	104	9532F	LW2-G295	2		10	10	0	100.0	0.0	29.742	10	32.215	2.47	0.25						
155	17	9532F	LW2-G295	3		10	10	0	100.0	0.0	31.021	10	32.986	1.97	0.20						
156	166	9532F	LW2-G295	4		10	9	1	90.0	10.0	27.966	9	29.525	1.56	0.17						
157	47	9532F	LW2-G295	5		10	8	2	80.0	20.0	29.074	8	31.524	2.45	0.31	Mean	8.9	1.1	88.8	11.3	0.22
158	147	9532F	LW2-G295	6		10	8	2	80.0	20.0	28.270	8	29.946	1.68	0.21	SD	1.0	1.0	9.9	9.9	0.05
159	70	9532F	LW2-G295	7		10	10	0	100.0	0.0	28.568	10	30.311	1.74	0.17	n	8	8	8	8	8
160	11	9532F	LW2-G295	8	wq replicate	10	8	2	80.0	20.0	27.661	8	29.663	2.00	0.25						
161	16	9533F	LW2-G280	1		10	10	0	100.0	0.0	28.702	10	30.978	2.28	0.23						
162	144	9533F	LW2-G280	2		10	9	1	90.0	10.0	30.232	9	32.579	2.35	0.26						
163	148	9533F	LW2-G280	3		10	9	1	90.0	10.0	31.894	9	33.509	1.62	0.18						
164	115	9533F	LW2-G280	4		10	9	1	90.0	10.0	28.526	9	29.916	1.39	0.15						
165	107	9533F	LW2-G280	5		10	10	0	100.0	0.0	29.737	10	31.751	2.01	0.20	Mean	9.4	0.6	93.8	6.3	0.21
166	63	9533F	LW2-G280	6		10	9	1	90.0	10.0	29.162	9	30.943	1.78	0.20	SD	0.5	0.5	5.2	5.2	0.04
167	59	9533F	LW2-G280	7		10	9	1	90.0	10.0	29.530	9	32.155	2.63	0.29	n	8	8	8	8	8
168	168	9533F	LW2-G280	8	wq replicate	10	10	0	100.0	0.0	29.349	10	31.310	1.96	0.20						

Notes:

beaker #35 and beaker #167: one animal each lost in transfer to weighing pan

beaker #84: additional animal found when counted into pan, apparent initial miscount in number of survivors; the survival count was adjusted to reflect this

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Test Number: 686-17

Freshwater Sediment Test
28-Day Hyalella azteca

Water Quality Data

	NAS	CLIENT										Interstitial water	
BKR	SMPL	DESCRIP										NH3	pH
	9534F	Control										1.5	6.6
	9514F	LW2-G273										11.6	6.2
	9515F	LW2-G124										3.2	5.6
	9516F	LW2-G425										0.9	5.3
	9517F	LW2-G364										2.6	5.7
	9518F	LW2-G420										4.6	6.0
	9519F	LW2-G409										5.0	6.1
	9520F	LW2-G383										---	---
	9521F	LW2-G368										22.9	6.9
	9522F	LW2-G382										3.8	7.0
	9523F	LW2-G392										4.8	7.2
	9524F	LW2-G346										3.4	7.0
	9525F	LW2-G347										2.4	6.8
	9526F	LW2-G342										1.9	6.6
	9527F	LW2-G352										3.2	6.5
	9528F	LW2-G396										4.3	6.7
	9529F	LW2-G405										1.6	6.3
	9530F	LW2-G426										5.0	6.2
	9531F	LW2-G277										2.5	6.3
	9532F	LW2-G295										2.1	6.4
	9533F	LW2-G280										2.4	6.3
					Overlying water								
			REPL	DAY	TEMP	DO	COND	pH	HARD	ALK	NH3		
9	9523F	LW2-G392	8	0	22.4	6.8	165	6.8	34	40	0.7		
11	9532F	LW2-G295	8	0	22.4	6.5	160	6.6	43	40	0.5		
12	9516F	LW2-G425	8	0	22.4	6.3	160	6.5	34	40	0.3		
21	9521F	LW2-G368	8	0	22.4	6.7	4750	6.4	68	70	1.5		
22	9524F	LW2-G346	8	0	22.4	6.6	175	7.0	43	40	0.6		
30	9526F	LW2-G342	8	0	22.3	6.6	160	6.5	43	40	0.5		
38	9517F	LW2-G364	8	0	22.3	6.0	170	6.6	43	40	0.7		
40	9530F	LW2-G426	8	0	22.3	6.3	170	6.5	43	50	1.0		
46	9528F	LW2-G396	8	0	22.3	6.4	160	6.3	51	40	0.7		
76	9527F	LW2-G352	8	0	22.3	6.2	170	6.3	51	40	0.8		
88	9529F	LW2-G405	8	0	22.3	6.5	165	6.5	51	40	0.4		
90	9515F	LW2-G124	8	0	22.3	6.9	160	6.4	34	40	0.4		
111	9525F	LW2-G347	8	0	22.4	6.7	170	6.5	43	40	0.5		
116	9531F	LW2-G277	8	0	22.3	6.8	165	6.5	43	40	0.6		
119	9520F	LW2-G383	8	0	22.3	6.4	160	6.6	34	40	0.3		
150	9514F	LW2-G273	8	0	22.1	6.2	175	6.5	43	40	2.0		
151	9522F	LW2-G382	8	0	22.3	6.3	165	6.4	43	40	0.9		
153	9519F	LW2-G409	8	0	22.2	6.3	175	6.5	43	40	1.0		
160	9534F	Control	8	0	22.4	6.2	230	6.6	43	40	0.2		
161	9518F	LW2-G420	8	0	22.3	6.7	180	6.5	51	40	0.9		
168	9533F	LW2-G280	8	0	22.5	6.6	165	6.6	43	40	0.5		
9	9523F	LW2-G392	8	1	22.4	7.6	165	6.4					
11	9532F	LW2-G295	8	1	22.4	7.5	165	6.5					
12	9516F	LW2-G425	8	1	22.4	7.4	165	6.4					
21	9521F	LW2-G368	8	1	22.5	6.8	2580	6.5					
22	9524F	LW2-G346	8	1	22.4	7.4	175	6.4					
30	9526F	LW2-G342	8	1	22.4	7.5	170	6.5					
38	9517F	LW2-G364	8	1	22.3	7.5	165	6.5					
40	9530F	LW2-G426	8	1	22.4	7.6	170	6.5					
46	9528F	LW2-G396	8	1	22.4	7.6	165	6.5					
76	9527F	LW2-G352	8	1	22.4	7.4	170	6.5					

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88	9529F	LW2-G405	8	1	22.5	7.3	165	6.5						
90	9515F	LW2-G124	8	1	22.6	7.5	165	6.5						
111	9525F	LW2-G347	8	1	22.5	7.3	170	6.5						
116	9531F	LW2-G277	8	1	22.5	7.4	165	6.5						
119	9520F	LW2-G383	8	1	22.5	7.4	165	6.5						
150	9514F	LW2-G273	8	1	22.4	7.4	170	6.6						
151	9522F	LW2-G382	8	1	22.4	7.3	165	6.5						
153	9519F	LW2-G409	8	1	22.5	7.2	170	6.5						
160	9534F	Control	8	1	22.5	7.4	210	6.6						
161	9518F	LW2-G420	8	1	22.4	7.6	170	6.6						
168	9533F	LW2-G280	8	1	22.5	7.4	165	6.6						
9	9523F	LW2-G392	8	2	22.7									
11	9532F	LW2-G295	8	2	22.7									
12	9516F	LW2-G425	8	2	22.6									
21	9521F	LW2-G368	8	2	22.7									
22	9524F	LW2-G346	8	2	22.7									
30	9526F	LW2-G342	8	2	22.7									
38	9517F	LW2-G364	8	2	22.7									
40	9530F	LW2-G426	8	2	22.7									
46	9528F	LW2-G396	8	2	22.7									
76	9527F	LW2-G352	8	2	22.8									
88	9529F	LW2-G405	8	2	22.8									
90	9515F	LW2-G124	8	2	22.9									
111	9525F	LW2-G347	8	2	22.8									
116	9531F	LW2-G277	8	2	22.8									
119	9520F	LW2-G383	8	2	22.8									
150	9514F	LW2-G273	8	2	22.7									
151	9522F	LW2-G382	8	2	22.7									
153	9519F	LW2-G409	8	2	22.7									
160	9534F	Control	8	2	22.7									
161	9518F	LW2-G420	8	2	22.7									
168	9533F	LW2-G280	8	2	22.8									
9	9523F	LW2-G392	8	3	22.6	7.2		6.4						
11	9532F	LW2-G295	8	3	22.4	7.4		6.4						
12	9516F	LW2-G425	8	3	22.3	7.4		6.4						
21	9521F	LW2-G368	8	3	22.4	7.4		6.7						
22	9524F	LW2-G346	8	3	22.3	7.5		6.5						
30	9526F	LW2-G342	8	3	22.5	7.7		6.6						
38	9517F	LW2-G364	8	3	22.4	7.7		6.5						
40	9530F	LW2-G426	8	3	22.4	7.6		6.5						
46	9528F	LW2-G396	8	3	22.4	7.7		6.6						
76	9527F	LW2-G352	8	3	22.4	7.4		6.5						
88	9529F	LW2-G405	8	3	22.5	6.9		6.4						
90	9515F	LW2-G124	8	3	22.6	7.4		6.5						
111	9525F	LW2-G347	8	3	22.6	7.1		6.5						
116	9531F	LW2-G277	8	3	22.5	7.3		6.5						
119	9520F	LW2-G383	8	3	22.4	7.1		6.5						
150	9514F	LW2-G273	8	3	22.5	7.1		6.5						
151	9522F	LW2-G382	8	3	22.3	7.4		6.6						
153	9519F	LW2-G409	8	3	22.3	7.5		6.5						
160	9534F	Control	8	3	22.6	7.5		6.6						
161	9518F	LW2-G420	8	3	22.6	7.5		6.5						
168	9533F	LW2-G280	8	3	22.6	7.4		6.5						
9	9523F	LW2-G392	8	4	22.5									
11	9532F	LW2-G295	8	4	22.5									
12	9516F	LW2-G425	8	4	22.5									
21	9521F	LW2-G368	8	4	22.6									
22	9524F	LW2-G346	8	4	22.5									
30	9526F	LW2-G342	8	4	22.4									

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38	9517F	LW2-G364	8	4	22.4										
40	9530F	LW2-G426	8	4	22.4										
46	9528F	LW2-G396	8	4	22.5										
76	9527F	LW2-G352	8	4	22.5										
88	9529F	LW2-G405	8	4	22.5										
90	9515F	LW2-G124	8	4	22.3										
111	9525F	LW2-G347	8	4	22.4										
116	9531F	LW2-G277	8	4	22.4										
119	9520F	LW2-G383	8	4	22.5										
150	9514F	LW2-G273	8	4	22.4										
151	9522F	LW2-G382	8	4	22.6										
153	9519F	LW2-G409	8	4	22.5										
160	9534F	Control	8	4	22.4										
161	9518F	LW2-G420	8	4	22.5										
168	9533F	LW2-G280	8	4	22.7										
9	9523F	LW2-G392	8	5	22.6										
11	9532F	LW2-G295	8	5	22.6										
12	9516F	LW2-G425	8	5	22.6										
21	9521F	LW2-G368	8	5	22.5										
22	9524F	LW2-G346	8	5	22.5										
30	9526F	LW2-G342	8	5	22.5										
38	9517F	LW2-G364	8	5	22.6										
40	9530F	LW2-G426	8	5	22.6										
46	9528F	LW2-G396	8	5	22.6										
76	9527F	LW2-G352	8	5	22.6										
88	9529F	LW2-G405	8	5	22.6										
90	9515F	LW2-G124	8	5	22.6										
111	9525F	LW2-G347	8	5	22.6										
116	9531F	LW2-G277	8	5	22.6										
119	9520F	LW2-G383	8	5	22.6										
150	9514F	LW2-G273	8	5	22.6										
151	9522F	LW2-G382	8	5	22.6										
153	9519F	LW2-G409	8	5	22.5										
160	9534F	Control	8	5	22.6										
161	9518F	LW2-G420	8	5	22.6										
168	9533F	LW2-G280	8	5	22.7										
9	9523F	LW2-G392	8	6	22.5	5.5		6.6							
11	9532F	LW2-G295	8	6	22.5	6.1		6.6							
12	9516F	LW2-G425	8	6	22.4	6.0		6.6							
21	9521F	LW2-G368	8	6	22.4	5.5		6.8							
22	9524F	LW2-G346	8	6	22.4	6.3		6.9							
30	9526F	LW2-G342	8	6	22.3	6.0		6.7							
38	9517F	LW2-G364	8	6	22.4	5.9		6.7							
40	9530F	LW2-G426	8	6	22.4	5.9		6.7							
46	9528F	LW2-G396	8	6	22.5	6.3		6.7							
76	9527F	LW2-G352	8	6	22.5	6.2		6.7							
88	9529F	LW2-G405	8	6	22.5	6.3		6.7							
90	9515F	LW2-G124	8	6	22.5	6.8		6.7							
111	9525F	LW2-G347	8	6	22.5	6.2		6.7							
116	9531F	LW2-G277	8	6	22.5	6.1		6.7							
119	9520F	LW2-G383	8	6	22.5	5.8		6.7							
150	9514F	LW2-G273	8	6	22.4	6.1		6.7							
151	9522F	LW2-G382	8	6	22.4	6.1		6.7							
153	9519F	LW2-G409	8	6	22.4	5.9		6.7							
160	9534F	Control	8	6	22.4	6.5		6.7							
161	9518F	LW2-G420	8	6	22.5	6.0		6.7							
168	9533F	LW2-G280	8	6	22.6	6.5		6.7							
9	9523F	LW2-G392	8	7	22.2										
11	9532F	LW2-G295	8	7	22.2										

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12	9516F	LW2-G425	8	7	22.1										
21	9521F	LW2-G368	8	7	22.2										
22	9524F	LW2-G346	8	7	22.0										
30	9526F	LW2-G342	8	7	22.0										
38	9517F	LW2-G364	8	7	22.1										
40	9530F	LW2-G426	8	7	22.0										
46	9528F	LW2-G396	8	7	22.2										
76	9527F	LW2-G352	8	7	22.2										
88	9529F	LW2-G405	8	7	22.0										
90	9515F	LW2-G124	8	7											
111	9525F	LW2-G347	8	7	22.1										
116	9531F	LW2-G277	8	7	22.2										
119	9520F	LW2-G383	8	7	22.1										
150	9514F	LW2-G273	8	7	22.0										
151	9522F	LW2-G382	8	7	22.1										
153	9519F	LW2-G409	8	7	22.2										
160	9534F	Control	8	7	22.2										
161	9518F	LW2-G420	8	7	22.1										
168	9533F	LW2-G280	8	7	22.0										
9	9523F	LW2-G392	8	8	22.5	7.4	150	6.7							
11	9532F	LW2-G295	8	8	22.4	7.5	155	6.7							
12	9516F	LW2-G425	8	8	22.4	7.4	155	6.7							
21	9521F	LW2-G368	8	8	22.4	7.6	820	7.1							
22	9524F	LW2-G346	8	8	22.4	7.4	160	6.8							
30	9526F	LW2-G342	8	8	22.4	7.6	155	6.7							
38	9517F	LW2-G364	8	8	22.4	7.6	155	6.7							
40	9530F	LW2-G426	8	8	22.6	7.6	155	6.7							
46	9528F	LW2-G396	8	8	22.5	7.6	155	6.8							
76	9527F	LW2-G352	8	8	22.5	7.4	155	6.8							
88	9529F	LW2-G405	8	8	22.5	7.4	155	6.8							
90	9515F	LW2-G124	8	8	22.7	7.6	155	6.8							
111	9525F	LW2-G347	8	8	22.7	7.8	160	6.9							
116	9531F	LW2-G277	8	8	22.7	7.5	160	6.8							
119	9520F	LW2-G383	8	8	22.7	7.4	155	6.8							
150	9514F	LW2-G273	8	8	22.6	7.4	160	6.7							
151	9522F	LW2-G382	8	8	22.4	7.4	155	6.8							
153	9519F	LW2-G409	8	8	22.4	7.0	155	6.8							
160	9534F	Control	8	8	22.5	7.4	160	6.9							
161	9518F	LW2-G420	8	8	22.6	7.0	160	6.8							
168	9533F	LW2-G280	8	8	22.6	7.5	155	6.8							
9	9523F	LW2-G392	8	9	23.1										
11	9532F	LW2-G295	8	9	23.0										
12	9516F	LW2-G425	8	9	23.0										
21	9521F	LW2-G368	8	9	22.9										
22	9524F	LW2-G346	8	9	22.9										
30	9526F	LW2-G342	8	9	22.9										
38	9517F	LW2-G364	8	9	23.0										
40	9530F	LW2-G426	8	9	23.0										
46	9528F	LW2-G396	8	9	23.0										
76	9527F	LW2-G352	8	9	23.1										
88	9529F	LW2-G405	8	9	23.1										
90	9515F	LW2-G124	8	9	23.1										
111	9525F	LW2-G347	8	9	23.2										
116	9531F	LW2-G277	8	9	23.2										
119	9520F	LW2-G383	8	9	23.2										
150	9514F	LW2-G273	8	9	23.1										
151	9522F	LW2-G382	8	9	23.1										
153	9519F	LW2-G409	8	9	22.9										
160	9534F	Control	8	9	22.9										

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161	9518F	LW2-G420	8	9	23.0									
168	9533F	LW2-G280	8	9	23.0									
9	9523F	LW2-G392	8	10	22.7	6.2		6.2						
11	9532F	LW2-G295	8	10	22.7	6.4		6.2						
12	9516F	LW2-G425	8	10	22.7	6.4		6.2						
21	9521F	LW2-G368	8	10	22.7	6.8		6.5						
22	9524F	LW2-G346	8	10	22.7	6.8		6.2						
30	9526F	LW2-G342	8	10	22.7	6.4		6.2						
38	9517F	LW2-G364	8	10	22.7	6.4		6.2						
40	9530F	LW2-G426	8	10	22.7	6.2		6.2						
46	9528F	LW2-G396	8	10	22.7	6.6		6.3						
76	9527F	LW2-G352	8	10	22.7	6.4		6.2						
88	9529F	LW2-G405	8	10	22.7	6.8		6.3						
90	9515F	LW2-G124	8	10	22.8	7.0		6.3						
111	9525F	LW2-G347	8	10	22.8	6.5		6.3						
116	9531F	LW2-G277	8	10	22.7	6.8		6.3						
119	9520F	LW2-G383	8	10	22.7	6.4		6.3						
150	9514F	LW2-G273	8	10	22.7	6.6		6.3						
151	9522F	LW2-G382	8	10	22.6	6.6		6.3						
153	9519F	LW2-G409	8	10	22.6	6.0		6.3						
160	9534F	Control	8	10	22.6	6.5		6.3						
161	9518F	LW2-G420	8	10	22.6	6.4		6.4						
168	9533F	LW2-G280	8	10	22.7	6.5		6.4						
9	9523F	LW2-G392	8	11	22.7									
11	9532F	LW2-G295	8	11	22.7									
12	9516F	LW2-G425	8	11	22.6									
21	9521F	LW2-G368	8	11	22.7									
22	9524F	LW2-G346	8	11	22.6									
30	9526F	LW2-G342	8	11	22.7									
38	9517F	LW2-G364	8	11	22.6									
40	9530F	LW2-G426	8	11	22.8									
46	9528F	LW2-G396	8	11	22.6									
76	9527F	LW2-G352	8	11	22.6									
88	9529F	LW2-G405	8	11	22.8									
90	9515F	LW2-G124	8	11	22.9									
111	9525F	LW2-G347	8	11	22.8									
116	9531F	LW2-G277	8	11	22.7									
119	9520F	LW2-G383	8	11	22.7									
150	9514F	LW2-G273	8	11	22.7									
151	9522F	LW2-G382	8	11	22.6									
153	9519F	LW2-G409	8	11	22.5									
160	9534F	Control	8	11	22.7									
161	9518F	LW2-G420	8	11	22.6									
168	9533F	LW2-G280	8	11	22.7									
9	9523F	LW2-G392	8	12	22.7									
11	9532F	LW2-G295	8	12	22.7									
12	9516F	LW2-G425	8	12	22.7									
21	9521F	LW2-G368	8	12	22.6									
22	9524F	LW2-G346	8	12	22.6									
30	9526F	LW2-G342	8	12	22.7									
38	9517F	LW2-G364	8	12	22.6									
40	9530F	LW2-G426	8	12	22.7									
46	9528F	LW2-G396	8	12	22.8									
76	9527F	LW2-G352	8	12	22.7									
88	9529F	LW2-G405	8	12	22.7									
90	9515F	LW2-G124	8	12	22.8									
111	9525F	LW2-G347	8	12	22.9									
116	9531F	LW2-G277	8	12	22.8									
119	9520F	LW2-G383	8	12	22.7									

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150	9514F	LW2-G273	8	12	22.7									
151	9522F	LW2-G382	8	12	22.7									
153	9519F	LW2-G409	8	12	22.6									
160	9534F	Control	8	12	22.7									
161	9518F	LW2-G420	8	12	22.7									
168	9533F	LW2-G280	8	12	22.7									
9	9523F	LW2-G392	8	13	22.7	6.2		6.2						
11	9532F	LW2-G295	8	13	22.7	6.2		6.2						
12	9516F	LW2-G425	8	13	22.7	6.0		6.2						
21	9521F	LW2-G368	8	13	22.6	5.2		6.6						
22	9524F	LW2-G346	8	13	22.6	6.2		6.4						
30	9526F	LW2-G342	8	13	22.7	6.0		6.3						
38	9517F	LW2-G364	8	13	22.6	5.8		6.2						
40	9530F	LW2-G426	8	13	22.6	6.2		6.2						
46	9528F	LW2-G396	8	13	22.7	6.2		6.3						
76	9527F	LW2-G352	8	13	22.7	6.0		6.3						
88	9529F	LW2-G405	8	13	22.7	6.0		6.3						
90	9515F	LW2-G124	8	13	22.9	6.2		6.3						
111	9525F	LW2-G347	8	13	22.8	6.2		6.4						
116	9531F	LW2-G277	8	13	22.8	6.0		6.4						
119	9520F	LW2-G383	8	13	22.8	5.9		6.4						
150	9514F	LW2-G273	8	13	22.8	5.4		6.3						
151	9522F	LW2-G382	8	13	22.7	5.7		6.3						
153	9519F	LW2-G409	8	13	22.6	5.4		6.3						
160	9534F	Control	8	13	22.7	6.0		6.4						
161	9518F	LW2-G420	8	13	22.7	5.9		6.4						
168	9533F	LW2-G280	8	13	22.7	5.8		6.4						
9	9523F	LW2-G392	8	14	22.9									
11	9532F	LW2-G295	8	14	22.8									
12	9516F	LW2-G425	8	14	22.8									
21	9521F	LW2-G368	8	14	22.7									
22	9524F	LW2-G346	8	14	22.8									
30	9526F	LW2-G342	8	14	22.8									
38	9517F	LW2-G364	8	14	22.8									
40	9530F	LW2-G426	8	14	22.8									
46	9528F	LW2-G396	8	14	22.9									
76	9527F	LW2-G352	8	14	22.8									
88	9529F	LW2-G405	8	14	22.8									
90	9515F	LW2-G124	8	14	22.8									
111	9525F	LW2-G347	8	14	23.0									
116	9531F	LW2-G277	8	14	22.9									
119	9520F	LW2-G383	8	14	22.8									
150	9514F	LW2-G273	8	14	22.8									
151	9522F	LW2-G382	8	14	22.6									
153	9519F	LW2-G409	8	14	22.6									
160	9534F	Control	8	14	22.7									
161	9518F	LW2-G420	8	14	22.7									
168	9533F	LW2-G280	8	14	22.7									
9	9523F	LW2-G392	8	15	22.7	6.4	155	6.4						
11	9532F	LW2-G295	8	15	22.7	6.5	155	7.5						
12	9516F	LW2-G425	8	15	22.7	6.4	155	6.4						
21	9521F	LW2-G368	8	15	22.7	6.4	465	6.5						
22	9524F	LW2-G346	8	15	22.7	6.2	160	6.4						
30	9526F	LW2-G342	8	15	22.8	6.6	160	6.4						
38	9517F	LW2-G364	8	15	22.7	6.6	155	6.4						
40	9530F	LW2-G426	8	15	22.9	6.4	155	6.3						
46	9528F	LW2-G396	8	15	22.8	6.4	155	6.4						
76	9527F	LW2-G352	8	15	22.8	6.6	155	6.4						
88	9529F	LW2-G405	8	15	22.8	6.6	155	6.4						

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90	9515F	LW2-G124	8	15	23.1	6.7	155	6.4						
111	9525F	LW2-G347	8	15	22.9	6.6	160	6.4						
116	9531F	LW2-G277	8	15	22.9	6.4	160	6.4						
119	9520F	LW2-G383	8	15	22.9	6.5	155	6.4						
150	9514F	LW2-G273	8	15	22.8	5.8	155	6.3						
151	9522F	LW2-G382	8	15	22.7	6.3	155	6.4						
153	9519F	LW2-G409	8	15	22.7	6.0	155	6.4						
160	9534F	Control	8	15	22.7	6.2	160	6.4						
161	9518F	LW2-G420	8	15	22.8	6.4	160	6.4						
168	9533F	LW2-G280	8	15	22.8	6.3	160	6.5						
9	9523F	LW2-G392	8	16	22.3									
11	9532F	LW2-G295	8	16	22.2									
12	9516F	LW2-G425	8	16	22.2									
21	9521F	LW2-G368	8	16	22.2									
22	9524F	LW2-G346	8	16	22.1									
30	9526F	LW2-G342	8	16	22.1									
38	9517F	LW2-G364	8	16	22.1									
40	9530F	LW2-G426	8	16	22.1									
46	9528F	LW2-G396	8	16	22.2									
76	9527F	LW2-G352	8	16	22.2									
88	9529F	LW2-G405	8	16	22.2									
90	9515F	LW2-G124	8	16	22.5									
111	9525F	LW2-G347	8	16	22.3									
116	9531F	LW2-G277	8	16	22.3									
119	9520F	LW2-G383	8	16	22.3									
150	9514F	LW2-G273	8	16	22.3									
151	9522F	LW2-G382	8	16	22.2									
153	9519F	LW2-G409	8	16	22.1									
160	9534F	Control	8	16	22.2									
161	9518F	LW2-G420	8	16	22.2									
168	9533F	LW2-G280	8	16	22.3									
9	9523F	LW2-G392	8	17	22.3	6.2		6.6						
11	9532F	LW2-G295	8	17	22.2	6.4		6.6						
12	9516F	LW2-G425	8	17	22.2	6.2		6.8						
21	9521F	LW2-G368	8	17	22.1	6.2		6.8						
22	9524F	LW2-G346	8	17	22.1	6.3		6.7						
30	9526F	LW2-G342	8	17	22.2	6.4		6.7						
38	9517F	LW2-G364	8	17	22.3	6.5		6.7						
40	9530F	LW2-G426	8	17	22.2	6.1		6.7						
46	9528F	LW2-G396	8	17	22.2	6.5		6.7						
76	9527F	LW2-G352	8	17	22.2	6.4		6.6						
88	9529F	LW2-G405	8	17	22.3	6.2		6.6						
90	9515F	LW2-G124	8	17	22.5	6.6		6.7						
111	9525F	LW2-G347	8	17	22.4	6.2		6.6						
116	9531F	LW2-G277	8	17	22.4	6.4		6.7						
119	9520F	LW2-G383	8	17	22.4	6.4		6.7						
150	9514F	LW2-G273	8	17	22.3	6.2		6.7						
151	9522F	LW2-G382	8	17	22.2	6.3		6.7						
153	9519F	LW2-G409	8	17	22.1	5.8		6.7						
160	9534F	Control	8	17	22.2	6.2		6.7						
161	9518F	LW2-G420	8	17	22.2	6.3		6.7						
168	9533F	LW2-G280	8	17	22.3	6.4		6.7						
9	9523F	LW2-G392	8	18	22.2									
11	9532F	LW2-G295	8	18	22.3									
12	9516F	LW2-G425	8	18	22.3									
21	9521F	LW2-G368	8	18	22.3									
22	9524F	LW2-G346	8	18	22.3									
30	9526F	LW2-G342	8	18	22.4									
38	9517F	LW2-G364	8	18	22.4									

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40	9530F	LW2-G426	8	18	22.3										
46	9528F	LW2-G396	8	18	22.5										
76	9527F	LW2-G352	8	18	22.4										
88	9529F	LW2-G405	8	18	22.5										
90	9515F	LW2-G124	8	18	22.7										
111	9525F	LW2-G347	8	18	22.6										
116	9531F	LW2-G277	8	18	22.6										
119	9520F	LW2-G383	8	18	22.6										
150	9514F	LW2-G273	8	18	22.5										
151	9522F	LW2-G382	8	18	22.5										
153	9519F	LW2-G409	8	18	22.4										
160	9534F	Control	8	18	22.3										
161	9518F	LW2-G420	8	18	22.4										
168	9533F	LW2-G280	8	18	22.4										
9	9523F	LW2-G392	8	19	22.9										
11	9532F	LW2-G295	8	19	22.9										
12	9516F	LW2-G425	8	19	22.8										
21	9521F	LW2-G368	8	19	22.8										
22	9524F	LW2-G346	8	19	22.7										
30	9526F	LW2-G342	8	19	22.9										
38	9517F	LW2-G364	8	19	22.7										
40	9530F	LW2-G426	8	19	23.0										
46	9528F	LW2-G396	8	19	22.8										
76	9527F	LW2-G352	8	19	22.8										
88	9529F	LW2-G405	8	19	23.0										
90	9515F	LW2-G124	8	19	23.2										
111	9525F	LW2-G347	8	19	22.8										
116	9531F	LW2-G277	8	19	22.8										
119	9520F	LW2-G383	8	19	23.0										
150	9514F	LW2-G273	8	19	23.1										
151	9522F	LW2-G382	8	19	22.7										
153	9519F	LW2-G409	8	19	22.7										
160	9534F	Control	8	19	23.0										
161	9518F	LW2-G420	8	19	22.9										
168	9533F	LW2-G280	8	19	23.0										
9	9523F	LW2-G392	8	20	22.8	6.9		6.8							
11	9532F	LW2-G295	8	20	22.8	6.5		6.8							
12	9516F	LW2-G425	8	20	22.7	6.4		6.7							
21	9521F	LW2-G368	8	20	22.7	6.4		6.8							
22	9524F	LW2-G346	8	20	22.6	6.4		6.8							
30	9526F	LW2-G342	8	20	22.8	6.8		6.8							
38	9517F	LW2-G364	8	20	22.7	6.5		6.7							
40	9530F	LW2-G426	8	20	22.9	6.8		6.7							
46	9528F	LW2-G396	8	20	22.6	6.4		6.7							
76	9527F	LW2-G352	8	20	22.6	6.4		6.7							
88	9529F	LW2-G405	8	20	22.8	6.6		6.7							
90	9515F	LW2-G124	8	20	23.1	7.0		6.6							
111	9525F	LW2-G347	8	20	22.8	6.3		6.7							
116	9531F	LW2-G277	8	20	22.7	6.5		6.7							
119	9520F	LW2-G383	8	20	22.9	6.6		6.7							
150	9514F	LW2-G273	8	20	22.9	6.3		6.7							
151	9522F	LW2-G382	8	20	22.6	6.0		6.7							
153	9519F	LW2-G409	8	20	22.5	5.7		6.7							
160	9534F	Control	8	20	22.7	6.1		6.7							
161	9518F	LW2-G420	8	20	22.6	6.3		6.6							
168	9533F	LW2-G280	8	20	22.6	6.3		6.7							
9	9523F	LW2-G392	8	21	22.6										
11	9532F	LW2-G295	8	21	22.6										
12	9516F	LW2-G425	8	21	22.6										

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21	9521F	LW2-G368	8	21	22.5										
22	9524F	LW2-G346	8	21	22.6										
30	9526F	LW2-G342	8	21	22.6										
38	9517F	LW2-G364	8	21	22.6										
40	9530F	LW2-G426	8	21	22.7										
46	9528F	LW2-G396	8	21	22.7										
76	9527F	LW2-G352	8	21	22.6										
88	9529F	LW2-G405	8	21	22.6										
90	9515F	LW2-G124	8	21	22.7										
111	9525F	LW2-G347	8	21	22.6										
116	9531F	LW2-G277	8	21	22.5										
119	9520F	LW2-G383	8	21	22.6										
150	9514F	LW2-G273	8	21	22.7										
151	9522F	LW2-G382	8	21	22.6										
153	9519F	LW2-G409	8	21	22.5										
160	9534F	Control	8	21	22.6										
161	9518F	LW2-G420	8	21	22.6										
168	9533F	LW2-G280	8	21	22.6										
9	9523F	LW2-G392	8	22	23.0	6.5	160	6.7							
11	9532F	LW2-G295	8	22	22.9	6.4	160	6.7							
12	9516F	LW2-G425	8	22	22.9	6.2	155	6.7							
21	9521F	LW2-G368	8	22	22.9	6.3	205	6.9							
22	9524F	LW2-G346	8	22	22.8	6.6	160	6.8							
30	9526F	LW2-G342	8	22	23.0	6.2	160	6.8							
38	9517F	LW2-G364	8	22	23.0	6.2	160	6.7							
40	9530F	LW2-G426	8	22	23.2	6.7	160	6.7							
46	9528F	LW2-G396	8	22	23.0	6.4	155	6.7							
76	9527F	LW2-G352	8	22	22.9	6.2	155	6.6							
88	9529F	LW2-G405	8	22	23.0	6.6	155	6.7							
90	9515F	LW2-G124	8	22	23.2	7.0	155	6.7							
111	9525F	LW2-G347	8	22	22.9	6.0	155	6.7							
116	9531F	LW2-G277	8	22	22.8	5.9	160	6.7							
119	9520F	LW2-G383	8	22	23.1	5.9	160	6.7							
150	9514F	LW2-G273	8	22	23.0	6.1	155	6.7							
151	9522F	LW2-G382	8	22	22.8	6.0	155	6.6							
153	9519F	LW2-G409	8	22	22.7	5.7	150	6.6							
160	9534F	Control	8	22	22.9	5.9	155	6.6							
161	9518F	LW2-G420	8	22	22.9	5.9	150	6.6							
168	9533F	LW2-G280	8	22	23.0	6.3	155	6.7							
9	9523F	LW2-G392	8	23	22.9										
11	9532F	LW2-G295	8	23	22.9										
12	9516F	LW2-G425	8	23	22.7										
21	9521F	LW2-G368	8	23	22.7										
22	9524F	LW2-G346	8	23	22.6										
30	9526F	LW2-G342	8	23	22.6										
38	9517F	LW2-G364	8	23	22.9										
40	9530F	LW2-G426	8	23	23.0										
46	9528F	LW2-G396	8	23	23.1										
76	9527F	LW2-G352	8	23	22.7										
88	9529F	LW2-G405	8	23	22.9										
90	9515F	LW2-G124	8	23	22.9										
111	9525F	LW2-G347	8	23	22.8										
116	9531F	LW2-G277	8	23	22.7										
119	9520F	LW2-G383	8	23	22.7										
150	9514F	LW2-G273	8	23	22.9										
151	9522F	LW2-G382	8	23	22.9										
153	9519F	LW2-G409	8	23	22.7										
160	9534F	Control	8	23	22.7										
161	9518F	LW2-G420	8	23	22.8										

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168	9533F	LW2-G280	8	23	22.7									
9	9523F	LW2-G392	8	24	22.7	6.8		6.5						
11	9532F	LW2-G295	8	24	22.5	6.6		6.6						
12	9516F	LW2-G425	8	24	22.4	6.6		6.6						
21	9521F	LW2-G368	8	24	22.4	6.6		6.6						
22	9524F	LW2-G346	8	24	22.3	6.6		6.6						
30	9526F	LW2-G342	8	24	22.6	7.2		6.6						
38	9517F	LW2-G364	8	24	22.5	6.8		6.6						
40	9530F	LW2-G426	8	24	22.9	7.2		6.6						
46	9528F	LW2-G396	8	24	22.5	7.0		6.6						
76	9527F	LW2-G352	8	24	22.5	6.4		6.5						
88	9529F	LW2-G405	8	24	22.7	7.0		6.6						
90	9515F	LW2-G124	8	24	23.0	7.4		6.6						
111	9525F	LW2-G347	8	24	22.6	6.9		6.6						
116	9531F	LW2-G277	8	24	22.5	6.9		6.7						
119	9520F	LW2-G383	8	24	22.7	6.7		6.6						
150	9514F	LW2-G273	8	24	22.7	6.5		6.6						
151	9522F	LW2-G382	8	24	22.4	6.4		6.7						
153	9519F	LW2-G409	8	24	22.2	6.0		6.6						
160	9534F	Control	8	24	22.5	6.2		6.7						
161	9518F	LW2-G420	8	24	22.5	6.4		6.6						
168	9533F	LW2-G280	8	24	22.6	6.6		6.7						
9	9523F	LW2-G392	8	25	22.6									
11	9532F	LW2-G295	8	25	22.5									
12	9516F	LW2-G425	8	25	22.4									
21	9521F	LW2-G368	8	25	22.4									
22	9524F	LW2-G346	8	25	22.5									
30	9526F	LW2-G342	8	25	22.5									
38	9517F	LW2-G364	8	25	22.4									
40	9530F	LW2-G426	8	25	22.4									
46	9528F	LW2-G396	8	25	22.7									
76	9527F	LW2-G352	8	25	22.5									
88	9529F	LW2-G405	8	25	22.5									
90	9515F	LW2-G124	8	25	22.7									
111	9525F	LW2-G347	8	25	22.5									
116	9531F	LW2-G277	8	25	22.5									
119	9520F	LW2-G383	8	25	22.5									
150	9514F	LW2-G273	8	25	22.5									
151	9522F	LW2-G382	8	25	22.5									
153	9519F	LW2-G409	8	25	22.5									
160	9534F	Control	8	25	22.5									
161	9518F	LW2-G420	8	25	22.4									
168	9533F	LW2-G280	8	25										
9	9523F	LW2-G392	8	26	22.9									
11	9532F	LW2-G295	8	26	22.8									
12	9516F	LW2-G425	8	26	22.7									
21	9521F	LW2-G368	8	26	22.7									
22	9524F	LW2-G346	8	26	22.7									
30	9526F	LW2-G342	8	26	22.8									
38	9517F	LW2-G364	8	26	22.8									
40	9530F	LW2-G426	8	26	23.0									
46	9528F	LW2-G396	8	26	22.8									
76	9527F	LW2-G352	8	26	22.8									
88	9529F	LW2-G405	8	26	22.8									
90	9515F	LW2-G124	8	26	23.0									
111	9525F	LW2-G347	8	26	22.7									
116	9531F	LW2-G277	8	26	22.7									
119	9520F	LW2-G383	8	26	22.7									
150	9514F	LW2-G273	8	26	22.9									

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151	9522F	LW2-G382	8	26	22.7									
153	9519F	LW2-G409	8	26	22.6									
160	9534F	Control	8	26	22.9									
161	9518F	LW2-G420	8	26	22.8									
168	9533F	LW2-G280	8	26	22.9									
9	9523F	LW2-G392	8	27	22.8	6.2		6.7						
11	9532F	LW2-G295	8	27	22.6	5.8		6.7						
12	9516F	LW2-G425	8	27	22.6	6.0		6.7						
21	9521F	LW2-G368	8	27	22.6	4.6		6.7						
22	9524F	LW2-G346	8	27	22.7	5.6		6.7						
30	9526F	LW2-G342	8	27	22.6	6.4		6.7						
38	9517F	LW2-G364	8	27	22.6	6.1		6.7						
40	9530F	LW2-G426	8	27	22.9	6.5		6.7						
46	9528F	LW2-G396	8	27	22.6	6.1		6.7						
76	9527F	LW2-G352	8	27	22.6	5.7		6.7						
88	9529F	LW2-G405	8	27	22.7	6.2		6.7						
90	9515F	LW2-G124	8	27	22.7	6.8		6.7						
111	9525F	LW2-G347	8	27	22.6	6.2		6.8						
116	9531F	LW2-G277	8	27	22.5	6.4		6.8						
119	9520F	LW2-G383	8	27	22.7	6.0		6.7						
150	9514F	LW2-G273	8	27	22.6	5.6		6.7						
151	9522F	LW2-G382	8	27	22.6	5.5		6.7						
153	9519F	LW2-G409	8	27	22.5	5.0		6.7						
160	9534F	Control	8	27	22.5	5.2		6.7						
161	9518F	LW2-G420	8	27	22.6	5.4		6.7						
168	9533F	LW2-G280	8	27	22.7	5.8		6.8						
9	9523F	LW2-G392	8	28	22.5	7.7	145	6.6	34	40	0.6			
11	9532F	LW2-G295	8	28	22.4	7.6	150	6.6	34	40	<0.1			
12	9516F	LW2-G425	8	28	22.4	7.1	145	6.6	34	40	<0.1			
21	9521F	LW2-G368	8	28	22.4	7.4	160	6.6	34	40	<0.1			
22	9524F	LW2-G346	8	28	22.3	7.6	150	6.6	34	40	<0.1			
30	9526F	LW2-G342	8	28	22.4	7.6	150	6.6	34	40	<0.1			
38	9517F	LW2-G364	8	28	22.4	7.5	145	6.6	34	40	<0.1			
40	9530F	LW2-G426	8	28	22.4	8.0	150	6.6	43	40	<0.1			
46	9528F	LW2-G396	8	28	22.5	7.9	145	6.6	43	40	<0.1			
76	9527F	LW2-G352	8	28	22.4	7.3	150	6.6	34	40	0.3			
88	9529F	LW2-G405	8	28	22.4	7.8	150	6.5	43	40	<0.1			
90	9515F	LW2-G124	8	28	22.6	8.2	150	6.6	34	40	<0.1			
111	9525F	LW2-G347	8	28	22.6	7.9	150	6.6	34	40	<0.1			
116	9531F	LW2-G277	8	28	22.4	7.9	150	6.6	51	40	<0.1			
119	9520F	LW2-G383	8	28	22.4	7.8	150	6.6	34	40	<0.1			
150	9514F	LW2-G273	8	28	22.5	7.4	150	6.6	34	40	<0.1			
151	9522F	LW2-G382	8	28	22.4	7.0	150	6.6	34	40	<0.1			
153	9519F	LW2-G409	8	28	22.3	6.9	150	6.6	34	40	<0.1			
160	9534F	Control	8	28	22.4	6.7	155	6.6	34	40	<0.1			
161	9518F	LW2-G420	8	28	22.4	6.9	145	6.5	43	40	<0.1			
168	9533F	LW2-G280	8	28	22.5	7.2	155	6.8	43	40	<0.1			
				Mean	22.6	6.6	223	6.6	40	41	—		4.5	6.4
				SD	0.2	0.6	464	0.2	7	5	—		4.9	0.5
				n	607	294	126	294	42	42	42		21	21
				Min	22.0	4.6	145	6.2	34	40	<0.1		0.9	5.3
				Max	23.2	8.2	4750	7.5	68	70	2.0		22.9	7.2

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RAW DATA DIVIDER PAGE
Test No. 686-17

AMMONIA EXPOSURE BENCHSHEETS AND ANALYSIS

Total Ammonia-N in Sediment Pore Water: Computation Worksheet

Salicylate Method (SOP #5492)

Result

	Sample description	Dilution factor	OD_{655}	NH_3-N (mg/L)	pH	Salinity (ppt)
	Blank	-----	-----	-----		
	1.0 mg/L NH_3-N Std.	-----	0.139	1.00		
	3.0 mg/L NH_3-N Std.	-----	0.279	3.00		
	6.0 mg/L NH_3-N Std.	-----	0.582	6.00		
	10.0 mg/L NH_3-N Std.	-----	0.930	10.00		
	3.0 mg/L spike	-----	0.280	2.96		
	3.0 mg/L spike dupl.	-----	0.277	2.93		
1.	9514F	5	0.219	11.59		
2.	9515F	5	0.060	3.18		
3.	9516F	5	0.017	0.90		
4.	9517F	5	0.049	2.59		
5.	9518F	5	0.087	4.60		
6.	9519F	5	0.095	5.03		
7.	9520F	5	---*	---*		
8.	9521F	5	0.432	22.86		
9.	9522F	5	0.071	3.76		
10.	9523F	5	0.090	4.76		
11.	9524F	5	0.064	3.39		
12.	9525F	5	0.046	2.43		
13.	9526F	5	0.036	1.91		
14.	9527F	5	0.060	3.18		
15.	9528F	5	0.081	4.29		
16.	9529F	5	0.030	1.59		
17.	9530F	5	0.094	4.97		
18.	9531F	5	0.047	2.49		
19.	9532F	5	0.040	2.12		
20.	9533F	5	0.046	2.43		
21.	9534F	5	0.028	1.48		
22.						
23.		* insufficient sample for analysis				
24.						
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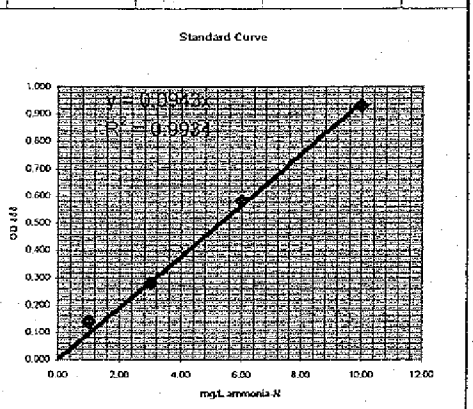

Reporting limit (mg/L) =	0.5
Recovery (%) =	98.3
Precision (RPD) =	1.08
Sample volume (ml):	0.10
Dilution factor	5

Sample Set Description:

Proj. No.: 686

Bulk sediment porewaters

Batch 9

Analyst: RSC

Date analysed: 10/18/2004

Total Ammonia-N in Sediment Pore Water: Computation Worksheet

Salicylate Method (SOP #5492)

Result

	Sample description	Dilution factor	OD655	NH_3-N (mg/L)	pH	Salinity (ppt)
	Blank	-----	----	----		
	1.0 mg/L NH_3-N Std.	-----	.139	1.00		
	3.0 mg/L NH_3-N Std.	-----	.279	3.00		
	6.0 mg/L NH_3-N Std.	-----	.582	6.00		
	10.0 mg/L NH_3-N Std.	-----	.930	10.00		
	3.0 mg/L spike	-----	.280			
	3.0 mg/L spike dupl.	-----	.277			
1.	9514F	5	.219		6.2	
2.	9515F	5	.060		5.6	
3.	9516F	5	.017		5.3	
4.	9517F	5	.049		5.7	
5.	9518F	5	.087		6.0	
6.	9519F	5	.095		6.1	
7.	9520F	5	—	—	—	
8.	9521F	5	.432		6.9	
9.	9522F	5	.071		7.0	
10.	9523F	5	.090		7.2	
11.	9524F	5	.064		7.0	
12.	9525F	5	.042		6.8	
13.	9526F	5	.036		6.6	
14.	9527F	5	.060		6.5	
15.	9528F	5	.081		6.7	
16.	9529F	5	.030		6.3	
17.	9530F	5	.034		6.2	
18.	9531F	5	.047		6.3	
19.	9532F	5	.040		6.4	
20.	9533F	5	.046		6.3	
21.	9534F		.028		6.6	
22.						
23.						
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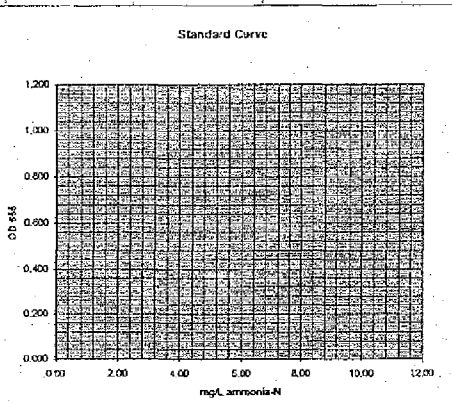

Reporting limit (mg/L) =	0.5
Recovery (%) =	#VALUE!
Precision (RPD) =	#VALUE!
Sample volume (ml):	0.10
Dilution factor	5

Sample Set Description:

Proj. No.:	686
Bulk sediment porewaters	
Batch 9	

Analyst:	RSC
Date analysed:	10/18/2004

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BZTO104(e)008247

Total Ammonia-N in Water: Computation Worksheet

Salicylate Method (SOP #5492)

Result

	Sample description	Dilution factor	OD_{655}	NH_3-N (mg/L)
	Blank	-----	----	----
	1.0 mg/L NH_3-N Std.	-----	0.084	1.00
	3.0 mg/L NH_3-N Std.	-----	0.274	3.00
	6.0 mg/L NH_3-N Std.	-----	0.542	6.00
	10.0 mg/L NH_3-N Std.	-----	0.895	10.00
	3.0 mg/L spike	-----	0.285	3.17
	3.0 mg/L spike dupl.	-----	0.277	3.09
1.	9	1	0.059	0.66
2.	11	1	0.040	0.45
3.	12	1	0.029	0.32
4.	21	1	0.136	1.51
5.	22	1	0.054	0.60
6.	30	1	0.048	0.53
7.	38	1	0.061	0.68
8.	40	1	0.090	1.00
9.	46	1	0.058	0.65
10.	76	1	0.067	0.75
11.	88	1	0.032	0.36
12.	90	1	0.035	0.39
13.	111	1	0.043	0.48
14.	116	1	0.051	0.57
15.	119	1	0.025	0.28
16.	150	1	0.181	2.02
17.	151	1	0.077	0.86
18.	153	1	0.090	1.00
19.	160	1	0.017	0.19
20.	161	1	0.076	0.85
21.	168	1	0.048	0.53
22.				
23.				
24.				
25.				
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32.				
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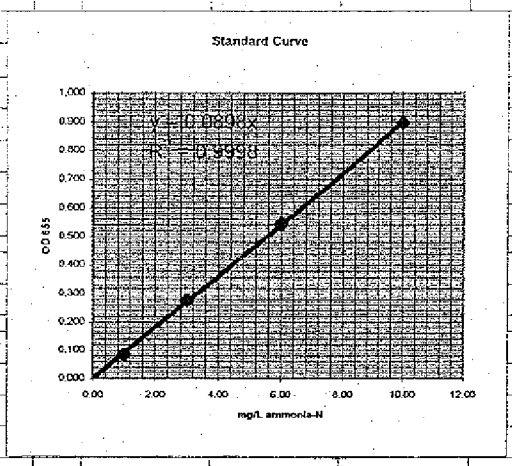

Reporting limit (mg/L) =	0.1
Recovery (%) =	104.3
Precision (RPD) =	2.85
Sample volume (ml):	0.50
Dilution factor	1

Sample Set Description:

Test No.:	686-17
Test Day:	0 (10-19-04)
Species:	*Hyalella*
Overlying water	
Analyst:	RSC
Date analysed:	11/2/2004

ANC08248
BZTO104(e)008248

Total Ammonia-N in Water: Computation Worksheet

Salicylate Method (SOP #5492)

Result

	Sample description	Dilution factor	OD655	NH_3-N (mg/L)
	Blank	-----	-----	-----
	1.0 mg/L NH_3-N Std.	-----	.154	1.00
	3.0 mg/L NH_3-N Std.	-----	.274	3.00
	6.0 mg/L NH_3-N Std.	-----	.524	6.00
	10.0 mg/L NH_3-N Std.	-----	.895	10.00
	3.0 mg/l. spike	----	.285	
	3.0 mg/L spike dupl.	----	.277	
1.	9	1	.059	
2.	11	1	.040	
3.	12	1	.029	
4.	21	1	.136	
5.	22	1	.057	
6.	30	1	.048	
7.	38	1	.061	
8.	40	1	.090	
9.	46	1	.258	
10.	76	1	.067	
11.	88	1	.032	
12.	90	1	.035	
13.	111	1	.043	
14.	116	1	.057	
15.	119	1	.025	
16.	150	1	.181	
17.	151	1	.077	
18.	153	1	.090	
19.	160	1	.017	
20.	161	1	.076	
21.	168	1	.048	
22.				
23.				
24.				
25.				
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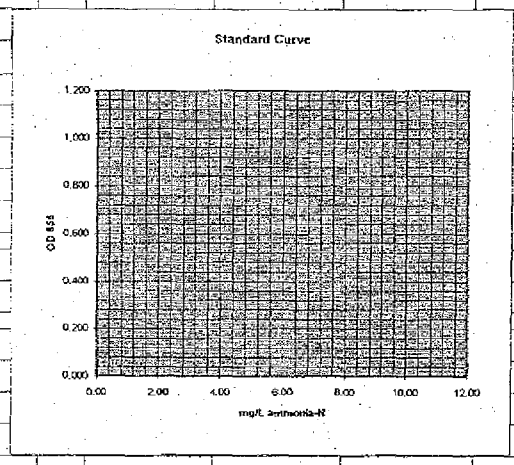

Reporting limit (mg/L) =	0.1
Recovery (%) =	#VALUE!
Precision (RPD) =	#VALUE!
Sample volume (ml):	0.50
Dilution factor	1

Sample Set Description:

Test No.:	686-17
Test Day:	0 (10-19-04)
Species:	*Hyalella*
Overlying water	
Analyst:	RSC
Date analysed:	11/2/2004

ANC08249
BZTO104(e)008249

Total Ammonia-N in Water: Computation Worksheet

Salicylate Method (SOP #5492)

Result

	Sample description	Dilution factor	OD_{655}	NH_3-N (mg/L)
	Blank	-----	-----	-----
	1.0 mg/L NH_3-N Std.	-----	0.078	1.00
	3.0 mg/L NH_3-N Std.	-----	0.287	3.00
	6.0 mg/L NH_3-N Std.	-----	0.541	6.00
	10.0 mg/L NH_3-N Std.	-----	0.940	10.00
	3.0 mg/L spike	-----	0.290	3.12
	3.0 mg/L spike dupl.	-----	0.283	3.04
1.	9	1	0.056	0.60
2.	11	1	0.000	ND
3.	12	1	0.000	ND
4.	21	1	0.000	ND
5.	22	1	0.000	ND
6.	30	1	0.000	ND
7.	38	1	0.000	ND
8.	40	1	0.000	ND
9.	46	1	0.000	ND
10.	76	1	0.023	0.25
11.	88	1	0.000	ND
12.	90	1	0.005	ND
13.	111	1	0.000	ND
14.	116	1	0.000	ND
15.	119	1	0.000	ND
16.	150	1	0.000	ND
17.	151	1	0.000	ND
18.	153	1	0.000	ND
19.	160	1	0.001	ND
20.	161	1	0.000	ND
21.	168	1	0.000	ND
22.				
23.				
24.				
25.				
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31.				
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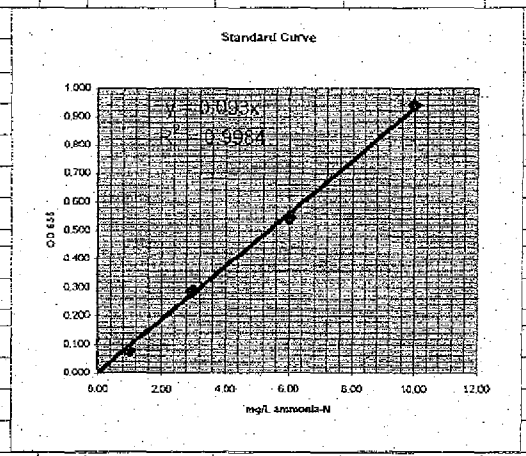
34.				
35.				
36.				



Reporting limit (mg/L) =	0.1
Recovery (%) =	102.6
Precision (RPD) =	2.44
Sample volume (ml):	0.50
Dilution factor	1

Sample Set Description:

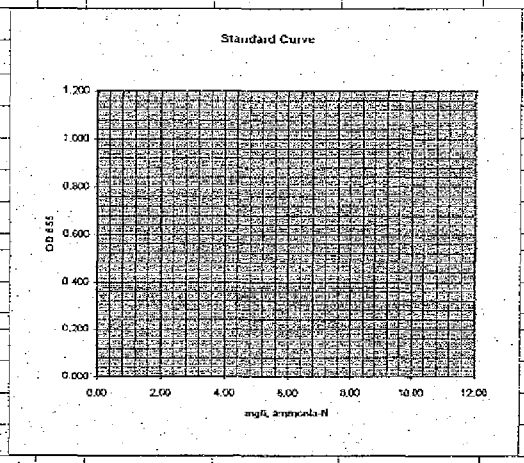
Test No.:	686-17
Test Day:	28 (11-16-04)
Species:	*Hyalella*
Overlying water	
Analyst:	RSC
Date analysed:	12/15/2004

Total Ammonia-N in Water: Computation Worksheet

Salicylate Method (SOP #5492)

Result

	Sample description	Dilution factor	OD655	NH_3-N (mg/L)
	Blank	----	----	----
	1.0 mg/L NH_3-N Std.	----	.078	1.00
	3.0 mg/L NH_3-N Std.	----	.287	3.00
	6.0 mg/L NH_3-N Std.	----	.541	6.00
	10.0 mg/L NH_3-N Std.	----	.940	10.00
	3.0 mg/L spike	----	.279	
	3.0 mg/L spike dupl.	----	.287	
1.	9	1	.056	
2.	11	1	.000	
3.	12	1	.000	
4.	21	1	.000	
5.	22	1	.000	
6.	30	1	.000	
7.	38	1	.000	
8.	40	1	.000	
9.	46	1	.000	
10.	76	1	.023	
11.	88	1	.000	
12.	90	1	.005	
13.	111	1	.000	
14.	116	1	.000	
15.	119	1	.000	
16.	150	1	.000	
17.	151	1	.000	
18.	153	1	.000	
19.	160	1	.001	
20.	161	1	.000	
21.	168	1	.000	
22.				
23.				
24.				
25.				
26.				
27.				
28.				
29.				
30.				
31.				
32.				
33.				
34.				
35.				
36.				



Reporting limit (mg/L) =	0.1
Recovery (%) =	#VALUE!
Precision (RPD) =	#VALUE!
Sample volume (ml):	0.50
Dilution factor	1

Sample Set Description:

Test No.:	686-17
Test Day:	28 (11-16-04)
Species:	*Hyalella*
Overlying water	
Analyst:	RSC
Date analysed:	12/15/2004

CHAIN-OF-CUSTODY RECORDS

1 of 2

Windward Environmental

CHAIN-OF-CUSTODY/TEST REQUEST FORM

1332

Project/Client Name: LWG - Portland Harbor
Windward Project No:
Contact Name: H. Anderson
Sampled By: P. Sparks, T. Shultz (Integral)

Ship to: NAS
Attn: Gerald Irissarri
Shipping address:

Shipping Date: 10/12/04
Airbill Number:

Sample Collection Date (m/d/y)	Time	Sample Identification	Volume of Sample / # of Containers	Matrix	Test(s) Requested (check test(s) required) 10 day CHIRONOMUS	28day HYALELLA						Comments / Instructions [Jar tag number(s)]
10/7/04	1548	LW2-G273 N	4	Sed	X	X		2°C				9514F
10/7/04	1115	LW2-G124	4	Sed	X	X		0°C				9515F
10/7/04	1316	LW2-G431	4	Sed	X	X						SP
10/7/04	1436	LW2-G425	4	Sed	X	X		2°C				9516F
10/8/04	1205	LW2-G136	4	Sed	X	X						SP
10/8/04	0952	LW2-G424	4	Sed	X	X						SP
10/8/04	1440	LW2-G364	4	Sed	X	X		0°C				9517F
10/8/04	0919	LW2-G420	4	Sed	X	X		0.5°C				9518F
10/8/04	1522	LW2-G409	4	Sed	X	X		2°C				9519F
10/8/04	1400	LW2-G383	4	Sed	X	X		0°C				9520F
10/8/04	1627	LW2-G368	4	Sed	X	X		0.5C				9521F
10/8/04	1307	LW2-G382	4	Sed	X	X		0°C				9522F
10/8/04	1140	LW2-G411	4	Sed	X	X						SP
Total Number of Containers			~~36~~ 44	Purchase Order / Statement of Work #								

1) Released by:	1) Rec'd by:	2) Released by:	1) Rec'd by:
Print name: Shannon Pierce	Print name: R. A. Caldwell	Print name:	
Signature: Shannon Pierce	Company: MU Aquatic Sci	Signature:	Company:
Company: Windward Environmental	Date/Time: 10/12/04 12:35	Company:	Date/Time:
Date/Time: 10/12/04 1235		Date/Time:	

* Distribution: White and yellow copies accompany shipment; pink-consignor's copy; white-consignee return with results; yellow-consignee's copy.
* Instructions for completion of Chain-of-Custody/Test Request Form on back.

Wind Ward environmental LLC
• 200 West Mercer Street
Suite 401
Seattle, WA 98119
Tel: 206.378.1364
Fax: 206.217.0089

To be completed by Laboratory upon sample receipt:

Date of receipt: 10/12/04	Laboratory W.O.#:
Condition upon receipt: OK	Time of receipt: 1235
Cooler temperature: 0-2°C	Received by:

ANC08253
BZTO104(e)008253

2 of 2

Windward Environmental

CHAIN-OF-CUSTODY/TEST REQUEST FORM

1365

Project/Client Name: LWG-Portland Harbor
Windward Project No:
Contact Name: H. Anderson
Sampled By: P. Sparks, T. Schultz (Integral)

Ship to: NAS
Attn: Gerald Irissarri
Shipping address:

Shipping Date: 10/12/04
Airbill Number:

Sample Collection Date (m/d/y)	Time	Sample Identification	Volume of Sample / # of Containers	Matrix	Test(s) Requested (check test(s) required)							Comments / Instructions [Jar tag number(s)]
					10 day CHIRONOMUS	28 day HYALLA						
10/08/04	1027	LW2-G392	4	Sed	X	X		0.5°C				9523 F
10/11/04	926	LW2-G346	4	sed	X	X		0°C				9524 F
10/11/04	941	LW2-G347	4	sed	X	X		0°C				9525 F
10/11/04	958	LW2-G342	4	sed	X	X		0°C				9526 F
10/11/04	1020	LW2-G352	4	sed	X	X		0°C				9527 F
10/11/04	1108	LW2-G396	4	sed	X	X		0°C				9528 F
10/11/04	1138	LW2-G405	4	sed	X	X		0°C				9529 F
10/11/04	1221	LW2-G426	4	sed	X	X		0°C				9530 F
10/11/04	1403	LW2-G277	4	sed	X	X		0°C				9531 F
10/11/04	1419	LW2-G295	4	sed	X	X		2°C				9532 F
10/11/04	1445	LW2-G280	4	sed	X	X		2°C				9533 F

Total Number of Containers: 44
Purchase Order / Statement of Work #:

1) Released by:	1) Rec'd by:	2) Released by:	1) Rec'd by:
Print name: Shannon Pierce	R. S. Caldwell	Print name:	
Signature: Shannon Pierce		Signature:	
Company: Windward Environmental	Company: NW Aquatic Sci	Company:	Company:
Date/Time: 10/12/04 1235	Date/Time: 10/12/04 12:35	Date/Time:	Date/Time:

* Distribution: White and yellow copies accompany shipment, pink-consignor's copy; white-consignee return with results; yellow-consignee's copy.
* Instructions for completion of Chain-of-Custody/Test Request Form on back.

Wind Ward environmental LLC
200 West Mercer Street
Suite 401
Seattle, WA 98119
Tel: 206.378.1364
Fax: 206.217.0089

To be completed by Laboratory upon sample receipt:

Date of receipt: 10/12/04	Laboratory W.O. #
Condition upon receipt: OK	Time of receipt: 1235
Cooler temperature: 0-2°C	Received by:

ANC08254
BZTO104(e)008254

APPENDIX II

RAW DATA – REFERENCE TOXICANT TEST

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS- _____

ACUTE TOXICITY TEST (ALL SPECIES)

REVIEWED PAGES 1-7 -GJI

Test No. 999- 1851 Client: QC Test Investigator _____

Test Type (rangefinding/definitive) Test Length (hr) 96

Species *Hyalella azteca*

STUDY MANAGEMENT

Client: QC test

Client's Study Monitor: QC test

Testing Laboratory: Northwestern Aquatic Sciences

Test Location: Newport Laboratory

Laboratory's Study Personnel:

Proj. Man./Study Dir. G.J. Irissarri GJI

QA Officer L. K. Nemeth LKN

1. GA Bubien GAB 2. William T. Montgomery WTM

3. M.S. Redmond MSR 4. B.B. Prideaux BBP

Test Beginning: 10-19-04 1300 Test Ending: 10-23-04 1220

TEST MATERIAL Lot No.: 7NZ

Description: Cadmium as $CdCl_2$-2.5H_2O (1.0 mg/ml) Prepared: 7-13-04

NAS Sample No.				
Date of Collection:				
Date of Receipt:				
Temperature (deg C):				
Dissolved oxygen (mg/L):				
pH:				
Conductivity (umhos/cm):				
Hardness (mg/L):				
Alkalinity (mg/L):				
Salinity (ppt):				
Total chlorine (mg/L):				
Total ammonia-N (mg/L):				
_____:				

DILUTION WATER

Description: Moderately hard synthetic water

Date of Preparation/Collection: 10-11-04

Water Quality: Cond. (umhos/cm): 310 Salinity (ppt) — pH 7.9

Hardness (mg/L as $CaCO_3$): 85 Alkalinity (mg/L as $CaCO_3$): 80

Treatments: Aerated ≥ 24 hrs

TEST LOCATION

Test conducted in (circle one): room 1 (room 2) trailer water bath other: _____

Randomization chart:

A	3.75	60	30	7.5	Ø	15				
B	30	15	60	3.75	7.5	Ø				

Error codes: 1) Correction of handwriting error

2) Written in wrong location; entry deleted

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-_____

ACUTE TOXICITY TEST (ALL SPECIES)

Test No. 999-1851 Client QC Test Investigator _____

TEST ORGANISMS

Species: *Hyalella azteca* Age: 7-8 DAYS Size: _____

Source: Chesapeake Cultures, Hayes, VA Date received: 10-15-04

Acclimation Data:

Date	Temp. (deg.C)	DO (mg/L)	pH	Cond. umhos/cm	Hardness (mg/L)	Alkalinity (mg/L)	Feeding Amount	Feeding description	Water changes
10-15-04*	20.5	>15.0	7.4	395	136	200	10 mL	YTC/pan	50% w/ tap water
10-16-04	20.7	8.7	7.8	370	119	190	"	"	yes - tap
10-17-04	20.4	8.9	7.5	255	102	100	"	"	yes - tap
10-18-04	22.8	8.2	7.2	225	58	70	"	"	"
10-19-04	22.4	7.9	7.7	200	51	50	"	"	—
Mean	21.4	9.7	7.5	289	93	122			
S.D.	1.1	3.0	0.2	88	37	69			
(N)	5	5	5	5	5	5			

Photoperiod during acclimation: 16:8, L:D

*receiving water

TEST PROCEDURES AND CONDITIONS

Test concentrations (50% series recommended): 60, 30, 15, 7.5, 3.75, 0 ug/L

Test chamber: 250 ml glass beakers Test volume: 100 ml

Replicates/treatment: 10 Organisms/treatment: 20 (10/rep)

Test water changes: None Aeration during test: None

Feeding: 0.5 ml YTC suspension per beaker on days 0 and 2

Duration: 24-hr, 48-hr, 96-hr Test temperature (deg.C): 23 ± 1 or 20 ± 1

Beaker placement: Stratified randomization Photoperiod: 16:8, L:D

MISCELLANEOUS NOTES

Test solution preparation:

1st working stock made by 1:99 (1ml ↑ 100 ml) dilution of concentrated 1.0 mg/ml Cd stock.
Final conc.: 10 ug/L.

2nd working stock made by 10:90 (10ml ↑ 100 ml) dilution of concentrated 1st working stock.
Final conc.: 1ug/L.

Test concentration (ug/L)	ml of 2nd working stock per **200** ml	Dilution water
60	12	Brought up to final volume of 200 ml with dilution water and distributed evenly between two replicates
30	6	
15	3	
7.5	1.5	
3.75	0.75	
0	0	

10/19/04 MS

ANC08257

BZTO104(e)008257

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-_____

ACUTE TOXICITY TEST (ALL SPECIES)

Test No. 999-1851 Client QC Test

DAILY RECORD SHEET

Day 0 (10/19/04) CB

Conc. (ug/L)	Temp. (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	Survivors A	Survivors B
1. 60	23.4	8.6	320	7.9	85	70	10	10
2. 30	23.4	8.6	310	7.9			10	10
3. 15	23.5	8.6	310	7.9			10	10
4. 7.5	23.4	8.8	315	7.9			10	10
5. 3.75	23.4	8.6	310	7.8			10	10
6. 0	23.3	8.7	310	7.8	85	70	10	10
All animals fed 0.5 ml YTC suspension. Initials: CB								

Day 1 (10/20/04) CB/BBP

Conc. (ug/L)	Temp. (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	Survivors A	Survivors B
1. 60	23.6	8.2	325	7.5			10	10
2. 30	23.5	8.1	325	7.5			10	10
3. 15	23.6	8.1	325	7.6			10	10
4. 7.5	23.5	8.0	325	7.4			10	10
5. 3.75	23.5	8.0	320	7.4			10	10
6. 0	23.6	8.0	325	7.4			10	10

Day 2 (10/21/04) CB/BBP

Conc. (ug/L)	Temp. (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	Survivors A	Survivors B
1. 60	23.5	7.8	345	7.4			0	0
2. 30	23.5	7.7	340	7.4			5(50)	6(40)
3. 15	23.6	7.5	340	7.4			10	10
4. 7.5	23.5	7.6	335	7.4			10	10
5. 3.75	23.5	7.6	335	7.4			10	10
6. 0	23.4	7.6	345	7.4			10	10
All animals fed 0.5 ml YTC suspension. Initials: CB								

Day 3 (10/22/04) CB/BBP

Conc. (ug/L)	Temp. (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	Survivors A	Survivors B
1. 60	—	—	—	—			0	0
2. 30	23.5	8.1	340	7.4			0(50)	0(60)
3. 15	23.5	8.1	345	7.4			6(40)	5(50)
4. 7.5	23.5	7.9	335	7.3			10	10
5. 3.75	23.4	8.0	340	7.3			10	10
6. 0	23.4	7.9	350	7.3			10	10

Day 4 (10/23/04) CB

Conc. (ug/L)	Temp. (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	Survivors A	Survivors B
1. 60	—	—	—	—	—	—	0	0
2. 30	—	—	—	—			0	0
3. 15	23.6	8.0	350	7.5			0(60)	0(50)
4. 7.5	23.5	7.7	345	7.5			4(60)	5(50)
5. 3.75	23.5	7.9	340	7.5			8(20)	9(10)
6. 0	23.6	7.8	350	7.5	85	70	10	10
Mean	23.5	8.1	332	7.5				
SD	0.1	0.4	14	0.2				
n	27	27	27	27				

Chesapeake Cultures

P.O. Box 507 Hayes, VA 23072 (804) 693-4046 (804)694-4704 fax
www.c-cultures.com
e-mail growfish@c-cultures.com

N.A.S.
Shipment Information

Species Hyalella azteca Date 10/14/04

Age 2-3d. / ~ 1.0-1.3 mm P.O. No. verbal

Quanitity 2400 + Invoice No. 4853

Temperature 23.5°C Salinity — pH 7.97

Notes Thankyou!

Received by WTM 10-15-04

Biologist

* *Please inspect shipment and report any problem immediately* *

ANC08259
BZTO104(e)008259

Acute 96-hr Toxicity Test-96 Hr Survival

Start Date:	10/19/04 13:00	Test ID:	999-1851	Sample ID:	REF-Ref Toxicant
End Date:	10/23/04 12:20	Lab ID:	ORNAS-Northwestern Aquati	Sample Type:	CDCL-Cadmium chloride
Sample Date:		Protocol:	EPAA 91-EPA Acute	Test Species:	HA-Hyalella azteca
Comments:					

Conc-ug/L	1	2
D-Control	1.0000	1.0000
3.75	0.8000	0.9000
7.5	0.4000	0.5000
15	0.0000	0.0000
30	0.0000	0.0000
60	0.0000	0.0000

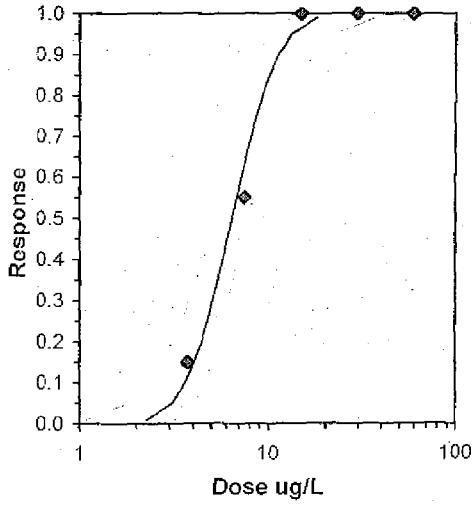
			Transform: Arcsin Square Root					Number	Total
Conc-ug/L	Mean	N-Mean	Mean	Min	Max	CV%	N	Resp	Number
D-Control	1.0000	1.0000	1.4120	1.4120	1.4120	0.000	2	0	20
3.75	0.8500	0.8500	1.1781	1.1071	1.2490	8.517	2	3	20
7.5	0.4500	0.4500	0.7351	0.6847	0.7854	9.685	2	11	20
15	0.0000	0.0000	0.1588	0.1588	0.1588	0.000	2	20	20
30	0.0000	0.0000	0.1588	0.1588	0.1588	0.000	2	20	20
60	0.0000	0.0000	0.1588	0.1588	0.1588	0.000	2	20	20

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Normality of the data set cannot be confirmed				
Equality of variance cannot be confirmed				

Maximum Likelihood-Probit

Parameter	Value	SE	95% Fiducial Limits		Control	Chi-Sq	Critical	P-value	Mu	Sigma	Iter
Slope	5.16143	1.05032	3.10279	7.22006	0	1.48913	7.81472	0.68	0.80805	0.19374	6
Intercept	0.82929	0.88705	-0.9093	2.56791							
TSCR											

Point	Probits	ug/L	95% Fiducial Limits	
EC01	2.674	2.27685	1.08	3.20612
EC05	3.355	3.08582	1.76681	4.0387
EC10	3.718	3.62877	2.28686	4.58774
EC15	3.964	4.04808	2.71341	5.01501
EC20	4.158	4.41564	3.10037	5.39687
EC25	4.326	4.75745	3.46727	5.7621
EC40	4.747	5.74075	4.52512	6.90236
EC50	5.000	6.42766	5.23093	7.8125
EC60	5.253	7.19678	5.96264	8.96749
EC75	5.674	8.68425	7.20574	11.6009
EC80	5.842	9.35649	7.71114	12.9439
EC85	6.036	10.206	8.31511	14.7599
EC90	6.282	11.3854	9.10595	17.4813
EC95	6.645	13.3886	10.3615	22.5883
EC99	7.326	18.1456	13.0735	36.8928



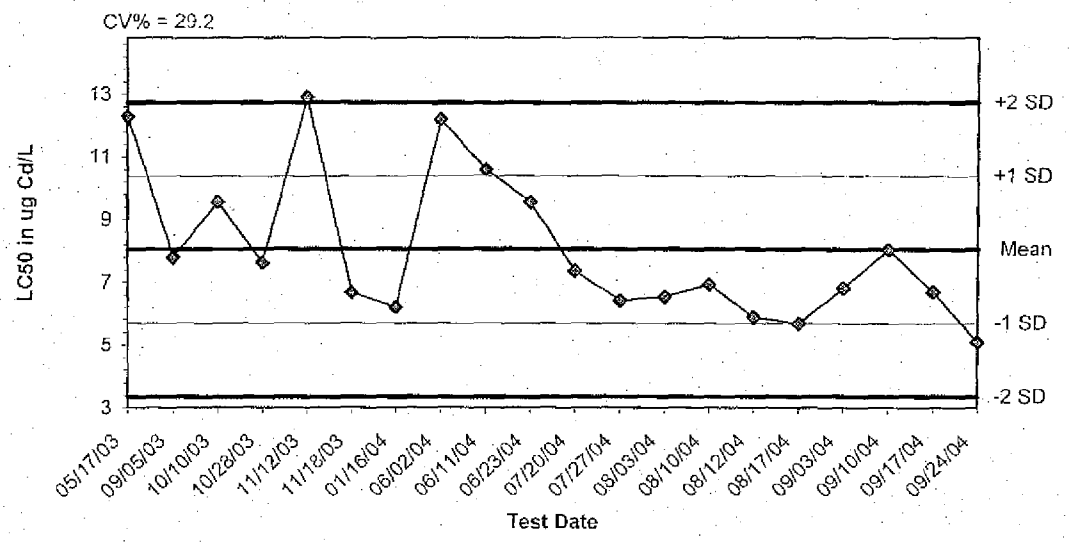
ANC08260
BZTO104(e)008260

Test: AT-Acute 96-hr Toxicity Test							Test ID: 999-1851		
Species: HA-Hyalella azteca							Protocol: EPAA 91-EPA Acute		
Sample ID: REF-Ref Toxicant							Sample Type: CDCL-Cadmium chloride		
Start Date: 10/19/04 13:00			End Date: 10/23/04 12:20				Lab ID: ORNAS-Northwestern Aquatic Sciences		
Pos	ID	Rep	Group	Start	24 Hr	48 Hr	72 Hr	96 Hr	Notes
	1	1	D-Control	10				10	
	2	2	D-Control	10				10	
	3	1	3.750	10				8	
	4	2	3.750	10				9	
	5	1	7.500	10				4	
	6	2	7.500	10				5	
	7	1	15.000	10				0	
	8	2	15.000	10				0	
	9	1	30.000	10				0	
	10	2	30.000	10				0	
	11	1	60.000	10				0	
	12	2	60.000	10				0	

Comments: Data entry verified against laboratory bench sheets. MSK 10-25-04

ANC08261
BZTO104(e)008261

Hyalella azteca 96-hr reference toxicant test - last 20 points



Dates	Values	Mean	-1 SD	-2 SD	+1 SD	+2 SD
05/17/03	12.3000	8.0395	5.6924	3.3453	10.3866	12.7337
09/05/03	7.7900	8.0395	5.6924	3.3453	10.3866	12.7337
10/10/03	9.5600	8.0395	5.6924	3.3453	10.3866	12.7337
10/28/03	7.6200	8.0395	5.6924	3.3453	10.3866	12.7337
11/12/03	12.9000	8.0395	5.6924	3.3453	10.3866	12.7337
11/18/03	6.6700	8.0395	5.6924	3.3453	10.3866	12.7337
01/16/04	6.1900	8.0395	5.6924	3.3453	10.3866	12.7337
06/02/04	12.2000	8.0395	5.6924	3.3453	10.3866	12.7337
06/11/04	10.6000	8.0395	5.6924	3.3453	10.3866	12.7337
06/23/04	9.5600	8.0395	5.6924	3.3453	10.3866	12.7337
07/20/04	7.3500	8.0395	5.6924	3.3453	10.3866	12.7337
07/27/04	6.4100	8.0395	5.6924	3.3453	10.3866	12.7337
08/03/04	6.5300	8.0395	5.6924	3.3453	10.3866	12.7337
08/10/04	6.9300	8.0395	5.6924	3.3453	10.3866	12.7337
08/12/04	5.8800	8.0395	5.6924	3.3453	10.3866	12.7337
08/17/04	5.6800	8.0395	5.6924	3.3453	10.3866	12.7337
09/03/04	6.8000	8.0395	5.6924	3.3453	10.3866	12.7337
09/10/04	8.0300	8.0395	5.6924	3.3453	10.3866	12.7337
09/17/04	6.6900	8.0395	5.6924	3.3453	10.3866	12.7337
09/24/04	5.1000	8.0395	5.6924	3.3453	10.3866	12.7337

YMR
10-20-04

ANC08262
BZTO104(e)008262

Report

of

Test No. 686-18

Toxicity of Portland Harbor RI/FS Freshwater Test Sediments (Batch 9) using a 10-day Midge, *Chironomus tentans*, Sediment Bioassay

Submitted to

Windward Environmental, Inc.
200 West Mercer Street, Suite 401
Seattle, WA 98119

Submitted by

Northwestern Aquatic Sciences
3814 Yaquina Bay Road
P.O. Box 1437
Newport, OR 97365

January 19, 2005

TOXICITY TEST REPORT

TEST IDENTIFICATION

Test No.: 686-18

Title: Toxicity of Portland Harbor RI/FS freshwater test sediments (batch 9) using a 10-day midge, *Chironomus tentans*, sediment bioassay.

Protocol No.: NAS-686-CT4b, June 24, 2004. Based on ASTM 2003, Standard Method No. E 1706-00 and U.S. EPA Method 100.2 (EPA/600/R-99/064, 2000) This protocol can be found in Appendix B of the Portland Harbor RI/FS Round 2 Quality Assurance Project Plan, June 24, 2004.

STUDY MANAGEMENT

Study Sponsor: Windward Environmental, Inc., 200 West Mercer Street, Suite 401, Seattle, WA 98119.

Sponsor's Study Monitor: Ms. Helle Andersen

Testing Laboratory: Northwestern Aquatic Sciences, P.O. Box 1437, Newport, OR 97365

Test Location: Newport laboratory

Laboratory's Study Personnel: G.J. Irissarri, B.S., Proj. Man./Study Dir.; L.K. Nemeth, B.A., M.B.A., QA Officer; R.S. Caldwell, PhD, Sr. Toxicol.; M.S. Redmond, M.S., Aq. Toxicol.; G.A. Buhler, B.S., Aq. Toxicol.; W.T. Montgomery, A.A., Sr. Tech.; G. Hayes, B.S., Tech.; S.J. Gage, B.A., Tech.; B.B. Pridgeon, Lab Assist.

Study Schedule:

Test Beginning: 10-19-04, 1300 hrs.

Test Ending: 10-29-04, 1230 hrs.

Disposition of Study Records: All specimens, raw data, reports and other study records are stored according to Good Laboratory Practice regulations at Northwestern Aquatic Sciences, 3814 Yaquina Bay Rd., Newport, OR 97365.

Good Laboratory Practices: The test was conducted following the principles of Good Laboratory Practices (GLP) as defined in the EPA/TSCA Good Laboratory Practice regulations revised August 17, 1989 (40 CFR Part 792).

Statement of Quality Assurance: The test data were reviewed by the Quality Assurance Unit to assure that the study was performed in accordance with the protocol and standard operating procedures. This report is an accurate reflection of the raw data.

TEST MATERIAL

Test Sediments: Portland Harbor RI/FS freshwater test sediments (Batch 9). Details are as follows:

NAS Sample No.	9514F	9515F	9516F	9517F	9518F
Description	LW2-G273	LW2-G124	LW2-G425	LW2-G364	LW2-G420
Collection Date	10/7/04	10/7/04	10/7/04	10/8/04	10/8/04
Receipt Date	10/12/04	10/12/04	10/12/04	10/12/04	10/12/04
NAS Sample No.	9519F	9520F	9521F	9522F	9523F
Description	LW2-G409	LW2-G383	LW2-G368	LW2-G382	LW2-G392
Collection Date	10/8/04	10/8/04	10/8/04	10/8/04	10/8/04
Receipt Date	10/12/04	10/12/04	10/12/04	10/12/04	10/12/04
NAS Sample No.	9524F	9525F	9526F	9527F	9528F
Description	LW2-G346	LW2-G347	LW2-G342	LW2-G352	LW2-G396
Collection Date	10/11/04	10/11/04	10/11/04	10/11/04	10/11/04
Receipt Date	10/12/04	10/12/04	10/12/04	10/12/04	10/12/04
NAS Sample No.	9529F	9530F	9531F	9532F	9533F
Description	LW2-G405	LW2-G426	LW2-G277	LW2-G295	LW2-G280
Collection Date	10/11/04	10/11/04	10/11/04	10/11/04	10/11/04
Receipt Date	10/12/04	10/12/04	10/12/04	10/12/04	10/12/04

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Control Sediment: The negative control sediment (NAS#9534F) was collected on 10-14-04 from an area approximately one mile east of the Hwy. 101 bridge at Beaver Creek, approx. 8 miles south of Newport, OR.
Treatments: Homogenized at test set up by mixing using stainless steel implements.
Storage: All test and control sediments were stored at 4°C in the dark in capped containers until used.

TEST WATER

Source: Dechlorinated Newport, OR tap water.
Dates of Collection: Five batches of test water were collected between 10/12/04 and 10/26/04
Water Quality (mean ± SD):
pH: 6.9 ± 0.0 (n=5)
conductivity: 160 ± 5 µmhos/cm (n=5)
hardness: 34 ± 0 mg/L as $CaCO_3$ (n=5)
alkalinity: 34 ± 5 mg/L as $CaCO_3$. (n=5)
chlorine: All batches were below 0.02 mg/L.
Pretreatment: Dechlorinated and aerated ≥24 hr.

TEST ORGANISMS

Species: *Chironomus tentans*, midge.
Size: 3rd instar, mean initial wt: 0.14 ± 0.01 mg
Source: NAS cultures, originally obtained from EPA, Duluth, MN.
Acclimation: Holding conditions prior to testing averaged: temperature, 23.3 ± 0.3°C; dissolved oxygen, 7.3 ± 0.7 mg/L; pH, 7.2 ± 0.1; conductivity, 320 ± 30 µmhos/cm; hardness, 94mg/L as $CaCO_3$; and alkalinity, 85 mg/L as $CaCO_3$.

TEST PROCEDURES AND CONDITIONS

The following is an abbreviated statement of the test procedures and a statement of the test conditions actually employed. See the test protocol for a more detailed description of the test procedures used in this study.

Test Chambers: 300 ml high-form glass beakers
Test Volumes: 100 ml sediment layer; 175 ml test water.
Replicates/Treatment: 8
Organisms/Treatment: 80
Water Volume Changes: 2 water volumes per day
Aeration: None.
Feeding: Animals were fed 1.5 ml of Prime Tropical Flakes suspension (1.5 ml contains 6 mg dry solids) per beaker daily.
Effects Criteria: 1) survival after 10 days, and 2) average individual biomass (based on ash-free dry weight) after 10 days. Death is defined as no visible movement or response to tactile stimulation. Missing organisms were considered to be dead.
Water Quality and Other Test Conditions: The temperature, dissolved oxygen, conductivity, pH, hardness, alkalinity and ammonia-nitrogen were measured in the overlying water of one replicate test container per treatment on days 0 and 10 of the test. Temperature and dissolved oxygen were measured daily in the overlying water of one replicate test container per treatment. Interstitial ammonia was measured in the bulk sediment. Hardness and alkalinity were measured with titrimetric methods. Interstitial water samples were obtained by centrifugation, or by settling in the case of very sandy sediments. Total ammonia-N was measured using Hach reagents based on the salicylate (Clin. Chim. Acta 14:403, 1996) colorimetric method; samples were not distilled prior to analysis. The photoperiod was 16:8, L:D.

DATA ANALYSIS METHODS

Survival and individual biomass were calculated for each replicate as follows:

percent survival = 100 x (number surviving/initial number tested)
average individual ash-free dry wt. = (final wt. – ashed dry wt.)/number weighed,
where:

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ash-free dry wt. = dry weight of organisms recovered on day 10 – ashed dry weight, in mg

Means and standard deviations for the biological endpoints described above, and for water quality data, were computed using Microsoft Excel 2000.

PROTOCOL DEVIATIONS

1. Additional pH and conductivity measurements were made in the overlying water on test day 1.

REFERENCE TOXICANT TEST

The reference toxicant test is a multi-concentration toxicity test using potassium chloride, to evaluate the performance of the test organisms used in the sediment toxicity test. The performance is evaluated by comparing the results of this test with historical results obtained at the laboratory. A summary of the reference toxicant test result is given below. The reference toxicant test raw data are found in Appendix II.

Test No.: 999-1852
Reference Toxicant and Source: Potassium chloride (Fisher, Lot No. 020865A).
Test Date: 10-19-04
Dilution Water Used: Moderately hard synthetic water prepared from Milli-Q® deionized water.
Result: 96-hr LC50, 5.31 g/L. This result is within the laboratory's control chart warning limits (3.06 to 7.55 g/L).

TEST RESULTS

Observations of water quality in the overlying water throughout the test are summarized in Table 1. A detailed tabulation of the water quality results by sample and test day can be found in Appendix I. Interstitial ammonia and pH measurements are listed in Table 2. The means and standard deviations of percent mortality and growth (ash-free dry weight) of midges exposed for 10 days to sediments are summarized in Table 3. Detailed data organized by sample and replicate, and summary statistics for these observations, are given in Appendix I.

All water quality observations of overlying water temperature and dissolved oxygen were within the protocol specified ranges. Ammonia-N in the overlying water ranged from 0.1 to 2.6 mg/L in all day 0 and day 10 observations. Interstitial bulk sediment values for ammonia-N ranged from 0.9 to 22.9 mg/L.
The test met the survival and weight acceptability criteria specified in the test protocol with 92.5% mean control survival (≥70% required) and a control individual mean ash-free dry weight of 0.99 mg per larvae (0.48 mg required). The reference toxicant (positive control) result was within the laboratory's control chart limits (5.31 g/L; control chart mean ± 2 S.D. = 5.30 ± 2.24). It is concluded, therefore, that the test has developed fully acceptable data for use in making management decisions.

REFERENCES

ASTM. 2003. Standard Test Methods for Measuring the Toxicity of Sediment-Associated Contaminants with Fresh Water Invertebrates. ASTM Standard Method No. E 1706-00. Am. Soc. Test. Mat., West Conshohocken, PA.

U.S. EPA. 2000. Section 12, Test Method 100.2, *Chironomus tentans* 10-d Survival and Growth Test for Sediments, pp 55-62 In: Methods for Measuring the Toxicity and Bioaccumulation of Sediment-associated Contaminants with Freshwater Invertebrates (Second Edition). EPA/600/R-99/064.

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STUDY APPROVAL

Gerald Lussier 1-21-05
Project Manager/Study Director Date

Linda K Jennifer 1/20/05
Quality Assurance Unit Date

Richard S. Caldwell 1/21/05
Laboratory Director Date

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Table 1. Summary of water quality conditions during tests of the midge, *Chironomus tentans*, exposed to freshwater sediments.

Water Quality Parameter	Mean ± S.D.	Minimum	Maximum	N
Temperature (°C)	22.5 ± 0.3	22.0	23.2	231
Dissolved oxygen (mg/L)	5.9 ± 0.8	3.9	7.2	231
Conductivity (µmhos/cm)	267 ± 621	145	4800	63
pH	6.3 ± 0.2	6.0	7.4	63
Hardness (mg/L as $CaCO_3$)	40 ± 6	34	68	42
Alkalinity (mg/L as $CaCO_3$)	42 ± 6	40	70	42
Total ammonia (mg/L)	0.6 ± 0.5	0.1	2.6	42

Table 2. Pore water ammonia-N and pH in bulk test sediments at the time of test setup.

NAS Sample No.	Sample Description	Ammonia (mg/L)	pH
9534F	Control	1.5	6.6
9514F	LW2-G273	11.6	6.2
9515F	LW2-G124	3.2	5.6
9516F	LW2-G425	0.9	5.3
9517F	LW2-G364	2.6	5.7
9518F	LW2-G420	4.6	6.0
9519F	LW2-G409	5.0	6.1
9520F	LW2-G383	---	---
9521F	LW2-G368	22.9	6.9
9522F	LW2-G382	3.8	7.0
9523F	LW2-G392	4.8	7.2
9524F	LW2-G346	3.4	7.0
9525F	LW2-G347	2.4	6.8
9526F	LW2-G342	1.9	6.6
9527F	LW2-G352	3.2	6.5
9528F	LW2-G396	4.3	6.7
9529F	LW2-G405	1.6	6.3
9530F	LW2-G426	5.0	6.2
9531F	LW2-G277	2.5	6.3
9532F	LW2-G295	2.1	6.4
9533F	LW2-G280	2.4	6.3

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Table 3. Mortality and growth[1] results of *Chironomus tentans* 10-day sediment toxicity test

Sample description		Average percent mortality (Mean ± SD)	Average ash-free dry wt/midge (mg)[1] (Mean ± SD)
9534F	Control	7.5 ± 7.1	0.99 ± 0.18
9514F	LW2-G273	13.8 ± 14.1	0.77 ± 0.17
9515F	LW2-G124	16.3 ± 10.6	1.12 ± 0.20
9516F	LW2-G425	10.0 ± 9.3	1.17 ± 0.09
9517F	LW2-G364	15.0 ± 13.1	0.91 ± 0.15
9518F	LW2-G420	11.3 ± 17.3	1.09 ± 0.23
9519F	LW2-G409	5.0 ± 7.6	1.01 ± 0.11
9520F	LW2-G383	11.3 ± 11.3	1.14 ± 0.12
9521F	LW2-G368	88.8 ± 11.3	0.32 ± 0.28
9522F	LW2-G382	11.3 ± 11.3	1.11 ± 0.10
9523F	LW2-G392	7.5 ± 11.6	0.81 ± 0.12
9524F	LW2-G346	10.0 ± 7.6	1.05 ± 0.09
9525F	LW2-G347	13.8 ± 11.9	0.97 ± 0.08
9526F	LW2-G342	12.5 ± 10.4	1.04 ± 0.12
9527F	LW2-G352	12.5 ± 12.8	1.06 ± 0.13
9528F	LW2-G396	16.3 ± 9.2	1.04 ± 0.09
9529F	LW2-G405	13.8 ± 13.0	1.18 ± 0.23
9530F	LW2-G426	6.3 ± 7.4	0.97 ± 0.10
9531F	LW2-G277	11.3 ± 12.5	1.05 ± 0.15
9532F	LW2-G295	6.3 ± 7.4	0.99 ± 0.09
9533F	LW2-G280	10.0 ± 10.7	1.00 ± 0.10

[1] Pupae were not included in the sample to estimate ash-free dry weight (as per EPA/600/R-99/064, p. 59, section 12.3.8.2)

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APPENDIX I

RAW DATA

TEST DESCRIPTION, MONITORING, AND RESULTS BENCHSHEETS

NORTHWESTERN AQUATIC SCIENCES — PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

REVIEWED PAGES 1-37 GJI

Test No. 686-18 Client Windward Environmental Investigator

STUDY MANAGEMENT

Client: Windward Enviromental, 200 West Mercer Street, Suite 401, Seattle, WA 98119

Client's Study Monitor: Ms. Helle Anderson GJI

Testing Laboratory: Northwestern Aquatic Sciences

Test Location: Newport Laboratory

Laboratory's Study Personnel:

Proj. Man./Study Dir. G.J. Irissarri GJI

QA Officer L.K. Nemeth LKN

1. G A Buhler GAB
2. Susan Cook SC
3. William T. Montgomery WTM
4. G.G. Hayes GGH
5. B.B. Pridgeon BBP
6. D.S. Caldwell DSC
7. M.S. REDMOND
8.

Study Schedule:

Test Beginning: 10-13-04 1300 Test Ending: 10-29-04 1230

TEST MATERIAL

General description (see sample logbook/chain-of-custody for details):

NAS Sample No.:	9534F	9514F	9515F	9516F	9517F
Description:	Control	LW2-G273	LW2-G124	LW2-G425	LW2-G364
Collection Date:	10-14-04	10/7/04	10/7/04	10/7/04	10/8/04
Receipt Date:	10-14-04	10/12/04	10/12/04	10/12/04	10/12/04

NAS Sample No.:	9518F	9519F	9520F	9521F	9522F
Description:	LW2-G420	LW2-G409	LW2-G383	LW2-G368	LW2-G382
Collection Date:	10/8/04	10/8/04	10/8/04	10/8/04	10/8/04
Receipt Date:	10/12/04	10/12/04	10/12/04	10/12/04	10/12/04

NAS Sample No.:	9523F	9524F	9525F	9526F	9527F
Description:	LW2-G392	LW2-G346	LW2-G347	LW2-G342	LW2-G352
Collection Date:	10/8/04	10/11/04	10/11/04	10/11/04	10/11/04
Receipt Date:	10/12/04	10/12/04	10/12/04	10/12/04	10/12/04

NAS Sample No.:	9528F	9529F	9530F	9531F	9532F
Description:	LW2-G396	LW2-G405	LW2-G426	LW2-G277	LW2-G295
Collection Date:	10/11/04	10/11/04	10/11/04	10/11/04	10/11/04
Receipt Date:	10/12/04	10/12/04	10/12/04	10/12/04	10/12/04

NAS Sample No.:	9533F				
Description:	LW2-G280				
Collection Date:	10/11/04				
Receipt Date:	10/12/04				

Error codes: 1) correction of handwriting error
2) written in wrong location; entry deleted
3) wrong date deleted, replaced with corrrect date
4) error found in measurement; measurement repeated

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NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-18 Client Windward Environmental Investigator

SEDIMENT DESCRIPTIONS -- SUPPLEMENTAL NOTES

Sample No.	Description
9514F	smooth dark gray mud
9515F	gray muddy sand w/ rocks and wood debris
9516F	dark gray sand w/ organic debris
9517F	gray fine mud
9518F	gray brown mud
9519F	watery gray mud
9520F	coarse sand w/ debris
9521F	gray mud
9522F	smooth gray mud
9523F	smooth brown mud
9524F	smooth gray mud
9525F	smooth brown mud
9526F	smooth gray mud
9527F	smooth gray mud
9528F	smooth gray mud
9529F	brown sand w/ woody + grassy debris
9530F	smooth brown/gray mud
9531F	smooth gray mud, 1 chironomid found
9532F	DARK GRAY GREEN SMOOTH MUD
9533F	smooth brown mud
9534F	Black fine grain mud

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NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-18 Client Windward Environmental Investigator

TEST WATER

Source: Dechlorinated Newport, OR tap water

Date of Collection: 10-12-04, 10-20-04, 10-23-04, 10-26-04, 10-26-04 (2ND BATCH)

pH 7.0, 6.9, 6.9, 6.9, 6.9 ($\bar{X}$ = 6.9 ± 0.0)

Cond (umhos/cm^2) 165, 155, 155, 160, 165 ($\bar{X}$ = 160 ± 5)

Hardness (mg/L) 34, 34, 34, 34, 34 ($\bar{X}$ = 34 ± 0.0)

Alkalinity (mg/L) 30, 30, 30, 40, 40 ($\bar{X}$ = 34 ± 5)

Treatments: Aerated ≥ 24 hrs

TEST ORGANISMS

Species: *Chironomus tentans* Age: 3rd instar Date received: —

Source: NAS cultures

Acclimation Data:

Date	Temp. (deg.C)	DO (mg/L)	pH	Cond umhos/cm	Feeding amount (ml)	Feeding description*	Water changes	Hardness (mg/L)	Alkalinity (mg/L)
10-8-04	23.3	6.6	7.2	290	ANIMALS	FED TETRA	CULTURE	—	—
10-11-04	22.8	7.0	7.0	320	FIN AND	SELENASTRUM	TANKS	—	—
10-13-04	23.2	6.5	7.1	330			CHANGED	102	90
10-16-04	23.7	7.8	7.3	360	DETAILS	RECORED IN	TWICE	—	—
10-18-04	23.5	7.2	7.3	340	CHIRONOMID		WEEKLY	—	—
10-19-04	23.5	8.4	7.4	280	CULTURE	DATA		85	80
Mean	23.3	7.3	7.2	320	SHEET.			94	85
S.D.	0.3	0.7	0.1	30				—	—
(N)	6	6	6	6				2	2

Photoperiod during acclimation: 16:8, L:D *S=Selenastrum, T=Tetra Fin suspension

TEST PROCEDURES AND CONDITIONS

Test chambers: 300 ml glass beakers

Test volumes: 100 ml of test sediment; 275 ml total volume

Replicates/treatment: (8) 8 Organisms/treatment: (80) 80 (10/REP)

Test water changes: Twice daily

Aeration: only if DO falls below 2.5 mg/L

Feeding: everyday beginning with day zero

Test temperature (deg.C): 23

Beaker placement: Total randomization

Photoperiod: 16:8, L:D

Control Sediment:

Source: From an area approximately one mile east of the Hwy. 101 bridge at Beaver Creek, approx. 8 miles south of Newport, OR.

Date collected: 10-14-04

Sieved through 0.5 -mm screen NAS# 9534F

Storage: 4°C in the dark in closed containers.

MISCELLANEOUS NOTES

LIGHT INTENSITY MEASUREMENTS:

10-23-04

SITE A: 28 FT-CANDLES (301 LUX)

SITE B: 64 FT-CANDLES (689 LUX)

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NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-18 Client Windward Environmental Investigator _____

Test conducted in (circle one): room 1 (room 2) trailer water bath other:_____

Randomization chart:

5								165	
4								164	
3								163	163
2								162	167
1								161	166

Randomization chart:

Randomization chart:

Randomization chart:

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Test No. 686-18 Client Windward Environmental Investigator _____

DAILY RECORD SHEET

Day 0 (10/19/04) WB/BBP

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond.* (umhos/cm)	pH*	Hardness* (mg/L)	Alkalinity* (mg/L)	S (ppm)	NH3* (ppm)	Comments
5	22.8	6.6	165	6.6	43	50			Each beaker fed 1.5 ml
7	22.8	6.4	165	6.6	43	40			Prime Tropical Flakes
10	22.7	6.1	170	6.4	43	50			suspension.
11	22.7	6.3	160	6.5	34	40			Initials: WTM
23	22.7	6.7	160	6.2	43	40			
25	22.6	6.9	160	6.5	34	40			
33	22.8	6.8	230	6.5	43	40			
37	22.6	6.2	165	6.6	43	40			
47	22.5	6.2	160	6.5	51	40			Water changed in all
54	22.7	6.5	160	6.5	43	40			beakers.
60	22.7	6.1	175	6.4	43	40			Time: 0700
76	22.7	6.9	155	6.5	43	40			Initials: WB
87	22.5	6.4	175	6.4	43	50			
90	22.5	6.3	160	6.5	43	40			
92	22.5	6.7	170	6.4	43	40			
105	22.5	6.8	160	6.5	43	40			
128	22.5	6.8	170	6.4	43	40			Water changed in all
132	22.6	6.6	4,800	6.4	68	70			beakers.
140	22.8	6.8	180	6.1	34	40			Time: 1700
152	22.8	7.0	170	6.6	34	40			Initials: AJ
163	22.9	6.6	170	6.5	43	40			

*Water quality measurements to be taken.

Day 1 (10/20/04) WTM/BBP

Beaker No.	Temp.* (deg.C)	DO * (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
5	22.6	6.4	165	6.2					Each beaker fed 1.5 ml
7	22.5	6.6	165	6.2					Prime Tropical Flakes
10	22.5	6.5	165	6.2					suspension.
11	22.5	6.6	165	6.2					Initials: WTM
23	22.4	6.5	165	6.2					
25	22.5	6.5	165	6.2					
33	22.4	6.6	200	6.3					
37	22.4	6.4	170	6.3					
47	22.4	6.3	160	6.2					Water changed in all
54	22.4	6.7	165	6.3					beakers.
60	22.4	6.8	170	6.3					Time: 0715
76	22.5	6.7	160	6.2					Initials: WTM
87	22.4	6.4	170	6.2					
90	22.4	6.6	165	6.2					
92	22.4	6.7	165	6.3					
105	22.4	6.6	165	6.3					
128	22.4	6.9	170	6.3					Water changed in all
132	22.4	7.1	1,890	6.4					beakers.
140	22.5	6.8	165	6.5					Time: 1710
152	22.3	6.9	170	6.3					Initials: BBP
163	22.4	7.2	170	6.5					

*Water quality measurements to be taken.

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-18 Client Windward Environmental Investigator _____

DAILY RECORD SHEET

Day 2 (10/24/04) JB

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
5	22.9	6.4							Each beaker fed 1.5 ml
7	22.8	6.7							Prime Tropical Flakes
10	22.8	6.7							suspension.
11	22.8	6.4							Initials: [illegible]
23	22.8	6.5							
25	22.8	6.5							
33	22.7	6.6							
37	22.7	6.2							
47	22.7	6.5							Water changed in all
54	22.7	6.0							beakers.
60	22.7	6.1							Time: 0645
76	22.8	6.4							Initials: JB
87	22.7	6.3							
90	22.7	6.5							
92	22.7	6.1							
105	22.7	6.3							
128	22.6	6.1							Water changed in all
132	22.6	6.5							beakers.
140	22.8	6.7							Time: 1700
152	22.6	6.7							Initials: [illegible]
163	22.7	7.0							

*Water quality measurements to be taken.

Day 3 (10/25/04) JB/[illegible]

Beaker No.	Temp.* (deg.C)	DO * (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
5	22.3	5.5							Each beaker fed 1.5 ml
7	22.3	5.9							Prime Tropical Flakes
10	22.3	6.5							suspension.
11	22.3	6.3							Initials: [illegible]
23	22.2	6.4							
25	22.2	6.7							
33	22.2	6.9							
37	22.1	6.0							
47	22.1	6.5							Water changed in all
54	22.1	6.2							beakers.
60	22.2	6.5							Time: 0555
76	22.2	6.6							Initials: JB
87	22.2	6.6							
90	22.1	6.7							
92	22.2	6.2							
105	22.2	5.4							
128	22.1	6.6							Water changed in all
132	22.1	6.9							beakers.
140	22.1	6.6							Time: 1700
152	22.1	6.3							Initials: [illegible]
163	22.2	6.7							

*Water quality measurements to be taken.

ANC08277
BZTO104(e)008277

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-18 Client Windward Environmental Investigator _____

DAILY RECORD SHEET

Day 4 (12/22/04)

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
5	22.2	5.9							Each beaker fed 1.5 ml
7	23.2	6.1							Prime Tropical Flakes
10	23.2	6.3							suspension.
11	23.0	6.5							Initials: DM
23	22.9	6.4							
25	22.8	6.6							
33	22.8	6.7							
37	22.6	6.5							
47	22.6	6.4							Water changed in all
54	22.3	6.2							beakers.
60	22.5	6.3							Time: 0630
76	22.6	6.5							Initials: DM
87	22.5	6.5							
90	22.7	6.6							
92	22.6	6.8							
105	22.5	5.6							
128	22.5	6.4							Water changed in all
132	22.6	6.7							beakers.
140	22.5	6.4							Time: 1720
152	22.5	6.6							Initials: BBP
163	22.6	6.5							

*Water quality measurements to be taken.

Day 5 (12/23/04) DM

Beaker No.	Temp.* (deg.C)	DO * (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
5	22.7	5.0							Each beaker fed 1.5 ml
7	22.6	5.2							Prime Tropical Flakes
10	22.7	5.0							suspension.
11	22.7	4.9							Initials: DM
23	22.6	5.0							
25	22.8	5.0							
33	22.8	4.3							
37	22.6	4.7							
47	22.5	5.2							Water changed in all
54	22.6	4.6							beakers.
60	22.7	4.5							Time: 0715
76	22.7	4.8							Initials: DM
87	22.5	4.8							
90	22.6	4.7							
92	22.5	4.6							
105	22.5	4.5							
128	22.5	3.9							Water changed in all
132	22.5	5.0							beakers.
140	22.7	4.7							Time: 1730
152	22.7	4.3							Initials: BBP
163	22.6	4.9							

*Water quality measurements to be taken.

ANC08278
BZTO104(e)008278

Test No. 686-18 Client Windward Environmental Investigator _____

DAILY RECORD SHEET

Day 6 (10/25/04) VB / AJ

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
5	22.5	4.7							Each beaker fed 1.5 ml
7	22.4	4.6							Prime Tropical Flakes
10	22.4	4.6							suspension.
11	22.6	4.4							Initials: WTM
23	22.6	4.5							
25	22.6	5.0							
33	22.7	4.5							
37	22.4	4.6							
47	22.4	5.0							Water changed in all
54	22.4	4.8							beakers.
60	22.4	4.8							Time: 0645
76	22.6	5.6							Initials: VB
87	22.3	5.0							
90	22.3	5.1							
92	22.4	~~4.8~~ 4.8 AJ							
105	22.3	5.2							
128	22.4	4.5							Water changed in all
132	22.3	5.0							beakers.
140	22.3	4.8							Time: 1705
152	22.6	4.4							Initials: BBP
163	22.4	5.3							

*Water quality measurements to be taken.

Day 7 (10/26/04) VB

Beaker No.	Temp.* (deg.C)	DO * (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
5	22.5	5.2							Each beaker fed 1.5 ml
7	22.5	5.0							Prime Tropical Flakes
10	22.3	5.1							suspension.
11	22.3	4.8							Initials: VB
23	22.4	5.0							
25	22.1	5.2							
33	22.3	5.4							
37	22.2	5.3							
47	22.2	5.5							Water changed in all
54	22.2	5.1							beakers.
60	22.1	4.8							Time: 0620
76	22.1	4.6							Initials: VB
87	22.1	5.0							
90	22.2	5.1							
92	22.1	5.2							
105	22.0	5.3							
128	22.0	4.9							Water changed in all
132	22.0	5.1							beakers.
140	22.0	4.8							Time: 1715
152	22.1	5.0							Initials: AJ
163	22.0	5.6							

*Water quality measurements to be taken.

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-18 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 8 (10/27/08 CB/[illegible]/mm

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
5	22.8	6.2							Each beaker fed 1.5 ml
7	22.4	6.4							Prime Tropical Flakes
10	22.5	6.4							suspension.
11	22.5	6.3							Initials: CB
23	22.3	6.4							
25	22.5	6.7							
33	22.3	5.6							
37	22.2	5.9							
47	22.2	6.2							Water changed in all
54	22.2	6.2							beakers.
60	22.3	5.8							Time: 0715
76	22.3	6.3							Initials: CB
87	22.2	6.1							
90	22.2	6.6							
92	22.2	6.6							
105	22.4	7.0							
128	22.3	6.5							Water changed in all
132	22.2	6.6							beakers.
140	22.6	6.7							Time: 1700
152	22.4	6.2							Initials: BBP
163	22.4	6.6							

*Water quality measurements to be taken.

Day 9 (10/28/08 JB/AS/BBP

Beaker No.	Temp.* (deg.C)	DO * (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
5	23.2	5.2							Each beaker fed 1.5 ml
7	23.0	5.0							Prime Tropical Flakes
10	23.1	5.4							suspension.
11	23.0	4.9							Initials: mm
23	22.9	5.6							
25	22.9	5.6							
33	23.1	5.4							
37	22.9	4.8							
47	22.8	5.4							Water changed in all
54	22.8	5.4							beakers.
60	22.9	5.0							Time: 0700
76	22.9	6.0							Initials: CB
87	22.9	5.4							
90	22.8	5.7							
92	22.8	5.2							
105	22.8	5.6							
128	22.8	5.0							Water changed in all
132	22.8	5.4							beakers.
140	22.8	5.0							Time: 1715
152	23.0	5.4							Initials: BBP
163	22.9	5.2							

*Water quality measurements to be taken.

ANC08280
BZTO104(e)008280

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-18 Client Windward Environmental Investigator _____

DAILY RECORD SHEET

Day 10 (10/14/04) ND/BBP

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond.* (umhos/cm)	pH *	Hardness * (mg/L)	Alkalinity * (mg/L)	S (ppm)	NH3 * (ppm)	Comments
5	23.0	6.2	150	6.0	43	40			Each beaker fed 1.5 ml
7	22.9	6.4	150	6.0	34	40			Prime Tropical Flakes
10	23.0	6.4	145	6.1	34	40			suspension.
11	22.9	6.3	145	6.0	34	40			Initials: —
23	22.8	6.0	145	6.0	43	40			
25	22.9	6.4	145	6.0	34	40			
33	22.8	5.1	155	6.1	34	50			
37	22.7	5.8	145	6.1	43	40			
47	22.7	6.3	145	6.1	43	40			Water changed in all
54	22.7	6.2	145	6.0	43	40			beakers.
60	22.7	6.4	150	6.1	34	40			Time: 0655
76	22.8	6.9	145	6.1	34	40			Initials: BB
87	22.8	6.1	150	6.1	43	40			
90	22.7	6.4	150	6.0	43	40			
92	22.7	6.3	150	6.1	34	40			
105	22.7	6.0	150	6.1	43	40			
128	22.7	5.8	150	6.0	34	40			Water changed in all
132	22.7	6.1	440	6.4	34	40			beakers.
140	22.9	6.0	150	6.1	34	50			Time:
152	22.7	6.0	150	6.1	34	40			Initials:
163	22.8	6.1	150	6.1	43	40			

*Water quality measurements to be taken.

Day ____(/ /)

Beaker No.	Temp.* (deg.C)	DO * (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
									Each beaker fed 1.5 ml
									Prime Tropical Flakes
									suspension.
									Initials:
									Water changed in all
									beakers.
									Time:
									Initials:
									Water changed in all
									beakers.
									Time:
									Initials:

*Water quality measurements to be taken.

ANC08281
BZTO104(e)008281

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-18 Client Windward Enviromental Investigator _____

DAY 20 TEST TERMINATION SHEET

Beaker No.	Number of survivors	Initials
1	10	UB
2	Ø	UB
3	10	UB
4	10	UB
5	9	UB
6	9	UB
7	8	UB
8	6	UB
9	8	UB
10	9	UB
11	9	UB
12	9	UB
13	10	UB
14	8	UB
15	9	UB
16	8	UB
17	9	UB
18	9	UB
19	9	UB
20	9	UB
21	9	UB
22	10	UB
23	8	UB
24	10	UB
25	9	UB
26	10	UB
27	6+1 pupa	UB
28	7+1 pupa	UB
29	7	UB
30	6	UB
31	10	UB
32	Ø	UB
33	10	MSR
34	7	GDH
35	9	UB
36	9	UB
37	9	UB
38	9	UB
39	9	MSR
40	10	UB
41	10	WTM
42	10	UB
43	10	UB
44	10	GDH
45	10	WTM

Beaker No.	Number of survivors	Initials
46	7	UB
47	10	UB
48	9	GDH
49	8	WTM
50	8	MSR
51	9	UB
52	10	UB
53	9	GDH
54	10	UB
55	6+2 pupa	WTM
56	9	MSR
57	8	GDH
58	9	GDH
59	6	GDH
60	8	WTM
61	~~9~~ 10	GDH
62	10	MSR
63	9	UB
64	9	WTM
65	7	UB
66	9	GDH
67	9	UB
68	8	WTM
69	7	GDH
70	8	UB
71	9	WTM
72	10	MSR
73	10	UB
74	10	WTM
75	10	GDH
76	10	GDH
77	6	GDH
78	9	UB
79	8	WTM
80	8	UB
81	10	MSR
82	10	UB
83	9	GDH
84	10	WTM
85	9	WTM
86	1	GDH
87	10	MSR
88	10	GDH
89	8	WTM
90	7	GDH

ANC08282
BZTO104(e)008282

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-18 Client Windward Enviromental Investigator

DAY 20 TEST TERMINATION SHEET

Beaker No.	Number of survivors	Initials
91	9	WTM
92	9	UB
93	10	GH
94	7	UB
95	9	UB
96	10	WTM
97	10	GH
98	9	UB
99	10	GH
100	9	UB
101	9+1 pupa	MLR
102	9	GH
103	10	UB
104	8	WTM
105	8	GH
106	9/10	WTM
107	8	UB
108	10	GH
109	9	MLR
110	10	UB
111	5	GH
112	8	UB
113	10	WTM
114	10	WTM
115	9	GH
116	9	UB
117	10	WTM
118	7	UB
119	9	GH
120	8	MLR
121	9	WTM
122	10	WTM
123	8	MLR
124	10	WTM
125	9	UB
126	10	WTM
127	7	UB
128	9	MLR
129	9	UB
130	10	WTM
131	10	UB
132	1	MLR
133	10	WTM
134	7	UB
135	8	MLR

Beaker No.	Number of survivors	Initials
136	9	UB
137	10	UB
138	10	WTM
139	9	UB
140	8	UB
141	9	WTM
142	8	MLR
143	9	UB
144	9	UB
145	8	WTM
146	7	UB
147	9	WTM
148	9	UB
149	8	UB
150	3	UB
151	10	UB
152	8	WTM
153	8	UB
154	2	UB
155	0	UB
156	9	WTM
157	2	UB
158	9	UB
159	10	WTM
160	10	UB
161	10	UB
162	10	UB
163	7	WTM
164	8	UB
165	8	UB
166	9	WTM
167	9	UB
168	10	UB

ANC08283
BZTO104(e)008283

Test No. 686-18 Client Windward Environmental Investigator _____

Tare: Date 10-14-04 Oven temp (C.) 53-65 Drying time (hr.) 25 Initials JRF
Standard Weights: 10 mg: 10.005 100mg: 10.015

Final #1 Date 10-21-04 Oven temp (C.) 62 Drying time (hr.) 44 Initials JRF
Standard Weights: 10 mg: 10.004 100mg: 100.015

Final: #2 Date 10-22-04 Oven temp (C.) 63 Drying time (hr.) @ MJR 10-22-04 ~~63~~ 23 Initials MJR
Standard Weights: 10 mg: 10.007 100mg: 100.019

Equip. used: Oven: Blue M#1 Balance: Sartorius M3P

(Dry overnight at 60-90 degrees C)

Pan #	Tare wt. (mg)	Total wt. (mg) 1	Total wt. (mg) 2	#weighed	Comments
1	89.86	92.52	92.55	20	
2	92.68	95.50	95.50	20	
3	105.13	108.05	108.04	20	

ANC08284
BZTO104(e)008284

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-18 Client Windward Environmental Investigator

WEIGHING DATA SHEET

Tare: Date 10-14-04 Oven temp (C.) 550 Drying time (hr.) 2 Initials JRF
Standard Weights: 10 mg: 10.005 100mg: 100.015

Final #1: Date 11-1-04 Oven temp (C.) 70 Drying time (hr.) 23 Initials JRF
Standard Weights: 10 mg: 10.007 100mg: 100.017

Final #2: Date 11-3-04 Oven temp (C.) 67 Drying time (hr.) 24 Initials JRF
Standard Weights: 10 mg: 10.005 100mg: 100.017

Final #3: Date 11-4-04 Oven temp (C.) 550 Drying time (hr.) 2 Initials JRF
Standard Weights: 10 mg: 10.003 100mg: 100.010

Equip. used: Oven Blue M #1 Balance Sartorius M3P
Furnace FISHER MUFFLE FURANCE 650 SERIES

(Dry overnight at 60-90 degrees C) (Final ashing is at 550 degrees C for 2 hours)

Bkr. #	Pan #	Tare wt. (mg)	Total wt. (mg) 1	Total wt. (mg) 2	no. weighed	put into pans-initials	Ashed weight (mg)
1	1	97.83	110.90	110.88	10	AV	101.90
2	2	94.09	—	—	0	AV	—
3	3	94.77	110.94	110.93	10	AV	98.71
4	4	92.14	100.43	100.42	10	AV	94.29
5	5	81.79	93.04	93.04	8	AV	89.82
6	6	90.35	103.20	103.18	9	AV	94.34
7	7	99.25	109.75	109.74	8	AV	102.51
8	8	86.38	95.36	95.35	6	AV	88.74
9	9	86.96	99.05	99.03	8	AV	89.75
10	10	91.93	104.16	104.14	9	AV	95.62
11	11	101.81	114.78	114.74	9	AV	106.33
12	12	91.48	102.20	102.18	9	AV	94.30
13	13	96.12	105.87	105.86	10	AV	98.65
14	14	100.07	109.89	109.89	8	AV	102.63
15	15	98.70	105.47	105.46	9	AV	100.52
16	16	86.80	99.36	99.33	8	AV	89.96
17	17	87.22	99.42	99.39	9	AV	90.83
18	18	99.74	109.69	109.66	9	AV	101.94
19	19	100.27	113.03	113.00	9	AV	104.13
20	20	88.24	101.92	101.89	9	AV	92.70
21	21	88.67	99.96	99.93	9	AV	91.77
22	22	90.07	103.04	103.01	10	AV	92.94
23	23	87.90	98.47	98.45	8	AV	90.95
24	24	86.73	96.68	96.65	10	AV	89.14
25	25	87.72	99.64	99.61	9	AV	91.46
26	26	97.78	112.29	112.25	10	AV	101.74
27	27	88.87	100.76	100.71	6	AV	92.48
28	28	87.65	101.58	101.54	7	AV	91.58
29	29	87.56	99.31	99.26	7	AV	90.90
30	30	88.20	100.26	100.21	6	AV	90.62
31	31	90.25	104.82	104.66	10	BBP	94.88
32	32	90.37	—	—	0	BBP	—
33	33	90.60	104.82	104.65	10	BBP	93.53

ANC08285
BZTO104(e)008285

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-18 Client Windward Environmental Investigator

WEIGHING DATA SHEET

See page _____ for information on drying times and temperatures, standard weights,etc.

Bkr. #	Pan #	Tare wt. (mg)	Total wt. (mg) 1	Total wt. (mg) 2	no. weighed	put into pans-initials	Ash weight (mg)
34	34	89.05	100.65	100.50	7	BBP	91.69
35	35	85.89	98.10	97.97	9	BBP	89.11
36	36	85.75	99.11	98.97	9	BBP	90.34
37	37	100.31	112.80	112.65	9	BBP	104.01
38	38	86.91	99.75	99.62	9	BBP	91.18
39	39	94.97	103.18	103.09	9	BBP	97.32
40	40	92.84	107.12	106.99	10	BBP	97.85
41	41	88.60	102.09	101.97	10	BBP	~~93.22~~ 93.22
42	42	90.57	102.21	102.10	10	BBP	93.48
43	43	91.18	103.18	103.07	10	BBP	95.17
44	44	88.45	100.09	99.97	10	BBP	91.54
45	45	85.35	99.50	99.37	10	BBP	90.13
46	46	98.53	107.40	107.31	7	BBP	100.47
47	47	83.73	99.42	99.28	10	BBP	89.40
48	48	89.62	101.34	101.23	9	BBP	93.26
49	49	97.88	112.07	111.95	8	BBP	102.50
50	50	95.16	109.47	109.34	8	BBP	100.18
51	51	96.85	111.60	111.48	9	BBP	101.59
52	52	90.61	108.44	108.29	10	BBP	97.68. 59 JP
53	53	89.38	104.84	104.71	9	BBP	94.55
54	54	90.29	100.85	100.76	10	BBP	92.99
55	55	93.11	104.08	103.98	6	BBP	96.40
56	56	92.55	106.89	106.76	9	BBP	95.96
57	57	84.46	96.31	96.22	8	BBP	87.65
58	58	90.10	103.98	103.88	7	BBP	95.19
59	59	86.68	93.92	93.86	6	BBP	88.69
60	60	95.23	107.93	107.84	8	BBP	99.57
61	61	83.06	98.57	98.51	10	AH	88.51
62	62	88.34	104.26	104.20	10	AH	92.70
63	63	90.43	104.43	104.38	9	AH	94.77
64	64	91.09	105.38	105.34	9	AH	96.29
65	65	92.13	105.72	105.68	7	AH	96.84
66	66	92.14	105.79	105.73	9	AH	96.22
67	67	93.01	107.93	107.87	9	AH	97.94
68	68	89.78	104.85	104.79	8	AH	94.63
69	69	89.62	100.50	100.45	7	AH	92.68
70	70	93.98	108.22	108.16	8	AH	98.17
71	71	84.91	98.08	98.02	9	AH	89.34
72	72	93.36	103.40	103.36	10	AH	95.44
73	73	90.12	104.00	103.92	10	AH	95.16
74	74	88.53	101.64	101.58	10	AH	92.84
75	75	86.93	97.89	97.84	10	AH	90.91
76	76	90.52	106.49	106.42	10	AH	96.64

ANC08286
BZTO104(e)008286

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-18 Client Windward Environmental Investigator

WEIGHING DATA SHEET

See page _____ for information on drying times and temperatures, standard weights,etc.

Bkr. #	Pan #	Tare wt. (mg)	Total wt. (mg) 1	Total wt. (mg) 2	no. weighed	put into pans-initials	Ash weight (mg)
77	77	95.77	107.19	107.14	6		100.00
78	78	84.39	94.15	94.11	9		87.12
79	79	88.37	99.19	99.13	8		91.16
80	80	91.83	102.89	102.80	8		95.49
81	81	87.63	101.85	101.78	10		92.08
82	82	87.88	102.04	101.96	10		92.88
83	83	87.56	96.29	96.23	9		89.76
84	84	81.31	94.23	94.16	10		85.39
85	85	90.52	105.80	105.70	9		96.34
86	86	90.66	91.11	91.11	1		90.82
87	87	94.83	105.26	105.18	10		98.16
88	88	92.99	108.42	108.32	10		97.22
89	89	91.65	103.78	103.69	8		96.53
90	90	93.47	105.59	105.50	7		98.00
91	91	88.43	101.86	101.82	9	BBP	92.26
92	92	82.09	98.37	98.33	9	BBP	88.92
93	93	90.06	107.76	107.72	10	BBP	97.74
94	94	82.26	95.02	94.99	7	BBP	87.54
95	95	78.52	94.53	94.50	9	BBP	83.73
96	96	82.35	99.52	99.48	10	BBP	89.72
97	97	88.14	104.63	104.56	10	BBP	93.23
98	98	77.41	92.90	92.85	9	BBP	83.77
99	99	78.44	95.62	95.56	10	BBP	85.63
100	100	84.97	99.94	99.89	9	BBP	90.21
101	101	83.65	94.55	94.51	9	BBP	87.42
102	102	91.54	108.12	108.06	9	BBP	98.12
103	103	88.20	105.89	105.81	10	BBP	95.42
104	104	87.42	102.10	102.04	8	BBP	92.97
105	105	87.27	101.37	101.30	8	BBP	93.18
106	106	84.65	102.03	101.95	10	BBP	91.66
107	107	86.00	102.07	102.00	8	BBP	93.00
108	108	88.28	104.31	104.24	10	BBP	95.15
109	109	81.06	95.29	95.20	9	BBP	84.33
110	110	89.90	105.28	105.21	10	BBP	95.56
111	111	78.80	88.19	88.14	5	BBP	80.09
112	112	78.73	91.24	91.18	8	BBP	81.98
113	113	81.32	97.92	97.84	10	BBP	87.16
114	114	84.29	101.00	100.92	10	BBP	90.77
115	115	93.36	106.74	106.69	9		98.09
116	116	85.01	101.41	101.35	9		91.45
117	117	87.31	98.78	98.73	10		90.99
118	118	86.93	98.94	98.88	7		91.36
119	119	88.52	102.80	102.72	9		94.48

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NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-18 Client Windward Environmental Investigator

WEIGHING DATA SHEET

See page _____ for information on drying times and temperatures, standard weights, etc.

Bkr. #	Pan #	Tare wt. (mg)	Total wt. (mg) 1	Total wt. (mg) 2	no. weighed	put into pans-initials	Ash weight (mg)
120	120	89.80	103.26	103.20	8		94.72
121	121	85.74	101.84	101.76	9		91.67
122	122	85.02	102.06	101.97	10		90.18
123	123	85.32	99.56	99.49	8		90.44
124	124	87.96	102.63	102.55	10		92.18
125	125	87.39	103.62	102.92	9		92.94
126	126	92.55	109.67	109.56	10		99.37
127	127	93.34	108.63	108.56	7		99.41
128	128	89.34	104.21	104.13	9		94.13
129	129	90.32	105.58	105.49	9		94.56
130	130	85.66	102.94	102.83	10		92.46
131	131	91.88	107.38	107.33	10		97.47
132	132	95.62	95.76	95.78	1		95.77
133	133	91.78	106.08	106.00	10		95.32
134	134	94.26	108.13	108.04	7		99.01
135	135	93.78	107.01	106.92	8		97.44
136	136	100.38	111.30	111.21	9		102.82
137	137	93.10	107.57	107.47	10		98.26
138	138	78.81	95.04	94.93	10		83.90
139	139	93.48	108.98	108.86	9		99.67
140	140	82.57	94.47	94.36	8		86.22
141	141	102.11	116.81	116.73	9		106.16
142	142	94.15	108.28	108.19	8		99.65
143	143	83.61	98.04	97.93	9		89.34
144	144	91.30	110.02	109.88	9		99.19
145	145	92.02	107.59	107.46	8		96.95
146	146	96.60	112.87	112.74	7		103.52
147	147	94.32	108.90	108.76	9		98.59
148	148	98.77	114.10	114.00	9		105.18
149	149	78.98	94.39	94.27	8		85.49
150	150	84.63	86.96	86.94	3		85.47
151	151	98.72	115.78	115.69	10		105.35
152	152	96.56	110.94	110.87	8		100.19
153	153	93.26	104.67	104.64	8		97.08
154	154	90.26	92.36	92.35	2		90.95
155	155	86.99	—	—	0		—
156	156	79.98	95.21	95.11	9		85.70
157	157	80.64	80.96	80.95	2		80.77
158	158	86.57	97.22	97.15	9		89.52
159	159	84.49	97.46	97.39	10		88.70
160	160	89.11	103.65	103.59	10		93.53
161	161	90.26	105.26	105.23	10		96.23
162	162	91.95	107.16	107.06	10		97.62

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NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-18 Client Windward Environmental Investigator

WEIGHING DATA SHEET

See page _____ for information on drying times and temperatures, standard weights,etc.

Bkr. #	Pan #	Tare wt. (mg)	Total wt. (mg) 1	Total wt. (mg) 2	no. weighed	put into pans-initials	Ash weight (mg)
163	163	93.60	103.46	103.40	7	BBP	97.56
164	164	83.69	97.44	97.33	8	BBP	87.08
165	165	88.23	103.31	103.23	8	BBP	94.72
166	166	92.70	105.51	105.44	9	BBP	97.21
167	167	90.17	102.98	102.93	9	BBP	93.73
168	168	92.67	103.33	103.24	10	BBP	95.46

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TEST DATA ANALYSIS RECORDS

Test Number: 686-18

Freshwater Sediment Test
10-Day Chironomus tentans

Endpoints Data Entry and Calculations File

BKR=beaker number
INIT=initial number
SURV=number survivors
MORT=number dead=INIT-SURV
PSURV=%survival=100(SURV/INIT)
PMORT=%mortality=100(MORT/INIT)

TARE WT= ashed weight of pan used for that replicate at test termination (mg), or dry weight of pan if ash-free dry weight is not an endpoint
WT COUNT= number of test organisms weighed at test end
DRY WT= TARE WT + dry weight of test organisms recovered at test termination (mg)
TWT=total biomass=DRY WT-TARE WT
WT=average individual biomass=TWT/WT COUNT

ASHED DRY WT= weight of ashed pan + weight of ashed test organisms recovered at test termination
TAFDW=DRY WT - ASHED DRY WT= total ash-free organism weight for given replicate
AFDW=average individual ash-free biomass=TAFDW/WT COUNT

INITIAL WEIGHT

pan #	tare wt (mg)	final wt (mg)	wt count	avg. wt/ organism
1	89.86	92.55	20	0.13
2	92.68	95.50	20	0.14
3	105.13	108.04	20	0.15

INDEX	BKR	NAS SMPL	CLIENT DESCRIP	REPL		INIT	SURV	MORT	PSURV	PMORT	TARE WT (mg)	WT COUNT	DRY WT (mg)	ASHED DRY WT (mg)	TWT (mg)	WT (mg)	TAFDW (mg)	AFDW (mg)		SURV	MORT	PSURV	PMORT	WT	AFDW
1	164	9534F	Control	1		10	8	2	80.0	20.0	83.69	8	97.33	87.08	13.44	1.68	10.25	1.28							
2	136	9534F	Control	2		10	9	1	90.0	10.0	100.36	9	111.21	102.82	10.83	1.20	8.39	0.93							
3	147	9534F	Control	3		10	9	1	90.0	10.0	94.32	9	108.76	98.59	14.44	1.60	10.17	1.13							
4	158	9534F	Control	4		10	9	1	90.0	10.0	86.57	9	97.15	89.52	10.58	1.18	7.63	0.85							
5	168	9534F	Control	5		10	10	0	100.0	0.0	92.67	10	103.24	95.46	10.57	1.06	7.78	0.78	Mean	9.3	0.8	92.5	7.5	1.33	0.99
6	91	9534F	Control	6		10	9	1	90.0	10.0	88.43	9	101.82	92.26	13.39	1.49	9.56	1.06	SD	0.7	0.7	7.1	7.1	0.25	0.18
7	72	9534F	Control	7		10	10	0	100.0	0.0	93.36	10	103.36	95.44	10.00	1.00	7.92	0.79	n	8	8	8	8	8	8
8	33	9534F	Control	8	wq replicate	10	10	0	100.0	0.0	90.60	10	104.65	93.53	14.05	1.41	11.12	1.11							
9	48	9514F	LW2-G273	1		10	9	1	90.0	10.0	89.82	9	101.23	93.26	11.61	1.29	7.97	0.89							
10	13	9514F	LW2-G273	2		10	10	0	100.0	0.0	96.12	10	105.86	98.68	9.74	0.97	7.18	0.72							
11	59	9514F	LW2-G273	3		10	6	4	60.0	40.0	86.68	6	93.86	88.69	7.18	1.20	5.17	0.86							
12	69	9514F	LW2-G273	4		10	7	3	70.0	30.0	89.62	7	100.45	92.68	10.83	1.55	7.77	1.11							
13	15	9514F	LW2-G273	5		10	9	1	90.0	10.0	98.70	9	105.46	100.52	6.76	0.75	4.94	0.55	Mean	8.6	1.4	86.3	13.8	1.06	0.77
14	83	9514F	LW2-G273	6		10	9	1	90.0	10.0	87.56	9	96.23	89.76	8.67	0.96	6.47	0.72	SD	1.4	1.4	14.1	14.1	0.25	0.17
15	39	9514F	LW2-G273	7		10	9	1	90.0	10.0	94.97	9	103.09	97.32	8.12	0.90	5.77	0.64	n	8	8	8	8	8	8
16	87	9514F	LW2-G273	8	wq replicate	10	10	0	100.0	0.0	94.83	10	105.18	98.16	10.35	1.04	7.02	0.70							
17	70	9515F	LW2-G124	1		10	8	2	80.0	20.0	93.98	8	108.16	98.17	14.18	1.77	9.99	1.25							
18	27	9515F	LW2-G124	2		10	7	3	70.0	30.0	88.87	6	100.71	92.48	11.84	1.97	8.23	1.37							
19	35	9515F	LW2-G124	3		10	7	3	70.0	30.0	92.13	7	105.68	96.84	13.55	1.94	8.84	1.26							
20	55	9515F	LW2-G124	4		10	8	2	80.0	20.0	93.11	6	103.98	96.40	10.87	1.81	7.56	1.26							
21	20	9515F	LW2-G124	5		10	9	1	90.0	10.0	88.24	9	101.89	92.70	13.65	1.52	9.19	1.02	Mean	8.4	1.6	83.8	16.3	1.67	1.12
22	85	9515F	LW2-G124	6		10	9	1	90.0	10.0	90.52	9	105.70	96.34	15.18	1.69	9.36	1.04	SD	1.1	1.1	10.6	10.6	0.29	0.20
23	78	9515F	LW2-G124	7		10	9	1	90.0	10.0	84.39	9	94.11	87.12	9.72	1.08	6.99	0.78	n	8	8	8	8	8	8
24	76	9515F	LW2-G124	8	wq replicate	10	10	0	100.0	0.0	90.52	10	106.42	96.64	15.90	1.59	9.78	0.98							
25	62	9516F	LW2-G425	1		10	10	0	100.0	0.0	88.34	10	104.20	92.70	15.86	1.59	11.50	1.15							
26	88	9516F	LW2-G425	2		10	10	0	100.0	0.0	92.99	10	108.32	97.22	15.33	1.53	11.10	1.11							
27	56	9516F	LW2-G425	3		10	9	1	90.0	10.0	92.55	9	106.76	95.96	14.21	1.58	10.80	1.20							
28	16	9516F	LW2-G425	4		10	8	2	80.0	20.0	86.80	8	99.33	89.36	12.53	1.57	9.37	1.17							
29	135	9516F	LW2-G425	5		10	8	2	80.0	20.0	93.78	8	106.92	97.44	13.14	1.64	9.48	1.19	Mean	9.0	1.0	90.0	10.0	1.61	1.17
30	95	9516F	LW2-G425	6		10	9	1	90.0	10.0	78.52	9	94.50	83.73	15.98	1.78	10.77	1.20	SD	0.9	0.9	9.3	9.3	0.12	0.09
31	160	9516F	LW2-G425	7		10	10	0	100.0	0.0	89.11	10	103.59	93.53	14.48	1.45	10.06	1.01	n	8	8	8	8	8	8
32	152	9516F	LW2-G425	8	wq replicate	10	8	2	80.0	20.0	96.56	8	110.87	100.19	14.31	1.79	10.68	1.34							
33	43	9517F	LW2-G364	1		10	10	0	100.0	0.0	91.18	10	103.07	95.17	11.89	1.19	7.90	0.79							
34	108	9517F	LW2-G364	2		10	10	0	100.0	0.0	88.28	10	104.24	95.15	15.96	1.60	9.09	0.91							
35	75	9517F	LW2-G364	3		10	10	0	100.0	0.0	86.93	10	97.84	90.91	10.91	1.09	6.93	0.69							
36	89	9517F	LW2-G364	4		10	8	2	80.0	20.0	91.65	8	103.69	96.53	12.04	1.51	7.16	0.90							
37	14	9517F	LW2-G364	5		10	8	2	80.0	20.0	100.07	8	109.89	102.63	9.82	1.23	7.26	0.91	Mean	8.5	1.5	85.0	15.0	1.45	0.91
38	94	9517F	LW2-G364	6		10	7	3	70.0	30.0	82.26	7	94.99	87.54	12.73	1.82	7.45	1.06	SD	1.3	1.3	13.1	13.1	0.27	0.15
39	49	9517F	LW2-G364	7		10	8	2	80.0	20.0	97.88	8	111.95	102.50	14.07	1.76	9.45	1.18	n	8	8	8	8	8	8
40	163	9517F	LW2-G364	8	wq replicate	10	7	3	70.0	30.0	93.60	7	103.40	97.56	9.80	1.40	5.84	0.83							

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Test Number: 686-18

Freshwater Sediment Test
10-Day Chironomus tentans

INDEX	BKR	NAS SMPL	CLIENT DESCRIP	REPL		INIT	SURV	MORT	PSURV	PMORT	TARE WT (mg)	WT COUNT	DRY WT (mg)	ASHED DRY WT (mg)	TWT (mg)	WT (mg)	TAFDW (mg)	AFDW (mg)		SURV	MORT	PSURV	PMORT	WT	AFDW
41	162	9518F	LW2-G42(	1		10	10	0	100.0	0.0	91.95	10	107.06	97.62	15.11	1.51	9.44	0.94							
42	151	9518F	LW2-G42(	2		10	10	0	100.0	0.0	98.72	10	115.69	105.35	16.97	1.70	10.34	1.03							
43	111	9518F	LW2-G42(	3		10	5	5	50.0	50.0	78.80	5	88.14	80.09	9.34	1.87	8.05	1.61							
44	73	9518F	LW2-G42(	4		10	10	0	100.0	0.0	90.12	10	103.92	95.16	13.80	1.38	8.76	0.88							
45	148	9518F	LW2-G42(	5		10	9	1	90.0	10.0	98.77	9	114.00	105.18	15.23	1.69	8.82	0.98	Mean	8.9	1.1	88.8	11.3	1.69	1.09
46	106	9518F	LW2-G42(	6		10	10	0	100.0	0.0	84.65	10	101.95	91.68	17.30	1.73	10.27	1.03	SD	1.7	1.7	17.3	17.3	0.21	0.23
47	144	9518F	LW2-G42(	7		10	9	1	90.0	10.0	91.30	9	109.88	99.19	18.58	2.06	10.69	1.19	n	8	8	8	8	8	8
48	60	9518F	LW2-G42(	8	wq replicate	10	8	2	80.0	20.0	95.23	8	107.84	99.57	12.61	1.58	8.27	1.03							
49	131	9519F	LW2-G40!	1		10	10	0	100.0	0.0	91.88	10	107.33	97.47	15.45	1.55	9.86	0.99							
50	45	9519F	LW2-G40!	2		10	10	0	100.0	0.0	85.35	10	99.37	90.13	14.02	1.40	9.24	0.92							
51	114	9519F	LW2-G40!	3		10	10	0	100.0	0.0	84.29	10	100.92	90.77	16.63	1.66	10.15	1.02							
52	103	9519F	LW2-G40!	4		10	10	0	100.0	0.0	88.20	10	105.81	95.42	17.61	1.76	10.39	1.04							
53	58	9519F	LW2-G40!	5		10	9	1	90.0	10.0	90.10	7	103.88	95.19	13.78	1.97	8.69	1.24	Mean	9.5	0.5	95.0	5.0	1.61	1.01
54	165	9519F	LW2-G40!	6		10	8	2	80.0	20.0	88.23	8	103.23	94.72	15.00	1.88	8.51	1.06	SD	0.8	0.8	7.6	7.6	0.25	0.11
55	84	9519F	LW2-G40!	7		10	10	0	100.0	0.0	81.31	10	94.16	85.39	12.85	1.29	8.77	0.88	n	8	8	8	8	8	8
56	10	9519F	LW2-G40!	8	wq replicate	10	9	1	90.0	10.0	91.93	9	104.14	95.62	12.21	1.36	8.52	0.95							
57	129	9520F	LW2-G38:	1		10	9	1	90.0	10.0	90.32	9	105.49	94.56	15.17	1.69	10.93	1.21							
58	34	9520F	LW2-G38:	2		10	7	3	70.0	30.0	89.05	7	100.50	91.69	11.45	1.64	8.81	1.26							
59	145	9520F	LW2-G38:	3		10	8	2	80.0	20.0	92.02	8	107.46	96.95	15.44	1.93	10.51	1.31							
60	141	9520F	LW2-G38:	4		10	9	1	90.0	10.0	102.11	9	116.73	106.16	14.62	1.62	10.57	1.17							
61	110	9520F	LW2-G38:	5		10	10	0	100.0	0.0	89.90	10	105.21	95.56	15.31	1.53	9.65	0.96	Mean	8.9	1.1	88.8	11.3	1.62	1.14
62	97	9520F	LW2-G38:	6		10	10	0	100.0	0.0	88.14	10	104.56	93.23	16.42	1.64	11.33	1.13	SD	1.1	1.1	11.3	11.3	0.16	0.12
63	133	9520F	LW2-G38:	7		10	10	0	100.0	0.0	91.78	10	106.00	95.32	14.22	1.42	10.68	1.07	n	8	8	8	8	8	8
64	140	9520F	LW2-G38:	8	wq replicate	10	8	2	80.0	20.0	82.57	8	94.36	86.22	11.79	1.47	8.14	1.02							
65	150	9521F	LW2-G36(	1		10	3	7	30.0	70.0	84.63	3	86.94	85.47	2.31	0.77	1.47	0.49							
66	157	9521F	LW2-G36(	2		10	2	8	20.0	80.0	80.64	2	80.95	80.77	0.31	0.16	0.18	0.09							
67	155	9521F	LW2-G36(	3		10	0	10	0.0	100.0	86.99	0													
68	32	9521F	LW2-G36(	4		10	0	10	0.0	100.0	90.37	0													
69	154	9521F	LW2-G36(	5		10	2	8	20.0	80.0	90.26	2	92.35	90.95	2.09	1.04	1.40	0.70	Mean	1.1	8.9	11.3	88.8	0.52	0.32
70	2	9521F	LW2-G36(	6		10	0	10	0.0	100.0	94.09	0							SD	1.1	1.1	11.3	11.3	0.39	0.28
71	86	9521F	LW2-G36(	7		10	1	9	10.0	90.0	90.66	1	91.11	90.62	0.45	0.45	0.29	0.29	n	8	8	8	8	5	5
72	132	9521F	LW2-G36(	8	wq replicate	10	1	9	10.0	90.0	95.62	1	95.78	95.77	0.16	0.16	0.01	0.01							
73	138	9522F	LW2-G38:	1		10	10	0	100.0	0.0	78.81	10	94.93	83.90	16.12	1.61	11.03	1.10							
74	112	9522F	LW2-G38:	2		10	8	2	80.0	20.0	78.73	8	91.18	81.98	12.45	1.56	9.20	1.15							
75	122	9522F	LW2-G38:	3		10	10	0	100.0	0.0	85.02	10	101.97	90.18	16.95	1.70	11.79	1.18							
76	134	9522F	LW2-G38:	4		10	7	3	70.0	30.0	94.26	7	108.04	99.01	13.78	1.97	9.03	1.29							
77	100	9522F	LW2-G38:	5		10	9	1	90.0	10.0	84.97	9	99.89	90.21	14.92	1.66	9.68	1.08	Mean	8.9	1.1	88.8	11.3	1.62	1.11
78	113	9522F	LW2-G38:	6		10	10	0	100.0	0.0	81.32	10	97.84	87.16	16.52	1.65	10.68	1.07	SD	1.1	1.1	11.3	11.3	0.18	0.10
79	57	9522F	LW2-G38:	7		10	8	2	80.0	20.0	84.45	8	96.22	87.65	11.76	1.47	8.57	1.07	n	8	8	8	8	8	8
80	37	9522F	LW2-G38:	8	wq replicate	10	9	1	90.0	10.0	100.31	9	112.65	104.01	12.34	1.37	8.64	0.96							
81	46	9523F	LW2-G39:	1		10	7	3	70.0	30.0	98.53	7	107.31	100.47	8.78	1.25	6.84	0.98							
82	153	9523F	LW2-G39:	2		10	8	2	80.0	20.0	93.26	8	104.64	97.08	11.38	1.42	7.56	0.95							
83	117	9523F	LW2-G39:	3		10	10	0	100.0	0.0	87.31	10	98.73	90.99	11.42	1.14	7.74	0.77							
84	24	9523F	LW2-G39:	4		10	10	0	100.0	0.0	86.73	10	96.65	89.14	9.92	0.99	7.51	0.75							
85	18	9523F	LW2-G39:	5		10	9	1	90.0	10.0	99.74	9	109.66	101.94	9.92	1.10	7.72	0.86	Mean	9.3	0.8	92.5	7.5	1.12	0.81
86	4	9523F	LW2-G39:	6		10	10	0	100.0	0.0	92.14	10	100.42	94.29	8.28	0.83	6.13	0.61	SD	1.2	1.2	11.6	11.6	0.18	0.12
87	101	9523F	LW2-G39:	7		10	10	0	100.0	0.0	83.85	9	94.51	87.42	10.66	1.18	7.09	0.79	n	8	8	8	8	8	8
88	54	9523F	LW2-G39:	8	wq replicate	10	10	0	100.0	0.0	90.29	10	100.76	92.99	10.47	1.05	7.77	0.78							
89	116	9524F	LW2-G34(	1		10	9	1	90.0	10.0	85.01	9	101.35	91.45	16.34	1.82	9.90	1.10							
90	3	9524F	LW2-G34(	2		10	10	0	100.0	0.0	94.77	10	110.93	98.71	16.16	1.62	12.22	1.22							
91	125	9524F	LW2-G34(	3		10	9	1	90.0	10.0	87.39	9	102.92	92.94	15.53	1.73	9.98	1.11							
92	96	9524F	LW2-G34(	4		10	10	0	100.0	0.0	82.35	10	99.48	89.72	17.13	1.71	9.76	0.98							
93	38	9524F	LW2-G34(	5		10	9	1	90.0	10.0	86.91	9	99.62	91.18	12.71	1.41	8.44	0.94	Mean	9.0	1.0	90.0	10.0	1.67	1.05
94	149	9524F	LW2-G34(	6		10	8	2	80.0	20.0	78.98	8	94.27	85.49	15.29	1.91	8.78	1.10	SD	0.8	0.8	7.6	7.6	0.18	0.09
95	6	9524F	LW2-G34(	7		10	9	1	90.0	10.0	90.35	9	103.18	94.34	12.83	1.43	8.84	0.98	n	8	8	8	8	8	8
96	105	9524F	LW2-G34(	8	wq replicate	10	8	2	80.0	20.0	87.27	8	101.30	93.18	14.03	1.75	8.12	1.02							

ANC08292
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Test Number: 686-18

Freshwater Sediment Test
10-Day Chironomus tentans

INDEX	BKR	NAS SMPL	CLIENT DESCRIP	REPL		INIT	SURV	MORT	PSURV	PMORT	TARE WT (mg)	WT COUNT	DRY WT (mg)	ASHED DRY WT (mg)	TWT (mg)	WT (mg)	TAFDW (mg)	AFDW (mg)
97	115	9525F	LW2-G347	1		10	9	1	90.0	10.0	93.38	9	106.89	98.09	13.31	1.48	8.60	0.96
98	8	9525F	LW2-G347	2		10	6	4	60.0	40.0	86.38	6	95.35	88.74	8.97	1.50	6.61	1.10
99	143	9525F	LW2-G347	3		10	9	1	90.0	10.0	83.61	9	97.93	89.34	14.32	1.59	8.59	0.95
100	137	9525F	LW2-G347	4		10	10	0	100.0	0.0	93.10	10	107.47	98.26	14.37	1.44	9.21	0.92
101	19	9525F	LW2-G347	5		10	9	1	90.0	10.0	100.27	9	113.00	104.13	12.73	1.41	8.87	0.99
102	83	9525F	LW2-G347	6		10	9	1	90.0	10.0	90.43	9	104.38	94.77	13.95	1.55	9.61	1.07
103	12	9525F	LW2-G347	7		10	9	1	90.0	10.0	91.48	9	102.18	94.30	10.70	1.19	7.88	0.88
104	23	9525F	LW2-G347	8	wq replicate	10	8	2	80.0	20.0	87.90	8	98.45	90.95	10.55	1.32	7.50	0.94
105	98	9526F	LW2-G342	1		10	9	1	90.0	10.0	77.41	9	92.85	83.77	15.44	1.72	9.08	1.01
106	61	9526F	LW2-G342	2		10	10	0	100.0	0.0	83.06	10	98.51	88.51	15.45	1.55	10.00	1.00
107	17	9526F	LW2-G342	3		10	9	1	90.0	10.0	87.22	9	99.39	90.83	12.17	1.35	8.56	0.95
108	127	9526F	LW2-G342	4		10	7	3	70.0	30.0	93.34	7	108.56	99.41	15.22	2.17	9.15	1.31
109	64	9526F	LW2-G342	5		10	9	1	90.0	10.0	91.09	9	105.34	96.29	14.25	1.58	9.05	1.01
110	26	9526F	LW2-G342	6		10	10	0	100.0	0.0	97.78	10	112.25	101.74	14.47	1.45	10.51	1.05
111	107	9526F	LW2-G342	7		10	8	2	80.0	20.0	86.00	8	102.00	93.00	16.00	2.00	9.00	1.13
112	7	9526F	LW2-G342	8	wq replicate	10	8	2	80.0	20.0	99.25	8	109.74	102.51	10.49	1.31	7.23	0.90
113	93	9527F	LW2-G352	1		10	10	0	100.0	0.0	90.06	10	107.72	97.74	17.66	1.77	9.98	1.00
114	77	9527F	LW2-G352	2		10	6	4	60.0	40.0	95.77	6	107.14	100.00	11.37	1.90	7.14	1.19
115	67	9527F	LW2-G352	3		10	9	1	90.0	10.0	93.01	9	107.87	97.94	14.86	1.65	9.93	1.10
116	71	9527F	LW2-G352	4		10	9	1	90.0	10.0	84.91	9	98.02	89.34	13.11	1.46	8.68	0.96
117	74	9527F	LW2-G352	5		10	10	0	100.0	0.0	88.53	10	101.58	92.84	13.05	1.31	8.74	0.87
118	68	9527F	LW2-G352	6		10	8	2	80.0	20.0	89.78	8	104.79	94.63	15.01	1.88	10.16	1.27
119	156	9527F	LW2-G352	7		10	9	1	90.0	10.0	79.98	9	95.11	85.70	15.13	1.68	9.41	1.05
120	92	9527F	LW2-G352	8	wq replicate	10	9	1	90.0	10.0	82.09	9	98.33	88.92	16.24	1.80	9.41	1.05
121	166	9528F	LW2-G396	1		10	9	1	90.0	10.0	92.70	9	105.44	97.21	12.74	1.42	8.23	0.91
122	142	9528F	LW2-G396	2		10	8	2	80.0	20.0	94.15	8	108.19	99.65	14.04	1.76	8.54	1.07
123	119	9528F	LW2-G396	3		10	9	1	90.0	10.0	88.52	9	102.72	94.48	14.20	1.58	8.24	0.92
124	50	9528F	LW2-G396	4		10	8	2	80.0	20.0	95.16	8	109.34	100.18	14.18	1.77	9.16	1.15
125	120	9528F	LW2-G396	5		10	8	2	80.0	20.0	89.80	8	103.20	94.72	13.40	1.68	8.48	1.06
126	118	9528F	LW2-G396	6		10	7	3	70.0	30.0	86.93	7	98.88	91.36	11.95	1.71	7.52	1.07
127	123	9528F	LW2-G396	7		10	8	2	80.0	20.0	85.32	8	99.49	90.44	14.17	1.77	9.05	1.13
128	47	9528F	LW2-G396	8	wq replicate	10	10	0	100.0	0.0	83.73	10	99.28	89.40	15.55	1.56	9.88	0.99
129	30	9529F	LW2-G405	1		10	6	4	60.0	40.0	88.20	6	100.21	90.62	12.01	2.00	9.59	1.60
130	81	9529F	LW2-G405	2		10	10	0	100.0	0.0	87.63	10	101.78	92.08	14.15	1.42	9.70	0.97
131	167	9529F	LW2-G405	3		10	9	1	90.0	10.0	90.17	9	102.93	93.73	12.76	1.42	9.20	1.02
132	109	9529F	LW2-G405	4		10	9	1	90.0	10.0	81.06	9	95.20	84.33	14.14	1.57	10.87	1.21
133	9	9529F	LW2-G405	5		10	8	2	80.0	20.0	86.96	8	99.03	89.75	12.07	1.51	9.28	1.16
134	22	9529F	LW2-G405	6		10	10	0	100.0	0.0	90.07	10	103.01	92.94	12.94	1.29	10.07	1.01
135	28	9529F	LW2-G405	7		10	8	2	80.0	20.0	87.65	7	101.54	91.58	13.89	1.98	9.96	1.42
136	5	9529F	LW2-G405	8	wq replicate	10	9	1	90.0	10.0	81.79	8	93.04	84.82	11.25	1.41	8.22	1.03
137	124	9530F	LW2-G426	1		10	10	0	100.0	0.0	87.96	10	102.55	92.18	14.59	1.46	10.37	1.04
138	38	9530F	LW2-G426	2		10	9	1	90.0	10.0	85.89	9	97.97	89.11	12.08	1.34	8.86	0.98
139	159	9530F	LW2-G426	3		10	10	0	100.0	0.0	84.49	10	97.39	88.70	12.90	1.29	8.69	0.87
140	44	9530F	LW2-G426	4		10	10	0	100.0	0.0	88.45	10	99.97	91.54	11.52	1.15	8.43	0.84
141	66	9530F	LW2-G426	5		10	9	1	90.0	10.0	92.14	9	105.73	96.22	13.59	1.51	9.51	1.06
142	42	9530F	LW2-G426	6		10	10	0	100.0	0.0	90.57	10	102.10	93.48	11.53	1.15	8.62	0.86
143	79	9530F	LW2-G426	7		10	8	2	80.0	20.0	88.37	8	99.13	91.16	10.76	1.35	7.97	1.00
144	128	9530F	LW2-G426	8	wq replicate	10	9	1	90.0	10.0	89.34	9	104.13	94.13	14.79	1.64	10.00	1.11
145	130	9531F	LW2-G277	1		10	10	0	100.0	0.0	85.66	10	102.83	92.46	17.17	1.72	10.37	1.04
146	161	9531F	LW2-G277	2		10	10	0	100.0	0.0	90.26	10	105.23	96.23	14.97	1.50	9.00	0.90
147	139	9531F	LW2-G277	3		10	9	1	90.0	10.0	93.48	9	108.86	99.67	15.38	1.71	9.19	1.02
148	146	9531F	LW2-G277	4		10	7	3	70.0	30.0	96.60	7	112.74	103.52	16.14	2.31	9.22	1.32
149	29	9531F	LW2-G277	5		10	7	3	70.0	30.0	87.56	7	99.26	90.90	11.70	1.67	8.36	1.19
150	82	9531F	LW2-G277	6		10	10	0	100.0	0.0	87.88	10	101.96	92.88	14.08	1.41	9.08	0.91
151	121	9531F	LW2-G277	7		10	9	1	90.0	10.0	85.74	9	101.76	91.67	16.02	1.78	10.09	1.12
152	11	9531F	LW2-G277	8	wq replicate	10	9	1	90.0	10.0	101.81	9	114.74	106.33	12.93	1.44	8.41	0.93

	SURV	MORT	PSURV	PMORT	WT	AFDW
Mean	8.6	1.4	86.3	13.8	1.43	0.97
SD	1.2	1.2	11.9	11.9	0.13	0.08
n	8	8	8	8	8	8
Mean	8.8	1.3	87.5	12.5	1.64	1.04
SD	1.0	1.0	10.4	10.4	0.31	0.12
n	8	8	8	8	8	8
Mean	8.8	1.3	87.5	12.5	1.68	1.06
SD	1.3	1.3	12.8	12.8	0.21	0.13
n	8	8	8	8	8	8
Mean	8.4	1.6	83.8	16.3	1.65	1.04
SD	0.9	0.9	9.2	9.2	0.13	0.09
n	8	8	8	8	8	8
Mean	8.6	1.4	86.3	13.8	1.57	1.18
SD	1.3	1.3	13.0	13.0	0.27	0.23
n	8	8	8	8	8	8
Mean	9.4	0.6	93.8	6.3	1.36	0.97
SD	0.7	0.7	7.4	7.4	0.17	0.10
n	8	8	8	8	8	8
Mean	8.9	1.1	88.8	11.3	1.69	1.05
SD	1.2	1.2	12.5	12.5	0.29	0.15
n	8	8	8	8	8	8

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Test Number: 686-18

Freshwater Sediment Test
10-Day Chironomus tentans

INDEX	BKR	NAS SMPL	CLIENT DESCRIP	REPL		INIT	SURV	MORT	PSURV	PMORT	TARE WT (mg)	WT COUNT	DRY WT (mg)	ASHED DRY WT (mg)	TWT (mg)	WT (mg)	TAFDW (mg)	AFDW (mg)			SURV	MORT	PSURV	PMORT	WT	AFDW
153	126	9532F	LW2-G295	1		10	10	0	100.0	0.0	92.55	10	109.56	99.37	17.01	1.70	10.19	1.02								
154	31	9532F	LW2-G295	2		10	10	0	100.0	0.0	90.25	10	104.66	94.88	14.41	1.44	9.78	0.98								
155	40	9532F	LW2-G295	3		10	10	0	100.0	0.0	92.84	10	106.99	97.85	14.15	1.42	9.14	0.91								
156	51	9532F	LW2-G295	4		10	9	1	90.0	10.0	96.85	9	111.46	101.59	14.63	1.63	9.89	1.10								
157	99	9532F	LW2-G295	5		10	10	0	100.0	0.0	78.44	10	95.56	85.63	17.12	1.71	9.93	0.99	Mean	9.4	0.6	93.8	6.3	1.54	0.99
158	53	9532F	LW2-G295	6		10	9	1	90.0	10.0	89.38	9	104.71	94.55	15.33	1.70	10.16	1.13	SD	0.7	0.7	7.4	7.4	0.17	0.09
159	80	9532F	LW2-G295	7		10	8	2	80.0	20.0	91.83	8	102.80	95.49	10.97	1.37	7.31	0.91	n	8	8	8	8	8	8
160	25	9532F	LW2-G295	8	wq replicate	10	9	1	90.0	10.0	87.72	9	99.61	91.46	11.89	1.32	8.15	0.91								
161	36	9533F	LW2-G280	1		10	9	1	90.0	10.0	85.75	9	98.97	90.34	13.22	1.47	8.63	0.96								
162	1	9533F	LW2-G280	2		10	10	0	100.0	0.0	97.83	10	110.88	101.90	13.05	1.31	8.98	0.90								
163	102	9533F	LW2-G280	3		10	9	1	90.0	10.0	91.54	9	108.06	98.12	16.52	1.84	9.94	1.10								
164	104	9533F	LW2-G280	4		10	8	2	80.0	20.0	87.42	8	102.04	92.97	14.62	1.83	9.07	1.13								
165	41	9533F	LW2-G280	5		10	10	0	100.0	0.0	88.60	10	101.97	93.22	13.37	1.34	8.75	0.88	Mean	9.0	1.0	90.0	10.0	1.56	1.00
166	52	9533F	LW2-G280	6		10	10	0	100.0	0.0	90.61	10	108.29	97.59	17.68	1.77	10.70	1.07	SD	1.1	1.1	10.7	10.7	0.25	0.10
167	21	9533F	LW2-G280	7		10	9	1	90.0	10.0	86.67	9	99.93	91.77	11.26	1.25	8.16	0.91	n	8	8	8	8	8	8
168	90	9533F	LW2-G280	8	wq replicate	10	7	3	70.0	30.0	93.47	7	105.50	98.00	12.03	1.72	7.50	1.07								

Beaker #5 one animal was lost or damaged in transfering to weighing pan. Beaker #58 lost two animals.

Beakers #27, 28, and 101 each had one pupa which was not included in the weighing. Beaker #55 had two pupae which were not included in the weighing.

Pupae are not included in the sample to estimate ash-free dry weight (as per EPA/600/R-99/064, p. 59, section 12.3.8.2)

ANC08294
BZTO104(e)008294

Test Number: P686-18

Freshwater Sediment Test
10-Day Chironomus tentans

Water Quality Data

	NAS	CLIENT			Bulk Sediment Interstitial water	
	SMPL	DESCRIP			NH3	pH
	9534F	Control			1.5	6.6
	9514F	LW2-G273			11.6	6.2
	9515F	LW2-G124			3.2	5.6
	9516F	LW2-G425			0.9	5.3
	9517F	LW2-G364			2.6	5.7
	9518F	LW2-G420			4.6	6.0
	9519F	LW2-G409			5.0	6.1
	9520F	LW2-G383			—	---
	9521F	LW2-G368			22.9	6.9
	9522F	LW2-G382			3.8	7.0
	9523F	LW2-G392			4.8	7.2
	9524F	LW2-G346			3.4	7.0
	9525F	LW2-G347			2.4	6.8
	9526F	LW2-G342			1.9	6.6
	9527F	LW2-G352			3.2	6.5
	9528F	LW2-G396			4.3	6.7
	9529F	LW2-G405			1.6	6.3
	9530F	LW2-G426			5.0	6.2
	9531F	LW2-G277			2.5	6.3
	9532F	LW2-G295			2.1	6.4
	9533F	LW2-G280			2.4	6.3

	NAS	CLIENT			Overlying water						
BKR	SMPL	DESCRIP	REPL	DAY	TEMP	DO	COND	pH	NH3	HARD	ALK
5	9529F	LW2-G405	8	0	22.8	6.6	165	6.6	0.4	43	50
7	9526F	LW2-G342	8	0	22.8	6.4	165	6.6	0.5	43	40
10	9519F	LW2-G409	8	0	22.7	6.1	170	6.4	1.0	43	50
11	9531F	LW2-G277	8	0	22.7	6.3	160	6.5	0.6	34	40
23	9525F	LW2-G347	8	0	22.7	6.7	160	6.2	0.6	43	40
25	9532F	LW2-G295	8	0	22.6	6.9	160	6.5	0.5	34	40
33	9534F	Control	8	0	22.8	6.8	230	6.5	0.2	43	40
37	9522F	LW2-G382	8	0	22.6	6.2	165	6.6	0.9	43	40
47	9528F	LW2-G396	8	0	22.5	6.2	160	6.5	0.6	51	40
54	9523F	LW2-G392	8	0	22.7	6.5	160	6.5	0.6	43	40
60	9518F	LW2-G420	8	0	22.7	6.1	175	6.4	1.0	43	40
76	9515F	LW2-G124	8	0	22.7	6.9	155	6.5	0.4	43	40
87	9514F	LW2-G273	8	0	22.5	6.4	175	6.4	2.3	43	50
90	9533F	LW2-G280	8	0	22.5	6.3	160	6.5	0.5	43	40
92	9527F	LW2-G352	8	0	22.5	6.7	170	6.4	0.8	43	40
105	9524F	LW2-G346	8	0	22.5	6.8	160	6.5	0.6	43	40
128	9530F	LW2-G426	8	0	22.5	6.8	170	6.4	1.1	43	40
132	9521F	LW2-G368	8	0	22.6	6.6	4800	7.0	2.6	68	70
140	9520F	LW2-G383	8	0	22.8	6.8	180	7.4	0.3	34	40
152	9516F	LW2-G425	8	0	22.8	7.0	170	6.6	0.4	34	40
163	9517F	LW2-G364	8	0	22.9	6.6	170	6.5	0.7	43	40
5	9529F	LW2-G405	8	1	22.6	6.4	165	6.2			
7	9526F	LW2-G342	8	1	22.5	6.6	165	6.2			
10	9519F	LW2-G409	8	1	22.5	6.5	165	6.2			
11	9531F	LW2-G277	8	1	22.5	6.6	165	6.2			
23	9525F	LW2-G347	8	1	22.4	6.5	165	6.2			
25	9532F	LW2-G295	8	1	22.5	6.5	165	6.2			
33	9534F	Control	8	1	22.4	6.6	200	6.3			
37	9522F	LW2-G382	8	1	22.4	6.4	170	6.3			
47	9528F	LW2-G396	8	1	22.4	6.3	160	6.2			
54	9523F	LW2-G392	8	1	22.4	6.7	165	6.3			
60	9518F	LW2-G420	8	1	22.4	6.8	170	6.3			
76	9515F	LW2-G124	8	1	22.5	6.7	160	6.3			
87	9514F	LW2-G273	8	1	22.4	6.4	170	6.2			
90	9533F	LW2-G280	8	1	22.4	6.6	165	6.2			
92	9527F	LW2-G352	8	1	22.4	6.7	165	6.3			
105	9524F	LW2-G346	8	1	22.4	6.6	165	6.3			
128	9530F	LW2-G426	8	1	22.4	6.8	170	6.3			
132	9521F	LW2-G368	8	1	22.4	7.1	1890	6.4			
140	9520F	LW2-G383	8	1	22.5	6.8	165	6.5			
152	9516F	LW2-G425	8	1	22.3	6.9	170	6.3			
163	9517F	LW2-G364	8	1	22.4	7.2	170	6.5			
5	9529F	LW2-G405	8	2	22.9	6.4					
7	9526F	LW2-G342	8	2	22.8	6.7					
10	9519F	LW2-G409	8	2	22.8	6.7					
11	9531F	LW2-G277	8	2	22.8	6.7					
23	9525F	LW2-G347	8	2	22.8	6.5					
25	9532F	LW2-G295	8	2	22.8	6.5					
33	9534F	Control	8	2	22.7	6.6					
37	9522F	LW2-G382	8	2	22.7	6.2					

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47	9528F	LW2-G396	8	2	22.7	6.5									
54	9523F	LW2-G392	8	2	22.7	6.0									
60	9518F	LW2-G420	8	2	22.7	6.1									
76	9515F	LW2-G124	8	2	22.8	6.4									
87	9514F	LW2-G273	8	2	22.7	6.3									
90	9533F	LW2-G280	8	2	22.7	6.5									
92	9527F	LW2-G352	8	2	22.7	6.1									
105	9524F	LW2-G346	8	2	22.7	6.3									
128	9530F	LW2-G426	8	2	22.6	6.1									
132	9521F	LW2-G368	8	2	22.6	6.5									
140	9520F	LW2-G383	8	2	22.8	6.7									
152	9516F	LW2-G425	8	2	22.6	6.7									
163	9517F	LW2-G364	8	2	22.7	7.0									
5	9529F	LW2-G405	8	3	22.3	5.5									
7	9526F	LW2-G342	8	3	22.3	5.9									
10	9519F	LW2-G409	8	3	22.3	6.5									
11	9531F	LW2-G277	8	3	22.3	6.3									
23	9525F	LW2-G347	8	3	22.2	6.4									
25	9532F	LW2-G295	8	3	22.2	6.7									
33	9534F	Control	8	3	22.2	6.4									
37	9522F	LW2-G382	8	3	22.1	6.0									
47	9528F	LW2-G396	8	3	22.1	6.5									
54	9523F	LW2-G392	8	3	22.1	6.2									
60	9518F	LW2-G420	8	3	22.2	6.5									
76	9515F	LW2-G124	8	3	22.2	6.6									
87	9514F	LW2-G273	8	3	22.2	6.6									
90	9533F	LW2-G280	8	3	22.1	6.7									
92	9527F	LW2-G352	8	3	22.2	6.2									
105	9524F	LW2-G346	8	3	22.2	5.4									
128	9530F	LW2-G426	8	3	22.1	6.6									
132	9521F	LW2-G368	8	3	22.1	6.9									
140	9520F	LW2-G383	8	3	22.1	6.0									
152	9516F	LW2-G425	8	3	22.1	6.3									
163	9517F	LW2-G364	8	3	22.2	6.7									
5	9529F	LW2-G405	8	4	23.2	5.9									
7	9526F	LW2-G342	8	4	23.2	6.1									
10	9519F	LW2-G409	8	4	23.2	6.3									
11	9531F	LW2-G277	8	4	23.0	6.5									
23	9525F	LW2-G347	8	4	22.9	6.4									
25	9532F	LW2-G295	8	4	22.8	6.6									
33	9534F	Control	8	4	22.8	6.7									
37	9522F	LW2-G382	8	4	22.6	6.5									
47	9528F	LW2-G396	8	4	22.6	6.4									
54	9523F	LW2-G392	8	4	22.3	6.2									
60	9518F	LW2-G420	8	4	22.5	6.3									
76	9515F	LW2-G124	8	4	22.6	6.5									
87	9514F	LW2-G273	8	4	22.5	6.5									
90	9533F	LW2-G280	8	4	22.7	6.6									
92	9527F	LW2-G352	8	4	22.6	6.8									
105	9524F	LW2-G346	8	4	22.5	5.6									
128	9530F	LW2-G426	8	4	22.5	6.4									
132	9521F	LW2-G368	8	4	22.6	6.7									
140	9520F	LW2-G383	8	4	22.5	6.4									
152	9516F	LW2-G425	8	4	22.5	6.6									
163	9517F	LW2-G364	8	4	22.6	6.5									
5	9529F	LW2-G405	8	5	22.7	5.0									
7	9526F	LW2-G342	8	5	22.6	5.2									
10	9519F	LW2-G409	8	5	22.7	5.0									
11	9531F	LW2-G277	8	5	22.7	4.8									
23	9525F	LW2-G347	8	5	22.6	5.0									
25	9532F	LW2-G295	8	5	22.8	5.0									
33	9534F	Control	8	5	22.8	4.3									
37	9522F	LW2-G382	8	5	22.6	4.2									
47	9528F	LW2-G396	8	5	22.5	5.2									
54	9523F	LW2-G392	8	5	22.6	4.6									
60	9518F	LW2-G420	8	5	22.7	4.5									
76	9515F	LW2-G124	8	5	22.7	4.8									
87	9514F	LW2-G273	8	5	22.5	4.8									
90	9533F	LW2-G280	8	5	22.6	4.7									
92	9527F	LW2-G352	8	5	22.5	4.6									
105	9524F	LW2-G346	8	5	22.5	4.5									
128	9530F	LW2-G426	8	5	22.5	3.9									
132	9521F	LW2-G368	8	5	22.5	5.0									
140	9520F	LW2-G383	8	5	22.7	4.7									
152	9516F	LW2-G425	8	5	22.7	4.3									
163	9517F	LW2-G364	8	5	22.6	4.9									
5	9529F	LW2-G405	8	6	22.5	4.7									
7	9526F	LW2-G342	8	6	22.4	4.6									
10	9519F	LW2-G409	8	6	22.4	4.6									
11	9531F	LW2-G277	8	6	22.6	4.4									

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23	9525F	LW2-G347	8	6	22.6	4.5									
25	9532F	LW2-G295	8	6	22.6	5.0									
33	9534F	Control	8	6	22.7	4.5									
37	9522F	LW2-G382	8	6	22.4	4.6									
47	9528F	LW2-G396	8	6	22.4	5.0									
54	9523F	LW2-G392	8	6	22.4	4.8									
60	9518F	LW2-G420	8	6	22.4	4.8									
76	9515F	LW2-G124	8	6	22.6	5.6									
87	9514F	LW2-G273	8	6	22.3	5.0									
90	9533F	LW2-G280	8	6	22.3	5.1									
92	9527F	LW2-G352	8	6	22.4	4.8									
105	9524F	LW2-G346	8	6	22.3	5.2									
128	9530F	LW2-G426	8	6	22.4	4.5									
132	9521F	LW2-G368	8	6	22.3	5.0									
140	9520F	LW2-G383	8	6	22.3	4.8									
152	9516F	LW2-G425	8	6	22.6	4.4									
163	9517F	LW2-G364	8	6	22.4	5.3									
5	9529F	LW2-G405	8	7	22.5	5.2									
7	9526F	LW2-G342	8	7	22.5	5.0									
10	9519F	LW2-G409	8	7	22.3	5.1									
11	9531F	LW2-G277	8	7	22.3	4.8									
23	9525F	LW2-G347	8	7	22.4	5.0									
25	9532F	LW2-G295	8	7	22.1	5.2									
33	9534F	Control	8	7	22.3	5.4									
37	9522F	LW2-G382	8	7	22.2	5.3									
47	9528F	LW2-G396	8	7	22.2	5.5									
54	9523F	LW2-G392	8	7	22.2	5.1									
60	9518F	LW2-G420	8	7	22.1	4.8									
76	9515F	LW2-G124	8	7	22.1	4.6									
87	9514F	LW2-G273	8	7	22.1	5.0									
90	9533F	LW2-G280	8	7	22.2	5.1									
92	9527F	LW2-G352	8	7	22.1	5.2									
105	9524F	LW2-G346	8	7	22.0	5.3									
128	9530F	LW2-G426	8	7	22.0	4.9									
132	9521F	LW2-G368	8	7	22.0	5.1									
140	9520F	LW2-G383	8	7	22.0	4.8									
152	9516F	LW2-G425	8	7	22.1	5.0									
163	9517F	LW2-G364	8	7	22.0	5.6									
5	9529F	LW2-G405	8	8	22.8	6.2									
7	9526F	LW2-G342	8	8	22.4	6.4									
10	9519F	LW2-G409	8	8	22.5	6.4									
11	9531F	LW2-G277	8	8	22.5	6.2									
23	9525F	LW2-G347	8	8	22.3	6.4									
25	9532F	LW2-G295	8	8	22.5	6.7									
33	9534F	Control	8	8	22.3	5.6									
37	9522F	LW2-G382	8	8	22.2	5.9									
47	9528F	LW2-G396	8	8	22.2	6.2									
54	9523F	LW2-G392	8	8	22.2	6.2									
60	9518F	LW2-G420	8	8	22.3	5.8									
76	9515F	LW2-G124	8	8	22.3	6.3									
87	9514F	LW2-G273	8	8	22.2	6.1									
90	9533F	LW2-G280	8	8	22.2	6.6									
92	9527F	LW2-G352	8	8	22.2	6.6									
105	9524F	LW2-G346	8	8	22.4	7.0									
128	9530F	LW2-G426	8	8	22.3	6.5									
132	9521F	LW2-G368	8	8	22.2	6.6									
140	9520F	LW2-G383	8	8	22.6	6.7									
152	9516F	LW2-G425	8	8	22.4	6.2									
163	9517F	LW2-G364	8	8	22.4	6.6									
5	9529F	LW2-G405	8	9	23.2	5.2									
7	9526F	LW2-G342	8	9	23.0	5.0									
10	9519F	LW2-G409	8	9	23.1	5.4									
11	9531F	LW2-G277	8	9	23.0	4.9									
23	9525F	LW2-G347	8	9	22.9	5.6									
25	9532F	LW2-G295	8	9	22.9	5.6									
33	9534F	Control	8	9	23.1	4.4									
37	9522F	LW2-G382	8	9	22.9	4.8									
47	9528F	LW2-G396	8	9	22.8	5.4									
54	9523F	LW2-G392	8	9	22.8	5.4									
60	9518F	LW2-G420	8	9	22.9	5.0									
76	9515F	LW2-G124	8	9	22.9	6.0									
87	9514F	LW2-G273	8	9	22.9	5.4									
90	9533F	LW2-G280	8	9	22.8	5.7									
92	9527F	LW2-G352	8	9	22.8	5.2									
105	9524F	LW2-G346	8	9	22.8	5.6									
128	9530F	LW2-G426	8	9	22.8	5.0									
132	9521F	LW2-G368	8	9	22.8	5.4									
140	9520F	LW2-G383	8	9	22.8	5.0									
152	9516F	LW2-G425	8	9	23.0	5.4									
163	9517F	LW2-G364	8	9	22.9	5.2									

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5	9529F	LW2-G405	8	10	23.0	6.2	150	6.0	0.1	43	40		
7	9526F	LW2-G342	8	10	22.9	6.4	150	6.0	0.2	34	40		
10	9519F	LW2-G409	8	10	23.0	6.4	145	6.1	0.4	34	40		
11	9531F	LW2-G277	8	10	22.9	6.3	145	6.0	0.3	34	40		
23	9525F	LW2-G347	8	10	22.8	6.0	145	6.0	0.3	43	40		
25	9532F	LW2-G295	8	10	22.9	6.4	145	6.0	0.2	34	40		
33	9534F	Control	8	10	22.8	5.1	155	6.1	1.9	34	50		
37	9522F	LW2-G382	8	10	22.7	5.8	145	6.1	0.3	43	40		
47	9528F	LW2-G396	8	10	22.7	6.3	145	6.1	0.2	43	40		
54	9523F	LW2-G392	8	10	22.7	6.2	145	6.0	0.3	43	40		
60	9518F	LW2-G420	8	10	22.7	6.4	150	6.1	0.4	34	40		
76	9515F	LW2-G124	8	10	22.8	6.9	145	6.1	0.4	34	40		
87	9514F	LW2-G273	8	10	22.8	6.1	150	6.1	0.8	43	40		
90	9533F	LW2-G280	8	10	22.7	6.4	150	6.0	0.5	43	40		
92	9527F	LW2-G352	8	10	22.7	6.3	150	6.1	0.4	34	40		
105	9524F	LW2-G346	8	10	22.7	6.0	150	6.1	0.4	43	40		
128	9530F	LW2-G426	8	10	22.7	5.8	150	6.0	0.4	34	40		
132	9521F	LW2-G368	8	10	22.7	6.1	440	6.4	0.4	34	40		
140	9520F	LW2-G383	8	10	22.9	6.0	150	6.1	0.3	34	50		
152	9516F	LW2-G425	8	10	22.7	6.0	150	6.1	0.3	34	40		
163	9517F	LW2-G364	8	10	22.8	6.1	150	6.1	0.3	43	40		
				Mean	22.5	5.9	267	6.3	0.6	40	42	---	---
				SD	0.3	0.8	621	0.2	0.5	6	6	---	---
				n	231	231	63	63	42	42	42	20	20
				Min	22.0	3.9	145	6.0	0.1	34	40	0.9	5.3
				Max	23.2	7.2	4800	7.4	2.6	68	70	22.9	7.2

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AMMONIA EXPOSURE BENCHSHEETS AND ANALYSIS

Total Ammonia-N in Sediment Pore Water: Computation Worksheet

Salicylate Method (SOP #5492)

Result

	Sample description	Dilution factor	OD_{655}	NH_3-N (mg/L)	pH	Salinity (ppt)
	Blank	----	----	----		
	1.0 mg/L NH_3-N Std.	----	0.139	1.00		
	3.0 mg/L NH_3-N Std.	----	0.279	3.00		
	6.0 mg/L NH_3-N Std.	----	0.582	6.00		
	10.0 mg/L NH_3-N Std.	----	0.930	10.00		
	3.0 mg/L spike	----	0.280	2.96		
	3.0 mg/L spike dupl.	----	0.277	2.93		
1.	9514F	5	0.219	11.59		
2.	9515F	5	0.060	3.18		
3.	9516F	5	0.017	0.90		
4.	9517F	5	0.049	2.59		
5.	9518F	5	0.087	4.60		
6.	9519F	5	0.095	5.03		
7.	9520F	5	---*	---*		
8.	9521F	5	0.432	22.86		
9.	9522F	5	0.071	3.76		
10.	9523F	5	0.090	4.76		
11.	9524F	5	0.064	3.39		
12.	9525F	5	0.046	2.43		
13.	9526F	5	0.036	1.91		
14.	9527F	5	0.060	3.18		
15.	9528F	5	0.081	4.29		
16.	9529F	5	0.030	1.59		
17.	9530F	5	0.094	4.97		
18.	9531F	5	0.047	2.49		
19.	9532F	5	0.040	2.12		
20.	9533F	5	0.046	2.43		
21.	9534F	5	0.028	1.48		
22.						
23.		* insufficient sample for analysis				
24.						
25.						
26.						
27.						
28.						
29.						
30.						
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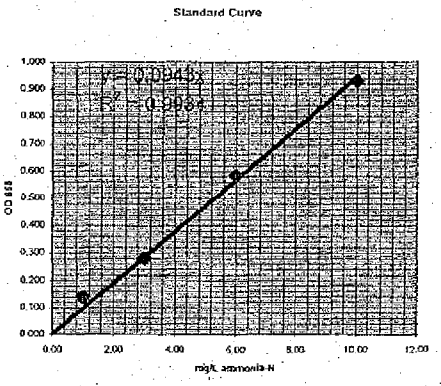
35.						



Reporting limit (mg/L) =	0.5
Recovery (%) =	98.3
Precision (RPD) =	1.08
Sample volume (ml):	0.10
Dilution factor	5

Sample Set Description:

Proj. No.: 686
Bulk sediment porewaters
Batch 9

Analyst: RSC
Date analysed: 10/18/2004

ANC08300
BZTO104(e)008300

Total Ammonia-N in Sediment Pore Water: Computation Worksheet

Salicylate Method (SOP #5492)

Result

	Sample description	Dilution factor	OD_{655}	NH_3-N (mg/L)	pH	Salinity (ppt)
	Blank	-----	----	----		
	1.0 mg/L NH_3-N Std.	-----	.139	1.00		
	3.0 mg/L NH_3-N Std.	-----	.279	3.00		
	6.0 mg/L NH_3-N Std.	-----	.582	6.00		
	10.0 mg/L NH_3-N Std.	-----	.930	10.00		
	3.0 mg/L spike	-----	.280			
	3.0 mg/L spike dupl.	-----	.277			
1.	9514F	5	.219		6.2	
2.	9515F	5	.060		5.6	
3.	9516F	5	.017		5.3	
4.	9517F	5	.049		5.7	
5.	9518F	5	.087		6.0	
6.	9519F	5	.095		6.1	
7.	9520F	5	—	—	—	
8.	9521F	5	.432		6.9	
9.	9522F	5	.071		7.0	
10.	9523F	5	.090		7.2	
11.	9524F	5	.064		7.0	
12.	9525F	5	.046		6.8	
13.	9526F	5	.036		6.6	
14.	9527F	5	.060		6.5	
15.	9528F	5	.081		6.7	
16.	9529F	5	.070		6.3	
17.	9530F	5	.094		6.2	
18.	9531F	5	.049		6.3	
19.	9532F	5	.040		6.4	
20.	9533F	5	.046		6.5	
21.	9534F		.028		6.6	
22.						
23.						
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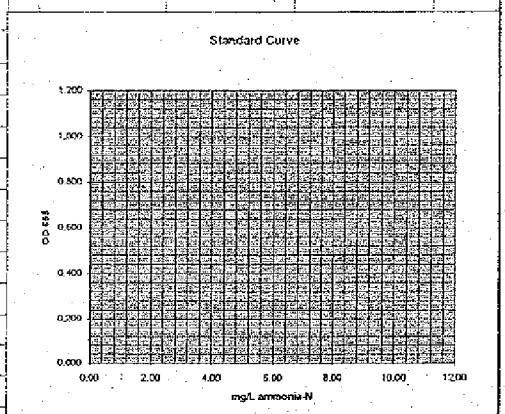

Reporting limit (mg/L) =	0.5
Recovery (%) =	#VALUE!
Precision (RPD) =	#VALUE!
Sample volume (ml):	0.10
Dilution factor	5

Sample Set Description:

Proj. No.: 686

Bulk sediment porewaters

Batch 9

Analyst: RSC

Date analysed: 10/18/2004

Total Ammonia-N in Water: Computation Worksheet

Salicylate Method (SOP #5492)

Result

	Sample description	Dilution factor	OD655	NH_3-N (mg/L)
	Blank	-----	----	----
	1.0 mg/L NH_3-N Std.	-----	0.084	1.00
	3.0 mg/L NH_3-N Std.	-----	0.274	3.00
	6.0 mg/L NH_3-N Std.	-----	0.542	6.00
	10.0 mg/L NH_3-N Std.	-----	0.895	10.00
	3.0 mg/L spike	-----	0.285	3.17
	3.0 mg/L spike dupl.	-----	0.277	3.09
1.	5	1	0.036	0.40
2.	7	1	0.042	0.47
3.	10	1	0.087	0.97
4.	11	1	0.056	0.62
5.	23	1	0.055	0.61
6.	25	1	0.048	0.53
7.	33	1	0.018	0.20
8.	37	1	0.082	0.91
9.	47	1	0.051	0.57
10.	54	1	0.057	0.63
11.	60	1	0.090	1.00
12.	76	1	0.038	0.42
13.	87	1	0.202	2.25
14.	90	1	0.042	0.47
15.	92	1	0.071	0.79
16.	105	1	0.056	0.62
17.	128	1	0.102	1.14
18.	132	1	0.232	2.58
19.	140	1	0.027	0.30
20.	152	1	0.031	0.35
21.	163	1	0.062	0.69
22.				
23.				
24.				
25.				
26.				
27.				
28.				
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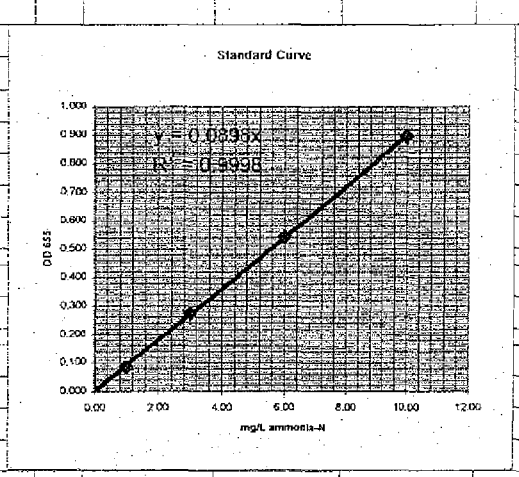
31.				
32.				
33.				
34.				
35.				
36.				



Reporting limit (mg/L) =	0.1
Recovery (%) =	104.3
Precision (RPD) =	2.85
Sample volume (ml):	0.50
Dilution factor	1

Sample Set Description:

Test No.:	686-18
Test Day:	0 (10-19-04)
Species:	*Chironomus*
Overlying water	
Analyst:	RSC
Date analysed:	11/2/2004

Total Ammonia-N in Water: Computation Worksheet
Salicylate Method (SOP #5492)

Result

	Sample description	Dilution factor	OD_{655}	NH_3-N (mg/L)
	Blank	-----	-----	-----
	1.0 mg/L NH_3-N Std.	-----	.084	1.00
	3.0 mg/L NH_3-N Std.	-----	.274	3.00
	6.0 mg/L NH_3-N Std.	-----	.542	6.00
	10.0 mg/L NH_3-N Std.	-----	.895	10.00
	3.0 mg/L spike	-----	.265	
	3.0 mg/L spike dupl.	-----	.277	
1.	5	1	.036	
2.	7	1	.042	
3.	10	1	.067	
4.	11	1	.056	
5.	23	1	.055	
6.	25	1	.048	
7.	33	1	.018	
8.	37	1	.052	
9.	47	1	.057	
10.	54	1	.057	
11.	60	1	.093	
12.	76	1	.038	
13.	87	1	.202	
14.	90	1	.042	
15.	92	1	.077	
16.	105	1	.056	
17.	128	1	.132	
18.	132	1	.232	
19.	140	1	.027	
20.	152	1	.031	
21.	163	1	.062	
22.				
23.				
24.				
25.				
26.				
27.				
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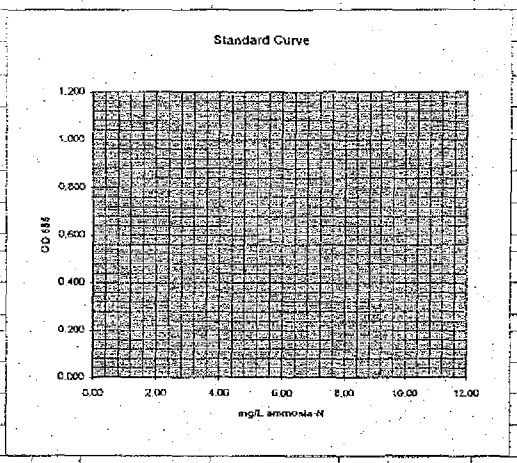
31.				
32.				
33.				
34.				
35.				
36.				



Reporting limit (mg/L) =	0.1
Recovery (%) =	#VALUE!
Precision (RPD) =	#VALUE!
Sample volume (ml):	0.50
Dilution factor	1

Sample Set Description:

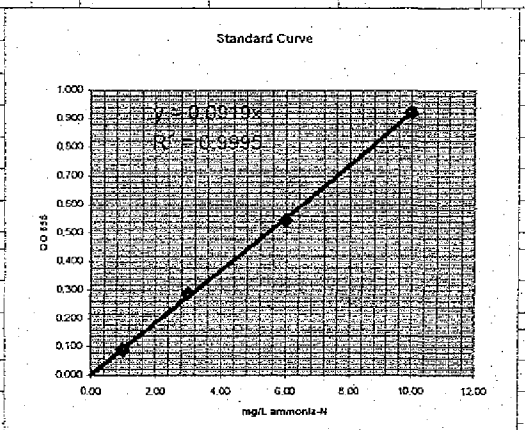
Test No.:	686-18
Test Day:	0 (10-19-04)
Species:	*Chironomus*
Overlying water	
Analyst:	RSC
Date analysed:	11/2/2004

Total Ammonia-N in Water: Computation Worksheet

Salicylate Method (SOP #5492)

Result

	Sample description	Dilution factor	OD_{655}	NH_3-N (mg/L)
	Blank	-----	-----	-----
	1.0 mg/L NH_3-N Std.	-----	0.089	1.00
	3.0 mg/L NH_3-N Std.	-----	0.287	3.00
	6.0 mg/L NH_3-N Std.	-----	0.545	6.00
	10.0 mg/L NH_3-N Std.	-----	0.920	10.00
	3.0 mg/L spike	-----	0.291	3.17
	3.0 mg/L spike dupl.	-----	0.305	3.32
1.	5	1	0.011	0.12
2.	7	1	0.020	0.22
3.	10	1	0.037	0.40
4.	11	1	0.028	0.30
5.	23	1	0.028	0.30
6.	25	1	0.015	0.16
7.	33	1	0.172	1.87
8.	37	1	0.027	0.29
9.	47	1	0.017	0.18
10.	54	1	0.023	0.25
11.	60	1	0.038	0.41
12.	76	1	0.038	0.41
13.	87	1	0.074	0.80
14.	90	1	0.042	0.46
15.	92	1	0.032	0.35
16.	105	1	0.037	0.40
17.	128	1	0.035	0.38
18.	132	1	0.038	0.41
19.	140	1	0.027	0.29
20.	152	1	0.023	0.25
21.	163	1	0.030	0.33
22.				
23.				
24.				
25.				
26.				
27.				
28.				
29.				
30.				
31.				
32.				
33.				
34.				
35.				
36.				



Reporting limit (mg/L) =	0.1
Recovery (%) =	108.1
Precision (RPD) =	-4.70
Sample volume (ml):	0.50
Dilution factor	1

Sample Set Description:

Test No.:	686-18
Test Day:	10 (10-29-04)
Species:	*Chironomus*
Overlying water	
Analyst:	RSC
Date analysed:	11/10/2004

Total Ammonia-N in Water: Computation Worksheet

Salicylate Method (SOP #5492)

Result

	Sample description	Dilution factor	OD_{655}	NH_3-N (mg/L)
	Blank	-----	-----	-----
	1.0 mg/L NH_3-N Std.	-----	.089	1.00
	3.0 mg/L NH_3-N Std.	-----	.287	3.00
	6.0 mg/L NH_3-N Std.	-----	.545	6.00
	10.0 mg/L NH_3-N Std.	-----	.920	10.00
	3.0 mg/L spike	-----	.291	
	3.0 mg/L spike dupl.	-----	.305	
1.	5	1	.011	
2.	7	1	.020	
3.	10	1	.037	
4.	11	1	.028	
5.	23	1	.028	
6.	25	1	.015	
7.	33	1	.172	
8.	37	1	.027	
9.	47	1	.017	
10.	54	1	.023	
11.	60	1	.038	
12.	76	1	.038	
13.	87	1	.074	
14.	90	1	.042	
15.	92	1	.032	
16.	105	1	.037	
17.	128	1	.035	
18.	132	1	.038	
19.	140	1	.027	
20.	152	1	.023	
21.	163	1	.030	
22.				
23.				
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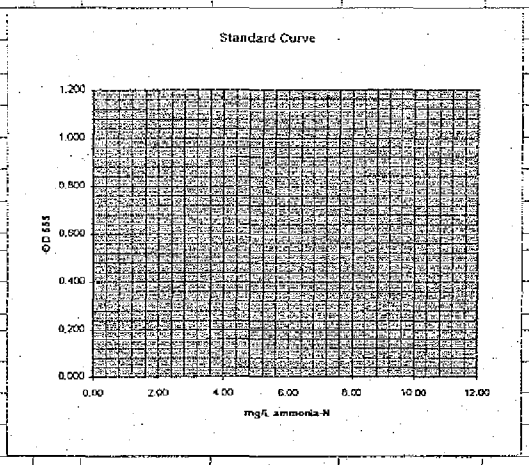
36.				



Reporting limit (mg/L) =	0.1
Recovery (%) =	#VALUE!
Precision (RPD) =	#VALUE!
Sample volume (ml):	0.50
Dilution factor	1

Sample Set Description:

Test No.:	686-18
Test Day:	10 (10-29-04)
Species:	*Chironomus*
Overlying water	
Analyst:	RSC
Date analysed:	11/10/2004

CHAIN-OF-CUSTODY RECORDS

1 of 2

Windward Environmental

CHAIN-OF-CUSTODY/TEST REQUEST FORM

1332

Project/Client Name: LWG - Portland Harbor
Windward Project No:
Contact Name: H. Anderson
Sampled By: P. Sparks, T. Schultz (Integral)

Ship to: NAS
Attn: Gerald Irissarri
Shipping address:

Shipping Date: 10/12/04
Airbill Number:

Sample Collection Date (m/d/y)	Time	Sample Identification	Volume of Sample / # of Containers	Matrix	Test(s) Requested (check test(s) required): 10 day CHIRONOMUS	28 day HYALLA						Comments / Instructions [Jar tag number(s)]
10/7/04	1548	LW2-G273	4	Sed	X	X		2°C				9514F
10/7/04	1115	LW2-G124	4	Sed	X	X		0°C				9515F
~~10/7/04~~	~~1316~~	~~LW2-G431~~	~~4~~	~~Sed~~	~~X~~	~~X~~						SP
10/7/04	1436	LW2-G425	4	Sed	X	X		2°C				9516F
~~10/7/04~~	~~1205~~	~~LW2-G126~~	~~4~~	~~Sed~~	~~X~~	~~X~~						SP
~~10/8/04~~	~~0952~~	~~LW2-G424~~	~~4~~	~~Sed~~	~~X~~	~~X~~						SP
10/8/04	1440	LW2-G364	4	Sed	X	X		0°C				9517F
10/8/04	0919	LW2-G420	4	Sed	X	X		0.5°C				9518F
10/8/04	1522	LW2-G409	4	Sed	X	X		2°C				9519F
10/8/04	1400	LW2-G383	4	Sed	X	X		0°C				9520F
10/8/04	1627	LW2-G368	4	Sed	X	X		0.5°C				9521F
10/8/04	1307	LW2-G382	4	Sed	X	X		0°C				9522F
~~10/8/04~~	~~1140~~	~~LW2-G411~~	~~4~~	~~Sed~~	~~X~~	~~X~~						SP

Total Number of Containers: 36

Purchase Order / Statement of Work #

1) Released by: Shannon Pierce	1) Rec'd by: R. S. Caldwell	2) Released by:	1) Rec'd by:
Print name: Shannon Pierce	Company: NW Aquatic Sci	Print name:	Company:
Signature:	Date/Time: 10/12/04 12:35	Signature:	Date/Time:
Company: Windward Environmental		Company:	
Date/Time: 10/12/04 1235		Date/Time:	

* Distribution: White and yellow copies accompany shipment; pink-consignor's copy; white-consignee return with results; yellow-consignee's copy.

* Instructions for completion of Chain-of-Custody/Test Request Form on back.

Windward environmental LLC
200 West Mercer Street
Suite 401
Seattle, WA 98119
Tel: 206.378.1364
Fax: 206.217.0089

To be completed by Laboratory upon sample receipt:

Date of receipt: 10/12/04	Laboratory W.O. #:
Condition upon receipt: OK	Time of receipt: 1235
Cooler temperature: 0-2°C	Received by: [illegible]

2 of 2

Windward Environmental

CHAIN-OF-CUSTODY/TEST REQUEST FORM

1365

Project/Client Name: LWG-Portland Harbor
Windward Project No:
Contact Name: H. Anderson
Sampled By: P. Sparks, T. Schultz (Integral)

Ship to: NAS
Attn: Gerald Irissarri
Shipping address:

Shipping Date: 10/12/04
Airbill Number:

Sample Collection Date (m/d/y)	Time	Sample Identification	Volume of Sample / # of Containers	Matrix	Test(s) Requested (check test(s) required)							Comments / Instructions [Jar tag number(s)]
					10 day CHIRONOMUS	28 day HYALLA						
10/08/04	1027	LW2-G392	4	sed	X	X		0.5°C				9523 F
10/11/04	926	LW2-G346	4	sed	X	X		0°C				9524 F
10/11/04	941	LW2-G347	4	sed	X	X		0°C				9525 F
10/11/04	958	LW2-G342	4	sed	X	X		0°C				9526 F
10/11/04	1020	LW2-G352	4	sed	X	X		0°C				9527 F
10/11/04	1108	LW2-G396	4	sed	X	X		0°C				9528 F
10/11/04	1138	LW2-G405	4	sed	X	X		0°C				9529 F
10/11/04	1221	LW2-G426	4	sed	X	X		0°C				9530 F
10/11/04	1403	LW2-G277	4	sed	X	X		0°C				9531 F
10/11/04	1419	LW2-G295	4	sed	X	X		2°C				9532 F
10/11/04	1445	LW2-G280	4	sed	X	X		2°C				9533 F
		Total Number of Containers	44	Purchase Order / Statement of Work #								

1) Released by:	1) Rec'd by:	2) Released by:	1) Rec'd by:
Print name: Shannon Pierce	R. S. Caldwell	Print name:	
Signature: Shannon Pierce	Company: NW Aquatic Sci	Signature:	Company:
Company: Windward Environmental	Date/Time: 10/12/04 12:35	Company:	Date/Time:
Date/Time: 10/12/04 1235		Date/Time:	

* Distribution: White and yellow copies accompany shipment; pink-consignor's copy; white-consignee return with results; yellow-consignee's copy.
* Instructions for completion of Chain-of-Custody/Test Request Form on back.

Wind Ward environmental LLC
200 West Mercer Street
Suite 401
Seattle, WA 98119
Tel: 206.378.1364
Fax: 206.217.0089

To be completed by Laboratory upon sample receipt:

Date of receipt: 10/12/04	Laboratory W.O. #
Condition upon receipt: OK	Time of receipt: 1235
Cooler temperature: 0-2°C	Received by:

PAGE 24 OF 34

ANC08308
BZT0104(e)008308

APPENDIX II

RAW DATA – REFERENCE TOXICANT TEST

REVIEWED PAGES 1-7 GJI 12-18-04

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS- _____

ACUTE TOXICITY TEST (ALL SPECIES)

Test No. 999-1852 Client: QC Test Investigator _____

Test Type (rangefinding/definitive) _____ Test Length (hr) 96

Species *Chironomus tentans*

STUDY MANAGEMENT

Client: QC test

Client's Study Monitor: QC test

Testing Laboratory: Northwestern Aquatic Sciences

Test Location: Newport Laboratory

Laboratory's Study Personnel:

Proj. Man./Study Dir. G J. Irissarri GJI

QA Officer L. K. Nemeth LKN

1. GA Bichler GAB 2. William T. Montgomery WTM

3. M.S. Redmond MSR 4. _____

Study Schedule:

Test Beginning: 10-19-04 1250 Test Ending: 10-23-04 1230

TEST MATERIAL

Description: Potassium Chloride Crystals - Fisher Lot No.: 020865A

NAS Sample No.				
Date of Collection:				
Date of Receipt:				
Temperature (deg C):				
Dissolved oxygen (mg/L):				
pH:				
Conductivity (umhos/cm):				
Hardness (mg/L):				
Alkalinity (mg/L):				
Salinity (ppt):				
Total chlorine (mg/L):				
Total ammonia-N (mg/L):				
_____				

DILUTION WATER

Description: Moderately hard synthetic water

Date of Preparation/Collection: 10-18-04

Water Quality: Cond. (umhos/cm): 310 Salinity (ppt) — pH 7.9

Hardness (mg/L as $CaCO_3$): 85 Alkalinity (mg/L as $CaCO_3$): 80

Treatments: Aerated ≥ 24 hrs

TEST LOCATION

Test conducted in (circle one): room 1 (room 2) trailer water bath other: _____

Randomization chart:

2.5	1.25	10	20	Ø	20	10	5	1.25	Ø
10	5	1.25	5	25	5	1.25	25	20	1.25
Ø	20	2.5	Ø	1.25	10	2.5	1.25	5	20
20	25	5	10	5	2.5	10	Ø	10	2.5
5	10	Ø	2.5	10	1.25	Ø	20	2.5	10
1.25	Ø	20	1.25	20	Ø	5	10	Ø	5

Error codes: 1) Correction of handwriting error
2) Written in wrong location; entry deleted
3) Wrong date deleted; replaced with correct date

ANC08310
BZTO104(e)008310

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-_____

ACUTE TOXICITY TEST (ALL SPECIES)

Test No. 999-1852 Client QC Test Investigator _____

TEST ORGANISMS

Species: *Chironomus tentans* Age: — Size: 3rd instar

Source: NAS cultures Date received: —

Acclimation Data:

Date	Temp. (deg.C)	DO (mg/L)	pH	Cond. umhos/cm	Hardness (mg/L)	Alkalinity (mg/L)	Feeding Amount	Feeding description*	Water changes
10-8-04	23.3	6.9 7.2	7.2	290			ANIMALS FED		CULTURE
10-11-04	22.8	7.0	7.0	320			TETRA FIN AND		TANKS
10-13-04	23.2	6.5	7.1	330	102	90	SELENASTRUM		CHANGED
10-16-04	23.7	7.3	7.8	360					TWICE
10-18-04	23.5	7.2	7.3	340			DETAILS RECORDED		WEEKLY
10-19-04	23.5	8.4	7.4	280	85	80	IN CHIRONOMID		
Mean	23.3	7.2	7.3	320			CULTURE DATA		
S.D.	0.3	0.7	0.3	30	—	—	SHEET		
(N)	6	6	6	6	2	2			

Photoperiod during acclimation: _____ *S=*Selenastrum*, T=Tetra Fin suspension

TEST PROCEDURES AND CONDITIONS

Test concentrations (50% series recommended): 20, 10, 5, 2.5, 1.25, 0 g/L

Test chamber: 30 ml plastic cups Test volume: 20 ml

Replicates/treatment: 10 Organisms/treatment: 10 (1/rep)

Test water changes: None Aeration during test: None

Feeding: 0.25 ml Prime Tropical Flakes (4g/L) suspension per cup on days 0 and 2

Duration: 24-hr, 48-hr, (96-hr) Test temperature (deg.C): 23 ± 1

Beaker placement: Stratified randomization Photoperiod: 16:8, L:D

MISCELLANEOUS NOTES

Test solution preparation:

Working stock: Dissolve 10g KCl crystals in dilution water and dilute to 500 mL.
Final conc.: 20 g/L.

Test concentration (g/L)	KCl working stock (ml/200ml)	ml of dilution water per 200 ml
20	200	0
10	100	100
5	50	150
2.5	25	175
1.25	12.5	187.5
0	0	200

DB 10-19-04

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-_____

ACUTE TOXICITY TEST (ALL SPECIES)

Test No. 999-1852 Client QC Test

DAILY RECORD SHEET

Day 0 (10/19/04)NB Temp Beaker (°C): 23.1

Conc. (g/L)	Temp. (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	Comments
1. 20	23.5	8.4	>20,000	7.9	85	70	
2. 10	23.5	8.5	14,300	7.9			
3. 5	23.5	8.6	8050	7.9			
4. 2.5	23.5	8.6	4260	7.9			
5. 1.25	23.5	8.6	2250	7.8			
6. 0	23.5	8.5	310	7.8	85	70	
All animals fed 0.25 ml Prime Tropical Flakes suspension. Initials: NB							

Day 1 (10/20/04) NB Temp Beaker (°C): 23.3

Conc. (g/L)	Temp. (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	Comments
1. 20							
2. 10							
3. 5							
4. 2.5							
5. 1.25							
6. 0							

Day 2 (10/21/04) NB Temp Beaker (°C): 22.7

Conc. (g/L)	Temp. (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	Comments
1. 20							
2. 10							
3. 5							
4. 2.5							
5. 1.25							
6. 0							
All animals fed 0.25 ml Prime Tropical Flakes suspension. Initials: NB							

Day 3 (10/22/04) NB Temp Beaker (°C): 23.0

Conc. (g/L)	Temp. (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	Comments
1. 20							
2. 10							
3. 5							
4. 2.5							
5. 1.25							
6. 0							

Day 4 (10/23/04 NB Temp Beaker (°C): 22.9

Conc. (g/L)	Temp. (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	Comments
1. 20	—	—	—	—	—	—	
2. 10	—	—	—	—			
3. 5	23.0	7.4	8200	7.7			
4. 2.5	23.0	7.7	4350	7.7			
5. 1.25	23.0	7.6	2150	7.6			
6. 0	23.1	7.8	360	7.6	85	70	
Mean	23.3	8.2	(control) 335	7.8	85	70	
SD	0.2	0.5		0.1	0	0	
n	10	10	2	10	3	3	

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-_____

ACUTE TOXICITY TEST (ALL SPECIES)

Test No. 999-1852 Client _____ QC Test _____ Investigator _____

DAILY RECORD SHEET - Survivors

Day 0 (10/19/04) CB

Conc. (g/L)	Survivors in Replicate: 1	2	3	4	5	6	7	8	9	10	Total
1. 20	1	1	1	1	1	1	1	1	1	1	10
2. 10	1	1	1	1	1	1	1	1	1	1	10
3. 5	1	1	1	1	1	1	1	1	1	1	10
4. 2.5	1	1	1	1	1	1	1	1	1	1	10
5. 1.25	1	1	1	1	1	1	1	1	1	1	10
6. 0	1	1	1	1	1	1	1	1	1	1	10

Day 1 (10/20/04) CB

Conc. (g/L)	Survivors in Replicate: 1	2	3	4	5	6	7	8	9	10	Total
1. 20	X	X	X	X	1	X	1	1	1	X	4
2. 10	1	1	X	1	1	1	X	1	1	1	8
3. 5	1	1	1	1	1	1	1	1	1	1	10
4. 2.5	1	1	1	1	1	1	1	1	1	1	10
5. 1.25	1	1	1	1	1	1	1	1	1	1	10
6. 0	1	1	1	1	1	1	1	1	1	1	10

Day 2 (10/21/04) CB

Conc. (g/L)	Survivors in Replicate: 1	2	3	4	5	6	7	8	9	10	Total
1. 20	X	X	X	X	X	X	X	X	X	X	0
2. 10	X	X	X	X	X	X	X	X	X	X	0
3. 5	1	1	1	1	1	1	1	1	1	1	10
4. 2.5	1	1	1	1	1	1	1	1	1	1	10
5. 1.25	1	1	1	1	1	1	1	1	1	1	10
6. 0	1	1	1	1	1	1	1	1	1	1	10

Day 3 (10/22/04) CB

Conc. (g/L)	Survivors in Replicate: 1	2	3	4	5	6	7	8	9	10	Total
1. 20	X	X	X	X	X	X	X	X	X	X	0
2. 10	X	X	X	X	X	X	X	X	X	X	0
3. 5	1	1	1	1	1	1	1	1	1	1	10
4. 2.5	1	1	1	1	1	1	1	1	1	1	10
5. 1.25	1	1	1	1	1	1	1	1	1	1	10
6. 0	1	1	1	1	1	1	1	1	1	1	10

Day 4 (10/23/04) CB

Conc. (g/L)	Survivors in Replicate: 1	2	3	4	5	6	7	8	9	10	Total
1. 20	X	X	X	X	X	X	X	X	X	X	0
2. 10	X	X	X	X	X	X	X	X	X	X	0
3. 5	1	1	1	X	1	X	1	1	X	X	6
4. 2.5	1	1	1	1	1	1	1	1	1	1	10
5. 1.25	1	1	1	1	1	X	1	1	1	1	9
6. 0	1	1	1	1	1	1	1	1	1	1	10

ANC08313
BZTO104(e)008313

Acute 96-hr Toxicity Test-96 Hr Survival

Start Date:	10/19/04 12:50	Test ID:	999-1852	Sample ID:	REF-Ref Toxicant
End Date:	10/23/04 12:30	Lab ID:	ORNAS-Northwestern Aquati	Sample Type:	KCL-Potassium chloride
Sample Date:		Protocol:	EPAF 91-EPA Freshwater	Test Species:	CT-Chironomus tentans
Comments:					

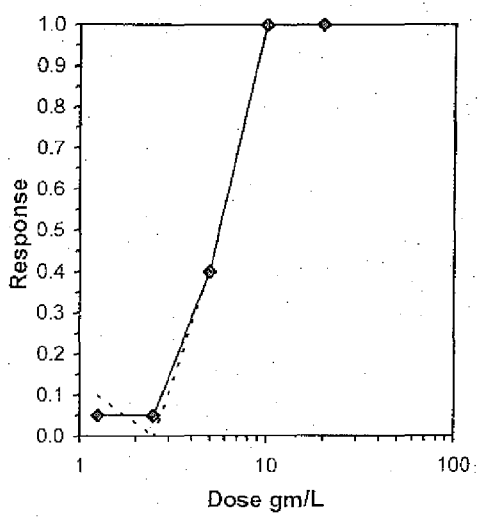
Conc-gm/L	1
D-Control	1.0000
1.25	0.9000
2.5	1.0000
5	0.6000
10	0.0000
20	0.0000

Conc-gm/L	Mean	N-Mean	Resp	Not Resp	Total	N	Fisher's Exact P	1-Tailed Critical	Number Resp	Total Number
D-Control	1.0000	1.0000	0	10	10	1			0	10
1.25	0.9000	0.9000	1	9	10	1	0.5000	0.0500	1	10
2.5	1.0000	1.0000	0	10	10	1	1.0000	0.0500	0	10
*5	0.6000	0.6000	4	6	10	1	0.0433	0.0500	4	10
10	0.0000	0.0000	10	0	10	1			10	10
20	0.0000	0.0000	10	0	10	1			10	10

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU
Fisher's Exact Test	2.5	5	3.53553	

Trimmed Spearman-Karber

Trim Level	EC50	95% CL	
0.0%			
5.0%	5.3058	4.1585	6.7697
10.0%	5.3578	4.0858	7.0258
20.0%	5.4600	3.7645	7.9192
Auto-5.0%	5.3058	4.1585	6.7697



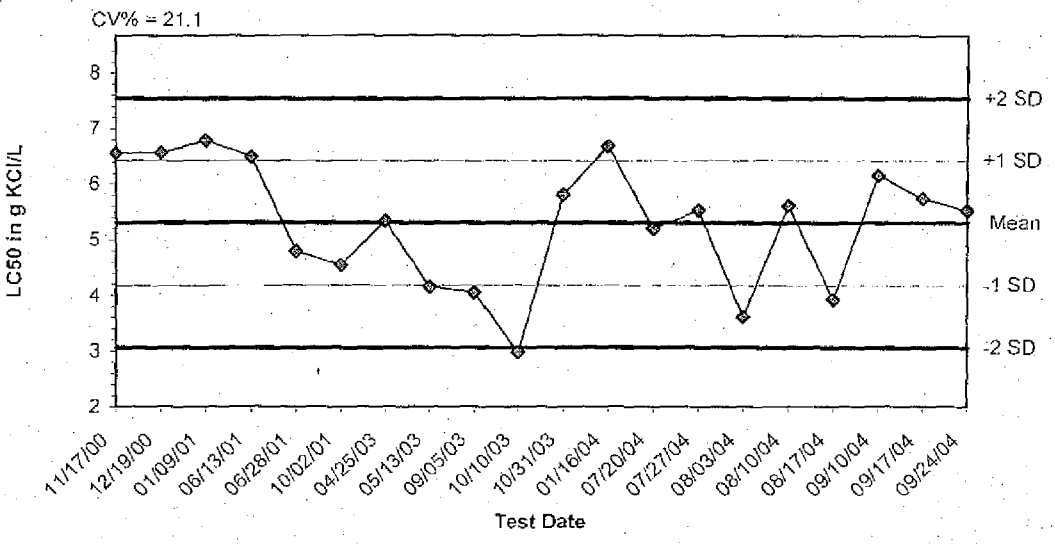
ANC08314
BZTO104(e)008314

Test: AT-Acute 96-hr Toxicity Test							Test ID: 999-1852		
Species: CT-Chironomus tentans							Protocol: EPAF 91-EPA Freshwater		
Sample ID: REF-Ref Toxicant							Sample Type: KCL-Potassium chloride		
Start Date: 10/19/04 12:50				End Date: 10/23/04 12:30			Lab ID: ORNAS-Northwestern Aquatic Sciences		
Pos	ID	Rep	Group	Start	24 Hr	48 Hr	72 Hr	96 Hr	Notes
	1	1	D-Control	10				10	
	2	1	1.250	10				9	
	3	1	2.500	10				10	
	4	1	5.000	10				6	
	5	1	10.000	10				0	
	6	1	20.000	10				0	

Comments: Data entry verified against laboratory bench sheets
MSR 10-26-04

ANC08315
BZTO104(e)008315

Chironomus tentans 96-hr reference toxicant test - last 20 points



Dates	Values	Mean	-1 SD	-2 SD	+1 SD	+2 SD
11/17/00	6.5600	5.3045	4.1838	3.0631	6.4252	7.5459
12/19/00	6.5700	5.3045	4.1838	3.0631	6.4252	7.5459
01/09/01	6.7900	5.3045	4.1838	3.0631	6.4252	7.5459
06/13/01	6.4900	5.3045	4.1838	3.0631	6.4252	7.5459
06/28/01	4.8000	5.3045	4.1838	3.0631	6.4252	7.5459
10/02/01	4.5500	5.3045	4.1838	3.0631	6.4252	7.5459
04/25/03	5.3400	5.3045	4.1838	3.0631	6.4252	7.5459
05/13/03	4.1600	5.3045	4.1838	3.0631	6.4252	7.5459
09/05/03	4.0600	5.3045	4.1838	3.0631	6.4252	7.5459
10/10/03	2.9800	5.3045	4.1838	3.0631	6.4252	7.5459
10/31/03	5.8000	5.3045	4.1838	3.0631	6.4252	7.5459
01/16/04	6.6800	5.3045	4.1838	3.0631	6.4252	7.5459
07/20/04	5.2000	5.3045	4.1838	3.0631	6.4252	7.5459
07/27/04	5.5300	5.3045	4.1838	3.0631	6.4252	7.5459
08/03/04	3.6200	5.3045	4.1838	3.0631	6.4252	7.5459
08/10/04	5.6100	5.3045	4.1838	3.0631	6.4252	7.5459
08/17/04	3.9300	5.3045	4.1838	3.0631	6.4252	7.5459
09/10/04	6.1600	5.3045	4.1838	3.0631	6.4252	7.5459
09/17/04	5.7400	5.3045	4.1838	3.0631	6.4252	7.5459
09/24/04	5.5200	5.3045	4.1838	3.0631	6.4252	7.5459

msk
10-20-04

ANC08316
BZTO104(e)008316

Report

of

Test No. 686-19

Toxicity of Portland Harbor RI/FS Freshwater Test Sediments (Batch 10) using a 28-day *Hyalella azteca*, Sediment Bioassay

Submitted to

Windward Environmental, Inc.
200 West Mercer Street, Suite 401
Seattle, WA 98119

Submitted by

Northwestern Aquatic Sciences
3814 Yaquina Bay Road
P.O. Box 1437
Newport, OR 97365

January 19, 2005

TOXICITY TEST REPORT

TEST IDENTIFICATION

Test No.: 686-19

Title: Toxicity of Portland Harbor RI/FS freshwater test sediments (Batch 10) using a 28-day amphipod, *Hyalella azteca*, sediment bioassay.

Protocol No.: NAS-XXX-HA4c, June 24, 2004. Based on ASTM Method E 1706-00 (ASTM 2003) and EPA Method 100.4 (EPA/600/R-99/064, 2000). This protocol can be found in Appendix B of the Portland Harbor RI/FS Round 2 Quality Assurance Project Plan, June 24, 2004.

STUDY MANAGEMENT

Study Sponsor: Windward Environmental, Inc., 200 West Mercer Street, Suite 401, Seattle, WA 98119.

Sponsor's Study Monitor: Ms. Helle Andersen

Testing Laboratory: Northwestern Aquatic Sciences, P.O. Box 1437, Newport, OR 97365

Test Location: Newport laboratory

Laboratory's Study Personnel: G.J. Irissarri, B.S., Proj. Man./Study Dir.; L.K. Nemeth, B.S., M.B.A., QA Officer; R.S. Caldwell, Ph.D., Sr. Toxicol.; M.S. Redmond, M.S., Aq. Toxicol.; G.A. Buhler, B.S., Aq. Toxicol.; W.T. Montgomery, A.A., Sr. Tech.; G. Hayes, B.S., Tech.; S.J. Gage, B.A., Tech.; B.B. Pridgeon, Lab Asst.

Study Schedule:

Test Beginning: 10-26-04, 1345 hrs.

Test Ending: 11-23-04, 1400 hrs.

Disposition of Study Records: All specimens, raw data, reports and other study records are stored according to Good Laboratory Practice regulations at Northwestern Aquatic Sciences, 3814 Yaquina Bay Rd., Newport, OR 97365.

Good Laboratory Practices: The test was conducted following the principles of Good Laboratory Practices (GLP) as defined in the EPA/TSCA Good Laboratory Practice regulations revised August 17, 1989 (40 CFR Part 792).

Statement of Quality Assurance: The test data were reviewed by the Quality Assurance Unit to assure that the study was performed in accordance with the protocol and standard operating procedures. This report is an accurate reflection of the raw data.

TEST MATERIAL

Test Sediments: Portland Harbor RI/FS freshwater test sediments (Batch 10). Details are as follows:

NAS Sample No.	9542F	9543F	9544F	9545F	9546F
Description	LW2-G210	LW2-G213	LW2-G200	LW2-G093	LW2-G206
Collection Date	10/21/04	10/21/04	10/21/04	10/21/04	10/21/04
Receipt Date	10/23/04	10/23/04	10/23/04	10/23/04	10/23/04
NAS Sample No.	9547F	9548F	9549F	9550F	9551F
Description	LW2-G362-1	LW2-G413	LW2-G393	LW2-G417	LW2-G415
Collection Date	10/22/04	10/22/04	10/22/04	10/22/04	10/22/04
Receipt Date	10/23/04	10/23/04	10/23/04	10/23/04	10/23/04
NAS Sample No.	9552F	9553F	9554F	9555F	9556F
Description	LW2-G380	LW2-G430	LW2-G437	LW2-G403	LW2-G401
Collection Date	10/22/04	10/22/04	10/22/04	10/22/04	10/22/04
Receipt Date	10/23/04	10/23/04	10/23/04	10/23/04	10/23/04
NAS Sample No.	9557F	9558F	9559F	9560F	9561F
Description	LW2-G377	LW2-G371	LW2-G366	LW2-G351	LW2-G282
Collection Date	10/22/04	10/22/04	10/22/04	10/22/04	10/22/04
Receipt Date	10/23/04	10/23/04	10/23/04	10/23/04	10/23/04

ANC08318
BZTO104(e)008318

Control Sediment: The negative control sediment (NAS#9434F) was collected on 10-14-04 from an area approximately one mile east of the Hwy. 101 bridge at Beaver Creek, approx. 8 miles south of Newport, OR.
Treatments: Homogenized at test set up by mixing using stainless steel implements.
Storage: All test and reference sediments were stored locked at 4°C in the dark in sealed containers until used.

TEST WATER

Source: Dechlorinated Newport, OR tap water.
Dates of Collection: Eighteen batches of test water were collected between 10-23-04 and 11-21-04
Water Quality (mean ± S.D.):
pH: 7.0 ± 0.2 (n=18)
conductivity: 153 ± 5 (n=18)
hardness: 34 ± 0 (n=18)
alkalinity: 36 ± 5 (n=19)
chlorine: All batches were <0.02 mg/L.
Pretreatment: Aerated ≥24 hr.

TEST ORGANISMS

Species: *Hyalella azteca,* amphipod.
Age/Size: 7-8 days old
Source: Chesapeake Cultures, Hayes, VA; received 10-22-04
Acclimation: Holding conditions prior to testing averaged (n=5): temperature, 21.6 ± 1.9°C; dissolved oxygen, 9.8 ± 2.9 mg/L; pH, 7.4 ± 0.2; conductivity, 268 ± 86 µmhos/cm; hardness, 85 ± 39 mg/L as $CaCO_3$; and alkalinity, 102 ± 59 mg/L as $CaCO_3$. Half of the water was replaced daily with dechlorinated Newport, OR tap water during holding. Animals were fed YTC daily during holding.

TEST PROCEDURES AND CONDITIONS

The following is an abbreviated statement of the test procedures and a statement of the test conditions actually employed. See the test protocol for a more detailed description of the test procedures used in this study.

Test Chambers: 300 ml high-form glass beakers
Test Volumes: 100 ml sediment layer; 175 ml test water.
Replicates/Treatment: 8
Organisms/Treatment: 80
Water Volume Changes: 2 water volumes per day
Aeration: None.
Feeding: Animals are fed 1.0 ml of YTC suspension per beaker daily.
Effects Criteria: Effects Criteria: 1) survival after 28 days, and 2) average individual biomass (based on dry weight) after 28 days. Death is defined as no visible movement or response to tactile stimulation. Missing organisms were considered to be dead.
Water Quality and Other Test Conditions: The temperature, dissolved oxygen, conductivity, pH, hardness, alkalinity and ammonia-nitrogen were measured in the overlying water of one replicate test container per treatment on days 0 and 28 of the test. Temperature was measured daily, dissolved oxygen and pH three times per week, and conductivity weekly, in the overlying water of one replicate test container per treatment. Interstitial ammonia was measured in the bulk sediment. Hardness and alkalinity were measured with titrimetric methods. Interstitial water samples from bulk sediments were obtained by centrifugation, or by settling in the case of very sandy sediments. Total ammonia-N was measured using Hach reagents based on the salicylate (Clin. Chim. Acta 14:403, 1996) colorimetric method. Samples were not distilled prior to analysis. The photoperiod was 16:8, L:D.

ANC08319
BZTO104(e)008319

DATA ANALYSIS METHODS

Survival and mortality were calculated for each replicate as follows:

percent survival = 100 x (number surviving/initial number tested)
percent mortality = 100 x (number dead/initial number tested)

average individual biomass = (final wt. - tare wt.)/number weighed,
where:
final wt. = tare wt. + dry weight of organisms recovered on day 28, in mg

Means and standard deviations for the biological endpoints described above, and for water quality data, were computed using Microsoft Excel 2000.

PROTOCOL DEVIATIONS

None

REFERENCE TOXICANT TEST

The reference toxicant test is a multi-concentration toxicity test using cadmium chloride, to evaluate the performance of the test organisms used in the sediment toxicity test. The performance is evaluated by comparing the results of this test with historical results obtained at the laboratory. A summary of the reference toxicant test result is given below. The reference toxicant test raw data are found in Appendix II. The age of the test dilution water exceeded EPA specifications. This deviation is not likely to have affected the test results.

Test No.: 999-1855
Reference Toxicant and Source: Cadmium as $CdCl_2 \bullet 2½ H_2O$, Mallinckrodt Lot #TNZ, 1.0 mg/ml stock prepared 7-13-04
Test Date: 10-26-04
Dilution Water Used: Moderately hard synthetic water prepared from Milli-Q® deionized water.
Result: 96-hr LC50, 6.73 µg/L. This result is within the laboratory's control chart warning limits (3.46 – 12.0 µg/L).

TEST RESULTS

Observations of water quality in the overlying water throughout the test are summarized in Table 1. A detailed tabulation of the water quality results by sample and test day can be found in Appendix I. Interstitial ammonia measurements and pH for bulk sediments are listed in Table 2. The means and standard deviations of percent mortality of *Hyalella* exposed for 28 days to sediments, and the growth measured as dry weight are summarized in Table 3. Detailed data organized by sample and replicate, and summary statistics for these observations, are given in Appendix II.

All water quality observations of overlying water temperature and dissolved oxygen were within the protocol specified ranges. Ammonia-N in the overlying water ranged from <0.1 to 1.5 mg/L in all day 0 and day 28 observations. Interstitial bulk sediment values for ammonia-N ranged from 0.9 to 27.1 mg/L.

The test met the acceptability criteria specified in the test protocol with 98.8% mean control survival (≥80% required). The reference toxicant (positive control) result was within the laboratory's control chart limits (6.73 µg/L; control chart mean ± 2 S.D. = 7.75 ± 4.29). It is concluded, therefore, that the test has developed fully acceptable data for use in making management decisions.

REFERENCES

ASTM. 2003. Standard Test Methods for Measuring the Toxicity of Sediment-Associated Contaminants with Fresh Water Invertebrates. ASTM Standard Method No. E 1706-00. Am. Soc. Test. Mat., West Conshohocken, PA.

ANC08320
BZTO104(e)008320

U.S. EPA. 2000. Section 11, Test Method 100.1, *Hyalella azteca* 10-d Survival and Growth Test for Sediments, pp 47-54 In: Methods for Measuring the Toxicity and Bioaccumulation of Sediment-associated Contaminants with Freshwater Invertebrates (Second Edition). EPA/600/R-99/064.

STUDY APPROVAL

Gerald Lussier 1-21-05
Project Manager/Study Director Date

Linda K. Nemeth 1/20/05
Quality Assurance Unit Date

Richard S. Caldwell 1/21/05
Laboratory Director Date

ANC08321
BZTO104(e)008321

Table 1. Summary of water quality conditions during tests of the amphipod, *Hyalella azteca*, exposed to freshwater sediments.

Water Quality Parameter	Mean ± S.D.	Minimum	Maximum	N
Temperature (°C)	22.6 ± 0.3	22.0	23.4	609
Dissolved oxygen (mg/L)	6.5 ± 0.7	4.8	8.2	294
Conductivity (µmhos/cm)	238 ± 346	110	2530	126
pH	6.6 ± 0.1	6.3	7.0	294
Hardness (mg/L as $CaCO_3$)	43 ± 7	34	60	42
Alkalinity (mg/L as $CaCO_3$)	43 ± 6	40	60	42
Total ammonia (mg/L)	---	<0.1	1.5	42

Table 2. Pore water ammonia-N and pH in bulk test sediments at the time of test setup.

NAS Sample No.	Sample Description	Ammonia (mg/L)	pH
9542F	LW2-G210	26.2	6.4
9543F	LW2-G213	1.8	5.8
9544F	LW2-G200	2.6	5.8
9545F	LW2-G093	6.4	5.9
9546F	LW2-G206	3.6	5.8
9547F	LW2-G362-1	19.5	5.7
9548F	LW2-G413	1.0	5.9
9549F	LW2-G393	7.4	6.9
9550F	LW2-G417	4.5	6.0
9551F	LW2-G415	3.3	6.0
9552F	LW2-G380	1.0	6.1
9553F	LW2-G430	---	---
9554F	LW2-G437	1.3	6.0
9555F	LW2-G403	1.0	6.0
9556F	LW2-G401	5.1	6.6
9557F	LW2-G377	0.9	6.7
9558F	LW2-G371	27.1	6.2
9559F	LW2-G366	6.4	6.3
9560F	LW2-G351	10.8	7.5
9561F	LW2-G282	1.0	6.8

ANC08322
BZTO104(e)008322

Table 3. Mortality and growth results of *Hyalella* 28-day sediment toxicity test

NAS Sample No.	Sample Description	Average Percent mortality (Mean ± SD)	Average dry wt/amphipod (mg) (Mean ± SD)
9534F	Control	1.3 ± 3.5	0.44 ± 0.04
9542F	LW2-G210	68.8 ± 19.6	0.41 ± 0.16
9543F	LW2-G213	7.5 ± 7.1	0.32 ± 0.09
9544F	LW2-G200	3.8 ± 7.4	0.30 ± 0.04
9545F	LW2-G093	7.5 ± 8.9	0.35 ± 0.05
9546F	LW2-G206	0.0 ± 0.0	0.31 ± 0.09
9547F	LW2-G362-1	8.8 ± 9.9	0.37 ± 0.06
9548F	LW2-G413	1.3 ± 3.5	0.38 ± 0.07
9549F	LW2-G393	5.0 ± 7.6	0.36 ± 0.04
9550F	LW2-G417	5.0 ± 10.7	0.36 ± 0.08
9551F	LW2-G415	8.9 ± 11.3	0.35 ± 0.03
9552F	LW2-G380	10.0 ± 10.7	0.43 ± 0.05
9553F	LW2-G430	3.8 ± 5.2	0.42 ± 0.06
9554F	LW2-G437	6.3 ± 7.4	0.36 ± 0.04
9555F	LW2-G403	3.8 ± 5.2	0.36 ± 0.05
9556F	LW2-G401	3.8 ± 7.4	0.28 ± 0.07
9557F	LW2-G377	5.0 ± 10.7	0.30 ± 0.08
9558F	LW2-G371	61.3 ± 11.3	0.52 ± 0.05
9559F	LW2-G366	67.5 ± 17.5	0.42 ± 0.08
9560F	LW2-G351	1.3 ± 3.5	0.27 ± 0.07
9561F	LW2-G282	6.3 ± 10.6	0.33 ± 0.08

ANC08323
BZTO104(e)008323

APPENDIX I

RAW DATA

TEST DESCRIPTION, MONITORING, AND RESULTS BENCHSHEETS

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-19 Client Windward Environmental Investigator

STUDY MANAGEMENT

Client: Windward Enviromental, 200 West Mercer Street, Suite 401, Seattle, WA 98119

Client's Study Monitor: Ms. Helle Anderson 632

Testing Laboratory: Northwestern Aquatic Sciences

Test Location: Newport Laboratory

Laboratory's Study Personnel:

Proj. Man./Study Dir. G.J. Irissarri 632

QA Officer L.K. Nemeth

1. [illegible] 2. G.C. Hayes
3. Susan Gale 4. B.B. Prideaux BBP
5. R.S. Carlson 6. M.S. Redmond MSR
7. William T. Montgomery 8.

Study Schedule:

Test Beginning: 10-26-04 1345 Test Ending: 11-23-04 1400

TEST MATERIAL

General description (see sample logbook/chain-of-custody for details):

NAS Sample No.:	9534F	9542F	9543F	9544F	9545F
Description:	control	LW2-G210	LW2-G213	LW2-G200	LW2-G093
Collection Date:	10/14/04	10/21/04	10/21/04	10/21/04	10/21/04
Receipt Date:	10/14/04	10/23/04	10/23/04	10/23/04	10/23/04

NAS Sample No.:	9546F	9547F	9548F	9549F	9550F
Description:	LW2-G206	LW2-G362-1	LW2-G413	LW2-G393	LW2-G417
Collection Date:	10/21/04	10/22/04	10/22/04	10/22/04	10/22/04
Receipt Date:	10/23/04	10/23/04	10/23/04	10/23/04	10/23/04

NAS Sample No.:	9551F	9552F	9553F	9554F	9555F
Description:	LW2-G415	LW2-G380	LW2-G430	LW2-G437	LW2-G403
Collection Date:	10/22/04	10/22/04	10/22/04	10/22/04	10/22/04
Receipt Date:	10/23/04	10/23/04	10/23/04	10/23/04	10/23/04

NAS Sample No.:	9556F	9557F	9558F	9559F	9560F
Description:	LW2-G401	LW2-G377	LW2-G371	LW2-G366	LW2-G351
Collection Date:	10/22/04	10/22/04	10/22/04	10/22/04	10/22/04
Receipt Date:	10/23/04	10/23/04	10/23/04	10/23/04	10/23/04

NAS Sample No.:	9561F				
Description:	LW2-G282				
Collection Date:	10/22/04				
Receipt Date:	10/23/04				

Error codes: 1) correction of handwriting error
2) written in wrong location; entry deleted
3) wrong date deleted, replaced with correct date
4) error found in measurement; measurement repeated

ANC08326
BZTO104(e)008326

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-19 Client Windward Environmental Investigator

SEDIMENT DESCRIPTIONS -- SUPPLEMENTAL NOTES

Sample No.	Description
9534F	~~Dark gray mud w/ wood debris~~ Dark brown fine mud
9542F	DK Gray muddy Sand @ Petroleum odor
9543F	Dark gray mud w/ wood debris
9544F	Dark gray gritty mud w/ grassy debris
9545F	Dark gray brown mud
9546F	Dark gray mud
9547F	Dark Gray - Brown Muddy @ fine sand.
9548F	Dark gray sand
9549F	Dark gray sandy mud
9550F	Dark gray - Brown sandy mud @ rocks (Sm)
9551F	Gray smooth Mud
9552F	Dark gray brown sandy mud
9553F	Dark brown sand
9554F	Dark gray mud. Over 12 Chironomids found and removed, sediment sieved (.5)
9555F	Dark brown sandy soil
9556F	Fine gray mud
9557F	Gray brown sandy mud
9558F	Sandy gray mud
9559F	Brown Smooth Mud
9560F	Creamy brown mud
9561F	Dark brown sandy mud w large wood debris

ANC08327
BZTO104(e)008327

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-19 Client Windward Environmental Investigator

TEST WATER

Source: Dechlorinated Newport, OR Tap Water

Date of Collection:

pH

Cond (umhos/cm2) (SEE NEXT PAGE)

Hardness (mg/La0

Alkalinity (mg/L)

Treatments: Aerated ≥24 hrs

TEST ORGANISMS

Species: *Hyalella azteca* Age: 7-8 DAYS Date received: 10-22-04

Source: Chesapeake Cultures, Hayes, VA

Acclimation Data:

Date	Temp. (deg.C)	DO (mg/L)	pH	Cond umhos/cm	Feeding * amount	Feeding * description	Water changes	Hardness (mg/L)	Alkalinity (mg/L)
10-22-04	18.2	715.0	7.4	360	10 mL	YTC	50% w/TAP	145	170
10-23-04	22.8	8.6	7.8	360	"	"	"	103	160
10-24-04	22.3	8.5	7.5	235	"	"	"	68	80
10-25-04	22.4	8.4	7.2	195	"	"	"	60	60
10-26-04	22.5	8.3	7.3	190	"	"	—	51	40
Mean	21.6	9.8	7.4	268				85	102
S.D.	6^2 & 1.9	2.9	0.2	86				39	59
(N)	5	5	5	5				5	5

Photoperiod during acclimation: 16:8, L:D

* ANIMALS WERE DIVIDED INTO 3 PANS. FEEDING IS PER PAN

TEST PROCEDURES AND CONDITIONS

Test chambers: 300 ml glass beakers

Test volumes: 100 ml of test sediment; 275 ml total volume

Replicates/treatment: (8) 8 Organisms/treatment: (80) 80 (10/REP)

Test water changes: Twice daily

Aeration: only if DO falls below 2.5 mg/L

Beaker placement: Total randomization

Feeding: everyday beginning with day zero

Photoperiod: 16:8, L:D

Test temperature (deg.C): 23

Control Sediment:

Source: From an area approximately one mile east of the Hwy. 101 bridge at Beaver Creek, approx. 8 miles south of Newport, OR.

Date collected: 10-14-04

Sieved through 0.5 -mm screen NAS# 9534F

Storage: 4°C in the dark in closed containers.

MISCELLANEOUS NOTES

LIGHT INTENSITY MEASUREMENTS:

	SITE A	SITE B
11-5-04	49 FT-CANDLES (517 LUX)	72 FT-CANDLES (775 LUX)
11-11-04	70 FT-CANDLES (753 LUX)	67 FT-CANDLES (712 LUX)

ANC08328
BZTO104(e)008328

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4b

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-19 Client Windward Environmental Investigator

Test Dilution Water: Dechlorinated Newport, OR Tap Water

Date of Collection	Total Chlorine (mg/L)	Hardness (mg/L)	Alkalinity (mg/L)	Conductivity (µmhos/cm)	pH
10-23-04	<0.02	34	30	155	6.9
10-26-04	<0.02	34	40	160	6.9
10-26-04 (2ND BATCH)	<0.02	34	40	165	6.9
10-29-04	<0.02	34	30	155	7.3
10-30-04	<0.02	34	30	155	7.2
11-2-04	<0.02	34	30	150	7.0
11-4-04	<0.02	34	30	155	6.9
11-4-04 (2ND BATCH)	<0.02	34	30	155	6.9
11-6-04	<0.02	34	40	150	7.2
11-9-04	<0.02	34	40	155	7.1
11-10-04	<0.02	34	40	150	7.3
11-11-04	<0.02	34	40	150	6.6
11-13-04	<0.02	34	40	150	6.8
11-14-04	<0.02	34	40	150	6.8
11-16-04	<0.02	34	40	150	7.2
11-17-04	<0.02	34	40	155	7.0
11-20-04	<0.02	34	40	150	7.1
11-21-04	<0.02	34	30	140	6.9
		$\bar{X}=34\pm0$	$\bar{X}=36\pm5$	② ~~$\bar{X}=36\pm5$~~ 6/1 $\bar{X}=153\pm5$	$\bar{X}=7.0\pm0.2$

ANC08329
BZTO104(e)008329

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c
HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-19 Client Windward Environmental Investigator _____

Test conducted in (circle one): room 1 (room 2) trailer water bath other: _____

Randomization chart:

5								165	
4								164	
3	→							163	168
2								162	167
1								161	166

Randomization chart:

Randomization chart:

Randomization chart:

ANC08330
BZTO104(e)008330

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-19 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 0 (10/26/04 CB/RBP

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond.* umhos/cm	pH *	Hardness* (mg/L)	Alkalinity* (mg/L)	S (ppm)	NH3* (ppm)	Comments
9	22.2	7.2	260	6.8	51	60			Each beaker fed 1.0 ml
21	22.2	7.2	155	6.8	34	40			YTC suspension
23	22.2	7.5	155	6.7	43	50			Initials: RBP
33	22.2	7.4	170	6.8	43	55			
42	22.1	7.2	160	6.8	43	40			
56	22.2	7.4	170	6.7	51	50			
66	22.2	7.4	150	6.7	43	50			
70	22.5	7.5	160	6.6	34	40			
82	22.3	7.2	140	6.6	34	40			Water changed in all
108	22.2	6.4	2530	6.5	60	60			beakers.
109	22.2	7.2	710	6.6	60	50			Time: 0620
110	22.4	7.0	250	6.8	34	50			Initials: CB
126	22.1	7.1	170	6.7	43	40			
129	22.1	7.2	160	6.7	43	40			
130	22.1	7.4	310	6.8	43	60			
133	22.2	7.0	160	6.7	43	40			
136	22.1	7.2	160	6.6	43	40			Water changed in all
142	22.0	7.1	150	6.7	34	40			beakers.
152	22.0	7.2	160	6.6	43	40			Time: 1715
155	22.0	7.6	1560	6.7	34	50			Initials: CB
161	22.2	7.2	180	6.9	43	40			

*Water quality measurements to be taken.

Day 1 (10/27/04) CB/RBP/CB

Beaker No.	Temp.* (deg.C)	DO * (ppm)	Cond.* umhos/cm	pH *	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
9	22.7	7.2	225	7.0					Each beaker fed 1.0 ml
21	22.8	7.4	155	6.9					YTC suspension
23	22.7	7.6	155	6.8					Initials: CB
33	22.7	7.8	155	6.9					
42	22.8	7.8	160	6.9					
56	22.8	7.8	165	6.8					
66	22.7	7.8	155	6.8					
70	23.1	7.8	150	6.8					
82	22.7	7.6	150	6.8					Water changed in all
108	22.6	6.0	1890	6.9					beakers.
109	22.8	7.2	540	6.8					Time: 0715
110	22.9	7.8	190	7.0					Initials: CB
126	22.8	7.5	160	6.8					
129	22.7	7.4	160	6.8					
130	22.9	7.6	225	6.8	6.9				
133	22.7	7.5	160	6.9					
136	22.7	7.4	150	6.7					Water changed in all
142	22.6	7.4	150	6.9					beakers.
152	22.5	7.6	155	6.8					Time: 1710
155	23.0	7.8	2190	6.9					Initials: CB
161	22.8	7.4	160	6.9					

*Water quality measurements to be taken.

ANC08331
BZTO104(e)008331

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-19 Client Windward Environmental Investigator _____

DAILY RECORD SHEET

Day 2 (10/28/09) JS/BBP

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
9	23.4								Each beaker fed 1.0 ml
21	23.3								YTC suspension
23	23.2								Initials: [illegible]
33	23.2								
42	23.3								
56	23.3								
66	23.2								
70	23.2								
82	23.2								Water changed in all
108	23.1								beakers.
109	23.1								Time: 0710
110	23.2								Initials: JS
126	23.2								
129	23.2								
130	23.2								
133	23.2								
136	23.1								Water changed in all
142	23.0								beakers.
152	23.0								Time: 1715
155	22.9								Initials: BBP
161	23.2								

*Water quality measurements to be taken.

Day 3 (10/29/09) MD/mm

Beaker No.	Temp.* (deg.C)	DO * (ppm)	Cond. (umhos/cm)	pH *	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
9	22.8	7.2		6.6					Each beaker fed 1.0 ml
21	22.8	7.2		6.5					YTC suspension
23	22.7	7.2		6.4					Initials: MM
33	22.7	7.3		6.5					
42	22.7	7.4		6.5					
56	22.7	7.4		6.5					
66	22.7	7.4		6.4					
70	23.0	7.4		6.4					
82	22.8	7.2		6.4					Water changed in all
108	22.7	7.6		6.7					beakers.
109	22.8	7.4		6.5					Time: 0655
110	22.9	7.3		6.6					Initials: JS
126	22.7	7.0		6.4					
129	22.7	7.2		6.4					
130	22.9	7.4		6.6					
133	22.7	7.2		6.5					
136	22.7	7.4		6.4					Water changed in all
142	22.7	7.2		6.4					beakers.
152	22.7	7.1		6.5					Time: 1715
155	22.9	7.2		6.6					Initials: BBP
161	22.9	7.2		6.8					

*Water quality measurements to be taken.

ANC08332
BZTO104(e)008332

Test No. 686-19 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 4 (10/30 by) JB

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
9	22.8								Each beaker fed 1.0 ml
21	22.8								YTC suspension
23	22.7								Initials: EB
33	22.7								
42	22.6								
56	22.6								
66	22.6								
70	22.8								
82	22.7								Water changed in all
108	22.6								beakers.
109	22.7								Time: 0700
110	22.8								Initials: JB
126	22.8								
129	22.7								
130	22.8								
133	22.6								
136	22.6								Water changed in all
142	22.6								beakers.
152	22.5								Time: 1810
155	22.8								Initials: BBB
161	22.7								

*Water quality measurements to be taken.

Day 5 (10/31 by) JB

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
9	22.9								Each beaker fed 1.0 ml
21	22.9								YTC suspension
23	22.8								Initials: AMJ
33	22.8								
42	22.8								
56	22.7								
66	22.7								
70	22.9								
82	22.9								Water changed in all
108	22.7								beakers.
109	22.7								Time: 0650
110	22.9								Initials:
126	22.9								
129	22.9								
130	22.9								
133	22.8								
136	22.8								Water changed in all
142	22.7								beakers.
152	22.7								Time: 1800
155	22.9								Initials: BBB
161	22.8								

*Water quality measurements to be taken.

ANC08333
BZTO104(e)008333

'ESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c
HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

_086-19 Client Windward Environmental Investigator _____

DAILY RECORD SHEET

Day __6__ (11/ 1 /04) UB/AJ/GOH

Beaker No.	Temp.* (deg.C)	DO * (ppm)	Cond. (umhos/cm)	pH *	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
9	22.9	6.2		6.6					Each beaker fed 1.0 ml
21	23.0	5.8		6.5					YTC suspension
23	22.9	6.0		6.3					Initials: GJL
33	22.9	5.8		6.4					
42	23.0	6.1		6.4					
56	22.9	6.4		6.5					
66	22.9	6.3		6.5					
70	23.2	5.8		6.5					
82	22.8	6.0		6.5					Water changed in all
108	22.8	6.4		6.7					beakers.
109	23.0	6.3		6.7					Time: 0655
110	23.2	6.2		6.7					Initials: GJL
126	23.0	6.0		6.7					
129	23.0	6.0		6.7					
130	23.1	6.2		6.5					
133	22.8	6.0		6.6					
136	22.9	5.8		6.6					Water changed in all
142	22.8	6.0		6.6					beakers.
152	22.7	6.1		6.6					Time: 1705
155	23.0	6.6		6.7					Initials: AJ
161	22.9	6.4		6.7					

*Water quality measurements to be taken.

Day __7__ (11 /2 04) UB/GOH

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
9	22.9								Each beaker fed 1.0 ml
21	22.9								YTC suspension
23	22.9								Initials: UB
33	22.9								
42	22.9								
56	22.9								
66	22.9								
70	23.2								
82	22.9								Water changed in all
108	22.9								beakers.
109	22.9								Time: 0655
110	23.0								Initials: GJL
126	22.9								
129	22.9								
130	22.9								
133	23.0								
136	22.8								Water changed in all
142	22.8								beakers.
152	22.7								Time: 1710
155	22.7								Initials: GOH
161	22.9								

*Water quality measurements to be taken.

Test No. 686-19 Client Windward Environmental Investigator _____

DAILY RECORD SHEET

Day 8 (11/13/19) BBP

Beaker No.	Temp.* (deg.C)	DO * (ppm)	Cond.* (umhos/cm)	pH *	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
9	23.1	6.5	170	6.5					Each beaker fed 1.0 ml
21	23.1	6.5	150	6.4					YTC suspension
23	22.9	6.2	155	6.4					Initials: CB
33	23.0	6.5	155	6.5					
42	23.0	6.6	155	6.5					
56	23.0	6.6	155	6.6					
66	23.0	6.6	155	6.6					
70	23.0	6.5	150	6.6					
82	23.2	6.6	565	6.6					Water changed in all
108	22.9	6.6	250	6.9					beakers.
109	23.1	6.4	110	6.8					Time: 0710
110	23.3	6.5	165	6.8					Initials: GJ1
126	23.3	6.5	155	6.7					
129	23.0	6.2	155	6.7					
130	22.9	6.6	165	6.7					
133	22.8	6.1	150	6.6					
136	22.9	6.4	150	6.7					Water changed in all
142	22.9	6.4	155	6.7					beakers.
152	22.8	6.6	155	6.7					Time: 1715
155	22.8	7.2	745	6.7					Initials: BBP
161	23.0	6.8	160	6.8					

*Water quality measurements to be taken.

Day 9 (11/14/19) CB/BBP

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
9	22.4								Each beaker fed 1.0 ml
21	22.5								YTC suspension
23	22.4								Initials: GJ1
33	22.4								
42	22.5								
56	22.5								
66	22.4								
70	22.8								
82	22.5								Water changed in all
108	22.4								beakers.
109	22.5								Time: 0740
110	22.8								Initials: CB
126	22.5								
129	22.4								
130	22.6								
133	22.5								
136	22.4								Water changed in all
142	22.3								beakers.
152	22.2								Time: 1710
155	22.6								Initials: BBP
161	22.4								

*Water quality measurements to be taken.

ANC08335
BZTO104(e)008335

Test No. 686-19 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 10 (11/5/04) VB/GSH/AJ/BBP

Beaker No.	Temp.* (deg.C)	DO * (ppm)	Cond. (umhos/cm)	pH *	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
9	22.7	6.4		6.8					Each beaker fed 1.0 ml
21	22.7	6.2		6.8					YTC suspension
23	22.7	5.8		6.7					Initials: GSL
33	22.7	5.8		6.7					
42	22.7	6.4		6.7					
56	22.7	6.1		6.8					
66	22.6	6.2		6.7					
70	22.9	6.2		6.7					
82	22.5	6.2		6.7					Water changed in all
108	22.4	6.4		6.9					beakers.
109	22.5	6.4		6.9					Time: 0645
110	22.9	6.2		6.7					Initials: GSL
126	22.6	5.4		6.7					
129	22.6	5.6		6.7					
130	22.5	6.4		6.7					
133	22.5	5.2		6.6					
136	22.4	5.6		6.6					Water changed in all
142	22.4	5.9		6.6					beakers.
152	22.3	5.8		6.6					Time: 1715
155	22.5	6.4		6.7					Initials: AJ
161	22.5	6.0		6.7					

*Water quality measurements to be taken.

Day 11 (11/6/04) VB

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
9	22.7								Each beaker fed 1.0 ml
21	22.7								YTC suspension
23	22.7								Initials: VB
33	22.8								
42	22.8								
56	22.8								
66	22.7								
70	22.9								
82	22.8								Water changed in all
108	22.7								beakers.
109	22.7								Time: 0715
110	22.9								Initials: VB
126	22.8								
129	22.7								
130	22.9								
133	22.7								
136	22.7								Water changed in all
142	22.7								beakers. 11-6-04
152	22.6								Time: ~~160~~ 1800
155	22.8								Initials: BBP
161	22.8								

*Water quality measurements to be taken.

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-19 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 12 (11/7 64) bf

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
9	22.8								Each beaker fed 1.0 ml
21	22.7								YTC suspension
23	22.7								Initials: GJL
33	22.7								
42	22.7								
56	22.8								
66	22.8								
70	23.2								
82	22.7								Water changed in all
108	22.8								beakers.
109	22.9								Time: 0715
110	23.1								Initials: GJL
126	22.9								
129	22.9								
130	23.1								
133	22.8								
136	22.9								Water changed in all
142	22.8								beakers.
152	22.8								Time: 1730
155	23.2								Initials: EBP
161	22.9								

*Water quality measurements to be taken.

Day 13 (11/8 64) mm/sf

Beaker No.	Temp.* (deg.C)	DO * (ppm)	Cond. (umhos/cm)	pH *	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
9	22.6	5.8		6.8					Each beaker fed 1.0 ml
21	22.5	5.4		6.6					YTC suspension
23	22.4	6.0		6.6					Initials: mm
33	22.5	5.8		6.6					
42	22.5	5.9		6.6					
56	22.6	5.5		6.6					
66	22.6	5.9		6.6					
70	22.9	6.0		6.6					
82	22.5	6.4		6.6					Water changed in all
108	22.6	5.9		6.8					beakers.
109	22.6	5.9		6.7					Time: 0715
110	22.9	6.2		6.6					Initials: GJL
126	22.7	5.9		6.6					
129	22.7	5.8		6.6					
130	22.9	6.2		6.7					
133	22.9	5.8		6.6					
136	22.7	5.9		6.6					Water changed in all
142	22.6	6.0		6.6					beakers.
152	22.6	6.0		6.6					Time: 1720
155	23.0	6.4		6.8					Initials:
161	22.7	6.0		6.6					

*Water quality measurements to be taken.

ANC08337
BZTO104(e)008337

Test No. 686-19 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 14 (11 19 104) WS

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
9	22.6								Each beaker fed 1.0 ml
21	22.6								YTC suspension
23	22.5								Initials: WSM
33	22.5								
42	22.5								
56	22.6								
66	22.6								
70	22.8								
82	22.5								Water changed in all
108	22.5								beakers.
109	22.6								Time: 0705
110	22.8								Initials: GJ
126	22.7								
129	22.7								
130	22.9								
133	22.7								
136	22.6								Water changed in all
142	22.7								beakers.
152	22.6								Time: 1715
155	22.9								Initials: GBJ
161	22.7								

*Water quality measurements to be taken.

Day 15 (11 20 104) WS/GJ

Beaker No.	Temp.* (deg.C)	DO * (ppm)	Cond.* (umhos/cm)	pH *	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
9	22.7	5.9	160	6.7					Each beaker fed 1.0 ml
21	22.7	5.5	150	6.5					YTC suspension
23	22.6	6.0	150	6.5					Initials: GJ
33	22.7	5.4	155	6.5					
42	22.7	5.8	155	6.5					
56	22.7	5.4	160	6.6					
66	22.8	6.0	150	6.6					
70	23.0	6.3	155	6.5					
82	22.7	6.3	155	6.7					Water changed in all
108	22.7	6.3	245	6.6					beakers.
109	22.8	5.8	165	6.7					Time: 0710
110	22.9	6.0	160	6.6					Initials: WS
126	22.7	5.6	155	6.5					
129	22.8	6.0	155	6.6					
130	22.9	6.1	160	6.6					
133	22.7	5.6	150	6.6					
136	22.8	5.9	150	6.6					Water changed in all
142	22.7	6.2	155	6.7					beakers.
152	22.7	6.0	155	6.5					Time: 1725
155	22.9	6.6	260	6.7					Initials: AJ
161	22.8	6.0	155	6.6					

*Water quality measurements to be taken.

ANC08338
BZTO104(e)008338

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-19 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 16 (11/11/04) BBP

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
9	22.6								Each beaker fed 1.0 ml
21	22.6								YTC suspension
23	22.6								Initials: GSM
33	22.5								
42	22.5								
56	22.5								
66	22.6								
70	22.6								
82	22.6								Water changed in all
108	22.6								beakers.
109	22.6								Time: 0650
110	22.7								Initials: GSL
126	22.9								
129	22.8								
130	22.7								
133	22.8								
136	22.8								Water changed in all
142	22.7								beakers.
152	22.7								Time: 1700
155	22.6								Initials: BBP
161	22.6								

*Water quality measurements to be taken.

Day 17 (11/12/04) CB3/GSM/BBP

Beaker No.	Temp.* (deg.C)	DO * (ppm)	Cond. (umhos/cm)	pH *	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
9	22.4	6.4		6.5					Each beaker fed 1.0 ml
21	22.4	6.6		6.5					YTC suspension
23	22.3	6.6		6.5					Initials: GSL
33	22.3	6.7		6.5					
42	22.3	6.9		6.5					
56	22.5	6.4		6.6					
66	22.5	6.8		6.5					
70	22.8	6.8		6.5					
82	22.4	7.0		6.5					Water changed in all
108	22.5	7.0		6.6					beakers.
109	22.6	6.4		6.6					Time: 0650
110	22.8	6.7		6.6					Initials: CB3
126	22.7	6.5		6.5					
129	22.6	6.6		6.5					
130	22.8	7.0		6.5					
133	22.6	6.4		6.5					
136	22.7	6.6		6.5					Water changed in all
142	22.6	6.8		6.5					beakers.
152	22.5	7.0		6.5					Time: 1730
155	23.0	6.9		6.6					Initials:
161	22.7	6.7		6.5					

*Water quality measurements to be taken.

ANC08339
BZTO104(e)008339

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-19 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 18 (11/13/19) WTM/SJ

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
9	22.4								Each beaker fed 1.0 ml
21	22.4								YTC suspension
23	22.4								Initials: WTM
33	22.4								
42	22.4								
56	22.4								
66	22.5								
70	22.7								
82	22.4								Water changed in all
108	22.4								beakers.
109	22.5								Time: 0745
110	22.5								Initials: WTM
126	22.6								
129	22.5								
130	22.5								
133	22.5								
136	22.7								Water changed in all
142	22.5								beakers.
152	22.5								Time: 1700
155	22.5								Initials:
161	22.6								

*Water quality measurements to be taken.

Day 19 (11/14/19) GJL

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
9	22.8								Each beaker fed 1.0 ml
21	22.7								YTC suspension
23	22.6								Initials: GJL
33	22.6								
42	22.6								
56	22.7								
66	22.7								
70	23.1								
82	22.7								Water changed in all
108	22.7								beakers.
109	22.8								Time: GJL
110	22.9								Initials: 0715
126	22.8								
129	22.8								
130	22.9								
133	22.7								
136	22.8								Water changed in all
142	22.7								beakers.
152	22.7								Time: 1715
155	23.1								Initials:
161	22.8								

*Water quality measurements to be taken.

ANC08340
BZTO104(e)008340

Test No. 686-19 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 20 (11/15/04) GSL

Beaker No.	Temp.* (deg.C)	DO * (ppm)	Cond. (umhos/cm)	pH *	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
9	22.7	4.8		6.6					Each beaker fed 1.0 ml
21	22.7	5.2		6.6					YTC suspension
23	22.6	5.4		6.5					Initials: MPM
33	22.6	5.2		6.6					
42	22.6	5.5		6.6					
56	22.7	5.4		6.6					
66	22.7	5.7		6.6					
70	22.7	5.6		6.6					
82	22.6	5.8		6.6					Water changed in all
108	22.6	5.6		6.7					beakers.
109	22.6	5.0		6.7					Time: 0725
110	22.7 0730	5.6		6.8					Initials: GSL
126	22.7	5.6		6.6					
129	22.7	5.4		6.6					
130	22.9	5.9		6.7					
133	22.9	5.3		6.7					
136	22.7	5.6		6.6					Water changed in all
142	22.6	5.6		6.6					beakers.
152	22.6	5.4		6.6					Time: 1705
155	23.0	5.4		6.7					Initials: GSL
161	22.7	5.8		6.6					

*Water quality measurements to be taken.

Day 21 (11/16/04) JB/GSL

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
9	22.4								Each beaker fed 1.0 ml
21	22.3								YTC suspension
23	22.3								Initials: MPM
33	22.3								
42	22.3								
56	22.3								
66	22.4								
70	22.6								
82	22.4								Water changed in all
108	22.3								beakers.
109	22.3								Time: 0700
110	22.4								Initials: GSL
126	22.5								
129	22.5								
130	22.5								
133	22.4								
136	22.5								Water changed in all
142	22.4								beakers.
152	22.9								Time: 1705
155	22.8								Initials:
161	22.5								

*Water quality measurements to be taken.

ANC08341
BZTO104(e)008341

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-19 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 22 (11/17/04) GM/BBP

Beaker No.	Temp.* (deg.C)	DO * (ppm)	Cond.* (umhos/cm)	pH *	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
9	22.0	5.6	160	6.4					Each beaker fed 1.0 ml
21	22.0	5.8	155	6.4					YTC suspension
23	22.0	5.5	160	6.4					Initials: MTM
33	22.1	5.4	155	6.4					
42	22.0	5.7	160	6.3					
56	22.1	6.0	155	6.4					
66	22.1	6.0	155	6.3					
70	22.3	6.1	155	6.3					
82	22.0	6.1	155	6.3					Water changed in all
108	22.0	5.8	200	6.5					beakers.
109	22.0	5.6	165	6.5					Time: 0725
110	22.2	5.7	165	6.5					Initials: GM
126	22.0	5.8	155	6.4					
129	22.0	5.7	160	6.5					
130	22.1	6.2	160	6.4					
133	22.0	5.6	155	6.3					
136	22.0	6.2	155	6.3					Water changed in all
142	22.1	6.3	155	6.4					beakers.
152	22.1	5.8	155	6.5					Time: 1700
155	22.4	5.6	175	6.5					Initials: BBP
161	22.1	5.9	155	6.4					

*Water quality measurements to be taken.

Day 23 (11/18/04) MM/BBP

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
9	22.7								Each beaker fed 1.0 ml
21	22.7								YTC suspension
23	22.6								Initials: MTM
33	22.7								
42	22.7								
56	22.6								
66	22.8								
70	23.1								
82	22.7								Water changed in all
108	22.7								beakers.
109	22.8								Time: 0730
110	22.8								Initials: MTM
126	23.0								
129	23.9								
130	22.9								
133	23.1								
136	22.9								Water changed in all
142	22.8								beakers.
152	22.7								Time: 1710
155	22.9								Initials: BBP
161	22.9								

*Water quality measurements to be taken.

ANC08342
BZTO104(e)008342

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-19 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 24 (11/19/09) 0705 / UB

Beaker No.	Temp.* (deg.C)	DO * (ppm)	Cond. (umhos/cm)	pH *	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
9	22.5	5.8		6.7					Each beaker fed 1.0 ml
21	22.4	6.3		6.6					YTC suspension
23	22.4	6.2		6.6					Initials:
33	22.4	5.7		6.6					
42	22.4	6.4		6.6					
56	22.4	6.1		6.6					
66	22.5	6.4		6.6					
70	22.6	6.4		6.7					
82	22.4	6.4		6.7					Water changed in all
108	22.5	6.0		6.7					beakers.
109	22.6	5.6		6.7					Time: 0705
110	22.9	6.0		6.6					Initials: UB
126	22.7	6.0		6.6					
129	22.6	6.0		6.6					
130	22.9	7.0		6.7					
133	22.6	5.8		6.6					
136	22.7	6.5		6.7					Water changed in all
142	22.6	6.2		6.6					beakers.
152	22.5	6.1		6.6					Time: 1700
155	22.9	6.2		6.6					Initials:
161	22.7	6.1		6.6					

*Water quality measurements to be taken.

Day 25 (11/20/09 UB

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
9	22.3								Each beaker fed 1.0 ml
21	22.3								YTC suspension
23	22.3								Initials:
33	22.3								
42	22.3								
56	22.6								
66	22.4								
70	22.4								
82	22.3								Water changed in all
108	22.3								beakers.
109	22.4								Time: 0713
110	22.7								Initials: UB
126	22.6								
129	22.6								
130	22.6								
133	22.7								
136	22.5								Water changed in all
142	22.5								beakers.
152	22.4								Time: 1715
155	22.5								Initials: BM
161	22.5								

*Water quality measurements to be taken.

ANC08343
BZTO104(e)008343

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-19 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 26 (11/21/04) GS2

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
9	22.1								Each beaker fed 1.0 ml
21	23.1								YTC suspension
23	22.0								Initials: WTM
33	22.1								
42	22.2								
56	22.2								
66	22.1								
70	22.0								
82	22.0								Water changed in all
108	22.1								beakers.
109	22.3								Time: 0710
110	22.3								Initials: GS2
126	22.2								
129	22.3								
130	22.1								
133	22.3								
136	22.2								Water changed in all
142	22.1								beakers.
152	22.3								Time: 1710
155	22.3								Initials: MHR
161	22.3								

*Water quality measurements to be taken.

Day 27 (11/22 0745 JSG)

Beaker No.	Temp.* (deg.C)	DO * (ppm)	Cond. (umhos/cm)	pH *	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
9	22.5	6.7		6.7					Each beaker fed 1.0 ml
21	22.4	7.1		6.5					YTC suspension
23	22.3	7.0		6.5					Initials: WTM
33	22.3	6.8		6.6					
42	22.3	7.2		6.6					
56	22.3	7.2		6.7					
66	22.4	7.6		6.7					
70	22.7	7.5		6.6					
82	22.3	7.4		6.6					Water changed in all
108	22.4	7.3		6.8					beakers.
109	22.5	6.7		6.7					Time: 0705
110	22.9	7.2		6.8					Initials: GS2
126	22.6	6.8		6.6					
129	22.5	7.1		6.7					
130	22.5	8.2		6.8					
133	22.7	6.9		6.7					
136	22.6	7.8		6.8					Water changed in all
142	22.5	7.2		6.7					beakers.
152	22.4	7.2		6.7					Time: 1700
155	22.4	7.3		6.7					Initials: MHR
161	22.6	7.2		6.7					

*Water quality measurements to be taken.

ANC08344
BZTO104(e)008344

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-19 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 28 (11/23 64) wtm/BBP

Beaker No.	Temp.* (deg.C)	DO * (ppm)	Cond. * (umhos/cm)	pH *	Hardness* (mg/L)	Alkalinity* (mg/L)	S (ppm)	NH3 * (ppm)	Comments
9	22.6	6.8	150	6.6	43	40			Each beaker fed 1.0 ml
21	22.6	7.0	145	6.5	43	40			YTC suspension
23	22.4	7.0	145	6.4	43	40			Initials: —
33	22.4	6.7	150	6.5	51	40			
42	22.3	6.8	150	6.5	43	40			
56	22.4	7.2	150	6.6	51	40			
66	22.5	7.5	150	6.8	51	40			
70	23.0	7.2	150	6.6	43	40			
82	22.5	7.1	150	6.7	43	40			Water changed in all
108	22.6	7.2	165	6.8	34	40			beakers.
109	22.7	6.8	155	6.7	43	40			Time: 0720
110	22.9	7.2	160	6.8	43	40			Initials: BJJ
126	22.8	7.2	150	6.8	51	40			
129	22.7	7.2	150	6.7	51	40			
130	22.7	7.8	150	6.7	43	40			
133	22.7	7.2	150	6.8	51	40			
136	22.5	7.6	150	6.8	34	40			Water changed in all
142	22.6	7.5	150	6.8	43	40			beakers.
152	22.6	7.2	150	6.8	43	40			Time:
155	23.0	7.3	160	6.8	34	40			Initials:
161	23.2	7.3	150	6.7	34	40			

*Water quality measurements to be taken.

Day (/ /)

Beaker No.	Temp.* (deg.C)	DO * (ppm)	Cond. (umhos/cm)	pH *	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
									Each beaker fed 1.0 ml
									YTC suspension
									Initials:
									Water changed in all
									beakers.
									Time:
									Initials:
									Water changed in all
									beakers.
									Time:
									Initials:

*Water quality measurements to be taken.

ANC08345
BZTO104(e)008345

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-19 Client Windward Environmental Investigator _____

DAY 28 TEST TERMINATION SHEET

Beaker No.	Number of survivors	Initials
1	6	CB
2	10	GJ
3	2	CB
4	3	GJ
5	9	CB
6	4	GJ
7	10	GJ
8	9	CB
9	10	CB
10	9	GJ
11	10	GJ
12	7	CB
13	10	GJ
14	10	CB
15	8	GJ
16	10	CB
17	10	GJ
18	10	CB
19	9	GJ
20	10	CB
21	1	CB GJ
22	7	GJ
23	8	CB
24	10	CB
25	8	GJ
26	9	CB
27	1	GJ
28	10	GJ
29	9	CB
30	10	GJ
31	10	GJ
32	10	CB
33	9	GJ
34	10	GJ
35	10	CB
36	10	GJ
37	10	CB
38	10	CB
39	10	GJ
40	10	GJ
41	10	CB
42	10	GJ
43	10	CB
44	10	GJ
45	10	GJ

Beaker No.	Number of survivors	Initials
46	9	GJ
47	8	CB
48	8	[illegible]
49	9	GJ
50	9	CB
51	9	GJ
52	9	CB
53	8	[illegible]
54	10	GJ
55	9	CB
56	10	[illegible]
57	10	GJ
58	9	CB
59	10	GJ
60	9	[illegible]
61	10	CB
62	4	GJ
63	9	CB
64	10	[illegible]
65	10	GJ
66	10	GJ
67	10	[illegible]
68	8	CB
69	10	GJ
70	11	[illegible]
71	10	GJ
72	10	CB
73	10	[illegible]
74	8	GJ
75	9	[illegible]
76	10	CB
77	1	GJ
78	10	GJ
79	10	[illegible]
80	10	CB
81	4	GJ
82	10	[illegible]
83	8	GJ
84	10	[illegible]
85	9	[illegible]
86	7	GJ
87	10	GJ
88	10	[illegible]
89	8	GJ
90	10	CB

ANC08346
BZTO104(e)008346

Test No. 686-19 Client Windward Environmental Investigator _____

DAY 28 TEST TERMINATION SHEET

Beaker No.	Number of survivors	Initials
91	5	GOK
92	5	UB
93	9	GJ1
94	10	UB
95	9	GOK
96	10	GJ1
97	8	UB
98	9	UB
99	GJ1 ~~9~~ 7 11-23	GJ1
100	9	GOK
101	10	GJ1
102	10	UB
103	4	GOK
104	4	GJ1
105	10	UB
106	10	GJ1
107	10	UB
108	3	GOK
109	10	GJ1
110	10	GJ1
111	9	UB
112	2	GOK
113	10	GJ1
114	9	UB
115	5	GJ1
116	10	UB
117	10	GOK
118	10	GJ1
119	9	UB
120	9	GOK
121	9	GJ1
122	10	UB
123	1	GJ1
124	5	GOK
125	10	UB
126	10	UB
127	10	GJ1
128	10	GOK
129	10	UB
130	9	GJ1
131	10	UB
132	10	UB
133	9	UB
134	10	GJ1
135	10	GOK

Beaker No.	Number of survivors	Initials
136	10	UB
137	10	GJ1
138	10	GOK
139	10	UB
140	9	GJ1
141	5	GOK
142	10	UB
143	4	GJ1
144	10	GJ1
145	7	UB
146	10	GOK
147	10	GJ1
148	10	UB
149	10	GJ1
150	10	UB
151	10	GOK
152	10	GJ1
153	9	UB
154	2	GJ1
155	GJ1 ~~5~~ 6	GOK
156	9	GJ1
157	3	UB
158	8	GOK
159	10	GJ1
160	10	GOK
161	10	GJ1
162	10	GOK
163	10	GJ1
164	10	GJ1
165	2	GOK
166	10	UB
167	10	GJ1
168	10	UB

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c
HYALELLA AZTECA 14-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-19 Client Windward Environmental Investigator

ZERO-TIME WEIGHING DATA SHEET

Tare: Date 10-21-04 Oven temp (C.) 63 Drying time (hr.) 18 Initials JRF
Standard Weights: 10 mg: 10.004 100mg: 10.015

Final: Date 10-27-04 Oven temp (C.) 64 Drying time (hr.) 20 Initials JRF
Standard Weights: 10 mg: 10.006 100mg: 100.015

Equip. used: Oven: Blue M #1 Balance: Sartorius M3P

(Dry overnight at 60-90 degrees C)

Pan #	Tare wt. (mg)	Total wt. (mg)	#weighed	Comments
1	31.923	32.537	20	
2	27.486	28.080	20	
3	30.337	31.020	20	
4	29.300	29.983	20	
5	28.938 JF	29.530	20	

ANC08348
BZTO104(e)008348

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-19 Client Windward Environmental Investigator

WEIGHING DATA SHEET

Tare: Date 10-28-04 Oven temp (C.) 62 Drying time (hr.) 22 Initials JRF
Standard Weights: 10 mg: 10.005 100mg: 100.018

Final #1: Date 11-24-04 Oven temp (C.) 71 Drying time (hr.) 20 Initials JRF
Standard Weights: 10 mg: 10.004 100mg: 100.015

Final #2: Date 11-29-04 Oven temp (C.) 71 Drying time (hr.) 24 Initials JRF
Standard Weights: 10 mg: 10.006 100mg: 100.017

Equip. used: Oven Blue M #1 Balance Sartorius M3P
(Dry overnight at 60-90 degrees C)

Bkr. #	Pan #	Tare wt. (mg)	Total wt. (mg) 1	Total wt. (mg) 2	no. weighed	put into pans-initials	Comments
1	1	28.351	30.799	30.504	6	BBP	
2	2	27.468	30.211	30.170	10	BBP	
3	3	31.418	32.442	32.430	2	BBP	
4	4	28.769	29.940	29.932	3	BBP	
5	5	30.900	34.094	34.048	9	BBP	
6	6	27.793	29.406	29.394	4	BBP	
7	7	27.439	29.495	29.466	10	BBP	
8	8	27.464	29.676	29.648	9	BBP	
9	9	28.753	31.748	31.695	10	BBP	
10	10	28.197	30.802	30.756	9	BBP	
11	11	28.845	30.173	30.148	10	BBP	
12	12	30.237	32.748	32.679	7	BBP	
13	13	27.604	31.615	31.536	10	BBP	
14	14	28.836	32.716	32.630	10	BBP	
15	15	27.517	31.009	30.964	8	BBP	
16	16	27.449	31.420	31.361	10	BBP	
17	17	27.728	31.688	31.648	10	BBP	
18	18	27.289	30.997	30.948	10	BBP	
19	19	27.708	30.854	30.803	9	BBP	
20	20	28.982	32.394	32.343	9	BBP	
21	21	27.626	28.283	28.270	1	BBP	
22	22	27.553	30.568	30.524	7	BBP	
23	23	26.716	29.240	29.201	8	BBP	
24	24	28.469	31.207	31.158	10	BBP	
25	25	28.005	31.852	31.794	8	BBP	
26	26	24.787	27.164	27.127	9	BBP	
27	27	29.358	29.477	29.454	1	BBP	
28	28	28.833	32.543	32.470	10	BBP	
29	29	29.445	32.008	31.962	9	BBP	
30	30	28.190	32.234	32.161	10		
31	31	27.958	31.763	31.858	10		
32	32	26.619	29.649	29.595	10		
33	33	28.156	31.767	31.703	9		

ANC08349
BZTO104(e)008349

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-19 Client Windward Environmental Investigator

WEIGHING DATA SHEET

See page _____ for information on drying times and temperatures, standard weights,etc.

Bkr. #	Pan #	Tare wt. (mg)	Total wt. (mg) 1	Total wt. (mg) 2	no. weighed	put into pans-initials	Comments
34	34	28.924	33.154	33.082	10	AM	
35	35	29.470	30.834	30.798	10	AM	
36	36	30.454	34.204	34.151	10	AM	
37	37	29.851	33.770	33.703	10	AM	
38	38	28.442	32.399	32.327	10	AM	
39	39	29.170	33.563	33.489	10	AM	
40	40	28.246	30.008	29.957	10	AM	
41	41	29.402	33.533	33.466	10	AM	
42	42	27.184	31.717	31.664	10	AM	
43	43	27.799	31.298	31.252	10	AM	
44	44	29.569	33.880	33.846	10	AM	
45	45	29.220	32.826	32.782	10	AM	
46	46	26.182	28.773	28.749	9	AM	
47	47	27.710	31.074	31.012	8	AM	
48	48	27.968	31.330	31.279	8	AM	
49	49	29.266	32.923	32.868	9	AM	
50	50	31.256	34.554	34.472	9	AM	
51	51	27.100	30.027	29.983	9	AM	
52	52	29.474	32.747	32.693	9	AM	
53	53	28.360	31.693	31.603	8	AM	
54	54	28.517	31.076	30.982	10	AM	
55	55	33.703	36.627	36.747	9	AM	
56	56	30.157	33.929	33.824	10	AM	
57	57	29.218	31.443	31.364	10	AM	
58	58	29.777	33.207	33.095	9	AM	
59	59	29.554	32.387	32.300	10	AM	
60	60	26.732	29.668	29.604	9	AM	
61	61	28.080	31.332	31.254	10	AM	
62	62	27.861	30.386	30.305	4	AM	
63	63	29.640	34.252	34.163	9	AM	
64	64	27.390	29.723	29.658	10	AM	
65	65	27.826	30.720	30.643	10	AM	
66	66	28.796	30.247	30.200	10	AM	
67	67	28.420	32.358	32.248	10	AM	
68	68	28.108	31.422	31.338	8	AM	
69	69	26.894	30.122	30.038	10	AM	
70	70	28.837	31.653	31.579	11	AM	
71	71	31.392	34.925	34.838	10	AM	
72	72	27.903	30.781	30.704	10	AM	
73	73	29.485	32.979	32.935	10	BBP	
74	74	31.123	34.528	34.471	8	BBP	
75	75	28.762	32.341	32.298	9	BBP	
76	76	31.710	34.563	34.536	10	BBP	

ANC08350
BZTO104(e)008350

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-19 Client Windward Environmental Investigator

WEIGHING DATA SHEET

See page _____ for information on drying times and temperatures, standard weights,etc.

Bkr. #	Pan #	Tare wt. (mg)	Total wt. (mg) 1	Total wt. (mg) 2	no. weighed	put into pans-initials	Comments
77	77	27.242	27.691	27.707	1	BBP	
78	78	27.199	30.440	30.418	10	BBP	
79	79	27.945	32.180	32.156	10	BBP	
80	80	27.078	29.253	29.254	10	BBP	
81	81	30.521	32.144	32.150	4	BBP	
82	82	29.996	33.548	33.504	10	BBP	
83	83	27.045	29.465	29.459	8	BBP	
84	84	28.920	33.709	33.661	10	BBP	
85	85	28.255	32.044	32.018	9	BBP	
86	86	27.723	29.456	29.453	7	BBP	
87	87	28.504	31.945	31.914	10	BBP	
88	88	27.808	31.954	31.940	10	BBP	
89	89	28.724	31.826	31.823	8	BBP	
90	90	28.146	31.457	31.442	10	BBP	
91	91	27.377	29.138	29.139	5	BBP	
92	92	29.105	31.810	31.834	5	BBP	
93	93	26.833	31.053	30.782	9	BBP	
94	94	27.009	31.249	30.983	10	BBP	
95	95	29.898	32.954	32.936	9	BBP	
96	96	27.715	31.535	31.521	10	BBP	
97	97	29.503	32.948	32.938	8	BBP	
98	98	27.685	30.780	30.774	9	BBP	
99	99	30.219	32.558	32.557	7	BBP	
100	100	28.110	30.969	30.950	9	BBP	
101	101	30.236	33.031	33.020	10	BBP	
102	102	30.262	33.723	33.698	10	BBP	
103	103	29.706	31.743	31.722	4	BBP	
104	104	29.960	32.000	32.002	4	BBP	
105	105	27.983	31.088	31.077	10	BBP	
106	106	29.703	33.078	32.816	10	BBP	
107	107	29.634	33.517	33.250	10	BBP	
108	108	30.611	32.306	32.320	3	BBP	
109	109	27.723	31.238	31.155	10	BBP	
110	110	27.144	31.412	31.298	10	BBP	
111	111	28.886	32.744	32.644	9	BBP	
112	112	28.886	29.925	29.905	2	BBP	
113	113	27.508	29.983	29.892	10	BBP	
114	114	30.017	33.803	33.715	9	BBP	
115	115	28.120	30.156	30.113	5	BBP	
116	116	28.513	33.265	33.150	10	BBP	
117	117	29.262	32.824	32.744	10	BBP	
118	118	27.430	30.320	30.258	10	BBP	
119	119	28.768	31.689	31.613	8	BBP	

ANC08351
BZTO104(e)008351

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-19 Client Windward Environmental Investigator

WEIGHING DATA SHEET

See page _____ for information on drying times and temperatures, standard weights,etc.

Bkr. #	Pan #	Tare wt. (mg)	Total wt. (mg) 1	Total wt. (mg) 2	no. weighed	put into pans-initials	Comments
120	120	27.963	31.814	31.675	9	BBP	
121	121	27.335	30.578	30.491	9	BBP	
122	122	28.009	32.794	32.632	10	BBP	
123	123	27.640	28.091	28.098	1	BBP	
124	124	28.191	30.720	30.644	5	BBP	
125	125	27.830	32.239	32.125	10	BBP	
126	126	27.364	31.094	31.001	10	BBP	
127	127	30.374	34.604	34.476	10	BBP	
128	128	28.958	33.970	33.822	10	BBP	
129	129	29.829	33.895	33.748	10	BBP	
130	130	27.068	28.973	28.928	9	BBP	
131	131	28.324	31.389	31.279	10	BBP	
132	132	28.976	31.375	31.273	10	BBP	
133	133	26.582	29.812	29.712	9	BBP	
134	134	29.876	32.462	32.390	10	BBP	
135	135	28.728	33.159	33.024	10	BBP	
136	136	28.981	31.374	31.285	9	BBP	
137	137	26.885	31.693	31.525	10	BBP	
138	138	29.047	32.525	32.424	10	BBP	
139	139	30.786	34.022	33.900	10	BBP	
140	140	31.067	35.474	35.334	9	BBP	
141	141	30.354	32.909	32.830	5	BBP	
142	142	27.832	32.800	32.660	10	BBP	
143	143	27.788	29.440	29.360	4	BBP	
144	144	27.464	30.723	30.641	10	BBP	
145	145	29.382	32.945	32.853	7	BBP	
146	146	28.376	33.431	33.332	10	BBP	
147	147	27.730	30.960	30.908	9	BBP	
148	148	27.714	31.806	31.708	10	BBP	
149	149	29.713	33.526	33.435	10	BBP	
150	150	32.055	35.761	35.683	10	BBP	
151	151	28.206	31.008	30.962	10	BBP	
152	152	27.384	29.809	29.739	9	BBP	
153	153	28.348	31.447	31.371	9	BBP	
154	154	28.153	28.707	28.690	2	BBP	
155	155	29.045	31.671	31.605	6	BBP	
156	156	28.305	31.670	31.591	9	BBP	
157	157	28.857	30.251	30.221	3	BBP	
158	158	28.616	31.609	31.571	8	BBP	
159	159	26.454	29.663	29.622	10	BBP	
160	160	26.711	31.220	31.147	10	BBP	
161	161	28.758	31.890	31.822	10	BBP	
162	162	27.306	30.087	30.017	10	BBP	

ANC08352
BZTO104(e)008352

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-19 Client Windward Environmental Investigator

WEIGHING DATA SHEET

See page _____ for information on drying times and temperatures, standard weights,etc.

Bkr. #	Pan #	Tare wt. (mg)	Total wt. (mg) 1	Total wt. (mg) 2	no. weighed	put into pans-initials	Comments
163	163	27.702	31.385	31.337	10	BBP	
164	164	27.316	30.988	30.912	10	BBP	
165	165	29.473	30.542	30.515	2	BBP	
166	166	27.463	31.634	31.533	10	BBP	
167	167	27.682	31.943	31.873	10	BBP	
168	168	29.309	31.935	31.861	10	BBP	

ANC08353
BZTO104(e)008353

Chesapeake Cultures

P.O. Box 507 Hayes, VA 23072 (804) 693-4046 (804)694-4704 fax
www.c-cultures.com
e-mail growfish@c-cultures.com

NAS

Shipment Information

Species Hyalella azteca Date 10/21/04

Age ~2-3d; 1.0-1.3mm P.O. No. Verbal

Quanitity 2400+ Invoice No. 4861

Temperature 23°C Salinity — pH 7.96

Notes Thank you!

Rec'd 10-22a
KB

Biologist

* *Please inspect shipment and report any problem immediately* *

ANC08354
BZTO104(e)008354

Test Number: P686-19

Freshwater Sediment Test
28-day Hyalella azteca
Randomization Key

10/24/04

	NAS	CLIENT		
BKR	SMPL	DESCRIP	REPL	
166	9534F	Control	1	
114	9534F	Control	2	
146	9534F	Control	3	
88	9534F	Control	4	
128	9534F	Control	5	
137	9534F	Control	6	
13	9534F	Control	7	
110	9534F	Control	8	wq replicate
115	9542F	LW2-G210	1	
4	9542F	LW2-G210	2	
1	9542F	LW2-G210	3	
104	9542F	LW2-G210	4	
27	9542F	LW2-G210	5	
143	9542F	LW2-G210	6	
123	9542F	LW2-G210	7	
21	9542F	LW2-G210	8	wq replicate
68	9543F	LW2-G213	1	
52	9543F	LW2-G213	2	
11	9543F	LW2-G213	3	
26	9543F	LW2-G213	4	
16	9543F	LW2-G213	5	
50	9543F	LW2-G213	6	
156	9543F	LW2-G213	7	
161	9543F	LW2-G213	8	wq replicate
113	9544F	LW2-G200	1	
102	9544F	LW2-G200	2	
162	9544F	LW2-G200	3	
149	9544F	LW2-G200	4	
29	9544F	LW2-G200	5	
72	9544F	LW2-G200	6	
118	9544F	LW2-G200	7	
23	9544F	LW2-G200	8	wq replicate
97	9545F	LW2-G093	1	
37	9545F	LW2-G093	2	
98	9545F	LW2-G093	3	
45	9545F	LW2-G093	4	
76	9545F	LW2-G093	5	
55	9545F	LW2-G093	6	
83	9545F	LW2-G093	7	
126	9545F	LW2-G093	8	wq replicate
69	9546F	LW2-G206	1	
78	9546F	LW2-G206	2	
71	9546F	LW2-G206	3	
148	9546F	LW2-G206	4	
94	9546F	LW2-G206	5	
96	9546F	LW2-G206	6	
7	9546F	LW2-G206	7	
66	9546F	LW2-G206	8	wq replicate

ANC08355
BZTO104(e)008355

28-day Hyalella azteca
Randomization Key

BKR	NAS SMPL	CLIENT DESCRIP	REPL	
25	9547F	LW2-G362-1	1	
90	9547F	LW2-G362-1	2	
101	9547F	LW2-G362-1	3	
74	9547F	LW2-G362-1	4	
95	9547F	LW2-G362-1	5	
164	9547F	LW2-G362-1	6	
48	9547F	LW2-G362-1	7	
109	9547F	LW2-G362-1	8	wq replicate
125	9548F	LW2-G413	1	
75	9548F	LW2-G413	2	
168	9548F	LW2-G413	3	
18	9548F	LW2-G413	4	
167	9548F	LW2-G413	5	
20	9548F	LW2-G413	6	
144	9548F	LW2-G413	7	
142	9548F	LW2-G413	8	wq replicate
107	9549F	LW2-G393	1	
30	9549F	LW2-G393	2	
73	9549F	LW2-G393	3	
47	9549F	LW2-G393	4	
65	9549F	LW2-G393	5	
163	9549F	LW2-G393	6	
121	9549F	LW2-G393	7	
33	9549F	LW2-G393	8	wq replicate
46	9550F	LW2-G417	1	
135	9550F	LW2-G417	2	
24	9550F	LW2-G417	3	
22	9550F	LW2-G417	4	
34	9550F	LW2-G417	5	
122	9550F	LW2-G417	6	
147	9550F	LW2-G417	7	
136	9550F	LW2-G417	8	wq replicate
119	9551F	LW2-G415	1	
61	9551F	LW2-G415	2	
89	9551F	LW2-G415	3	
87	9551F	LW2-G415	4	
12	9551F	LW2-G415	5	
67	9551F	LW2-G415	6	
105	9551F	LW2-G415	7	
133	9551F	LW2-G415	8	wq replicate
31	9552F	LW2-G380	1	
15	9552F	LW2-G380	2	
140	9552F	LW2-G380	3	
160	9552F	LW2-G380	4	
49	9552F	LW2-G380	5	
145	9552F	LW2-G380	6	
5	9552F	LW2-G380	7	
42	9552F	LW2-G380	8	wq replicate

ANC08356
BZTO104(e)008356

BKR	NAS SMPL	CLIENT DESCRIP	REPL	
84	9553F	LW2-G430	1	
51	9553F	LW2-G430	2	
93	9553F	LW2-G430	3	
63	9553F	LW2-G430	4	
41	9553F	LW2-G430	5	
44	9553F	LW2-G430	6	
39	9553F	LW2-G430	7	
82	9553F	LW2-G430	8	wq replicate
60	9554F	LW2-G437	1	
138	9554F	LW2-G437	2	
150	9554F	LW2-G437	3	
111	9554F	LW2-G437	4	
19	9554F	LW2-G437	5	
106	9554F	LW2-G437	6	
53	9554F	LW2-G437	7	
129	9554F	LW2-G437	8	wq replicate
58	9555F	LW2-G403	1	
85	9555F	LW2-G403	2	
43	9555F	LW2-G403	3	
120	9555F	LW2-G403	4	
131	9555F	LW2-G403	5	
36	9555F	LW2-G403	6	
14	9555F	LW2-G403	7	
152	9555F	LW2-G403	8	wq replicate
132	9556F	LW2-G401	1	
80	9556F	LW2-G401	2	
40	9556F	LW2-G401	3	
158	9556F	LW2-G401	4	
134	9556F	LW2-G401	5	
153	9556F	LW2-G401	6	
139	9556F	LW2-G401	7	
56	9556F	LW2-G401	8	wq replicate
17	9557F	LW2-G377	1	
2	9557F	LW2-G377	2	
86	9557F	LW2-G377	3	
38	9557F	LW2-G377	4	
127	9557F	LW2-G377	5	
57	9557F	LW2-G377	6	
32	9557F	LW2-G377	7	
130	9557F	LW2-G377	8	wq replicate
92	9558F	LW2-G371	1	
141	9558F	LW2-G371	2	
62	9558F	LW2-G371	3	
124	9558F	LW2-G371	4	
165	9558F	LW2-G371	5	
157	9558F	LW2-G371	6	
103	9558F	LW2-G371	7	
108	9558F	LW2-G371	8	wq replicate

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28-day Hyalella azteca
Randomization Key

BKR	NAS SMPL	CLIENT DESCRIP	REPL	
81	9559F	LW2-G366	1	
91	9559F	LW2-G366	2	
77	9559F	LW2-G366	3	
154	9559F	LW2-G366	4	
3	9559F	LW2-G366	5	
112	9559F	LW2-G366	6	
6	9559F	LW2-G366	7	
155	9559F	LW2-G366	8	wq replicate
35	9560F	LW2-G351	1	
100	9560F	LW2-G351	2	
159	9560F	LW2-G351	3	
28	9560F	LW2-G351	4	
54	9560F	LW2-G351	5	
64	9560F	LW2-G351	6	
59	9560F	LW2-G351	7	
9	9560F	LW2-G351	8	wq replicate
117	9561F	LW2-G282	1	
8	9561F	LW2-G282	2	
151	9561F	LW2-G282	3	
116	9561F	LW2-G282	4	
99	9561F	LW2-G282	5	
10	9561F	LW2-G282	6	
79	9561F	LW2-G282	7	
70	9561F	LW2-G282	8	wq replicate

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TEST DATA ANALYSIS RECORDS

Endpoints Data Entry and Calculations File

BKR=beaker number
INIT=initial number
SURV=number survivors
MORT=number dead=INIT-SURV
PSURV=%survival=100(SURV/INIT)
PMORT=%mortality=100(MORT/INIT)

TARE WT= ashed weight of pan used for that replicate at test termination (mg), or dry weight of pan if ash-free dry weight is not an endpoint
WT COUNT= number of test organisms weighed at test end
DRY WT= TARE WT + dry weight of test organisms recovered at test termination (mg)
TWT=total biomass=DRY WT-TARE WT
WT=average individual biomass=TWT/WT COUNT

Data entry verified against laboratory bench sheets - MSR 12/13/04 mr

INITIAL WEIGHT

pan #	tare wt (mg)	final wt (mg)	wt count	avg. wt/ organism
1	31.923	32.537	20	0.031
2	27.486	28.080	20	0.030
3	30.337	31.020	20	0.034
4	29.300	29.983	20	0.034
5	28.938	29.530	20	0.030

INDEX	BKR	NAS SMPL	CLIENT DESCRIP	REP		INIT	SURV	MORT	PSURV	PMORT	TARE WT (mg)	WT COUNT	DRY WT (mg)	TWT (mg)	WT (mg)		SURV	MORT	PSURV	PMORT	WT
1	166	9534F	Control	1		10	10	0	100.0	0.0	27.463	10	31.533	4.07	0.41						
2	114	9534F	Control	2		10	9	1	90.0	10.0	30.017	9	33.715	3.70	0.41						
3	146	9534F	Control	3		10	10	0	100.0	0.0	28.376	10	33.332	4.96	0.50						
4	88	9534F	Control	4		10	10	0	100.0	0.0	27.808	10	31.940	4.13	0.41						
5	128	9534F	Control	5		10	10	0	100.0	0.0	28.958	10	33.822	4.86	0.49	Mean	9.9	0.1	98.8	1.3	0.44
6	137	9534F	Control	6		10	10	0	100.0	0.0	26.885	10	31.525	4.64	0.46	SD	0.4	0.4	3.5	3.5	0.04
7	13	9534F	Control	7		10	10	0	100.0	0.0	27.604	10	31.538	3.93	0.39	n	8	8	8	8	8
8	110	9534F	Control	8	wq replicate	10	10	0	100.0	0.0	27.144	10	31.298	4.15	0.42						
9	115	9542F	LW2-G210	1		10	5	5	50.0	50.0	28.120	5	30.113	1.99	0.40						
10	4	9542F	LW2-G210	2		10	3	7	30.0	70.0	28.769	3	29.932	1.16	0.39						
11	1	9542F	LW2-G210	3		10	6	4	60.0	40.0	28.351	6	30.504	2.15	0.36						
12	104	9542F	LW2-G210	4		10	4	6	40.0	60.0	29.960	4	32.002	2.04	0.51						
13	27	9542F	LW2-G210	5		10	1	9	10.0	90.0	29.358	1	29.454	0.10	0.10	Mean	3.1	6.9	31.3	68.8	0.41
14	143	9542F	LW2-G210	6		10	4	6	40.0	60.0	27.788	4	29.380	1.59	0.40	SD	2.0	2.0	19.6	19.6	0.16
15	123	9542F	LW2-G210	7		10	1	9	10.0	90.0	27.640	1	28.098	0.46	0.46	n	8	8	8	8	8
16	21	9542F	LW2-G210	8	wq replicate	10	1	9	10.0	90.0	27.626	1	28.270	0.64	0.64						
17	68	9543F	LW2-G213	1		10	8	2	80.0	20.0	28.108	8	31.338	3.23	0.40						
18	52	9543F	LW2-G213	2		10	9	1	90.0	10.0	29.474	9	32.693	3.22	0.36						
19	11	9543F	LW2-G213	3		10	10	0	100.0	0.0	28.845	10	30.145	1.30	0.13						
20	26	9543F	LW2-G213	4		10	9	1	90.0	10.0	24.787	9	27.127	2.34	0.26						
21	16	9543F	LW2-G213	5		10	10	0	100.0	0.0	27.419	10	31.361	3.94	0.39	Mean	9.3	0.8	92.5	7.5	0.32
22	50	9543F	LW2-G213	6		10	9	1	90.0	10.0	31.256	9	34.472	3.22	0.36	SD	0.7	0.7	7.1	7.1	0.09
23	156	9543F	LW2-G213	7		10	9	1	90.0	10.0	28.305	9	31.591	3.29	0.37	n	8	8	8	8	8
24	161	9543F	LW2-G213	8	wq replicate	10	10	0	100.0	0.0	28.758	10	31.822	3.06	0.31						
25	113	9544F	LW2-G200	1		10	10	0	100.0	0.0	27.508	10	29.892	2.38	0.24						
26	102	9544F	LW2-G200	2		10	10	0	100.0	0.0	30.262	10	33.698	3.44	0.34						
27	162	9544F	LW2-G200	3		10	10	0	100.0	0.0	27.306	10	30.017	2.71	0.27						
28	149	9544F	LW2-G200	4		10	10	0	100.0	0.0	29.713	10	33.435	3.72	0.37						
29	29	9544F	LW2-G200	5		10	9	1	90.0	10.0	29.445	9	31.962	2.52	0.28	Mean	9.6	0.4	96.3	3.8	0.30
30	72	9544F	LW2-G200	6		10	10	0	100.0	0.0	27.903	10	30.704	2.80	0.28	SD	0.7	0.7	7.4	7.4	0.04
31	118	9544F	LW2-G200	7		10	10	0	100.0	0.0	27.430	10	30.258	2.83	0.28	n	8	8	8	8	8
32	23	9544F	LW2-G200	8	wq replicate	10	8	2	80.0	20.0	26.716	8	29.201	2.49	0.31						

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INDEX	BKR	NAS SMPL	CLIENT DESCRIP	REPL		INIT	SURV	MORT	PSURV	PMORT	TARE WT (mg)	WT COUNT	DRY WT (mg)	TWT (mg)	WT (mg)		SURV	MORT	PSURV	PMORT	WT
33	97	9545F	LW2-G093	1		10	8	2	80.0	20.0	29.503	8	32.938	3.44	0.43						
34	37	9545F	LW2-G093	2		10	10	0	100.0	0.0	29.851	10	33.703	3.85	0.39						
35	98	9545F	LW2-G093	3		10	9	1	90.0	10.0	27.685	9	30.774	3.09	0.34						
36	45	9545F	LW2-G093	4		10	10	0	100.0	0.0	29.220	10	32.782	3.56	0.36						
37	76	9545F	LW2-G093	5		10	10	0	100.0	0.0	31.710	10	34.536	2.83	0.28	Mean	9.3	0.8	92.5	7.5	0.35
38	55	9545F	LW2-G093	6		10	9	1	90.0	10.0	33.703	9	36.747	3.04	0.34	SD	0.9	0.9	8.9	8.9	0.05
39	83	9545F	LW2-G093	7		10	8	2	80.0	20.0	27.045	8	29.459	2.41	0.30	n	8	8	8	8	8
40	126	9545F	LW2-G093	8	wq replicate	10	10	0	100.0	0.0	27.364	10	31.001	3.64	0.36						
41	69	9546F	LW2-G206	1		10	10	0	100.0	0.0	26.894	10	30.038	3.14	0.31						
42	78	9546F	LW2-G206	2		10	10	0	100.0	0.0	27.199	10	30.418	3.22	0.32						
43	71	9546F	LW2-G206	3		10	10	0	100.0	0.0	31.392	10	34.838	3.45	0.34						
44	148	9546F	LW2-G206	4		10	10	0	100.0	0.0	27.714	10	31.708	3.99	0.40						
45	94	9546F	LW2-G206	5		10	10	0	100.0	0.0	27.009	10	30.983	3.97	0.40	Mean	10.0	0.0	100.0	0.0	0.31
46	96	9546F	LW2-G206	6		10	10	0	100.0	0.0	27.715	10	31.521	3.81	0.38	SD	0.0	0.0	0.0	0.0	0.09
47	7	9546F	LW2-G206	7		10	10	0	100.0	0.0	27.439	10	29.466	2.03	0.20	n	8	8	8	8	8
48	66	9546F	LW2-G206	8	wq replicate	10	10	0	100.0	0.0	28.796	10	30.200	1.40	0.14						
49	25	9547F	LW2-G362-1	1		10	8	2	80.0	20.0	28.005	8	31.794	3.79	0.47						
50	90	9547F	LW2-G362-1	2		10	10	0	100.0	0.0	28.146	10	31.442	3.30	0.33						
51	101	9547F	LW2-G362-1	3		10	10	0	100.0	0.0	30.236	10	33.020	2.78	0.28						
52	74	9547F	LW2-G362-1	4		10	8	2	80.0	20.0	31.123	8	34.471	3.35	0.42						
53	95	9547F	LW2-G362-1	5		10	9	1	90.0	10.0	29.898	9	32.936	3.04	0.34	Mean	9.1	0.9	91.3	8.8	0.37
54	164	9547F	LW2-G362-1	6		10	10	0	100.0	0.0	27.316	10	30.912	3.60	0.36	SD	1.0	1.0	9.9	9.9	0.06
55	48	9547F	LW2-G362-1	7		10	8	2	80.0	20.0	27.968	8	31.279	3.31	0.41	n	8	8	8	8	8
56	109	9547F	LW2-G362-1	8	wq replicate	10	10	0	100.0	0.0	27.723	10	31.155	3.43	0.34						
57	125	9548F	LW2-G413	1		10	10	0	100.0	0.0	27.830	10	32.125	4.30	0.43						
58	75	9548F	LW2-G413	2		10	9	1	90.0	10.0	28.762	9	32.298	3.54	0.39						
59	168	9548F	LW2-G413	3		10	10	0	100.0	0.0	29.309	10	31.861	2.55	0.26						
60	18	9548F	LW2-G413	4		10	10	0	100.0	0.0	27.289	10	30.948	3.66	0.37						
61	167	9548F	LW2-G413	5		10	10	0	100.0	0.0	27.682	10	31.873	4.19	0.42	Mean	9.9	0.1	98.8	1.3	0.38
62	20	9548F	LW2-G413	6		10	10	0	100.0	0.0	28.982	9	32.343	3.36	0.37	SD	0.4	0.4	3.5	3.5	0.07
63	144	9548F	LW2-G413	7		10	10	0	100.0	0.0	27.464	10	30.641	3.18	0.32	n	8	8	8	8	8
64	142	9548F	LW2-G413	8	wq replicate	10	10	0	100.0	0.0	27.832	10	32.660	4.83	0.48						
65	107	9549F	LW2-G393	1		10	10	0	100.0	0.0	29.634	10	33.250	3.62	0.36						
66	30	9549F	LW2-G393	2		10	10	0	100.0	0.0	28.190	10	32.161	3.97	0.40						
67	73	9549F	LW2-G393	3		10	10	0	100.0	0.0	29.485	10	32.935	3.45	0.35						
68	47	9549F	LW2-G393	4		10	8	2	80.0	20.0	27.710	8	31.012	3.30	0.41						
69	65	9549F	LW2-G393	5		10	10	0	100.0	0.0	27.826	10	30.643	2.82	0.28	Mean	9.5	0.5	95.0	5.0	0.36
70	163	9549F	LW2-G393	6		10	10	0	100.0	0.0	27.702	10	31.337	3.64	0.36	SD	0.8	0.8	7.6	7.6	0.04
71	121	9549F	LW2-G393	7		10	9	1	90.0	10.0	27.335	9	30.491	3.16	0.35	n	8	8	8	8	8
72	33	9549F	LW2-G393	8	wq replicate	10	9	1	90.0	10.0	28.156	9	31.703	3.55	0.39						

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INDEX	BKR	NAS SMPL	CLIENT DESCRIP	REPL		INIT	SURV	MORT	PSURV	PMORT	TARE WT (mg)	WT COUNT	DRY WT (mg)	TWT (mg)	WT (mg)		SURV	MORT	PSURV	PMORT	WT
73	46	9550F	LW2-G417	1		10	9	1	90.0	10.0	26.182	9	28.749	2.57	0.29						
74	135	9550F	LW2-G417	2		10	10	0	100.0	0.0	28.728	10	33.024	4.30	0.43						
75	24	9550F	LW2-G417	3		10	10	0	100.0	0.0	28.469	10	31.158	2.69	0.27						
76	22	9550F	LW2-G417	4		10	7	3	70.0	30.0	27.553	7	30.524	2.97	0.42						
77	34	9550F	LW2-G417	5		10	10	0	100.0	0.0	28.924	10	33.082	4.16	0.42	Mean	9.5	0.5	95.0	5.0	0.36
78	122	9550F	LW2-G417	6		10	10	0	100.0	0.0	28.009	10	32.632	4.62	0.46	SD	1.1	1.1	10.7	10.7	0.08
79	147	9550F	LW2-G417	7		10	10	0	100.0	0.0	27.730	9	30.908	3.18	0.35	n	8	8	8	8	8
80	136	9550F	LW2-G417	8	wq replicate	10	10	0	100.0	0.0	28.981	9	31.285	2.30	0.26						
81	119	9551F	LW2-G415	1		10	9	1	90.0	10.0	28.768	8	31.613	2.85	0.36						
82	67	9551F	LW2-G415	2		10	10	0	100.0	0.0	28.080	10	31.254	3.17	0.32						
83	89	9551F	LW2-G415	3		10	8	2	80.0	20.0	28.724	8	31.823	3.10	0.39						
84	87	9551F	LW2-G415	4		10	10	0	100.0	0.0	28.504	10	31.914	3.41	0.34						
85	12	9551F	LW2-G415	5		10	7	3	70.0	30.0	30.237	7	32.679	2.44	0.35	Mean	9.1	0.9	91.3	8.8	0.35
86	67	9551F	LW2-G415	6		10	10	0	100.0	0.0	28.420	10	32.248	3.83	0.38	SD	1.1	1.1	11.3	11.3	0.03
87	105	9551F	LW2-G415	7		10	10	0	100.0	0.0	27.983	10	31.077	3.09	0.31	n	8	8	8	8	8
88	133	9551F	LW2-G415	8	wq replicate	10	9	1	90.0	10.0	26.582	9	29.712	3.13	0.35						
89	31	9552F	LW2-G380	1		10	10	0	100.0	0.0	27.958	10	31.858	3.90	0.39						
90	15	9552F	LW2-G380	2		10	8	2	80.0	20.0	27.517	8	30.964	3.45	0.43						
91	140	9552F	LW2-G380	3		10	9	1	90.0	10.0	31.067	9	35.334	4.27	0.47						
92	160	9552F	LW2-G380	4		10	10	0	100.0	0.0	26.711	10	31.147	4.44	0.44						
93	49	9552F	LW2-G380	5		10	9	1	90.0	10.0	29.266	9	32.868	3.60	0.40	Mean	9.0	1.0	90.0	10.0	0.43
94	145	9552F	LW2-G380	6		10	7	3	70.0	30.0	29.382	7	32.853	3.47	0.50	SD	1.1	1.1	10.7	10.7	0.05
95	5	9552F	LW2-G380	7		10	9	1	90.0	10.0	30.900	9	34.048	3.15	0.35	n	8	8	8	8	8
96	42	9552F	LW2-G380	8	wq replicate	10	10	0	100.0	0.0	27.184	10	31.664	4.48	0.45						
97	84	9553F	LW2-G430	1		10	10	0	100.0	0.0	28.920	10	33.661	4.74	0.47						
98	51	9553F	LW2-G430	2		10	9	1	90.0	10.0	27.100	9	29.983	2.88	0.32						
99	93	9553F	LW2-G430	3		10	9	1	90.0	10.0	26.833	9	30.782	3.95	0.44						
100	63	9553F	LW2-G430	4		10	9	1	90.0	10.0	29.640	9	34.163	4.52	0.50						
101	41	9553F	LW2-G430	5		10	10	0	100.0	0.0	29.402	10	33.466	4.06	0.41	Mean	9.6	0.4	96.3	3.8	0.42
102	44	9553F	LW2-G430	6		10	10	0	100.0	0.0	29.569	10	33.846	4.28	0.43	SD	0.5	0.5	5.2	5.2	0.06
103	39	9553F	LW2-G430	7		10	10	0	100.0	0.0	29.170	10	33.489	4.32	0.43	n	8	8	8	8	8
104	82	9553F	LW2-G430	8	wq replicate	10	10	0	100.0	0.0	29.996	10	33.504	3.51	0.35						
105	60	9554F	LW2-G437	1		10	9	1	90.0	10.0	26.732	9	29.604	2.87	0.32						
106	138	9554F	LW2-G437	2		10	10	0	100.0	0.0	29.047	10	32.424	3.38	0.34						
107	150	9554F	LW2-G437	3		10	10	0	100.0	0.0	32.055	10	35.683	3.63	0.36						
108	111	9554F	LW2-G437	4		10	9	1	90.0	10.0	28.888	9	32.644	3.76	0.42						
109	19	9554F	LW2-G437	5		10	9	1	90.0	10.0	27.706	9	30.803	3.10	0.34	Mean	9.4	0.6	93.8	6.3	0.36
110	106	9554F	LW2-G437	6		10	10	0	100.0	0.0	29.703	10	32.816	3.11	0.31	SD	0.7	0.7	7.4	7.4	0.04
111	53	9554F	LW2-G437	7		10	8	2	80.0	20.0	28.360	8	31.603	3.24	0.41	n	8	8	8	8	8
112	129	9554F	LW2-G437	8	wq replicate	10	10	0	100.0	0.0	29.829	10	33.748	3.92	0.39						

ANC08363
BZTO104(e)008363

Test Number: P686-19

Freshwater Sediment Test
28-day Hyalella azteca

12/16/04

INDEX	BKR	NAS SMPL	CLIENT DESCRIP	REPL		INIT	SURV	MORT	PSURV	PMORT	TARE WT (mg)	WT COUNT	DRY WT (mg)	TWT (mg)	WT (mg)		SURV	MORT	PSURV	PMORT	WT
113	58	9555F	LW2-G403	1		10	9	1	90.0	10.0	29.777	9	33.095	3.32	0.37						
114	85	9555F	LW2-G403	2		10	9	1	90.0	10.0	28.255	9	32.018	3.76	0.42						
115	43	9555F	LW2-G403	3		10	10	0	100.0	0.0	27.799	10	31.252	3.45	0.35						
116	120	9555F	LW2-G403	4		10	9	1	90.0	10.0	27.963	9	31.675	3.71	0.41						
117	131	9555F	LW2-G403	5		10	10	0	100.0	0.0	28.324	10	31.279	2.96	0.30	Mean	9.6	0.4	96.3	3.8	0.36
118	36	9555F	LW2-G403	6		10	10	0	100.0	0.0	30.454	10	34.151	3.70	0.37	SD	0.5	0.5	5.2	5.2	0.05
119	14	9555F	LW2-G403	7		10	10	0	100.0	0.0	28.836	10	32.630	3.79	0.38	n	8	8	8	8	8
120	152	9555F	LW2-G403	8	wq replicate	10	10	0	100.0	0.0	27.384	9	29.739	2.36	0.26						
121	132	9556F	LW2-G401	1		10	10	0	100.0	0.0	28.976	10	31.273	2.30	0.23						
122	80	9556F	LW2-G401	2		10	10	0	100.0	0.0	27.078	10	29.254	2.18	0.22						
123	40	9556F	LW2-G401	3		10	10	0	100.0	0.0	28.246	10	29.957	1.71	0.17						
124	158	9556F	LW2-G401	4		10	8	2	80.0	20.0	28.616	8	31.571	2.96	0.37						
125	134	9556F	LW2-G401	5		10	10	0	100.0	0.0	29.876	10	32.390	2.51	0.25	Mean	9.6	0.4	96.3	3.8	0.28
126	153	9556F	LW2-G401	6		10	9	1	90.0	10.0	28.348	9	31.371	3.02	0.34	SD	0.7	0.7	7.4	7.4	0.07
127	139	9556F	LW2-G401	7		10	10	0	100.0	0.0	30.786	10	33.900	3.11	0.31	n	8	8	8	8	8
128	56	9556F	LW2-G401	8	wq replicate	10	10	0	100.0	0.0	30.157	10	33.824	3.67	0.37						
129	17	9557F	LW2-G377	1		10	10	0	100.0	0.0	27.728	10	31.648	3.92	0.39						
130	2	9557F	LW2-G377	2		10	10	0	100.0	0.0	27.468	10	30.170	2.70	0.27						
131	86	9557F	LW2-G377	3		10	7	3	70.0	30.0	27.723	7	29.453	1.73	0.25						
132	38	9557F	LW2-G377	4		10	10	0	100.0	0.0	28.442	10	32.327	3.89	0.39						
133	127	9557F	LW2-G377	5		10	10	0	100.0	0.0	30.374	10	34.476	4.10	0.41	Mean	9.5	0.5	95.0	5.0	0.30
134	57	9557F	LW2-G377	6		10	10	0	100.0	0.0	29.218	10	31.364	2.15	0.21	SD	1.1	1.1	10.7	10.7	0.08
135	32	9557F	LW2-G377	7		10	10	0	100.0	0.0	26.619	10	29.595	2.98	0.30	n	8	8	8	8	8
136	130	9557F	LW2-G377	8	wq replicate	10	9	1	90.0	10.0	27.068	9	28.928	1.86	0.21						
137	92	9558F	LW2-G371	1		10	5	5	50.0	50.0	29.105	5	31.834	2.73	0.55						
138	141	9558F	LW2-G371	2		10	5	5	50.0	50.0	30.354	5	32.830	2.48	0.50						
139	62	9558F	LW2-G371	3		10	4	6	40.0	60.0	27.861	4	30.305	2.44	0.61						
140	124	9558F	LW2-G371	4		10	5	5	50.0	50.0	28.191	5	30.644	2.45	0.49						
141	165	9558F	LW2-G371	5		10	2	8	20.0	80.0	29.473	2	30.515	1.04	0.52	Mean	3.9	6.1	38.8	61.3	0.52
142	157	9558F	LW2-G371	6		10	3	7	30.0	70.0	28.857	3	30.221	1.36	0.45	SD	1.1	1.1	11.3	11.3	0.06
143	103	9558F	LW2-G371	7		10	4	6	40.0	60.0	29.706	4	31.722	2.02	0.50	n	8	8	8	8	8
144	108	9558F	LW2-G371	8	wq replicate	10	3	7	30.0	70.0	30.611	3	32.320	1.71	0.57						
145	81	9559F	LW2-G366	1		10	4	6	40.0	60.0	30.521	4	32.150	1.63	0.41						
146	91	9559F	LW2-G366	2		10	5	5	50.0	50.0	27.377	5	29.139	1.76	0.35						
147	77	9559F	LW2-G366	3		10	1	9	10.0	90.0	27.242	1	27.707	0.47	0.47						
148	154	9559F	LW2-G366	4		10	2	8	20.0	80.0	28.153	2	28.690	0.54	0.27						
149	3	9559F	LW2-G366	5		10	2	8	20.0	80.0	31.418	2	32.430	1.01	0.51	Mean	3.3	6.8	32.5	67.5	0.42
150	112	9559F	LW2-G366	6		10	2	8	20.0	80.0	28.886	2	29.905	1.02	0.51	SD	1.8	1.8	17.5	17.5	0.08
151	6	9559F	LW2-G366	7		10	4	6	40.0	60.0	27.793	4	29.394	1.60	0.40	n	8	8	8	8	8
152	155	9559F	LW2-G366	8	wq replicate	10	6	4	60.0	40.0	29.045	6	31.605	2.56	0.43						

ANC08364
BZTO104(e)008364

INDEX	BKR	NAS SMPL	CLIENT DESCRIP	REPL		INIT	SURV	MORT	PSURV	PMORT	TARE WT (mg)	WT COUNT	DRY WT (mg)	TWT (mg)	WT (mg)		SURV	MORT	PSURV	PMORT	WT
153	35	9560F	LW2-G351	1		10	10	0	100.0	0.0	29.470	10	30.798	1.33	0.13						
154	100	9560F	LW2-G351	2		10	9	1	90.0	10.0	28.110	9	30.950	2.84	0.32						
155	159	9560F	LW2-G351	3		10	10	0	100.0	0.0	26.454	10	29.622	3.17	0.32						
156	28	9560F	LW2-G351	4		10	10	0	100.0	0.0	28.833	10	32.470	3.64	0.36						
157	54	9560F	LW2-G351	5		10	10	0	100.0	0.0	28.517	10	30.982	2.47	0.25	Mean	9.9	0.1	98.8	1.3	0.27
158	64	9560F	LW2-G351	6		10	10	0	100.0	0.0	27.390	10	29.658	2.27	0.23	SD	0.4	0.4	3.5	3.5	0.07
159	59	9560F	LW2-G351	7		10	10	0	100.0	0.0	29.554	10	32.300	2.75	0.27	n	8	8	8	8	8
160	9	9560F	LW2-G351	8	wq replicate	10	10	0	100.0	0.0	28.753	10	31.695	2.94	0.29						
161	117	9561F	LW2-G282	1		10	10	0	100.0	0.0	29.262	10	32.744	3.48	0.35						
162	8	9561F	LW2-G282	2		10	9	1	90.0	10.0	27.464	9	29.648	2.18	0.24						
163	151	9561F	LW2-G282	3		10	10	0	100.0	0.0	28.206	10	30.962	2.76	0.28						
164	116	9561F	LW2-G282	4		10	10	0	100.0	0.0	28.513	10	33.150	4.64	0.46						
165	99	9561F	LW2-G282	5		10	7	3	70.0	30.0	30.219	7	32.557	2.34	0.33	Mean	9.5	0.6	93.8	6.3	0.33
166	10	9561F	LW2-G282	6		10	9	1	90.0	10.0	28.197	9	30.756	2.56	0.28	SD	1.2	1.1	10.6	10.6	0.08
167	79	9561F	LW2-G282	7		10	10	0	100.0	0.0	27.945	10	32.156	4.21	0.42	n	8	8	8	8	8
168	70	9561F	LW2-G282	8	wq replicate	11	11	0	100.0	0.0	28.837	11	31.579	2.74	0.25						

Notes:

beakers #20, 119, 136, 147, 152: one animal each lost in transfer to weighing pan

ANC083655
BZTO104(e)008365

Water Quality Data

BKR	NAS SMPL	CLIENT DESCRIP	Interstitial water NH3	pH
	9542F	LW2-G210	26.2	6.4
	9543F	LW2-G213	1.8	5.8
	9544F	LW2-G200	2.6	5.8
	9545F	LW2-G093	6.4	5.9
	9546F	LW2-G206	3.6	5.8
	9547F	LW2-G362-1	19.5	5.7
	9548F	LW2-G413	1.0	5.9
	9549F	LW2-G393	7.4	6.9
	9550F	LW2-G417	4.5	6.0
	9551F	LW2-G415	3.3	6.0
	9552F	LW2-G380	1.0	6.1
	9553F	LW2-G430	—	—
	9554F	LW2-G437	1.3	6.0
	9555F	LW2-G403	1.0	6.0
	9556F	LW2-G401	5.1	6.6
	9557F	LW2-G377	0.9	6.7
	9558F	LW2-G371	27.1	6.2
	9559F	LW2-G366	6.4	6.3
	9560F	LW2-G351	10.8	7.5
	9561F	LW2-G282	1.0	6.8

					Overlying water						
			REPL	DAY	TEMP	DO	COND	pH	HARD	ALK	NH3
9	9560F	LW2-G351	8	0	22.2	7.2	260	6.8	51	60	0.9
21	9542F	LW2-G210	8	0	22.2	7.2	155	6.8	34	40	0.6
23	9544F	LW2-G200	8	0	22.2	7.5	155	6.7	43	50	0.5
33	9549F	LW2-G393	8	0	22.2	7.4	170	6.8	43	55	1.1
42	9552F	LW2-G380	8	0	22.1	7.2	160	6.8	43	40	0.2
56	9556F	LW2-G401	8	0	22.2	7.6	170	6.7	51	50	0.6
66	9546F	LW2-G206	8	0	22.2	7.4	150	6.7	43	50	0.6
70	9561F	LW2-G282	8	0	22.5	7.5	160	6.6	34	40	0.2
82	9553F	LW2-G430	8	0	22.3	7.2	140	6.6	34	40	0.1
108	9558F	LW2-G371	8	0	22.2	6.4	2530	6.5	60	60	1.5
109	9547F	LW2-G362-1	8	0	22.2	7.2	710	6.6	60	50	1.4
110	9534F	Control	8	0	22.4	7.0	250	6.8	34	50	0.4
126	9545F	LW2-G093	8	0	22.1	7.1	170	6.7	43	40	0.8
129	9554F	LW2-G437	8	0	22.1	7.2	160	6.7	43	40	0.3
130	9557F	LW2-G377	8	0	22.1	7.4	310	6.8	43	60	0.2
133	9551F	LW2-G415	8	0	22.2	7.0	160	6.7	43	40	0.5
136	9550F	LW2-G417	8	0	22.1	7.2	160	6.6	43	40	0.6
142	9548F	LW2-G413	8	0	22.0	7.1	150	6.7	34	40	0.3
152	9555F	LW2-G403	8	0	22.0	7.2	160	6.6	43	40	0.2
155	9559F	LW2-G366	8	0	22.0	7.6	1560	6.7	34	50	0.2
161	9543F	LW2-G213	8	0	22.2	7.2	180	6.9	43	40	0.3
9	9560F	LW2-G351	8	1	22.7	7.2	225	7.0			
21	9542F	LW2-G210	8	1	22.8	7.4	155	6.9			
23	9544F	LW2-G200	8	1	22.7	7.6	155	6.8			
33	9549F	LW2-G393	8	1	22.7	7.8	155	6.9			
42	9552F	LW2-G380	8	1	22.8	7.8	160	6.9			
56	9556F	LW2-G401	8	1	22.8	7.8	165	6.8			
66	9546F	LW2-G206	8	1	22.7	7.8	155	6.8			
70	9561F	LW2-G282	8	1	23.1	7.8	150	6.8			
82	9553F	LW2-G430	8	1	22.7	7.6	150	6.8			
108	9558F	LW2-G371	8	1	22.6	6.0	1890	6.9			

ANC08366
BZTO104(e)008366

					Overlying water						
			REPL	DAY	TEMP	DO	COND	pH	HARD	ALK	NH3
109	9547F	LW2-G362-1	8	1	22.8	7.2	540	6.8			
110	9534F	Control	8	1	22.9	7.8	190	7.0			
126	9545F	LW2-G093	8	1	22.8	7.5	160	6.8			
129	9554F	LW2-G437	8	1	22.7	7.4	160	6.8			
130	9557F	LW2-G377	8	1	22.9	7.6	225	6.9			
133	9551F	LW2-G415	8	1	22.7	7.5	160	6.9			
136	9550F	LW2-G417	8	1	22.7	7.4	150	6.7			
142	9548F	LW2-G413	8	1	22.6	7.4	150	6.9			
152	9555F	LW2-G403	8	1	22.5	7.6	155	6.8			
155	9559F	LW2-G366	8	1	23.0	7.8	2190	6.9			
161	9543F	LW2-G213	8	1	22.8	7.4	160	6.9			
9	9560F	LW2-G351	8	2	23.4						
21	9542F	LW2-G210	8	2	23.3						
23	9544F	LW2-G200	8	2	23.2						
33	9549F	LW2-G393	8	2	23.2						
42	9552F	LW2-G380	8	2	23.3						
56	9556F	LW2-G401	8	2	23.3						
66	9546F	LW2-G206	8	2	23.2						
70	9561F	LW2-G282	8	2	23.2						
82	9553F	LW2-G430	8	2	23.2						
108	9558F	LW2-G371	8	2	23.1						
109	9547F	LW2-G362-1	8	2	23.1						
110	9534F	Control	8	2	23.2						
126	9545F	LW2-G093	8	2	23.2						
129	9554F	LW2-G437	8	2	23.2						
130	9557F	LW2-G377	8	2	23.2						
133	9551F	LW2-G415	8	2	23.2						
136	9550F	LW2-G417	8	2	23.1						
142	9548F	LW2-G413	8	2	23.0						
152	9555F	LW2-G403	8	2	23.0						
155	9559F	LW2-G366	8	2	22.9						
161	9543F	LW2-G213	8	2	23.2						
9	9560F	LW2-G351	8	3	22.8	7.2		6.6			
21	9542F	LW2-G210	8	3	22.8	7.2		6.5			
23	9544F	LW2-G200	8	3	22.7	7.2		6.4			
33	9549F	LW2-G393	8	3	22.7	7.3		6.5			
42	9552F	LW2-G380	8	3	22.7	7.4		6.5			
56	9556F	LW2-G401	8	3	22.7	7.4		6.5			
66	9546F	LW2-G206	8	3	22.7	7.4		6.4			
70	9561F	LW2-G282	8	3	23.0	7.4		6.4			
82	9553F	LW2-G430	8	3	22.8	7.2		6.4			
108	9558F	LW2-G371	8	3	22.7	7.6		6.7			
109	9547F	LW2-G362-1	8	3	22.8	7.4		6.5			
110	9534F	Control	8	3	22.9	7.3		6.6			
126	9545F	LW2-G093	8	3	22.7	7.0		6.4			
129	9554F	LW2-G437	8	3	22.7	7.2		6.4			
130	9557F	LW2-G377	8	3	22.9	7.4		6.6			
133	9551F	LW2-G415	8	3	22.7	7.2		6.5			
136	9550F	LW2-G417	8	3	22.7	7.4		6.4			
142	9548F	LW2-G413	8	3	22.7	7.2		6.4			
152	9555F	LW2-G403	8	3	22.7	7.1		6.5			
155	9559F	LW2-G366	8	3	22.9	7.2		6.6			
161	9543F	LW2-G213	8	3	22.9	7.2		6.8			
9	9560F	LW2-G351	8	4	22.8						
21	9542F	LW2-G210	8	4	22.8						
23	9544F	LW2-G200	8	4	22.7						
33	9549F	LW2-G393	8	4	22.7						

ANC08367
BZTO104(e)008367

					Overlying water						
			REPL	DAY	TEMP	DO	COND	pH	HARD	ALK	NH3
42	9552F	LW2-G380	8	4	22.6						
56	9556F	LW2-G401	8	4	22.6						
66	9546F	LW2-G206	8	4	22.6						
70	9561F	LW2-G282	8	4	22.8						
82	9553F	LW2-G430	8	4	22.7						
108	9558F	LW2-G371	8	4	22.6						
109	9547F	LW2-G362-1	8	4	22.7						
110	9534F	Control	8	4	22.8						
126	9545F	LW2-G093	8	4	22.8						
129	9554F	LW2-G437	8	4	22.7						
130	9557F	LW2-G377	8	4	22.8						
133	9551F	LW2-G415	8	4	22.6						
136	9550F	LW2-G417	8	4	22.6						
142	9548F	LW2-G413	8	4	22.6						
152	9555F	LW2-G403	8	4	22.5						
155	9559F	LW2-G366	8	4	22.8						
161	9543F	LW2-G213	8	4	22.7						
9	9560F	LW2-G351	8	5	22.9						
21	9542F	LW2-G210	8	5	22.9						
23	9544F	LW2-G200	8	5	22.8						
33	9549F	LW2-G393	8	5	22.8						
42	9552F	LW2-G380	8	5	22.8						
56	9556F	LW2-G401	8	5	22.7						
66	9546F	LW2-G206	8	5	22.7						
70	9561F	LW2-G282	8	5	22.9						
82	9553F	LW2-G430	8	5	22.9						
108	9558F	LW2-G371	8	5	22.7						
109	9547F	LW2-G362-1	8	5	22.7						
110	9534F	Control	8	5	22.9						
126	9545F	LW2-G093	8	5	22.9						
129	9554F	LW2-G437	8	5	22.9						
130	9557F	LW2-G377	8	5	22.9						
133	9551F	LW2-G415	8	5	22.8						
136	9550F	LW2-G417	8	5	22.8						
142	9548F	LW2-G413	8	5	22.7						
152	9555F	LW2-G403	8	5	22.7						
155	9559F	LW2-G366	8	5	22.9						
161	9543F	LW2-G213	8	5	22.8						
9	9560F	LW2-G351	8	6	22.9	6.2		6.6			
21	9542F	LW2-G210	8	6	23.0	5.8		6.5			
23	9544F	LW2-G200	8	6	22.9	6.0		6.3			
33	9549F	LW2-G393	8	6	22.9	5.8		6.4			
42	9552F	LW2-G380	8	6	23.0	6.1		6.4			
56	9556F	LW2-G401	8	6	22.9	6.4		6.5			
66	9546F	LW2-G206	8	6	22.9	6.3		6.5			
70	9561F	LW2-G282	8	6	23.2	5.8		6.5			
82	9553F	LW2-G430	8	6	22.8	6.0		6.5			
108	9558F	LW2-G371	8	6	22.8	6.4		6.7			
109	9547F	LW2-G362-1	8	6	23.0	6.3		6.7			
110	9534F	Control	8	6	23.2	6.2		6.7			
126	9545F	LW2-G093	8	6	23.0	6.0		6.7			
129	9554F	LW2-G437	8	6	23.0	6.0		6.7			
130	9557F	LW2-G377	8	6	23.1	6.2		6.5			
133	9551F	LW2-G415	8	6	22.8	6.0		6.6			
136	9550F	LW2-G417	8	6	22.9	5.8		6.6			
142	9548F	LW2-G413	8	6	22.8	6.0		6.6			
152	9555F	LW2-G403	8	6	22.7	6.1		6.6			

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					Overlying water						
			REPL	DAY	TEMP	DO	COND	pH	HARD	ALK	NH3
155	9559F	LW2-G366	8	6	23.0	6.6		6.7			
161	9543F	LW2-G213	8	6	22.9	6.4		6.7			
9	9560F	LW2-G351	8	7	22.9						
21	9542F	LW2-G210	8	7	22.9						
23	9544F	LW2-G200	8	7	22.9						
33	9549F	LW2-G393	8	7	22.9						
42	9552F	LW2-G380	8	7	22.9						
56	9556F	LW2-G401	8	7	22.9						
66	9546F	LW2-G206	8	7	22.9						
70	9561F	LW2-G282	8	7	23.2						
82	9553F	LW2-G430	8	7	22.9						
108	9558F	LW2-G371	8	7	22.9						
109	9547F	LW2-G362-1	8	7	22.9						
110	9534F	Control	8	7	23.0						
126	9545F	LW2-G093	8	7	22.9						
129	9554F	LW2-G437	8	7	22.9						
130	9557F	LW2-G377	8	7	22.9						
133	9551F	LW2-G415	8	7	23.0						
136	9550F	LW2-G417	8	7	22.8						
142	9548F	LW2-G413	8	7	22.8						
152	9555F	LW2-G403	8	7	22.7						
155	9559F	LW2-G366	8	7	22.7						
161	9543F	LW2-G213	8	7	22.9						
9	9560F	LW2-G351	8	8	23.1	6.5	170	6.5			
21	9542F	LW2-G210	8	8	23.1	6.5	150	6.4			
23	9544F	LW2-G200	8	8	22.9	6.2	155	6.4			
33	9549F	LW2-G393	8	8	23.0	6.5	155	6.5			
42	9552F	LW2-G380	8	8	23.0	6.6	155	6.5			
56	9556F	LW2-G401	8	8	23.0	6.6	155	6.6			
66	9546F	LW2-G206	8	8	23.0	6.6	155	6.6			
70	9561F	LW2-G282	8	8	23.0	6.5	150	6.6			
82	9553F	LW2-G430	8	8	23.2	6.6	565	6.6			
108	9558F	LW2-G371	8	8	22.9	6.6	250	6.9			
109	9547F	LW2-G362-1	8	8	23.1	6.4	110	6.8			
110	9534F	Control	8	8	23.3	6.5	165	6.8			
126	9545F	LW2-G093	8	8	23.3	6.5	155	6.7			
129	9554F	LW2-G437	8	8	23.0	6.2	155	6.7			
130	9557F	LW2-G377	8	8	22.9	6.6	165	6.7			
133	9551F	LW2-G415	8	8	22.8	6.1	150	6.6			
136	9550F	LW2-G417	8	8	22.9	6.4	150	6.7			
142	9548F	LW2-G413	8	8	22.9	6.4	155	6.7			
152	9555F	LW2-G403	8	8	22.8	6.6	155	6.7			
155	9559F	LW2-G366	8	8	22.8	7.2	745	6.7			
161	9543F	LW2-G213	8	8	23.0	6.8	160	6.8			
9	9560F	LW2-G351	8	9	22.4						
21	9542F	LW2-G210	8	9	22.5						
23	9544F	LW2-G200	8	9	22.4						
33	9549F	LW2-G393	8	9	22.4						
42	9552F	LW2-G380	8	9	22.5						
56	9556F	LW2-G401	8	9	22.5						
66	9546F	LW2-G206	8	9	22.4						
70	9561F	LW2-G282	8	9	22.8						
82	9553F	LW2-G430	8	9	22.5						
108	9558F	LW2-G371	8	9	22.4						
109	9547F	LW2-G362-1	8	9	22.5						
110	9534F	Control	8	9	22.8						
126	9545F	LW2-G093	8	9	22.5						

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					Overlying water						
			REPL	DAY	TEMP	DO	COND	pH	HARD	ALK	NH3
129	9554F	LW2-G437	8	9	22.4						
130	9557F	LW2-G377	8	9	22.6						
133	9551F	LW2-G415	8	9	22.5						
136	9550F	LW2-G417	8	9	22.4						
142	9548F	LW2-G413	8	9	22.3						
152	9555F	LW2-G403	8	9	22.2						
155	9559F	LW2-G366	8	9	22.6						
161	9543F	LW2-G213	8	9	22.4						
9	9560F	LW2-G351	8	10	22.7	6.4		6.8			
21	9542F	LW2-G210	8	10	22.7	6.2		6.8			
23	9544F	LW2-G200	8	10	22.7	5.8		6.7			
33	9549F	LW2-G393	8	10	22.7	5.8		6.7			
42	9552F	LW2-G380	8	10	22.7	6.4		6.7			
56	9556F	LW2-G401	8	10	22.7	6.1		6.8			
66	9546F	LW2-G206	8	10	22.6	6.2		6.7			
70	9561F	LW2-G282	8	10	22.9	6.2		6.7			
82	9553F	LW2-G430	8	10	22.5	6.2		6.7			
108	9558F	LW2-G371	8	10	22.4	6.4		6.9			
109	9547F	LW2-G362-1	8	10	22.5	6.4		6.9			
110	9534F	Control	8	10	22.9	6.2		6.7			
126	9545F	LW2-G093	8	10	22.6	5.4		6.7			
129	9554F	LW2-G437	8	10	22.6	5.6		6.7			
130	9557F	LW2-G377	8	10	22.5	6.4		6.7			
133	9551F	LW2-G415	8	10	22.5	5.2		6.6			
136	9550F	LW2-G417	8	10	22.4	5.6		6.6			
142	9548F	LW2-G413	8	10	22.4	5.9		6.6			
152	9555F	LW2-G403	8	10	22.3	5.8		6.6			
155	9559F	LW2-G366	8	10	22.5	6.4		6.7			
161	9543F	LW2-G213	8	10	22.5	6.0		6.7			
9	9560F	LW2-G351	8	11	22.7						
21	9542F	LW2-G210	8	11	22.7						
23	9544F	LW2-G200	8	11	22.7						
33	9549F	LW2-G393	8	11	22.8						
42	9552F	LW2-G380	8	11	22.8						
56	9556F	LW2-G401	8	11	22.8						
66	9546F	LW2-G206	8	11	22.7						
70	9561F	LW2-G282	8	11	22.9						
82	9553F	LW2-G430	8	11	22.8						
108	9558F	LW2-G371	8	11	22.7						
109	9547F	LW2-G362-1	8	11	22.7						
110	9534F	Control	8	11	22.9						
126	9545F	LW2-G093	8	11	22.8						
129	9554F	LW2-G437	8	11	22.7						
130	9557F	LW2-G377	8	11	22.9						
133	9551F	LW2-G415	8	11	22.7						
136	9550F	LW2-G417	8	11	22.7						
142	9548F	LW2-G413	8	11	22.7						
152	9555F	LW2-G403	8	11	22.6						
155	9559F	LW2-G366	8	11	22.8						
161	9543F	LW2-G213	8	11	22.8						
9	9560F	LW2-G351	8	12	22.8						
21	9542F	LW2-G210	8	12	22.7						
23	9544F	LW2-G200	8	12	22.7						
33	9549F	LW2-G393	8	12	22.7						
42	9552F	LW2-G380	8	12	22.7						
56	9556F	LW2-G401	8	12	22.8						
66	9546F	LW2-G206	8	12	22.8						

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					Overlying water						
			REPL	DAY	TEMP	DO	COND	pH	HARD	ALK	NH3
70	9561F	LW2-G282	8	12	23.2						
82	9553F	LW2-G430	8	12	22.7						
108	9558F	LW2-G371	8	12	22.8						
109	9547F	LW2-G362-1	8	12	22.9						
110	9534F	Control	8	12	23.1						
126	9545F	LW2-G093	8	12	22.9						
129	9554F	LW2-G437	8	12	22.9						
130	9557F	LW2-G377	8	12	23.1						
133	9551F	LW2-G415	8	12	22.8						
136	9550F	LW2-G417	8	12	22.9						
142	9548F	LW2-G413	8	12	22.8						
152	9555F	LW2-G403	8	12	22.8						
155	9559F	LW2-G366	8	12	23.2						
161	9543F	LW2-G213	8	12	22.9						
9	9560F	LW2-G351	8	13	22.6	5.8		6.8			
21	9542F	LW2-G210	8	13	22.5	5.4		6.6			
23	9544F	LW2-G200	8	13	22.4	6.0		6.6			
33	9549F	LW2-G393	8	13	22.5	5.8		6.6			
42	9552F	LW2-G380	8	13	22.5	5.9		6.6			
56	9556F	LW2-G401	8	13	22.6	5.5		6.6			
66	9546F	LW2-G206	8	13	22.6	5.9		6.6			
70	9561F	LW2-G282	8	13	22.9	6.0		6.6			
82	9553F	LW2-G430	8	13	22.5	6.4		6.6			
108	9558F	LW2-G371	8	13	22.6	5.9		6.8			
109	9547F	LW2-G362-1	8	13	22.6	5.9		6.7			
110	9534F	Control	8	13	22.9	6.2		6.6			
126	9545F	LW2-G093	8	13	22.7	5.9		6.6			
129	9554F	LW2-G437	8	13	22.7	5.8		6.6			
130	9557F	LW2-G377	8	13	22.9	6.2		6.7			
133	9551F	LW2-G415	8	13	22.9	5.8		6.6			
136	9550F	LW2-G417	8	13	22.7	5.9		6.6			
142	9548F	LW2-G413	8	13	22.6	6.0		6.6			
152	9555F	LW2-G403	8	13	22.6	6.0		6.6			
155	9559F	LW2-G366	8	13	23.0	6.4		6.8			
161	9543F	LW2-G213	8	13	22.7	6.0		6.6			
9	9560F	LW2-G351	8	14	22.6						
21	9542F	LW2-G210	8	14	22.6						
23	9544F	LW2-G200	8	14	22.5						
33	9549F	LW2-G393	8	14	22.5						
42	9552F	LW2-G380	8	14	22.5						
56	9556F	LW2-G401	8	14	22.6						
66	9546F	LW2-G206	8	14	22.6						
70	9561F	LW2-G282	8	14	22.8						
82	9553F	LW2-G430	8	14	22.5						
108	9558F	LW2-G371	8	14	22.5						
109	9547F	LW2-G362-1	8	14	22.6						
110	9534F	Control	8	14	22.8						
126	9545F	LW2-G093	8	14	22.7						
129	9554F	LW2-G437	8	14	22.7						
130	9557F	LW2-G377	8	14	22.9						
133	9551F	LW2-G415	8	14	22.7						
136	9550F	LW2-G417	8	14	22.6						
142	9548F	LW2-G413	8	14	22.7						
152	9555F	LW2-G403	8	14	22.6						
155	9559F	LW2-G366	8	14	22.9						
161	9543F	LW2-G213	8	14	22.7						
9	9560F	LW2-G351	8	15	22.7	5.9	160	6.7			

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					Overlying water						
			REPL	DAY	TEMP	DO	COND	pH	HARD	ALK	NH3
21	9542F	LW2-G210	8	15	22.7	5.5	150	6.5			
23	9544F	LW2-G200	8	15	22.6	6.0	150	6.5			
33	9549F	LW2-G393	8	15	22.7	5.4	155	6.5			
42	9552F	LW2-G380	8	15	22.7	5.8	155	6.5			
56	9556F	LW2-G401	8	15	22.7	5.4	160	6.6			
66	9546F	LW2-G206	8	15	22.8	6.0	150	6.6			
70	9561F	LW2-G282	8	15	23.0	6.3	155	6.5			
82	9553F	LW2-G430	8	15	22.7	6.3	155	6.7			
108	9558F	LW2-G371	8	15	22.7	6.3	245	6.6			
109	9547F	LW2-G362-1	8	15	22.8	5.8	165	6.7			
110	9534F	Control	8	15	22.9	6.0	160	6.6			
126	9545F	LW2-G093	8	15	22.7	5.6	155	6.5			
129	9554F	LW2-G437	8	15	22.8	6.0	155	6.6			
130	9557F	LW2-G377	8	15	22.9	6.1	160	6.6			
133	9551F	LW2-G415	8	15	22.7	5.6	150	6.6			
136	9550F	LW2-G417	8	15	22.8	5.9	150	6.6			
142	9548F	LW2-G413	8	15	22.7	6.2	155	6.7			
152	9555F	LW2-G403	8	15	22.7	6.0	155	6.5			
155	9559F	LW2-G366	8	15	22.9	6.6	260	6.7			
161	9543F	LW2-G213	8	15	22.8	6.0	155	6.6			
9	9560F	LW2-G351	8	16	22.6						
21	9542F	LW2-G210	8	16	22.6						
23	9544F	LW2-G200	8	16	22.6						
33	9549F	LW2-G393	8	16	22.5						
42	9552F	LW2-G380	8	16	22.5						
56	9556F	LW2-G401	8	16	22.5						
66	9546F	LW2-G206	8	16	22.6						
70	9561F	LW2-G282	8	16	22.6						
82	9553F	LW2-G430	8	16	22.6						
108	9558F	LW2-G371	8	16	22.6						
109	9547F	LW2-G362-1	8	16	22.6						
110	9534F	Control	8	16	22.7						
126	9545F	LW2-G093	8	16	22.9						
129	9554F	LW2-G437	8	16	22.8						
130	9557F	LW2-G377	8	16	22.7						
133	9551F	LW2-G415	8	16	22.8						
136	9550F	LW2-G417	8	16	22.8						
142	9548F	LW2-G413	8	16	22.7						
152	9555F	LW2-G403	8	16	22.7						
155	9559F	LW2-G366	8	16	22.6						
161	9543F	LW2-G213	8	16	22.6						
9	9560F	LW2-G351	8	17	22.4	6.4		6.5			
21	9542F	LW2-G210	8	17	22.4	6.6		6.5			
23	9544F	LW2-G200	8	17	22.3	6.6		6.5			
33	9549F	LW2-G393	8	17	22.3	6.7		6.5			
42	9552F	LW2-G380	8	17	22.3	6.9		6.5			
56	9556F	LW2-G401	8	17	22.5	6.4		6.6			
66	9546F	LW2-G206	8	17	22.5	6.8		6.5			
70	9561F	LW2-G282	8	17	22.8	6.8		6.5			
82	9553F	LW2-G430	8	17	22.4	7.0		6.5			
108	9558F	LW2-G371	8	17	22.5	7.0		6.6			
109	9547F	LW2-G362-1	8	17	22.6	6.4		6.6			
110	9534F	Control	8	17	22.8	6.7		6.6			
126	9545F	LW2-G093	8	17	22.7	6.5		6.5			
129	9554F	LW2-G437	8	17	22.6	6.6		6.5			
130	9557F	LW2-G377	8	17	22.8	7.0		6.5			
133	9551F	LW2-G415	8	17	22.6	6.4		6.5			

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					Overlying water						
			REPL	DAY	TEMP	DO	COND	pH	HARD	ALK	NH3
136	9550F	LW2-G417	8	17	22.7	6.6		6.5			
142	9548F	LW2-G413	8	17	22.6	6.8		6.5			
152	9555F	LW2-G403	8	17	22.5	7.0		6.5			
155	9559F	LW2-G366	8	17	23.0	6.9		6.6			
161	9543F	LW2-G213	8	17	22.7	6.7		6.5			
9	9560F	LW2-G351	8	18	22.4						
21	9542F	LW2-G210	8	18	22.4						
23	9544F	LW2-G200	8	18	22.4						
33	9549F	LW2-G393	8	18	22.4						
42	9552F	LW2-G380	8	18	22.4						
56	9556F	LW2-G401	8	18	22.4						
66	9546F	LW2-G206	8	18	22.5						
70	9561F	LW2-G282	8	18	22.7						
82	9553F	LW2-G430	8	18	22.4						
108	9558F	LW2-G371	8	18	22.4						
109	9547F	LW2-G362-1	8	18	22.5						
110	9534F	Control	8	18	22.5						
126	9545F	LW2-G093	8	18	22.6						
129	9554F	LW2-G437	8	18	22.5						
130	9557F	LW2-G377	8	18	22.5						
133	9551F	LW2-G415	8	18	22.5						
136	9550F	LW2-G417	8	18	22.7						
142	9548F	LW2-G413	8	18	22.5						
152	9555F	LW2-G403	8	18	22.5						
155	9559F	LW2-G366	8	18	22.5						
161	9543F	LW2-G213	8	18	22.6						
9	9560F	LW2-G351	8	19	22.8						
21	9542F	LW2-G210	8	19	22.7						
23	9544F	LW2-G200	8	19	22.6						
33	9549F	LW2-G393	8	19	22.6						
42	9552F	LW2-G380	8	19	22.6						
56	9556F	LW2-G401	8	19	22.7						
66	9546F	LW2-G206	8	19	22.7						
70	9561F	LW2-G282	8	19	23.1						
82	9553F	LW2-G430	8	19	22.7						
108	9558F	LW2-G371	8	19	22.7						
109	9547F	LW2-G362-1	8	19	22.8						
110	9534F	Control	8	19	22.9						
126	9545F	LW2-G093	8	19	22.8						
129	9554F	LW2-G437	8	19	22.8						
130	9557F	LW2-G377	8	19	22.9						
133	9551F	LW2-G415	8	19	22.7						
136	9550F	LW2-G417	8	19	22.8						
142	9548F	LW2-G413	8	19	22.7						
152	9555F	LW2-G403	8	19	22.7						
155	9559F	LW2-G366	8	19	23.1						
161	9543F	LW2-G213	8	19	22.8						
9	9560F	LW2-G351	8	20	22.7	4.8		6.6			
21	9542F	LW2-G210	8	20	22.7	5.2		6.6			
23	9544F	LW2-G200	8	20	22.6	5.4		6.5			
33	9549F	LW2-G393	8	20	22.6	5.2		6.6			
42	9552F	LW2-G380	8	20	22.6	5.5		6.6			
56	9556F	LW2-G401	8	20	22.7	5.4		6.6			
66	9546F	LW2-G206	8	20	22.7	5.7		6.6			
70	9561F	LW2-G282	8	20	22.7	5.6		6.6			
82	9553F	LW2-G430	8	20	22.6	5.8		6.6			
108	9558F	LW2-G371	8	20	22.6	5.6		6.7			

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					Overlying water						
			REPL	DAY	TEMP	DO	COND	pH	HARD	ALK	NH3
109	9547F	LW2-G362-1	8	20	22.6	5.0		6.7			
110	9534F	Control	8	20	23.0	5.6		6.8			
126	9545F	LW2-G093	8	20	22.7	5.6		6.6			
129	9554F	LW2-G437	8	20	22.7	5.4		6.6			
130	9557F	LW2-G377	8	20	22.9	5.9		6.7			
133	9551F	LW2-G415	8	20	22.9	5.3		6.7			
136	9550F	LW2-G417	8	20	22.7	5.6		6.6			
142	9548F	LW2-G413	8	20	22.6	5.6		6.6			
152	9555F	LW2-G403	8	20	22.6	5.4		6.6			
155	9559F	LW2-G366	8	20	23.0	5.4		6.7			
161	9543F	LW2-G213	8	20	22.7	5.8		6.6			
9	9560F	LW2-G351	8	21	22.4						
21	9542F	LW2-G210	8	21	22.3						
23	9544F	LW2-G200	8	21	22.3						
33	9549F	LW2-G393	8	21	22.3						
42	9552F	LW2-G380	8	21	22.3						
56	9556F	LW2-G401	8	21	22.3						
66	9546F	LW2-G206	8	21	22.4						
70	9561F	LW2-G282	8	21	22.6						
82	9553F	LW2-G430	8	21	22.4						
108	9558F	LW2-G371	8	21	22.3						
109	9547F	LW2-G362-1	8	21	22.3						
110	9534F	Control	8	21	22.4						
126	9545F	LW2-G093	8	21	22.5						
129	9554F	LW2-G437	8	21	22.5						
130	9557F	LW2-G377	8	21	22.5						
133	9551F	LW2-G415	8	21	22.4						
136	9550F	LW2-G417	8	21	22.5						
142	9548F	LW2-G413	8	21	22.4						
152	9555F	LW2-G403	8	21	22.4						
155	9559F	LW2-G366	8	21	22.8						
161	9543F	LW2-G213	8	21	22.5						
9	9560F	LW2-G351	8	22	22.0	5.6	160	6.4			
21	9542F	LW2-G210	8	22	22.0	5.8	155	6.4			
23	9544F	LW2-G200	8	22	22.0	5.5	160	6.4			
33	9549F	LW2-G393	8	22	22.1	5.4	155	6.4			
42	9552F	LW2-G380	8	22	22.0	5.7	160	6.3			
56	9556F	LW2-G401	8	22	22.1	6.0	155	6.4			
66	9546F	LW2-G206	8	22	22.1	6.0	155	6.3			
70	9561F	LW2-G282	8	22	22.3	6.1	155	6.3			
82	9553F	LW2-G430	8	22	22.0	6.1	155	6.3			
108	9558F	LW2-G371	8	22	22.0	5.8	200	6.5			
109	9547F	LW2-G362-1	8	22	22.0	5.6	165	6.5			
110	9534F	Control	8	22	22.2	5.7	165	6.5			
126	9545F	LW2-G093	8	22	22.0	5.8	155	6.4			
129	9554F	LW2-G437	8	22	22.0	5.7	160	6.5			
130	9557F	LW2-G377	8	22	22.1	6.2	160	6.4			
133	9551F	LW2-G415	8	22	22.0	5.6	155	6.3			
136	9550F	LW2-G417	8	22	22.0	6.2	155	6.3			
142	9548F	LW2-G413	8	22	22.1	6.3	155	6.4			
152	9555F	LW2-G403	8	22	22.1	5.8	155	6.5			
155	9559F	LW2-G366	8	22	22.4	5.6	175	6.5			
161	9543F	LW2-G213	8	22	22.1	5.9	155	6.4			
9	9560F	LW2-G351	8	23	22.7						
21	9542F	LW2-G210	8	23	22.7						
23	9544F	LW2-G200	8	23	22.6						
33	9549F	LW2-G393	8	23	22.7						

ANC08374
BZTO104(e)008374

					Overlying water						
			REPL	DAY	TEMP	DO	COND	pH	HARD	ALK	NH3
42	9552F	LW2-G380	8	23	22.7						
56	9556F	LW2-G401	8	23	22.6						
66	9546F	LW2-G206	8	23	22.8						
70	9561F	LW2-G282	8	23	23.1						
82	9553F	LW2-G430	8	23	22.7						
108	9558F	LW2-G371	8	23	22.7						
109	9547F	LW2-G362-1	8	23	22.8						
110	9534F	Control	8	23	22.8						
126	9545F	LW2-G093	8	23	23.0						
129	9554F	LW2-G437	8	23	22.9						
130	9557F	LW2-G377	8	23	22.9						
133	9551F	LW2-G415	8	23	23.1						
136	9550F	LW2-G417	8	23	22.9						
142	9548F	LW2-G413	8	23	22.8						
152	9555F	LW2-G403	8	23	22.7						
155	9559F	LW2-G366	8	23	22.9						
161	9543F	LW2-G213	8	23	22.9						
9	9560F	LW2-G351	8	24	22.5	5.8		6.7			
21	9542F	LW2-G210	8	24	22.4	6.3		6.6			
23	9544F	LW2-G200	8	24	22.4	6.2		6.6			
33	9549F	LW2-G393	8	24	22.4	5.7		6.6			
42	9552F	LW2-G380	8	24	22.4	6.4		6.6			
56	9556F	LW2-G401	8	24	22.4	6.1		6.6			
66	9546F	LW2-G206	8	24	22.5	6.4		6.6			
70	9561F	LW2-G282	8	24	22.6	6.4		6.7			
82	9553F	LW2-G430	8	24	22.4	6.4		6.7			
108	9558F	LW2-G371	8	24	22.5	6.0		6.7			
109	9547F	LW2-G362-1	8	24	22.6	5.6		6.7			
110	9534F	Control	8	24	22.9	6.0		6.6			
126	9545F	LW2-G093	8	24	22.7	6.0		6.6			
129	9554F	LW2-G437	8	24	22.6	6.0		6.6			
130	9557F	LW2-G377	8	24	22.9	7.0		6.7			
133	9551F	LW2-G415	8	24	22.6	5.8		6.6			
136	9550F	LW2-G417	8	24	22.7	6.5		6.7			
142	9548F	LW2-G413	8	24	22.6	6.2		6.6			
152	9555F	LW2-G403	8	24	22.5	6.1		6.6			
155	9559F	LW2-G366	8	24	22.9	6.2		6.6			
161	9543F	LW2-G213	8	24	22.7	6.1		6.6			
9	9560F	LW2-G351	8	25	22.3						
21	9542F	LW2-G210	8	25	22.3						
23	9544F	LW2-G200	8	25	22.3						
33	9549F	LW2-G393	8	25	22.3						
42	9552F	LW2-G380	8	25	22.3						
56	9556F	LW2-G401	8	25	22.6						
66	9546F	LW2-G206	8	25	22.4						
70	9561F	LW2-G282	8	25	22.4						
82	9553F	LW2-G430	8	25	22.3						
108	9558F	LW2-G371	8	25	22.3						
109	9547F	LW2-G362-1	8	25	22.4						
110	9534F	Control	8	25	22.7						
126	9545F	LW2-G093	8	25	22.6						
129	9554F	LW2-G437	8	25	22.6						
130	9557F	LW2-G377	8	25	22.6						
133	9551F	LW2-G415	8	25	22.7						
136	9550F	LW2-G417	8	25	22.5						
142	9548F	LW2-G413	8	25	22.5						
152	9555F	LW2-G403	8	25	22.4						

ANC08375
BZTO104(e)008375

					Overlying water						
			REPL	DAY	TEMP	DO	COND	pH	HARD	ALK	NH3
155	9559F	LW2-G366	8	25	22.5						
161	9543F	LW2-G213	8	25	22.5						
9	9560F	LW2-G351	8	26	22.1						
21	9542F	LW2-G210	8	26	22.1						
23	9544F	LW2-G200	8	26	22.0						
33	9549F	LW2-G393	8	26	22.1						
42	9552F	LW2-G380	8	26	22.2						
56	9556F	LW2-G401	8	26	22.2						
66	9546F	LW2-G206	8	26	22.1						
70	9561F	LW2-G282	8	26	22.0						
82	9553F	LW2-G430	8	26	22.0						
108	9558F	LW2-G371	8	26	22.1						
109	9547F	LW2-G362-1	8	26	22.3						
110	9534F	Control	8	26	22.3						
126	9545F	LW2-G093	8	26	22.2						
129	9554F	LW2-G437	8	26	22.3						
130	9557F	LW2-G377	8	26	22.4						
133	9551F	LW2-G415	8	26	22.3						
136	9550F	LW2-G417	8	26	22.2						
142	9548F	LW2-G413	8	26	22.1						
152	9555F	LW2-G403	8	26	22.3						
155	9559F	LW2-G366	8	26	22.5						
161	9543F	LW2-G213	8	26	22.3						
9	9560F	LW2-G351	8	27	22.5	6.7		6.7			
21	9542F	LW2-G210	8	27	22.4	7.1		6.5			
23	9544F	LW2-G200	8	27	22.3	7.0		6.5			
33	9549F	LW2-G393	8	27	22.3	6.8		6.6			
42	9552F	LW2-G380	8	27	22.3	7.2		6.6			
56	9556F	LW2-G401	8	27	22.3	7.2		6.7			
66	9546F	LW2-G206	8	27	22.4	7.6		6.7			
70	9561F	LW2-G282	8	27	22.7	7.5		6.6			
82	9553F	LW2-G430	8	27	22.3	7.4		6.6			
108	9558F	LW2-G371	8	27	22.4	7.3		6.8			
109	9547F	LW2-G362-1	8	27	22.5	6.7		6.7			
110	9534F	Control	8	27	22.9	7.2		6.8			
126	9545F	LW2-G093	8	27	22.6	6.8		6.6			
129	9554F	LW2-G437	8	27	22.5	7.1		6.7			
130	9557F	LW2-G377	8	27	22.5	8.2		6.8			
133	9551F	LW2-G415	8	27	22.7	6.9		6.7			
136	9550F	LW2-G417	8	27	22.6	7.8		6.8			
142	9548F	LW2-G413	8	27	22.5	7.2		6.7			
152	9555F	LW2-G403	8	27	22.4	7.2		6.7			
155	9559F	LW2-G366	8	27	22.4	7.3		6.7			
161	9543F	LW2-G213	8	27	22.6	7.2		6.7			
9	9560F	LW2-G351	8	28	22.6	6.8	150	6.6	43	40	<0.1
21	9542F	LW2-G210	8	28	22.6	7.0	145	6.5	43	40	0.1
23	9544F	LW2-G200	8	28	22.4	7.0	145	6.4	43	40	<0.1
33	9549F	LW2-G393	8	28	22.4	6.7	150	6.5	51	40	0.2
42	9552F	LW2-G380	8	28	22.3	6.8	150	6.5	43	40	<0.1
56	9556F	LW2-G401	8	28	22.4	7.2	150	6.5	51	40	<0.1
66	9546F	LW2-G206	8	28	22.5	7.5	150	6.8	51	40	0.1
70	9561F	LW2-G282	8	28	23.0	7.2	150	6.6	43	40	<0.1
82	9553F	LW2-G430	8	28	22.5	7.1	150	6.7	43	40	0.1
108	9558F	LW2-G371	8	28	22.6	7.2	165	6.8	34	40	0.1
109	9547F	LW2-G362-1	8	28	22.7	6.8	155	6.7	43	40	<0.1
110	9534F	Control	8	28	22.9	7.2	160	6.8	43	40	<0.1
126	9545F	LW2-G093	8	28	22.8	7.2	150	6.8	51	40	0.1

ANC08377
BZTO104(e)008377

					Overlying water							Interstitial water	
			REPL	DAY	TEMP	DO	COND	pH	HARD	ALK	NH3	NH3	pH
129	9554F	LW2-G437	8	28	22.7	7.2	150	6.7	51	40	<0.1		
130	9557F	LW2-G377	8	28	22.7	7.8	150	6.7	43	40	<0.1		
133	9551F	LW2-G415	8	28	22.7	7.2	150	6.8	51	40	0.1		
136	9550F	LW2-G417	8	28	22.5	7.6	150	6.8	34	40	0.1		
142	9548F	LW2-G413	8	28	22.6	7.5	150	6.8	43	40	0.2		
152	9555F	LW2-G403	8	28	22.6	7.2	150	6.8	43	40	0.1		
155	9559F	LW2-G366	8	28	23.0	7.3	160	6.8	34	40	0.1		
161	9543F	LW2-G213	8	28	23.2	7.3	150	6.7	34	40	0.1		
				Mean	22.6	6.5	238	6.6	43	43	---	6.9	6.2
				SD	0.3	0.7	346	0.1	7	6	---	8.3	0.5
				n	609	294	126	294	42	42	42	19	19
				Min	22.0	4.8	110	6.3	34	40	<0.1	0.9	5.7
				Max	23.4	8.2	2530	7.0	60	60	1.5	27.1	7.5

Data entry verified against laboratory bench sheets - MSR 12/14/04 MSR

ANC08378
BZTO104(e)008378

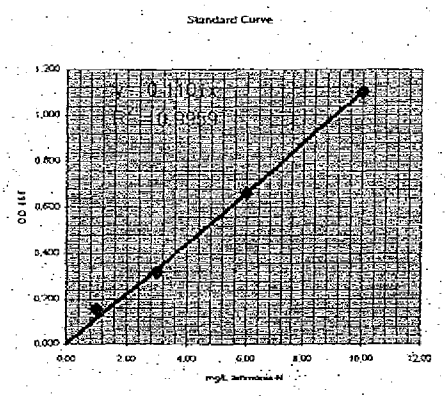
AMMONIA EXPOSURE BENCHSHEETS AND ANALYSIS

Total Ammonia-N in Sediment Pore Water: Computation Worksheet

Salicylate Method (SOP #5492)

Result

	Sample description	Dilution factor	OD_{655}	NH_3-N (mg/L)	pH	Salinity (ppt)
	Blank	---	---	---		
	1.0 mg/L NH_3-N Std.	---	0.155	1.00		
	3.0 mg/L NH_3-N Std.	---	0.318	3.00		
	6.0 mg/L NH_3-N Std.	---	0.660	6.00		
	10.0 mg/L NH_3-N Std.	---	1.100	10.00		
	3.0 mg/L spike	---	0.319	2.89		
	3.0 mg/L spike dupl.	---	0.315	2.86		
1.	9542F	5	0.578	26.23		
2.	9543F	5	0.040	1.81		
3.	9544F	5	0.058	2.63		
4.	9545F	5	0.140	6.35		
5.	9546F	5	0.079	3.58		
6.	9547F	5	0.430	19.51		
7.	9548F	5	0.021	0.95		
8.	9549F	5	0.164	7.44		
9.	9550F	5	0.100	4.54		
10.	9551F	5	0.073	3.31		
11.	9552F	5	0.021	0.95		
12.	9553F	5	---*	---*		
13.	9554F	5	0.028	1.27		
14.	9555F	5	0.022	1.00		
15.	9556F	5	0.112	5.08		
16.	9557F	5	0.020	0.91		
17.	9558F	5	0.598	27.13		
18.	9559F	5	0.140	6.35		
19.	9560F	5	0.238	10.80		
20.	9561F	5	0.023	1.04		
21.						
22.						
23.		* insufficient sample for analysis				
24.						
25.						
26.						
27.						
28.						
29.						
30.						
31.						
32.						
33.						
34.						
35.						



Reporting limit (mg/L) =	0.5
Recovery (%) =	95.9
Precision (RPD) =	1.26
Sample volume (ml):	0.10
Dilution factor	5

Sample Set Description:

Proj. No.: 686

Bulk sediment porewaters

Batch 10

Analyst: RSC

Date analysed: 10/25/2004

ANC08380
BZTO104(e)008380

Total Ammonia-N in Sediment Pore Water: Computation Worksheet

Salicylate Method (SOP #5492)

Result

	Sample description	Dilution factor	OD655	NH3-N (mg/L)	pH	Salinity (ppt)
	Blank	----	----	----		
	1.0 mg/L NH3-N Std.	----	.155	1.00		
	3.0 mg/L NH3-N Std.	----	.314	3.00		
	6.0 mg/L NH3-N Std.	----	.665	6.00		
	10.0 mg/L NH3-N Std.	----	1.10	10.00		
	3.0 mg/L spike	----	.319			
	3.0 mg/L spike dupl.	----	.315			
1.	9542F	5	.578		6.4	
2.	9543F	5	.040		5.8	
3.	9544F	5	.058		5.8	
4.	9545F	5	.140		5.9	
5.	9546F	5	.079		5.8	
6.	9547F	5	.430		5.7	
7.	9548F	5	.044		5.9	
8.	9549F	5	.161		6.9	
9.	9550F	5	.100		6.0	
10.	9551F	5	.073		6.0	
11.	9552F	5	.025		6.1	
12.	9553F	5	—*		—*	
13.	9554F	5	.028		6.0	
14.	9555F	5	.022		6.0	
15.	9556F	5	.112		6.6	
16.	9557F	5	.020		6.7	
17.	9558F	5	.598		6.2	
18.	9559F	5	.140		6.3	
19.	9560F	5	.238		7.5	
20.	9561F	5	.023		6.8	
21.						
22.						
23.		* insufficient sample for analysis				
24.						
25.						
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27.						
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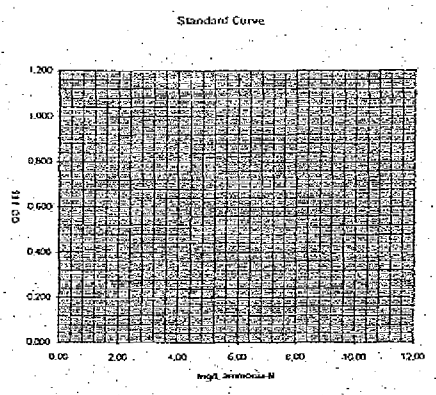

Reporting limit (mg/L) =	0.5
Recovery (%) =	#VALUE!
Precision (RPD) =	#VALUE!
Sample volume (ml):	0.10
Dilution factor	5

Sample Set Description:

Proj. No.:	686
Bulk sediment porewaters	
Batch 10	
Analyst:	RSC
Date analysed:	10/25/2004

ANC08381
BZTO104(e)008381

Total Ammonia-N in Water: Computation Worksheet
Salicylate Method (SOP #5492)

Result

	Sample description	Dilution factor	OD_{655}	NH_3-N (mg/L)
	Blank	-----	-----	-----
	1.0 mg/L NH_3-N Std.	-----	0.089	1.00
	3.0 mg/L NH_3-N Std.	-----	0.287	3.00
	6.0 mg/L NH_3-N Std.	-----	0.545	6.00
	10.0 mg/L NH_3-N Std.	-----	0.920	10.00
	3.0 mg/L spike	-----	0.291	3.17
	3.0 mg/L spike dupl.	-----	0.305	3.32
1.	9	1	0.080	0.87
2.	21	1	0.060	0.65
3.	23	1	0.042	0.46
4.	33	1	0.097	1.06
5.	42	1	0.019	0.21
6.	56	1	0.052	0.57
7.	66	1	0.059	0.64
8.	70	1	0.019	0.21
9.	82	1	0.012	0.13
10.	108	1	0.142	1.54
11.	109	1	0.126	1.37
12.	110	1	0.033	0.36
13.	126	1	0.078	0.85
14.	129	1	0.030	0.33
15.	130	1	0.021	0.23
16.	133	1	0.047	0.51
17.	136	1	0.053	0.58
18.	142	1	0.026	0.28
19.	152	1	0.020	0.22
20.	155	1	0.023	0.25
21.	161	1	0.027	0.29
22.				
23.				
24.				
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32.				
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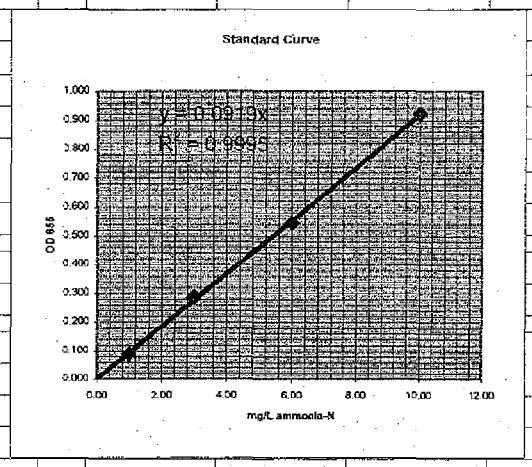
35.				
36.				



Reporting limit (mg/L) =	0.1
Recovery (%) =	108.1
Precision (RPD) =	-4.70
Sample volume (ml):	0.50
Dilution factor	1

Sample Set Description:

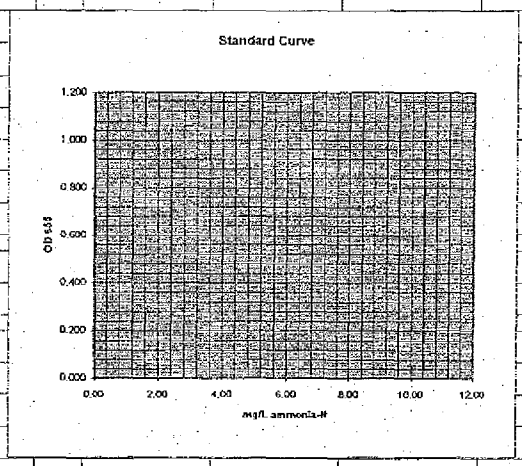
Test No.:	686-19
Test Day:	0 (10-26-04)
Species:	*Hyalella*
Overlying water	
Analyst:	RSC
Date analysed:	11/10/2004

Total Ammonia-N in Water: Computation Worksheet

Salicylate Method (SOP #5492)

Result

	Sample description	Dilution factor	OD655	NH_3-N (mg/L)
	Blank	-----	-----	-----
	1.0 mg/L NH_3-N Std.	-----	.089	1.00
	3.0 mg/L NH_3-N Std.	-----	.287	3.00
	6.0 mg/L NH_3-N Std.	-----	.545	6.00
	10.0 mg/L NH_3-N Std.	-----	.920	10.00
	3.0 mg/L spike	-----	.291	
	3.0 mg/L spike dupl.	-----	.305	
1.	9	1	.080	
2.	~~11~~ 21	1	.060	
3.	23	1	.042	
4.	33	1	.097	
5.	42	1	.019	
6.	56	1	.052	
7.	66	1	.059	
8.	70	1	.019	
9.	82	1	.012	
10.	108	1	.142	
11.	109	1	.126	
12.	110	1	.033	
13.	126	1	.078	
14.	129	1	.030	
15.	130	1	.021	
16.	133	1	.047	
17.	136	1	.053	
18.	142	1	.026	
19.	152	1	.020	
20.	155	1	.023	
21.	161	1	.027	
22.				
23.				
24.				
25.				
26.				
27.				
28.				
29.				
30.				
31.				
32.				
33.				
34.				
35.				
36.				



Reporting limit (mg/L) =	0.1
Recovery (%) =	#VALUE!
Precision (RPD) =	#VALUE!
Sample volume (ml):	0.50
Dilution factor	1

Sample Set Description:

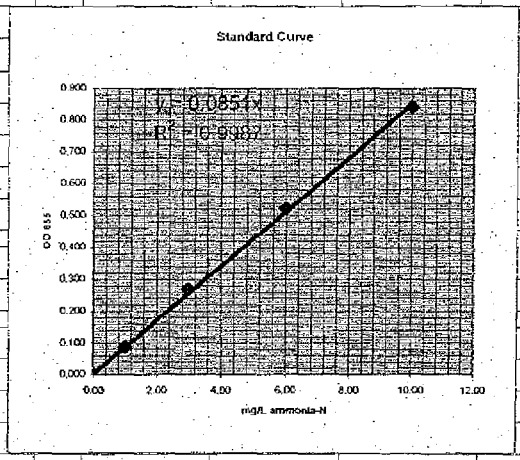
Test No.:	686-19
Test Day:	0 (10-26-04)
Species:	*Hyalella*
Overlying water	
Analyst:	RSC
Date analysed:	11/10/2004

Total Ammonia-N in Water: Computation Worksheet

Salicylate Method (SOP #5492)

Result

	Sample description	Dilution factor	OD_{655}	NH_3-N (mg/L)
	Blank	-----	-----	-----
	1.0 mg/L NH_3-N Std.	-----	0.087	1.00
	3.0 mg/L NH_3-N Std.	-----	0.268	3.00
	6.0 mg/L NH_3-N Std.	-----	0.522	6.00
	10.0 mg/L NH_3-N Std.	-----	0.840	10.00
	3.0 mg/L spike	-----	0.271	3.18
	3.0 mg/L spike dupl.	-----	0.268	3.15
1.	9	1	0.000	ND
2.	21	1	0.010	0.12
3.	23	1	0.004	ND
4.	33	1	0.015	0.18
5.	42	1	0.002	ND
6.	56	1	0.007	ND
7.	66	1	0.012	0.14
8.	70	1	0.007	ND
9.	82	1	0.009	0.11
10.	108	1	0.009	0.11
11.	109	1	0.007	ND
12.	110	1	0.007	ND
13.	126	1	0.010	0.12
14.	129	1	0.008	ND
15.	130	1	0.008	ND
16.	133	1	0.009	0.11
17.	136	1	0.009	0.11
18.	142	1	0.014	0.16
19.	152	1	0.009	0.11
20.	155	1	0.011	0.13
21.	161	1	0.011	0.13
22.				
23.				
24.				
25.				
26.				
27.				
28.				
29.				
30.				
31.				
32.				
33.				
34.				
35.				
36.				



Reporting limit (mg/L) =	0.1
Recovery (%) =	105.5
Precision (RPD) =	1.11
Sample volume (ml):	0.50
Dilution factor	1

Sample Set Description:

Test No.:	686-19
Test Day:	28 (11-23-04)
Species:	*Hyalella*
Overlying water	
Analyst:	RSC
Date analysed:	12/1/2004

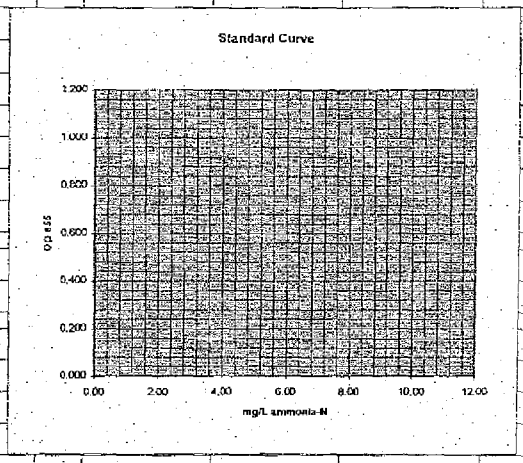
ANC08384
BZTO104(e)008384

Total Ammonia-N in Water: Computation Worksheet

Salicylate Method (SOP #5492)

Result

	Sample description	Dilution factor	OD655	NH3-N (mg/L)
	Blank	-----	-----	-----
	1.0 mg/L NH3-N Std.	-----	.087	1.00
	3.0 mg/L NH3-N Std.	-----	.268	3.00
	6.0 mg/L NH3-N Std.	-----	.512	6.00
	10.0 mg/L NH3-N Std.	-----	.840	10.00
	3.0 mg/L spike	-----	.271	
	3.0 mg/L spike dupl.	-----	.268	
1.	9	1	.000	
2.	21	1	.010	
3.	23	1	.004	
4.	33	1	.015	
5.	42	1	.002	
6.	56	1	.037	
7.	66	1	.012	
8.	70	1	.007	
9.	82	1	.009	
10.	108	1	.004	
11.	109	1	.007	
12.	110	1	.007	
13.	126	1	.010	
14.	129	1	.008	
15.	130	1	.008	
16.	133	1	.009	
17.	136	1	.009	
18.	142	1	.014	
19.	152	1	.009	
20.	155	1	.017	
21.	161	1	.017	
22.				
23.				
24.				
25.				
26.				
27.				
28.				
29.				
30.				
31.				
32.				
33.				
34.				
35.				
36.				



Reporting limit (mg/L) =	0.1
Recovery (%) =	#VALUE!
Precision (RPD) =	#VALUE!
Sample volume (ml):	0.50
Dilution factor	1

Sample Set Description:

Test No.:	686-19
Test Day:	28 (11-23-04)
Species:	*Hyalella*
Overlying water	
Analyst:	RSC
Date analysed:	12/1/2004

ANC08385
BZTO104(e)008385

CHAIN-OF-CUSTODY RECORDS

Windward Environmental

CHAIN-OF-CUSTODY/TEST REQUEST FORM

1334

Project/Client Name: PORTLAND HARBOR RI/FS ROUND 2
Windward Project No: 03.28.04.28
Contact Name: HELLE ANDERSEN
Sampled By: THAI DO

Ship to: NORTHWESTERN AQUATIC SCIENCES
Attn: GERALD IRISSARRI
Shipping address: NEWPORT, OR

Shipping Date: HAND DELIVERED
Airbill Number:

Sample Collection Date (m/d/y)	Time	Sample Identification	Volume of Sample / # of Containers	Matrix	Test(s) Requested (check test(s) required): 10-d. Chir.	28-d. Hy.		Temp °C (cooler)				Comments / Instructions [Jar tag number(s)]
10.21.2004	13:43	LW2-G210	4L/4	SEDIMENT	x	x		3.0				9542F
10.21.2004	14:09	LW2-G213	4L/4	SEDIMENT	x	x		3.0				9543F
10.21.2004	14:35	LW2-G200	4L/4	SEDIMENT	x	x		3.0				9544F
10.21.2004	16:12	LW2-G093	4L/4	SEDIMENT	x	x		3.0				9545F
10.21.2004	17:40	LW2-G206	4L/4	SEDIMENT	x	x		4.0				9546F
10.22.2004	08:53	LW2-G362-1	4L/4	SEDIMENT	x	x		4.0				9547F
10.22.2004	09:28	LW2-G413	4L/4	SEDIMENT	x	x		4.0				9548F
10.22.2004	09:51	LW2-G393	4L/4	SEDIMENT	x	x		3.0				9549F
10.22.2004	10:22	LW2-G417	4L/4	SEDIMENT	x	x		3.0				9550F
10.22.2004	10:45	LW2-G415	4L/4	SEDIMENT	x	x		3.0				9551F
10.22.2004	11:31	LW2-G380	4L/4	SEDIMENT	x	x		3.0				9552F
10.22.2004	12:05	LW2-G430	4L/4	SEDIMENT	x	x		3.0				9553F
10.22.2004	13:20	LW2-G437	4L/4	SEDIMENT	x	x		3.0				9554F
		Total Number of Containers	52/80	Purchase Order / Statement of Work #								

1) Released by:
Print name: THAI DO
Signature:
Company: WINDWARD ENVIRONMENTAL LLC
Date/Time: 10.23.2004/09:35

1) Rec'd by: Gary A Bukler
Company: Northwestern Aquatic
Date/Time: 10/23/04 0935

2) Released by:
Print name:
Signature:
Company:
Date/Time:

1) Rec'd by:
Company:
Date/Time:

* Distribution: White and yellow copies accompany shipment; pink-consignor's copy; white-consignee return with results; yellow-consignee's copy.
* Instructions for completion of Chain-of-Custody/Test Request Form on back.

To be completed by Laboratory upon sample receipt:

Date of receipt: 10/23/04	Laboratory W.O.#:
Condition upon receipt: Intact	Time of receipt: 0935
Cooler temperature: 2.0-4.0°C	Received by: Gary A Bukler

Windward environmental LLC
200 West Mercer Street
Suite 401
Seattle, WA 98119
Tel: 206.378.1364
Fax: 206.217.0089

ANC08387
BZTO104(e)008387

2 of 2

Windward Environmental

CHAIN-OF-CUSTODY/TEST REQUEST FORM

1335

Project/Client Name: PORTLAND HARBOR RI/FS ROUND 2
Windward Project No: 03.28.04.28
Contact Name: HELLE ANDERSEN
Sampled By: THAI DO

Ship to: NORTHWESTERN AQUATIC SCIENCES
Attn: GERALD IRISSARRI
Shipping address: NEWPORT, OR

Shipping Date: HAND DELIVERED
Airbill Number:

Sample Collection Date (m/d/y)	Time	Sample Identification	Volume of Sample / # of Containers	Matrix	Test(s) Requested (check test(s) required)							Comments / Instructions [Jar tag number(s)]
					10d. Chir.	28d. Hy.		Temp °C (cooler)				
10.22.2004	13:50	LW2-G403	4L/4	SEDIMENT	x	x		3.0				9555F
10.22.2004	14:13	LW2-G401	4L/4	SEDIMENT	x	x		2.0				9556F
10.22.2004	14:44	LW2-G377	4L/4	SEDIMENT	x	x		2.0				9557F
10.22.2004	15:02	LW2-G341	4L/4	SEDIMENT	x	x		2.0				9558F
10.22.2004	15:18	LW2-G366	4L/4	SEDIMENT	x	x		3.5				9559F
10.22.2004	15:32	LW2-G351	4L/4	SEDIMENT	x	x		3.5				9560F
10.22.2004	15:53	LW2-G282	4L/4	SEDIMENT	x	x		3.5				9561F
		Total Number of Containers	28/80	Purchase Order / Statement of Work #								

1) Released by:
Print name: THAI DO
Signature:
Company: WINDWARD ENVIRONMENTAL LLC
Date/Time: 10.23.2004/09:35

1) Rec'd by: Gary A Butler
Company: Northwestern Aquatic
Date/Time: 10/23/04 0935

2) Released by:
Print name:
Signature:
Company:
Date/Time:

1) Rec'd by:
Company:
Date/Time:

* Distribution: White and yellow copies accompany shipment; pink-consignor's copy; white-consignee return with results; yellow-consignee's copy.
* Instructions for completion of Chain-of-Custody/Test Request Form on back.

To be completed by Laboratory upon sample receipt:

Date of receipt: 10/23/04	Laboratory W.O. #
Condition upon receipt: In tact	Time of receipt: 0935
Cooler temperature: 2.0-4.0c	Received by: Gary A Butler

Wind Ward environmental LLC
• 200 West Mercer Street
Suite 401
Seattle, WA 98119
Tel: 206.378.1364
Fax: 206.217.0089

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BZT0104(e)008388

APPENDIX II

RAW DATA – REFERENCE TOXICANT TEST

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-

ACUTE TOXICITY TEST (ALL SPECIES)

REVIEWED PAGES 1-7 -GSI

Test No. 999-1855 Client: QC Test Investigator

Test Type (rangefinding/definitive) Test Length (hr) 96

Species *Hyalella azteca*

STUDY MANAGEMENT

Client: QC test

Client's Study Monitor: QC test

Testing Laboratory: Northwestern Aquatic Sciences

Test Location: Newport Laboratory

Laboratory's Study Personnel:

Proj. Man./Study Dir. G.J. Irissarri GJI

QA Officer L. K. Nemeth LKN

1. GABuhler GB 2. Susan Gage SG

3. M.S. Redmond MLR 4. William T. Montgomery WTM

Test Beginning: 10-26-04 1220 Test Ending: 10-30-04 1140

TEST MATERIAL Lot No.: Mallinckrodt Lot#TNZ

Description: Cadmium as $CdCl_2 \cdot 2.5H_2O$ (1.0 mg/ml) Prepared: 7-13-04

NAS Sample No.				
Date of Collection:				
Date of Receipt:				
Temperature (deg C):				
Dissolved oxygen (mg/L):				
pH:				
Conductivity (umhos/cm):				
Hardness (mg/L):				
Alkalinity (mg/L):				
Salinity (ppt):				
Total chlorine (mg/L):				
Total ammonia-N (mg/L):				

DILUTION WATER

Description: Moderately hard synthetic water

Date of Preparation/Collection: 10-5-04

Water Quality: Cond. (umhos/cm): 320 Salinity (ppt) — pH 7.5

Hardness (mg/L as $CaCO_3$): 85 Alkalinity (mg/L as $CaCO_3$): 80

Treatments: Aerated ≥ 24 hrs

AGE OF TEST DILUTION WATER EXCEEDED EPA SPECIFICATIONS.

TEST LOCATION

Test conducted in (circle one): room 1 room 2 trailer water bath other:

Randomization chart:

A	60	15	∅	30	7.5	3.75				
B	15	∅	3.75	60	7.5	30				

Error codes: 1) Correction of handwriting error
2) Written in wrong location; entry deleted
3) Wrong date deleted; replaced with correct date
4) Error found in measurement; measurement repeated

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-_____

ACUTE TOXICITY TEST (ALL SPECIES)

Test No. 999-1855 Client QC Test Investigator _____

TEST ORGANISMS

Species: *Hyalella azteca* Age: 7-8 DAYS Size: —

Source: Chesapeake Cultures, Hayes, VA Date received: 10-22-04

Acclimation Data:

Date	Temp. (deg.C)	DO (mg/L)	pH	Cond. umhos/cm	Hardness (mg/L)	Alkalinity (mg/L)	Feeding * Amount	Feeding * description	Water changes
10-22-04	18.2	>15.0	7.4	360	145	170	10mL	YTC	50% w/ TAP WATER
10-23-04	22.8	8.6	7.8	360	103	160	"	"	"
10-24-04	22.3	8.5	7.5	235	68	80	"	"	"
10-25-04	22.4	8.4	7.2	195	60	60	"	"	"
10-26-04	22.5	8.3	7.3	190	51	40	"	"	
Mean	21.6	9.8	7.4	268	85	102			
S.D.	1.9	2.9	0.2	86	39	59			
(N)	5	5	5	5	5	5			

Photoperiod during acclimation: 16:8, L:D

* ANIMALS WERE DIVIDED INTO 3 PANS, FEEDING IS PER PAN.

TEST PROCEDURES AND CONDITIONS

Test concentrations (50% series recommended): 60, 30, 15, 7.5, 3.75, 0 ug/L

Test chamber: 250 ml glass beakers Test volume: 100 ml

Replicates/treatment: 10 Organisms/treatment: 20 (10/rep)

Test water changes: None Aeration during test: None

Feeding: 0.5 ml YTC suspension per beaker on days 0 and 2

Duration: 24-hr, 48-hr, (96-hr) Test temperature (deg.C): (23 ± 1) or 20 ± 1

Beaker placement: Stratified randomization Photoperiod: 16:8, L:D

MISCELLANEOUS NOTES

Test solution preparation:

1st working stock made by 1:99 (1ml ↑ 100 ml) dilution of concentrated 1.0 mg/ml Cd stock.
Final conc.: 10 ug/L.

2nd working stock made by 10:90 (10ml ↑ 100 ml) dilution of concentrated 1st working stock.
Final conc.: 1ug/L.

Test concentration (ug/L)	ml of 2nd working stock per 200 ml	Dilution water
60	12	Brought up to final volume of 200 ml with dilution water and distributed evenly between two replicates
30	6	
15	3	
7.5	1.5	
3.75	0.75	
0	0	

CM 10/26/04

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NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-_____

ACUTE TOXICITY TEST (ALL SPECIES)

Test No. 999-1855 Client QC Test

DAILY RECORD SHEET

Day 0 (10/26/04) UB

Conc. (ug/L)	Temp. (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	Survivors A	Survivors B
1. 60	23.0	8.6	290	7.6	85	70	10	10
2. 30	23.2	8.5	290	7.7			10	10
3. 15	23.1	8.7	290	7.7			10	10
4. 7.5	23.1	8.5	290	7.7			10	10
5. 3.75	23.1	8.6	285	7.7			10	10
6. 0	23.1	8.6	290	7.7	85	70	10	10
All animals fed 0.5 ml YTC suspension. Initials: UB								

Day 1 (10/27/04) UB

Conc. (ug/L)	Temp. (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	Survivors A	Survivors B
1. 60	23.6	7.6	295	7.3			10	10
2. 30	23.5	7.6	295	7.3			10	10
3. 15	23.5	7.8	295	7.3			10	10
4. 7.5	23.5	7.8	295	7.4			10	10
5. 3.75	23.5	7.9	300	7.4			10	10
6. 0	23.6	7.6	300	7.4			10	10

Day 2 (10/28/04) UB/[illegible]

Conc. (ug/L)	Temp. (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	Survivors A	Survivors B
1. 60	23.7	7.3	300	7.5			2(8D)	4(6D)
2. 30	23.7	7.4	300	7.6			6(4D)	4(6D)
3. 15	23.7	7.5	300	7.6			10	10
4. 7.5	23.8	7.6	300	7.6			10	10
5. 3.75	23.8	7.8	310	7.7			10	10
6. 0	23.7	7.5	300	7.8			10	10
All animals fed 0.5 ml YTC suspension. Initials: UB								

Day 3 (10/29/04) UB/[illegible]

Conc. (ug/L)	Temp. (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	Survivors A	Survivors B
1. 60	22.9	7.6	295	7.2			0(6D)	0(4D)
2. 30	23.1	7.6	300	7.2			0(6D)	0(4D)
3. 15	23.0	7.6	300	7.2			4(6D)	6(4D)
4. 7.5	23.3	7.8	305	7.2			9(6D)	10
5. 3.75	23.3	7.9	315	7.3			10	10
6. 0	23.0	7.5	300	7.2			10	10

Day 4 (10/30/04) UB

Conc. (ug/L)	Temp. (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	Survivors A	Survivors B
1. 60	—	—	—	—	—	—	0	0
2. 30	—	—	—	—			0	0
3. 15	23.1	7.4	310	7.5			0(4D)	0(6D)
4. 7.5	23.4	7.7	320	7.5			3(6D)	5(5D)
5. 3.75	23.3	7.6	330	7.5			9(1D)	10
6. 0	23.1	7.5	320	7.4	85	70	10	10
Mean	23.3	7.8	301	7.5	85	70		
SD	0.3	0.4	11	0.2	0	0		
n	28	28	28	28	3	3		

Chesapeake Cultures

P.O. Box 507 Hayes, VA 23072 (804) 693-4046 (804)694-4704 fax
www.c-cultures.com
e-mail growfish@c-cultures.com

NAS

Shipment Information

Species Hyalella azteca Date 10/21/04

Age in 2-3 d; 1.0-1.3 mm P.O. No. Verbal

Quanitity 2400+ Invoice No. 4861

Temperature 23°C Salinity – pH 7.96

Notes Thank you!

Rec'd 10-22-04 BB

Biologist [signature]

* *Please inspect shipment and report any problem immediately* *

ANC08393
BZTO104(e)008393

Acute 96-hr Toxicity Test-96 Hr Survival

Start Date:	10/26/04 12:20	Test ID:	999-1855	Sample ID:	REF-Ref Toxicant
End Date:	10/30/04 11:40	Lab ID:	ORNAS-Northwestern Aquati	Sample Type:	CDCL-Cadmium chloride
Sample Date:		Protocol:	EPAF 91-EPA Freshwater	Test Species:	HA-Hyalella azteca
Comments:					

Conc-ug/L	1	2
D-Control	1.0000	1.0000
3.75	0.9000	1.0000
7.5	0.3000	0.5000
15	0.0000	0.0000
30	0.0000	0.0000
60	0.0000	0.0000

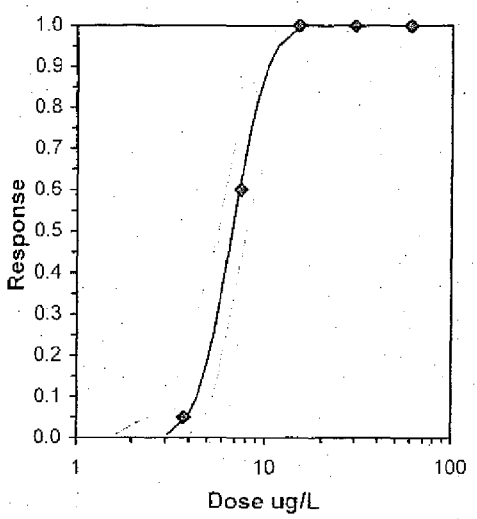
			Transform: Arcsin Square Root					Number	Total
Conc-ug/L	Mean	N-Mean	Mean	Min	Max	CV%	N	Resp	Number
D-Control	1.0000	1.0000	1.4120	1.4120	1.4120	0.000	2	0	20
3.75	0.9500	0.9500	1.3305	1.2490	1.4120	8.661	2	1	20
7.5	0.4000	0.4000	0.6825	0.5796	0.7854	21.317	2	12	20
15	0.0000	0.0000	0.1588	0.1588	0.1588	0.000	2	20	20
30	0.0000	0.0000	0.1588	0.1588	0.1588	0.000	2	20	20
60	0.0000	0.0000	0.1588	0.1588	0.1588	0.000	2	20	20

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Normality of the data set cannot be confirmed				
Equality of variance cannot be confirmed				

Maximum Likelihood-Probit

Parameter	Value	SE	95% Fiducial Limits		Control	Chi-Sq	Critical	P-value	Mu	Sigma	Iter
Slope	6.89875	1.5323	3.89545	9.90205	0	0.28228	7.81472	0.96	0.82782	0.14495	4
Intercept	-0.7109	1.29322	-3.2457	1.82378							
TSCR											

Point	Probits	ug/L	95% Fiducial Limits	
EC01	2.674	3.09463	1.63807	4.05961
EC05	3.355	3.88502	2.41992	4.8171
EC10	3.718	4.38587	2.96717	5.29905
EC15	3.964	4.75977	3.39493	5.66745
EC20	4.158	5.07955	3.7692	5.99312
EC25	4.326	5.37095	4.11332	6.30221
EC40	4.747	6.18155	5.05427	7.25552
EC50	5.000	6.727	5.64541	8.00303
EC60	5.253	7.32057	6.23278	8.93079
EC75	5.674	8.42541	7.18395	10.961
EC80	5.842	8.90876	7.55679	11.958
EC85	6.036	9.50727	7.99322	13.2727
EC90	6.282	10.3178	8.55105	15.1824
EC95	6.645	11.6479	9.40878	18.6114
EC99	7.326	14.6229	11.1669	27.4883



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Test: AT-Acute 96-hr Toxicity Test							Test ID: 999-1855		
Species: HA-Hyalella azteca							Protocol: EPAF 91-EPA Freshwater		
Sample ID: REF-Ref Toxicant							Sample Type: CDCL-Cadmium chloride		
Start Date: 10/26/04 12:20			End Date: 10/30/04 11:40				Lab ID: ORNAS-Northwestern Aquatic Sciences		
Pos	ID	Rep	Group	Start	24 Hr	48 Hr	72 Hr	96 Hr	Notes
	1	1	D-Control	10				10	
	2	2	D-Control	10				10	
	3	1	3.750	10				9	
	4	2	3.750	10				10	
	5	1	7.500	10				3	
	6	2	7.500	10				5	
	7	1	15.000	10				0	
	8	2	15.000	10				0	
	9	1	30.000	10				0	
	10	2	30.000	10				0	
	11	1	60.000	10				0	
	12	2	60.000	10				0	

Comments: Data entry verified against laboratory bench sheets MLR 11-10-04

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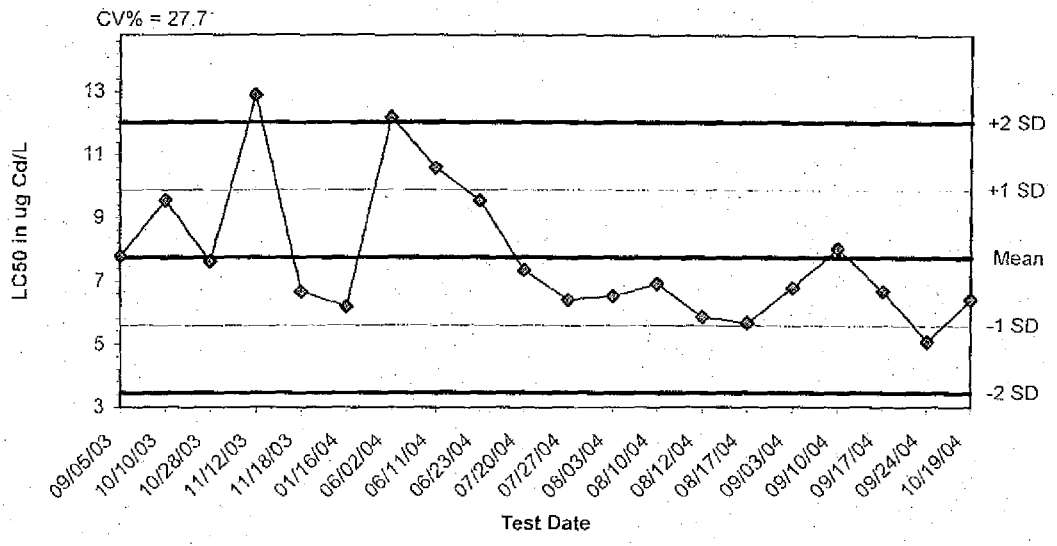
Hyalella azteca 96-hr reference toxicant test - last 20 points



Dates	Values	Mean	-1 SD	-2 SD	+1 SD	+2 SD
09/05/03	7.7900	7.7460	5.6014	3.4568	9.8906	12.0352
10/10/03	9.5600	7.7460	5.6014	3.4568	9.8906	12.0352
10/28/03	7.6200	7.7460	5.6014	3.4568	9.8906	12.0352
11/12/03	12.9000	7.7460	5.6014	3.4568	9.8906	12.0352
11/18/03	6.6700	7.7460	5.6014	3.4568	9.8906	12.0352
01/16/04	6.1900	7.7460	5.6014	3.4568	9.8906	12.0352
06/02/04	12.2000	7.7460	5.6014	3.4568	9.8906	12.0352
06/11/04	10.6000	7.7460	5.6014	3.4568	9.8906	12.0352
06/23/04	9.5600	7.7460	5.6014	3.4568	9.8906	12.0352
07/20/04	7.3500	7.7460	5.6014	3.4568	9.8906	12.0352
07/27/04	6.4100	7.7460	5.6014	3.4568	9.8906	12.0352
08/03/04	6.5300	7.7460	5.6014	3.4568	9.8906	12.0352
08/10/04	6.9300	7.7460	5.6014	3.4568	9.8906	12.0352
08/12/04	5.8800	7.7460	5.6014	3.4568	9.8906	12.0352
08/17/04	5.6800	7.7460	5.6014	3.4568	9.8906	12.0352
09/03/04	6.8000	7.7460	5.6014	3.4568	9.8906	12.0352
09/10/04	8.0300	7.7460	5.6014	3.4568	9.8906	12.0352
09/17/04	6.6900	7.7460	5.6014	3.4568	9.8906	12.0352
09/24/04	5.1000	7.7460	5.6014	3.4568	9.8906	12.0352
10/19/04	6.4300	7.7460	5.6014	3.4568	9.8906	12.0352

MSR
10-25-04

ANC08396
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Report

of

Test No. 686-2

Toxicity of Portland Harbor RI/FS Freshwater Test Sediments (Batch 1) using a 10-day Midge, *Chironomus tentans*, Sediment Bioassay

Submitted to

Windward Environmental, Inc.
200 West Mercer Street, Suite 401
Seattle, WA 98119

Submitted by

Northwestern Aquatic Sciences
3814 Yaquina Bay Road
P.O. Box 1437
Newport, OR 97365

January 18, 2005

TOXICITY TEST REPORT

TEST IDENTIFICATION

Test No.: 686-2

Title: Toxicity of Portland Harbor RI/FS freshwater test sediments (batch 1) using a 10-day midge, *Chironomus tentans*, sediment bioassay.

Protocol No.: NAS-686-CT4b, June 24, 2004. Based on ASTM 2003, Standard Method No. E 1706-00 and U.S. EPA Method 100.2 (EPA/600/R-99/064, 2000) This protocol can be found in Appendix B of the Portland Harbor RI/FS Round 2 Quality Assurance Project Plan, June 24, 2004.

STUDY MANAGEMENT

Study Sponsor: Windward Environmental, Inc., 200 West Mercer Street, Suite 401, Seattle, WA 98119.

Sponsor's Study Monitor: Ms. Helle Anderson

Testing Laboratory: Northwestern Aquatic Sciences, P.O. Box 1437, Newport, OR 97365

Test Location: Newport laboratory

Laboratory's Study Personnel: G.J. Irissarri, B.S., Proj. Man./Study Dir.; L.K. Nemeth, M.B.A., QA Officer; R.S. Caldwell, PhD, Sr. Toxicol.; M.S. Redmond, M.S., Aq. Toxicol.; G.A. Buhler, B.S., Aq. Toxicol.; W.T. Montgomery, A.A., Sr. Tech.; G. Hayes, B.S., Tech.; S.J. Gage, B.A., Tech.; B.B. Pridgeon, Lab Asst; J. M. Gray, Lab Asst.

Study Schedule:

Test Beginning: 7-27-04, 1530 hrs.

Test Ending: 8-6-04, 1500 hrs.

Disposition of Study Records: All specimens, raw data, reports and other study records are stored according to Good Laboratory Practice regulations at Northwestern Aquatic Sciences, 3814 Yaquina Bay Rd., Newport, OR 97365.

Good Laboratory Practices: The test was conducted following the principles of Good Laboratory Practices (GLP) as defined in the EPA/TSCA Good Laboratory Practice regulations revised August 17, 1989 (40 CFR Part 792).

Statement of Quality Assurance: The test data were reviewed by the Quality Assurance Unit to assure that the study was performed in accordance with the protocol and standard operating procedures. This report is an accurate reflection of the raw data.

TEST MATERIAL

Test Sediments: Portland Harbor RI/FS freshwater test sediments (Batch 1). Details are as follows:

NAS Sample No.	9213F	9214F	9215F	9216F	9217F
Description	LW2-G009	LW2-G010	LW2-G011	LW2-G007-1	LW2-G026
Collection Date	7-19-04	7-19-04	7-19-04	7-20-04	7-20-04
Receipt Date	7-23-04	7-23-04	7-23-04	7-23-04	7-23-04
NAS Sample No.	9218F	9219F	9220F	9221F	9222F
Description	LW2-G060	LW2-G064	LW2-G203-1	LW2-G066	LW2-G015
Collection Date	7-20-04	7-20-04	7-20-04	7-20-04	7-20-04
Receipt Date	7-23-04	7-23-04	7-23-04	7-23-04	7-23-04
NAS Sample No.	9223F	9224F	9225F	9226F	9227F
Description	LW2-G019	LW2-G017	LW2-G294-1	LW2-G270	LW2-G311-1
Collection Date	7-20-04	7-20-04	7-21-04	7-21-04	7-21-04
Receipt Date	7-23-04	7-23-04	7-23-04	7-23-04	7-23-04
NAS Sample No.	9228F	9229F	9230F	9231F	9232F
Description	LW2-G324-1	LW2-G334	LW2-G345-1	LW2-G221	LW2-G220
Collection Date	7-22-04	7-22-04	7-22-04	7-22-04	7-22-04
Receipt Date	7-23-04	7-23-04	7-23-04	7-23-04	7-23-04

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Control Sediment: The negative control sediment (NAS#9208F) was collected on 7-20-04 from an area approximately one mile east of the Hwy. 101 bridge at Beaver Creek, approx. 8 miles south of Newport, OR.
Treatments: Homogenized at test set up by mixing using stainless steel implements.
Storage: All test and control sediments were stored locked at 4°C in the dark in capped containers until used.

TEST WATER

Source: Dechlorinated Newport, OR tap water.
Dates of Collection: Six batches of test water were collected between 7/23/04 and 8/5/04
Water Quality (mean ± SD):
pH: 7.1 ± 0.1 (n=6)
conductivity: 157 ± 4 µmhos/cm (n=6)
hardness: 34 ± 0 mg/L as $CaCO_3$ (n=6)
alkalinity: 30 ± 0 mg/L as $CaCO_3$. (n=6)
chlorine: All batches were <0.02 mg/L.
Pretreatment: Dechlorinated and aerated ≥24 hr.

TEST ORGANISMS

Species: *Chironomus tentans*, midge.
Size: 3rd instar, mean initial wt: 0.16 ± 0.01 mg
Source: NAS cultures, originally obtained from EPA, Duluth, MN.
Acclimation: Holding conditions prior to testing averaged: temperature, 23.9 ± 1.0°C; dissolved oxygen, 7.3 ± 1.1 mg/L; pH, 7.4 ± 0.2; conductivity, 338 ± 25 µmhos/cm; hardness, 81 mg/L as $CaCO_3$; and alkalinity, 85 mg/L as $CaCO_3$.

TEST PROCEDURES AND CONDITIONS

The following is an abbreviated statement of the test procedures and a statement of the test conditions actually employed. See the test protocol for a more detailed description of the test procedures used in this study.

Test Chambers: 300 ml high-form glass beakers
Test Volumes: 100 ml sediment layer; 175 ml test water.
Replicates/Treatment: 8
Organisms/Treatment: 80
Water Volume Changes: 2 water volumes per day
Aeration: None.
Feeding: Animals were fed 1.5 ml of Prime Tropical Flakes suspension (1.5 ml contains 6 mg dry solids) per beaker daily.
Effects Criteria: 1) survival after 10 days, and 2) average individual biomass (based on ash-free dry weight) after 10 days. Death is defined as no visible movement or response to tactile stimulation. Missing organisms were considered to be dead.
Water Quality and Other Test Conditions: The temperature, dissolved oxygen, conductivity, pH, hardness, alkalinity and ammonia-nitrogen were measured in the overlying water of one replicate test container per treatment on days 0 and 10 of the test. Temperature and dissolved oxygen were measured daily in the overlying water of one replicate test container per treatment. Interstitial ammonia was measured in the bulk sediment. Hardness and alkalinity were measured with titrimetric methods. Interstitial water samples were obtained by centrifugation, or by settling in the case of very sandy sediments. Total total ammonia-N was measured using Hach reagents based on the salicylate (Clin. Chim. Acta 14:403, 1996) colorimetric method; samples were not distilled prior to analysis. The photoperiod was 16:8, L:D.

DATA ANALYSIS METHODS

Survival and individual biomass were calculated for each replicate as follows:

percent survival = 100 x (number surviving/initial number tested)
average individual ash-free dry wt. = (final wt. – ashed dry wt.)/number weighed,
where:

ANC08399
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ash-free dry wt. = dry weight of organisms recovered on day 10 – ashed dry weight, in mg

Means and standard deviations for the biological endpoints described above, and for water quality data, were computed using Microsoft Excel 2000.

PROTOCOL DEVIATIONS

The maximum light intensity recorded during the test measured 1141 lux, which slightly exceeded the 100-1000 lux parameters described in the protocol. Light levels were reduced to below 1000 lux part way through this test and for all subsequent tests. This deviation is considered minor and not likely to have affected the test results.

REFERENCE TOXICANT TEST

The reference toxicant test is a multi-concentration toxicity test using potassium chloride, to evaluate the performance of the test organisms used in the sediment toxicity test. The performance is evaluated by comparing the results of this test with historical results obtained at the laboratory. A summary of the reference toxicant test result is given below. The reference toxicant test raw data are found in Appendix II.

Test No.: 999-1810
Reference Toxicant and Source: Potassium chloride (Fisher, Lot No. 006829).
Test Date: 7-27-04
Dilution Water Used: Moderately hard synthetic water prepared from Milli-Q® deionized water.
Result: 96-hr LC50, 5.53 g/L. This result is within the laboratory's control chart warning limits (2.75 to 7.56 g/L).

TEST RESULTS

Observations of water quality in the overlying water throughout the test are summarized in Table 1. A detailed tabulation of the water quality results by sample and test day can be found in Appendix I. Interstitial ammonia and pH measurements are listed in Table 2. The means and standard deviations of percent mortality and growth (ash-free dry weight) of midges exposed for 10 days to sediments are summarized in Table 3. Detailed data organized by sample and replicate, and summary statistics for these observations, are given in Appendix I.

All water quality observations of overlying water temperature and dissolved oxygen were within the protocol specified ranges. Ammonia-N in the overlying water ranged from <0.10 to 1.3 mg/L in all day 0 and day 10 observations. Interstitial bulk sediment values for ammonia-N ranged from <0.5 to 18.2 mg/L.
The test met the survival and weight acceptability criteria specified in the test protocol with 85.0% mean control survival (≥70% required) and a control individual mean ash-free dry weight of 0.69 mg per larvae (0.48 mg required). The reference toxicant (positive control) result was within the laboratory's control chart limits (5.53 g/L; control chart mean ± 2 S.D. = 5.15 ± 2.40). It is concluded, therefore, that the test has developed fully acceptable data for use in making management decisions.

REFERENCES

ASTM. 2003. Standard Test Methods for Measuring the Toxicity of Sediment-Associated Contaminants with Fresh Water Invertebrates. ASTM Standard Method No. E 1706-00. Am. Soc. Test. Mat., West Conshohocken, PA.

U.S. EPA. 2000. Section 12, Test Method 100.2, *Chironomus tentans* 10-d Survival and Growth Test for Sediments, pp 55-62 In: Methods for Measuring the Toxicity and Bioaccumulation of Sediment-associated Contaminants with Freshwater Invertebrates (Second Edition). EPA/600/R-99/064.

ANC08400
BZTO104(e)008400

STUDY APPROVAL

Gerald Isaacson 1-20-05
Project Manager/Study Director Date

Linda K. Nemeth 1/14/05
Quality Assurance Unit Date

Richard A. Caldwell 1/20/05
Laboratory Director Date

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Table 1. Summary of water quality conditions during tests of the midge, *Chironomus tentans*, exposed to freshwater sediments.

Water Quality Parameter	Mean ± S.D.	Minimum	Maximum	N
Temperature (°C)	22.8 ± 0.3	22.3	23.5	231
Dissolved oxygen (mg/L)	5.3 ± 1.1	3.0	7.2	231
Conductivity (µmhos/cm)	166 ± 14	155	240	63
pH	7.1 ± 0.2	6.8	7.5	63
Hardness (mg/L as $CaCO_3$)	46 ± 6	34	60	42
Alkalinity (mg/L as $CaCO_3$)	43 ± 5	40	60	42
Total ammonia (mg/L)	---	<0.1	1.3	42

Table 2. Pore water ammonia-N and pH in bulk test sediments at the time of test setup.

NAS Sample No.	Sample Description	Ammonia (mg/L)	pH
9208F	Control	<0.5	7.2
9213F	LW2-G009	0.5	7.0
9214F	LW2-G010	2.5	6.7
9215F	LW2-G011	7.9	6.8
9216F	LW2-G007-1	6.3	6.6
9217F	LW2-G026	4.2	6.7
9218F	LW2-G060	1.1	7.1
9219F	LW2-G064	0.5	7.1
9220F	LW2-G203-1	5.1	6.7
9221F	LW2-G066	4.2	6.8
9222F	LW2-G015	4.3	6.9
9223F	LW2-G019	1.1	7.8
9224F	LW2-G017	6.2	7.0
9225F	LW2-G294-1	7.6	6.8
9226F	LW2-G270	12.5	6.6
9227F	LW2-G311-1	18.2	6.8
9228F	LW2-G324-1	0.5	7.0
9229F	LW2-G334	3.1	7.0
9230F	LW2-G345-1	12.4	6.5
9231F	LW2-G221	1.9	7.0
9232F	LW2-G220	1.6	7.2

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Table 3. Mortality and growth[1] results of *Chironomus tentans* 10-day sediment toxicity test.

Sample description		Average Percent mortality (Mean ± SD)	Average ash-free dry wt/midge (mg)[1] (Mean ± SD)
9208F	Control	15.0 ± 9.3	0.69 ± 0.07
9213F	LW2-G009	17.5 ± 16.7	0.76 ± 0.10
9214F	LW2-G010	18.8 ± 23.0	0.72 ± 0.17
9215F	LW2-G011	22.5 ± 16.7	0.90 ± 0.13
9216F	LW2-G007-1	28.8 ± 14.6	0.75 ± 0.15
9217F	LW2-G026	18.8 ± 14.6	0.71 ± 0.06
9218F	LW2-G060	12.5 ± 10.4	0.80 ± 0.10
9219F	LW2-G064	16.3 ± 7.4	0.79 ± 0.09
9220F	LW2-G203-1	17.5 ± 26.0	0.70 ± 0.09
9221F	LW2-G066	10.0 ± 13.1	0.75 ± 0.08
9222F	LW2-G015	11.3 ± 9.9	0.74 ± 0.06
9223F	LW2-G019	15.0 ± 16.0	0.83 ± 0.05
9224F	LW2-G017	35.0 ± 29.3	0.79 ± 0.10
9225F	LW2-G294-1	100.0 ± 0.0	---
9226F	LW2-G270	37.5 ± 14.9	0.53 ± 0.16
9227F	LW2-G311-1	86.3 ± 10.6	0.11 ± 0.06
9228F	LW2-G324-1	27.5 ± 22.5	0.93 ± 0.13
9229F	LW2-G334	6.3 ± 7.4	0.64 ± 0.09
9230F	LW2-G345-1	17.5 ± 7.1	0.64 ± 0.06
9231F	LW2-G221	13.8 ± 11.9	0.73 ± 0.11
9232F	LW2-G220	17.5 ± 11.6	0.70 ± 0.10

[1] Pupae were not included in the sample to estimate ash-free dry weight (as per EPA/600/R-99/064, p. 59, section 12.3.8.2)

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APPENDIX I

RAW DATA

TEST DESCRIPTION, MONITORING, AND RESULTS BENCHSHEETS

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-2 Client Windward Environmental Investigator

STUDY MANAGEMENT

Client: Windward Enviromental, 200 West Mercer Street, Suite 401, Seattle, WA 98119
Client's Study Monitor: Ms. Helle Anderson
Testing Laboratory: Northwestern Aquatic Sciences
Test Location: Newport Laboratory
Laboratory's Study Personnel:
Proj. Man./Study Dir. G.J. Irissarri GJI
QA Officer L.K. Nemeth
1. GA Schlen GS 2. G.C. Hayes GCH
3. William T. Montgomery WTM 4. B.B. Pridgeon BBP
Study Schedule: m.s Redmond MLR - R.S. Gilman RSG - J. McGRAY
Test Beginning: 7-27-04 1530 Test Ending: 8-16-04 1500 GJI

TEST MATERIAL

General description (see sample logbook/chain-of-custody for details):

NAS Sample No.:	9213F	9214F	9215F	9216F	9217F
Description:	LW2-G009	LW2-G010	LW2-G011	LW2-G007-1	LW2-G026
Collection Date:	7/19/04	7/19/04	7/19/04	7/20/04	7/20/04
Receipt Date:	7/23/04	7/23/04	7/23/04	7/23/04	7/23/04

NAS Sample No.:	9218F	9219F	9220F	9221F	9222F
Description:	LW2-G060	LW2-G064	LW2-G203-1	LW2-G066	LW2-G015
Collection Date:	7/20/04	7/20/04	7/20/04	7/20/04	7/20/04
Receipt Date:	7/23/04	7/23/04	7/23/04	7/23/04	7/23/04

NAS Sample No.:	9223F	9224F	9225F	9226F	9227F
Description:	LW2-G019	LW2-G017	LW2-G294-1	LW2-G270	LW2-G311-1
Collection Date:	7/20/04	7/20/04	7/21/04	7/21/04	7/21/04
Receipt Date:	7/23/04	7/23/04	7/23/04	7/23/04	7/23/04

NAS Sample No.:	9228F	9229F	9230F	9231F	9232F
Description:	LW2-G324-1	LW2-G334	LW2-G345-1	LW2-G221	LW2-G220
Collection Date:	7/22/04	7/22/04	7/22/04	7/22/04	7/22/04
Receipt Date:	7/23/04	7/23/04	7/23/04	7/23/04	7/23/04

NAS Sample No.:	9208F				
Description:	Control				
Collection Date:	7/20/04				
Receipt Date:	7/20/04				

NAS Sample No.:					
Description:					
Collection Date:					
Receipt Date:					

Error codes: 1) correction of handwriting error
2) written in wrong location; entry deleted
3) wrong date deleted, replaced with corrrect date
4) error found in measurement; measurement repeated

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-2 Client Windward Environmental Investigator

SEDIMENT DESCRIPTIONS -- SUPPLEMENTAL NOTES

Sample No.	Description
9208F	BLACK FINE MUD
9213F	Grey, brown sandy mud
9214F	Gray brown fine sand
9215F	Gray-brown grainy Sand
9216F	Gray brown fine grain mud
9217F	GRAY/GREEN FINE MUD w/ SOME FINE SAND
9218F	Gray brown sandy mud
9219F	Gray, brown mud with some fine sand
9220F	DK. Brown sandy mud with sticks
9221F	Gray brown fine sand
9222F	Dark brown fine grain mud
9223F	Gray muddy sand
9224F	GRAY/GREEN FINE MUD w/ PLANT DEBRIS
9225F	Gray brown light sand in mud Strong odor of petroleum
9226F	Gray brown fine grain mud
9227F	Thick Brown Mud
9228F	BROWN MUDDY SAND, CHUNKS OF PLANT DEBRIS
9229F	Gray brown mud With Plant debris
9230F	Dark brown mud
9231F	Gray brown sandy mud
9232F	Brown fluid mud

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BZTO104(e)008407

NORTHWESTERN AQUATIC SCIENCES — PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-2 Client Windward Environmental Investigator

TEST WATER

Source: Dechlorinated Newport, OR tap water

Date of Collection: 7-23-04, 7-27-04, 7-29-04, 8-2-04, 8-3-04, 8-5-04

pH 7.0, 7.3, 7.2, 7.1, 7.1, 7.1 ($\bar{X}$ = 7.1 ± 0.1)

Cond (umhos/cm^2) 150, 160, 160, 160, 155, 155 ($\bar{X}$ = 157 ± 4)

Hardness (mg/L) 34, 34, 34, 34, 34, 34 ($\bar{X}$ = 34 ± 0.0)

Alkalinity (mg/L) 30, 30, 30, 30, 30, 30 ($\bar{X}$ = 30 ± 0.0)

Treatments: Aerated ≥ 24 hrs

TEST ORGANISMS

Species: *Chironomus tentans* Age: 3RD INSTAR Date received: —

Source: NAS cultures

Acclimation Data:

Date	Temp. (deg.C)	DO (mg/L)	pH	Cond umhos/cm	Feeding amount	Feeding description	Water changes	Hardness (mg/L)	Alkalinity (mg/L)
7-16-04	24.6	7.0	7.2	340	4 mL S, 3 mL T	S=SELENASTRUM T=TETRA FIN	YES	—	—
7-19-04	24.4	7.4	7.4	350	4S, 3T		YES	—	—
7-21-04	24.2	5.9	7.4	350	—		—	102	100
7-23-04	24.6	6.6	7.2	360	4S, 3T		YES	—	—
7-26-04	23.8	8.6	7.8	335	4S, 3T		YES, ½ WATER REPLACED W/ TAP WATER		—
7-27-04	22.0	8.5	7.5	290	—		—	60	70
Mean	23.9	7.3	7.4	338				81	85
S.D.	1.0	1.1	0.2	25				—	—
(N)	6	6	6	6				2	2

Photoperiod during acclimation: 16:8, L:D

TEST PROCEDURES AND CONDITIONS

Test chambers: 300 ml glass beakers

Test volumes: 100 ml of test sediment; 275 ml total volume

Replicates/treatment: (8) 8 Organisms/treatment: (80) 80 (10/REP)

Test water changes: Twice daily

Aeration: only if DO falls below 2.5 mg/L

Feeding: everyday beginning with day zero

Test temperature (deg.C): 23

Beaker placement: Total randomization

Photoperiod: 16:8, L:D

Control Sediment:

Source: From an area approximately one mile east of the Hwy. 101 bridge at Beaver Creek, approx. 8 miles south of Newport, OR.

Date collected: 7/20/04

Sieved through 0.5 -mm screen NAS# 9208F

Storage: 4°C in the dark in closed containers.

MISCELLANEOUS NOTES

LIGHT INTENSITY READINGS:

8-3-04 85, 106 FT-CANDLES

ANC08408
BZTO104(e)008408

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-2 Client Windward Environmental Investigator _____

Test conducted in (circle one): room 1 (room 2) trailer water bath other:_____

Randomization chart: TOP SHELF

5								165	
4								164	
3							▷	163	168
2								162	167
1								161	166

FRONT

Randomization chart:

Randomization chart:

Randomization chart:

ANC08409
BZTO104(e)008409

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No 686-2 Client Windward Environmental Investigator _____

DAILY RECORD SHEET

Day 0 (7/27/04) MB/BBP

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond.* µmhos/cm	pH*	Hardness* (mg/L)	Alkalinity* (mg/L)	S (ppm)	NH3* (ppm)	Comments
8	22.7	7.2	165	7.5	43	40			Each beaker fed 1.5 ml
15	22.9	7.0	160	7.3	51	40			Prime Tropical Flakes
22	22.6	7.1	165	7.0	51	40			suspension.
37	22.6	7.0	160	7.1	43	40			Initials: MB
38	22.6	6.8	205	7.3	60	40			Batch 7-23-04
41	22.6	6.9	160	7.2	51	40			
43	22.6	7.0	160	7.1	51	40			
47	22.5	6.8	165	7.1	51	40			
53	22.6	6.9	160	7.0	43	40			Water changed in all
59	22.7	6.8	165	7.5	43	40			beakers.
62	22.7	6.6	165	7.2	43	40			Time: 0725
76	22.6	6.7	160	7.2	51	40			Initials: MB
91	22.7	6.8	240	7.0	51	40			
93	22.7	6.9	170	7.1	43	40			
98	22.7	6.8	155	7.1	51	40			
115	22.7	6.8	165	7.1	51	50			
128	22.9	6.8	160	7.1	34	50			Water changed in all
153	22.7	6.9	160	7.1	43	60			beakers.
155	22.6	7.0	160	7.1	34	50			Time: 1830
167	22.8	6.8	170	7.2	51	40			Initials: MM
168	22.9	6.5	165	7.2	51	40			

*Water quality measurements to be taken.

Day 1 (7/28/04) BBP

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. µmhos/cm	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
8	22.9	7.0	165	7.3					Each beaker fed 1.5 ml
15	22.9	7.1	160	7.2					Prime Tropical Flakes
22	22.8	7.0	165	6.9					suspension.
37	22.8	6.8	160	7.0					Initials: MB
38	22.8	6.6	185	7.1					
41	22.8	6.8	160	7.1					
43	22.8	6.8	160	7.1					
47	22.8	6.8	160	7.1					
53	22.7	6.5	160	7.1					Water changed in all
59	22.9	6.4	170	7.3					beakers.
62	22.8	6.5	165	7.2					Time: 0720
76	22.9	6.8	160	7.1					Initials: MB
91	22.9	6.8	200	7.0					
93	22.9	6.8	170	7.2					
98	22.9	6.8	160	7.2					
115	23.1	7.0	160	7.1					
128	22.9	7.0	160	7.1					Water changed in all
153	22.9	7.0	165	7.1					beakers.
155	23.1	7.0	160	7.1					Time: 1720
167	23.1	7.0	165	7.2					Initials: MM
168	23.1	6.4	165	7.3					

*Water quality measurements to be taken.

ANC08410
BZTO104(e)008410

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No 686-2 Client Windward Environmental Investigator _____

DAILY RECORD SHEET

Day 2 (7/29/04) DW/GB/BBP

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. umhos/cm	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
8	23.3	7.1							Each beaker fed 1.5 ml
15	23.4	6.9							Prime Tropical Flakes
22	23.1	6.7							suspension.
37	23.0	6.2							Initials: BB
38	23.0	6.1							
41	23.0	6.1							
43	22.9	6.4							
47	23.0	6.6							
53	22.9	6.3							Water changed in all
59	23.1	6.4							beakers.
62	22.9	6.5							Time: 0730
76	23.1	6.6							Initials: GJ
91	23.1	6.7							
93	23.1	6.5							
98	23.3	6.5							
115	23.3	6.6							
128	23.1	6.6							Water changed in all
153	23.1	~~6.9~~ 6.6							beakers.
155	23.3	6.9							Time: 1705
167	23.4	6.7							Initials: ~~BB~~
168	23.5	6.7							

*Water quality measurements to be taken.

Day 3 (7/30/04) NB/GJ

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. umhos/cm	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
8	22.7	5.1		~~7.0~~ 6.1					Each beaker fed 1.5 ml
15	22.9	5.4							Prime Tropical Flakes
22	22.7	5.2							suspension.
37	22.7	5.2							Initials: GJ
38	22.6	5.2							
41	22.6	4.6							
43	22.7	4.7							
47	22.6	4.8							
53	22.6	4.8							Water changed in all
59	22.6	4.6							beakers.
62	22.7	4.8							Time: 0720
76	22.6	5.1							Initials: GJ
91	22.7	5.3							
93	22.6	4.9							
98	22.6	4.7							
115	22.8	5.0							
128	22.8	5.0							Water changed in all
153	22.8	5.2							beakers.
155	22.6	5.4							Time: 1730
167	22.7	5.2							Initials: MM
168	22.8	5.6							

*Water quality measurements to be taken.

ANC08411
BZTO104(e)008411

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No 686-2 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 4 (7/31/01 0B/GS1

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. umhos/cm	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
8	22.5	6.4							Each beaker fed 1.5 ml
15	22.7	6.5							Prime Tropical Flakes
22	22.4	6.3							suspension.
37	22.4	6.1							Initials: UB
38	22.4	6.3							
41	22.5	5.9							
43	22.4	5.8							
47	22.4	6.0							
53	22.4	6.0							Water changed in all
59	22.5	6.0							beakers.
62	22.4	5.8							Time: 0655
76	22.5	6.1							Initials: UB
91	22.5	6.3							
93	22.5	6.0							
98	22.5	5.9							
115	22.6	6.2							
128	22.4	6.2							Water changed in all
153	22.4	6.3							beakers.
155	22.6	6.4							Time: 1705
167	22.6	6.4							Initials: GS1
168	22.4	6.6							

*Water quality measurements to be taken.

Day 5 (8/1/01) WTM

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. umhos/cm	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
8	22.4	5.8							Each beaker fed 1.5 ml
15	22.6	5.7							Prime Tropical Flakes
22	22.6	5.7							suspension.
37	22.3	5.7							Initials: WTM
38	22.4	5.8							
41	22.4	5.1							
43	22.4	5.3							
47	22.3	5.7							
53	22.3	5.7							Water changed in all
59	22.5	5.0							beakers.
62	22.3	5.3							Time: 0700
76	22.4	5.4							Initials: WTM
91	22.3	5.2							
93	22.4	4.9							
98	22.4	4.9							
115	22.5	5.1							
128	22.4	5.3							Water changed in all
153	22.3	5.5							beakers.
155	22.4	5.6							Time: 1725
167	22.5	4.6							Initials: MH2
168	22.5	5.1							

*Water quality measurements to be taken.

ANC08412
BZTO104(e)008412

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No 686-2 Client Windward Environmental Investigator _____

DAILY RECORD SHEET

Day 6 (8/2/04) mm/dd/yy

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. umhos/cm	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
8	22.5	5.4							Each beaker fed 1.5 ml
15	22.6	5.0							Prime Tropical Flakes
22	22.4	5.2							suspension.
37	22.3	5.2							Initials: GJL
38	22.4	5.2							
41	22.4	4.8							
43	22.4	5.0							
47	22.4	5.0							
53	22.3	4.7							Water changed in all
59	22.4	4.8							beakers.
62	22.4	4.8							Time: 0710
76	22.3	5.0							Initials: GJL
91	22.4	4.8							
93	22.4	5.0							
98	22.4	5.0							
115	22.5	5.4							
128	22.3	5.4							Water changed in all
153	22.4	5.5							beakers.
155	22.5	5.6							Time: 1700
167	22.5	4.8							Initials: [illegible] /mm
168	22.5	5.1							

*Water quality measurements to be taken.

Day 7 (8/3/04) GJL

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. umhos/cm	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
8	23.0	4.7							Each beaker fed 1.5 ml
15	23.0	4.1							Prime Tropical Flakes
22	23.0	4.0							suspension.
37	22.8	4.2							Initials: GJS
38	22.8	4.6							
41	22.9	3.9							
43	22.9	4.0							
47	22.8	4.3							
53	22.8	4.2							Water changed in all
59	22.7	4.4							beakers.
62	22.9	4.2	8.3-04						Time: 0705
76	22.7	4.7							Initials: GJL
91	22.9	4.3							
93	22.8	4.5							
98	22.8	4.4							
115	22.9	4.6							
128	22.7	4.8							Water changed in all
153	22.7	4.6							beakers.
155	22.7	4.5							Time: 1715
167	22.9	4.4							Initials: GJL/BBP
168	22.9	4.6							

*Water quality measurements to be taken.

ANC08413
BZTO104(e)008413

Test No 686-2 Client Windward Environmental Investigator _____

DAILY RECORD SHEET

Day 8 (8/4/04) [illegible]/CAB

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
8	22.8	4.1							Each beaker fed 1.5 ml
15	22.9	4.0							Prime Tropical Flakes
22	22.7	3.4							suspension.
37	22.7	3.8							Initials: CAB
38	22.7	3.8							
41	22.8	4.2							
43	22.7	3.2							
47	22.7	3.4							
53	22.7	3.8							Water changed in all
59	22.7	3.8							beakers.
62	22.7	3.3							Time: 0710
76	22.7	4.1							Initials: GJL
91	22.7	3.3							
93	22.7	3.6							
98	22.7	3.4							
115	22.8	3.8							
128	22.7	4.2							Water changed in all
153	22.6	4.6							beakers.
155	22.8	4.3							Time: 1720
167	22.8	3.8							Initials: [illegible]
168	22.8	3.8							

*Water quality measurements to be taken.

Day 9 (8/5/04) CAB

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
8	23.2	3.8							Each beaker fed 1.5 ml
15	23.2	3.9							Prime Tropical Flakes
22	23.2	3.6							suspension.
37	23.1	3.8							Initials: CAB
38	23.1	3.9							
41	23.1	3.9							
43	23.1	4.0							
47	23.1	3.8							
53	23.1	3.4							Water changed in all
59	23.1	3.3							beakers.
62	23.1	3.0							Time: 0710
76	23.1	3.6							Initials: GJL
91	23.1	3.6							
93	23.1	3.7							
98	23.1	3.5							
115	23.1	3.7							
128	23.1	3.8							Water changed in all
153	23.2	3.8							beakers.
155	23.1	3.9							Time: 1845
167	23.2	4.2							Initials: BBP
168	23.2	4.0							

*Water quality measurements to be taken.

Test No 686-2 Client Windward Environmental Investigator _____

DAILY RECORD SHEET

Day 10 (8 / 6 / 04 CAS / GJL

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond.* (umhos/cm)	pH*	Hardness* (mg/L)	Alkalinity* (mg/L)	S (ppm)	NH3* (ppm)	Comments
8	23.0	4.8	205	7.0	43	50			Each beaker fed 1.5 ml
15	23.0	4.6	175	7.0	43	40			Prime Tropical Flakes
22	22.9	4.6	160	6.9	43	40			suspension.
37	22.9	4.4	160	6.8	43	50			Initials: —
38	22.8	4.4	170	7.0	43	40			
41	22.9	4.7	160	7.0	43	40			
43	22.9	4.2	160	6.9	43	40			
47	22.8	4.3	160	6.9	51	40			
53	22.8	4.2	160	6.9	43	40			Water changed in all
59	22.9	4.6	165	7.0	43	~~40~~ 50			beakers.
62	22.8	4.3	165	7.0	43	50			Time: 0705
76	22.8	4.8	160	6.9	43	50			Initials: GJL
91	22.8	4.1	165	6.9	43	50			
93	22.8	4.0	165	6.8	51	40			
98	22.8	4.6	160	6.9	60	40			
115	22.9	4.3	160	6.8	43	40			
128	22.8	4.4	160	6.8	43	40			Water changed in all
153	22.7	4.9	160	6.9	51	50			beakers.
155	22.8	5.2	160	6.9	43	40			Time:
167	22.8	4.6	160	6.9	51	50			Initials:
168	22.8	4.0	165	6.9	43	40			

*Water quality measurements to be taken.

Day _____(/ /)

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
8									Each beaker fed 1.5 ml
15									Prime Tropical Flakes
22									suspension.
37									Initials:
38									
41									
43									
47									
53									Water changed in all
59									beakers.
62									Time:
76									Initials:
91									
93									
98									
115									
128									Water changed in all
153									beakers.
155									Time:
167									Initials:
168									

*Water quality measurements to be taken.

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-2 Client Windward Enviromental Investigator

DAY 20 TEST TERMINATION SHEET

Beaker No.	Number of survivors	Initials
1	8	GJL
2	10	CAB
3	9	GJL
4	9	CAB
5	9	GJL
6	7	CAB
7	3	GJL
8	5	CAB
9	10	GJL
10	8	CAB
11	10	GJL
12	0	CAB
13	9	WTM
14	8	CAB
15	9	GJL
16	10	CAB
17	3	GJL
18	9	WTM
19	0	CAB
20	0	GJL
21	1	CAB
22	7	CAB
23	0	GJL
24	10	CAB
25	7	WTM
26	10	GJL
27	10	CAB
28	2	WTM
29	10	CAB
30	9	WTM
31	8	CAB
32	9	WTM
33	9	CAB
34	9	GJL
35	2	GJL
36	7	CAB
37	9	WTM
38	9	GJL
39	8	WTM
40	10	GJL
41	9	CAB
42	7	CAB
43	7	GJL
44	8	CAB
45	10	GJL

Beaker No.	Number of survivors	Initials
46	7	WTM
47	7	CAB
48	9	CAB
49	9	GJL
50	10	CAB
51	10	GJL
52	8	CAB
53	0	GJL
54	10	WTM
55	10	GJL
56	9	CAB
57	8	WTM
58	8	GJL
59	9	GJL
60	9	WTM
61	9	CAB
62	8	GJL
63	9	WTM
64	9	CAB
65	8	GJL
66	9	WTM
67	10	CAB
68	9	GJL
69	8	CAB
70	WTM 9/10	WTM
71	8	CAB
72	0	GJL
73	8	GJL
74	7	WTM
75	9	CAB
76	9	GJL
77	7	WTM
78	7	GJL
79	9	WTM
80	9	GJL
81	10	GJL
82	10	CAB
83	10	WTM
84	10	GJL
85	9	[illegible]
86	9	WTM
87	10	CAB
88	10	GJL
89	10	GJL
90	8	CAB

ANC08416
BZTO104(e)008416

Test No. 686-2 Client Windward Enviromental Investigator _____

DAY 20 TEST TERMINATION SHEET

Beaker No.	Number of survivors	Initials
91	9	WTM
92	8	GJL
93	5	CB
94	0	CB
95	8	WTM
96	9	GJL
97	10	CB
98	8	WTM
99	7	GJL
100	8	CB
101	7	GJL
102	9	GJL
103	9	CB
104	7	WTM
105	9	GJL
106	9	CB
107	9	GJL
108	GJL ~~7~~ 8	GJL
109	8	WTM
110	3	CB
111	10	CB
112	10	GJL
113	1	WTM
114	10	GJL
115	8	CB
116	2	GJL
117	7	WTM
118	8	GJL
119	2	CB
120	3	GJL
121	9	GJL
122	4	CB
123	7	WTM
124	8	GJL
125	7	GJL
126	5	WTM
127	6	GJL
128	6	GJL
129	8	WTM
130	10	GJL
131	Ø	GJL
132	10	GJL
133	8	WTM
134	7	CB
135	8	CB

Beaker No.	Number of survivors	Initials
136	5	WTM
137	5	GJL
138	6	CB
139	8	CB
140	9	GJL
141	5	GJL
142	7	CB
143	9	GJL
144	0	CB
145	3	CB
146	9	GJL
147	8	GJL
148	9	CB
149	9	CB
150	8	GJL
151	5	GJL
152	8	CB
153	Ø	GJL
154	4	CB
155	8	CB
156	8	GJL
157	9	CB
158	9	CB
159	6	GJL
160	6	CB
161	5	CB
162	8	CB
163	8	CB
164	7	GJL
165	9	CB
166	8	GJL
167	9	GJL
168	9	CB
169		
170		
171		
172		
173		
174		
175		
176		
177		
178		
179		
180		

Test No. 686-2 Client Windward Environmental Investigator _____

Tare: Date 7-27-04 Oven temp (C.) 63 Drying time (hr.) 24 Initials GJL
Standard Weights: 10 mg: 10.001 100mg: 100.018

Final #1 Date 7-29-04 Oven temp (C.) 62 Drying time (hr.) 24 Initials GJL
Standard Weights: 10 mg: 10.005 100mg: 100.017

Final: #2 Date 7-31-04 Oven temp (C.) 62 Drying time (hr.) 24 Initials GJL
Standard Weights: 10 mg: 10.005 100mg: 100.015

Equip. used: Oven: BLUE M Balance: SARTORIUS M3P

(Dry overnight at 60-90 degrees C)

Pan #	Tare wt. (mg)	Total wt. (mg) 1	Total wt. (mg) 2	#weighed	Comments
1	100.62	103.57	103.52	20	
2	104.90	108.37	108.31	20	
3	110.95	114.36	114.29	20	

ANC08418
BZTO104(e)008418

NORTHWESTERN AQUATIC SCIENCES — PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-2 Client WINDWARD ENVIRONMENTAL Investigator

WEIGHING DATA SHEET

Tare:	Date 8-4-04	Oven temp (C.) 64	Drying time (hr.) 24	Initials JRF
	Standard Weights:	10 mg: 10.010	100mg: 100.018	
Final #1:	Date 8-9-04	Oven temp (C.) 67	Drying time (hr.) 24	Initials JRF
	Standard Weights:	10 mg: 10.007	100mg: 100.012	
Final #2:	Date 8-11-04	Oven temp (C.) 64	Drying time (hr.) 24	Initials JRF
	Standard Weights:	10 mg: 10.006	100mg: 100.008	
Final #3:	Date 8-12-04	Oven temp (C.) 550	Drying time (hr.) 2	Initials JRF
	Standard Weights:	10 mg: 10.005	100mg: 100.015	

Equip. used: Oven Blue M #1 Balance Sartorius M3P

Furnace

(Dry overnight at 60-90 degrees C) (Final ashing is at 550 degrees C for 2 hours)

Bkr. #	Pan #	Tare wt. (mg)	Total wt. (mg) 1	Total wt. (mg) 2	no. weighed	put into pans-initials	Ashed weight (mg)
1	1	100.78	109.92	109.98	8	JMH	104.01
2	2	100.33	113.68	113.78	10	JMH	104.92
3	3	92.70	104.15	104.21	9	JMH	96.79
4	4	96.04	106.96	107.01	9	JMH	99.65
5	5	97.26	108.78	108.82	9	JMH	101.02
6	6	99.96	107.02	107.03	7	JMH	102.17
7	7	112.30	112.78	112.72	3	JMH	112.43
8	8	97.18	103.35	103.33	5	JMH	99.22
9	9	102.16	111.47	111.45	9 *	WTM	105.50
10	10	86.60	95.54	95.51	8	WTM	89.47
11	11	93.07	102.19	102.18	10	WTM	95.44
12	12	93.91	—	—	0	WTM	—
13	13	100.26	110.64	110.66	9	WTM	103.39
14	14	97.48	105.50	105.48	8	WTM	100.08
15	15	89.03	98.00	98.00	9	WTM	91.78
16	16	86.23	98.84	98.83	10	WTM	91.12
17	17	101.37	106.01	105.97	3	WTM	103.03
18	18	103.88	113.47	113.46	9	WTM	106.81
19	19	98.05	—	—	0	WTM	—
20	20	94.59	—	—	0	WTM	—
21	21	106.86	107.14	107.09	1	BBP	107.07
22	22	102.61	106.75	106.71	7	BBP	103.81
23	23	98.33	—	—	0	BBP	—
24	24	98.25	108.09	108.08	10	BBP	101.02
25	25	98.13	105.54	105.57	7	BBP	100.36
26	26	87.90	98.88	98.93	10	BBP	90.92
27	27	97.58	106.18	108.23	10	BBP	101.30
28	28	99.78	100.07	100.05	2	BBP	99.86
29	29	94.48	104.60	104.63	10	BBP	97.66
30	30	93.22	103.70	103.75	9	BBP	97.11
31	31	105.08	113.20	113.20	8	GJT	107.86
32	32	93.96	104.59	104.63	9	GJT	97.59
33	33	103.06	112.95	112.97	9	GJT	106.06

* BEAKER #9 - ONE ANIMAL LOST IN TRANSFER -GJT

ANC08419
BZTO104(e)008419

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-2 Client Windward Environmental Investigator

WEIGHING DATA SHEET

See page _____ for information on drying times and temperatures, standard weights,etc.

Bkr. #	Pan #	Tare wt. (mg)	Total wt. (mg) 1	Total wt. (mg) 2	no. weighed	put into pans-initials	Ash weight (mg)
34	34	103.89	113.84	113.87	9	GJ	107.23
35	35	97.91	98.44	98.41	2	GJ	98.05
36	36	91.54	96.29	96.29	7	GJ	92.79
37	37	91.26	98.83	98.85	9	GJ	93.77
38	38	94.98	101.65	101.65	9	GJ	97.12
39	39	99.84	108.27	108.28	8	GJ	102.45
40	40	105.28	115.09	115.10	10	GJ	108.93
41	41	101.04	109.42	109.44	9	MH	103.79
42	42	99.69	104.75	104.75	7	MH	100.94
43	43	100.51	107.52	107.54	7	MH	102.33
44	44	91.32	101.48	101.51	8	MH	94.42
45	45	94.06	104.76	104.80	10	MH	97.28
46	46	98.55	107.09	107.14	7	MH	100.88
47	47	98.34	106.00	106.02	7	MH	100.96
48	48	94.72	103.67	103.69	9	MH	97.31
49	49	93.99	103.29	103.32	9	MH	96.75
50	50	92.60	101.94	101.96	10	MH	95.38
51	51	82.80	92.51	92.52	10	MH	85.86
52	52	88.36	97.74	97.78	8	MH	90.75
53	53	103.58	—	—	0	MH	—
54	54	86.83	96.74	96.76	10	MH	89.86
55	55	118.68	130.23	130.26	10	MH	122.66
56	56	102.24	111.70	111.68	9	MH	105.28
57	57	113.17	119.05	119.02	8	MH	114.91
58	58	94.60	102.87	102.87	8	MH	96.97
59	59	104.01	113.15	113.14	9	MH	106.47
60	60	110.01	120.46	120.46	9	MH	113.15
61	61	101.52	109.88	109.88	9	MH	104.01
62	62	87.01	96.26	96.19	8	MH	89.55
63	63	103.59	112.91	112.87	9	MH	106.51
64	64	103.66	113.82	113.76	9	MH	107.11
65	65	110.49	117.67	117.62	8	MH	112.16
66	66	104.98	113.97	113.93	9	MH	107.41
67	67	110.39	121.58	121.46	10	MH	113.97
68	68	107.41	117.15	117.08	9	MH	109.78
69	69	83.15	90.48	90.40	8	MH	85.66
70	70	82.69	91.92	91.83	10	MH	85.60
71	71	113.87	123.46	123.40	8	MH	117.05
72	72	102.00	—	—	0	MH	—
73	73	105.20	116.63	116.71	8	MR	109.04
74	74	104.82	114.70	114.75	7	MR	108.14
75	75	89.05	100.68	100.73	9	MR	92.88
76	76	101.23	111.41	111.43	9	MR	104.24

ANC08420
BZTO104(e)008420

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-2 Client Windward Environmental Investigator

WEIGHING DATA SHEET

See page _____ for information on drying times and temperatures, standard weights,etc.

Bkr. #	Pan #	Tare wt. (mg)	Total wt. (mg) 1	Total wt. (mg) 2	no. weighed	put into pans-initials	Ash weight (mg)
77	77	102.95	112.88	112.91	7	MLR	105.67
78	78	102.31	110.82	110.85	7	MLR	104.49
79	79	79.83	90.90	90.98	9	MLR	82.97
80	80	89.57	97.76	97.80	9	MLR	91.90
81	81	99.12	107.53	107.55	10	MLR	101.81
82	82	100.50	110.66	110.68	10	MLR	104.13
83	83	104.64	115.20	115.20	10	MLR	108.36
84	84	91.42	103.04	103.05	10	MLR	94.53
85	85	89.89	98.23	98.25	9	MLR	92.80
86	86	99.40	108.14	108.16	9	MLR	102.01
87	87	91.51	101.65	101.69	10	MLR	94.38
88	88	96.03	104.75	104.75	10	MLR	98.28
89	89	104.05	113.13	113.12	10	MLR	106.86
90	90	99.78	109.87	109.86	8	MLR	103.29
91	91	104.09	112.48	112.48	9	MLR	106.96
92	92	92.24	101.60	101.61	8	MLR	95.15
93	93	111.26	117.31	117.31	5	MLR	113.02
94	94	93.42	—	—	—	—	—
95	95	98.16	108.91	108.90	8	MLR	101.32
96	96	108.26	118.59	118.59	9	MLR	110.27
97	97	109.70	121.20	121.19	10	JMH	113.36
98	98	102.75	113.53	113.53	8	JMH	105.51
99	99	107.89	114.78	114.78	7	JMH	109.31
100	100	93.90	101.28	101.27	8	JMH	95.55
101	101	103.76	110.23	110.22	7	JMH	105.95
102	102	106.23	114.68	114.87	9	JMH	109.18
103	103	103.17	112.46	112.45	9	JMH	106.26
104	104	93.68	101.07	101.07	7	JMH	95.76
105	105	103.10	111.11	111.10	9	JMH	105.86
106	106	85.56	95.07	95.07	9	JMH	88.89
107	107	101.96	111.98	112.00	9	JMH	104.67
108	108	100.53	110.00	110.01	8	JMH	103.22
109	109	109.03	117.78	117.79	8	JMH	111.55
110	110	101.85	105.32	105.31	3	JMH	103.15
111	111	91.69	99.84	99.84	10	JMH	94.36
112	112	100.34	109.93	109.94	10	JMH	103.46
113	113	85.85	85.98	85.98	1	JMH	85.89
114	114	106.96	115.35	115.34	10	JMH	109.26
115	115	101.62	108.83	108.83	8	JMH	103.77
116	116	98.12	100.24	100.23	2	JMH	98.83
117	117	105.66	111.67	111.67	7	JMH	107.66
118	118	96.58	107.18	107.19	8	JMH	100.52
119	119	91.49	91.98	91.98	2	JMH	91.60

ANC08421
BZTO104(e)008421

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-2 Client Windward Environmental Investigator

WEIGHING DATA SHEET

See page _____ for information on drying times and temperatures, standard weights,etc.

Bkr. #	Pan #	Tare wt. (mg)	Total wt. (mg) 1	Total wt. (mg) 2	no. weighed	put into pans-initials	Ash weight (mg)
120	120	99.53	93.05	93.04	3	JMH	90.70
121	121	101.78	108.90	108.90	9	JMH	103.42
122	122	89.89	92.26	92.27	4	MR	90.55
123	123	97.84	104.70	104.69	7	MR	99.83
124	124	112.90	122.33	122.32	8	MR	115.70
125	125	95.59	103.77	103.76	7	MR	98.10
126	126	98.69	105.65	105.65	5	MR	100.95
127	127	104.86	111.16	111.15	6	MR	107.00
128	128	110.97	118.35	118.34	6	MR	113.48
129	129	103.92	109.70	109.69	8	MR	105.71
130	130	96.55	107.43	107.40	10	MR	100.56
131	131	93.02	—	—	—	—	—
132	132	99.72	111.49	111.46	10	MR	103.10
133	133	99.44	107.51	107.49	8	MR	102.13
134	134	87.69	93.77	93.76	7	MR	89.52
135	135	103.43	112.17	112.16	8	MR	106.46
136	136	84.27	91.87	91.86	5	MR	86.62
137	137	100.85	107.84	107.83	5	MR	102.60
138	138	100.65	104.46	104.47	6	MR	101.76
139	139	84.66	93.99	93.96	8	MR	87.12
140	140	92.93	104.63	104.60	9	MR	96.69
141	141	84.98	88.30	88.30	5	MR	86.03
142	142	102.01	110.03	110.04	7	JMH	104.61
143	143	91.16	98.94	98.95	9	JMH	93.19
144	144	96.87	—	—	0	JMH	—
145	145	105.54	109.69	109.71	3	JMH	106.37
146	146	103.13	112.11	112.12	9	JMH	106.31
147	147	92.23	99.93	99.94	8	JMH	94.64
148	148	107.76	115.29	115.26	9	JMH	110.31
149	149	97.67	106.96	106.97	9	JMH	99.94
150	150	91.29	99.76	99.77	8	JMH	93.83
151	151	96.01	102.09	102.10	5	JMH	97.55
152	152	104.90	112.42	112.42	8	JMH	106.80
153	153	105.36	—	—	0	JMH	—
154	154	93.27	99.46	99.45	4	JMH	94.88
155	155	105.52	114.38	114.37	8	JMH	108.59
156	156	99.74	108.22	108.22	8	JMH	102.65
157	157	91.79	101.14	101.15	9	JMH	94.19
158	158	89.61	99.89	99.89	9	JMH	93.00
159	159	92.01	99.21	99.21	6	JMH	94.23
160	160	101.77	107.54	107.55	6	JMH	103.58
161	161	96.44	102.94	102.94	5	JMH	98.37
162	162	107.05	117.09	117.09	8	JMH	110.50

ANC08422
BZTO104(e)008422

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-2 Client Windward Environmental Investigator

WEIGHING DATA SHEET

See page _____ for information on drying times and temperatures, standard weights,etc.

Bkr. #	Pan #	Tare wt. (mg)	Total wt. (mg) 1	Total wt. (mg) 2	no. weighed	put into pans-initials	Ash weight (mg)
163	163	101.11	112.09	112.09	8	[illegible]	104.58
164	164	105.09	115.20	115.20	7	[illegible]	108.46
165	165	96.70	107.97	107.97	9	[illegible]	100.63
166	166	89.77	99.27	99.27	8	[illegible]	92.49
167	167	89.62	99.83	99.81	9	[illegible]	93.43
168	168	100.88	107.61	107.60	9	[illegible]	102.36
169	169						
170	170						
171	171						
172	172						
173	173						
174	174						
175	175						
176	176						
177	177						
178	178						
179	179						
180	180						
181	181						
182	182						
183	183						
184	184						
185	185						
186	186						
187	187						
188	188						
189	189						
190	190						
191	191						
192	192						
193	193						
194	194						
195	195						
196	196						
197	197						
198	198						
199	199						
200	200						
201	201						
202	202						
203	203						
204	204						
205	205						

ANC08423
BZTO104(e)008423

Test Number: 686-2

Freshwater Sediment Test
10-Day Chironomus tentans

BKR	NAS SMPL	CLIENT DESCRIP	REPL	
65	9207F	Control	1	
100	9207F	Control	2	
157	9207F	Control	3	
99	9207F	Control	4	
143	9207F	Control	5	
88	9207F	Control	6	
152	9207F	Control	7	
168	9207F	Control	8	wq replicate
104	9213F	LW2-G009	1	
150	9213F	LW2-G009	2	
95	9213F	LW2 G009	3	
18	9213F	LW2-G009	4	
114	9213F	LW2-G009	5	
87	9213F	LW2-G009	6	
49	9213F	LW2-G009	7	
8	9213F	LW2-G009	8	wq replicate
164	9214F	LW2-G010	1	
103	9214F	LW2-G010	2	
9	9214F	LW2-G010	3	
102	9214F	LW2-G010	4	
17	9214F	LW2-G010	5	
1	9214F	LW2-G010	6	
111	9214F	LW2-G010	7	
37	9214F	LW2-G010	8	wq replicate
140	9215F	LW2-G011	1	
5	9215F	LW2-G011	2	
10	9215F	LW2-G011	3	
154	9215F	LW2-G011	4	
77	9215F	LW2-G011	5	
13	9215F	LW2-G011	6	
108	9215F	LW2-G011	7	
62	9215F	LW2-G011	8	wq replicate
25	9216F	LW2-G007-1	1	
136	9216F	LW2-G007-1	2	
146	9216F	LW2-G007-1	3	
160	9216F	LW2-G007-1	4	
159	9216F	LW2-G007-1	5	
124	9216F	LW2-G007-1	6	
101	9216F	LW2-G007-1	7	
41	9216F	LW2-G007-1	8	wq replicate
55	9217F	LW2-G026	1	
50	9217F	LW2-G026	2	
127	9217F	LW2-G026	3	
135	9217F	LW2-G026	4	
60	9217F	LW2-G026	5	
58	9217F	LW2-G026	6	
134	9217F	LW2-G026	7	
47	9217F	LW2-G026	8	wq replicate
75	9218F	LW2-G060	1	
39	9218F	LW2-G060	2	
64	9218F	LW2-G060	3	
16	9218F	LW2-G060	4	
74	9218F	LW2-G060	5	
67	9218F	LW2-G060	6	
163	9218F	LW2-G060	7	
15	9218F	LW2-G060	8	wq replicate
162	9219F	LW2-G064	1	
56	9219F	LW2-G064	2	
92	9219F	LW2-G064	3	
71	9219F	LW2-G064	4	
73	9219F	LW2-G064	5	
83	9219F	LW2-G064	6	
90	9219F	LW2-G064	7	
155	9219F	LW2-G064	8	wq replicate

ANC08424
BZTO104(e)008424

BKR	NAS SMPL	CLIENT DESCRIP	REPL	
80	9220F	LW2-G203-1	1	
30	9220F	LW2-G203-1	2	
116	9220F	LW2-G203-1	3	
84	9220F	LW2-G203-1	4	
33	9220F	LW2-G203-1	5	
63	9220F	LW2-G203-1	6	
81	9220F	LW2-G203-1	7	
115	9220F	LW2-G203-1	8	wq replicate
130	9221F	LW2-G066	1	
112	9221F	LW2-G066	2	
79	9221F	LW2-G066	3	
97	9221F	LW2-G066	4	
158	9221F	LW2-G066	5	
61	9221F	LW2-G066	6	
32	9221F	LW2-G066	7	
128	9221F	LW2-G066	8	wq replicate
66	9222F	LW2-G015	1	
125	9222F	LW2-G015	2	
27	9222F	LW2-G015	3	
34	9222F	LW2-G015	4	
3	9222F	LW2-G015	5	
51	9222F	LW2-G015	6	
109	9222F	LW2-G015	7	
167	9222F	LW2-G015	8	wq replicate
132	9223F	LW2-G019	1	
151	9223F	LW2-G019	2	
44	9223F	LW2-G019	3	
118	9223F	LW2-G019	4	
149	9223F	LW2-G019	5	
26	9223F	LW2-G019	6	
68	9223F	LW2-G019	7	
59	9223F	LW2-G019	8	wq replicate
126	9224F	LW2-G017	1	
2	9224F	LW2-G017	2	
142	9224F	LW2-G017	3	
121	9224F	LW2-G017	4	
120	9224F	LW2-G017	5	
45	9224F	LW2-G017	6	
110	9224F	LW2-G017	7	
93	9224F	LW2-G017	8	wq replicate
12	9225F	LW2-G294-1	1	
20	9225F	LW2-G294-1	2	
94	9225F	LW2-G294-1	3	
19	9225F	LW2-G294-1	4	
144	9225F	LW2-G294-1	5	
131	9225F	LW2-G294-1	6	
72	9225F	LW2-G294-1	7	
53	9225F	LW2-G294-1	8	wq replicate
129	9226F	LW2-G270	1	
122	9226F	LW2-G270	2	
141	9226F	LW2-G270	3	
138	9226F	LW2-G270	4	
42	9226F	LW2-G270	5	
161	9226F	LW2-G270	6	
57	9226F	LW2-G270	7	
22	9226F	LW2-G270	8	wq replicate
28	9227F	LW2-G311-1	1	
21	9227F	LW2-G311-1	2	
23	9227F	LW2-G311-1	3	
119	9227F	LW2-G311-1	4	
35	9227F	LW2-G311-1	5	
113	9227F	LW2-G311-1	6	
7	9227F	LW2-G311-1	7	
153	9227F	LW2-G311-1	8	wq replicate

ANC08425
BZTO104(e)008425

Test Number: 686-2

Freshwater Sediment Test
10-Day Chironomus tentans

BKR	NAS SMPL	CLIENT DESCRIP	REPL	
46	9228F	LW2-G324-1	1	
145	9228F	LW2-G324-1	2	
139	9228F	LW2-G324-1	3	
29	9228F	LW2-G324-1	4	
52	9228F	LW2-G324-1	5	
96	9228F	LW2-G324-1	6	
137	9228F	LW2-G324-1	7	
98	9228F	LW2-G324-1	8	wq replicate
89	9229F	LW2-G334	1	
82	9229F	LW2-G334	2	
40	9229F	LW2-G334	3	
165	9229F	LW2-G334	4	
14	9229F	LW2-G334	5	
105	9229F	LW2-G334	6	
70	9229F	LW2-G334	7	
38	9229F	LW2-G334	8	wq replicate
106	9230F	LW2-G345-1	1	
6	9230F	LW2-G345-1	2	
69	9230F	LW2-G345-1	3	
156	9230F	LW2-G345-1	4	
148	9230F	LW2-G345-1	5	
31	9230F	LW2-G345-1	6	
133	9230F	LW2-G345-1	7	
91	9230F	LW2-G345-1	8	wq replicate
107	9231F	LW2-G221	1	
123	9231F	LW2-G221	2	
36	9231F	LW2-G221	3	
166	9231F	LW2-G221	4	
11	9231F	LW2-G221	5	
4	9231F	LW2-G221	6	
54	9231F	LW2-G221	7	
76	9231F	LW2-G221	8	wq replicate
117	9232F	LW2-G220	1	
78	9232F	LW2-G220	2	
85	9232F	LW2-G220	3	
48	9232F	LW2-G220	4	
24	9232F	LW2-G220	5	
86	9232F	LW2-G220	6	
147	9232F	LW2-G220	7	
43	9232F	LW2-G220	8	wq replicate

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TEST DATA ANALYSIS RECORDS

Endpoints Data Entry and Calculations File

BKR=beaker number
INIT=initial number
SURV=number survivors
MORT=number dead=INIT-SURV
PSURV=%survival=100(SURV/INIT)
PMORT=%mortality=100(MORT/INIT)

TARE WT= ashed weight of pan used for that replicate at test termination (mg), or dry weight of pan if ash-free dry weight is not an endpoint
WT COUNT= number of test organisms weighed at test end
DRY WT= TARE WT + dry weight of test organisms recovered at test termination (mg)
TWT=total biomass=DRY WT-TARE WT
WT=average individual biomass=TWT/WT COUNT

ASHED DRY WT= weight of ashed pan + weight of ashed test organisms recovered at test termination
TAFDW=DRY WT - ASHED DRY WT= total ash-free organism weight for given replicate
AFDW=average individual ash-free biomass=TAFDW/WT COUNT

INITIAL WEIGHT

pan #	tare wt (mg)	final wt (mg)	wt count	avg. wt/ organism
1	100.62	103.52	20	0.15
2	104.90	108.31	20	0.17
3	110.95	114.29	20	0.17

INDEX	BKR	NAS SMPL	CLIENT DESCRIP	REPL		INIT	SURV	MORT	PSURV	PMORT	TARE WT (mg)	WT COUNT	DRY WT (mg)	ASHED DRY WT (mg)	TWT (mg)	WT (mg)	TAFDW (mg)	AFDW (mg)		SURV	MORT	PSURV	PMORT	WT	AFDW
1	65	9208F	Control	1		10	8	2	80.0	20.0	110.49	8	117.62	112.16	7.13	0.89	5.46	0.66							
2	100	9208F	Control	2		10	8	2	80.0	20.0	93.90	8	101.27	95.55	7.37	0.92	5.72	0.72							
3	157	9208F	Control	3		10	9	1	90.0	10.0	91.79	9	101.15	94.19	9.36	1.04	6.96	0.77							
4	99	9208F	Control	4		10	7	3	70.0	30.0	107.89	7	114.78	109.31	6.89	0.98	5.47	0.78							
5	143	9208F	Control	5		10	9	1	90.0	10.0	91.15	9	98.95	93.19	7.79	0.87	5.76	0.64	Mean	8.5	1.5	85.0	15.0	0.91	0.69
6	88	9208F	Control	6		10	10	0	100.0	0.0	96.03	10	104.75	98.28	8.72	0.87	6.47	0.65	SD	0.9	0.9	9.3	9.3	0.09	0.07
7	152	9208F	Control	7		10	8	2	80.0	20.0	104.90	8	112.42	106.80	7.52	0.94	5.62	0.70	n	8	8	8	8	8	8
8	168	9208F	Control	8	wq replicate	10	9	1	90.0	10.0	100.88	9	107.60	102.36	6.72	0.75	5.24	0.58							
17	104	9213F	LW2-G009	1		10	7	3	70.0	30.0	93.65	7	101.07	95.76	7.39	1.06	5.31	0.76							
18	150	9213F	LW2-G009	2		10	8	2	80.0	20.0	91.29	8	99.77	93.83	8.48	1.06	5.94	0.74							
19	95	9213F	LW2-G009	3		10	8	2	80.0	20.0	98.16	8	108.90	101.32	10.74	1.34	7.58	0.95							
20	18	9213F	LW2-G009	4		10	9	1	90.0	10.0	103.89	9	113.46	106.81	9.58	1.06	6.65	0.74							
21	114	9213F	LW2-G009	5		10	10	0	100.0	0.0	106.95	10	115.34	109.26	8.38	0.84	6.08	0.61	Mean	8.3	1.8	82.5	17.5	1.08	0.76
22	67	9213F	LW2-G009	6		10	10	0	100.0	0.0	91.51	10	101.69	94.36	10.18	1.02	7.31	0.73	SD	1.7	1.7	16.7	16.7	0.15	0.10
23	49	9213F	LW2-G009	7		10	9	1	90.0	10.0	99.99	9	103.32	98.75	9.33	1.04	6.57	0.73	n	8	8	8	8	8	8
24	8	9213F	LW2-G009	8	wq replicate	10	5	5	50.0	50.0	97.18	5	103.33	99.22	6.15	1.23	4.11	0.82							
25	164	9214F	LW2-G010	1		10	7	3	70.0	30.0	105.09	7	115.20	108.46	10.11	1.44	6.74	0.96							
26	103	9214F	LW2-G010	2		10	9	1	90.0	10.0	103.17	9	112.45	106.26	9.28	1.03	6.19	0.69							
27	9	9214F	LW2-G010	3		10	10	0	100.0	0.0	102.15	9	111.45	105.50	9.29	1.03	5.95	0.86							
28	102	9214F	LW2-G010	4		10	9	1	90.0	10.0	106.23	9	114.87	109.18	8.64	0.96	5.69	0.83							
29	17	9214F	LW2-G010	5		10	3	7	30.0	70.0	101.37	3	105.97	103.03	4.60	1.53	2.94	0.98	Mean	8.1	1.9	81.3	18.8	1.10	0.72
30	1	9214F	LW2-G010	6		10	8	2	80.0	20.0	100.78	8	109.98	104.01	9.20	1.15	5.97	0.75	SD	2.3	2.3	23.0	23.0	0.26	0.17
31	111	9214F	LW2-G010	7		10	10	0	100.0	0.0	91.69	10	99.84	94.36	8.15	0.82	5.48	0.55	n	8	8	8	8	8	8
32	37	9214F	LW2-G010	8	wq replicate	10	9	1	90.0	10.0	91.26	9	98.85	93.77	7.59	0.84	5.08	0.56							
33	140	9215F	LW2-G011	1		10	9	1	90.0	10.0	92.93	9	104.60	96.99	11.67	1.30	7.91	0.86							
34	5	9215F	LW2-G011	2		10	9	1	90.0	10.0	97.26	9	108.82	101.02	11.56	1.28	7.80	0.87							
35	10	9215F	LW2-G011	3		10	8	2	80.0	20.0	86.60	8	95.51	89.47	8.91	1.11	6.04	0.76							
36	154	9215F	LW2-G011	4		10	4	6	40.0	60.0	93.27	4	99.45	94.88	6.18	1.55	4.57	1.14							
37	77	9215F	LW2-G011	5		10	7	3	70.0	30.0	102.95	7	112.91	105.67	9.96	1.42	7.24	1.00	Mean	7.8	2.3	77.5	22.5	1.27	0.90
38	13	9215F	LW2-G011	6		10	9	1	90.0	10.0	100.29	9	110.66	103.39	10.38	1.15	7.27	0.81	SD	1.7	1.7	16.7	16.7	0.15	0.13
39	108	9215F	LW2-G011	7		10	8	2	80.0	20.0	100.53	8	110.01	103.22	9.48	1.19	6.79	0.85	n	8	8	8	8	8	8
40	62	9215F	LW2-G011	8	wq replicate	10	8	2	80.0	20.0	87.01	8	96.19	89.55	9.18	1.15	6.64	0.83							
9	25	9216F	LW2-G007-1	1		10	7	3	70.0	30.0	98.13	7	105.57	100.36	7.44	1.06	5.21	0.74							
10	136	9216F	LW2-G007-1	2		10	5	5	50.0	50.0	84.27	5	91.86	86.62	7.59	1.52	5.24	1.05							
11	146	9216F	LW2-G007-1	3		10	9	1	90.0	10.0	103.13	9	112.12	106.31	8.99	1.00	5.81	0.65							
12	160	9216F	LW2-G007-1	4		10	6	4	60.0	40.0	101.77	6	107.55	103.58	5.78	0.96	3.97	0.66							
13	159	9216F	LW2-G007-1	5		10	6	4	60.0	40.0	92.01	6	99.21	94.23	7.20	1.20	4.98	0.83	Mean	7.1	2.9	71.3	28.8	1.10	0.75
14	124	9216F	LW2-G007-1	6		10	8	2	80.0	20.0	112.90	8	122.32	115.70	9.42	1.18	6.62	0.83	SD	1.5	1.5	14.6	14.6	0.20	0.15
15	101	9216F	LW2-G007-1	7		10	7	3	70.0	30.0	103.76	7	110.22	105.95	6.46	0.92	4.27	0.61	n	8	8	8	8	8	8
16	41	9216F	LW2-G007-1	8	wq replicate	10	9	1	90.0	10.0	101.04	9	109.44	103.79	8.40	0.93	5.65	0.63							
65	55	9217F	LW2-G026	1		10	10	0	100.0	0.0	118.68	10	130.26	122.68	11.58	1.16	7.80	0.76							
66	50	9217F	LW2-G026	2		10	10	0	100.0	0.0	92.80	10	101.96	95.38	9.36	0.94	6.58	0.66							
67	127	9217F	LW2-G026	3		10	6	4	60.0	40.0	104.86	6	111.15	107.00	6.29	1.05	4.15	0.69							
68	135	9217F	LW2-G026	4		10	8	2	80.0	20.0	103.43	8	112.16	106.46	8.73	1.09	5.70	0.71							
69	60	9217F	LW2-G026	5		10	9	1	90.0	10.0	110.01	9	120.46	113.15	10.45	1.16	7.31	0.81	Mean	8.1	1.9	81.3	18.8	1.05	0.71
70	58	9217F	LW2-G026	6		10	8	2	80.0	20.0	94.80	8	102.67	96.97	8.27	1.03	5.90	0.74	SD	1.5	1.5	14.6	14.6	0.10	0.06
71	134	9217F	LW2-G026	7		10	7	3	70.0	30.0	87.69	7	93.76	89.52	6.07	0.87	4.24	0.61	n	8	8	8	8	8	8
72	47	9217F	LW2-G026	8	wq replicate	10	7	3	70.0	30.0	98.34	7	106.02	100.96	7.68	1.10	5.06	0.72							

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Freshwater Sediment Test
10-Day Chironomus tentans

INDEX	BKR	NAS SMPL	CLIENT DESCRIP	REPL		INIT	SURV	MORT	PSURV	PMORT	TARE WT (mg)	WT COUNT	DRY WT (mg)	ASHED DRY WT (mg)	TWT (mg)	WT (mg)	TAFDW (mg)	AFDW (mg)		SURV	MORT	PSURV	PMORT	WT	AFDW
73	75	9218F	LW2-G060	1		10	9	1	90.0	10.0	89.05	9	100.73	92.86	11.68	1.30	7.85	0.87							
74	39	9218F	LW2-G060	2		10	8	2	80.0	20.0	99.84	8	108.26	102.45	8.44	1.06	5.83	0.73							
75	64	9218F	LW2-G060	3		10	9	1	90.0	10.0	103.66	9	113.76	107.11	10.10	1.12	6.65	0.74							
76	16	9218F	LW2-G060	4		10	10	0	100.0	0.0	86.23	10	98.83	91.12	12.60	1.26	7.71	0.77							
77	74	9218F	LW2-G060	5		10	7	3	70.0	30.0	104.82	7	114.75	108.14	9.93	1.42	6.61	0.94	Mean	8.8	1.3	87.5	12.5	1.26	0.80
78	67	9218F	LW2-G060	6		10	10	0	100.0	0.0	110.39	10	121.46	113.97	11.07	1.11	7.49	0.75	SD	1.0	1.0	10.4	10.4	0.15	0.10
79	163	9218F	LW2-G060	7		10	8	2	80.0	20.0	101.11	8	112.09	104.58	10.98	1.37	7.51	0.94	n	8	8	8	8	8	8
80	15	9218F	LW2-G060	8	wq replicate	10	9	1	90.0	10.0	89.03	9	98.00	91.78	8.97	1.00	6.22	0.69							
81	162	9219F	LW2-G064	1		10	8	2	80.0	20.0	107.05	8	117.09	110.50	10.04	1.26	6.59	0.82							
82	56	9219F	LW2-G064	2		10	9	1	90.0	10.0	102.24	9	111.68	105.28	9.44	1.05	6.40	0.71							
83	92	9219F	LW2-G064	3		10	8	2	80.0	20.0	92.24	8	101.61	95.15	9.37	1.17	6.48	0.81							
84	71	9219F	LW2-G064	4		10	8	2	80.0	20.0	113.87	8	123.40	117.05	9.53	1.19	6.35	0.79							
85	73	9219F	LW2-G064	5		10	8	2	80.0	20.0	105.20	8	116.71	109.04	11.51	1.44	7.67	0.96	Mean	8.4	1.6	83.8	16.3	1.19	0.79
86	83	9219F	LW2-G064	6		10	10	0	100.0	0.0	104.64	10	115.20	108.36	10.56	1.06	6.84	0.68	SD	0.7	0.7	7.4	7.4	0.13	0.09
87	90	9219F	LW2-G064	7		10	8	2	80.0	20.0	99.78	8	109.86	103.29	10.08	1.26	6.57	0.82	n	8	8	8	8	8	8
88	155	9219F	LW2-G064	8	wq replicate	10	8	2	80.0	20.0	105.52	8	114.37	108.59	8.85	1.11	5.78	0.72							
97	80	9220F	LW2-G203-1	1		10	9	1	90.0	10.0	88.57	9	97.80	91.90	8.23	0.91	5.90	0.66							
98	30	9220F	LW2-G203-1	2		10	9	1	90.0	10.0	93.22	9	103.75	97.11	10.53	1.17	6.64	0.74							
99	116	9220F	LW2-G203-1	3		10	2	8	20.0	80.0	98.12	2	100.23	96.83	2.11	1.06	1.40	0.70							
100	84	9220F	LW2-G203-1	4		10	10	0	100.0	0.0	91.42	10	103.05	94.53	11.63	1.16	8.52	0.85							
101	33	9220F	LW2-G203-1	5		10	9	1	90.0	10.0	103.06	9	112.97	105.06	9.91	1.10	6.91	0.77	Mean	8.3	1.8	82.5	17.5	1.02	0.70
102	63	9220F	LW2-G203-1	6		10	9	1	90.0	10.0	103.59	9	112.87	105.51	9.28	1.03	6.36	0.71	SD	2.6	2.6	26.0	26.0	0.12	0.09
103	81	9220F	LW2-G203-1	7		10	10	0	100.0	0.0	99.12	10	107.55	101.81	8.43	0.84	5.74	0.57	n	8	8	8	8	8	8
104	115	9220F	LW2-G203-1	8	wq replicate	10	8	2	80.0	20.0	101.62	8	108.83	103.77	7.21	0.90	5.06	0.63							
89	130	9221F	LW2-G066	1		10	10	0	100.0	0.0	96.55	10	107.40	100.56	10.85	1.09	6.84	0.68							
90	112	9221F	LW2-G066	2		10	10	0	100.0	0.0	100.34	10	109.94	103.48	9.60	0.96	6.48	0.65							
91	79	9221F	LW2-G066	3		10	9	1	90.0	10.0	79.83	9	90.98	82.97	11.15	1.24	8.01	0.89							
92	97	9221F	LW2-G066	4		10	10	0	100.0	0.0	109.70	10	121.19	113.36	11.49	1.15	7.83	0.78							
93	158	9221F	LW2-G066	5		10	9	1	90.0	10.0	89.61	9	99.89	93.00	10.28	1.14	6.89	0.77	Mean	9.0	1.0	90.0	10.0	1.11	0.75
94	61	9221F	LW2-G066	6		10	9	1	90.0	10.0	101.52	9	109.88	104.01	8.36	0.93	5.87	0.65	SD	1.3	1.3	13.1	13.1	0.12	0.08
95	32	9221F	LW2-G066	7		10	9	1	90.0	10.0	93.96	9	104.63	97.56	10.67	1.19	7.04	0.78	n	8	8	8	8	8	8
96	126	9221F	LW2-G066	8	wq replicate	10	6	4	60.0	40.0	110.97	6	118.34	113.48	7.37	1.23	4.86	0.81							
41	66	9222F	LW2-G015	1		10	9	1	90.0	10.0	104.98	9	113.93	107.41	8.95	0.99	6.52	0.72							
42	125	9222F	LW2-G015	2		10	7	3	70.0	30.0	95.59	7	103.76	99.10	8.17	1.17	5.66	0.81							
43	27	9222F	LW2-G015	3		10	10	0	100.0	0.0	97.58	10	108.23	101.30	10.65	1.07	6.93	0.69							
44	34	9222F	LW2-G015	4		10	9	1	90.0	10.0	103.89	9	113.87	107.23	9.98	1.11	6.64	0.74							
45	3	9222F	LW2-G015	5		10	9	1	90.0	10.0	92.70	9	104.21	96.79	11.51	1.28	7.42	0.82	Mean	8.9	1.1	88.8	11.3	1.10	0.74
46	51	9222F	LW2-G015	6		10	10	0	100.0	0.0	82.80	10	92.52	85.86	9.72	0.97	6.66	0.67	SD	1.0	1.0	9.9	9.9	0.10	0.06
47	109	9222F	LW2-G015	7		10	8	2	80.0	20.0	109.03	8	117.79	111.55	8.76	1.10	6.24	0.78	n	8	8	8	8	8	8
48	167	9222F	LW2-G015	8	wq replicate	10	9	1	90.0	10.0	89.82	9	99.81	93.43	10.19	1.13	6.36	0.71							
57	132	9223F	LW2-G019	1		10	10	0	100.0	0.0	99.72	10	111.46	103.10	11.74	1.17	6.36	0.84							
58	151	9223F	LW2-G019	2		10	5	5	50.0	50.0	96.31	5	102.10	97.55	3.09	1.22	4.55	0.91							
59	44	9223F	LW2-G019	3		10	8	2	80.0	20.0	91.32	8	101.51	94.42	10.19	1.27	7.09	0.89							
60	118	9223F	LW2-G019	4		10	8	2	80.0	20.0	96.58	8	107.19	100.52	10.61	1.33	6.67	0.83							
61	149	9223F	LW2-G019	5		10	9	1	90.0	10.0	97.67	9	108.97	99.94	9.30	1.03	7.03	0.78	Mean	8.5	1.5	85.0	15.0	1.15	0.83
62	26	9223F	LW2-G019	6		10	10	0	100.0	0.0	87.90	10	98.93	90.92	11.03	1.10	8.01	0.80	SD	1.6	1.6	16.0	16.0	0.11	0.05
63	68	9223F	LW2-G019	7		10	9	1	90.0	10.0	107.41	9	117.08	109.78	9.67	1.07	7.30	0.81	n	8	8	8	8	8	8
64	59	9223F	LW2-G019	8	wq replicate	10	9	1	90.0	10.0	104.01	9	113.14	106.47	9.13	1.01	6.67	0.74							
49	126	9224F	LW2-G017	1		10	5	5	50.0	50.0	98.66	5	105.65	100.95	6.99	1.39	4.70	0.94							
50	2	9224F	LW2-G017	2		10	10	0	100.0	0.0	100.33	10	113.78	104.92	13.45	1.35	8.86	0.89							
51	142	9224F	LW2-G017	3		10	7	3	70.0	30.0	102.01	7	110.04	104.61	8.03	1.16	5.43	0.78							
52	121	9224F	LW2-G017	4		10	9	1	90.0	10.0	101.78	9	108.90	103.42	7.12	0.79	5.46	0.61							
53	120	9224F	LW2-G017	5		10	3	7	30.0	70.0	89.53	3	93.04	90.70	3.51	1.17	2.34	0.78	Mean	6.5	3.5	65.0	35.0	1.16	0.79
54	45	9224F	LW2-G017	6		10	10	0	100.0	0.0	94.06	10	104.80	97.28	10.74	1.07	7.52	0.75	SD	2.9	2.9	29.3	29.3	0.18	0.10
55	110	9224F	LW2-G017	7		10	3	7	30.0	70.0	101.85	3	105.31	103.15	3.46	1.15	2.16	0.72	n	8	8	8	8	8	8
56	93	9224F	LW2-G017	8	wq replicate	10	5	5	50.0	50.0	111.26	5	117.31	113.02	6.05	1.21	4.29	0.86							
129	12	9225F	LW2-G294-1	1		10	0	10	0.0	100.0	93.91	0													
130	20	9225F	LW2-G294-1	2		10	0	10	0.0	100.0	94.59	0													
131	94	9225F	LW2-G294-1	3		10	0	10	0.0	100.0	93.42	0													
132	19	9225F	LW2-G294-1	4		10	0	10	0.0	100.0	96.05	0													
133	144	9225F	LW2-G294-1	5		10	0	10	0.0	100.0	98.87	0													
134	131	9225F	LW2-G294-1	6		10	0	10	0.0	100.0	93.02	0							Mean	0.0	10.0	0.0	100.0	0.00	0.00
135	72	9225F	LW2-G294-1	7		10	0	10	0.0	100.0	102.00	0							SD	0.0	0.0	0.0	0.0	0.00	0.00
136	53	9225F	LW2-G294-1	8	wq replicate	10	0	10	0.0	100.0	103.56	0							n	8	8	8	8	0	0

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Test Number: 686-2

Freshwater Sediment Test
10-Day Chironomus tentans

INDEX	BKR	NAS SMPL	CLIENT DESCRIP	REPL		INIT	SURV	MORT	PSURV	PMORT	TARE WT (mg)	WT COUNT	DRY WT (mg)	ASHED DRY WT (mg)	TWT (mg)	WT (mg)	TAFDW (mg)	AFDW (mg)			SURV	MORT	PSURV	PMORT	WT	AFDW
121	129	9226F	LW2-G270	1		10	8	2	80.0	20.0	103.92	8	109.69	105.71	5.77	0.72	3.98	0.50								
122	122	9226F	LW2-G270	2		10	4	6	40.0	60.0	89.89	4	92.27	90.55	2.38	0.59	1.72	0.43								
123	141	9226F	LW2-G270	3		10	5	5	50.0	50.0	84.98	5	88.30	86.03	3.32	0.68	2.27	0.45								
124	138	9226F	LW2-G270	4		10	6	4	60.0	40.0	100.65	6	104.47	101.76	3.82	0.64	2.71	0.45								
125	42	9226F	LW2-G270	5		10	7	3	70.0	30.0	99.69	7	104.75	100.94	5.06	0.72	3.81	0.54	Mean	6.3	3.8	62.5	37.5	0.74	0.53
126	161	9226F	LW2-G270	6		10	5	5	50.0	50.0	98.44	5	102.94	98.37	6.50	1.30	4.57	0.91	SD	1.5	1.5	14.9	14.9	0.23	0.16
127	57	9226F	LW2-G270	7		10	8	2	80.0	20.0	113.17	8	119.02	114.91	5.85	0.73	4.11	0.51	n	8	8	8	8	8	8
128	22	9226F	LW2-G270	8	wq replicate	10	7	3	70.0	30.0	102.61	7	106.71	103.81	4.10	0.59	2.90	0.41								
137	28	9227F	LW2-G311-1	1		10	2	8	20.0	80.0	99.78	2	100.05	99.86	0.27	0.13	0.19	0.09								
138	21	9227F	LW2-G311-1	2		10	1	9	10.0	90.0	106.86	1	107.09	107.07	0.23	0.23	0.02	0.02								
139	23	9227F	LW2-G311-1	3		10	0	10	0.0	100.0	98.33	0														
140	119	9227F	LW2-G311-1	4		10	2	8	20.0	80.0	91.49	2	91.98	91.60	0.49	0.25	0.38	0.19								
141	35	9227F	LW2-G311-1	5		10	2	8	20.0	80.0	97.91	2	98.41	98.05	0.50	0.25	0.36	0.13	Mean	1.4	8.8	13.8	86.3	0.19	0.11
142	113	9227F	LW2-G311-1	6		10	1	9	10.0	90.0	85.85	1	85.98	85.89	0.13	0.13	0.09	0.09	SD	1.1	1.1	10.6	10.6	0.06	0.06
143	7	9227F	LW2-G311-1	7		10	3	7	30.0	70.0	112.30	3	112.72	112.43	0.42	0.14	0.29	0.10	n	6	8	8	8	6	6
144	153	9227F	LW2-G311-1	8	wq replicate	10	0	10	0.0	100.0	105.36	0														
145	48	9228F	LW2-G324-1	1		10	7	3	70.0	30.0	98.55	7	107.14	100.88	8.59	1.23	6.26	0.89								
146	145	9228F	LW2-G324-1	2		10	3	7	30.0	70.0	105.54	3	109.71	108.37	4.17	1.39	3.34	1.11								
147	139	9228F	LW2-G324-1	3		10	8	2	80.0	20.0	84.66	8	93.96	87.12	9.30	1.16	6.64	0.85								
148	29	9228F	LW2-G324-1	4		10	10	0	100.0	0.0	94.48	10	104.63	97.66	10.15	1.02	6.97	0.70								
149	52	9228F	LW2-G324-1	5		10	8	2	80.0	20.0	88.36	8	97.76	90.75	9.42	1.18	7.03	0.88	Mean	7.3	2.8	72.5	27.5	1.23	0.93
150	96	9228F	LW2-G324-1	6		10	9	1	90.0	10.0	108.26	9	118.59	110.27	10.33	1.15	8.32	0.92	SD	2.3	2.3	22.5	22.5	0.13	0.13
151	137	9228F	LW2-G324-1	7		10	5	5	50.0	50.0	100.85	5	107.83	102.60	6.98	1.40	5.23	1.05	n	8	8	8	8	8	8
152	98	9228F	LW2-G324-1	8	wq replicate	10	6	2	80.0	20.0	102.75	8	113.53	105.51	10.78	1.35	8.02	1.00								
153	89	9229F	LW2-G334	1		10	10	0	100.0	0.0	104.05	10	113.12	106.86	9.07	0.91	6.26	0.63								
154	82	9229F	LW2-G334	2		10	10	0	100.0	0.0	100.50	10	110.68	104.13	10.18	1.02	6.55	0.66								
155	40	9229F	LW2-G334	3		10	10	0	100.0	0.0	105.26	10	115.10	108.93	9.82	0.98	6.17	0.62								
156	165	9229F	LW2-G334	4		10	9	1	90.0	10.0	96.70	9	107.97	100.63	11.27	1.25	7.34	0.82								
157	14	9229F	LW2-G334	5		10	8	2	80.0	20.0	97.48	8	105.48	100.08	8.00	1.00	5.40	0.68	Mean	9.4	0.6	93.8	6.3	0.96	0.64
158	105	9229F	LW2-G334	6		10	9	1	90.0	10.0	103.10	9	111.10	105.86	8.00	0.89	5.24	0.58	SD	0.7	0.7	7.4	7.4	0.15	0.09
159	70	9229F	LW2-G334	7		10	10	0	100.0	0.0	82.69	10	91.83	85.60	9.14	0.91	6.23	0.62	n	8	8	8	8	8	8
160	38	9229F	LW2-G334	8	wq replicate	10	9	1	90.0	10.0	94.98	9	101.85	97.12	6.87	0.74	4.53	0.50								
161	106	9230F	LW2-G345-1	1		10	9	1	90.0	10.0	85.56	9	95.07	88.88	9.51	1.06	6.18	0.69								
162	6	9230F	LW2-G345-1	2		10	7	3	70.0	30.0	99.96	7	107.03	102.17	7.07	1.01	4.86	0.69								
163	69	9230F	LW2-G345-1	3		10	8	2	80.0	20.0	83.15	8	90.40	85.66	7.25	0.91	4.74	0.59								
164	156	9230F	LW2-G345-1	4		10	8	2	80.0	20.0	99.74	8	108.22	102.65	8.48	1.06	5.57	0.70								
165	148	9230F	LW2-G345-1	5		10	9	1	90.0	10.0	107.76	9	115.28	110.31	7.52	0.84	4.97	0.55	Mean	8.3	1.8	82.5	17.5	0.96	0.64
166	31	9230F	LW2-G345-1	6		10	8	2	80.0	20.0	105.06	8	113.20	107.86	8.12	0.90	5.34	0.59	SD	0.7	0.7	7.1	7.1	0.09	0.06
167	133	9230F	LW2-G345-1	7		10	6	2	80.0	20.0	99.44	8	107.49	102.13	8.05	1.01	5.36	0.67	n	8	8	8	8	8	8
168	91	9230F	LW2-G345-1	8	wq replicate	10	9	1	90.0	10.0	104.09	9	112.48	106.96	8.39	0.93	5.52	0.61								
113	107	9231F	LW2-G221	1		10	9	1	90.0	10.0	101.96	9	112.00	104.87	10.04	1.12	7.13	0.79								
114	123	9231F	LW2-G221	2		10	7	3	70.0	30.0	97.84	7	104.69	99.83	6.85	0.98	4.86	0.69								
115	36	9231F	LW2-G221	3		10	7	3	70.0	30.0	91.54	7	96.29	92.79	4.75	0.68	3.50	0.50								
116	166	9231F	LW2-G221	4		10	8	2	80.0	20.0	89.77	8	99.27	92.49	9.50	1.19	6.78	0.85								
117	11	9231F	LW2-G221	5		10	10	0	100.0	0.0	93.07	10	102.18	95.44	9.11	0.91	6.74	0.67	Mean	8.6	1.4	86.3	13.8	1.03	0.73
118	4	9231F	LW2-G221	6		10	9	1	90.0	10.0	98.04	9	107.01	99.65	10.97	1.22	7.36	0.82	SD	1.2	1.2	11.9	11.9	0.18	0.11
119	54	9231F	LW2-G221	7		10	10	0	100.0	0.0	86.83	10	96.76	89.86	9.93	0.99	6.90	0.89	n	8	8	8	8	8	8
120	76	9231F	LW2-G221	8	wq replicate	10	9	1	90.0	10.0	101.23	9	111.43	104.24	10.20	1.13	7.19	0.80								
105	117	9232F	LW2-G220	1		10	7	3	70.0	30.0	105.66	7	111.67	107.66	6.01	0.86	4.01	0.57								
106	78	9232F	LW2-G220	2		10	7	3	70.0	30.0	102.31	7	110.85	104.49	8.54	1.22	6.36	0.91								
107	85	9232F	LW2-G220	3		10	9	1	90.0	10.0	89.89	9	98.25	92.80	8.36	0.93	5.45	0.61								
108	48	9232F	LW2-G220	4		10	9	1	90.0	10.0	94.72	9	103.69	97.31	8.97	1.00	6.39	0.71								
109	24	9232F	LW2-G220	5		10	10	0	100.0	0.0	98.25	10	108.08	101.02	9.83	0.98	7.06	0.71	Mean	8.3	1.9	82.5	17.5	0.99	0.70
110	66	9232F	LW2-G220	6		10	9	1	90.0	10.0	99.40	9	108.16	102.01	8.76	0.97	6.15	0.68	SD	1.2	1.2	11.6	11.6	0.10	0.10
111	147	9232F	LW2-G220	7		10	8	2	80.0	20.0	92.23	8	99.94	94.64	7.71	0.96	5.30	0.66	n	8	8	8	8	8	8
112	43	9232F	LW2-G220	8	wq replicate	10	7	3	70.0	30.0	100.51	7	107.54	102.33	7.03	1.00	5.21	0.74								

Beaker #9: one animal lost or damaged in transfering to weighing pan

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Test Number: 686-2

Freshwater Sediment Test
10-Day Chironomus tentans

Water Quality Data

NAS SMPL	CLIENT DESCRIP	Bulk Sediment Interstitial water NH3	pH
9208F	Control	<0.5	7.2
9213F	LW2-G009	0.5	7.0
9214F	LW2-G010	2.5	6.7
9215F	LW2-G011	7.9	6.8
9216F	LW2-G007-1	6.3	6.6
9217F	LW2-G026	4.2	6.7
9218F	LW2-G060	1.1	7.1
9219F	LW2-G064	0.5	7.1
9220F	LW2-G203-1	5.1	6.7
9221F	LW2-G066	4.2	6.8
9222F	LW2-G015	4.3	6.9
9223F	LW2-G019	1.1	7.8
9224F	LW2-G017	6.2	7.0
9225F	LW2-G294-1	7.6	6.8
9226F	LW2-G270	12.5	6.6
9227F	LW2-G311-1	18.2	6.8
9228F	LW2-G324-1	0.5	7.0
9229F	LW2-G334	3.1	7.0
9230F	LW2-G345-1	12.4	6.5
9231F	LW2-G221	1.9	7.0
9232F	LW2-G220	1.6	7.2

	NAS	CLIENT			Overlying water						
BKR	SMPL	DESCRIP	REPL	DAY	TEMP	DO	COND	pH	NH3	HARD	ALK
8	9213F	LW2-G009	8	0	22.7	7.2	165	7.5	0.1	43	40
15	9218F	LW2-G060	8	0	22.9	7.0	160	7.3	0.2	51	40
22	9226F	LW2-G270	8	0	22.6	7.1	165	7.0	0.8	51	40
37	9214F	LW2-G010	8	0	22.6	7.0	160	7.1	0.5	43	40
38	9229F	LW2-G334	8	0	22.6	6.8	205	7.3	0.3	60	40
41	9216F	LW2-G007-1	8	0	22.6	6.9	160	7.2	0.5	51	40
43	9232F	LW2-G220	8	0	22.6	7.0	160	7.1	0.2	51	40
47	9217F	LW2-G026	8	0	22.5	6.8	165	7.1	0.5	51	40
53	9225F	LW2-G294-1	8	0	22.6	6.9	160	7.0	---	43	40
59	9223F	LW2-G019	8	0	22.7	6.8	165	7.5	0.2	43	40
62	9215F	LW2-G011	8	0	22.7	6.6	165	7.2	0.5	43	40
76	9231F	LW2-G221	8	0	22.6	6.7	160	7.2	0.3	51	40
91	9230F	LW2-G345-1	8	0	22.7	6.8	240	7.0	1.0	51	40
93	9224F	LW2-G017	8	0	22.7	6.9	170	7.1	0.6	43	40
98	9228F	LW2-G324-1	8	0	22.7	6.8	155	7.1	0.2	51	40
115	9220F	LW2-G203-1	8	0	22.7	6.8	165	7.1	0.5	51	50
128	9221F	LW2-G066	8	0	22.9	6.8	160	7.1	0.5	34	50
153	9227F	LW2-G311-1	8	0	22.7	6.9	160	7.1	1.3	43	60
155	9219F	LW2-G064	8	0	22.6	7.0	160	7.1	0.2	34	50
167	9222F	LW2-G015	8	0	22.8	6.8	170	7.2	0.5	51	40
168	9207F	Control	8	0	22.9	6.5	165	7.2	0.2	51	40
8	9213F	LW2-G009	8	1	22.9	7.0	165	7.3			
15	9218F	LW2-G060	8	1	22.9	7.1	160	7.2			
22	9226F	LW2-G270	8	1	22.8	7.0	165	6.9			
37	9214F	LW2-G010	8	1	22.8	6.8	160	7.0			
38	9229F	LW2-G334	8	1	22.8	6.6	185	7.1			
41	9216F	LW2-G007-1	8	1	22.8	6.8	160	7.1			

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43	9232F	LW2-G220	8	1	22.8	6.8	160	7.1						
47	9217F	LW2-G026	8	1	22.8	6.8	160	7.1						
53	9225F	LW2-G294-1	8	1	22.7	6.5	160	7.1						
59	9223F	LW2-G019	8	1	22.9	6.4	170	7.3						
62	9215F	LW2-G011	8	1	22.8	6.5	165	7.2						
76	9231F	LW2-G221	8	1	22.9	6.8	160	7.1						
91	9230F	LW2-G345-1	8	1	22.9	6.8	200	7.0						
93	9224F	LW2-G017	8	1	22.9	6.8	170	7.2						
98	9228F	LW2-G324-1	8	1	22.9	6.8	160	7.2						
115	9220F	LW2-G203-1	8	1	23.1	7.0	160	7.1						
128	9221F	LW2-G066	8	1	22.9	7.0	160	7.1						
153	9227F	LW2-G311-1	8	1	22.9	7.0	165	7.1						
155	9219F	LW2-G064	8	1	23.1	7.0	160	7.1						
167	9222F	LW2-G015	8	1	23.1	7.0	165	7.2						
168	9207F	Control	8	1	23.1	6.4	165	7.3						
8	9213F	LW2-G009	8	2	23.3	7.1								
15	9218F	LW2-G060	8	2	23.4	6.9								
22	9226F	LW2-G270	8	2	23.1	6.2								
37	9214F	LW2-G010	8	2	23.0	6.2								
38	9229F	LW2-G334	8	2	23.0	6.1								
41	9216F	LW2-G007-1	8	2	23.0	6.1								
43	9232F	LW2-G220	8	2	22.9	6.4								
47	9217F	LW2-G026	8	2	23.0	6.6								
53	9225F	LW2-G294-1	8	2	22.9	6.3								
59	9223F	LW2-G019	8	2	23.1	6.4								
62	9215F	LW2-G011	8	2	22.9	6.5								
76	9231F	LW2-G221	8	2	23.1	6.6								
91	9230F	LW2-G345-1	8	2	23.1	6.7								
93	9224F	LW2-G017	8	2	23.1	6.5								
98	9228F	LW2-G324-1	8	2	23.2	6.5								
115	9220F	LW2-G203-1	8	2	23.3	6.6								
128	9221F	LW2-G066	8	2	23.1	6.6								
153	9227F	LW2-G311-1	8	2	23.1	6.6								
155	9219F	LW2-G064	8	2	23.3	6.9								
167	9222F	LW2-G015	8	2	23.4	6.7								
168	9207F	Control	8	2	23.5	6.7								
8	9213F	LW2-G009	8	3	22.7	5.1								
15	9218F	LW2-G060	8	3	22.9	5.4								
22	9226F	LW2-G270	8	3	22.7	5.2								
37	9214F	LW2-G010	8	3	22.7	5.2								
38	9229F	LW2-G334	8	3	22.6	5.2								
41	9216F	LW2-G007-1	8	3	22.6	4.6								
43	9232F	LW2-G220	8	3	22.7	4.7								
47	9217F	LW2-G026	8	3	22.6	4.8								
53	9225F	LW2-G294-1	8	3	22.6	4.8								
59	9223F	LW2-G019	8	3	22.6	4.6								
62	9215F	LW2-G011	8	3	22.7	4.8								
76	9231F	LW2-G221	8	3	22.6	5.1								
91	9230F	LW2-G345-1	8	3	22.7	5.3								
93	9224F	LW2-G017	8	3	22.6	4.9								
98	9228F	LW2-G324-1	8	3	22.6	4.7								
115	9220F	LW2-G203-1	8	3	22.8	5.0								
128	9221F	LW2-G066	8	3	22.8	5.0								
153	9227F	LW2-G311-1	8	3	22.8	5.2								
155	9219F	LW2-G064	8	3	22.6	5.4								
167	9222F	LW2-G015	8	3	22.7	5.2								
168	9207F	Control	8	3	22.8	5.6								

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8	9213F	LW2-G009	8	4	22.5	6.4									
15	9218F	LW2-G060	8	4	22.7	6.5									
22	9226F	LW2-G270	8	4	22.4	6.3									
37	9214F	LW2-G010	8	4	22.4	6.1									
38	9229F	LW2-G334	8	4	22.4	6.3									
41	9216F	LW2-G007-1	8	4	22.5	5.9									
43	9232F	LW2-G220	8	4	22.4	5.8									
47	9217F	LW2-G026	8	4	22.4	6.0									
53	9225F	LW2-G294-1	8	4	22.4	6.0									
59	9223F	LW2-G019	8	4	22.5	6.0									
62	9215F	LW2-G011	8	4	22.4	5.8									
76	9231F	LW2-G221	8	4	22.5	6.1									
91	9230F	LW2-G345-1	8	4	22.5	6.3									
93	9224F	LW2-G017	8	4	22.5	6.0									
98	9228F	LW2-G324-1	8	4	22.5	5.9									
115	9220F	LW2-G203-1	8	4	22.6	6.2									
128	9221F	LW2-G066	8	4	22.4	6.2									
153	9227F	LW2-G311-1	8	4	22.4	6.3									
155	9219F	LW2-G064	8	4	22.6	6.4									
167	9222F	LW2-G015	8	4	22.6	6.4									
168	9207F	Control	8	4	22.7	6.6									
8	9213F	LW2-G009	8	5	22.4	5.8									
15	9218F	LW2-G060	8	5	22.6	5.7									
22	9226F	LW2-G270	8	5	22.6	5.7									
37	9214F	LW2-G010	8	5	22.3	5.7									
38	9229F	LW2-G334	8	5	22.4	5.8									
41	9216F	LW2-G007-1	8	5	22.4	5.1									
43	9232F	LW2-G220	8	5	22.4	5.3									
47	9217F	LW2-G026	8	5	22.3	5.7									
53	9225F	LW2-G294-1	8	5	22.3	5.2									
59	9223F	LW2-G019	8	5	22.5	5.0									
62	9215F	LW2-G011	8	5	22.3	5.3									
76	9231F	LW2-G221	8	5	22.4	5.4									
91	9230F	LW2-G345-1	8	5	22.3	5.2									
93	9224F	LW2-G017	8	5	22.4	4.9									
98	9228F	LW2-G324-1	8	5	22.4	4.9									
115	9220F	LW2-G203-1	8	5	22.5	5.1									
128	9221F	LW2-G066	8	5	22.4	5.3									
153	9227F	LW2-G311-1	8	5	22.3	5.5									
155	9219F	LW2-G064	8	5	22.4	5.6									
167	9222F	LW2-G015	8	5	22.5	4.6									
168	9207F	Control	8	5	22.5	5.1									
8	9213F	LW2-G009	8	6	22.5	5.4									
15	9218F	LW2-G060	8	6	22.6	5.0									
22	9226F	LW2-G270	8	6	22.4	5.2									
37	9214F	LW2-G010	8	6	22.3	5.2									
38	9229F	LW2-G334	8	6	22.4	5.2									
41	9216F	LW2-G007-1	8	6	22.4	4.8									
43	9232F	LW2-G220	8	6	22.4	5.0									
47	9217F	LW2-G026	8	6	22.4	5.0									
53	9225F	LW2-G294-1	8	6	22.3	4.7									
59	9223F	LW2-G019	8	6	22.4	4.8									
62	9215F	LW2-G011	8	6	22.4	4.8									
76	9231F	LW2-G221	8	6	22.3	5.0									
91	9230F	LW2-G345-1	8	6	22.4	4.8									
93	9224F	LW2-G017	8	6	22.4	5.0									
98	9228F	LW2-G324-1	8	6	22.4	5.0									

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115	9220F	LW2-G203-1	8	6	22.5	5.4
128	9221F	LW2-G066	8	6	22.3	5.4
153	9227F	LW2-G311-1	8	6	22.4	5.5
155	9219F	LW2-G064	8	6	22.5	5.6
167	9222F	LW2-G015	8	6	22.5	4.8
168	9207F	Control	8	6	22.5	5.1
8	9213F	LW2-G009	8	7	23.0	4.7
15	9218F	LW2-G060	8	7	23.0	4.1
22	9226F	LW2-G270	8	7	23.0	4.0
37	9214F	LW2-G010	8	7	22.8	4.2
38	9229F	LW2-G334	8	7	22.8	4.6
41	9216F	LW2-G007-1	8	7	22.9	3.9
43	9232F	LW2-G220	8	7	22.9	4.0
47	9217F	LW2-G026	8	7	22.8	4.3
53	9225F	LW2-G294-1	8	7	22.8	4.2
59	9223F	LW2-G019	8	7	22.7	4.4
62	9215F	LW2-G011	8	7	22.9	4.2
76	9231F	LW2-G221	8	7	22.7	4.7
91	9230F	LW2-G345-1	8	7	22.9	4.3
93	9224F	LW2-G017	8	7	22.8	4.5
98	9228F	LW2-G324-1	8	7	22.8	4.4
115	9220F	LW2-G203-1	8	7	22.9	4.6
128	9221F	LW2-G066	8	7	22.7	4.8
153	9227F	LW2-G311-1	8	7	22.7	4.6
155	9219F	LW2-G064	8	7	22.7	4.5
167	9222F	LW2-G015	8	7	22.9	4.4
168	9207F	Control	8	7	22.9	4.6
8	9213F	LW2-G009	8	8	22.8	4.1
15	9218F	LW2-G060	8	8	22.9	4.0
22	9226F	LW2-G270	8	8	22.7	3.4
37	9214F	LW2-G010	8	8	22.7	3.8
38	9229F	LW2-G334	8	8	22.7	3.8
41	9216F	LW2-G007-1	8	8	22.8	4.2
43	9232F	LW2-G220	8	8	22.7	3.2
47	9217F	LW2-G026	8	8	22.7	3.4
53	9225F	LW2-G294-1	8	8	22.7	3.8
59	9223F	LW2-G019	8	8	22.7	3.8
62	9215F	LW2-G011	8	8	22.7	3.3
76	9231F	LW2-G221	8	8	22.7	4.1
91	9230F	LW2-G345-1	8	8	22.7	3.3
93	9224F	LW2-G017	8	8	22.7	3.6
98	9228F	LW2-G324-1	8	8	22.7	3.4
115	9220F	LW2-G203-1	8	8	22.8	3.8
128	9221F	LW2-G066	8	8	22.7	4.2
153	9227F	LW2-G311-1	8	8	22.6	4.6
155	9219F	LW2-G064	8	8	22.8	4.3
167	9222F	LW2-G015	8	8	22.8	3.8
168	9207F	Control	8	8	22.8	3.8
8	9213F	LW2-G009	8	9	23.2	3.8
15	9218F	LW2-G060	8	9	23.2	3.9
22	9226F	LW2-G270	8	9	23.2	3.6
37	9214F	LW2-G010	8	9	23.1	3.8
38	9229F	LW2-G334	8	9	23.1	3.9
41	9216F	LW2-G007-1	8	9	23.1	3.9
43	9232F	LW2-G220	8	9	23.1	4.0
47	9217F	LW2-G026	8	9	23.1	3.8
53	9225F	LW2-G294-1	8	9	23.1	3.4

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59	9223F	LW2-G019	8	9	23.1	3.3								
62	9215F	LW2-G011	8	9	23.1	3.0								
76	9231F	LW2-G221	8	9	23.1	3.6								
91	9230F	LW2-G345-1	8	9	23.1	3.6								
93	9224F	LW2-G017	8	9	23.1	3.7								
98	9228F	LW2-G324-1	8	9	23.1	3.5								
115	9220F	LW2-G203-1	8	9	23.1	3.7								
128	9221F	LW2-G066	8	9	23.1	3.8								
153	9227F	LW2-G311-1	8	9	23.2	3.8								
155	9219F	LW2-G064	8	9	23.1	3.9								
167	9222F	LW2-G015	8	9	23.2	4.2								
168	9207F	Control	8	9	23.2	4.0								
8	9213F	LW2-G009	8	10	23.0	4.8	205	7.0	0.1	43	50			
15	9218F	LW2-G060	8	10	23.0	4.6	175	7.0	<0.1	43	40			
22	9226F	LW2-G270	8	10	22.9	4.6	160	6.9	0.4	43	40			
37	9214F	LW2-G010	8	10	22.9	4.4	160	6.8	0.3	43	50			
38	9229F	LW2-G334	8	10	22.8	4.4	170	7.0	0.1	43	40			
41	9216F	LW2-G007-1	8	10	22.9	4.7	160	7.0	0.2	43	40			
43	9232F	LW2-G220	8	10	22.9	4.2	160	6.9	0.2	43	40			
47	9217F	LW2-G026	8	10	22.8	4.3	160	6.9	0.3	51	40			
53	9225F	LW2-G294-1	8	10	22.8	4.2	160	6.9	0.2	43	40			
59	9223F	LW2-G019	8	10	22.9	4.6	165	7.0	<0.1	43	50			
62	9215F	LW2-G011	8	10	22.8	4.3	165	7.0	0.2	43	50			
76	9231F	LW2-G221	8	10	22.8	4.8	160	6.9	<0.1	43	50			
91	9230F	LW2-G345-1	8	10	22.8	4.1	165	6.9	0.3	43	50			
93	9224F	LW2-G017	8	10	22.8	4.0	165	6.8	0.3	51	40			
98	9228F	LW2-G324-1	8	10	22.8	4.6	160	6.9	<0.1	60	40			
115	9220F	LW2-G203-1	8	10	22.9	4.3	160	6.8	0.1	43	40			
128	9221F	LW2-G066	8	10	22.8	4.4	160	6.8	0.1	43	40			
153	9227F	LW2-G311-1	8	10	22.7	4.9	160	6.9	0.4	51	50			
155	9219F	LW2-G064	8	10	22.8	5.2	160	6.9	<0.1	43	40			
167	9222F	LW2-G015	8	10	22.8	4.6	160	6.9	0.1	51	50			
168	9207F	Control	8	10	22.8	4.0	165	6.9	0.1	43	40			
				Mean	22.8	5.3	166	7.1	---	46	43		---	---
				SD	0.3	1.1	14	0.2	---	6	5		---	---
				n	231	231	63	63	42	42	42		21	21
				Min	22.3	3.0	155	6.8	<0.1	34	40		<0.5	6.5
				Max	23.5	7.2	240	7.5	1.3	60	60		18.2	7.8

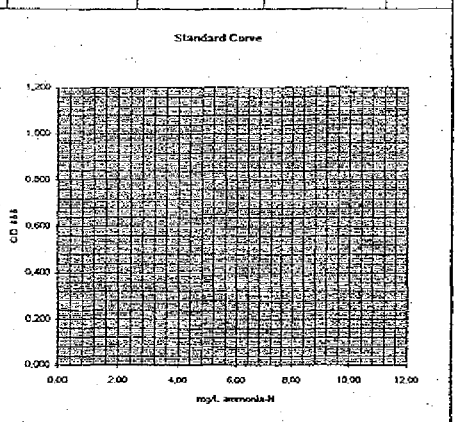
AMMONIA EXPOSURE BENCHSHEETS AND ANALYSIS

Total Ammonia-N in Sediment Pore Water: Computation Worksheet

Salicylate Method (SOP #5492)

Result

	Sample description	Dilution factor	OD655	NH3-N (mg/L)	pH	Salinity (ppt)
	Blank	----	----	----		
	1.0 mg/L NH3-N Std.	----	.118	1.00		
	3.0 mg/L NH3-N Std.	----	.259	3.00		
	6.0 mg/L NH3-N Std.	----	.550	6.00		
	10.0 mg/L NH3-N Std.	----	.950	10.00		
	3.0 mg/L spike	----	.265			
	3.0 mg/L spike dupl.	----	.259			
1.	9208F	5	.006		7.2	
2.	9213F	5	.010		7.0	
3.	9214F	5	.047		6.7	
4.	9215F	5	.149		6.8	
5.	9216F	5	.018		6.6	
6.	9217F	5	.078		6.7	
7.	9218F	5	.010		7.1	
8.	9219F	5	.010		7.1	
9.	9220F	5	.096		6.7	
10.	9221F	5	.071		6.8	
11.	9222F	5	.080		6.9	
12.	9223F	5	.020		7.8	
13.	9224F	5	.116		7.0	
14.	9225F	5	.197		6.8	
15.	9226F	5	.278		6.6	
16.	9227F	5	.342		6.8	
17.	9228F	5	.010		7.0	
18.	9229F	5	.059		7.0	
19.	9230F	5	.232		6.5	
20.	9231F	5	.035		7.0	
21.	9232F	5	.030		7.2	
22.		5				
23.		5				
24.		5				
25.		5				
26.		5				
27.		5				
28.		5				
29.		5				
30.		5				
31.		5				
32.		5				
33.		5				
34.		5				
35.		5				
36.		5				



Reporting limit (mg/L) =	0.5
Recovery (%) =	#VALUE!
Precision (RPD) =	#VALUE!
Sample volume (ml):	0.10
Dilution factor	5

Sample Set Description:

Proj. No.: 686

Bulk sediment porewaters

Analyst: RSC

Date analysed: 7/27/2004

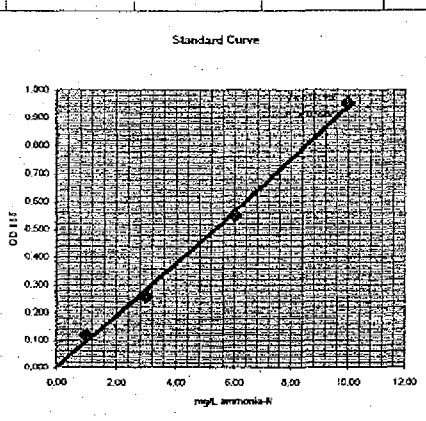
ANC08437
BZTO104(e)008437

Total Ammonia-N in Sediment Pore Water: Computation Worksheet

Salicylate Method (SOP #5492)

Result

	Sample description	Dilution factor	OD_{655}	NH_3-N (mg/L)	pH	Salinity (ppt)
	Blank	-----	-----	-----		
	1.0 mg/L NH_3-N Std.	-----	0.118	1.00		
	3.0 mg/L NH_3-N Std.	-----	0.259	3.00		
	6.0 mg/L NH_3-N Std.	-----	0.550	6.00		
	10.0 mg/L NH_3-N Std.	-----	0.950	10.00		
	3.0 mg/L spike	-----	0.265	2.82		
	3.0 mg/L spike dupl.	-----	0.259	2.76		
1.	9208F	5	0.006	ND		
2.	9213F	5	0.010	0.53		
3.	9214F	5	0.047	2.50		
4.	9215F	5	0.148	7.88		
5.	9216F	5	0.118	6.28		
6.	9217F	5	0.078	4.15		
7.	9218F	5	0.020	1.06		
8.	9219F	5	0.010	0.53		
9.	9220F	5	0.096	5.11		
10.	9221F	5	0.079	4.21		
11.	9222F	5	0.080	4.26		
12.	9223F	5	0.020	1.06		
13.	9224F	5	0.116	6.18		
14.	9225F	5	0.143	7.61		
15.	9226F	5	0.235	12.51		
16.	9227F	5	0.342	18.21		
17.	9228F	5	0.010	0.53		
18.	9229F	5	0.059	3.14		
19.	9230F	5	0.232	12.35		
20.	9231F	5	0.035	1.86		
21.	9232F	5	0.030	1.60		
22.		5				
23.		5				
24.		5				
25.		5				
26.		5				
27.		5				
28.		5				
29.		5				
30.		5				
31.		5				
32.		5				
33.		5				
34.		5				
35.		5				
36.		5				



Reporting limit (mg/L) =	0.5
Recovery (%) =	93.0
Precision (RPD) =	2.29
Sample volume (ml):	0.10
Dilution factor	5

Sample Set Description:

Proj. No.: 686

Bulk sediment porewaters

Analyst: RSC

Date analysed: 7/27/2004

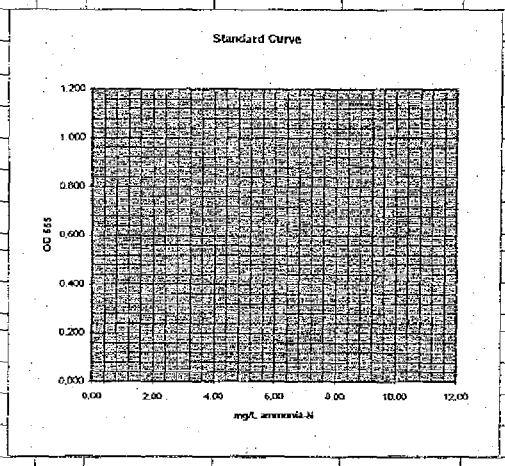
ANC08438
BZTO104(e)008438

Total Ammonia-N in Water: Computation Worksheet

Salicylate Method (SOP #5492)

Result

	Sample description	Dilution factor	OD655	NH3-N (mg/L)
	Blank	-----	-----	----
	1.0 mg/L NH3-N Std.	-----	.103	1.00
	3.0 mg/L NH3-N Std.	-----	.264	3.00
	6.0 mg/L NH3-N Std.	-----	.568	6.00
	10.0 mg/L NH3-N Std.	-----	.910	10.00
	3.0 mg/L spike	-----	.291	
	3.0 mg/L spike dupl.	-----	.248	
1.	8	1	.013	
2.	15	1	.020	
3.	22	1	.075	
4.	37	1	.342	
5.	38	1	.370	
6.	41	1	.042	
7.	43	1	.021	
8.	47	1	.043	
9.	53	1	—	
10.	59	1	.018	
11.	62	1	.041	
12.	76	1	.031	
13.	91	1	.044	
14.	93	1	.054	
15.	98	1	.015	
16.	115	1	.047	
17.	128	1	.048	
18.	153	1	.123	
19.	155	1	.018	
20.	167	1	.049	
21.	168	1	.019	
22.		1		
23.		1		
24.		1		
25.		1		
26.		1		
27.		1		
28.		1		
29.		1		
30.		1		
31.		1		
32.		1		
33.		1		
34.		1		
35.		1		
36.		1		



Reporting limit (mg/L) =	0.1
Recovery (%) =	#VALUE!
Precision (RPD) =	#VALUE!
Sample volume (ml):	0.50
Dilution factor	1

Sample Set Description:

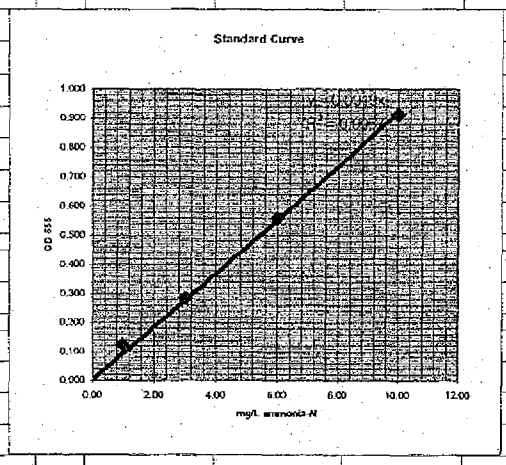
Test No.:	686-2
Test Day:	0 (7-27-04)
Species:	*Chironomus*
Overlying water	
Analyst:	RSC
Date analysed:	7/28/2004

Total Ammonia-N in Water: Computation Worksheet

Salicylate Method (SOP #5492)

Result

	Sample description	Dilution factor	OD_{655}	NH_3-N (mg/L)
	Blank	----	----	----
	1.0 mg/L NH_3-N Std.	----	0.123	1.00
	3.0 mg/L NH_3-N Std.	----	0.284	3.00
	6.0 mg/L NH_3-N Std.	----	0.558	6.00
	10.0 mg/L NH_3-N Std.	----	0.910	10.00
	3.0 mg/L spike	----	0.291	3.16
	3.0 mg/L spike dupl.	----	0.298	3.24
1.	8	1	0.013	0.14
2.	15	1	0.020	0.22
3.	22	1	0.075	0.81
4.	37	1	0.042	0.46
5.	38	1	0.030	0.33
6.	41	1	0.042	0.46
7.	43	1	0.021	0.23
8.	47	1	0.043	0.47
9.	53	1	---	---
10.	59	1	0.018	0.20
11.	62	1	0.041	0.45
12.	76	1	0.031	0.34
13.	91	1	0.094	1.02
14.	93	1	0.054	0.59
15.	98	1	0.015	0.16
16.	115	1	0.047	0.51
17.	128	1	0.048	0.52
18.	153	1	0.123	1.34
19.	155	1	0.018	0.20
20.	167	1	0.049	0.53
21.	168	1	0.019	0.21
22.		1		
23.		1		
24.		1		
25.		1		
26.		1		
27.		1		
28.		1		
29.		1		
30.		1		
31.		1		
32.		1		
33.		1		
34.		1		
35.		1		
36.		1		



Reporting limit (mg/L) =	0.1
Recovery (%) =	106.7
Precision (RPD) =	-2.38
Sample volume (ml):	0.50
Dilution factor	1

Sample Set Description:

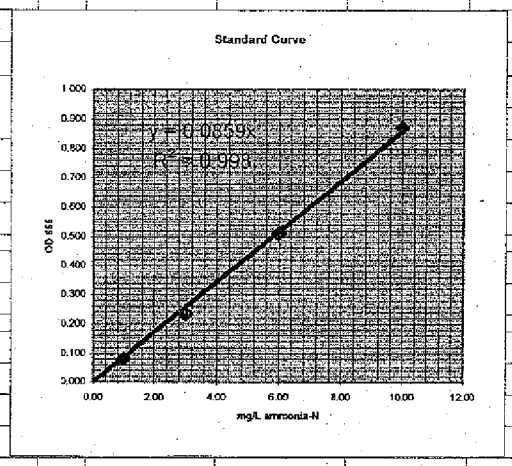
Test No.:	686-2
Test Day:	0 (7-27-04)
Species:	*Chironomus*
Overlying water	
Analyst:	RSC
Date analysed:	7/28/2004

ANC08440
BZTO104(e)008440

Total Ammonia-N in Water: Computation Worksheet
Salicylate Method (SOP #5492)

Result

	Sample description	Dilution factor	OD_{655}	NH_3-N (mg/L)
	Blank	-----	-----	-----
	1.0 mg/L NH_3-N Std.	-----	0.081	1.00
	3.0 mg/L NH_3-N Std.	-----	0.234	3.00
	6.0 mg/L NH_3-N Std.	-----	0.510	6.00
	10.0 mg/L NH_3-N Std.	-----	0.870	10.00
	3.0 mg/L spike	-----	0.242	2.81
	3.0 mg/L spike dupl.	-----	0.237	2.76
1.	8	1	0.009	0.10
2.	15	1	0.000	ND
3.	22	1	0.037	0.43
4.	37	1	0.029	0.34
5.	38	1	0.012	0.14
6.	41	1	0.021	0.24
7.	43	1	0.014	0.16
8.	47	1	0.028	0.33
9.	53	1	0.014	0.16
10.	59	1	0.000	ND
11.	62	1	0.020	0.23
12.	76	1	0.007	ND
13.	91	1	0.028	0.33
14.	93	1	0.022	0.26
15.	98	1	0.000	ND
16.	115	1	0.012	0.14
17.	128	1	0.012	0.14
18.	153	1	0.034	0.40
19.	155	1	0.000	ND
20.	167	1	0.010	0.12
21.	168	1	0.011	0.13
22.		1		
23.		1		
24.		1		
25.		1		
26.		1		
27.		1		
28.		1		
29.		1		
30.		1		
31.		1		
32.		1		
33.		1		
34.		1		
35.		1		
36.		1		



Reporting limit (mg/L) =	0.1
Recovery (%) =	92.9
Precision (RPD) =	2.09
Sample volume (ml):	0.50
Dilution factor	1

Sample Set Description:

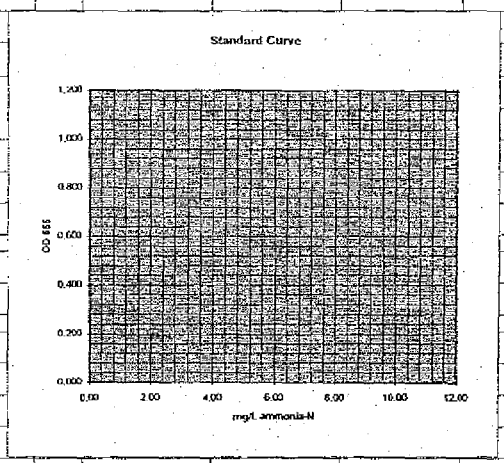
Test No.:	686-2
Test Day:	10 (8-6-04)
Species:	*Chironomus*
	Overlying water
Analyst:	RSC
Date analysed:	8/6/2004

Total Ammonia-N in Water: Computation Worksheet

Salicylate Method (SOP #5492)

Result

	Sample description	Dilution factor	OD655	NH_3-N (mg/L)
	Blank	----	----	----
	1.0 mg/L NH_3-N Std.	----	.081	1.00
	3.0 mg/L NH_3-N Std.	----	.234	3.00
	6.0 mg/L NH_3-N Std.	----	.510	6.00
	10.0 mg/L NH_3-N Std.	----	.870	10.00
	3.0 mg/L spike	----	.242	
	3.0 mg/L spike dupl.	----	.237	
1.	8	1	.009	
2.	15	1	.000	
3.	22	1	.037	
4.	37	1	.029	
5.	38	1	.012	
6.	41	1	.021	
7.	43	1	.017	
8.	47	1	.028	
9.	53	1	.014	
10.	59	1	.000	
11.	62	1	.020	
12.	76	1	.007	
13.	91	1	.023	
14.	93	1	.022	
15.	98	1	.000	
16.	115	1	.012	
17.	128	1	.012	
18.	153	1	.034	
19.	155	1	.000	
20.	167	1	.010	
21.	168	1	.011	
22.		1		
23.		1		
24.		1		
25.		1		
26.		1		
27.		1		
28.		1		
29.		1		
30.		1		
31.		1		
32.		1		
33.		1		
34.		1		
35.		1		
36.		1		



Reporting limit (mg/L) =	0.1
Recovery (%) =	#VALUE!
Precision (RPD) =	#VALUE!
Sample volume (ml):	0.50
Dilution factor	1

Sample Set Description:

Test No.:	686-2
Test Day:	10 (8-6-04)
Species:	~~*Hyalella*~~ CHIRONOMUS - 611
	Overlying water
Analyst:	RSC
Date analysed:	8/6/2004

CHAIN-OF-CUSTODY RECORDS

Windward Environmental

CHAIN-OF-CUSTODY/TEST REQUEST FORM

1242

Project/Client Name: LWG - PORTLAND HBC
Windward Project No:
Contact Name: H. ANDERSEN
Sampled By: H. ANDERSEN / WINDWARD

Ship to: NAS
Attn: GERALD IRISSARRI
Shipping address:

Shipping Date: 7/23/04
Airbill Number:

Sample Collection Date (m/d/y)	Time	Sample Identification	Volume of Sample / # of Containers (COOLER # / TEMP #)	Matrix	Test(s) Requested (check test(s) required)							Comments / Instructions [Jar tag number(s)]
					10-DAY CHIRONOMUS	28-DAY HYALELLA						
7/19/04	1452	LW2-G009	6 4	SEDIMENT	X	X		NAS#	9213F			TEMPERATURES OF
7/19/04	1515	LW2-G010	6 4	SEDIMENT	X	X			9214F			COOLERS UPON
7/19/04	1550	LW2-G011	5 4	SEDIMENT	X	X			9215F			RECEIPT AT LAB #
7/20/04	1005	LW2-G007-1	6 4	SEDIMENT	X	X			9216F			#1 3.0°C
7/20/04	1115	LW2-G026	1 4	SEDIMENT	X	X			9217F			#2 3.5°C
7/20/04	1142	LW2-G060	1 4 ✓	SEDIMENT	X	X			9218F			#3 5.5°C
7/20/04	1215	LW2-G064	2 4	SEDIMENT	X	X			9219F			#4 2.0°C
7/20/04	1440	LW2-G203-1	1 4 ✓	SEDIMENT	X	X			9220F			#5 1.0°C
7/20/04	1557	LW2-G066	5 4	SEDIMENT	X	X			9221F			#6 4.0°C
7/20/04	1640	LW2-G015	4 4	SEDIMENT	X	X			9222F			
7/20/04	1710	LW2-G019	4 4	SEDIMENT	X	X			9223F			
7/20/04	1735	LW2-G017	3 4	SEDIMENT	X	X			9224F			
		Total Number of Containers	48	Purchase Order / Statement of Work #								

1) Released by:	1) Rec'd by:	2) Released by:	1) Rec'd by:
Print name: HELLE ANDERSEN	GERALD IRISSARRI	Print name:	
Signature: Helle Andersen	Gerald Irissarri	Signature:	
Company: WINDWARD	Company: NORTHWESTERN AQUATIC SCIENCES	Company:	Company:
Date/Time: 1122 AM 7/23/04	Date/Time: 7-23-04 1122 AM	Date/Time:	Date/Time:

* Distribution: White and yellow copies accompany shipment; pink-consignor's copy; white-consignee return with results; yellow-consignee's copy.
* Instructions for completion of Chain-of-Custody/Test Request Form on back.

Wind Ward environmental LLC
• 200 West Mercer Street
Suite 401
Seattle, WA 98119
Tel: 206.378.1364
Fax: 206.217.0089

To be completed by Laboratory upon sample receipt:

Date of receipt:	Laboratory W.O. #:
Condition upon receipt:	Time of receipt:
Cooler temperature:	Received by:

PAGE 36 OF 37

ANC08444
BZTO104(e)008444

Windward Environmental

CHAIN-OF-CUSTODY/TEST REQUEST FORM

1243

Project/Client Name: LWG - PORTLAND HARBOR
Windward Project No:
Contact Name: H. ANDERSEN
Sampled By: H. ANDERSEN / WINDWARD

Ship to: NWAS
Attn: GERALD IRISSARRI
Shipping address:

Shipping Date: 7/23/04
Airbill Number:

Sample Collection Date (m/d/y)	Time	Sample Identification	Volume of Sample / # of Containers (COOLER #)	Matrix	Test(s) Requested (check test(s) required)							Comments / Instructions (Jar tag number(s))
					10-DAY AMPHIPODS	28-DAY HYALELLA						
7/21/04	0925	LW2 - G294-1	2 4	SEDIMENT	X	X		NAS#	9225F			
7/21/04	1007	LW2 - G270	5 4	SEDIMENT	X	X			9226F			
7/21/04	1137	LW2 - G311-1	5 4	SEDIMENT	X	X			9227F			
7/22/04	0902	LW2 - G324-1	2 4	SEDIMENT	X	X			9228F			
7/22/04	1022	LW2 - G334	4 4	SEDIMENT	X	X			9229F			
7/22/04	1054	LW2 - G345-1	3 4	SEDIMENT	X	X			9230F			
7/22/04	1239	LW2 - G221	6 4	SEDIMENT	X	X			9231F			
7/22/04	1308	LW2 - G220	3 4	SEDIMENT	X	X			9232F			
		Total Number of Containers	32	Purchase Order / Statement of Work #								

PAGE 37 OF 37

1) Released by:	1) Rec'd by:	2) Released by:	1) Rec'd by:
Print name: HELLE ANDERSEN	GERALD IRISSARRI	Print name:	
Signature: Helle Andersen	Gerald Irissarri	Signature:	
Company: WINDWARD	NORTHWESTERN AQUATIC SCIENCES	Company:	Company:
Date/Time: 1120 AM 7/23/04	7-23-04 1128 AM	Date/Time:	Date/Time:

* Distribution: White and yellow copies accompany shipment; pink-consignor's copy; white-consignee return with results; yellow-consignee's copy.
* Instructions for completion of Chain-of-Custody/Test Request Form on back.

Wind Ward environmental LLC
200 West Mercer Street
Suite 401
Seattle, WA 98119
Tel: 206.378.1364
Fax: 206.217.0089

To be completed by Laboratory upon sample receipt:

Date of receipt:	Laboratory W.O. #:
Condition upon receipt:	Time of receipt:
Cooler temperature:	Received by:

ANC08445
BZTO104(e)008445

APPENDIX II

RAW DATA – REFERENCE TOXICANT TEST

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-

ACUTE TOXICITY TEST (ALL SPECIES)

REVIEWED PAGES 1-7 GJI 7-28-04

Test No. 999-1810 Client: QC Test Investigator

Test Type (rangefinding/definitive) Test Length (hr) 96

Species Chironomus tentans

STUDY MANAGEMENT

Client: QC test

Client's Study Monitor: QC test

Testing Laboratory: Northwestern Aquatic Sciences

Test Location: Newport Laboratory

Laboratory's Study Personnel:

Proj. Man./Study Dir. G.J. Irissarri GJI

QA Officer L. K. Nemeth

1. [illegible] 2. M.S. Redmond MLR

3. 4.

Study Schedule:

Test Beginning: 7-27-04 1245 Test Ending: 7-31-04 1120

TEST MATERIAL

Description: Potassium Chloride Crystals - Lot No.: ~~034322~~ 006829 Fisher QUB 7-27-04 UB

NAS Sample No.				
Date of Collection:				
Date of Receipt:				
Temperature (deg C):				
Dissolved oxygen (mg/L):				
pH:				
Conductivity (umhos/cm):				
Hardness (mg/L):				
Alkalinity (mg/L):				
Salinity (ppt):				
Total chlorine (mg/L):				
Total ammonia-N (mg/L):				

DILUTION WATER

Description: Moderately hard synthetic water

Date of Preparation/Collection: 7-21-04

Water Quality: Cond. (umhos/cm): 310 Salinity (ppt) — pH 8.0

Hardness (mg/L as $CaCO_3$): 102 Alkalinity (mg/L as $CaCO_3$): 80

Treatments: Aerated ≥ 24 hrs

TEST LOCATION

Test conducted in (circle one): room 1 room 2 trailer water bath other:

Randomization chart:

5	2.5	Ø	10	1.25	20	5	20	5	1.25
10	5	1.25	2.5	20	2.5	1.25	10	Ø	20
0	0	5	20	2.5	10	20	2.5	1.25	Ø
20	20	10	1.25	Ø	5	2.5	1.25	20	2.5
1.25	1.25	2.5	5	5	Ø	10	Ø	10	5
2.5	10	20	Ø	10	1.25	Ø	5	2.5	10

Error codes: 1) Correction of handwriting error
2) Written in wrong location; entry deleted
3) Wrong date deleted; replaced with correct date
4) Error found in measurement; measurement repeated

Revised 12-5-01

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-_____

ACUTE TOXICITY TEST (ALL SPECIES)

Test No. 999-1810 Client QC Test Investigator _____

TEST ORGANISMS

Species: *Chironomus tentans* Age: 3RD INSTAR Size: 3rd instar

Source: NAS CULTURES Date received: —

Acclimation Data:

Date	Temp. (deg.C)	DO (mg/L)	pH	Cond. umhos/cm	Hardness (mg/L)	Alkalinity (mg/L)	Feeding Amount*	Feeding description	Water changes
7-16-04	24.6	7.0	7.2	340	—	—	4S,3T		YES
7-19-04	24.4	7.4	7.4	350	—	—	4S,3T		YES
7-21-04	24.2	5.9	7.4	350	102	100	—		—
7-23-04	24.6	6.6	7.2	360	—	—	4S,3T		YES
7-26-04	23.8	8.6	7.8	335	—	—	4S,3T		YES, ~~½ WATER REP~~ 6/7 ½ WATER REPLACED BY TAP WATER
7-27-04	22.0	8.5	7.5	290	60	70	—		—
Mean	23.9	7.3	7.4	338	81	85			
S.D.	1.0	1.1	0.2	25	—	—			
(N)	6	6	6	6	2	2			

Photoperiod during acclimation: 16:8, L:D

* S = SELENASTRUM, T = TETRA FIN AMOUNT IN MLS

TEST PROCEDURES AND CONDITIONS

Test concentrations (50% series recommended): 20, 10, 5, 2.5, 1.25, 0 g/L

Test chamber: 30 ml plastic cups Test volume: 20 ml

Replicates/treatment: 10 Organisms/treatment: 10 (1/rep)

Test water changes: None Aeration during test: None

Feeding: 0.25 ml Tetra Fin (4g/L) suspension per cup on days 0 and 2

Duration: 24-hr, 48-hr, (96-hr) Test temperature (deg.C): 23 ± 1

Beaker placement: Stratified randomization Photoperiod: 16:8, L:D

MISCELLANEOUS NOTES

Test solution preparation:

Working stock: Dissolve 10g KCl crystals in dilution water and dilute to 500 mL.
Final conc.: 20 g/L.

Test concentration (g/L)	KCl working stock (ml/200ml)	ml of dilution water per 200 ml
20	200	0
10	100	100
5	50	150
2.5	25	175
1.25	12.5	187.5
0	0	0

ANC08448
BZTO104(e)008448

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-_____

ACUTE TOXICITY TEST (ALL SPECIES)

Test No. 999-1810 Client _____ QC Test

DAILY RECORD SHEET

Day 0 (7 /27 /04) GS Temp Beaker (°C): 23.6

Conc. (g/L)	Temp. (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	Comments
1. 20	23.4	8.5	>20,000	8.0	85	70	
2. 10	23.4	8.5	14,430	8.0			
3. 5	23.4	8.5	7,990	8.0			
4. 2.5	23.4	8.5	4510	8.1			
5. 1.25	23.4	8.4	2480	8.0			
6. 0	23.4	8.5	315	8.0	68	70	
All animals fed 0.25 ml Tetra Fin suspension. Initials: GSL							

Day 1 (7 /28/04) GSL Temp Beaker (°C): 23.6

Conc. (g/L)	Temp. (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	Comments
1. 20							
2. 10							
3. 5							
4. 2.5							
5. 1.25							
6. 0							

Day 2 (7 /29 /04) GSL Temp Beaker (°C): 23.4

Conc. (g/L)	Temp. (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	Comments
1. 20							
2. 10							
3. 5							
4. 2.5							
5. 1.25							
6. 0							
All animals fed 0.25 ml Tetra Fin suspension. Initials: GSL							

Day 3 (7 /30 /04) GSL Temp Beaker (°C): 23.1

Conc. (g/L)	Temp. (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	Comments
1. 20							
2. 10							
3. 5							
4. 2.5							
5. 1.25							
6. 0							

Day 4 (7 /31 /04) GSL/GS Temp Beaker (°C):

Conc. (g/L)	Temp. (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	Comments
1. 20	–	–	–	–	–	–	
2. 10	–	–	–	–			
3. 5	23.4	8.0	8940	7.8			
4. 2.5	23.4	8.0	4460	7.9			
5. 1.25	23.4	8.0	2390	7.9			
6. 0	23.4	7.5	350	7.8	85	80	
Mean	23.4	8.2	333 (CONTROL)	8.0	79	73	
SD	0.0	0.3	–	0.1	10	6	
n	10	18	2	10	3	3	

Revised 12-5-01

ANC08449
BZTO104(e)008449

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-_____

ACUTE TOXICITY TEST (ALL SPECIES)

Test No. 999-1810 Client QC Test Investigator _____

DAILY RECORD SHEET - Survivors

Day 0 (7/27/04) 632

Conc. (g/L)	Survivors in Replicate: 1	2	3	4	5	6	7	8	9	10	Total
1. 20	1	1	1	1	1	1	1	1	1	1	10
2. 10	1	1	1	1	1	1	1	1	1	1	10
3. 5	1	1	1	1	1	1	1	1	1	1	10
4. 2.5	1	1	1	1	1	1	1	1	1	1	10
5. 1.25	1	1	1	1	1	1	1	1	1	1	10
6. 0	1	1	1	1	1	1	1	1	1	1	10

Day 1 (7/28/04) 632

Conc. (g/L)	Survivors in Replicate: 1	2	3	4	5	6	7	8	9	10	Total
1. 20	X	X	X	X	X	X	X	X	1	X	1 (9D)
2. 10	X	1	1	X	X	1	X	X	1	X	4 (6D)
3. 5	1	1	1	X	1	1	1	1	1	1	9 (1D)
4. 2.5	1	1	1	1	1	1	1	1	1	1	10
5. 1.25	1	1	1	1	1	1	1	1	1	1	10
6. 0	1	1	1	1	1	1	1	1	1	1	10

Day 2 (7/29/04) 632

Conc. (g/L)	Survivors in Replicate: 1	2	3	4	5	6	7	8	9	10	Total
1. 20	X	X	X	X	X	X	X	X	X	X	Ø (10D)
2. 10	X	X	X	X	X	X	X	X	X	X	Ø (4D)
3. 5	1	1	1	X	1	1	1	1	1	1	9
4. 2.5	1	1	1	1	1	1	1	1	1	1	10
5. 1.25	1	1	1	1	1	1	1	1	1	1	10
6. 0	1	1	1	1	1	1	1	1	1	1	10

Day 3 (7/30/04) 632

Conc. (g/L)	Survivors in Replicate: 1	2	3	4	5	6	7	8	9	10	Total
1. 20	X	X	X	X	X	X	X	X	X	X	Ø
2. 10	X	X	X	X	X	X	X	X	X	X	Ø
3. 5	1	1	1	X	1	1	1	1	1	1	9
4. 2.5	1	1	1	1	1	X	1	1	1	1	9 (1D)
5. 1.25	1	1	1	1	1	1	1	1	1	1	10
6. 0	1	1	1	1	1	1	1	1	1	1	10

Day 4 (7/31/04) 632

Conc. (g/L)	Survivors in Replicate: 1	2	3	4	5	6	7	8	9	10	Total
1. 20	X	X	X	X	X	X	X	X	X	X	Ø
2. 10	X	X	X	X	X	X	X	X	X	X	Ø
3. 5	1	X	1	X	1	1	1	1	1	1	8 (1D)
4. 2.5	1	1	1	1	1	X	1	1	1	1	9
5. 1.25	1	1	1	1	1	1	1	1	1	1	10
6. 0	1	1	1	1	1	1	1	1	1	1	10

ANC08450
BZTO104(e)008450

Acute 96-hr Toxicity Test-96 Hr Survival

Start Date:	7/27/04 12:45	Test ID:	999-1810	Sample ID:	REF-Ref Toxicant
End Date:	7/31/04 11:20	Lab ID:	ORNAS-Northwestern Aquati	Sample Type:	KCL-Potassium chloride
Sample Date:		Protocol:	EPAF 91-EPA Freshwater	Test Species:	CT-Chironomus tentans
Comments:					

Conc-gm/L	1
D-Control	1.0000
1.25	1.0000
2.5	0.9000
5	0.8000
10	0.0000
20	0.0000

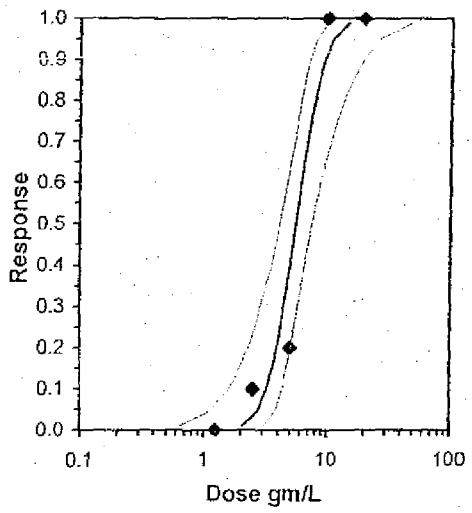
Conc-gm/L	Mean	N-Mean	Resp	Not Resp	Total	N	Fisher's Exact P	1-Tailed Critical	Number Resp	Total Number
D-Control	1.0000	1.0000	0	10	10	1			0	10
1.25	1.0000	1.0000	0	10	10	1	1.0000	0.0500	0	10
2.5	0.9000	0.9000	1	9	10	1	0.5000	0.0500	1	10
5	0.8000	0.8000	2	8	10	1	0.2368	0.0500	2	10
10	0.0000	0.0000	10	0	10	1			10	10
20	0.0000	0.0000	10	0	10	1			10	10

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU
Fisher's Exact Test	5	10	7.07107	

Maximum Likelihood-Probit

Parameter	Value	SE	95% Fiducial Limits		Control	Chi-Sq	Critical	P-value	Mu	Sigma	Iter
Slope	5.5052	1.50606	2.55332	8.45708	0	4.41248	7.81472	0.22	0.74282	0.18165	7
Intercept	0.91061	1.15977	-1.3625	3.18376							
TSCR											

Point	Probits	gm/L	95% Fiducial Limits	
EC01	2.674	2.0905	0.64039	3.10892
EC05	3.355	2.77998	1.15961	3.82148
EC10	3.718	3.23619	1.5803	4.29581
EC15	3.964	3.58557	1.93778	4.6716
EC20	4.158	3.88996	2.26906	5.01483
EC25	4.326	4.17162	2.58736	5.35135
EC40	4.747	4.97512	3.5118	6.46439
EC50	5.000	5.53125	4.11936	7.42006
EC60	5.253	6.14954	4.73052	8.69976
EC75	5.674	7.33401	5.71768	11.8014
EC80	5.842	7.86503	6.10227	13.4549
EC85	6.036	8.53272	6.55146	15.7531
EC90	6.282	9.45392	7.12538	19.3143
EC95	6.645	11.0054	8.01067	26.3187
EC99	7.326	14.6351	9.8477	47.6525



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Test: AT-Acute 96-hr Toxicity Test							Test ID: 999-1810		
Species: CT-Chironomus tentans							Protocol: EPAF 91-EPA Freshwater		
Sample ID: REF-Ref Toxicant							Sample Type: KCL-Potassium chloride		
Start Date: 7/27/04 12:45			End Date: 7/31/04 11:20				Lab ID: ORNAS-Northwestern Aquatic Sciences		
Pos	ID	Rep	Group	Start	24 Hr	48 Hr	72 Hr	96 Hr	Notes
	1	1	D-Control	10				10	
	2	1	1.250	10				10	
	3	1	2.500	10				9	
	4	1	5.000	10				8	
	5	1	10.000	10				0	
	6	1	20.000	10				0	

Comments: Data entry verified against laboratory bench sheets - MSR 8-20-04

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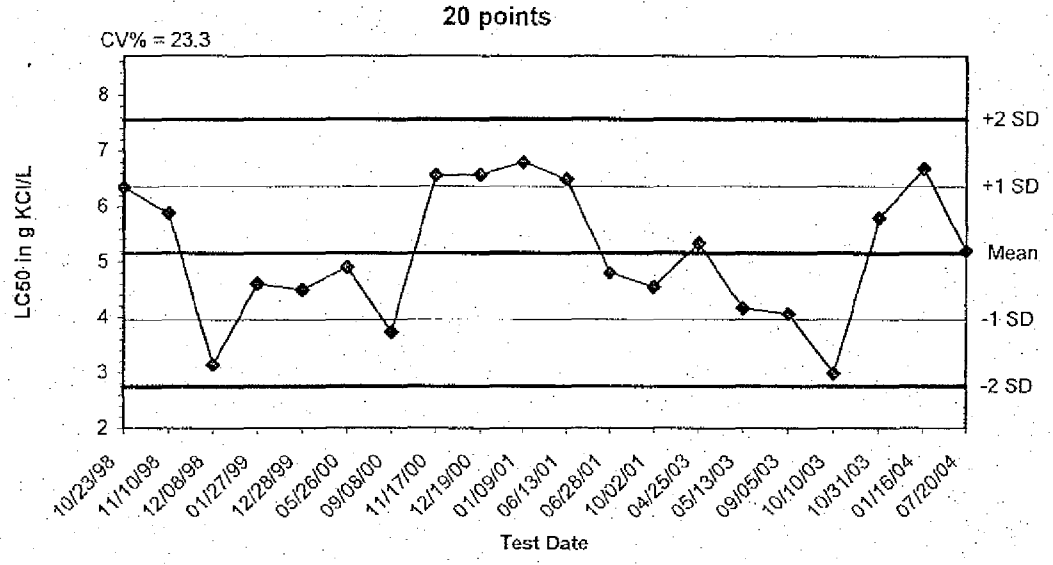
Chironomus tentans (3RD INSTAR) 96-hr reference toxicant test - last 20 points



Dates	Values	Mean	-1 SD	-2 SD	+1 SD	+2 SD
10/23/98	6.3500	5.1535	3.9508	2.7482	6.3562	7.5588
11/10/98	5.8800	5.1535	3.9508	2.7482	6.3562	7.5588
12/08/98	3.1400	5.1535	3.9508	2.7482	6.3562	7.5588
01/27/99	4.6000	5.1535	3.9508	2.7482	6.3562	7.5588
12/28/99	4.4900	5.1535	3.9508	2.7482	6.3562	7.5588
05/26/00	4.9000	5.1535	3.9508	2.7482	6.3562	7.5588
09/08/00	3.7300	5.1535	3.9508	2.7482	6.3562	7.5588
11/17/00	6.5600	5.1535	3.9508	2.7482	6.3562	7.5588
12/19/00	6.5700	5.1535	3.9508	2.7482	6.3562	7.5588
01/09/01	6.7900	5.1535	3.9508	2.7482	6.3562	7.5588
06/13/01	6.4900	5.1535	3.9508	2.7482	6.3562	7.5588
06/28/01	4.8000	5.1535	3.9508	2.7482	6.3562	7.5588
10/02/01	4.5500	5.1535	3.9508	2.7482	6.3562	7.5588
04/25/03	5.3400	5.1535	3.9508	2.7482	6.3562	7.5588
05/13/03	4.1600	5.1535	3.9508	2.7482	6.3562	7.5588
09/05/03	4.0600	5.1535	3.9508	2.7482	6.3562	7.5588
10/10/03	2.9800	5.1535	3.9508	2.7482	6.3562	7.5588
10/31/03	5.8000	5.1535	3.9508	2.7482	6.3562	7.5588
01/16/04	6.6800	5.1535	3.9508	2.7482	6.3562	7.5588
07/20/04	5.2000	5.1535	3.9508	2.7482	6.3562	7.5588

ysR
8-20-04

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Report

of

Test No. 686-20

Toxicity of Portland Harbor RI/FS Freshwater Test Sediments (Batch 10) using a 10-day Midge, *Chironomus tentans*, Sediment Bioassay

Submitted to

Windward Environmental, Inc.
200 West Mercer Street, Suite 401
Seattle, WA 98119

Submitted by

Northwestern Aquatic Sciences
3814 Yaquina Bay Road
P.O. Box 1437
Newport, OR 97365

January 19, 2005

TOXICITY TEST REPORT

TEST IDENTIFICATION

Test No.: 686-20

Title: Toxicity of Portland Harbor RI/FS freshwater test sediments (batch 10) using a 10-day midge, *Chironomus tentans*, sediment bioassay.

Protocol No.: NAS-686-CT4b, June 24, 2004. Based on ASTM 2003, Standard Method No. E 1706-00 and U.S. EPA Method 100.2 (EPA/600/R-99/064, 2000) This protocol can be found in Appendix B of the Portland Harbor RI/FS Round 2 Quality Assurance Project Plan, June 24, 2004.

STUDY MANAGEMENT

Study Sponsor: Windward Environmental, Inc., 200 West Mercer Street, Suite 401, Seattle, WA 98119.

Sponsor's Study Monitor: Ms. Helle Andersen

Testing Laboratory: Northwestern Aquatic Sciences, P.O. Box 1437, Newport, OR 97365

Test Location: Newport laboratory

Laboratory's Study Personnel: G.J. Irissarri, B.S., Proj. Man./Study Dir.; L.K. Nemeth, B.S., M.B.A., QA Officer; R.S. Caldwell, PhD, Sr. Toxicol.; G.A. Buhler, B.S., Aq. Toxicol.; W.T. Montgomery, A.A., Sr. Tech.; G. Hayes, B.S., Tech.; S.J. Gage, B.A., Tech.; B.B. Pridgeon, Lab Assist.

Study Schedule:

Test Beginning: 10-26-04, 1200 hrs.

Test Ending: 11-5-04, 1200 hrs.

Disposition of Study Records: All specimens, raw data, reports and other study records are stored according to Good Laboratory Practice regulations at Northwestern Aquatic Sciences, 3814 Yaquina Bay Rd., Newport, OR 97365.

Good Laboratory Practices: The test was conducted following the principles of Good Laboratory Practices (GLP) as defined in the EPA/TSCA Good Laboratory Practice regulations revised August 17, 1989 (40 CFR Part 792).

Statement of Quality Assurance: The test data were reviewed by the Quality Assurance Unit to assure that the study was performed in accordance with the protocol and standard operating procedures. This report is an accurate reflection of the raw data.

TEST MATERIAL

Test Sediments: Portland Harbor RI/FS freshwater test sediments (Batch 10). Details are as follows:

NAS Sample No.	9542F	9543F	9544F	9545F	9546F
Description	LW2-G210	LW2-G213	LW2-G200	LW2-G093	LW2-G206
Collection Date	10/21/04	10/21/04	10/21/04	10/21/04	10/21/04
Receipt Date	10/23/04	10/23/04	10/23/04	10/23/04	10/23/04
NAS Sample No.	9547F	9548F	9549F	9550F	9551F
Description	LW2-G362-1	LW2-G413	LW2-G393	LW2-G417	LW2-G415
Collection Date	10/22/04	10/22/04	10/22/04	10/22/04	10/22/04
Receipt Date	10/23/04	10/23/04	10/23/04	10/23/04	10/23/04
NAS Sample No.	9552F	9553F	9554F	9555F	9556F
Description	LW2-G380	LW2-G430	LW2-G437	LW2-G403	LW2-G401
Collection Date	10/22/04	10/22/04	10/22/04	10/22/04	10/22/04
Receipt Date	10/23/04	10/23/04	10/23/04	10/23/04	10/23/04
NAS Sample No.	9557F	9558F	9559F	9560F	9561F
Description	LW2-G377	LW2-G371	LW2-G366	LW2-G351	LW2-G282
Collection Date	10/22/04	10/22/04	10/22/04	10/22/04	10/22/04
Receipt Date	10/23/04	10/23/04	10/23/04	10/23/04	10/23/04

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Control Sediment: The negative control sediment (NAS#9434F) was collected on 10-14-04 from an area approximately one mile east of the Hwy. 101 bridge at Beaver Creek, approx. 8 miles south of Newport, OR.
Treatments: Homogenized at test set up by mixing using stainless steel implements.
Storage: All test and control sediments were stored at 4°C in the dark in capped containers until used.

TEST WATER

Source: Dechlorinated Newport, OR tap water.
Dates of Collection: Six batches of test water were collected between 10/23/04 and 11/2/04
Water Quality (mean ± SD):
pH: 7.0 ± 0.2 (n=6)
conductivity: 157 ± 5 µmhos/cm (n=6)
hardness: 34 ± 0 mg/L as $CaCO_3$ (n=6)
alkalinity: 33 ± 5 mg/L as $CaCO_3$. (n=6)
chlorine: All batches were below 0.02 mg/L.
Pretreatment: Dechlorinated and aerated ≥24 hr.

TEST ORGANISMS

Species: *Chironomus tentans*, midge.
Size: 3rd instar, mean initial wt: 0.14 ± 0.01 mg
Source: NAS cultures, originally obtained from EPA, Duluth, MN.
Acclimation: Holding conditions prior to testing averaged: temperature, 23.2 ± 0.8°C; dissolved oxygen, 7.8 ± 1.0 mg/L; pH, 7.4 ± 0.2; conductivity, 304 ± 25 µmhos/cm; hardness, 88 ± 13 mg/L as $CaCO_3$; and alkalinity, 77 ± 6 mg/L as $CaCO_3$.

TEST PROCEDURES AND CONDITIONS

The following is an abbreviated statement of the test procedures and a statement of the test conditions actually employed. See the test protocol for a more detailed description of the test procedures used in this study.

Test Chambers: 300 ml high-form glass beakers
Test Volumes: 100 ml sediment layer; 175 ml test water.
Replicates/Treatment: 8
Organisms/Treatment: 80
Water Volume Changes: 2 water volumes per day
Aeration: None.
Feeding: Animals were fed 1.5 ml of Prime Tropical Flakes suspension (1.5 ml contains 6 mg dry solids) per beaker daily.
Effects Criteria: 1) survival after 10 days, and 2) average individual biomass (based on ash-free dry weight) after 10 days. Death is defined as no visible movement or response to tactile stimulation. Missing organisms were considered to be dead.
Water Quality and Other Test Conditions: The temperature, dissolved oxygen, conductivity, pH, hardness, alkalinity and ammonia-nitrogen were measured in the overlying water of one replicate test container per treatment on days 0 and 10 of the test. Temperature and dissolved oxygen were measured daily in the overlying water of one replicate test container per treatment. Interstitial ammonia was measured in the bulk sediment. Hardness and alkalinity were measured with titrimetric methods. Interstitial water samples were obtained by centrifugation, or by settling in the case of very sandy sediments. Total ammonia-N was measured using Hach reagents based on the salicylate (Clin. Chim. Acta 14:403, 1996) colorimetric method; samples were not distilled prior to analysis. The photoperiod was 16:8, L:D.

DATA ANALYSIS METHODS

Survival and individual biomass were calculated for each replicate as follows:

percent survival = 100 x (number surviving/initial number tested)
average individual ash-free dry wt. = (final wt. -- ashed dry wt.)/number weighed,
where:

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ash-free dry wt. = dry weight of organisms recovered on day 10 – ashed dry weight, in mg

Means and standard deviations for the biological endpoints described above, and for water quality data, were computed using Microsoft Excel 2000.

PROTOCOL DEVIATIONS

None

REFERENCE TOXICANT TEST

The reference toxicant test is a multi-concentration toxicity test using potassium chloride, to evaluate the performance of the test organisms used in the sediment toxicity test. The performance is evaluated by comparing the results of this test with historical results obtained at the laboratory. A summary of the reference toxicant test result is given below. The reference toxicant test raw data are found in Appendix II. The age of the test dilution water exceeded EPA specifications. This deviation is not likely to have affected the test results.

Test No.: 999-1856
Reference Toxicant and Source: Potassium chloride (Fisher, Lot No. 020865A).
Test Date: 10-26-04
Dilution Water Used: Moderately hard synthetic water prepared from Milli-Q® deionized water.
Result: 96-hr LC50, 4.59 g/L. This result is within the laboratory's control chart warning limits (3.08 to 7.40 g/L).

TEST RESULTS

Observations of water quality in the overlying water throughout the test are summarized in Table 1. A detailed tabulation of the water quality results by sample and test day can be found in Appendix I. Interstitial ammonia and pH measurements are listed in Table 2. The means and standard deviations of percent mortality and growth (ash-free dry weight) of midges exposed for 10 days to sediments are summarized in Table 3. Detailed data organized by sample and replicate, and summary statistics for these observations, are given in Appendix I.

All water quality observations of overlying water temperature and dissolved oxygen were within the protocol specified ranges. Ammonia-N in the overlying water ranged from 0.1 to 1.8 mg/L in all day 0 and day 10 observations. Interstitial bulk sediment values for ammonia-N ranged from 0.9 to 27.1 mg/L. The test met the survival and weight acceptability criteria specified in the test protocol with 95.0% mean control survival (≥70% required) and a control individual mean ash-free dry weight of 1.08 mg per larvae (0.48 mg required). The reference toxicant (positive control) result was within the laboratory's control chart limits (4.59 g/L; control chart mean ± 2 S.D. = 5.24 ± 2.16). It is concluded, therefore, that the test has developed fully acceptable data for use in making management decisions.

REFERENCES

ASTM. 2003. Standard Test Methods for Measuring the Toxicity of Sediment-Associated Contaminants with Fresh Water Invertebrates. ASTM Standard Method No. E 1706-00. Am. Soc. Test. Mat., West Conshohocken, PA.

U.S. EPA. 2000. Section 12, Test Method 100.2, *Chironomus tentans* 10-d Survival and Growth Test for Sediments, pp 55-62 In: Methods for Measuring the Toxicity and Bioaccumulation of Sediment-associated Contaminants with Freshwater Invertebrates (Second Edition). EPA/600/R-99/064.

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STUDY APPROVAL

Gerald Crissman 1-21-05
Project Manager/Study Director Date

Linda K. Nemeth 1/20/05
Quality Assurance Unit Date

Richard S. Caldwell 1/21/05
Laboratory Director Date

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Table 1. Summary of water quality conditions during tests of the midge, *Chironomus tentans*, exposed to freshwater sediments.

Water Quality Parameter	Mean ± S.D.	Minimum	Maximum	N
Temperature (°C)	22.7 ± 0.3	22.0	23.5	231
Dissolved oxygen (mg/L)	6.0 ± 0.8	4.4	7.6	231
Conductivity (µmhos/cm)	302 ± 473	145	2670	42
pH	6.6 ± 0.2	6.3	6.9	42
Hardness (mg/L as $CaCO_3$)	39 ± 7	34	51	42
Alkalinity (mg/L as $CaCO_3$)	42 ± 7	30	60	42
Total ammonia (mg/L)	0.5 ± 0.3	0.1	1.8	42

Table 2. Pore water ammonia-N and pH in bulk test sediments at the time of test setup.

NAS Sample No.	Sample Description	Ammonia (mg/L)	pH
9542F	LW2-G210	26.2	6.4
9543F	LW2-G213	1.8	5.8
9544F	LW2-G200	2.6	5.8
9545F	LW2-G093	6.4	5.9
9546F	LW2-G206	3.6	5.8
9547F	LW2-G362-1	19.5	5.7
9548F	LW2-G413	1.0	5.9
9549F	LW2-G393	7.4	6.9
9550F	LW2-G417	4.5	6.0
9551F	LW2-G415	3.3	6.0
9552F	LW2-G380	1.0	6.1
9553F	LW2-G430	---	---
9554F	LW2-G437	1.3	6.0
9555F	LW2-G403	1.0	6.0
9556F	LW2-G401	5.1	6.6
9557F	LW2-G377	0.9	6.7
9558F	LW2-G371	27.1	6.2
9559F	LW2-G366	6.4	6.3
9560F	LW2-G351	10.8	7.5
9561F	LW2-G282	1.0	6.8

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Table 3. Mortality and growth[1] results of *Chironomus tentans* 10-day sediment toxicity test

Sample description		Average percent mortality (Mean ± SD)	Average ash-free dry wt/midge (mg)[1] (Mean ± SD)
9534F	Control	5.0 ± 5.3	1.08 ± 0.05
9542F	LW2-G210	33.8 ± 10.6	0.96 ± 0.20
9543F	LW2-G213	5.0 ± 7.6	0.91 ± 0.10
9544F	LW2-G200	10.0 ± 10.7	1.11 ± 0.09
9545F	LW2-G093	6.3 ± 7.4	0.85 ± 0.13
9546F	LW2-G206	6.3 ± 9.2	1.00 ± 0.06
9547F	LW2-G362-1	12.5 ± 10.4	1.03 ± 0.17
9548F	LW2-G413	6.3 ± 9.2	1.15 ± 0.05
9549F	LW2-G393	6.3 ± 9.2	0.99 ± 0.06
9550F	LW2-G417	3.8 ± 5.2	1.08 ± 0.12
9551F	LW2-G415	2.5 ± 4.6	0.95 ± 0.05
9552F	LW2-G380	10.0 ± 10.7	1.18 ± 0.10
9553F	LW2-G430	7.5 ± 11.6	1.15 ± 0.16
9554F	LW2-G437	2.5 ± 4.6	1.00 ± 0.09
9555F	LW2-G403	8.8 ± 8.3	1.07 ± 0.08
9556F	LW2-G401	6.3 ± 5.2	1.01 ± 0.08
9557F	LW2-G377	6.3 ± 5.2	1.12 ± 0.07
9558F	LW2-G371	60.0 ± 23.3	1.15 ± 0.07
9559F	LW2-G366	100.0 ± 0.0	---
9560F	LW2-G351	3.8 ± 7.4	0.97 ± 0.07
9561F	LW2-G282	10.0 ± 16.9	1.03 ± 0.07

[1] Pupae were not included in the sample to estimate ash-free dry weight (as per EPA/600/R-99/064, p. 59, section 12.3.8.2)

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APPENDIX I

RAW DATA

TEST DESCRIPTION, MONITORING, AND RESULTS BENCHSHEETS

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

REVIEWED PAEC 1-31-05

Test No. 686-20 Client Windward Environmental Investigator

STUDY MANAGEMENT

Client: Windward Enviromental, 200 West Mercer Street, Suite 401, Seattle, WA 98119

Client's Study Monitor: Ms. Helle Anderson

Testing Laboratory: Northwestern Aquatic Sciences

Test Location: Newport Laboratory

Laboratory's Study Personnel:

Proj. Man./Study Dir. G.J. Irissarri

QA Officer L.K. Nemeth

1. 2. G.C. Hayes GCH
3. Susan Gage SG 4. B.B. Pridgeon BBP
5. 6. K.S. Caldwell KSC
7. 8.

Study Schedule:

Test Beginning: 102604 1200 Test Ending: 11-5-04 1200

TEST MATERIAL

General description (see sample logbook/chain-of-custody for details):

NAS Sample No.:	9534F	9542F	9543F	9544F	9545F
Description:	control	LW2-G210	LW2-G213	LW2-G200	LW2-G093
Collection Date:	10/14/04	10/21/04	10/21/04	10/21/04	10/21/04
Receipt Date:	10/14/04	10/23/04	10/23/04	10/23/04	10/23/04

NAS Sample No.:	9546F	9547F	9548F	9549F	9550F
Description:	LW2-G206	LW2-G362-1	LW2-G413	LW2-G393	LW2-G417
Collection Date:	10/21/04	10/22/04	10/22/04	10/22/04	10/22/04
Receipt Date:	10/23/04	10/23/04	10/23/04	10/23/04	10/23/04

NAS Sample No.:	9551F	9552F	9553F	9554F	9555F
Description:	LW2-G415	LW2-G380	LW2-G430	LW2-G437	LW2-G403
Collection Date:	10/22/04	10/22/04	10/22/04	10/22/04	10/22/04
Receipt Date:	10/23/04	10/23/04	10/23/04	10/23/04	10/23/04

NAS Sample No.:	9556F	9557F	9558F	9559F	9560F
Description:	LW2-G401	LW2-G377	LW2-G371	LW2-G366	LW2-G351
Collection Date:	10/22/04	10/22/04	10/22/04	10/22/04	10/22/04
Receipt Date:	10/23/04	10/23/04	10/23/04	10/23/04	10/23/04

NAS Sample No.:	9561F				
Description:	LW2-G282				
Collection Date:	10/22/04				
Receipt Date:	10/23/04				

Error codes: 1) correction of handwriting error
2) written in wrong location; entry deleted
3) wrong date deleted, replaced with correct date
4) error found in measurement; measurement repeated

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CT

NORTHWESTERN AQUATIC SCIENCES 10- PROTOCOL NO. NAS-XXX-~~HA~~4c

~~HYALELLA AZTECA~~ 28-DAY SOLID PHASE SEDIMENT TEST

CHIRONOMUS TENTANS 611

Test No. 686-~~19~~ 20 Client Windward Environmental Investigator

SEDIMENT DESCRIPTIONS -- SUPPLEMENTAL NOTES

Sample No.	Description
9534F	~~Dark gray mud w/ wood debris~~ Dark brown fine mud
9542F	DK Gray muddy Sand @ Petroleum odor
9543F	Dark gray mud w/ wood debris
9544F	Dark gray gritty mud w/ grassy debris
9545F	Dark gray/brown mud
9546F	Dark gray mud
9547F	Dark Gray-Brown Muddy @ fine sand.
9548F	Dark gray sand
9549F	Dark gray sandy mud
9550F	Dark gray-Brown sandy mud (w) rocks (sm)
9551F	Gray smooth mud
9552F	Dark gray brown sandy mud
9553F	Dark brown sand
9554F	Dark gray mud, over 10 Chironomids found and removed, sediment sieved (.5)
9555F	Dark brown sandy soil
9556F	Fine gray mud
9557F	Gray brown sandy mud
9558F	Sandy gray mud
9559F	Brown smooth mud
9560F	Creamy brown mud
9561F	Dark brown sandy mud w/ large wood debris

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NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-20 Client Windward Environmental Investigator

TEST WATER

Source: Dechlorinated Newport, OR tap water

Date of Collection: 10-23-04, 10-26-04, 10-26-04 (2ND BATCH), 10-29-04, 10-30-04, 11-2-04

pH 6.9, 6.9, 6.9, 7.3, 7.2, 7.0 ($\bar{X}$ = 7.0 ± 0.2)

Cond (umhos/cm^2) 155, 160, 165, 155, 155, 150, ($\bar{X}$ = 157 ± 5)

Hardness (mg/L) 34, 34, 34, 34, 34, 34, ($\bar{X}$ = 34 ± 0)

Alkalinity (mg/L) 30, 40, 40, 30, 30, 30, ($\bar{X}$ = 33 ± 5)

Treatments: Aerated ≥ 24 hrs

TEST ORGANISMS

Species: *Chironomus tentans* Age: 3rd instar Date received: –

Source: NAS cultures

Acclimation Data:

Date	Temp. (deg.C)	DO (mg/L)	pH	Cond umhos/cm	Feeding amount (ml)	Feeding description*	Water changes	Hardness (mg/L)	Alkalinity (mg/L)
10-18-04	23.5	7.2	7.3	340	ANIMALS FED TETRA		CULTURE	–	–
10-19-04	23.5	8.4	7.4	280	FIN AND SELENASTRUM		TANKS	85	80
10-20-04	22.5	8.2	7.4	300			CHANGED	102	80
10-22-04	23.4	8.6	7.6	320	DETAILS RECORDED IN		TWICE	–	–
10-25-04	24.1	6.0	6.9	310	CHIRONOMID CULTURE		WEEKLY	–	–
10-26-04	21.9	8.6	7.5	275	DATA SHEET			77	70
Mean	23.2	7.8	7.4	304				88	77
S.D.	0.8	1.0	0.2	25				13	6
(N)	6	6	6	6				3	3

Photoperiod during acclimation: 16:8, L:D *S=Selenastrum, T=Tetra Fin suspension

TEST PROCEDURES AND CONDITIONS

Test chambers: 300 ml glass beakers

Test volumes: 100 ml of test sediment; 275 ml total volume

Replicates/treatment: (8) 8 Organisms/treatment: (80) 80

Test water changes: Twice daily

Aeration: only if DO falls below 2.5 mg/L

Feeding: everyday beginning with day zero

Test temperature (deg.C): 23

Beaker placement: Total randomization

Photoperiod: 16:8, L:D

Control Sediment:

Source: From an area approximately one mile east of the Hwy. 101 bridge at Beaver Creek, approx. 8 miles south of Newport, OR.

Date collected: 10-14-04

Sieved through 0.5 -mm screen NAS# 9534F

Storage: 4°C in the dark in closed containers.

MISCELLANEOUS NOTES

LIGHT INTENSITY MEASUREMENTS:

	SITE A	SITE B
11-5-04	65 FT-CANDLES (700 LUX)	58 FT-CANDLES (624 LUX)

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NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-20 Client Windward Environmental Investigator _____

Test conducted in (circle one): room 1 (room 2) trailer water bath other: _____

Randomization chart:

5								165	
4								164	
3	→	→	→	→	→	→	→	163	168
2								162	167
1								161	166

Randomization chart:

Randomization chart:

Randomization chart:

ANC08466
BZTO104(e)008466

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-20 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 0 (10/26/04) NS/BBP

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond.* (umhos/cm)	pH *	Hardness * (mg/L)	Alkalinity * (mg/L)	S (ppm)	NH3 * (ppm)	Comments
2	22.2	7.4	150	6.6	34	40			Each beaker fed 1.5 ml
6	22.2	7.4	150	6.6	43	40			Prime Tropical Flakes
8	22.0	7.5	160	6.3	43	40			suspension.
19	22.0	7.6	220	6.4	34	40			Initials: BBP
39	22.0	7.6	785	6.4	51	50			
45	22.0	7.4	170	6.7	34	40			
65	22.2	7.2	160	6.6	34	40			
73	22.1	7.3	165	6.7	43	50			
79	22.1	7.2	160	6.7	51	50			Water changed in all
86	22.1	6.6	2670	6.7	34	60			beakers.
97	22.0	7.5	175	6.8	51	50			Time: 0620
107	22.0	7.4	160	6.7	34	40			Initials: NS
109	22.1	7.2	160	6.6	43	40			
110	22.2	7.3	150	6.6	34	40			
127	22.1	7.4	330	6.7	34	60			
142	22.2	7.4	190	6.7	51	50			
143	22.2	7.3	1890	6.6	51	50			Water changed in all
146	22.2	7.2	280	6.9	51	60			beakers.
155	22.3	7.0	165	6.9	43	40			Time: 1715
165	22.4	7.0	170	6.8	51	40			Initials: GRH
167	22.4	7.1	155	6.8	43	40			

*Water quality measurements to be taken.

Day 1 (10/27/04) NS/GRH

Beaker No.	Temp.* (deg.C)	DO * (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
2	22.6	7.2							Each beaker fed 1.5 ml
6	22.6	7.4							Prime Tropical Flakes
8	22.6	7.4							suspension.
19	22.6	7.2							Initials: NS
39	22.6	7.4							
45	22.9	7.0							
65	22.6	7.2							
73	22.6	7.2							
79	22.6	7.2							Water changed in all
86	22.5	7.2							beakers.
97	22.5	6.9							Time: 0715
107	22.5	6.8							Initials: NS
109	22.5	6.6							
110	22.8	7.0							
127	22.9	7.3							
142	22.9	7.1							
143	22.5	7.0							Water changed in all
146	23.1	7.1							beakers.
155	23.1	7.0							Time: 1710
165	23.3	7.4							Initials: GRH
167	23.2	7.3							

*Water quality measurements to be taken.

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Test No. 686-20 Client Windward Environmental Investigator _____

DAILY RECORD SHEET

Day 2 (10/28/09) VB/AJ/BBP

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
2	23.0	6.2							Each beaker fed 1.5 ml
6	22.9	6.2							Prime Tropical Flakes
8	23.0	5.6							suspension.
19	23.0	5.9							Initials: WTM
39	23.0	5.8							
45	23.0	5.8							
65	23.2	5.8							
73	23.0	5.7							
79	23.1	5.8							Water changed in all
86	23.0	6.5							beakers.
97	23.0	5.6							Time: 0720
107	22.9	5.6							Initials: VB
109	22.9	5.6							
110	23.0	5.8							
127	23.1	5.9							
142	23.1	6.1							
143	23.2	6.2							Water changed in all
146	23.1	6.1							beakers.
155	23.3	6.1							Time: 1715
165	23.5	6.4							Initials: [illegible]
167	23.3	6.5							

*Water quality measurements to be taken.

Day 3 (10/29/09) VB/WTM

Beaker No.	Temp.* (deg.C)	DO * (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
2	22.7	6.2							Each beaker fed 1.5 ml
6	22.7	6.2							Prime Tropical Flakes
8	22.7	6.4							suspension.
19	22.7	6.2							Initials: WTM
39	22.7	6.2							
45	22.8	6.2							
65	22.8	6.4							
73	22.9	6.1							
79	22.8	6.1							Water changed in all
86	22.8	6.4							beakers.
97	22.7	6.4							Time: 0655
107	22.7	6.1							Initials: VB
109	22.7	6.0							
110	22.8	6.4							
127	22.8	6.5							
142	22.8	6.3							
143	22.8	6.2							Water changed in all
146	22.9	6.4							beakers.
155	22.9	6.4							Time: 1715
165	22.9	6.5							Initials: AJ
167	22.9	6.8							

*Water quality measurements to be taken.

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-20 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 4 (10/30/14) CB

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
2	22.5	6.1							Each beaker fed 1.5 ml
6	22.5	6.4							Prime Tropical Flakes
8	22.5	6.2							suspension.
19	22.5	5.8							Initials: CB
39	22.6	6.2							
45	22.8	6.3							
65	22.8	6.2							
73	22.6	6.0							
79	22.6	5.9							Water changed in all
86	22.5	6.1							beakers.
97	22.4	6.3							Time: 0740
107	22.4	6.5							Initials: CB
109	22.4	6.5							
110	22.4	6.6							
127	22.6	6.1							
142	22.7	6.0							
143	22.7	6.2							Water changed in all
146	22.8	6.0							beakers.
155	22.8	6.0							Time: 1810
165	22.9	5.8							Initials: CB
167	23.0	5.9							

*Water quality measurements to be taken.

Day 5 (10/31/14) JD

Beaker No.	Temp.* (deg.C)	DO * (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
2	22.6	6.6							Each beaker fed 1.5 ml
6	22.5	7.0							Prime Tropical Flakes
8	22.5	6.8							suspension.
19	22.6	6.7							Initials: CB
39	22.6	6.9							
45	22.7	6.6							
65	22.8	6.8							
73	22.7	6.4							
79	22.6	6.5							Water changed in all
86	22.4	6.9							beakers.
97	22.4	6.8							Time: 0650
107	22.4	6.2							Initials: CB
109	22.4	6.5							
110	22.6	6.8							
127	22.6	6.7							
142	22.6	6.5							
143	22.6	6.4							Water changed in all
146	22.7	6.6							beakers.
155	22.7	6.8							Time: 1300
165	22.8	6.2							Initials: BBP
167	22.8	6.4							

*Water quality measurements to be taken.

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Test No. 686-20 Client Windward Environmental Investigator _____

DAILY RECORD SHEET

Day 6 (11 / 1 /04) [illegible]

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
2	22.7	5.2							Each beaker fed 1.5 ml
6	22.7	5.3							Prime Tropical Flakes
8	22.7	5.0							suspension.
19	22.8	4.8							Initials: GJI
39	22.8	4.9							
45	22.9	5.0							
65	22.9	5.0							
73	22.7	4.8							
79	22.7	4.8							Water changed in all
86	22.7	5.6							beakers.
97	22.6	5.0							Time: 0655
107	22.6	4.8							Initials: [illegible]
109	22.7	5.3							
110	22.8	4.6							
127	22.8	4.8							
142	22.8	5.2							
143	22.8	5.2							Water changed in all
146	22.9	5.2							beakers.
155	22.9	5.4							Time: 1705
165	22.9	5.5							Initials: [illegible]
167	23.0	6.0							

*Water quality measurements to be taken.

Day 7 (11 /2 04) [illegible]

Beaker No.	Temp.* (deg.C)	DO * (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
2	22.8	5.0							Each beaker fed 1.5 ml
6	22.8	5.3							Prime Tropical Flakes
8	22.8	5.4							suspension.
19	22.8	4.8							Initials: [illegible]
39	22.9	5.0							
45	23.1	5.0							
65	23.0	5.2							
73	22.8	5.0							
79	22.8	5.2							Water changed in all
86	22.7	6.2							beakers.
97	22.7	5.0							Time: 0655
107	22.8	4.4							Initials: GJI
109	22.8	4.9							
110	22.9	5.2							
127	22.9	5.6							
142	23.0	5.2							
143	22.9	5.2							Water changed in all
146	22.9	5.0							beakers.
155	23.1	4.8							Time: 1710
165	23.1	4.9							Initials: [illegible]
167	23.1	5.6							

*Water quality measurements to be taken.

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-20 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 8 (11 / 3 /04) BBP

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
2	22.8	5.4							Each beaker fed 1.5 ml
6	22.8	5.4							Prime Tropical Flakes
8	22.8	5.4							suspension.
19	22.8	4.9							Initials: MB
39	22.9	5.0							
45	22.8	4.8							
65	22.9	5.0							
73	23.0	5.0							
79	22.8	5.2							Water changed in all
86	22.7	6.6							beakers.
97	22.7	5.0							Time: 0710
107	22.7	5.2							Initials: GJ
109	22.7	5.2							
110	22.7	5.5							
127	22.7	5.7							
142	22.9	5.6							
143	22.9	5.3							Water changed in all
146	23.0	5.4							beakers.
155	23.1	5.5							Time: 1715
165	23.1	5.3							Initials: BBP
167	23.1	5.7							

*Water quality measurements to be taken.

Day 9 (11 / 4 /04) GJ/BBP

Beaker No.	Temp.* (deg.C)	DO * (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
2	22.2	5.9							Each beaker fed 1.5 ml
6	22.2	6.0							Prime Tropical Flakes
8	22.2	6.1							suspension.
19	22.3	5.4							Initials: GJ
39	22.3	5.4							
45	22.3	6.0							
65	22.5	6.0							
73	22.5	5.8							
79	22.3	5.9							Water changed in all
86	22.3	6.6							beakers.
97	22.1	5.6							Time: 0740
107	22.2	5.5							Initials: MB
109	22.2	5.6							
110	22.2	5.8							
127	22.4	6.6							
142	22.4	5.8							
143	22.4	6.0							Water changed in all
146	22.6	6.0							beakers.
155	22.6	5.9							Time: 1710
165	22.7	6.1							Initials: BBP
167	22.7	6.4							

*Water quality measurements to be taken.

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Test No. 686-20 Client Windward Environmental Investigator _____

DAILY RECORD SHEET

Day 10 (11 / 5 / 00 VB / [illegible] / BBP

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond.* (umhos/cm)	pH*	Hardness* (mg/L)	Alkalinity* (mg/L)	S (ppm)	NH3 * (ppm)	Comments
2	22.3	6.0	150	6.5	34	30			Each beaker fed 1.5 ml
6	22.4	6.2	145	6.5	34	40			Prime Tropical Flakes
8	22.4	5.3	150	6.4	34	30			suspension.
19	22.5	5.2	160	6.5	34	40			Initials: —
39	22.3	5.1	190	6.5	34	40			
45	22.5	5.3	150	6.4	34	40			
65	22.4	5.0	150	6.3	34	30			
73	22.1	4.8	155	6.4	43	40			
79	22.2	5.4	150	6.4	34	40			Water changed in all
86	22.1	6.4	590	6.5	34	40			beakers.
97	22.1	4.7	160	6.4	34	40			Time: 0600
107	22.2	4.5	150	6.3	43	40			Initials: VB
109	22.2	5.0	150	6.3	34	40			
110	22.5	6.1	150	6.4	34	40			
127	22.5	6.1	160	6.5	34	40			
142	22.5	5.4	155	6.3	34	40			
143	22.4	5.4	450	6.6	34	40			Water changed in all
146	22.8	5.1	250	6.7	51	40			beakers.
155	22.6	5.4	156	6.4	34	40			Time:
165	22.8	5.4	155	6.5	34	40			Initials:
167	22.7	5.8	150	6.6	34	30			

*Water quality measurements to be taken.

Day ____(/ /)

Beaker No.	Temp.* (deg.C)	DO * (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
									Each beaker fed 1.5 ml
									Prime Tropical Flakes
									suspension.
									Initials:
									Water changed in all
									beakers.
									Time:
									Initials:
									Water changed in all
									beakers.
									Time:
									Initials:

*Water quality measurements to be taken.

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-20 Client Windward Enviromental Investigator

DAY 20 TEST TERMINATION SHEET

Beaker No.	Number of survivors	Initials
1	9	UB
2	5	UB
3	0	UB
4	10	GJL
5	9	UB
6	9	GJL
7	0	UB
8	9	UB
9	8	UB
10	10	GJL
11	8	UB
12	10	GJL
13	10	UB
14	10	UB
15	10	UB
16	10	GJL
17	9	UB
18	9	GJL
19	9	UB
20	9	UB
21	10	GJL
22	9	UB
23	7	GJL
24	9	UB
25	0	GJL
26	10	UB
27	10	GJL
28	3	UB
29	10	UB
30	9	UB
31	6	GJL
32	10	UB
33	7	GJL
34	0	UB
35	5	UB
36	GJL 9 10	GJL
37	10	GJL
38	7	GJL
39	9	GJL
40	7	GJL
41	8	GJL
42	10	GJL
43	3	GJL
44	9	GJL
45	9	UB

Beaker No.	Number of survivors	Initials
46	9	UB
47	8	UB
48	10	GJL
49	10	UB
50	10	GJL
51	8	UB
52	10	GJL
53	10	GJL
54	10	UB
55	10	GJL
56	10	UB
57	8	GJL
58	10	UB
59	10	GJL
60	10	GJL
61	10	UB
62	10	UB
63	10	GJL
64	9	UB
65	10	GJL
66	8	UB
67	10	GJL
68	9	UB
69	10	GJL
70	8	GJL
71	10	UB
72	10	GJL
73	10	GJL
74	10	UB
75	10	UB
76	9	GJL
77	9	UB
78	5	GJL
79	8	UB
80	10	GJL
81	10	UB
82	10	UB
83	10	GJL
84	0	GJL
85	10	UB
86	0	GJL
87	7	GJL
88	6	UB
89	9	GJL
90	9	UB

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NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-20 Client Windward Enviromental Investigator _____

DAY 20 TEST TERMINATION SHEET

Beaker No.	Number of survivors	Initials
91	9	CB
92	9	CB
93	8	CB
94	10	CB
95	10	GJL
96	9	CB
97	10	GJL
98	Ø	CB
99	9	GJL
100	8	CB
101	10	GJL
102	10	CB
103	10	GJL
104	Ø	CB
105	9	CB
106	9	GJL
107	9	CB
108	10	GJL
109	9	GJL
110	8	CB
111	10	GJL
112	9	CB
113	9	GJL
114	10	CB
115	9	CB
116	10	GJL
117	10	GJL
118	Ø	CB
119	7	CB
120	8	GJL
121	10	CB
122	9	GJL
123	5	CB
124	10	GJL
125	10	CB
126	5	CB
127	10	GJL
128	9	CB
129	10	GJL
130	9	CB
131	3	CB
132	9	CB
133	10	CB
134	6	GJL
135	10	CB

Beaker No.	Number of survivors	Initials
136	9	CB
137	10	GJL
138	10	CB
139	10	CB
140	9	GJL
141	8	CB
142	9	GJL
143	8	CB
144	10	CB
145	8	CB
146	10	GJL
147	9	GJL
148	10	GJL
149	9	GJL
150	8	CB
151	10	GJL
152	10	CB
153	10	CB
154	10	GJL
155	10	GJL
156	10	CB
157	9	CB
158	9	GJL
159	9	CB
160	8	CB
161	10	GJL
162	9	CB
163	10	CB
164	10	GJL
165	9	CB
166	10	GJL
167	8	CB
168	10	GJL

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BZTO104(e)008474

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-20 Client Windward Environmental Investigator _____

Tare: Date 10.21.04 Oven temp (C.) 63 Drying time (hr.) 18 Initials JRF
Standard Weights: 10 mg: 10.004 100mg: 100.015

Final #1 Date 10.27.04 Oven temp (C.) 64 Drying time (hr.) 20 Initials JRF
Standard Weights: 10 mg: 10.006 100mg: 100.015

Final: #2 Date 10.28.04 Oven temp (C.) 63 Drying time (hr.) 20 Initials JRF
Standard Weights: 10 mg: 10.005 100mg: 100.013

Equip. used: Oven: Blue M #1 Balance: Sartorius M3P

(Dry overnight at 60-90 degrees C)

Pan #	Tare wt. (mg)	Total wt. (mg) 1	Total wt. (mg) 2	#weighed	Comments
1	108.46	111.15	111.10	20	
2	94.85	97.63	97.58	20	
3	100.69	103.65	103.61	20	

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BZTO104(e)008475

NORTHWESTERN AQUATIC SCIENCES — PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-20 Client Windward Environmental Investigator

WEIGHING DATA SHEET

Tare: Date 10-25-04 Oven temp (C.) 550 Drying time (hr.) 2 Initials JRF
Standard Weights: 10 mg: 10.006 100mg: 100.024

Final #1: Date 11-8-04 Oven temp (C.) 73 Drying time (hr.) 24 Initials JRF
Standard Weights: 10 mg: 10.008 100mg: 100.022

Final #2: Date 11-10-04 Oven temp (C.) 63 Drying time (hr.) 24 Initials JRF
Standard Weights: 10 mg: 10.005 100mg: 10.012

Final #3: Date 11-11-04 Oven temp (C.) 550 Drying time (hr.) 2 Initials JRF
Standard Weights: 10 mg: 10.009 100mg: 100.019

Equip. used: Oven Blue M #1 Balance Sartorius M3P
Furnace FISHER MUFFLE FURNACE 650 SERIES

(Dry overnight at 60-90 degrees C) (Final ashing is at 550 degrees C for 2 hours)

Bkr. #	Pan #	Tare wt. (mg)	Total wt. (mg) 1	Total wt. (mg) 2	no. weighed	put into pans-initials	Ashed weight (mg)
1	1	117.39	130.73	130.781	9	BBP	120.82
2	2	105.58	112.24	112.28	5	BBP	107.69
3	3	95.72	—	—	0	BBP	—
4	4	89.22	100.95	101.07	10	BBP	91.72
5	5	99.69	108.02	108.10	9	BBP	102.00
6	6	105.94	118.69	118.73	9	BBP	110.83
7	7	93.88	—	—	0	BBP	—
8	8	87.24	102.81	102.90	9	BBP	93.71
9	9	102.03	116.22	116.33	8	BBP	107.41
10	10	90.48	103.58	103.68	10	BBP	94.36
11	11	101.42	110.52	110.56	8	BBP	103.57
12	12	99.30	113.00	113.06	10	BBP	103.18
13	13	97.01	110.09	110.17	10	BBP	101.49
14	14	96.00	110.74	110.82	10	BBP	100.81
15	15	96.60	109.54	109.61	10	BBP	100.31
16	16	100.15	113.08	113.12	10	BBP	103.66
17	17	98.85	112.78	112.83	9	BBP	103.59
18	18	109.47	119.79	119.84	9	BBP	111.91
19	19	103.20	116.33	116.40	9	BBP	106.56
20	20	103.11	116.54	116.61	9	BBP	107.31
21	21	100.21	111.29	111.32	10	BBP	103.54
22	22	97.05	110.61	110.66	9	BBP	101.97
23	23	95.36	106.17	106.20	7	BBP	97.70
24	24	97.90	109.87	109.94	9	BBP	100.00
25	25	103.49	—	—	0	BBP	—
26	26	95.9967	109.45	109.48	10	DJ	99.74
27	27	96.43	110.34	110.38	10	DJ	101.00
28	28	98.27	103.06	103.09	3	DJ	99.52
29	29	100.05	112.88	112.98	10	DJ	103.10
30	30	104.79	116.84	116.93	9	DJ	107.50
31	31	87.69	96.36	96.38	6	DJ	89.86
32	32	90.89	106.18	106.25	10	DJ	95.15
33	33	98.95	107.32	107.35	7	DJ	100.68

ANC08476
BZTO104(e)008476

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-20 Client Windward Environmental Investigator

WEIGHING DATA SHEET

See page _____ for information on drying times and temperatures, standard weights,etc.

Bkr. #	Pan #	Tare wt. (mg)	Total wt. (mg) 1	Total wt. (mg) 2	no. weighed	put into pans-initials	Ash weight (mg)
34	34	99.97	—	—	0	AA	—
35	35	100.08	107.95	107.98	5	AA	102.41
36	36	100.60	113.63	113.68	10	AA	104.43
37	37	88.75	102.00	102.06	10	AA	91.11
38	38	100.49	113.08	113.13	7	AA	103.91
39	39	97.71	112.66	112.74	9	AA	102.68
40	40	102.28	115.23	115.29	7	AA	105.09
41	41	92.16	105.27	105.32	8	AA	96.45
42	42	91.34	103.81	103.88	10	AA	95.21
43	43	96.79	101.63	101.66	3	AA	98.02
44	44	108.97	123.26	123.37	9	AA	112.67
45	45	101.92	117.86	117.98	9	AA	107.62
46	46	99.20	113.66	113.69	9	AA	105.22
47	47	81.95	95.72	95.79	8	AA	86.21
48	48	106.90	122.29	122.36	10	AA	111.54
49	49	100.65	114.60	114.68	10	AA	105.65
50	50	99.12	112.12	112.23	10	AA	102.73
51	51	94.87	110.71	110.77	8	AA	99.68
52	52	101.43	115.00	115.08	10	AA	104.16
53	53	94.19	109.05	109.14	10	AA	97.85
54	54	91.82	105.46	105.56	10	AA	95.88
55	55	95.91	109.88	109.97	10	AA	99.90
56	56	96.78	112.77	112.84	10	BBP	101.91
57	57	107.82	118.21	118.28	8	BBP	110.80
58	58	94.64	109.06	109.14	10	BBP	100.62
59	59	95.52	110.42	110.51	10	BBP	101.23
60	60	97.95	111.81	111.89	10	BBP	101.81
61	61	93.26	104.70	104.78	10	BBP	96.84
62	62	98.90	113.42	113.48	10	BBP	104.51
63	63	103.20	116.86	116.93	10	BBP	108.05
64	64	100.54	110.75	110.83	9	BBP	103.37
65	65	98.13	109.81	109.89	10	BBP	101.09
66	66	98.93	105.18	105.23	8	BBP	100.59
67	67	91.68	104.95	105.02	10	BBP	96.28
68	68	96.05	111.22	111.30	9	BBP	100.48
69	69	86.59	99.19	99.26	10	BBP	90.25
70	70	94.78	106.64	106.70	8	BBP	98.41
71	71	93.45	108.78	108.84	10	AA	98.35
72	72	103.02	117.31	117.37	10	AA	107.24
73	73	104.09	116.64	116.70	10	AA	107.99
74	74	92.58	106.32	106.39	10	AA	96.70
75	75	98.92	114.77	114.80	10	AA	104.56
76	76	100.72	117.17	117.24	9	AA	107.64

ANC08477
BZTO104(e)008477

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-20 Client Windward Environmental Investigator

WEIGHING DATA SHEET

See page _____ for information on drying times and temperatures, standard weights,etc.

Bkr. #	Pan #	Tare wt. (mg)	Total wt. (mg) 1	Total wt. (mg) 2	no. weighed	put into pans-initials	Ash weight (mg)
77	77	97.88	112.82	112.90	9		103.78
78	78	87.56	95.77	95.82	5		90.00
79	79	90.02	103.16	103.21	8		94.47
80	80	94.00	108.62	108.69	10		99.42
81	81	109.89	125.92	125.99	10		116.72
82	82	91.13	106.43	106.50	10		96.35
83	83	101.74	112.67	112.72	10		104.84
84	84	98.49	—	—	0		—
85	85	100.69	115.69	115.75	10		105.13
86	86	98.15	—	—	0		—
87	87	85.16	98.07	98.10	7		89.22
88	88	83.46	91.82	91.83	6		85.87
89	89	89.20	106.28	106.32	9		95.90
90	90	80.98	98.46	98.49	9		88.10
91	91	81.42	96.70	96.73	9		86.53
92	92	88.58	102.17	102.19	9		93.12
93	93	100.68	115.10	115.14	8		106.08
94	94	92.75	110.65	110.69	10		99.35
95	95	80.33	97.94	98.00	10		87.98
96	96	84.99	102.47	102.52	9		91.42
97	97	85.30	102.17	102.20	10		90.95
98	98	84.16	—	—	0		—
99	99	101.58	115.84	115.88	9		106.30
100	100	81.75	95.49	95.55	8		86.74
101	101	80.09	94.04	94.13	10		85.04
102	102	82.93	96.86	96.95	10		86.58
103	103	95.60	111.51	111.58	10		101.41
104	104	102.60	—	—	0		—
105	105	85.98	101.93	102.02	9		90.69
106	106	98.32	115.67	115.78	9		105.58
107	107	82.97	96.31	96.39	9		87.66
108	108	79.86	95.84	95.94	10		85.71
109	109	80.90	98.30	98.40	9		88.75
110	110	85.80	100.07	100.15	8		90.00
111	111	103.77	120.54	120.65	10		110.20
112	112	90.40	102.85	102.93	9		94.20
113	113	80.80	96.63	96.71	9		86.51
114	114	107.25	125.84	125.99	10		115.44
115	115	79.89	93.40	93.48	9		83.45
116	116	97.11	113.60	113.72	10		104.07
117	117	86.68	104.55	104.67	10		93.25
118	118	83.48	—	—	0		—
119	119	92.10	100.04	100.11	7		94.27

ANC08478
BZTO104(e)008478

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-20 Client Windward Environmental Investigator

WEIGHING DATA SHEET

See page _____ for information on drying times and temperatures, standard weights,etc.

Bkr. #	Pan #	Tare wt. (mg)	Total wt. (mg) 1	Total wt. (mg) 2	no. weighed	put into pans-initials	Ash weight (mg)
120	120	99.06	110.90	111.00	8	BBB	103.04
121	121	83.52	99.24	99.33	10	AH	87.76
122	122	83.96	102.00	102.10	9	AH	92.20
123	123	101.94	111.52	111.60	5	AH	105.83
124	124	96.94	113.62	113.68	9	AH	103.16
125	125	87.99	106.10	106.20	10	AH	96.31
126	126	104.48	115.39	115.47	5	AH	109.30
127	127	100.25	120.07	120.16	10	AH	108.88
128	128	98.76	117.07	117.15	9	AH	105.90
129	129	88.47	105.68	105.74	10	AH	96.30
130	130	80.80	97.99	98.04	9	AH	87.93
131	131	86.88	92.78	92.81	3	AH	89.43
132	132	84.58	97.75	97.82	9	AH	89.09
133	133	87.29	103.69	103.74	10	AH	92.24
134	134	82.95	93.94	93.98	6	AH	86.58
135	135	89.94	104.08	104.13	10	AH	93.93
136	136	88.04	103.55	103.62	9	AH	94.81
137	137	87.21	101.17	101.20	10	AH	91.97
138	138	83.32	101.39	101.45	10	AH	90.22
139	139	86.32	104.45	104.52	10	AH	94.78
140	140	85.76	101.80	101.84	9	AH	92.12
141	141	87.80	101.34	101.39	8	AH	93.03
142	142	85.40	99.75	99.81	9	AH	91.28
143	143	87.51	100.30	100.37	8	AH	92.10
144	144	84.12	103.43	103.48	10	AH	91.66
145	145	106.47	119.79	119.83	8	AH	110.91
146	146	82.72	97.97	98.02	10	AH	88.76
147	147	91.16	107.85	107.91	9	AH	97.67
148	148	89.56	107.69	107.76	10	AH	97.40
149	149	90.61	106.23	106.28	9	AH	96.52
150	150	91.58	107.12	107.17	8	AH	97.29
151	151	85.78	100.56	100.62	10	AH	90.81
152	152	81.20	98.66	98.71	10	AH	88.85
153	153	102.37	117.56	117.60	10	AH	107.82
154	154	83.62	99.83	99.92	10	AH	89.59
155	155	85.85	101.54	101.60	10	AH	90.99
156	156	89.74	108.83	108.89	10	AH	97.89
157	157	92.96	107.59	107.64	9	AH	97.31
158	158	101.78	116.46	116.54	9	AH	106.75
159	159	93.13	111.26	111.33	9	AH	101.25
160	160	89.51	103.64	103.71	8	AH	94.69
161	161	85.51	101.33	101.42	10	AH	91.45
162	162	90.25	105.80	105.87	9	AH	95.46

ANC08479
BZTO104(e)008479

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-20 Client Windward Environmental Investigator _____

WEIGHING DATA SHEET

See page _____ for information on drying times and temperatures, standard weights,etc.

Bkr. #	Pan #	Tare wt. (mg)	Total wt. (mg)		no. weighed	put into pans-initials	Ash weight (mg)
			1	2			
163	163	94.04	108.12	108.20	10		99.01
164	164	83.51	99.15	99.24	10		89.76
165	165	81.57	91.00	91.05	9		84.24
166	166	81.51	100.08	100.18	10		88.78
167	167	87.16	103.05	103.12	8		93.85
168	168	88.25	104.85	104.94	10		95.18

ANC08480
BZTO104(e)008480

BKR	NAS SMPL	CLIENT DESCRIP	REPL	
29	9534F	Control	1	
52	9534F	Control	2	
37	9534F	Control	3	
157	9534F	Control	4	
30	9534F	Control	5	
102	9534F	Control	6	
24	9534F	Control	7	
19	9534F	Control	8	wq replicate
88	9542F	LW2-G210	1	
145	9542F	LW2-G210	2	
33	9542F	LW2-G210	3	
66	9542F	LW2-G210	4	
119	9542F	LW2-G210	5	
31	9542F	LW2-G210	6	
134	9542F	LW2-G210	7	
2	9542F	LW2-G210	8	wq replicate
63	9543F	LW2-G213	1	
62	9543F	LW2-G213	2	
46	9543F	LW2-G213	3	
93	9543F	LW2-G213	4	
67	9543F	LW2-G213	5	
21	9543F	LW2-G213	6	
13	9543F	LW2-G213	7	
6	9543F	LW2-G213	8	wq replicate
144	9544F	LW2-G200	1	
75	9544F	LW2-G200	2	
14	9544F	LW2-G200	3	
130	9544F	LW2-G200	4	
77	9544F	LW2-G200	5	
87	9544F	LW2-G200	6	
140	9544F	LW2-G200	7	
167	9544F	LW2-G200	8	wq replicate
18	9545F	LW2-G093	1	
5	9545F	LW2-G093	2	
83	9545F	LW2-G093	3	
54	9545F	LW2-G093	4	
42	9545F	LW2-G093	5	
100	9545F	LW2-G093	6	
61	9545F	LW2-G093	7	
165	9545F	LW2-G093	8	wq replicate
72	9546F	LW2-G206	1	
59	9546F	LW2-G206	2	
152	9546F	LW2-G206	3	
9	9546F	LW2-G206	4	
168	9546F	LW2-G206	5	
141	9546F	LW2-G206	6	
27	9546F	LW2-G206	7	
8	9546F	LW2-G206	8	wq replicate

ANC08481
BZTO104(e)008481

BKR	NAS SMPL	CLIENT DESCRIP	REPL	
36	9547F	LW2-G362-1	1	
156	9547F	LW2-G362-1	2	
147	9547F	LW2-G362-1	3	
57	9547F	LW2-G362-1	4	
11	9547F	LW2-G362-1	5	
64	9547F	LW2-G362-1	6	
38	9547F	LW2-G362-1	7	
39	9547F	LW2-G362-1	8	wq replicate
117	9548F	LW2-G413	1	
94	9548F	LW2-G413	2	
166	9548F	LW2-G413	3	
150	9548F	LW2-G413	4	
48	9548F	LW2-G413	5	
56	9548F	LW2-G413	6	
47	9548F	LW2-G413	7	
45	9548F	LW2-G413	8	wq replicate
70	9549F	LW2-G393	1	
74	9549F	LW2-G393	2	
99	9549F	LW2-G393	3	
120	9549F	LW2-G393	4	
26	9549F	LW2-G393	5	
108	9549F	LW2-G393	6	
50	9549F	LW2-G393	7	
73	9549F	LW2-G393	8	wq replicate
15	9550F	LW2-G417	1	
10	9550F	LW2-G417	2	
161	9550F	LW2-G417	3	
96	9550F	LW2-G417	4	
138	9550F	LW2-G417	5	
106	9550F	LW2-G417	6	
68	9550F	LW2-G417	7	
97	9550F	LW2-G417	8	wq replicate
112	9551F	LW2-G415	1	
153	9551F	LW2-G415	2	
69	9551F	LW2-G415	3	
101	9551F	LW2-G415	4	
55	9551F	LW2-G415	5	
132	9551F	LW2-G415	6	
151	9551F	LW2-G415	7	
65	9551F	LW2-G415	8	wq replicate
51	9552F	LW2-G380	1	
53	9552F	LW2-G380	2	
1	9552F	LW2-G380	3	
23	9552F	LW2-G380	4	
44	9552F	LW2-G380	5	
105	9552F	LW2-G380	6	
32	9552F	LW2-G380	7	
155	9552F	LW2-G380	8	wq replicate

ANC08482
BZTO104(e)008482

Test Number: 686-20

Freshwater Sediment Test
10-Day Chironomus tentans
Randomization Key

10/24/04

BKR	NAS SMPL	CLIENT DESCRIP	REPL	
115	9553F	LW2-G430	1	
40	9553F	LW2-G430	2	
121	9553F	LW2-G430	3	
85	9553F	LW2-G430	4	
4	9553F	LW2-G430	5	
133	9553F	LW2-G430	6	
135	9553F	LW2-G430	7	
110	9553F	LW2-G430	8	wq replicate
81	9554F	LW2-G437	1	
139	9554F	LW2-G437	2	
58	9554F	LW2-G437	3	
114	9554F	LW2-G437	4	
159	9554F	LW2-G437	5	
95	9554F	LW2-G437	6	
148	9554F	LW2-G437	7	
109	9554F	LW2-G437	8	wq replicate
12	9555F	LW2-G403	1	
160	9555F	LW2-G403	2	
17	9555F	LW2-G403	3	
124	9555F	LW2-G403	4	
137	9555F	LW2-G403	5	
149	9555F	LW2-G403	6	
91	9555F	LW2-G403	7	
79	9555F	LW2-G403	8	wq replicate
20	9556F	LW2-G401	1	
125	9556F	LW2-G401	2	
80	9556F	LW2-G401	3	
90	9556F	LW2-G401	4	
122	9556F	LW2-G401	5	
116	9556F	LW2-G401	6	
22	9556F	LW2-G401	7	
142	9556F	LW2-G401	8	wq replicate
128	9557F	LW2-G377	1	
89	9557F	LW2-G377	2	
76	9557F	LW2-G377	3	
162	9557F	LW2-G377	4	
71	9557F	LW2-G377	5	
113	9557F	LW2-G377	6	
111	9557F	LW2-G377	7	
127	9557F	LW2-G377	8	wq replicate
123	9558F	LW2-G371	1	
28	9558F	LW2-G371	2	
131	9558F	LW2-G371	3	
126	9558F	LW2-G371	4	
43	9558F	LW2-G371	5	
7	9558F	LW2-G371	6	
35	9558F	LW2-G371	7	
143	9558F	LW2-G371	8	wq replicate

ANC08483
BZTO104(e)008483

Freshwater Sediment Test
10-Day Chironomus tentans
Randomization Key

BKR	NAS SMPL	CLIENT DESCRIP	REPL	
118	9559F	LW2-G366	1	
34	9559F	LW2-G366	2	
98	9559F	LW2-G366	3	
84	9559F	LW2-G366	4	
25	9559F	LW2-G366	5	
3	9559F	LW2-G366	6	
104	9559F	LW2-G366	7	
86	9559F	LW2-G366	8	wq replicate
41	9560F	LW2-G351	1	
49	9560F	LW2-G351	2	
136	9560F	LW2-G351	3	
129	9560F	LW2-G351	4	
164	9560F	LW2-G351	5	
103	9560F	LW2-G351	6	
163	9560F	LW2-G351	7	
146	9560F	LW2-G351	8	wq replicate
82	9561F	LW2-G282	1	
154	9561F	LW2-G282	2	
158	9561F	LW2-G282	3	
78	9561F	LW2-G282	4	
16	9561F	LW2-G282	5	
92	9561F	LW2-G282	6	
60	9561F	LW2-G282	7	
107	9561F	LW2-G282	8	wq replicate

TEST DATA ANALYSIS RECORDS

Test Number: 686-20

Freshwater Sediment Test
10-Day Chironomus tentans

Endpoints Data Entry and Calculations File

BKR=beaker number
INIT=initial number
SURV=number survivors
MORT=number dead=INIT-SURV
PSURV=%survival=100(SURV/INIT)
PMORT=%mortality=100(MORT/INIT)

TARE WT= ashed weight of pan used for that replicate at test termination (mg), or dry weight of pan if ash-free dry weight is not an endpoint
WT COUNT= number of test organisms weighed at test end
DRY WT= TARE WT + dry weight of test organisms recovered at test termination (mg)
TWT=total biomass=DRY WT-TARE WT
WT=average individual biomass=TWT/WT COUNT

ASHED DRY WT= weight of ashed pan + weight of ashed test organisms recovered at test termination
TAFDW=DRY WT - ASHED DRY WT= total ash-free organism weight for given replicate
AFDW=average individual ash-free biomass=TAFDW/WT COUNT

INITIAL WEIGHT

pan #	tare wt (mg)	final wt (mg)	wt count	avg. wt/ organism
1	108.46	111.10	20	0.13
2	94.85	97.55	20	0.14
3	100.69	103.61	20	0.15

INDEX	BKR	NAS SMPL	CLIENT DESCRIP	REPL		INIT	SURV	MORT	PSURV	PMORT	TARE WT (mg)	WT COUNT	DRY WT (mg)	ASHED DRY WT (mg)	TWT (mg)	WT (mg)	TAFDW (mg)	AFDW (mg)
1	29	9534F	Control	1		10	10	0	100.0	0.0	100.05	10	112.98	103.10	93.10	0.82	9.88	0.99
2	52	9534F	Control	2		10	10	0	100.0	0.0	101.43	10	115.08	104.16	94.16	0.82	10.92	1.09
3	37	9534F	Control	3		10	10	0	100.0	0.0	88.75	10	102.06	91.11	81.11	0.79	10.95	1.10
4	157	9534F	Control	4		10	9	1	90.0	10.0	92.96	9	107.64	97.31	88.31	0.82	10.33	1.15
5	30	9534F	Control	5		10	9	1	90.0	10.0	104.79	9	116.93	107.50	98.50	0.84	9.43	1.05
6	102	9534F	Control	6		10	10	0	100.0	0.0	82.93	10	96.95	86.58	76.58	0.79	10.37	1.04
7	24	9534F	Control	7		10	9	1	90.0	10.0	97.90	9	109.94	100.00	91.00	0.83	9.94	1.10
8	19	9534F	Control	8	wq replicate	10	9	1	90.0	10.0	103.20	9	116.40	106.56	97.56	0.84	9.84	1.09
9	88	9542F	LW2-G210	1		10	6	4	60.0	40.0	83.46	6	91.83	85.87	79.87	0.87	5.96	0.99
10	145	9542F	LW2-G210	2		10	8	2	80.0	20.0	106.47	8	119.83	110.91	102.91	0.86	8.92	1.12
11	33	9542F	LW2-G210	3		10	7	3	70.0	30.0	98.95	7	107.35	100.68	93.68	0.87	6.67	0.95
12	66	9542F	LW2-G210	4		10	8	2	80.0	20.0	98.93	8	105.23	100.59	92.59	0.88	4.64	0.58
13	119	9542F	LW2-G210	5		10	7	3	70.0	30.0	92.10	7	100.11	94.27	87.27	0.87	5.84	0.83
14	31	9542F	LW2-G210	6		10	6	4	60.0	40.0	87.69	6	96.38	89.86	83.86	0.87	6.52	1.09
15	134	9542F	LW2-G210	7		10	6	4	60.0	40.0	82.95	6	93.98	86.58	80.58	0.86	7.40	1.23
16	2	9542F	LW2-G210	8	wq replicate	10	5	5	50.0	50.0	105.58	5	112.28	107.69	102.69	0.91	4.59	0.92
17	63	9543F	LW2-G213	1		10	10	0	100.0	0.0	103.20	10	116.93	108.05	98.05	0.84	8.88	0.89
18	62	9543F	LW2-G213	2		10	10	0	100.0	0.0	98.90	10	113.48	104.51	94.51	0.83	8.97	0.90
19	46	9543F	LW2-G213	3		10	9	1	90.0	10.0	99.20	9	113.69	105.22	96.22	0.85	8.47	0.94
20	93	9543F	LW2-G213	4		10	8	2	80.0	20.0	100.68	8	115.14	106.08	98.08	0.85	9.06	1.13
21	67	9543F	LW2-G213	5		10	10	0	100.0	0.0	91.68	10	105.02	96.28	86.28	0.82	8.74	0.87
22	21	9543F	LW2-G213	6		10	10	0	100.0	0.0	100.21	10	111.32	103.54	93.54	0.84	7.78	0.78
23	13	9543F	LW2-G213	7		10	10	0	100.0	0.0	97.01	10	110.17	101.49	91.49	0.83	8.68	0.87
24	6	9543F	LW2-G213	8	wq replicate	10	9	1	90.0	10.0	105.94	9	118.73	110.83	101.83	0.86	7.90	0.88
25	144	9544F	LW2-G200	1		10	10	0	100.0	0.0	84.12	10	103.48	91.66	81.66	0.79	11.82	1.18
26	75	9544F	LW2-G200	2		10	10	0	100.0	0.0	98.92	10	114.80	104.56	94.56	0.82	10.24	1.02
27	14	9544F	LW2-G200	3		10	10	0	100.0	0.0	96.00	10	110.82	100.81	90.81	0.82	10.01	1.00
28	130	9544F	LW2-G200	4		10	9	1	90.0	10.0	80.80	9	98.04	87.93	78.93	0.81	10.11	1.12
29	77	9544F	LW2-G200	5		10	9	1	90.0	10.0	97.88	9	112.90	103.78	94.78	0.84	9.12	1.01
30	87	9544F	LW2-G200	6		10	7	3	70.0	30.0	85.16	7	98.10	89.22	82.22	0.84	8.88	1.27
31	140	9544F	LW2-G200	7		10	9	1	90.0	10.0	85.76	9	101.84	92.12	83.12	0.82	9.72	1.08
32	167	9544F	LW2-G200	8	wq replicate	10	8	2	80.0	20.0	87.16	8	103.12	93.65	85.65	0.83	9.27	1.16
33	18	9545F	LW2-G093	1		10	9	1	90.0	10.0	109.47	9	119.84	111.91	102.91	0.86	7.93	0.88
34	5	9545F	LW2-G093	2		10	9	1	90.0	10.0	99.69	9	108.10	102.00	93.00	0.86	6.10	0.68
35	83	9545F	LW2-G093	3		10	10	0	100.0	0.0	101.74	10	112.72	104.84	94.84	0.84	7.88	0.79
36	54	9545F	LW2-G093	4		10	10	0	100.0	0.0	91.82	10	105.56	95.88	85.88	0.81	9.68	0.97
37	42	9545F	LW2-G093	5		10	10	0	100.0	0.0	91.34	10	103.88	95.21	85.21	0.82	8.67	0.87
38	100	9545F	LW2-G093	6		10	8	2	80.0	20.0	81.75	8	95.55	86.74	78.74	0.82	8.81	1.10
39	61	9545F	LW2-G093	7		10	10	0	100.0	0.0	93.26	10	104.78	96.84	86.84	0.83	7.94	0.79
40	165	9545F	LW2-G093	8	wq replicate	10	9	1	90.0	10.0	91.57	9	91.05	84.24	75.24	0.83	6.81	0.76

	SURV	MORT	PSURV	PMORT	WT	AFDW
Mean	9.5	0.5	95.0	5.0	0.82	1.08
SD	0.5	0.5	5.3	5.3	0.02	0.05
n	8	8	8	8	8	8
Mean	6.5	3.4	66.3	33.8	0.87	0.96
SD	1.1	1.1	10.6	10.6	0.02	0.20
n	8	8	8	8	8	8
Mean	9.5	0.5	95.0	5.0	0.84	0.97
SD	0.8	0.8	7.8	7.8	0.01	0.10
n	8	8	8	8	8	8
Mean	9.0	1.0	90.0	10.0	0.82	1.11
SD	1.1	1.1	10.7	10.7	0.02	0.09
n	8	8	8	8	8	8
Mean	9.4	0.6	93.8	6.3	0.83	0.85
SD	0.7	0.7	7.4	7.4	0.02	0.13
n	8	8	8	8	8	8

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ANC08486
BZTO104(e)008486

Test Number: 686-20

Freshwater Sediment Test
10-Day Chironomus tentans

INDEX	BKR	NAS SMPL	CLIENT DESCRIP	REPL		INIT	SURV	MORT	PSURV	PMORT	TARE WT (mg)	WT COUNT	DRY WT (mg)	ASHED DRY WT (mg)	TWT (mg)	WT (mg)	TAFDW (mg)	AFDW (mg)		SURV	MORT	PSURV	PMORT	WT	AFDW
41	72	9546F	LW2-G206	1		10	10	0	100.0	0.0	103.02	10	117.37	107.24	14.35	1.44	10.13	1.01							
42	59	9546F	LW2-G206	2		10	10	0	100.0	0.0	95.52	10	110.51	101.23	14.99	1.50	9.28	0.93							
43	152	9546F	LW2-G206	3		10	10	0	100.0	0.0	81.20	10	98.71	88.85	17.51	1.75	9.86	0.99							
44	9	9546F	LW2-G206	4		10	8	2	80.0	20.0	102.03	8	116.33	107.41	14.30	1.79	8.92	1.12							
45	168	9546F	LW2-G206	5		10	10	0	100.0	0.0	88.25	10	104.94	95.18	16.69	1.67	9.76	0.98	Mean	9.4	0.6	93.8	6.3	1.62	1.00
46	141	9546F	LW2-G206	6		10	8	2	80.0	20.0	87.80	8	101.39	93.03	13.59	1.70	8.36	1.05	SD	0.9	0.9	9.2	9.2	0.15	0.06
47	27	9546F	LW2-G206	7		10	10	0	100.0	0.0	98.43	10	110.38	101.00	13.95	1.40	9.38	0.94	n	8	8	8	8	8	8
48	8	9546F	LW2-G206	8	wq replicate	10	9	1	90.0	10.0	87.24	9	102.90	93.71	15.66	1.74	9.19	1.02							
49	36	9547F	LW2-G362-1	1		10	10	0	100.0	0.0	100.60	10	113.68	104.43	13.06	1.31	9.25	0.93							
50	156	9547F	LW2-G362-1	2		10	10	0	100.0	0.0	89.74	10	108.89	97.89	19.15	1.92	11.00	1.10							
51	147	9547F	LW2-G362-1	3		10	9	1	90.0	10.0	91.16	9	107.91	97.67	16.75	1.86	10.24	1.14							
52	57	9547F	LW2-G362-1	4		10	8	2	80.0	20.0	107.82	8	118.28	110.80	10.46	1.31	7.48	0.94							
53	11	9547F	LW2-G362-1	5		10	8	2	80.0	20.0	101.42	8	110.56	103.57	9.14	1.14	6.99	0.87	Mean	8.8	1.3	87.5	12.5	1.52	1.03
54	64	9547F	LW2-G362-1	6		10	9	1	90.0	10.0	100.54	9	110.83	103.37	10.29	1.14	7.46	0.83	SD	1.0	1.0	10.4	10.4	0.33	0.17
55	38	9547F	LW2-G362-1	7		10	7	3	70.0	30.0	100.49	7	113.13	103.91	12.64	1.81	9.22	1.32	n	8	8	8	8	8	8
56	39	9547F	LW2-G362-1	8	wq replicate	10	9	1	90.0	10.0	97.71	9	112.74	102.68	15.03	1.67	10.06	1.12							
57	117	9548F	LW2-G413	1		10	10	0	100.0	0.0	86.68	10	104.67	93.25	17.99	1.80	11.42	1.14							
58	94	9548F	LW2-G413	2		10	10	0	100.0	0.0	92.75	10	110.69	99.35	17.94	1.79	11.34	1.13							
59	166	9548F	LW2-G413	3		10	10	0	100.0	0.0	81.51	10	100.18	88.78	18.67	1.87	11.40	1.14							
60	150	9548F	LW2-G413	4		10	8	2	80.0	20.0	91.58	8	107.17	97.29	15.59	1.95	9.88	1.24							
61	48	9548F	LW2-G413	5		10	10	0	100.0	0.0	106.90	10	122.36	111.54	15.45	1.55	10.62	1.06	Mean	9.4	0.6	93.8	6.3	1.76	1.15
62	56	9548F	LW2-G413	6		10	10	0	100.0	0.0	95.78	10	112.84	101.91	16.06	1.61	10.93	1.09	SD	0.9	0.9	9.2	9.2	0.13	0.05
63	47	9548F	LW2-G413	7		10	8	2	80.0	20.0	81.95	8	95.79	86.21	13.84	1.73	9.58	1.20	n	8	8	8	8	8	8
64	45	9548F	LW2-G413	8	wq replicate	10	9	1	90.0	10.0	101.92	9	117.98	107.62	16.06	1.78	10.36	1.15							
65	70	9549F	LW2-G393	1		10	8	2	80.0	20.0	94.78	8	106.70	98.41	11.92	1.49	8.29	1.04							
66	74	9549F	LW2-G393	2		10	10	0	100.0	0.0	92.58	10	106.39	96.70	13.81	1.38	9.69	0.97							
67	99	9549F	LW2-G393	3		10	9	1	90.0	10.0	101.58	9	115.88	106.30	14.30	1.59	9.58	1.06							
68	120	9549F	LW2-G393	4		10	8	2	80.0	20.0	99.06	8	111.00	103.04	11.94	1.49	7.96	0.99							
69	28	9549F	LW2-G393	5		10	10	0	100.0	0.0	95.67	10	109.48	99.74	13.81	1.38	9.74	0.97	Mean	9.4	0.6	93.8	6.3	1.44	0.99
70	108	9549F	LW2-G393	6		10	10	0	100.0	0.0	79.86	10	95.94	85.71	16.08	1.61	10.23	1.02	SD	0.9	0.9	9.2	9.2	0.13	0.05
71	50	9549F	LW2-G393	7		10	10	0	100.0	0.0	99.12	10	112.23	102.73	13.11	1.31	9.50	0.95	n	8	8	8	8	8	8
72	73	9549F	LW2-G393	8	wq replicate	10	10	0	100.0	0.0	104.09	10	116.70	107.99	12.61	1.26	8.71	0.87							
73	15	9550F	LW2-G417	1		10	10	0	100.0	0.0	96.60	10	109.61	100.31	13.01	1.30	9.30	0.93							
74	10	9550F	LW2-G417	2		10	10	0	100.0	0.0	90.46	10	103.68	94.36	13.20	1.32	9.32	0.93							
75	161	9550F	LW2-G417	3		10	10	0	100.0	0.0	85.51	10	101.42	91.45	15.91	1.59	9.97	1.00							
76	86	9550F	LW2-G417	4		10	9	1	90.0	10.0	84.99	9	102.52	91.42	17.53	1.95	11.10	1.23							
77	138	9550F	LW2-G417	5		10	10	0	100.0	0.0	83.32	10	101.45	90.22	18.13	1.81	11.23	1.12	Mean	9.6	0.4	96.3	3.8	1.66	1.08
78	106	9550F	LW2-G417	6		10	9	1	90.0	10.0	98.32	9	115.78	105.58	17.46	1.94	10.20	1.13	SD	0.5	0.5	5.2	5.2	0.25	0.12
79	68	9550F	LW2-G417	7		10	9	1	90.0	10.0	96.05	9	111.30	100.48	15.25	1.69	10.82	1.20	n	8	8	8	8	8	8
80	97	9550F	LW2-G417	8	wq replicate	10	10	0	100.0	0.0	85.30	10	102.20	90.95	16.90	1.69	11.25	1.13							
81	112	9551F	LW2-G415	1		10	9	1	90.0	10.0	90.40	9	102.93	94.20	12.53	1.39	8.73	0.97							
82	153	9551F	LW2-G415	2		10	10	0	100.0	0.0	102.37	10	117.60	107.82	15.23	1.52	9.78	0.98							
83	69	9551F	LW2-G415	3		10	10	0	100.0	0.0	86.59	10	99.26	90.25	12.67	1.27	9.01	0.90							
84	101	9551F	LW2-G415	4		10	10	0	100.0	0.0	80.09	10	94.13	85.04	14.04	1.40	9.09	0.91							
85	55	9551F	LW2-G415	5		10	10	0	100.0	0.0	95.91	10	109.97	99.90	14.06	1.41	10.07	1.01	Mean	9.8	0.3	97.5	2.5	1.39	0.95
86	132	9551F	LW2-G415	6		10	9	1	90.0	10.0	84.58	9	97.82	89.09	13.24	1.47	8.73	0.97	SD	0.5	0.5	4.6	4.6	0.12	0.05
87	151	9551F	LW2-G415	7		10	10	0	100.0	0.0	85.78	10	100.62	90.81	14.84	1.48	9.81	0.98	n	8	8	8	8	8	8
88	65	9551F	LW2-G415	8	wq replicate	10	10	0	100.0	0.0	98.13	10	109.89	101.09	11.76	1.18	8.80	0.88							
89	51	9552F	LW2-G380	1		10	8	2	80.0	20.0	94.87	8	110.77	99.68	15.90	1.99	11.09	1.39							
90	53	9552F	LW2-G380	2		10	10	0	100.0	0.0	94.19	10	109.14	97.85	14.95	1.50	11.29	1.13							
91	1	9552F	LW2-G380	3		10	9	1	90.0	10.0	117.39	9	130.81	120.82	13.42	1.49	9.99	1.11							
92	23	9552F	LW2-G380	4		10	7	3	70.0	30.0	95.36	7	105.20	97.70	10.84	1.55	8.50	1.21							
93	44	9552F	LW2-G380	5		10	9	1	90.0	10.0	108.97	9	123.37	112.67	14.40	1.60	10.70	1.19	Mean	9.0	1.0	90.0	10.0	1.63	1.18
94	105	9552F	LW2-G380	6		10	9	1	90.0	10.0	85.98	9	102.02	90.69	16.04	1.78	11.33	1.26	SD	1.1	1.1	10.7	10.7	0.17	0.10
95	32	9552F	LW2-G380	7		10	10	0	100.0	0.0	90.89	10	106.25	95.15	15.36	1.54	11.10	1.11	n	8	8	8	8	8	8
96	166	9552F	LW2-G380	8	wq replicate	10	10	0	100.0	0.0	85.85	10	101.60	90.99	15.75	1.58	10.61	1.06							

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ANC08487
BZTO104(e)008487

Test Number: 686-20

Freshwater Sediment Test
10-Day Chironomus tentans

INDEX	BKR	NAS SMPL	CLIENT DESCRIP	REPL		INIT	SURV	MORT	PSURV	PMORT	TARE WT (mg)	WT COUNT	DRY WT (mg)	ASHED DRY WT (mg)	TWT (mg)	WT (mg)	TAFDW (mg)	AFDW (mg)		SURV	MORT	PSURV	PMORT	WT	AFDW
97	115	9553F	LW2-G430	1		10	9	1	90.0	10.0	79.89	9	93.48	83.45	74.45	0.80	10.03	1.11							
98	40	9553F	LW2-G430	2		10	7	3	70.0	30.0	102.28	7	115.29	105.09	98.09	0.85	10.20	1.46							
99	121	9553F	LW2-G430	3		10	10	0	100.0	0.0	83.52	10	99.33	87.76	77.76	0.78	11.57	1.16							
100	85	9553F	LW2-G430	4		10	10	0	100.0	0.0	100.69	10	115.75	105.13	95.13	0.82	10.62	1.06							
101	4	9553F	LW2-G430	5		10	10	0	100.0	0.0	89.22	10	101.07	91.72	81.72	0.81	9.35	0.93	Mean	9.3	0.8	92.5	7.5	0.81	1.15
102	133	9553F	LW2-G430	6		10	10	0	100.0	0.0	87.29	10	103.74	92.24	82.24	0.79	11.50	1.15	SD	1.2	1.2	11.6	11.6	0.02	0.16
103	135	9553F	LW2-G430	7		10	10	0	100.0	0.0	89.94	10	104.13	93.93	83.93	0.81	10.20	1.02	n	8	8	8	8	8	8
104	110	9553F	LW2-G430	8	wq replicate	10	8	2	80.0	20.0	85.80	8	100.15	90.00	82.00	0.82	10.15	1.27							
105	81	9554F	LW2-G437	1		10	10	0	100.0	0.0	109.89	10	126.99	116.72	106.72	0.85	9.27	0.93							
106	139	9554F	LW2-G437	2		10	10	0	100.0	0.0	86.32	10	104.52	94.78	84.78	0.81	9.74	0.97							
107	58	9554F	LW2-G437	3		10	10	0	100.0	0.0	94.64	10	109.14	100.62	90.62	0.83	8.52	0.85							
108	114	9554F	LW2-G437	4		10	10	0	100.0	0.0	107.25	10	125.99	115.44	105.44	0.84	10.55	1.06							
109	159	9554F	LW2-G437	5		10	9	1	90.0	10.0	93.13	9	111.33	101.25	92.25	0.83	10.08	1.12	Mean	9.8	0.3	97.5	2.5	0.82	1.00
110	95	9554F	LW2-G437	6		10	10	0	100.0	0.0	80.33	10	98.00	87.98	77.98	0.80	10.02	1.00	SD	0.5	0.5	4.6	4.6	0.02	0.09
111	148	9554F	LW2-G437	7		10	10	0	100.0	0.0	89.56	10	107.76	97.40	87.40	0.81	10.36	1.04	n	8	8	8	8	8	8
112	109	9554F	LW2-G437	8	wq replicate	10	9	1	90.0	10.0	80.90	9	98.40	88.75	79.75	0.81	9.65	1.07							
113	12	9555F	LW2-G403	1		10	10	0	100.0	0.0	99.30	10	113.06	103.18	93.18	0.82	9.88	0.99							
114	160	9555F	LW2-G403	2		10	8	2	80.0	20.0	89.51	8	103.71	94.69	86.69	0.84	9.02	1.13							
115	17	9555F	LW2-G403	3		10	9	1	90.0	10.0	98.85	9	112.83	103.59	94.59	0.84	9.24	1.03							
116	124	9555F	LW2-G403	4		10	10	0	100.0	0.0	96.94	9	113.68	103.16	94.16	0.83	10.52	1.17							
117	137	9555F	LW2-G403	5		10	10	0	100.0	0.0	87.21	10	101.20	91.97	81.97	0.81	9.23	0.92	Mean	9.1	0.9	91.3	8.8	0.82	1.07
118	149	9555F	LW2-G403	6		10	9	1	90.0	10.0	90.61	9	106.26	96.52	87.52	0.82	9.76	1.08	SD	0.8	0.8	8.3	8.3	0.01	0.08
119	91	9555F	LW2-G403	7		10	9	1	90.0	10.0	81.42	9	96.73	86.53	77.53	0.80	10.20	1.13	n	8	8	8	8	8	8
120	79	9555F	LW2-G403	8	wq replicate	10	8	2	80.0	20.0	90.02	8	103.21	94.47	86.47	0.84	8.74	1.09							
121	20	9556F	LW2-G401	1		10	9	1	90.0	10.0	103.11	9	116.61	107.31	98.31	0.84	9.30	1.03							
122	125	9556F	LW2-G401	2		10	10	0	100.0	0.0	87.99	10	106.20	96.31	86.31	0.81	9.89	0.99							
123	80	9556F	LW2-G401	3		10	10	0	100.0	0.0	94.00	10	108.69	99.42	89.42	0.82	9.27	0.93							
124	90	9556F	LW2-G401	4		10	9	1	90.0	10.0	80.98	9	98.49	88.10	79.10	0.80	10.39	1.15							
125	122	9556F	LW2-G401	5		10	9	1	90.0	10.0	83.96	9	102.10	92.20	83.20	0.81	9.90	1.10	Mean	9.4	0.6	93.8	6.3	0.82	1.01
126	118	9556F	LW2-G401	6		10	10	0	100.0	0.0	97.11	10	113.72	104.07	94.07	0.83	9.65	0.97	SD	0.5	0.5	5.2	5.2	0.01	0.08
127	22	9556F	LW2-G401	7		10	9	1	90.0	10.0	97.05	9	110.66	101.97	92.97	0.84	8.69	0.97	n	8	8	8	8	8	8
128	142	9556F	LW2-G401	8	wq replicate	10	9	1	90.0	10.0	85.40	9	99.81	91.28	82.28	0.82	8.53	0.95							
129	128	9557F	LW2-G377	1		10	9	1	90.0	10.0	98.76	9	117.15	105.90	96.90	0.83	11.25	1.25							
130	88	9557F	LW2-G377	2		10	9	1	90.0	10.0	89.20	9	106.32	95.90	86.90	0.82	10.42	1.16							
131	78	9557F	LW2-G377	3		10	9	1	90.0	10.0	100.72	9	117.24	107.64	98.64	0.84	9.60	1.07							
132	162	9557F	LW2-G377	4		10	9	1	90.0	10.0	90.25	9	105.87	95.46	86.46	0.82	10.41	1.16							
133	71	9557F	LW2-G377	5		10	10	0	100.0	0.0	93.45	10	108.84	98.35	88.35	0.81	10.49	1.05	Mean	9.4	0.6	93.8	6.3	0.82	1.12
134	113	9557F	LW2-G377	6		10	9	1	90.0	10.0	80.80	9	96.71	86.51	77.51	0.80	10.20	1.13	SD	0.5	0.5	5.2	5.2	0.01	0.07
135	111	9557F	LW2-G377	7		10	10	0	100.0	0.0	103.77	10	120.65	110.20	100.20	0.83	10.45	1.05	n	8	8	8	8	8	8
136	127	9557F	LW2-G377	8	wq replicate	10	10	0	100.0	0.0	100.25	10	120.16	108.88	98.88	0.82	11.28	1.13							
137	123	9558F	LW2-G371	1		10	5	5	50.0	50.0	101.94	5	111.60	105.83	100.83	0.90	5.77	1.15							
138	28	9558F	LW2-G371	2		10	3	7	30.0	70.0	98.27	3	103.09	99.52	96.52	0.94	3.57	1.19							
139	131	9558F	LW2-G371	3		10	3	7	30.0	70.0	86.88	3	92.81	89.43	86.43	0.93	3.38	1.13							
140	126	9558F	LW2-G371	4		10	5	5	50.0	50.0	104.48	5	115.47	109.30	104.30	0.90	6.17	1.23							
141	43	9558F	LW2-G371	5		10	3	7	30.0	70.0	96.79	3	101.66	98.02	95.02	0.93	3.64	1.21	Mean	4.0	6.0	40.0	60.0	0.91	1.15
142	7	9558F	LW2-G371	6		10	0	10	0.0	100.0	93.68	0							SD	2.3	2.3	23.3	23.3	0.03	0.07
143	35	9558F	LW2-G371	7		10	5	5	50.0	50.0	100.08	5	107.98	102.41	97.41	0.90	5.57	1.11	n	8	8	8	8	7	7
144	143	9558F	LW2-G371	8	wq replicate	10	8	2	80.0	20.0	87.51	8	100.37	92.10	84.10	0.84	8.27	1.03							
145	118	9559F	LW2-G366	1		10	0	10	0.0	100.0	83.48	0													
146	34	9559F	LW2-G366	2		10	0	10	0.0	100.0	99.97	0													
147	98	9559F	LW2-G366	3		10	0	10	0.0	100.0	84.16	0													
148	84	9559F	LW2-G366	4		10	0	10	0.0	100.0	96.49	0													
149	25	9559F	LW2-G366	5		10	0	10	0.0	100.0	103.49	0							Mean	0.0	10.0	0.0	100.0		
150	3	9559F	LW2-G366	6		10	0	10	0.0	100.0	95.72	0							SD	0.0	0.0	0.0	0.0		
151	104	9559F	LW2-G366	7		10	0	10	0.0	100.0	102.60	0							n	8	8	8	8	0	0
152	86	9559F	LW2-G366	8	wq replicate	10	0	10	0.0	100.0	98.15	0													

ANC08488
BZTO104(e)008488

Test Number: 686-20

Freshwater Sediment Test
10-Day Chironomus tentans

INDEX	BKR	NAS SMPL	CLIENT DESCRIP	REPL		INIT	SURV	MORT	PSURV	PMORT	TARE WT (mg)	WT COUNT	DRY WT (mg)	ASHED DRY WT (mg)	TWT (mg)	WT (mg)	TAFDW (mg)	AFDW (mg)		SURV	MORT	PSURV	PMORT	WT	AFDW
153	41	9560F	LW2-G351	1		10	8	2	80.0	20.0	92.16	8	105.32	96.45	88.45	0.84	8.87	1.11							
154	49	9560F	LW2-G351	2		10	10	0	100.0	0.0	100.65	10	114.68	105.68	95.68	0.83	9.00	0.90							
155	136	9560F	LW2-G351	3		10	9	1	90.0	10.0	88.04	9	103.62	94.81	85.81	0.83	8.81	0.98							
156	129	9560F	LW2-G351	4		10	10	0	100.0	0.0	86.47	10	105.74	96.30	86.30	0.82	9.44	0.94							
157	164	9560F	LW2-G351	5		10	10	0	100.0	0.0	83.51	10	99.24	89.78	79.78	0.80	9.46	0.95	Mean	9.6	0.4	96.3	3.8	0.82	0.97
158	103	9560F	LW2-G351	6		10	10	0	100.0	0.0	95.60	10	111.58	101.41	91.41	0.82	10.17	1.02	SD	0.7	0.7	7.4	7.4	0.01	0.07
159	163	9560F	LW2-G351	7		10	10	0	100.0	0.0	94.04	10	108.20	99.01	89.01	0.82	9.19	0.92	n	8	8	8	8	8	8
160	146	9560F	LW2-G351	8	wq replicate	10	10	0	100.0	0.0	82.72	10	98.02	88.76	78.76	0.80	9.26	0.93							
161	82	9561F	LW2-G282	1		10	10	0	100.0	0.0	91.13	10	106.50	96.35	86.35	0.81	10.15	1.02							
162	154	9561F	LW2-G282	2		10	10	0	100.0	0.0	83.62	10	99.92	89.59	79.59	0.80	10.33	1.03							
163	158	9561F	LW2-G282	3		10	9	1	90.0	10.0	101.78	9	116.54	106.75	97.75	0.84	9.79	1.09							
164	78	9561F	LW2-G282	4		10	5	5	50.0	50.0	87.56	5	95.82	90.00	85.00	0.89	5.82	1.16							
165	15	9561F	LW2-G282	5		10	10	0	100.0	0.0	100.15	10	113.12	103.66	93.66	0.83	9.46	0.95	Mean	9.0	1.0	90.0	10.0	0.83	1.03
166	92	9561F	LW2-G282	6		10	9	1	90.0	10.0	88.58	9	102.19	93.12	84.12	0.82	9.07	1.01	SD	1.7	1.7	16.9	16.9	0.03	0.07
167	60	9561F	LW2-G282	7		10	10	0	100.0	0.0	97.95	10	111.89	101.81	91.81	0.82	10.08	1.01	n	8	8	8	8	8	8
168	107	9561F	LW2-G282	8	wq replicate	10	9	1	90.0	10.0	82.97	9	96.39	87.66	78.66	0.82	8.73	0.97							
Beaker #124 one animal was lost or damaged in transfering to weighing pan.																									

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Water Quality Data

NAS SMPL	CLIENT DESCRIP	Bulk Sediment Interstitial water NH3	pH
9542F	LW2-G210	26.2	6.4
9543F	LW2-G213	1.8	5.8
9544F	LW2-G200	2.6	5.8
9545F	LW2-G093	6.4	5.9
9546F	LW2-G206	3.6	5.8
9547F	LW2-G362-1	19.5	5.7
9548F	LW2-G413	1.0	5.9
9549F	LW2-G393	7.4	6.9
9550F	LW2-G417	4.5	6.0
9551F	LW2-G415	3.3	6.0
9552F	LW2-G380	1.0	6.1
9553F	LW2-G430	---	---
9554F	LW2-G437	1.3	6.0
9555F	LW2-G403	1.0	6.0
9556F	LW2-G401	5.1	6.6
9557F	LW2-G377	0.9	6.7
9558F	LW2-G371	27.1	6.2
9559F	LW2-G366	6.4	6.3
9560F	LW2-G351	10.8	7.5
9561F	LW2-G282	1.0	6.8

	NAS	CLIENT			Overlying water						
BKR	SMPL	DESCRIP	REPL	DAY	TEMP	DO	COND	pH	NH3	HARD	ALK
2	9542F	LW2-G210	8	0	22.2	7.4	150	6.6	0.9	34	40
6	9543F	LW2-G213	8	0	22.2	7.4	150	6.6	0.4	43	40
8	9546F	LW2-G206	8	0	22.0	7.5	160	6.3	0.7	43	40
19	9434F	Control	8	0	22.0	7.6	220	6.4	0.2	34	40
39	9547F	LW2-G362-1	8	0	22.0	7.6	785	6.4	1.8	51	50
45	9548F	LW2-G413	8	0	22.0	7.4	170	6.7	0.3	34	40
65	9551F	LW2-G415	8	0	22.2	7.2	160	6.6	0.6	34	40
73	9549F	LW2-G393	8	0	22.1	7.3	165	6.7	0.9	43	50
79	9555F	LW2-G403	8	0	22.1	7.2	160	6.7	0.2	51	50
86	9559F	LW2-G366	8	0	22.1	6.6	2670	6.7	0.4	34	60
97	9550F	LW2-G417	8	0	22.0	7.5	175	6.8	0.8	51	50
107	9561F	LW2-G282	8	0	22.0	7.4	160	6.7	0.4	34	40
109	9554F	LW2-G437	8	0	22.1	7.2	160	6.6	0.4	43	40
110	9553F	LW2-G430	8	0	22.2	7.3	150	6.6	0.1	34	40
127	9557F	LW2-G377	8	0	22.1	7.4	330	6.7	0.3	34	60
142	9556F	LW2-G401	8	0	22.2	7.4	190	6.7	0.6	51	50
143	9558F	LW2-G371	8	0	22.2	7.3	1890	6.6	1.0	51	50
146	9560F	LW2-G351	8	0	22.2	7.2	280	6.9	0.1	51	60
155	9552F	LW2-G380	8	0	22.3	7.0	165	6.9	0.2	43	40
165	9545F	LW2-G093	8	0	22.4	7.0	170	6.8	0.8	51	40
167	9544F	LW2-G200	8	0	22.4	7.1	155	6.8	0.5	43	40
2	9542F	LW2-G210	8	1	22.6	7.2					
6	9543F	LW2-G213	8	1	22.6	7.4					
8	9546F	LW2-G206	8	1	22.6	7.4					
19	9434F	Control	8	1	22.6	7.2					
39	9547F	LW2-G362-1	8	1	22.6	7.4					
45	9548F	LW2-G413	8	1	22.9	7.0					
65	9551F	LW2-G415	8	1	22.6	7.2					
73	9549F	LW2-G393	8	1	22.6	7.2					
79	9555F	LW2-G403	8	1	22.6	7.2					
86	9559F	LW2-G366	8	1	22.5	7.2					
97	9550F	LW2-G417	8	1	22.5	6.7					
107	9561F	LW2-G282	8	1	22.5	6.8					
109	9554F	LW2-G437	8	1	22.5	6.6					
110	9553F	LW2-G430	8	1	22.8	7.0					
127	9557F	LW2-G377	8	1	22.9	7.3					
142	9556F	LW2-G401	8	1	22.9	7.1					
143	9558F	LW2-G371	8	1	22.5	7.0					
146	9560F	LW2-G351	8	1	23.1	7.1					
155	9552F	LW2-G380	8	1	23.1	7.0					
165	9545F	LW2-G093	8	1	23.3	7.4					
167	9544F	LW2-G200	8	1	23.2	7.3					
2	9542F	LW2-G210	8	2	23.0	6.2					
6	9543F	LW2-G213	8	2	22.9	6.2					
8	9546F	LW2-G206	8	2	23.0	5.6					
19	9434F	Control	8	2	23.0	5.9					
39	9547F	LW2-G362-1	8	2	23.0	5.8					
45	9548F	LW2-G413	8	2	23.0	5.8					
65	9551F	LW2-G415	8	2	23.2	5.8					
73	9549F	LW2-G393	8	2	23.0	5.7					

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79	9555F	LW2-G403	8	2	23.1	5.8							
86	9559F	LW2-G366	8	2	23.0	6.5							
97	9550F	LW2-G417	8	2	23.0	5.6							
107	9561F	LW2-G282	8	2	22.9	5.6							
109	9554F	LW2-G437	8	2	22.9	5.6							
110	9553F	LW2-G430	8	2	23.0	5.8							
127	9557F	LW2-G377	8	2	23.1	5.9							
142	9556F	LW2-G401	8	2	23.1	6.1							
143	9558F	LW2-G371	8	2	23.2	6.2							
146	9560F	LW2-G351	8	2	23.1	6.1							
155	9552F	LW2-G380	8	2	23.3	6.1							
165	9545F	LW2-G093	8	2	23.5	6.4							
167	9544F	LW2-G200	8	2	23.3	6.5							
2	9542F	LW2-G210	8	3	22.7	6.2							
6	9543F	LW2-G213	8	3	22.7	6.2							
8	9546F	LW2-G206	8	3	22.7	6.4							
19	9434F	Control	8	3	22.7	6.2							
39	9547F	LW2-G362-1	8	3	22.7	6.2							
45	9548F	LW2-G413	8	3	22.8	6.2							
65	9551F	LW2-G415	8	3	22.8	6.4							
73	9549F	LW2-G393	8	3	22.9	6.1							
79	9555F	LW2-G403	8	3	22.8	6.1							
86	9559F	LW2-G366	8	3	22.8	6.4							
97	9550F	LW2-G417	8	3	22.7	6.4							
107	9561F	LW2-G282	8	3	22.7	6.1							
109	9554F	LW2-G437	8	3	22.7	6.0							
110	9553F	LW2-G430	8	3	22.8	6.4							
127	9557F	LW2-G377	8	3	22.8	6.5							
142	9556F	LW2-G401	8	3	22.8	6.3							
143	9558F	LW2-G371	8	3	22.8	6.2							
146	9560F	LW2-G351	8	3	22.9	6.4							
155	9552F	LW2-G380	8	3	22.9	6.4							
165	9545F	LW2-G093	8	3	22.9	6.5							
167	9544F	LW2-G200	8	3	22.9	6.8							
2	9542F	LW2-G210	8	4	22.5	6.1							
6	9543F	LW2-G213	8	4	22.5	6.4							
8	9546F	LW2-G206	8	4	22.5	6.2							
19	9434F	Control	8	4	22.5	5.8							
39	9547F	LW2-G362-1	8	4	22.6	6.2							
45	9548F	LW2-G413	8	4	22.8	6.3							
65	9551F	LW2-G415	8	4	22.8	6.2							
73	9549F	LW2-G393	8	4	22.6	6.0							
79	9555F	LW2-G403	8	4	22.6	5.9							
86	9559F	LW2-G366	8	4	22.5	6.1							
97	9550F	LW2-G417	8	4	22.4	6.3							
107	9561F	LW2-G282	8	4	22.4	6.5							
109	9554F	LW2-G437	8	4	22.4	6.5							
110	9553F	LW2-G430	8	4	22.4	6.6							
127	9557F	LW2-G377	8	4	22.6	6.1							
142	9556F	LW2-G401	8	4	22.7	6.0							
143	9558F	LW2-G371	8	4	22.7	6.2							
146	9560F	LW2-G351	8	4	22.8	6.0							
155	9552F	LW2-G380	8	4	22.8	6.0							
165	9545F	LW2-G093	8	4	22.9	5.8							
167	9544F	LW2-G200	8	4	23.0	5.9							
2	9542F	LW2-G210	8	5	22.6	6.6							
6	9543F	LW2-G213	8	5	22.5	7.0							
8	9546F	LW2-G206	8	5	22.5	6.8							
19	9434F	Control	8	5	22.6	6.7							
39	9547F	LW2-G362-1	8	5	22.6	6.9							
45	9548F	LW2-G413	8	5	22.7	6.6							
65	9551F	LW2-G415	8	5	22.8	6.8							
73	9549F	LW2-G393	8	5	22.7	6.4							
79	9555F	LW2-G403	8	5	22.6	6.5							
86	9559F	LW2-G366	8	5	22.4	6.9							
97	9550F	LW2-G417	8	5	22.4	6.8							
107	9561F	LW2-G282	8	5	22.4	6.2							
109	9554F	LW2-G437	8	5	22.4	6.5							
110	9553F	LW2-G430	8	5	22.6	6.8							
127	9557F	LW2-G377	8	5	22.6	6.7							
142	9556F	LW2-G401	8	5	22.6	6.5							
143	9558F	LW2-G371	8	5	22.6	6.4							
146	9560F	LW2-G351	8	5	22.7	6.6							
155	9552F	LW2-G380	8	5	22.7	6.8							
165	9545F	LW2-G093	8	5	22.8	6.2							
167	9544F	LW2-G200	8	5	22.8	6.4							
2	9542F	LW2-G210	8	6	22.7	5.2							
6	9543F	LW2-G213	8	6	22.7	5.3							
8	9546F	LW2-G206	8	6	22.7	5.0							
19	9434F	Control	8	6	22.8	4.8							

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39	9547F	LW2-G362-1	8	6	22.8	4.9								
45	9548F	LW2-G413	8	6	22.9	5.0								
65	9551F	LW2-G415	8	6	22.9	5.0								
73	9549F	LW2-G393	8	6	22.7	4.8								
79	9555F	LW2-G403	8	6	22.7	4.8								
86	9559F	LW2-G366	8	6	22.7	5.6								
97	9550F	LW2-G417	8	6	22.6	5.0								
107	9561F	LW2-G282	8	6	22.6	4.8								
109	9554F	LW2-G437	8	6	22.7	5.3								
110	9553F	LW2-G430	8	6	22.8	4.6								
127	9557F	LW2-G377	8	6	22.8	4.8								
142	9556F	LW2-G401	8	6	22.8	5.2								
143	9558F	LW2-G371	8	6	22.8	5.2								
146	9560F	LW2-G351	8	6	22.9	5.2								
155	9552F	LW2-G380	8	6	22.9	5.4								
165	9545F	LW2-G093	8	6	22.9	5.5								
167	9544F	LW2-G200	8	6	23.0	6.0								
2	9542F	LW2-G210	8	7	22.8	5.0								
6	9543F	LW2-G213	8	7	22.8	5.3								
8	9546F	LW2-G206	8	7	22.8	5.4								
19	9434F	Control	8	7	22.8	4.8								
39	9547F	LW2-G362-1	8	7	22.9	5.0								
45	9548F	LW2-G413	8	7	23.1	5.0								
65	9551F	LW2-G415	8	7	23.0	5.2								
73	9549F	LW2-G393	8	7	22.8	5.0								
79	9555F	LW2-G403	8	7	22.8	5.2								
86	9559F	LW2-G366	8	7	22.7	6.2								
97	9550F	LW2-G417	8	7	22.7	5.0								
107	9561F	LW2-G282	8	7	22.8	4.4								
109	9554F	LW2-G437	8	7	22.8	4.9								
110	9553F	LW2-G430	8	7	22.9	5.2								
127	9557F	LW2-G377	8	7	22.9	5.6								
142	9556F	LW2-G401	8	7	23.0	5.2								
143	9558F	LW2-G371	8	7	22.9	5.2								
146	9560F	LW2-G351	8	7	22.9	5.0								
155	9552F	LW2-G380	8	7	23.1	4.8								
165	9545F	LW2-G093	8	7	23.1	4.9								
167	9544F	LW2-G200	8	7	23.1	5.6								
2	9542F	LW2-G210	8	8	22.8	5.4								
6	9543F	LW2-G213	8	8	22.8	5.4								
8	9546F	LW2-G206	8	8	22.8	5.4								
19	9434F	Control	8	8	22.8	4.9								
39	9547F	LW2-G362-1	8	8	22.9	5.0								
45	9548F	LW2-G413	8	8	22.8	4.8								
65	9551F	LW2-G415	8	8	22.9	5.0								
73	9549F	LW2-G393	8	8	23.0	5.0								
79	9555F	LW2-G403	8	8	22.8	5.2								
86	9559F	LW2-G366	8	8	22.7	6.6								
97	9550F	LW2-G417	8	8	22.7	5.0								
107	9561F	LW2-G282	8	8	22.7	5.2								
109	9554F	LW2-G437	8	8	22.7	5.2								
110	9553F	LW2-G430	8	8	22.7	5.5								
127	9557F	LW2-G377	8	8	22.7	5.7								
142	9556F	LW2-G401	8	8	22.9	5.6								
143	9558F	LW2-G371	8	8	22.9	5.3								
146	9560F	LW2-G351	8	8	23.0	5.4								
155	9552F	LW2-G380	8	8	23.1	5.5								
165	9545F	LW2-G093	8	8	23.1	5.3								
167	9544F	LW2-G200	8	8	23.1	5.7								
2	9542F	LW2-G210	8	9	22.2	5.9								
6	9543F	LW2-G213	8	9	22.2	6.0								
8	9546F	LW2-G206	8	9	22.2	6.1								
19	9434F	Control	8	9	22.3	5.4								
39	9547F	LW2-G362-1	8	9	22.3	5.4								
45	9548F	LW2-G413	8	9	22.3	6.0								
65	9551F	LW2-G415	8	9	22.5	6.0								
73	9549F	LW2-G393	8	9	22.5	5.8								
79	9555F	LW2-G403	8	9	22.3	5.9								
86	9559F	LW2-G366	8	9	22.3	6.6								
97	9550F	LW2-G417	8	9	22.1	5.6								
107	9561F	LW2-G282	8	9	22.2	5.5								
109	9554F	LW2-G437	8	9	22.2	5.6								
110	9553F	LW2-G430	8	9	22.2	5.8								
127	9557F	LW2-G377	8	9	22.4	6.6								
142	9556F	LW2-G401	8	9	22.4	5.8								
143	9558F	LW2-G371	8	9	22.4	6.0								
146	9560F	LW2-G351	8	9	22.6	6.0								
155	9552F	LW2-G380	8	9	22.6	5.9								
165	9545F	LW2-G093	8	9	22.7	6.1								
167	9544F	LW2-G200	8	9	22.7	6.4								

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BZTO104(e)008492

Test Number: P686-20

Freshwater Sediment Test
10-Day Chironomus tentans

2	9542F	LW2-G210	8	10	22.3	6.0	150	6.5	0.4	34	30			
6	9543F	LW2-G213	8	10	22.4	6.2	145	6.5	0.4	34	40			
8	9546F	LW2-G206	8	10	22.4	5.3	150	6.4	0.5	34	30			
19	9434F	Control	8	10	22.5	5.2	160	6.5	0.5	34	40			
39	9547F	LW2-G362-1	8	10	22.3	5.1	190	6.5	0.6	34	40			
45	9548F	LW2-G413	8	10	22.5	5.3	150	6.4	0.2	34	40			
65	9551F	LW2-G415	8	10	22.4	5.0	150	6.3	0.5	34	30			
73	9549F	LW2-G393	8	10	22.1	4.8	155	6.4	0.7	43	40			
79	9555F	LW2-G403	8	10	22.2	5.4	150	6.4	0.7	34	40			
86	9559F	LW2-G366	8	10	22.1	6.4	590	6.5	0.3	34	40			
97	9550F	LW2-G417	8	10	22.1	4.7	160	6.4	0.5	34	40			
107	9561F	LW2-G282	8	10	22.2	4.5	150	6.3	0.4	43	40			
109	9554F	LW2-G437	8	10	22.2	5.0	150	6.3	0.4	34	40			
110	9563F	LW2-G430	8	10	22.5	6.1	150	6.4	0.2	34	40			
127	9557F	LW2-G377	8	10	22.5	6.1	160	6.5	0.3	34	40			
142	9556F	LW2-G401	8	10	22.5	5.4	155	6.3	0.6	34	40			
143	9558F	LW2-G371	8	10	22.4	5.4	450	6.6	0.5	34	40			
146	9560F	LW2-G351	8	10	22.8	5.1	250	6.7	1.0	51	40			
155	9552F	LW2-G380	8	10	22.6	5.4	150	6.4	0.2	34	40			
165	9545F	LW2-G093	8	10	22.8	5.4	155	6.5	0.4	34	40			
167	9544F	LW2-G200	8	10	22.7	5.8	150	6.6	0.3	34	30			
				Mean	22.7	6.0	302	6.6	0.5	39	42		6.9	6.2
				SD	0.3	0.8	473	0.2	0.3	7	7		8.3	0.5
				n	231	231	42	42	42	42	42		20	20
				Min	22.0	4.4	145	6.3	0.1	34	30		0.9	5.7
				Max	23.5	7.6	2670	6.9	1.8	51	60		27.1	7.5

ANC08493
BZTO104(e)008493

AMMONIA EXPOSURE BENCHSHEETS AND ANALYSIS

Total Ammonia-N in Sediment Pore Water: Computation Worksheet

Salicylate Method (SOP #5492)

Result

	Sample description	Dilution factor	OD_{655}	NH_3-N (mg/L)	pH	Salinity (ppt)
	Blank	-----	-----	-----		
	1.0 mg/L NH_3-N Std.	-----	0.155	1.00		
	3.0 mg/L NH_3-N Std.	-----	0.318	3.00		
	6.0 mg/L NH_3-N Std.	-----	0.660	6.00		
	10.0 mg/L NH_3-N Std.	-----	1.100	10.00		
	3.0 mg/L spike	-----	0.319	2.89		
	3.0 mg/L spike dupl.	-----	0.315	2.86		
1.	9542F	5	0.578	26.23		
2.	9543F	5	0.040	1.81		
3.	9544F	5	0.058	2.63		
4.	9545F	5	0.140	6.35		
5.	9546F	5	0.079	3.58		
6.	9547F	5	0.430	19.51		
7.	9548F	5	0.021	0.95		
8.	9549F	5	0.164	7.44		
9.	9550F	5	0.100	4.54		
10.	9551F	5	0.073	3.31		
11.	9552F	5	0.021	0.95		
12.	9553F	5	—*	—*		
13.	9554F	5	0.028	1.27		
14.	9555F	5	0.022	1.00		
15.	9556F	5	0.112	5.08		
16.	9557F	5	0.020	0.91		
17.	9558F	5	0.598	27.13		
18.	9559F	5	0.140	6.35		
19.	9560F	5	0.238	10.80		
20.	9561F	5	0.023	1.04		
21.						
22.						
23.		* insufficient sample for analysis				
24.						
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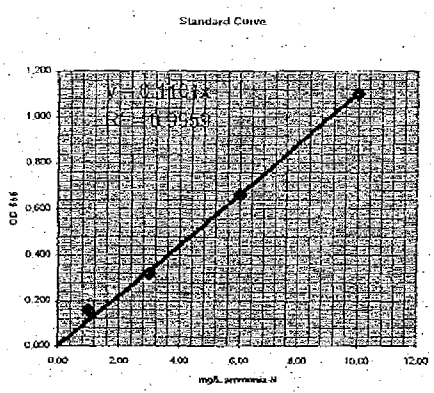

Reporting limit (mg/L) =	0.5
Recovery (%) =	95.9
Precision (RPD) =	1.26
Sample volume (ml):	0.10
Dilution factor	5

Sample Set Description:

Proj. No.: 686

Bulk sediment porewaters

Batch 10

Analyst: RSC

Date analysed: 10/25/2004

Total Ammonia-N in Sediment Pore Water: Computation Worksheet

Salicylate Method (SOP #5492)

Result

	Sample description	Dilution factor	OD_{655}	NH_3-N (mg/L)	pH	Salinity (ppt)
	Blank	----	----	----		
	1.0 mg/L NH_3-N Std.	----	.155	1.00		
	3.0 mg/L NH_3-N Std.	----	.318	3.00		
	6.0 mg/L NH_3-N Std.	----	.660	6.00		
	10.0 mg/L NH_3-N Std.	----	1.10	10.00		
	3.0 mg/L spike	----	.319			
	3.0 mg/L spike dupl.	----	.315			
1.	9542F	5	.578		6.4	
2.	9543F	5	.040		5.8	
3.	9544F	5	.058		5.8	
4.	9545F	5	.140		5.9	
5.	9546F	5	.079		5.8	
6.	9547F	5	.439		6.7	
7.	9548F	5	.021		5.9	
8.	9549F	5	.164		6.9	
9.	9550F	5	.100		6.0	
10.	9551F	5	.073		6.0	
11.	9552F	5	.021		6.1	
12.	9553F	5	*		*	
13.	9554F	5	.068		6.0	
14.	9555F	5	.022		6.0	
15.	9556F	5	.112		6.6	
16.	9557F	5	.020		6.7	
17.	9558F	5	.398		6.4	
18.	9559F	5	.140		6.3	
19.	9560F	5	.238		7.5	
20.	9561F	5	.023		6.8	
21.						
22.						
23.		* insufficient sample for analysis				
24.						
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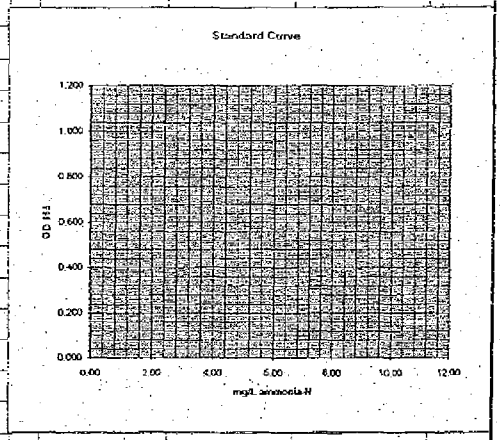

Reporting limit (mg/L) =	0.5
Recovery (%) =	#VALUE!
Precision (RPD) =	#VALUE!
Sample volume (ml):	0.10
Dilution factor	5

Sample Set Description:

Proj. No.: 686
Bulk sediment porewaters
Batch 10

Analyst: RSC
Date analysed: 10/25/2004

ANC08496
BZTO104(e)008496

Total Ammonia-N in Water: Computation Worksheet

Salicylate Method (SOP #5492)

Result

	Sample description	Dilution factor	OD_{655}	NH_3-N (mg/L)
	Blank	-----	-----	-----
	1.0 mg/L NH_3-N Std.	-----	0.089	1.00
	3.0 mg/L NH_3-N Std.	-----	0.287	3.00
	6.0 mg/L NH_3-N Std.	-----	0.545	6.00
	10.0 mg/L NH_3-N Std.	-----	0.920	10.00
	3.0 mg/L spike	-----	0.291	3.17
	3.0 mg/L spike dupl.	-----	0.305	3.32
1.	2	1	0.080	0.87
2.	6	1	0.038	0.41
3.	8	1	0.060	0.65
4.	19	1	0.015	0.16
5.	39	1	0.165	1.79
6.	45	1	0.023	0.25
7.	65	1	0.058	0.63
8.	73	1	0.086	0.94
9.	79	1	0.016	0.17
10.	86	1	0.040	0.44
11.	97	1	0.069	0.75
12.	107	1	0.037	0.40
13.	109	1	0.039	0.42
14.	110	1	0.012	0.13
15.	127	1	0.024	0.26
16.	142	1	0.057	0.62
17.	143	1	0.090	0.98
18.	146	1	0.012	0.13
19.	155	1	0.021	0.23
20.	165	1	0.075	0.82
21.	167	1	0.050	0.54
22.				
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24.				
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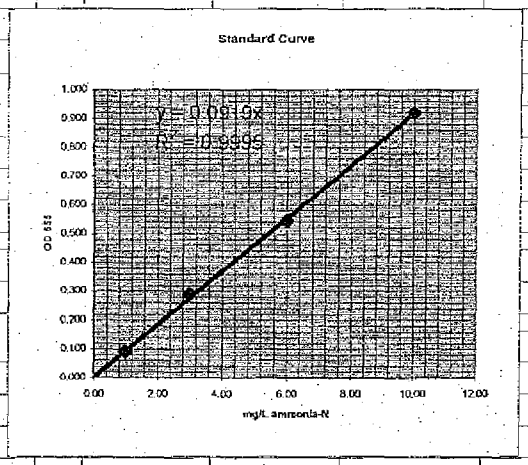

Reporting limit (mg/L) =	0.1
Recovery (%) =	108.1
Precision (RPD) =	-4.70
Sample volume (ml):	0.50
Dilution factor	1

Sample Set Description:

Test No.:	686-20
Test Day:	0 (10-26-04)
Species:	*Chironomus*
Overlying water	
Analyst:	RSC
Date analysed:	11/10/2004

Total Ammonia-N in Water: Computation Worksheet
Salicylate Method (SOP #5492)

Result

	Sample description	Dilution factor	OD655	NH_3-N (mg/L)
	Blank	-----	-----	-----
	1.0 mg/L NH_3-N Std.	-----	.089	1.00
	3.0 mg/L NH_3-N Std.	-----	.287	3.00
	6.0 mg/L NH_3-N Std.	-----	.545	6.00
	10.0 mg/L NH_3-N Std.	-----	.920	10.00
	3.0 mg/L spike	-----	.291	
	3.0 mg/L spike dupl.	-----	.305	
1.	2	1	.080	
2.	6	1	.038	
3.	8	1	.308	
4.	19	1	.075	
5.	39	1	.165	
6.	45	1	.023	
7.	65	1	.058	
8.	73	1	.082	
9.	79	1	.016	
10.	86	1	.040	
11.	97	1	.069	
12.	107	1	.037	
13.	109	1	.039	
14.	110	1	.012	
15.	127	1	.024	
16.	142	1	.057	
17.	143	1	.040	
18.	146	1	.012	
19.	155	1	.021	
20.	165	1	.075	
21.	167	1	.050	
22.				
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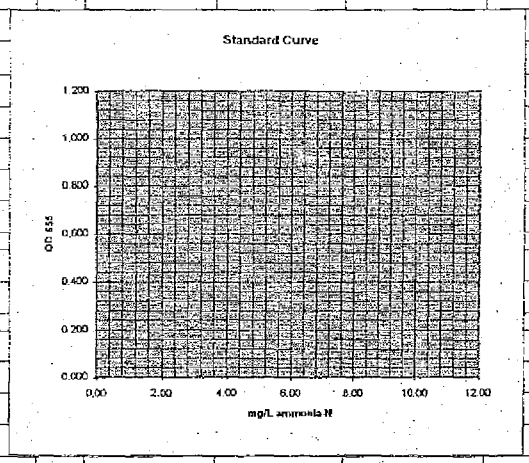

Reporting limit (mg/L) =	0.1
Recovery (%) =	#VALUE!
Precision (RPD) =	#VALUE!
Sample volume (ml):	0.50
Dilution factor	1

Sample Set Description:

Test No.:	686-20
Test Day:	0 (10-26-04)
Species:	*Chironomus*
Overlying water	
Analyst:	RSC
Date analysed:	11/10/2004

Total Ammonia-N in Water: Computation Worksheet

Salicylate Method (SOP #5492)

Result

	Sample description	Dilution factor	OD_{655}	NH_3-N (mg/L)
	Blank	-----	-----	-----
	1.0 mg/L NH_3-N Std.	-----	0.089	1.00
	3.0 mg/L NH_3-N Std.	-----	0.287	3.00
	6.0 mg/L NH_3-N Std.	-----	0.545	6.00
	10.0 mg/L NH_3-N Std.	-----	0.920	10.00
	3.0 mg/L spike	-----	0.291	3.17
	3.0 mg/L spike dupl.	-----	0.305	3.32
1.	2	1	0.040	0.44
2.	6	1	0.038	0.41
3.	8	1	0.048	0.52
4.	19	1	0.045	0.49
5.	39	1	0.052	0.57
6.	45	1	0.020	0.22
7.	65	1	0.041	0.45
8.	73	1	0.063	0.69
9.	79	1	0.061	0.66
10.	86	1	0.030	0.33
11.	97	1	0.042	0.46
12.	107	1	0.032	0.35
13.	109	1	0.033	0.36
14.	110	1	0.018	0.20
15.	127	1	0.031	0.34
16.	142	1	0.055	0.60
17.	143	1	0.048	0.52
18.	146	1	0.088	0.96
19.	155	1	0.019	0.21
20.	165	1	0.032	0.35
21.	167	1	0.030	0.33
22.				
23.				
24.				
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34.				
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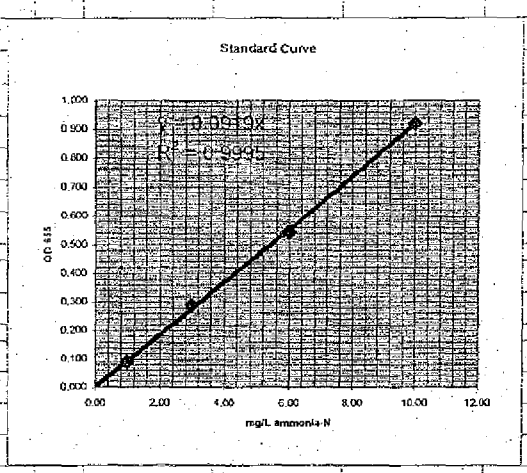

Reporting limit (mg/L) =	0.1
Recovery (%) =	108.1
Precision (RPD) =	-4.70
Sample volume (ml):	0.50
Dilution factor	1

Sample Set Description:

Test No.:	686-20
Test Day:	10 (11-5-04)
Species:	*Chironomus*
Overlying water	
Analyst:	RSC
Date analysed:	11/10/2004

Total Ammonia-N in Water: Computation Worksheet

Salicylate Method (SOP #5492)

Result

	Sample description	Dilution factor	OD655	NH_3-N (mg/L)
	Blank	-----	-----	-----
	1.0 mg/L NH_3-N Std.	-----	.089	1.00
	3.0 mg/L NH_3-N Std.	-----	.287	3.00
	6.0 mg/L NH_3-N Std.	-----	.545	6.00
	10.0 mg/L NH_3-N Std.	-----	.920	10.00
	3.0 mg/L spike	-----	.290	
	3.0 mg/L spike dupl.	-----	.305	
1.	2	1	.040	
2.	6	1	.038	
3.	8	1	.048	
4.	19	1	.045	
5.	39	1	.052	
6.	45	1	.020	
7.	65	1	.041	
8.	73	1	.063	
9.	79	1	.061	
10.	86	1	.030	
11.	97	1	.042	
12.	107	1	.032	
13.	109	1	.033	
14.	110	1	.018	
15.	127	1	.031	
16.	142	1	.055	
17.	143	1	.048	
18.	146	1	.054	
19.	155	1	.019	
20.	165	1	.032	
21.	167	1	.030	
22.				
23.				
24.				
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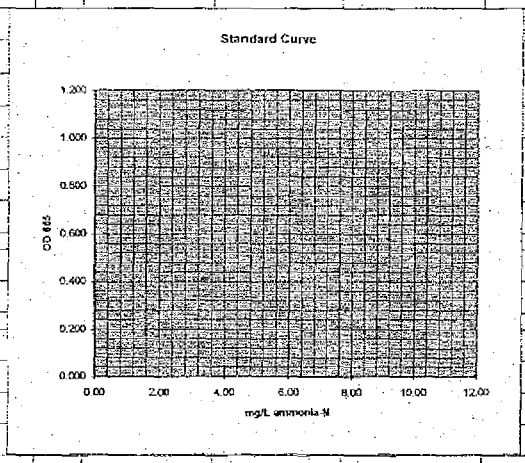
35.				
36.				



Reporting limit (mg/L) =	0.1
Recovery (%) =	#VALUE!
Precision (RPD) =	#VALUE!
Sample volume (ml):	0.50
Dilution factor	1

Sample Set Description:

Test No.:	686-20
Test Day:	10 (11-5-04)
Species:	*Chironomus*
Overlying water	
Analyst:	RSC
Date analysed:	11/10/2004

ANC08500
BZTO104(e)008500

CHAIN-OF-CUSTODY RECORDS

Windward Environmental

CHAIN-OF-CUSTODY/TEST REQUEST FORM

1334

Project/Client Name: PORTLAND HARBOR RI/FS ROUND 2
Windward Project No: 03.28.04.28
Contact Name: HELLE ANDERSEN
Sampled By: THAI DO

Ship to: NORTHWESTERN AQUATIC SCIENCES
Attn: GERALD IRISSARRI
Shipping address: NEWPORT, OR

Shipping Date: HAND DELIVERED
Airbill Number:

Sample Collection Date (m/d/y)	Time	Sample Identification	Volume of Sample / # of Containers	Matrix	Test(s) Requested (check test(s) required)							Comments / Instructions (Jar tag number(s))
					10-d. Chir.	28-d. Hyal.		Temp °C (water)				
10.21.2004	13:43	LWZ-G210	4L/4	SEDIMENT	X	X		3.0				9542F
10.21.2004	14:09	LWZ-G213	4L/4	SEDIMENT	X	X		3.0				9543F
10.21.2004	14:35	LWZ-G200	4L/4	SEDIMENT	X	X		3.0				9544F
10.21.2004	16:12	LWZ-G093	4L/4	SEDIMENT	X	X		3.0				9545F
10.21.2004	17:40	LWZ-G206	4L/4	SEDIMENT	X	X		4.0				9546F
10.22.2004	08:53	LWZ-G362-1	4L/4	SEDIMENT	X	X		4.0				9547F
10.22.2004	09:28	LWZ-G413	4L/4	SEDIMENT	X	X		4.0				9548F
10.22.2004	09:51	LWZ-G393	4L/4	SEDIMENT	X	X		3.0				9549F
10.22.2004	10:22	LWZ-G417	4L/4	SEDIMENT	X	X		3.0				9550F
10.22.2004	10:45	LWZ-G415	4L/4	SEDIMENT	X	X		3.0				9551F
10.22.2004	11:31	LWZ-G380	4L/4	SEDIMENT	X	X		3.0				9552F
10.22.2004	12:05	LWZ-G430	4L/4	SEDIMENT	X	X		3.0				9553F
10.22.2004	13:20	LWZ-G437	4L/4	SEDIMENT	X	X		3.0				9554F
		Total Number of Containers	52/80	Purchase Order / Statement of Work #								

1) Released by:	1) Rec'd by:	2) Released by:	1) Rec'd by:
Print name: THAI DO	Gary A Burbee	Print name:	
Signature:	Signature:	Signature:	
Company: WINDWARD ENVIRONMENTAL LLC	Company: Northwestern Aquatic	Company:	Company:
Date/Time: 10.23.2004/09:35	Date/Time: 10/23/04 0935	Date/Time:	Date/Time:

* Distribution: White and yellow copies accompany shipment; pink-consignor's copy; white-consignee return with results; yellow-consignee's copy.
* Instructions for completion of Chain-of-Custody/Test Request Form on back.

Wind Ward environmental LLC
• 200 West Mercer Street
Suite 401
Seattle, WA 98119
Tel: 206.378.1364
Fax: 206.217.0089

To be completed by Laboratory upon sample receipt:

Date of receipt: 10/23/04	Laboratory W.O.#:
Condition upon receipt: Intact	Time of receipt: 0935
Cooler temperature: 2.0-4.0°C	Received by: Gary A Burbee

ANC08502
BZTO104(e)008502

Windward Environmental

CHAIN-OF-CUSTODY/TEST REQUEST FORM

1335

Project/Client Name: PORTLAND HARBOR RI/FS ROUND 2
Windward Project No: 03.28.04.28
Contact Name: HELLE ANDERSEN
Sampled By: THAI DO

Ship to: NORTHWESTERN AQUATIC SCIENCES
Attn: GERALD IRISSARRI
Shipping address: NEWPORT, OR

Shipping Date: HAND DELIVERED
Airbill Number:

Sample Collection Date (m/d/y)	Time	Sample Identification	Volume of Sample / # of Containers	Matrix	Test(s) Requested (check test(s) required) 10d. chic.	28d. Hg.		Temp °C (water)				Comments / Instructions [Jar tag number(s)]
10.22.2004	13:50	LW2-G403	4L/4	SEDIMENT	x	x		3.0				9555F
10.22.2004	14:13	LW2-G401	4L/4	SEDIMENT	x	x		2.0				9556F
10.22.2004	14:44	LW2-G377	4L/4	SEDIMENT	x	x		2.0				9557F
10.22.2004	15:02	LW2-G391	4L/4	SEDIMENT	x	x		2.0				9558F
10.22.2004	15:18	LW2-G366	4L/4	SEDIMENT	x	x		3.5				9559F
10.22.2004	15:32	LW2-G351	4L/4	SEDIMENT	x	x		3.5				9560F
10.22.2004	15:53	LW2-G282	4L/4	SEDIMENT	x	x		3.5				9561F

Total Number of Containers: 28/80
Purchase Order / Statement of Work #:

1) Released by:	1) Rec'd by:	2) Released by	1) Rec'd by:
Print name: THAI DO	Gary A Burlew	Print name:	
Signature:	Company: Northwestern Aquatic	Signature:	Company:
Company: WINDWARD ENVIRONMENTAL LLC	Date/Time: 10/23/04 0935	Company:	Date/Time:
Date/Time: 10.23.2004/09:35		Date/Time:	

* Distribution: White and yellow copies accompany shipment; pink-consignor's copy; white-consignee return with results; yellow-consignee's copy.
* Instructions for completion of Chain-of-Custody/Test Request Form on back.

To be completed by Laboratory upon sample receipt:

Date of receipt: 10/23/04	Laboratory W.O. #
Condition upon receipt: Intact	Time of receipt: 0935
Cooler temperature: 2.0-4.0°C	Received by: Gary A Burlew

Wind Ward environmental LLC
200 West Mercer Street
Suite 401
Seattle, WA 98119
Tel: 206.378.1364
Fax: 206.217.0089

ANC08503
BZTO104(e)008503

APPENDIX II

RAW DATA – REFERENCE TOXICANT TEST

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-

ACUTE TOXICITY TEST (ALL SPECIES)

REVIEWED PAGES 1-7 -GJI

Test No. 999-1856 Client: QC Test Investigator

Test Type (rangefinding/definitive) Test Length (hr) 96

Species *Chironomus tentans*

STUDY MANAGEMENT

Client: QC test

Client's Study Monitor: QC test

Testing Laboratory: Northwestern Aquatic Sciences

Test Location: Newport Laboratory

Laboratory's Study Personnel:

Proj. Man./Study Dir. G.J. Irissarri GJI

QA Officer L. K. Nemeth LKN

1. GAB GAB 2. M.S. Redmond MSR

3. 4.

Study Schedule:

Test Beginning: 10-26-04 1200 Test Ending: 10-30-04 1130

TEST MATERIAL

Description: Potassium Chloride Crystals - Lot No.: Fisher 024965A

NAS Sample No.				
Date of Collection:				
Date of Receipt:				
Temperature (deg C):				
Dissolved oxygen (mg/L):				
pH:				
Conductivity (umhos/cm):				
Hardness (mg/L):				
Alkalinity (mg/L):				
Salinity (ppt):				
Total chlorine (mg/L):				
Total ammonia-N (mg/L):				
:				

DILUTION WATER

Description: Moderately hard synthetic water

Date of Preparation/Collection: 10-5-04

Water Quality: Cond. (umhos/cm): 320 Salinity (ppt) — pH 7.5

Hardness (mg/L as $CaCO_3$): 85 Alkalinity (mg/L as $CaCO_3$): 80

Treatments: Aerated ≥ 24 hrs

AGE OF DILUTION WATER EXCEEDS EPA SPECIFICATIONS.

TEST LOCATION

Test conducted in (circle one): room 1 (room 2) trailer water bath other:

Randomization chart:

10	5	1.25	5	2.5	5	1.25	7.5	20	1.25
2.5	1.25	10	20	Ø	20	10	5	1.5	Ø
5	10	Ø	2.5	10	1.25	Ø	20	2.5	10
20	2.5	5	10	5	2.5	5	Ø	10	2.5
1.25	Ø	20	1.25	20	Ø	20	10	Ø	5
Ø	20	2.5	Ø	1.25	10	2.5	1.25	5	20

Error codes: 1) Correction of handwriting error
2) Written in wrong location; entry deleted
3) Wrong date deleted; replaced with correct date
4) Error found in measurement; measurement repeated

ANC08505
BZTO104(e)008505

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-_____

ACUTE TOXICITY TEST (ALL SPECIES)

Test No. 999-1856 Client QC Test Investigator _____

TEST ORGANISMS

Species: *Chironomus tentans* Age: — Size: 3rd instar

Source: NAS cultures Date received: —

Acclimation Data:

Date	Temp. (deg.C)	DO (mg/L)	pH	Cond. umhos/cm	Hardness (mg/L)	Alkalinity (mg/L)	Feeding Amount	Feeding description*	Water changes
10-18-04	23.5	7.2	7.3	340	—	—	ANIMALS FED		CULTURE
10-19-04	23.5	8.4	7.4	280	85	80	TETRA FIN AND		TANKS
10-20-04	22.5	8.2	7.4	300	102	90	SELENASTRUM		CHANGED
10-22-04	23.4	8.6	7.6	320	—	—			TWICE
10-25-04	24.1	6.0	6.9	310	—	—	DETAILS RECORDED		WEEKLY
10-26-04	21.9	8.6	7.5	275	77	70	IN CHIRONOMID		
Mean	23.2	7.8	7.4	304	88	77	CULTURE DATA		
S.D.	0.8	1.0	0.2	25	13	6	SHEET.		
(N)	6	6	6	6	3	3			

Photoperiod during acclimation: 16L : 8D *S=*Selenastrum*, T=Tetra Fin suspension

TEST PROCEDURES AND CONDITIONS

Test concentrations (50% series recommended): 20, 10, 5, 2.5, 1.25, 0 g/L

Test chamber: 30 ml plastic cups Test volume: 20 ml

Replicates/treatment: 10 Organisms/treatment: 10 (1/rep)

Test water changes: None Aeration during test: None

Feeding: 0.25 ml Prime Tropical Flakes (4g/L) suspension per cup on days 0 and 2

Duration: 24-hr, 48-hr, (96-hr) Test temperature (deg.C): 23 ± 1

Beaker placement: Stratified randomization Photoperiod: 16:8, L:D

MISCELLANEOUS NOTES

Test solution preparation:

Working stock: Dissolve 10g KCl crystals in dilution water and dilute to 500 mL.
Final conc.: 20 g/L.

Test concentration (g/L)	KCl working stock (ml/200ml)	ml of dilution water per 200 ml
20	200	0
10	100	100
5	50	150
2.5	25	175
1.25	12.5	187.5
0	0	0

BB 10-26-04

ANC08506
BZTO104(e)008506

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-_____

ACUTE TOXICITY TEST (ALL SPECIES)

Test No. 999-1856 Client _____ QC Test

DAILY RECORD SHEET

Day 0 (10/26/04) MB Temp Beaker (°C): 22.8

Conc. (g/L)	Temp. (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	Comments
1. 20	23.0	8.4	>20,000	7.7	85	70	
2. 10	23.0	8.5	14,600	7.7			
3. 5	23.0	8.6	7,950	7.6			
4. 2.5	23.0	8.6	4,250	7.6			
5. 1.25	22.8	8.6	2,400	7.4			
6. 0	22.8	8.7	280	7.5	85	70	
All animals fed 0.25 ml Prime Tropical Flakes suspension. Initials: MB							

Day 1 (10/27/04) MB/MB Temp Beaker (°C): 23.5

Conc. (g/L)	Temp. (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	Comments
1. 20							
2. 10							
3. 5							
4. 2.5							
5. 1.25							
6. 0							

Day 2 (10/28/04) MB Temp Beaker (°C): 23.4

Conc. (g/L)	Temp. (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	Comments
1. 20							
2. 10							
3. 5							
4. 2.5							
5. 1.25							
6. 0							
All animals fed 0.25 ml Prime Tropical Flakes suspension. Initials: MB							

Day 3 (10/29/04) MB Temp Beaker (°C): 23.6

Conc. (g/L)	Temp. (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	Comments
1. 20							
2. 10							
3. 5							
4. 2.5							
5. 1.25							
6. 0							

Day 4 (10/30/04) MB Temp Beaker (°C): 23.3

Conc. (g/L)	Temp. (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	Comments
1. 20	—	—	—	—	—	—	
2. 10	—	—	—	—			
3. 5	23.5	7.3	8070	7.7			
4. 2.5	23.5	7.6	4,860	7.7			
5. 1.25	23.6	7.5	2450	7.6			
6. 0	23.7	7.7	320	7.6	85	70	
Mean	23.2	8.2	300 (control)	7.6	85	70	
SD	0.3	0.6	-	0.1	0	0	
n	10	10	2	10	3	3	

ANC08507
BZTO104(e)008507

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-_____

ACUTE TOXICITY TEST (ALL SPECIES)

Test No.999-1856 Client QC Test Investigator _____

DAILY RECORD SHEET - Survivors

Day 0 (10/26/04) dB

Conc. (g/L)	Survivors in Replicate: 1	2	3	4	5	6	7	8	9	10	Total
1. 20	1	1	1	1	1	1	1	1	1	1	10
2. 10	1	1	1	1	1	1	1	1	1	1	10
3. 5	1	1	1	1	1	1	1	1	1	1	10
4. 2.5	1	1	1	1	1	1	1	1	1	1	10
5. 1.25	1	1	1	1	1	1	1	1	1	1	10
6. 0	1	1	1	1	1	1	1	1	1	1	10

Day 1 (10/27/04) dB

Conc. (g/L)	Survivors in Replicate: 1	2	3	4	5	6	7	8	9	10	Total
1. 20	1	1	1	1	1	1	1	1	1	1	10
2. 10	1	1	1	1	1	1	1	1	1	1	10
3. 5	1	1	1	1	1	1	1	1	1	1	10
4. 2.5	1	1	1	1	1	1	1	1	1	1	10
5. 1.25	1	1	1	1	1	1	1	1	1	1	10
6. 0	1	1	1	1	1	1	1	1	1	1	10

Day 2 (10/28/04) dB

Conc. (g/L)	Survivors in Replicate: 1	2	3	4	5	6	7	8	9	10	Total
1. 20	X	X	X	X	X	X	X	X	X	X	0
2. 10	X	1	1	X	X	1	X	1	1	1	6
3. 5	1	1	1	1	1	X	1	1	1	1	9
4. 2.5	1	1	1	1	1	1	1	X	1	1	9
5. 1.25	1	1	1	1	1	1	1	1	1	1	10
6. 0	1	1	1	1	1	1	1	1	1	1	10

Day 3 (10/29/04) dB

Conc. (g/L)	Survivors in Replicate: 1	2	3	4	5	6	7	8	9	10	Total
1. 20	X	X	X	X	X	X	X	X	X	X	0
2. 10	X	X	X	X	X	X	X	X	X	X	0
3. 5	X	1	1	1	1	X	1	1	X	X	6
4. 2.5	1	1	1	1	1	1	1	X	1	1	9
5. 1.25	1	1	1	1	1	1	1	1	1	1	10
6. 0	1	1	1	1	1	1	1	1	1	1	10

Day 4 (10/30/04) dB

Conc. (g/L)	Survivors in Replicate: 1	2	3	4	5	6	7	8	9	10	Total
1. 20	X	X	X	X	X	X	X	X	X	X	0
2. 10	X	X	X	X	X	X	X	X	X	X	0
3. 5	X	X	1	1	1	X	1	1	X	X	5
4. 2.5	1	1	1	1	1	1	1	X	1	1	9
5. 1.25	1	1	1	1	1	1	1	1	1	1	10
6. 0	1	1	1	1	1	1	1	1	1	1	10

ANC08508
BZTO104(e)008508

Acute 96-hr Toxicity Test-96 Hr Survival

Start Date:	10/26/04 12:00	Test ID:	999-1856	Sample ID:	REF-Ref Toxicant
End Date:	10/30/04 11:30	Lab ID:	ORNAS-Northwestern Aquati	Sample Type:	KCL-Potassium chloride
Sample Date:		Protocol:	EPAF 91-EPA Freshwater	Test Species:	CT-Chironomus tentans
Comments:					

Conc-gm/L	1
D-Control	1.0000
1.25	1.0000
2.5	0.9000
5	0.5000
10	0.0000
20	0.0000

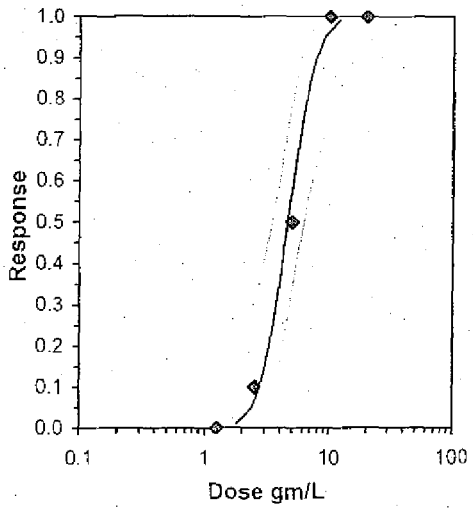
Conc-gm/L	Mean	N-Mean	Resp	Not Resp	Total	N	Fisher's Exact P	1-Tailed Critical	Number Resp	Total Number
D-Control	1.0000	1.0000	0	10	10	1			0	10
1.25	1.0000	1.0000	0	10	10	1	1.0000	0.0500	0	10
2.5	0.9000	0.9000	1	9	10	1	0.5000	0.0500	1	10
*5	0.5000	0.5000	5	5	10	1	0.0163	0.0500	5	10
10	0.0000	0.0000	10	0	10	1			10	10
20	0.0000	0.0000	10	0	10	1			10	10

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU
Fisher's Exact Test	2.5	5	3.53553	

Maximum Likelihood-Probit

Parameter	Value	SE	95% Fiducial Limits		Control	Chi-Sq	Critical	P-value	Mu	Sigma	Iter
Slope	5.69191	1.58291	2.5894	8.79442	0	0.75416	7.81472	0.86	0.66221	0.17569	5
Intercept	1.23077	1.09183	-0.9092	3.37076							
TSCR											

Point	Probits	gm/L	95% Fiducial Limits	
EC01	2.674	1.79266	0.54956	2.64162
EC05	3.355	2.36171	0.98685	3.22343
EC10	3.718	2.73561	1.33892	3.60934
EC15	3.964	3.02078	1.63689	3.91468
EC20	4.158	3.26848	1.91218	4.19347
EC25	4.326	3.4971	2.17594	4.46688
EC40	4.747	4.14666	2.93771	5.37243
EC50	5.000	4.59418	3.43444	6.15136
EC60	5.253	5.09	3.9306	7.19477
EC75	5.674	6.03542	4.72476	9.71906
EC80	5.842	6.45759	5.03208	11.0613
EC85	6.036	6.9871	5.38976	12.9232
EC90	6.282	7.71545	5.84505	15.801
EC95	6.645	8.93694	6.54413	21.4405
EC99	7.326	11.7739	7.98464	38.5044



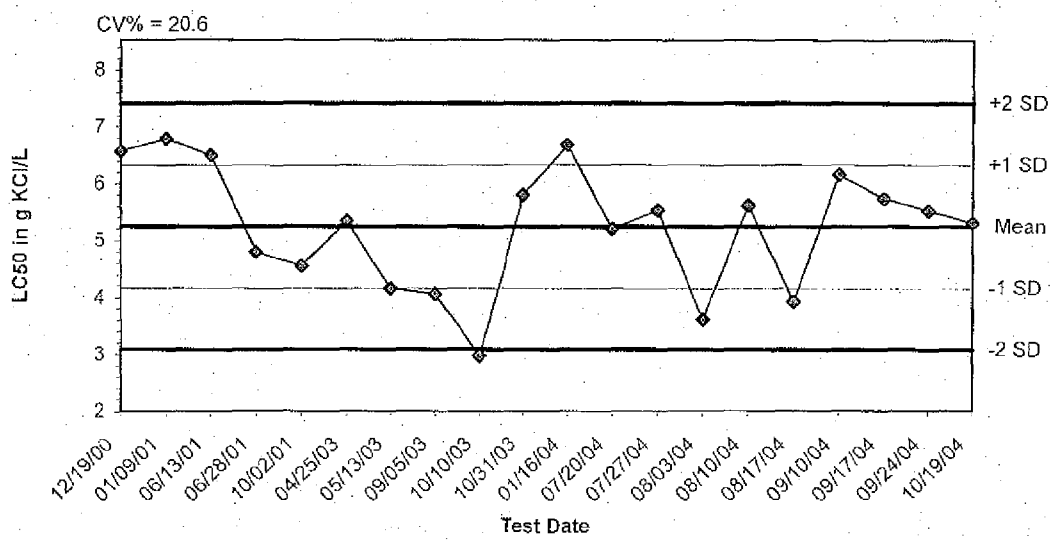
ANC08509
BZTO104(e)008509

Test: AT-Acute 96-hr Toxicity Test							Test ID: 999-1856		
Species: CT-Chironomus tentans							Protocol: EPAF 91-EPA Freshwater		
Sample ID: REF-Ref Toxicant							Sample Type: KCL-Potassium chloride		
Start Date: 10/26/04 12:00			End Date: 10/30/04 11:30				Lab ID: ORNAS-Northwestern Aquatic Sciences		
Pos	ID	Rep	Group	Start	24 Hr	48 Hr	72 Hr	96 Hr	Notes
	1	1	D-Control	10				10	
	2	1	1.250	10				10	
	3	1	2.500	10				9	
	4	1	5.000	10				5	
	5	1	10.000	10				0	
	6	1	20.000	10				0	

Comments: Data entry verified against laboratory bench sheets
MLK 11-10-04

ANC08510
BZTO104(e)008510

Chironomus tentans 96-hr reference toxicant test - last 20 points



Dates	Values	Mean	-1 SD	-2 SD	+1 SD	+2 SD
12/19/00	6.5700	5.2420	4.1608	3.0796	6.3232	7.4044
01/09/01	6.7900	5.2420	4.1608	3.0796	6.3232	7.4044
06/13/01	6.4900	5.2420	4.1608	3.0796	6.3232	7.4044
06/28/01	4.8000	5.2420	4.1608	3.0796	6.3232	7.4044
10/02/01	4.5500	5.2420	4.1608	3.0796	6.3232	7.4044
04/25/03	5.3400	5.2420	4.1608	3.0796	6.3232	7.4044
05/13/03	4.1600	5.2420	4.1608	3.0796	6.3232	7.4044
09/05/03	4.0600	5.2420	4.1608	3.0796	6.3232	7.4044
10/10/03	2.9800	5.2420	4.1608	3.0796	6.3232	7.4044
10/31/03	5.8000	5.2420	4.1608	3.0796	6.3232	7.4044
01/16/04	6.6800	5.2420	4.1608	3.0796	6.3232	7.4044
07/20/04	5.2000	5.2420	4.1608	3.0796	6.3232	7.4044
07/27/04	5.5300	5.2420	4.1608	3.0796	6.3232	7.4044
08/03/04	3.6200	5.2420	4.1608	3.0796	6.3232	7.4044
08/10/04	5.6100	5.2420	4.1608	3.0796	6.3232	7.4044
08/17/04	3.9300	5.2420	4.1608	3.0796	6.3232	7.4044
09/10/04	6.1600	5.2420	4.1608	3.0796	6.3232	7.4044
09/17/04	5.7400	5.2420	4.1608	3.0796	6.3232	7.4044
09/24/04	5.5200	5.2420	4.1608	3.0796	6.3232	7.4044
10/19/04	5.3100	5.2420	4.1608	3.0796	6.3232	7.4044

MSR
10-26-04

ANC08511
BZTO104(e)008511

Report

of

Test No. 686-21

Toxicity of Portland Harbor RI/FS Freshwater Test Sediments (Batch 11) using a 28-day Amphipod, *Hyalella azteca*, Sediment Bioassay

Submitted to

Windward Environmental, Inc.
200 West Mercer Street, Suite 401
Seattle, WA 98119

Submitted by

Northwestern Aquatic Sciences
3814 Yaquina Bay Road
P.O. Box 1437
Newport, OR 97365

January 19, 2005

ANC08512
BZTO104(e)008512

TOXICITY TEST REPORT

TEST IDENTIFICATION

Test No.: 686-21

Title: Toxicity of Portland Harbor RI/FS freshwater test sediments (Batch 11) using a 28-day amphipod, *Hyalella azteca*, sediment bioassay.

Protocol No.: NAS-686-HA4c, June 24, 2004. Based on ASTM Method E 1706-00 (ASTM 2003) and EPA Method 100.4 (EPA/600/R-99/064, 2000). This protocol can be found in Appendix B of the Portland Harbor RI/FS Round 2 Quality Assurance Project Plan, June 24, 2004.

STUDY MANAGEMENT

Study Sponsor: Windward Environmental, Inc., 200 West Mercer Street, Suite 401, Seattle, WA 98119.

Sponsor's Study Monitor: Ms. Helle Andersen

Testing Laboratory: Northwestern Aquatic Sciences, P.O. Box 1437, Newport, OR 97365.

Test Location: Newport laboratory

Laboratory's Study Personnel: G.J. Irissarri, B.S., Proj. Man./Study Dir.; L.K. Nemeth, M.B.A., QA Officer; R.S. Caldwell, Ph.D., Sr. Toxicol.; M.S. Redmond, M.S., Aq. Toxicol.; G.A. Buhler, B.S., Aq. Toxicol.; W.T. Montgomery, A.A., Sr. Tech.; G. Hayes, B.S., Tech.; S.J. Gage, B.A., Tech.; B.B. Pridgeon, Lab Asst.

Study Schedule:

Test Beginning: 11-2-04, 1330 hrs.

Test Ending: 11-30-04, 1030 hrs.

Disposition of Study Records: All specimens, raw data, reports and other study records are stored according to Good Laboratory Practice regulations at Northwestern Aquatic Sciences, 3814 Yaquina Bay Rd., Newport, OR 97365.

Good Laboratory Practices: The test was conducted following the principles of Good Laboratory Practices (GLP) as defined in the EPA/TSCA Good Laboratory Practice regulations revised August 17, 1989 (40 CFR Part 792).

Statement of Quality Assurance: The test data were reviewed by the Quality Assurance Unit to assure that the study was performed in accordance with the protocol and standard operating procedures. This report is an accurate reflection of the raw data.

TEST MATERIAL

Test Sediments: Portland Harbor RI/FS freshwater test sediments (Batch 11). Details are as follows:

NAS Sample No.	9577F	9578F	9579F	9580F	9581F
Description	LW2-G360	LW2-G212	LW2-G296	LW2-G205	LW2-G274
Collection Date	10/28/04	10/28/04	10/28/04	10/29/04	10/29/04
Receipt Date	10/30/04	10/30/04	10/30/04	10/30/04	10/30/04

NAS Sample No.	9582F	9583F	9584F	9585F	9586F
Description	LW2-G303	LW2-G376	LW2-G385	LW2-G367	LW2-G408
Collection Date	10/29/04	10/29/04	10/29/04	10/29/04	10/29/04
Receipt Date	10/30/04	10/30/04	10/30/04	10/30/04	10/30/04

NAS Sample No.	9587F	9588F	9589F
Description	LW2-G416	LW2-G355	LW2-G389
Collection Date	10/29/04	10/29/04	10/29/04
Receipt Date	10/30/04	10/30/04	10/30/04

Control Sediment: The negative control sediment (NAS#9574F) was collected on 10-28-04 from an area approximately one mile east of the Hwy. 101 bridge at Beaver Creek, approx. 8 miles south of Newport, OR.

Treatments: Homogenized at test set up by mixing using stainless steel implements.

Storage: All test and control sediments were stored at 4°C in the dark in capped containers until used.

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Means and standard deviations for the biological endpoints described above, and for water quality data, were computed using Microsoft Excel 2000.

PROTOCOL DEVIATIONS

None

REFERENCE TOXICANT TEST

The reference toxicant test is a multi-concentration toxicity test using cadmium chloride, to evaluate the performance of the test organisms used in the sediment toxicity test. The performance is evaluated by comparing the results of this test with historical results obtained at the laboratory. A summary of the reference toxicant test result is given below. The reference toxicant test raw data are found in Appendix II.

Test No.: 999- 1862
Reference Toxicant and Source: Cadmium as $CdCl_2 \bullet 2½ H_2O$, Mallinckrodt Lot #TNZ, 1.0 mg/ml stock prepared 7-13-04.
Test Date: 11-2-04.
Dilution Water Used: Moderately hard synthetic water prepared from Milli-Q® deionized water.
Result: 96-hr LC50, 5.30 µg/L. This result is within the laboratory's control chart warning limits (3.38 – 12.0 µg/L).

TEST RESULTS

Observations of water quality in the overlying water throughout the test are summarized in Table 1. A detailed tabulation of the water quality results by sample and test day can be found in Appendix I. Interstitial ammonia measurements and pH for bulk sediments are listed in Table 2. The means and standard deviations of percent mortality of *Hyalella* exposed for 28 days to sediments, and the growth measured as dry weight are summarized in Table 3. Detailed data organized by sample and replicate, and summary statistics for these observations, are given in Appendix I.

All water quality observations of overlying water temperature and dissolved oxygen were within the protocol specified ranges. For one sample, LW2-G360, conductivity in the overlying water was initially very much higher than for other samples resulting in a high range of observed conductivities, Table 1. Ammonia-N in the overlying water ranged from <0.1 to 2.8 mg/L in all day 0 and day 28 observations. Interstitial bulk sediment values for ammonia-N ranged from 1.2 to 26.2 mg/L.

The test met the acceptability criteria specified in the test protocol with 93.8% control survival (≥80% required). The reference toxicant (positive control) result was within the laboratory's control chart limits (5.30 µg/L; control chart mean ± 2 S.D. = 7.69 ± 4.31). It is concluded, therefore, that the test has developed fully acceptable data for use in making management decisions.

REFERENCES

ASTM. 2003. Standard Test Methods for Measuring the Toxicity of Sediment-Associated Contaminants with Fresh Water Invertebrates. ASTM Standard Method No. E 1706-00. Am. Soc. Test. Mat., West Conshohocken, PA.

U.S. EPA. 2000. Section 11, Test Method 100.1, *Hyalella azteca* 10-d Survival and Growth Test for Sediments, pp 47-54 In: Methods for Measuring the Toxicity and Bioaccumulation of Sediment-associated Contaminants with Freshwater Invertebrates (Second Edition). EPA/600/R-99/064.

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STUDY APPROVAL

Gerald Amirsani 1-21-05
Project Manager/Study Director Date

Lindi K. Nemeth 1/20/05
Quality Assurance Unit Date

Richard S. Caldwell 1/21/05
Laboratory Director Date

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Table 1. Summary of water quality conditions during tests of the amphipod, *Hyalella azteca*, exposed to freshwater sediments.

Water Quality Parameter	Mean ± S.D.	Minimum	Maximum	N
Temperature (°C)	22.4 ± 0.2	22.0	23.0	406
Dissolved oxygen (mg/L)	6.3 ± 0.6	5.0	7.5	196
Conductivity (µmhos/cm)	216 ± 349	145	3010	84
pH	6.6 ± 0.2	6.2	7.0	182
Hardness (mg/L as $CaCO_3$)	42 ± 15	26	111	28
Alkalinity (mg/L as $CaCO_3$)	41 ± 6	30	70	28
Total ammonia (mg/L)	---	<0.1	2.8	28

Table 2. Pore water ammonia-N and pH in bulk test sediments at the time of test setup.

NAS Sample No.	Sample Description	Ammonia (mg/L)	pH
9574F	Control	2.4	6.5
9577F	LW2-G360	26.2	6.7
9578F	LW2-G212	6.7	5.9
9579F	LW2-G296	1.2	7.0
9580F	LW2-G205	2.7	6.6
9581F	LW2-G274	2.2	6.5
9582F	LW2-G303	1.5	6.6
9583F	LW2-G376	3.5	6.6
9584F	LW2-G385	9.5	7.0
9585F	LW2-G367	2.1	5.9
9586F	LW2-G408	8.5	6.2
9587F	LW2-G416	4.6	6.2
9588F	LW2-G355	9.5	6.6
9589F	LW2-G389	1.6	6.6

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Table 3. Mortality and growth results of *Hyalella* 28-day sediment toxicity test

NAS Sample No.	Sample Description	Average Percent mortality (Mean ± SD)	Average dry wt/amphipod (mg) (Mean ± SD)
9574F	Control	5.0 ± 7.6	0.43 ± 0.04
9577F	LW2-G360	43.8 ± 20.7	0.42 ± 0.09
9578F	LW2-G212	5.0 ± 7.6	0.32 ± 0.09
9579F	LW2-G296	6.3 ± 7.4	0.24 ± 0.09
9580F	LW2-G205	3.8 ± 5.2	0.31 ± 0.08
9581F	LW2-G274	83.8 ± 22.0	0.40± 0.16
9582F	LW2-G303	11.3 ± 8.3	0.29 ± 0.03
9583F	LW2-G376	3.8 ± 5.2	0.31 ± 0.05
9584F	LW2-G385	7.5 ± 7.1	0.35 ± 0.04
9585F	LW2-G367	3.8 ± 7.4	0.36 ± 0.03
9586F	LW2-G408	12.5 ± 13.9	0.37 ± 0.07
9587F	LW2-G416	5.0 ± 10.7	0.27 ± 0.07
9588F	LW2-G355	3.8 ± 5.2	0.36 ± 0.07
9589F	LW2-G389	15.0 ± 18.5	0.37 ± 0.06

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APPENDIX I

RAW DATA

TEST DESCRIPTION, MONITORING, AND RESULTS BENCHSHEETS

'ESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

686-21 Client Windward Environmental Investigator

STUDY MANAGEMENT

Client: Windward Enviromental, 200 West Mercer Street, Suite 401, Seattle, WA 98119

Client's Study Monitor: Ms. Helle Anderson GJI

Testing Laboratory: Northwestern Aquatic Sciences

Test Location: Newport Laboratory

Laboratory's Study Personnel:

Proj. Man./Study Dir. G.J. Irissarri GJI

QA Officer L.K. Nemeth LN

1. GA Bahler GB
2. Susan Gage SG
3. G.C. Hayes GCH
4. BB. Pridgeon BBP
5. M.S. Redmond MR
6. William T. Montgomery WTM
7. R.S. Caldwell RSC
8.

Study Schedule:

Test Beginning: 11-2-04 1330 Test Ending: 11-30-04 1030

TEST MATERIAL

General description (see sample logbook/chain-of-custody for details):

NAS Sample No.:	9574F	9577F	9578F	9579F	9580F
Description:	control	LW2-G360	LW2-G212	LW2-G296	LW2-G205
Collection Date:	10/28/04	10/28/04	10/28/04	10/28/04	10/29/04
Receipt Date:	10/28/04	10/30/04	10/30/04	10/30/04	10/30/04

NAS Sample No.:	9581F	9582F	9583F	9584F	9585F
Description:	LW2-G274	LW2-G303	LW2-376	LW2-G385	LW2-G367
Collection Date:	10/29/04	10/29/04	10/29/04	10/29/04	10/29/04
Receipt Date:	10/30/04	10/30/04	10/30/04	10/30/04	10/30/04

NAS Sample No.:	9586F	9587F	9588F	9589F	
Description:	LW2-G408	LW2-G416	LW2-G355	LW2-G389	
Collection Date:	10/29/04	10/29/04	10/29/04	10/29/04	
Receipt Date:	10/30/04	10/30/04	10/30/04	10/30/04	

NAS Sample No.:					
Description:					
Collection Date:					
Receipt Date:					

NAS Sample No.:					
Description:					
Collection Date:					
Receipt Date:					

Error codes: 1) correction of handwriting error
written in wrong location; entry deleted
wrong date deleted, replaced with corrrect date
measurement repeated

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NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c
HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-21 Client Windward Environmental Investigator

SEDIMENT DESCRIPTIONS -- SUPPLEMENTAL NOTES

Sample No.	Description
9574F	Fine black mud
9577F	Fine black mud, 1 Chironomid Found
9578F	DARK GRAY MUD W/ FINE SAND AND WOOD DEBRIS
9579F	Fine dark gray mud
9580F	Dark gray sandy mud
9581F	BLACK USANDY MUD
9582F	Gray brown fine mud
9583F	Gray brown fine mud
9584F	Dark brown fine mud
9585F	Dark gray sandy mud w/ woody debris
9586F	Gray brown fine mud
9587F	Dark brown fine mud
9588F	Dark gray sandy mud
9589F	Gray/Green clay w/ debris

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NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-21 Client Windward Environmental Investigator

TEST WATER

Source: Dechlorinated Newport, OR Tap Water

Date of Collection:

pH

Cond (umhos/cm2) (SEE NEXT PAGE)

Hardness (mg/La0

Alkalinity (mg/L)

Treatments: Aerated ≥24 hrs

TEST ORGANISMS

Species: *Hyalella azteca* Age: 7-8 DAYS Date received: 10-29-04

Source: Chesapeake Cultures, Hayes, VA

Acclimation Data:

Date	Temp. (deg.C)	DO (mg/L)	pH	Cond umhos/cm	Feeding * amount	Feeding * description	Water changes	Hardness (mg/L)	Alkalinity (mg/L)
10-29-04	19.4	>15.0	7.6	390	10 mL	YTC	50% w/ TAPWATER	154	210
10-30-04	22.8	8.6	8.1	500	"	"	"	119	180
10-31-04	22.6	8.2	8.1	340	"	"	"	68	90
11-1-04	22.4	8.6	7.6	310	"	"	"	68	70
11-2-04	22.8	7.4	7.8	210	"	"	—	60	70
Mean	22.0	9.6	7.8	350				94	124
S.D.	1.5	3.1	0.3	107				41	66
(N)	5	5	5	5				5	5

Photoperiod during acclimation: 16:8, L:D

* ANIMALS WERE DIVIDED INTO 3 PANS. FEEDING IS PER PAN

TEST PROCEDURES AND CONDITIONS

Test chambers: 300 ml glass beakers

Test volumes: 100 ml of test sediment; 275 ml total volume

Replicates/treatment: (8) 8 Organisms/treatment: (80) 80 (10/REP)

Test water changes: Twice daily

Aeration: only if DO falls below 2.5 mg/L

Feeding: everyday beginning with day zero

Test temperature (deg.C): 23

Beaker placement: Total randomization

Photoperiod: 16:8, L:D

Control Sediment:

Source: From an area approximately one mile east of the Hwy. 101 bridge at Beaver Creek, approx. 8 miles south of Newport, OR.

Date collected: 10-28-04

Sieved through 0.5 -mm screen NAS# 9574 F

Storage: 4°C in the dark in closed containers.

MISCELLANEOUS NOTES

LIGHT INTENSITY MEASUREMENTS:

	SITE A	SITE B
11-5-04	67 FT-CANDLES (721 LUX)	35 FT-CANDLES (377 LUX)
11-11-04	64 FT-CANDLES (689 LUX)	36 FT-CANDLES (388 LUX)

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NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4b

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-21 Client Windward Environmental Investigator

Test Dilution Water: Dechlorinated Newport, OR Tap Water

Date of Collection	Total Chlorine (mg/L)	Hardness (mg/L)	Alkalinity (mg/L)	Conductivity (µmhos/cm)	pH
10-30-04	<0.02	34	30	155	7.2
11-2-04	<0.02	34	30	150	7.0
11-4-04	<0.02	34	30	150	6.9
11-4-04 (2ND BATCH)	<0.02	34	30	155	6.9
11-6-04	<0.02	34	30	150	7.2
11-9-04	<0.02	34	40	155	7.1
11-10-04	<0.02	34	40	150	7.3
11-11-04	<0.02	34	40	150	6.6
11-13-04	<0.02	34	40	150	6.8
11-14-04	<0.02	34	40	150	6.8
11-16-04	<0.02	34	40	150	7.2
11-17-04	<0.02	34	40	155	7.0
11-20-04	<0.02	34	40	150	7.1
11-21-04	<0.02	34	30	140	6.9
11-22-04	<0.02	34	40	145	6.8
11-25-04	<0.02	34	30	145	6.9
11-25-04 (2ND BATCH)	<0.02	34	30	140	6.9
11-27-04	<0.02	34	40	150	6.9
		$\bar{X}$ = 34 ± 0	$\bar{X}$ = 36 ± 5	$\bar{X}$ = 149 ± 5	$\bar{X}$ = 7.0 ± 0.2

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NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-21 Client Windward Environmental Investigator _____

Test conducted in (circle one): room 1 (room 2) trailer water bath other: _____

Randomization chart:

5								165	
4								164	
3								163	168
2								162	167
1								161	166

Randomization chart:

Randomization chart:

Randomization chart:

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NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-21 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 0 (11/2/04) DJ/BBP

Beaker No.	Temp.* (deg.C)	DO * (ppm)	Cond. * (umhos/cm)	pH *	Hardness* (mg/L)	Alkalinity* (mg/L)	S (ppm)	NH3 * (ppm)	Comments
3	22.7	6.8	3010	6.6	111	70			Each beaker fed 1.0 ml
13	22.7	7.1	540	7.0	51	40			YTC suspension
19	22.8	7.2	190	6.8	43	40			Initials:
32	22.9	7.5	155	6.9	34	40			
34	22.8	7.5	150	6.8	34	40			
48	22.7	7.3	150	6.8	43	40			
64	22.7	7.2	200	6.9	43	40			
65	22.9	7.0	155	6.8	43	40			
70	22.9	7.0	155	6.8	34	40			Water changed in all
77	22.7	7.0	150	6.6	34	40			beakers.
84	22.6	7.1	155	6.7	34	40			Time: 0655
86	22.8	7.1	165	6.8	51	40			Initials: DJ
98	22.5	5.4	145	6.7	43	40			
101	22.7	6.2	160	6.7	43	40			
									Water changed in all
									beakers.
									Time: 1710
									Initials: DJ

*Water quality measurements to be taken.

Day 1 (11/3/04) BBP

Beaker No.	Temp.* (deg.C)	DO * (ppm)	Cond.* (umhos/cm)	pH.*	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
3	22.8	6.4	1580	6.7					Each beaker fed 1.0 ml
13	22.6	6.6	385	6.9					YTC suspension
19	22.7	6.8	165	6.8					Initials: DS
32	22.9	6.9	155	6.8					
34	22.8	7.0	155	6.8					
48	22.8	7.0	155	6.8					
64	22.8	7.0	175	6.9					
65	22.9	7.0	155	6.8					
70	23.0	6.8	155	6.8					Water changed in all
77	23.0	7.0	155	6.8					beakers.
84	22.7	7.0	155	6.7					Time: 0710
86	22.8	6.7	165	6.7					Initials: DJ
98	22.8	6.2	150	6.7					
101	22.7	6.4	165	6.6					
									Water changed in all
									beakers.
									Time: 1715
									Initials: BBP

*Water quality measurements to be taken.

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Test No. 686-21 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 2 (11/ 9/00 JB/BBP

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
3	22.3								Each beaker fed 1.0 ml
13	22.1								YTC suspension
19	22.2								Initials: GJI
32	22.2								
34	22.2								
48	22.2								
64	22.2								
65	22.3								
70	22.3								Water changed in all
77	22.1								beakers.
84	22.0								Time: 1740
86	22.2								Initials: JB
98	22.1								
101	22.1								
									Water changed in all
									beakers.
									Time: 1710
									Initials: BBP

*Water quality measurements to be taken.

Day 3 (11/5/00 JB/PJ/GJI/JJ

Beaker No.	Temp.* (deg.C)	DO * (ppm)	Cond. (umhos/cm)	pH *	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
3	22.3	6.7		6.8					Each beaker fed 1.0 ml
13	22.2	6.9		6.8					YTC suspension
19	22.2	7.0		6.8					Initials: GJI
32	22.2	7.2		6.8					
34	22.2	7.2		6.8					
48	22.3	7.3		6.8					
64	22.2	7.0		6.9					
65	22.2	6.4		6.8					
70	22.4	6.8		6.8					Water changed in all
77	22.1	7.0		6.7					beakers.
84	22.1	7.0		6.7					Time: 0645
86	22.2	7.0		6.7					Initials: GJI
98	22.2	6.6		6.7					
101	22.1	6.6		6.7					
									Water changed in all
									beakers.
									Time: 1715
									Initials: JJ

*Water quality measurements to be taken.

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-21 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 4 (11/6 0400)

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
3	22.4								Each beaker fed 1.0 ml
13	22.4								YTC suspension
19	22.4								Initials: GB
32	22.4								
34	22.5								
48	22.4								
64	22.3								
65	22.3								
70	22.3								Water changed in all
77	22.5								beakers.
84	22.4								Time: 0715
86	22.5								Initials: GB
98	22.3								
101	22.3								
									Water changed in all
									beakers.
									Time: 1800
									Initials: BBP

*Water quality measurements to be taken.

Day 5 (11/7 0400) GJ

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
3	22.3								Each beaker fed 1.0 ml
13	22.4								YTC suspension
19	22.4								Initials: GJ
32	22.5								
34	22.3								
48	22.4								
64	22.4								
65	22.5								
70	22.5								Water changed in all
77	22.3								beakers.
84	22.4								Time: 0715
86	22.4								Initials: GJ
98	22.1								
101	22.3								
									Water changed in all
									beakers.
									Time: 1730
									Initials: BBP

*Water quality measurements to be taken.

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NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-21 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 6 (11/8/04) AJ/WTM

Beaker No.	Temp.* (deg.C)	DO * (ppm)	Cond. (umhos/cm)	pH *	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
3	22.5	6.8		6.7					Each beaker fed 1.0 ml
13	22.4	7.0		6.8					YTC suspension
19	22.4	6.8		6.8					Initials: WTM
32	22.4	6.8		6.7					
34	22.3	6.8		6.7					
48	22.3	6.8		6.8					
64	22.4	6.8		6.8					
65	22.5	6.5		6.7					
70	22.5	6.7		6.7					Water changed in all
77	22.3	6.9		6.7					beakers.
84	22.3	6.9		6.7					Time: 0715
86	22.3	6.9		6.8					Initials: GJL
98	22.3	6.9		6.7					
101	22.3	6.8		6.7					
									Water changed in all
									beakers.
									Time: 1720
									Initials: AJ

*Water quality measurements to be taken.

Day 7 (11/9/04) CAB

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
3	22.6								Each beaker fed 1.0 ml
13	22.6								YTC suspension
19	22.5								Initials: WTM
32	22.4								
34	22.4								
48	22.4								
64	22.4								
65	22.5								
70	22.5								Water changed in all
77	22.3								beakers.
84	22.3								Time: 0705
86	22.4								Initials: GJL
98	22.4								
101	22.3								
									Water changed in all
									beakers.
									Time: 1715
									Initials: BRP

*Water quality measurements to be taken.

ANC08528
BZTO104(e)008528

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-21 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 8 (11/10 [illegible]

Beaker No.	Temp.* (deg.C)	DO * (ppm)	Cond.* (umhos/cm)	pH *	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
3	22.8	6.3	315	6.7					Each beaker fed 1.0 ml
13	22.7	6.5	180	6.8					YTC suspension
19	22.6	6.1	150	6.6					Initials: GJ
32	22.7	5.7	150	6.6					
34	22.6	6.0	150	6.6					
48	22.6	6.0	150	6.7					
64	22.7	5.7	150	6.6					
65	22.8	5.7	150	6.5					
70	22.8	5.6	150	6.5					Water changed in all
77	22.6	5.9	150	6.5					beakers.
84	22.6	5.9	150	6.5					Time: 0710
86	22.6	5.7	150	6.5					Initials: GJ
98	22.4	6.6	145	6.6					
101	22.5	6.1	150	6.6					
									Water changed in all
									beakers.
									Time: 1715
									Initials: [illegible]

*Water quality measurements to be taken.

Day 9 (11 / 11 [illegible]

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
3	22.7								Each beaker fed 1.0 ml
13	22.7								YTC suspension
19	22.7								Initials: [illegible]
32	22.5								
34	22.5								
48	22.5								
64	22.5								
65	22.5								
70	22.7								Water changed in all
77	22.4								beakers.
84	22.4								Time: 0650
86	22.5								Initials: GJ
98	22.3								
101	22.4								
									Water changed in all
									beakers.
									Time: 1705
									Initials: [illegible]

*Water quality measurements to be taken.

ANC08529
BZTO104(e)008529

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO: NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 636-21 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 10 (11/12/04) [illegible]

Beaker No.	Temp.* (deg.C)	DO * (ppm)	Cond. umhos/cm	pH *	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
3	22.5	6.8		6.8					Each beaker fed 1.0 ml
13	22.2	6.7		6.6					YTC suspension
19	22.2	6.7		6.6					Initials: EJJ
32	22.2	6.8		6.5					
34	22.2	6.4		6.5					
48	22.2	6.7		6.5					
64	22.2	6.6		6.6					
65	22.4	6.0		6.5					
70	22.4	6.3		6.6					Water changed in all
77	22.2	6.4		6.5					beakers.
84	22.2	6.0		6.5					Time: 0930
86	22.1	6.4		6.6					Initials: [illegible]
98	22.0	6.6		6.5					
101	22.1	6.4		6.6					
									Water changed in all
									beakers.
									Time: 1725
									Initials: [illegible]

*Water quality measurements to be taken.

Day 11 (11/13/04) [illegible]

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. umhos/cm	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
3	22.5								Each beaker fed 1.0 ml
13	22.5								YTC suspension
19	22.5								Initials: WTM
32	22.3								
34	22.3								
48	22.3								
64	22.3								
65	22.3								
70	22.3								Water changed in all
77	22.4								beakers.
84	22.3								Time: 0745
86	22.3								Initials: WTM
98	22.3								
101	22.3								
									Water changed in all
									beakers.
									Time: 1730
									Initials: MLR

*Water quality measurements to be taken.

ANC08530
BZTO104(e)008530

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-21 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 12 (11/14/04) GSL

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
3	22.8								Each beaker fed 1.0 ml
13	22.6								YTC suspension
19	22.6								Initials: GSL
32	22.6								
34	22.5								
48	22.5								
64	22.6								
65	22.7								
70	22.7								Water changed in all
77	22.5								beakers.
84	22.5								Time: 0715
86	22.5								Initials: GSL
98	22.3								
101	22.5								
									Water changed in all
									beakers.
									Time: 1715
									Initials:

*Water quality measurements to be taken.

Day 13 (11/15/04) DBP

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. (umhos/cm)	pH *	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
3	22.7	5.4		6.7					Each beaker fed 1.0 ml
13	22.5	5.4		6.7					YTC suspension
19	22.5	5.2		6.6					Initials: DBP
32	22.5	5.5		6.6					
34	22.4	5.4		6.6					
48	22.4	5.2		6.6					
64	22.5	5.3		6.5					
65	22.6	5.0		6.5					
70	22.6	5.1		6.5					Water changed in all
77	22.6	5.3		6.5					beakers.
84	22.4	5.4		6.5					Time: 0725
86	22.5	5.6		6.5					Initials: GSL
98	22.3	5.3		6.5					
101	22.4	5.4		6.5					
									Water changed in all
									beakers.
									Time: 1705
									Initials: DBP

*Water quality measurements to be taken.

ANC08531
BZTO104(e)008531

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-21 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 14 (11/16/04) [illegible]

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. umhos/cm	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
3	22.6								Each beaker fed 1.0 ml
13	22.4								YTC suspension
19	22.4								Initials: [illegible]
32	22.3								
34	22.2								
48	22.2								
64	22.2								
65	22.4								
70	22.4								Water changed in all
77	22.3								beakers.
84	22.2								Time: 0700
86	22.3								Initials: GJ
98	22.1								
101	22.2								
									Water changed in all
									beakers.
									Time: 1705
									Initials: [illegible]

*Water quality measurements to be taken.

Day 15 (11/17/04) [illegible]

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. * umhos/cm	pH *	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
3	22.1	6.2	220	6.4					Each beaker fed 1.0 ml
13	22.2	6.0	190	6.3					YTC suspension
19	22.1	5.8	155	6.3					Initials: [illegible]
32	22.1	5.8	155	6.2					
34	22.0	5.8	155	6.2					
48	22.0	5.8	150	6.2					
64	22.0	5.8	155	6.2					
65	22.1	5.5	155	6.2					
70	22.2	5.3	160	6.2					Water changed in all
77	22.1	5.9	150	6.2					beakers.
84	22.1	5.7	150	6.2					Time: 0725
86	22.1	5.8	155	6.2					Initials: GJ
98	22.0	5.9	150	6.2					
101	22.0	5.8	155	6.2					
									Water changed in all
									beakers.
									Time: 1700
									Initials: [illegible]

*Water quality measurements to be taken.

ANC08532
BZTO104(e)008532

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-21 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 16 (11/18/04) mm/dd

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
3	22.9								Each beaker fed 1.0 ml
13	22.7								YTC suspension
19	22.7								Initials: MJM
32	22.7								
34	22.7								
48	22.6								
64	22.6								
65	22.8								
70	22.8								Water changed in all
77	22.6								beakers.
84	22.6								Time: 0730
86	22.6								Initials: MJM
98	22.4								
101	22.5								
									Water changed in all
									beakers.
									Time: 1710
									Initials:

*Water quality measurements to be taken.

Day 17 (11/19/04) MB/mm

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. (umhos/cm)	pH *	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
3	22.6	6.6		6.7					Each beaker fed 1.0 ml
13	22.4	6.6		6.6					YTC suspension
19	22.4	6.4		6.6					Initials: MJM
32	22.5	6.6		6.5					
34	22.3	6.4		6.5					
48	22.3	6.8		6.5					
64	22.4	6.2		6.5					
65	22.5	6.1		6.5					
70	22.5	5.8		6.5					Water changed in all
77	22.4	6.2		6.5					beakers.
84	22.3	6.3		6.5					Time: 0705
86	22.4	6.4		6.5					Initials: MB
98	22.2	6.5		6.6					
101	22.3	6.2		6.5					
									Water changed in all
									beakers.
									Time: 1700
									Initials:

*Water quality measurements to be taken.

ANC08533
BZTO104(e)008533

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-21 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 18 (11 / 20/04) MB

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
3	22.5								Each beaker fed 1.0 ml
13	22.4								YTC suspension
19	22.4								Initials: LMM
32	22.4								
34	22.4								
48	22.3								
64	22.2								
65	22.3								
70	22.3								Water changed in all
77	22.3								beakers.
84	22.2								Time: 0713
86	22.3								Initials: MB
98	22.2								
101	22.2								
									Water changed in all
									beakers.
									Time: 1715
									Initials: BBP

*Water quality measurements to be taken.

Day 19 (11 /21 /04)

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
3	22.1								Each beaker fed 1.0 ml
13	22.1								YTC suspension
19	22.0								Initials: LMM
32	22.2								
34	22.1								
48	22.1								
64	22.1								
65	22.0								
70	22.0								Water changed in all
77	22.1								beakers.
84	22.1								Time: 0710
86	22.2								Initials: MB
98	22.2								
101	22.2								
									Water changed in all
									beakers.
									Time: 1730
									Initials: BBP

*Water quality measurements to be taken.

ANC08534
BZTO104(e)008534

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-21 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 20 (11/22/04) NS/AF

Beaker No.	Temp.* (deg.C)	DO * (ppm)	Cond. (umhos/cm)	pH *	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
3	22.2	5.9		6.4					Each beaker fed 1.0 ml
13	22.2	5.7		6.4					YTC suspension
19	22.1	5.9		6.4					Initials: NSM
32	22.1	6.1		6.4					
34	22.1	6.3		6.4					
48	22.1	6.1		6.4					
64	22.1	5.9		6.3					
65	22.2	5.9		6.4					
70	22.2	5.9		6.4					Water changed in all
77	22.1	5.9		6.3					beakers.
84	22.1	5.9		6.3					Time: 0905
86	22.1	5.9		6.4					Initials: AF
98	22.1	5.3		6.3					
101	22.1	5.8		6.3					
									Water changed in all
									beakers.
									Time: 1700
									Initials: SM

*Water quality measurements to be taken.

Day 21 (11/23/04) AF

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
3	22.6								Each beaker fed 1.0 ml
13	22.6								YTC suspension
19	22.5								Initials: NSM
32	22.5								
34	22.5								
48	22.5								
64	22.6								
65	22.7								
70	22.7								Water changed in all
77	22.6								beakers.
84	22.4								Time: 0720
86	22.4								Initials: SM
98	22.4								
101	22.4								
									Water changed in all
									beakers.
									Time: 1655
									Initials: AF

*Water quality measurements to be taken.

ANC08535
BZTO104(e)008535

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-21 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 22 (11/24/04) BBP

Beaker No.	Temp.* (deg.C)	DO * (ppm)	Cond.* (umhos/cm)	pH *	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
3	22.4	6.7	160						Each beaker fed 1.0 ml
13	22.4	6.6	155						YTC suspension
19	22.3	6.6	150						Initials: CS
32	22.3	6.8	150						
34	22.3	7.0	150						
48	22.3	6.8	150						
64	22.3	6.6	150						
65	22.3	6.5	150						
70	22.3	6.4	150						Water changed in all
77	22.3	6.4	145						beakers.
84	22.3	6.6	145						Time: 0705
86	22.3	6.6	150						Initials: BBP
98	22.1	6.8	145						
101	22.1	6.8	150						
									Water changed in all
									beakers.
									Time: 1710
									Initials: BBP

*Water quality measurements to be taken.

Day 23 (11/25/04) GSL

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
3	22.8								Each beaker fed 1.0 ml
13	22.8								YTC suspension
19	22.8								Initials: GSL
32	22.8								
34	22.8								
48	22.8								
64	22.8								
65	22.8								
70	22.9								Water changed in all
77	22.8								beakers.
84	22.8								Time: 0715
86	22.8								Initials: GSL
98	22.7								
101	22.8								
									Water changed in all
									beakers.
									Time: 1730
									Initials: BBP

*Water quality measurements to be taken.

ANC08536
BZTO104(e)008536

Test No. 686-21 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 24 (11/26/04) CB/BJ

Beaker No.	Temp.* (deg.C)	DO * (ppm)	Cond. (umhos/cm)	pH *	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
3	22.6	5.7		6.5					Each beaker fed 1.0 ml
13	22.6	5.4		6.5					YTC suspension
19	22.6	5.8		6.2					Initials: GJL
32	22.6	6.2		6.4					
34	22.6	5.9		6.4					
48	22.5	6.0		6.4					
64	22.5	5.7		6.4					
65	22.7	5.7		6.4					
70	22.8	5.7		6.2					Water changed in all
77	22.5	5.8		6.3					beakers.
84	22.5	5.6		6.3					Time: 0710
86	22.6	5.4		6.4					Initials: GJL
98	22.5	5.9		6.4					
101	22.4	6.1		6.4					
									Water changed in all
									beakers.
									Time: 1720
									Initials: BBP

*Water quality measurements to be taken.

Day 25 (11/27/04) CB

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
3	22.2								Each beaker fed 1.0 ml
13	22.2								YTC suspension
19	22.2								Initials: GJL
32	22.2								
34	22.2								
48	22.1								
64	22.1								
65	22.2								
70	22.2								Water changed in all
77	22.2								beakers.
84	22.2								Time: 0700
86	22.2								Initials: CB
98	22.3								
101	22.3								
									Water changed in all
									beakers.
									Time: 17:20
									Initials: MLR

*Water quality measurements to be taken.

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-21 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 26 (11 128 04) GSL

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
3	22.1								Each beaker fed 1.0 ml
13	22.0								YTC suspension
19	22.0								Initials:
32	22.1								
34	22.1								
48	22.0								
64	22.0								
65	22.2								
70	22.2								Water changed in all
77	22.0								beakers.
84	22.0								Time: 0740
86	22.1								Initials: GSL
98	22.0								
101	22.1								
									Water changed in all
									beakers.
									Time: 1710
									Initials: BBP

*Water quality measurements to be taken.

Day 27 (11 129 104) GSL/BBP

Beaker No.	Temp.* (deg.C)	DO * (ppm)	Cond. (umhos/cm)	pH *	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
3	22.0	5.8		6.7					Each beaker fed 1.0 ml
13	22.1	6.0		6.6					YTC suspension
19	22.0	6.2		6.6					Initials: CB
32	22.0	6.1		6.6					
34	22.0	6.2		6.5					
48	22.0	5.6		6.5					
64	22.0	6.0		6.5					
65	22.1	5.9		6.5					
70	22.2	6.1		6.6					Water changed in all
77	22.0	6.2		6.5					beakers.
84	22.0	6.2		6.5					Time: 0700
86	22.0	5.5		6.5					Initials: CB
98	22.2	6.0		6.5					
101	22.1	6.3		6.5					
									Water changed in all
									beakers.
									Time: 1700
									Initials: BBP

*Water quality measurements to be taken.

ANC08538
BZTO104(e)008538

Test No. 686-21 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 28 (11/30/09) WW/BBP

Beaker No.	Temp.* (deg.C)	DO * (ppm)	Cond. * (umhos/cm)	pH *	Hardness* (mg/L)	Alkalinity* (mg/L)	S (ppm)	NH3 * (ppm)	Comments
3	22.4	6.9	165	6.9	26	40			Each beaker fed 1.0 ml
13	22.4	7.0	160	6.9	34	40			YTC suspension
19	22.3	7.2	155	6.8	43	40			Initials: —
32	22.4	7.4	155	6.8	34	40			
34	22.4	7.4	155	6.8	43	40			
48	22.4	7.3	155	6.9	43	40			
64	22.4	7.1	155	6.8	34	40			
65	22.4	7.2	155	6.8	34	30			
70	22.4	7.2	155	6.8	34	40			Water changed in all
77	22.4	7.2	150	6.7	43	40			beakers.
84	22.4	7.3	150	6.7	34	40			Time: 0615
86	22.3	7.1	155	6.7	34	40			Initials: WW
98	22.3	7.4	150	6.8	34	40			
101	22.4	7.4	150	6.7	51	40			
									Water changed in all
									beakers.
									Time:
									Initials:

*Water quality measurements to be taken.

Day (/ /)

Beaker No.	Temp.* (deg.C)	DO * (ppm)	Cond. (umhos/cm)	pH *	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
									Each beaker fed 1.0 ml
									YTC suspension
									Initials:
									Water changed in all
									beakers.
									Time:
									Initials:
									Water changed in all
									beakers.
									Time:
									Initials:

*Water quality measurements to be taken.

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-21 Client Windward Environmental Investigator

DAY 28 TEST TERMINATION SHEET

Beaker No.	Number of survivors	Initials
1	9	GJL
2	9	CB
3	7	CB
4	9	CB
5	9	GJL
6	10	GJL
7	10	CB
8	10	GJL
9	~~10~~ 5	GJL GJL @ 11-30-04
10	10	GJL
11	10	GJL
12	9	CB
13	10	GJL
14	10	GJL
15	10	GJL
16	10	GJL
17	10	CB
18	9	GJL
19	10	CB
20	7	GJL
21	10	CB
22	10	GJL
23	10	CB
24	8	GJL
25	10	CB
26	10	CB
27	10	GJL
28	9	GJL
29	10	GBK
30	9	CB
31	8	GJL
32	10	GBK
33	9	CB
34	10	GJL
35	10	GBK
36	9	GJL
37	10	GBK
38	9	GJL
39	10	CB
40	10	GJL
41	9	GBK
42	1	GJL
43	8	CB
44	10	GBK
45	10	CB

Beaker No.	Number of survivors	Initials
46	8	CB
47	10	GBK
48	10	GJL
49	10	CB
50	10	GJL
51	9	GBK
52	9	CB
53	10	GJL
54	8	GJL
55	9	CB
56	9	GBK
57	10	GJL
58	9	CB
59	1	GBK
60	8	CB
61	1	GJL
62	0	CB
63	8	GJL
64	10	GBK
65	8	MM
66	3	CB
67	10	GJL
68	10	GJL
69	9	GBK
70	6	GJL
71	11	MM
72	10	GJL
73	7	GJL
74	10	CB
75	10	GBK
76	7	MM
77	10	GJL
78	8	CB
79	6	GJL
80	9	CB
81	10	GBK
82	4	GJL
83	9	GBK
84	10	CB
85	10	MM
86	8	GJL
87	10	CB
88	10	MM
89	10	GJL
90	9	GBK

ANC08540
BZTO104(e)008540

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-21 Client Windward Environmental Investigator _____

DAY 28 TEST TERMINATION SHEET

Beaker No.	Number of survivors	Initials
91	9	CAB
92	10	GJL
93	9	GJL
94	10	CAB
95	6	[illegible]
96	10	[illegible]
97	9	GJL
98	10	[illegible]
99	8	CAB
100	9	GJL
101	0	[illegible]
102	10	[illegible]
103	10	CAB
104	10	[illegible]
105	3	CAB
106	9	[illegible]
107	5	[illegible]
108	9	GJL
109	0	CAB
110	5	CAB
111	10	[illegible]
112	9	GJL

Beaker No.	Number of survivors	Initials

ANC08541
BZTO104(e)008541

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c
HYALELLA AZTECA 14-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-21 Client Windward Environmental Investigator _____

ZERO-TIME WEIGHING DATA SHEET

Tare: Date 10-28-04 Oven temp (C.) 63 Drying time (hr.) 23 Initials JRF
Standard Weights: 10 mg: 10.005 100mg: 100.018

Final: Date 11-6-04 Oven temp (C.) 78 Drying time (hr.) 24 Initials GJ1
Standard Weights: 10 mg: 10.006 100mg: 100.020

Equip. used: Oven: Blue M #1 Balance: Sartorius M3P

(Dry overnight at 60-90 degrees C)

Pan #	Tare wt. (mg)	Total wt. (mg)	#weighed	Comments
1	29.658	30.259	20	
2	30.696	31.259	20	
3	30.758	31.348	20	
4	28.205	28.805	20	
5	29.569	30.138	20	

ANC08542
BZTO104(e)008542

NORTHWESTERN AQUATIC SCIENCES — PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-21 Client Windward Environmental Investigator

WEIGHING DATA SHEET

Tare:	Date 11-22-04	Oven temp (C.) 72	Drying time (hr.) 24	Initials JRF
	Standard Weights:	10 mg: 10.002	100mg: 100.014	
Final #1:	Date 12-1-04	Oven temp (C.) 67	Drying time (hr.) 23	Initials JRF
	Standard Weights:	10 mg: 10.002	100mg: 100.016	
Final #2:	Date 12-2-04	Oven temp (C.) 67	Drying time (hr.) 24	Initials JRF
	Standard Weights:	10 mg: 10.006	100mg: 100.016	

Equip. used: Oven BLUE M #1 Balance Sartorius M3P

(Dry overnight at 60-90 degrees C)

Bkr. #	Pan #	Tare wt. (mg)	Total wt. (mg) 1	Total wt. (mg) 2	no. weighed	put into pans-initials	Comments
1	1	30.473	33.25690	33.224	9		
2	2	28.587	31.155	31.114	9		
3	3	29.216	32.080	32.015	7		
4	4	29.051	30.636	30.586	9		
5	5	28.768	31.466	31.453	9		
6	6	28.131	32.669	32.625	10		
7	7	27.836	30.862	30.821	10		
8	8	28.642	31.480	31.431	10		
9	9	30.066	32.334	32.295	5		
10	10	30.476	33.176	33.115	10		
11	11	28.251	31.665	31.613	10		
12	12	27.753	28.210	28.202	9		
13	13	29.111	33.371	33.296	10		
14	14	29.117	32.678	32.619	10		
15	15	29.725	34.123	34.054	10		
16	16	27.804	30.795	30.751	10		
17	17	27.294	30.810	30.763	9 10		
18	18	30.665	32.921	32.887	10 9		
19	19	29.220	32.969	32.935	10		
20	20	29.818	32.410	32.367	7		
21	21	27.874	30.385	30.345	10		
22	22	29.628	30.805	30.788	10		
23	23	27.657	31.272	31.220	10		
24	24	28.207	31.157	31.118	8		
25	25	28.236	31.992	31.961	10		
26	26	28.312	31.934	31.891	10		
27	27	28.606	32.262	32.217	10		
28	28	29.560	33.259	33.213	9		
29	29	28.088	30.445	30.405	10		
30	30	27.981	31.532	31.476	9		
31	31	29.613	32.069	32.023	8		
32	32	30.134	33.362	33.310	10		
33	33	29.636	34.351	34.247	9		

ANC08543
BZTO104(e)008543

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-21 Client Windward Environmental Investigator

WEIGHING DATA SHEET

See page _____ for information on drying times and temperatures, standard weights,etc.

Bkr. #	Pan #	Tare wt. (mg)	Total wt. (mg) 1	Total wt. (mg) 2	no. weighed	put into pans-initials	Comments
34	34	28.755	31.411	31.319	10		
35	35	27.175	29.713	29.635	10		
36	36	28.233	30.770	30.947	9		
37	37	29.473	32.652	32.405	10		
38	38	27.211	30.890	30.859	9		
39	39	29.502	32.264	32.022	10		
40	40	28.379	32.206	32.161	10		
41	41	29.271	31.689	31.674	9		
42	42	29.664	30.284	30.279	1		
43	43	27.057	30.664	30.393	8		
44	44	28.493	31.394	31.126	10		
45	45	29.376	32.631	32.367	10		
46	46	27.598	30.474	30.204	8		
47	47	31.184	34.757	34.475	10		
48	48	29.288	32.529	32.270	10		
49	49	27.628	30.895	30.634	10		
50	50	29.360	33.692	33.437	10		
51	51	27.090	30.156	30.154	9		
52	52	29.283	33.245	32.986	9		
53	53	28.052	31.435	~~30.926~~ 31.182	10		
54	54	28.801	32.568	32.314	8		
55	55	29.334	33.173	~~32.658~~ 913	9		
56	56	28.044	31.276	30.986	9		
57	57	28.638	32.424	32.159	10		
58	58	28.485	31.974	31.970	8 9		
59	59	27.966	28.311	28.306	1		
60	60	28.658	31.837	31.832	8		
61	61	27.113	27.294	27.297	1		
62	62	27.043	—	—	0		
63	63	28.922	32.478	32.469	8		
64	64	28.224	32.178	32.164	10		
65	65	28.579	30.586	30.583	8		
66	66	27.892	29.667	29.661	3		
67	67	28.731	32.509	32.488	10		
68	68	29.072	32.453	32.443	10		
69	69	29.036	32.110	32.111	9		
70	70	28.127	30.858	30.856	6		
71	71	27.521	31.317	31.316	11		
72	72	29.121	33.003	32.992	10		
73	73	29.572	31.809	31.768	7		
74	74	28.091	31.429	31.365	10		
75	75	30.448	33.661	33.622	10		
76	76	27.921	30.835	30.780	7		

ANC08544
BZTO104(e)008544

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-21 Client Windward Environmental Investigator

WEIGHING DATA SHEET

See page _____ for information on drying times and temperatures, standard weights,etc.

Bkr. #	Pan #	Tare wt. (mg)	Total wt. (mg) 1	Total wt. (mg) 2	no. weighed	put into pans-initials	Comments
77	77	29.620	33.511	33.430	10	BBP	
78	78	28.336	30.821	30.764	8	BBP	
79	79	28.437	30.229	30.191	6	BBP	
80	80	28.096	30.166	30.123	9	BBP	
81	81	31.031	34.837	34.754	10	BBP	
82	82	27.316	29.138	29.102	4	BBP	
83	83	31.803	35.000	34.945	9	BBP	
84	84	30.696	34.766	34.703	10	BBP	
85	85	27.618	30.957	30.904	10	BBP	
86	86	28.193	31.536	31.489	8	BBP	
87	87	28.526	30.722	30.665	10	BBP	
88	88	28.723	33.027	32.966	10	BBP	
89	89	30.625	33.437	33.355	10	BBP	
90	90	28.086	31.087	31.021	9	BBP	
91	91	28.569	31.239	31.046	4	BBP	
92	92	26.571	30.977	30.906	10	BBP	
93	93	32.321	36.468	36.388	9	BBP	
94	94	27.484	31.580	31.495	10	BBP	
95	95	28.472	30.992	30.929	6	BBP	
96	96	29.270	31.801	31.742	10	BBP	
97	97	27.167	29.892	29.815	9	BBP	
98	98	31.192	34.713	34.629	10	BBP	
99	99	27.529	30.784	30.713	8	BBP	
100	100	29.586	30.681	30.631	8	BBP	
101	101	27.678	—	—	0	BBP	
102	102	30.868	33.122	33.058	10	BBP	
103	103	27.712	31.502	31.417	10	BBP	
104	104	27.594	30.266	30.202	10	BBP	
105	105	30.178	31.503	31.455	3	AA	
106	106	27.497	30.761	30.692	9	AA	
107	107	28.716	30.965	30.901	5	AA	
108	108	28.563	31.629	31.756	9	AA	
109	109	28.746	—	—	0	AA	
110	110	27.882	30.330	30.304	5	AA	
111	111	27.7160 *	30.258	29.976	10	AA	
112	112	27.980	30.349	30.330	9	AA	

ANC08545
BZTO104(e)008545

Chesapeake Cultures

P.O. Box 507 Hayes, VA 23072 (804) 693-4046 (804)694-4704 fax
www.c-cultures.com
e-mail growfish@c-cultures.com

NAS

Shipment Information

Species *Hyalella azteca* Date *10/28/04*

Age *2-3d. ; ~1.0-1.3mm* P.O. No. *verbal*

Quanitity *2400 +* Invoice No. *4869*

Temperature *24°C* Salinity *—* pH *7.95*

Notes *Thank you!*

recieved 10-29-04 BBP

Biologist *Elizabeth Williams*

✳ *Please inspect shipment and report any problem immediately* ✳

27 & 48

Test Number: P686-21

Freshwater Sediment Test
28-day *Hyalella azteca*
Randomization Key

10/30/04

BKR	NAS SMPL	CLIENT DESCRIP	REPL	
50	9574F	Control	1	
43	9574F	Control	2	
33	9574F	Control	3	
15	9574F	Control	4	
72	9574F	Control	5	
92	9574F	Control	6	
93	9574F	Control	7	
13	9574F	Control	8	wq replicate
79	9577F	LW2-G360	1	
107	9577F	LW2-G360	2	
76	9577F	LW2-G360	3	
66	9577F	LW2-G360	4	
9	9577F	LW2-G360	5	
51	9577F	LW2-G360	6	
105	9577F	LW2-G360	7	
3	9577F	LW2-G360	8	wq replicate
69	9578F	LW2-G212	1	
100	9578F	LW2-G212	2	
88	9578F	LW2-G212	3	
45	9578F	LW2-G212	4	
99	9578F	LW2-G212	5	
103	9578F	LW2-G212	6	
49	9578F	LW2-G212	7	
32	9578F	LW2-G212	8	wq replicate
96	9579F	LW2-G296	1	
35	9579F	LW2-G296	2	
29	9579F	LW2-G296	3	
111	9579F	LW2-G296	4	
18	9579F	LW2-G296	5	
41	9579F	LW2-G296	6	
12	9579F	LW2-G296	7	
65	9579F	LW2-G296	8	wq replicate
89	9580F	LW2-G205	1	
7	9580F	LW2-G205	2	
108	9580F	LW2-G205	3	
58	9580F	LW2-G205	4	
87	9580F	LW2-G205	5	
4	9580F	LW2-G205	6	
81	9580F	LW2-G205	7	
19	9580F	LW2-G205	8	wq replicate
42	9581F	LW2-G274	1	
95	9581F	LW2-G274	2	
109	9581F	LW2-G274	3	
82	9581F	LW2-G274	4	
62	9581F	LW2-G274	5	
59	9581F	LW2-G274	6	
61	9581F	LW2-G274	7	
101	9581F	LW2-G274	8	wq replicate

28 of 48

Test Number: P686-21

Freshwater Sediment Test
28-day *Hyalella azteca*
Randomization Key

10/30/04

BKR	NAS SMPL	CLIENT DESCRIP	REPL	
97	9582F	LW2-G303	1	
14	9582F	LW2-G303	2	
10	9582F	LW2-G303	3	
112	9582F	LW2-G303	4	
36	9582F	LW2-G303	5	
78	9582F	LW2-G303	6	
46	9582F	LW2-G303	7	
34	9582F	LW2-G303	8	wq replicate
91	9583F	LW2-G376	1	
5	9583F	LW2-G376	2	
68	9583F	LW2-G376	3	
104	9583F	LW2-G376	4	
39	9583F	LW2-G376	5	
106	9583F	LW2-G376	6	
37	9583F	LW2-G376	7	
84	9583F	LW2-G376	8	wq replicate
71	9584F	LW2-G385	1	
56	9584F	LW2-G385	2	
2	9584F	LW2-G385	3	
67	9584F	LW2-G385	4	
90	9584F	LW2-G385	5	
11	9584F	LW2-G385	6	
30	9584F	LW2-G385	7	
86	9584F	LW2-G385	8	wq replicate
24	9585F	LW2-G367	1	
25	9585F	LW2-G367	2	
40	9585F	LW2-G367	3	
57	9585F	LW2-G367	4	
16	9585F	LW2-G367	5	
52	9585F	LW2-G367	6	
23	9585F	LW2-G367	7	
77	9585F	LW2-G367	8	wq replicate
21	9586F	LW2-G408	1	
83	9586F	LW2-G408	2	
94	9586F	LW2-G408	3	
63	9586F	LW2-G408	4	
60	9586F	LW2-G408	5	
8	9586F	LW2-G408	6	
38	9586F	LW2-G408	7	
70	9586F	LW2-G408	8	wq replicate
80	9587F	LW2-G416	1	
22	9587F	LW2-G416	2	
73	9587F	LW2-G416	3	
74	9587F	LW2-G416	4	
53	9587F	LW2-G416	5	
85	9587F	LW2-G416	6	
44	9587F	LW2-G416	7	
48	9587F	LW2-G416	8	wq replicate

29 of 48

Test Number: P686-21

Freshwater Sediment Test
28-day *Hyalella azteca*
Randomization Key

10/30/04

BKR	NAS SMPL	CLIENT DESCRIP	REPL	
26	9588F	LW2-G355	1	
6	9588F	LW2-G355	2	
17	9588F	LW2-G355	3	
102	9588F	LW2-G355	4	
1	9588F	LW2-G355	5	
55	9588F	LW2-G355	6	
28	9588F	LW2-G355	7	
64	9588F	LW2-G355	8	wq replicate
75	9589F	LW2-G389	1	
31	9589F	LW2-G389	2	
27	9589F	LW2-G389	3	
54	9589F	LW2-G389	4	
110	9589F	LW2-G389	5	
20	9589F	LW2-G389	6	
47	9589F	LW2-G389	7	
98	9589F	LW2-G389	8	wq replicate

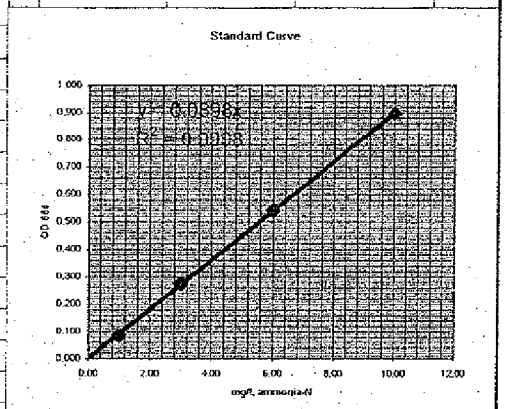
AMMONIA EXPOSURE BENCHSHEETS AND ANALYSIS

Total Ammonia-N in Sediment Pore Water: Computation Worksheet

Salicylate Method (SOP #5492)

Result

	Sample description	Dilution factor	OD_{655}	NH_3-N (mg/L)	pH	Salinity (ppt)
	Blank	-----	-----	-----		
	1.0 mg/L NH_3-N Std.	-----	0.084	1.00		
	3.0 mg/L NH_3-N Std.	-----	0.274	3.00		
	6.0 mg/L NH_3-N Std.	-----	0.542	6.00		
	10.0 mg/L NH_3-N Std.	-----	0.895	10.00		
	3.0 mg/L spike	-----	0.285	3.17		
	3.0 mg/L spike dupl.	-----	0.277	3.09		
1.	9577F	5	0.470	26.17		
2.	9578F	5	0.120	6.68		
3.	9579F	5	0.022	1.23		
4.	9580F	5	0.049	2.73		
5.	9581F	5	0.040	2.23		
6.	9582F	5	0.026	1.45		
7.	9583F	5	0.062	3.45		
8.	9584F	5	0.170	9.47		
9.	9585F	5	0.038	2.12		
10.	9586F	5	0.153	8.52		
11.	9587F	5	0.082	4.57		
12.	9588F	5	0.171	9.52		
13.	9589F	5	0.029	1.61		
14.	9574F	5	0.043	2.39		



Reporting limit (mg/L) =	0.5
Recovery (%) =	104.3
Precision (RPD) =	2.85
Sample volume (ml):	0.10
Dilution factor	5

Sample Set Description:

Proj. No.: 686

Bulk sediment porewaters

Batch 11

* insufficient sample for analysis

Analyst: RSC

Date analysed: 11/1/2004

ANC08551
BZTO104(e)008551

Total Ammonia-N in Sediment Pore Water: Computation Worksheet

Salicylate Method (SOP #5492)

Result

	Sample description	Dilution factor	OD655	NH3-N (mg/L)	pH	Salinity (ppt)
	Blank	----	----	----		
	1.0 mg/L NH3-N Std.	-----	0.084	1.00		
	3.0 mg/L NH3-N Std.	-----	0.274	3.00		
	6.0 mg/L NH3-N Std.	-----	.542	6.00		
	10.0 mg/L NH3-N Std.	-----	.895	10.00		
	3.0 mg/L spike	-----	.258			
	3.0 mg/L spike dupl.	-----	.277			
1.	9577F	5	.470		6.7	
2.	9578F	5	.140		5.9	
3.	9579F	5	.022		7.0	
4.	9580F	5	.049		6.6	
5.	9581F	5	.040		6.5	
6.	9582F	5	.026		6.6	
7.	9583F	5	.062		6.6	
8.	9584F	5	.010		7.0	
9.	9585F	5	.038		5.9	
10.	9586F	5	.153		6.2	
11.	9587F	5	.082		6.2	
12.	9588F	5	.171		6.6	
13.	9589F	5	.029		6.6	
14.	9574F		.043		6.5	
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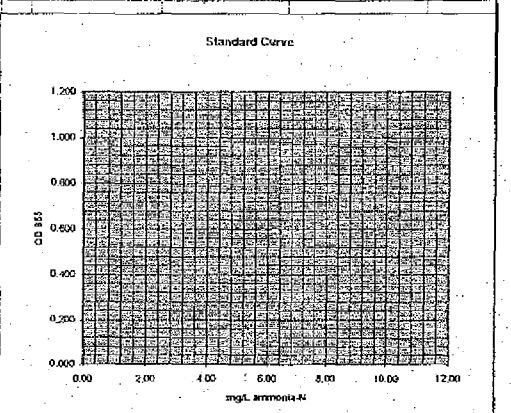

Reporting limit (mg/L) =	0.5
Recovery (%) =	#VALUE!
Precision (RPD) =	#VALUE!
Sample volume (ml):	0.10
Dilution factor	5

Sample Set Description:

Proj. No.: 686

Bulk sediment porewaters

Batch 11

Analyst: RSC

Date analysed: 11/1/2004

Total Ammonia-N in Water: Computation Worksheet
Salicylate Method (SOP #5492)

Result

	Sample description	Dilution factor	OD_{655}	NH_3-N (mg/L)
	Blank	----	----	----
	1.0 mg/L NH_3-N Std.	----	0.087	1.00
	3.0 mg/L NH_3-N Std.	----	0.268	3.00
	6.0 mg/L NH_3-N Std.	----	0.522	6.00
	10.0 mg/L NH_3-N Std.	----	0.840	10.00
	3.0 mg/L spike	----	0.271	3.18
	3.0 mg/L spike dupl.	----	0.268	3.15
1.	3	1	0.242	2.84
2.	13	1	0.004	ND
3.	19	1	0.044	0.52
4.	32	1	0.042	0.49
5.	34	1	0.020	0.23
6.	48	1	0.082	0.96
7.	64	1	0.070	0.82
8.	65	1	0.021	0.25
9.	70	1	0.069	0.81
10.	77	1	0.023	0.27
11.	84	1	0.060	0.70
12.	86	1	0.109	1.28
13.	98	1	0.028	0.33
14.	101	1	0.027	0.32
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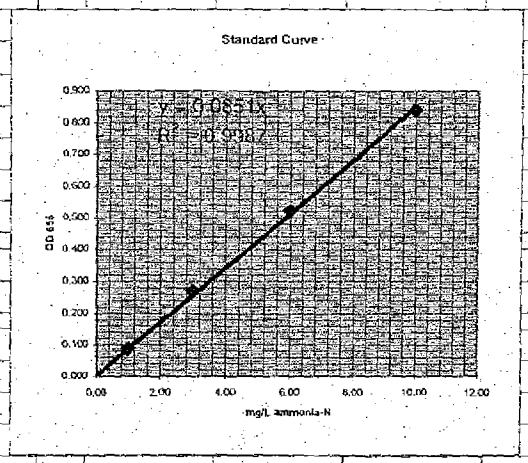


Reporting limit (mg/L) =	0.1
Recovery (%) =	105.5
Precision (RPD) =	1.11
Sample volume (ml):	0.50
Dilution factor	1

Sample Set Description:

Test No.:	686-21
Test Day:	0 (11-2-04)
Species:	*Hyalella*

Overlying water

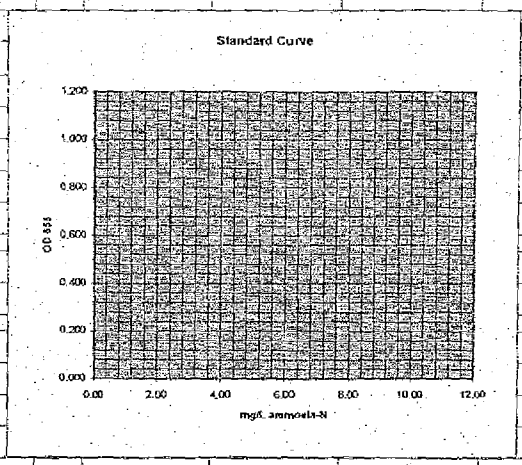
Analyst:	RSC
Date analysed:	12/1/2004

ANC08553
BZTO104(e)008553

Total Ammonia-N in Water: Computation Worksheet
Salicylate Method (SOP #5492)

Result

	Sample description	Dilution factor	OD655	NH_3-N (mg/L)
	Blank	----	----	----
	1.0 mg/L NH_3-N Std.	----	.087	1.00
	3.0 mg/L NH_3-N Std.	----	.268	3.00
	6.0 mg/L NH_3-N Std.	----	.522	6.00
	10.0 mg/L NH_3-N Std.	----	.840	10.00
	3.0 mg/L spike	----	.271	
	3.0 mg/L spike dupl.	----	.268	
1.	3	1	.241	
2.	13	1	.107	
3.	19	1	.044	
4.	32	1	.092	
5.	34	1	.020	
6.	48	1	.082	
7.	64	1	.070	
8.	65	1	.021	
9.	70	1	.069	
10.	77	1	.023	
11.	84	1	.060	
12.	86	1	.109	
13.	98	1	.028	
14.	101	1	.027	



Reporting limit (mg/L) =	0.1
Recovery (%) =	#VALUE!
Precision (RPD) =	#VALUE!
Sample volume (ml):	0.50
Dilution factor	1

Sample Set Description:

Test No.:	686-21
Test Day:	0 (11-2-04)
Species:	*Hyalella*

Overlying water

Analyst:	RSC
Date analysed:	12/1/2004

Total Ammonia-N in Water: Computation Worksheet

Salicylate Method (SOP #5492)

Result

	Sample description	Dilution factor	OD_{655}	NH_3-N (mg/L)
	Blank	----	----	----
	1.0 mg/L NH_3-N Std.	----	0.078	1.00
	3.0 mg/L NH_3-N Std.	----	0.287	3.00
	6.0 mg/L NH_3-N Std.	----	0.541	6.00
	10.0 mg/L NH_3-N Std.	----	0.940	10.00
	3.0 mg/L spike	----	0.290	3.12
	3.0 mg/L spike dupl.	----	0.283	3.04
1.	3	1	0.020	0.21
2.	13	1	0.018	0.19
3.	19	1	0.010	0.11
4.	32	1	0.019	0.20
5.	34	1	0.005	ND
6.	48	1	0.002	ND
7.	64	1	0.009	ND
8.	65	1	0.010	0.11
9.	70	1	0.008	ND
10.	77	1	0.001	ND
11.	84	1	0.006	ND
12.	86	1	0.013	0.14
13.	98	1	0.008	ND
14.	101	1	0.007	ND
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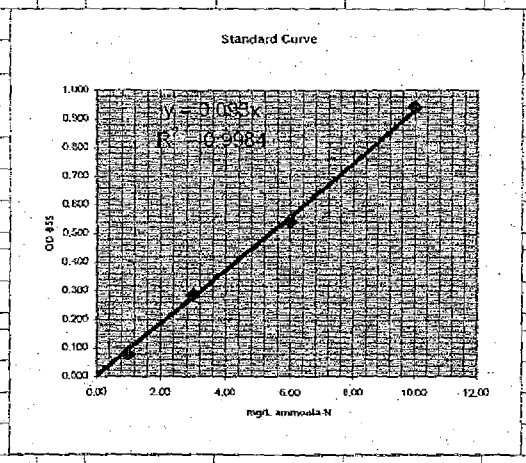

Reporting limit (mg/L) =	0.1
Recovery (%) =	102.6
Precision (RPD) =	2.44
Sample volume (ml):	0.50
Dilution factor	1

Sample Set Description:

Test No.:	686-21
Test Day:	28 (11-30-04)
Species:	*Hyalella*
Overlying water	
Analyst:	RSC
Date analysed:	12/15/2004

ANC08555
BZTO104(e)008555

Total Ammonia-N in Water: Computation Worksheet
Salicylate Method (SOP #5492)

Result

	Sample description	Dilution factor	OD_{655}	NH_3-N (mg/L)
	Blank	-----	----	----
	1.0 mg/L NH_3-N Std.	-----	.078	1.00
	3.0 mg/L NH_3-N Std.	-----	.257	3.00
	6.0 mg/L NH_3-N Std.	-----	.541	6.00
	10.0 mg/L NH_3-N Std.	-----	.990	10.00
	3.0 mg/L spike	-----	.290	
	3.0 mg/L spike dupl.	-----	.268	
1.	3	1	.022	
2.	13	1	.018	
3.	19	1	.010	
4.	32	1	.019	
5.	34	1	.005	
6.	48	1	.002	
7.	64	1	.009	
8.	65	1	.010	
9.	70	1	.008	
10.	77	1	.011	
11.	84	1	.006	
12.	86	1	.013	
13.	98	1	.008	
14.	101	1	.007	
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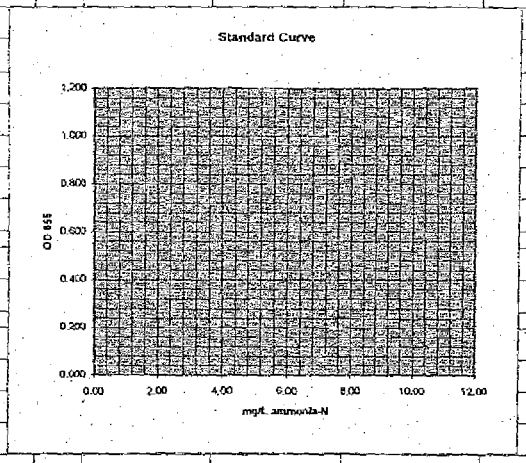

Reporting limit (mg/L) =	0.1
Recovery (%) =	#VALUE!
Precision (RPD) =	#VALUE!
Sample volume (ml):	0.50
Dilution factor	1

Sample Set Description:

Test No.:	686-21
Test Day:	28 (11-30-04)
Species:	*Hyalella*
Overlying water	
Analyst:	RSC
Date analysed:	12/15/2004

ANC08556
BZTO104(e)008556

TEST DATA ANALYSIS RECORDS

Test Number: P686-21

Freshwater Sediment Test
28-day Hyalella azteca

Endpoints Data Entry and Calculations File

BKR=beaker number
INIT=initial number
SURV=number survivors
MORT=number dead=INIT-SURV
PSURV=%survival=100(SURV/INIT)
PMORT=%mortality=100(MORT/INIT)

TARE WT= ashed weight of pan used for that replicate at test termination (mg), or
dry weight of pan if ash-free dry weight is not an endpoint
WT COUNT= number of test organisms weighed at test end
DRY WT= TARE WT + dry weight of test organisms recovered at test termination (mg)
TWT=total biomass=DRY WT-TARE WT
WT=average individual biomass=TWT/WT COUNT

INITIAL WEIGHT

pan #	tare wt (mg)	final wt (mg)	wt count	avg. wt/ organism
1	29.658	30.259	20	0.030
2	30.696	31.259	20	0.028
3	30.758	31.348	20	0.030
4	28.205	28.805	20	0.030
5	29.569	30.138	20	0.028

INDEX	BKR	NAS SMPL	CLIENT DESCRIP	REPL		INIT	SURV	MORT	PSURV	PMORT	TARE WT (mg)	WT COUNT	DRY WT (mg)	TWT (mg)	WT (mg)
1	50	9574F	Control	1		10	10	0	100.0	0.0	29.360	10	33.437	4.08	0.41
2	43	9574F	Control	2		10	8	2	80.0	20.0	27.057	8	30.393	3.34	0.42
3	33	9574F	Control	3		10	9	1	90.0	10.0	29.636	9	34.247	4.61	0.51
4	15	9574F	Control	4		10	10	0	100.0	0.0	29.725	10	34.054	4.33	0.43
5	72	9574F	Control	5		10	10	0	100.0	0.0	29.121	10	32.992	3.87	0.39
6	92	9574F	Control	6		10	10	0	100.0	0.0	26.571	10	30.906	4.34	0.43
7	93	9574F	Control	7		10	9	1	90.0	10.0	32.321	9	36.388	4.07	0.45
8	13	9574F	Control	8	wq replicate	10	10	0	100.0	0.0	29.111	10	33.296	4.19	0.42
9	79	9577F	LW2-G360	1		10	6	4	60.0	40.0	28.437	6	30.191	1.75	0.29
10	107	9577F	LW2-G360	2		10	5	5	50.0	50.0	28.716	5	30.901	2.19	0.44
11	76	9577F	LW2-G360	3		10	7	3	70.0	30.0	27.921	7	30.780	2.86	0.41
12	66	9577F	LW2-G360	4		10	3	7	30.0	70.0	27.892	3	29.661	1.77	0.59
13	9	9577F	LW2-G360	5		10	5	5	50.0	50.0	30.066	5	32.295	2.23	0.45
14	51	9577F	LW2-G360	6		10	9	1	90.0	10.0	27.090	9	30.154	3.06	0.34
15	105	9577F	LW2-G360	7		10	3	7	30.0	70.0	30.178	3	31.455	1.28	0.43
16	3	9577F	LW2-G360	8	wq replicate	10	7	3	70.0	30.0	29.216	7	32.015	2.80	0.40
17	69	9578F	LW2-G212	1		10	9	1	90.0	10.0	29.036	9	32.111	3.08	0.34
18	100	9578F	LW2-G212	2		10	9	1	90.0	10.0	29.586	8	30.631	1.05	0.13
19	88	9578F	LW2-G212	3		10	10	0	100.0	0.0	28.723	10	32.966	4.24	0.42
20	45	9578F	LW2-G212	4		10	10	0	100.0	0.0	29.376	10	32.367	2.99	0.30
21	99	9578F	LW2-G212	5		10	8	2	80.0	20.0	27.529	8	30.713	3.18	0.40
22	103	9578F	LW2-G212	6		10	10	0	100.0	0.0	27.712	10	31.417	3.71	0.37
23	49	9578F	LW2-G212	7		10	10	0	100.0	0.0	27.628	10	30.634	3.01	0.30
24	32	9578F	LW2-G212	8	wq replicate	10	10	0	100.0	0.0	30.131	10	33.310	3.18	0.32
25	96	9579F	LW2-G296	1		10	10	0	100.0	0.0	29.270	10	31.742	2.47	0.25
26	35	9579F	LW2-G296	2		10	10	0	100.0	0.0	27.175	10	29.635	2.46	0.25
27	29	9579F	LW2-G296	3		10	10	0	100.0	0.0	28.068	10	30.405	2.32	0.23
28	111	9579F	LW2-G296	4		10	10	0	100.0	0.0	27.710	10	29.976	2.27	0.23
29	18	9579F	LW2-G296	5		10	9	1	90.0	10.0	30.665	9	32.887	2.22	0.25
30	41	9579F	LW2-G296	6		10	9	1	90.0	10.0	29.271	9	31.674	2.40	0.27
31	12	9579F	LW2-G296	7		10	9	1	90.0	10.0	27.753	9	28.202	0.45	0.05
32	65	9579F	LW2-G296	8	wq replicate	10	8	2	80.0	20.0	28.579	8	31.583	3.00	0.38

	SURV	MORT	PSURV	PMORT	WT
Mean	9.5	0.5	95.0	5.0	0.43
SD	0.8	0.8	7.6	7.6	0.04
n	8	8	8	8	8
Mean	5.6	4.4	56.3	43.8	0.42
SD	2.1	2.1	20.7	20.7	0.09
n	8	8	8	8	8
Mean	9.5	0.5	95.0	5.0	0.32
SD	0.8	0.8	7.6	7.6	0.09
n	8	8	8	8	8
Mean	9.4	0.6	93.8	6.3	0.24
SD	0.7	0.7	7.4	7.4	0.09
n	8	8	8	8	8

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ANC08558
BZTO104(e)008558

Test Number: P686-21

Freshwater Sediment Test
28-day Hyalella azteca

INDEX	BKR	NAS SMPL	CLIENT DESCRIP	REPL		INIT	SURV	MORT	PSURV	PMORT	TARE WT (mg)	WT COUNT	DRY WT (mg)	TWT (mg)	WT (mg)		SURV	MORT	PSURV	PMORT	WT
33	89	9580F	LW2-G205	1		10	10	0	100.0	0.0	30.625	10	33.355	2.73	0.27						
34	7	9580F	LW2-G205	2		10	10	0	100.0	0.0	27.836	10	30.821	2.99	0.30						
35	108	9580F	LW2-G205	3		10	9	1	90.0	10.0	28.563	9	31.756	3.19	0.35						
36	58	9580F	LW2-G205	4		10	9	1	90.0	10.0	28.485	9	31.970	3.49	0.39						
37	87	9580F	LW2-G205	5		10	10	0	100.0	0.0	28.526	10	30.665	2.14	0.21	Mean	9.6	0.4	96.3	3.8	0.31
38	4	9580F	LW2-G205	6		10	9	1	90.0	10.0	29.051	9	30.586	1.54	0.17	SD	0.5	0.5	5.2	5.2	0.08
39	81	9580F	LW2-G205	7		10	10	0	100.0	0.0	31.031	10	34.754	3.72	0.37	n	8	8	8	8	8
40	19	9580F	LW2-G205	8	wq replicate	10	10	0	100.0	0.0	29.220	10	32.935	3.72	0.37						
41	42	9581F	LW2-G274	1		10	1	9	10.0	90.0	29.664	1	30.279	0.61	0.61						
42	95	9581F	LW2-G274	2		10	6	4	60.0	40.0	28.472	6	30.929	2.46	0.41						
43	109	9581F	LW2-G274	3		10	0	10	0.0	100.0	28.746	0									
44	82	9581F	LW2-G274	4		10	4	6	40.0	60.0	27.316	4	29.102	1.79	0.45						
45	62	9581F	LW2-G274	5		10	0	10	0.0	100.0	27.043	0				Mean	1.6	8.4	16.3	83.8	0.40
46	59	9581F	LW2-G274	6		10	1	9	10.0	90.0	27.966	1	28.306	0.34	0.34	SD	2.2	2.2	22.0	22.0	0.16
47	61	9581F	LW2-G274	7		10	1	9	10.0	90.0	27.113	1	27.297	0.18	0.18	n	8	8	8	8	5
48	101	9581F	LW2-G274	8	wq replicate	10	0	10	0.0	100.0	27.678	0									
49	97	9582F	LW2-G303	1		10	9	1	90.0	10.0	27.167	9	29.815	2.65	0.29						
50	14	9582F	LW2-G303	2		10	10	0	100.0	0.0	29.117	10	32.619	3.50	0.35						
51	10	9582F	LW2-G303	3		10	10	0	100.0	0.0	30.476	10	33.115	2.64	0.26						
52	112	9582F	LW2-G303	4		10	9	1	90.0	10.0	27.980	9	30.330	2.35	0.26						
53	36	9582F	LW2-G303	5		10	9	1	90.0	10.0	28.233	9	30.947	2.71	0.30	Mean	9.1	1.1	88.8	11.3	0.29
54	78	9582F	LW2-G303	6		10	8	2	80.0	20.0	28.336	8	30.764	2.43	0.30	SD	0.8	0.8	8.3	8.3	0.03
55	46	9582F	LW2-G303	7		10	8	2	80.0	20.0	27.598	8	30.204	2.61	0.33	n	8	8	8	8	8
56	34	9582F	LW2-G303	8	wq replicate	10	10	2	80.0	20.0	28.755	10	31.319	2.56	0.26						
57	91	9583F	LW2-G376	1		10	9	1	90.0	10.0	28.569	9	31.046	2.48	0.28						
58	5	9583F	LW2-G376	2		10	9	1	90.0	10.0	28.768	9	31.453	2.69	0.30						
59	68	9583F	LW2-G376	3		10	10	0	100.0	0.0	29.072	10	32.443	3.37	0.34						
60	104	9583F	LW2-G376	4		10	10	0	100.0	0.0	27.594	10	30.202	2.61	0.26						
61	39	9583F	LW2-G376	5		10	10	0	100.0	0.0	29.502	10	32.022	2.52	0.25	Mean	9.6	0.4	96.3	3.8	0.31
62	106	9583F	LW2-G376	6		10	9	1	90.0	10.0	27.497	9	30.692	3.20	0.36	SD	0.5	0.5	5.2	5.2	0.05
63	37	9583F	LW2-G376	7		10	10	0	100.0	0.0	29.473	10	32.405	2.93	0.29	n	8	8	8	8	8
64	84	9583F	LW2-G376	8	wq replicate	10	10	0	100.0	0.0	30.696	10	34.703	4.01	0.40						
65	71	9584F	LW2-G385	1		11	11	0	100.0	0.0	27.521	11	31.316	3.80	0.35						
66	56	9584F	LW2-G385	2		10	9	1	90.0	10.0	28.044	9	30.986	2.94	0.33						
67	2	9584F	LW2-G376	3		10	9	1	90.0	10.0	28.587	9	31.114	2.53	0.28						
68	67	9584F	LW2-G385	4		10	10	0	100.0	0.0	28.731	10	32.488	3.76	0.38						
69	90	9584F	LW2-G385	5		10	9	1	90.0	10.0	28.086	9	31.021	2.94	0.33	Mean	9.4	0.8	92.5	7.5	0.35
70	11	9584F	LW2-G385	6		10	10	0	100.0	0.0	28.251	10	31.613	3.36	0.34	SD	0.9	0.7	7.1	7.1	0.04
71	30	9584F	LW2-G385	7		10	9	1	90.0	10.0	27.981	9	31.476	3.50	0.39	n	8	8	8	8	8
72	86	9584F	LW2-G385	8	wq replicate	10	8	2	80.0	20.0	28.193	8	31.489	3.30	0.41						

ANC08559
BZTO104(e)008559

Test Number: P686-21

Freshwater Sediment Test
28-day Hyalella azteca

INDEX	BKR	NAS SMPL	CLIENT DESCRIP	REPL		INIT	SURV	MORT	PSURV	PMORT	TARE WT (mg)	WT COUNT	DRY WT (mg)	TWT (mg)	WT (mg)		SURV	MORT	PSURV	PMORT	WT
73	24	9585F	LW2-G367	1		10	8	2	80.0	20.0	28.207	8	31.118	2.91	0.36						
74	25	9585F	LW2-G367	2		10	10	0	100.0	0.0	28.236	10	31.961	3.73	0.37						
75	40	9585F	LW2-G367	3		10	10	0	100.0	0.0	28.379	10	32.181	3.80	0.38						
76	57	9585F	LW2-G367	4		10	10	0	100.0	0.0	28.638	10	32.159	3.52	0.35						
77	16	9585F	LW2-G367	5		10	10	0	100.0	0.0	27.804	10	30.751	2.95	0.29	Mean	9.6	0.4	96.3	3.8	0.36
78	52	9585F	LW2-G376	6		10	9	1	90.0	10.0	29.283	9	32.986	3.70	0.41	SD	0.7	0.7	7.4	7.4	0.03
79	23	9585F	LW2-G367	7		10	10	0	100.0	0.0	27.657	10	31.220	3.56	0.36	n	8	8	8	8	8
80	77	9585F	LW2-G367	8	wq replicate	10	10	0	100.0	0.0	29.620	10	33.430	3.81	0.38						
81	21	9586F	LW2-G408	1		10	10	0	100.0	0.0	27.874	10	30.345	2.47	0.25						
82	83	9586F	LW2-G408	2		10	9	1	90.0	10.0	31.803	9	34.945	3.14	0.35						
83	94	9586F	LW2-G408	3		10	10	0	100.0	0.0	27.484	10	31.495	4.01	0.40						
84	63	9586F	LW2-G408	4		10	8	2	80.0	20.0	28.922	8	32.469	3.55	0.44						
85	60	9586F	LW2-G408	5		10	8	2	80.0	20.0	28.658	8	31.832	3.17	0.40	Mean	8.8	1.3	87.5	12.5	0.37
86	6	9586F	LW2-G408	6		10	10	0	100.0	0.0	28.642	10	31.431	2.79	0.28	SD	1.4	1.4	13.9	13.9	0.07
87	38	9586F	LW2-G408	7		10	9	1	90.0	10.0	27.211	9	30.859	3.65	0.41	n	8	8	8	8	8
88	70	9586F	LW2-G408	8	wq replicate	10	6	4	60.0	40.0	28.127	6	30.856	2.73	0.45						
89	80	9587F	LW2-G416	1		10	9	1	90.0	10.0	28.096	9	30.123	2.03	0.23						
90	22	9587F	LW2-G416	2		10	10	0	100.0	0.0	29.628	10	30.788	1.16	0.12						
91	73	9587F	LW2-G416	3		10	7	3	70.0	30.0	29.572	7	31.768	2.20	0.31						
92	74	9587F	LW2-G416	4		10	10	0	100.0	0.0	28.091	10	31.365	3.27	0.33						
93	53	9587F	LW2-G416	5		10	10	0	100.0	0.0	28.052	10	31.182	3.13	0.31	Mean	9.5	0.5	95.0	5.0	0.27
94	85	9587F	LW2-G416	6		10	10	0	100.0	0.0	27.618	10	30.904	3.29	0.33	SD	1.1	1.1	10.7	10.7	0.07
95	44	9587F	LW2-G416	7		10	10	0	100.0	0.0	28.493	10	31.126	2.63	0.26	n	8	8	8	8	8
96	48	9587F	LW2-G416	8	wq replicate	10	10	0	100.0	0.0	29.288	10	32.270	2.98	0.30						
97	26	9588F	LW2-G355	1		10	10	0	100.0	0.0	28.312	10	31.891	3.58	0.36						
98	6	9588F	LW2-G355	2		10	10	0	100.0	0.0	28.131	10	32.625	4.49	0.45						
99	17	9588F	LW2-G355	3		10	10	0	100.0	0.0	27.294	10	30.763	3.47	0.35						
100	102	9588F	LW2-G355	4		10	10	0	100.0	0.0	30.868	10	33.058	2.19	0.22						
101	1	9588F	LW2-G355	5		10	9	1	90.0	10.0	30.473	9	33.224	2.75	0.31	Mean	9.6	0.4	96.3	3.8	0.36
102	55	9588F	LW2-G355	6		10	9	1	90.0	10.0	29.334	9	32.913	3.58	0.40	SD	0.5	0.5	5.2	5.2	0.07
103	28	9588F	LW2-G355	7		10	9	1	90.0	10.0	29.560	9	33.213	3.65	0.41	n	8	8	8	8	8
104	64	9588F	LW2-G355	8	wq replicate	10	10	0	100.0	0.0	28.224	10	32.164	3.94	0.39						
105	75	9589F	LW2-G389	1		10	10	0	100.0	0.0	30.448	10	33.622	3.17	0.32						
106	31	9589F	LW2-G389	2		10	8	2	80.0	20.0	29.613	8	32.023	2.41	0.30						
107	27	9589F	LW2-G389	3		10	10	0	100.0	0.0	28.606	10	32.217	3.61	0.36						
108	54	9589F	LW2-G389	4		10	8	2	80.0	20.0	28.801	8	32.314	3.51	0.44						
109	110	9589F	LW2-G389	5		10	5	5	50.0	50.0	27.882	5	30.304	2.42	0.48	Mean	8.5	1.5	85.0	15.0	0.37
110	20	9589F	LW2-G389	6		10	7	3	70.0	30.0	29.818	7	32.367	2.55	0.36	SD	1.9	1.9	18.5	18.5	0.06
111	47	9589F	LW2-G389	7		10	10	0	100.0	0.0	31.184	10	34.475	3.29	0.33	n	8	8	8	8	8
112	98	9589F	LW2-G389	8	wq replicate	10	10	0	100.0	0.0	31.192	10	34.629	3.44	0.34						

Beaker #100: one animal lost/damaged in transfer to weighing pan

ANC08560
BZTO104(e)008560

Water Quality Data

	NAS	CLIENT			Overlying water							Interstitial water	
BKR	SMPL	DESCRIP	REPL	DAY	TEMP	DO	COND	pH	HARD	ALK	NH3	NH3	pH
BULK SEDIMENT POREWATER													
	9574F	Control										2.4	6.5
	9577F	LW2-G360										26.2	6.7
	9578F	LW2-G212										6.7	5.9
	9579F	LW2-G296										1.2	7.0
	9580F	LW2-G205										2.7	6.6
	9581F	LW2-G274										2.2	6.5
	9582F	LW2-G303										1.5	6.6
	9583F	LW2-G376										3.5	6.6
	9584F	LW2-G385										9.5	7.0
	9585F	LW2-G367										2.1	5.9
	9586F	LW2-G408										8.5	6.2
	9587F	LW2-G416										4.6	6.2
	9588F	LW2-G355										9.5	6.6
	9589F	LW2-G389										1.6	6.6
TEST OVERLYING WATER													
3	9577F	LW2-G360	8	0	22.7	6.8	3010	6.6	111	70	2.8		
13	9574F	Control	8	0	22.7	7.1	540	7.0	51	40	<0.1		
19	9580F	LW2-G205	8	0	22.8	7.2	190	6.8	43	40	0.5		
32	9578F	LW2-G212	8	0	22.9	7.5	155	6.9	34	40	0.5		
34	9582F	LW2-G303	8	0	22.8	7.5	150	6.8	34	40	0.2		
48	9587F	LW2-G416	8	0	22.7	7.3	150	6.8	43	40	1.0		
64	9588F	LW2-G355	8	0	22.7	7.2	200	6.9	43	40	0.8		
65	9579F	LW2-G296	8	0	22.9	7.0	155	6.8	43	40	0.3		
70	9586F	LW2-G408	8	0	22.9	7.0	155	6.8	34	40	0.8		
77	9585F	LW2-G367	8	0	22.7	7.0	150	6.6	34	40	0.3		
84	9583F	LW2-G376	8	0	22.6	7.1	155	6.7	34	40	0.7		
86	9584F	LW2-G385	8	0	22.8	7.1	165	6.8	51	40	1.3		
98	9589F	LW2-G389	8	0	22.5	5.4	145	6.7	43	40	0.3		
101	9581F	LW2-G274	8	0	22.7	6.2	160	6.7	43	40	0.3		
3	9577F	LW2-G360	8	1	22.8	6.4	1580	6.7					
13	9574F	Control	8	1	22.6	6.6	385	6.9					
19	9580F	LW2-G205	8	1	22.7	6.8	165	6.8					
32	9578F	LW2-G212	8	1	22.9	6.9	155	6.8					
34	9582F	LW2-G303	8	1	22.8	7.0	155	6.8					
48	9587F	LW2-G416	8	1	22.8	7.0	155	6.8					
64	9588F	LW2-G355	8	1	22.8	7.0	175	6.9					
65	9579F	LW2-G296	8	1	22.9	7.0	155	6.8					
70	9586F	LW2-G408	8	1	23.0	6.8	155	6.8					
77	9585F	LW2-G367	8	1	23.0	7.0	155	6.8					
84	9583F	LW2-G376	8	1	22.7	7.0	155	6.7					
86	9584F	LW2-G385	8	1	22.8	6.7	165	6.7					
98	9589F	LW2-G389	8	1	22.8	6.2	150	6.7					
101	9581F	LW2-G274	8	1	22.7	6.4	165	6.6					

ANC08561
BZTO104(e)008561

Test Number: P686-21

Freshwater Sediment Test
28-Day Hyalella azteca

	NAS	CLIENT			Overlying water							Interstitial water	
BKR	SMPL	DESCRIP	REPL	DAY	TEMP	DO	COND	pH	HARD	ALK	NH3	NH3	pH
3	9577F	LW2-G360	8	2	22.3								
13	9574F	Control	8	2	22.1								
19	9580F	LW2-G205	8	2	22.2								
32	9578F	LW2-G212	8	2	22.2								
34	9582F	LW2-G303	8	2	22.2								
48	9587F	LW2-G416	8	2	22.2								
64	9588F	LW2-G355	8	2	22.2								
65	9579F	LW2-G296	8	2	22.3								
70	9586F	LW2-G408	8	2	22.3								
77	9585F	LW2-G367	8	2	22.1								
84	9583F	LW2-G376	8	2	22.0								
86	9584F	LW2-G385	8	2	22.2								
98	9589F	LW2-G389	8	2	22.1								
101	9581F	LW2-G274	8	2	22.1								
3	9577F	LW2-G360	8	3	22.3	6.7		6.8					
13	9574F	Control	8	3	22.2	6.9		6.8					
19	9580F	LW2-G205	8	3	22.2	7.0		6.8					
32	9578F	LW2-G212	8	3	22.2	7.2		6.8					
34	9582F	LW2-G303	8	3	22.2	7.2		6.8					
48	9587F	LW2-G416	8	3	22.3	7.3		6.8					
64	9588F	LW2-G355	8	3	22.2	7.0		6.9					
65	9579F	LW2-G296	8	3	22.2	6.4		6.8					
70	9586F	LW2-G408	8	3	22.4	6.8		6.8					
77	9585F	LW2-G367	8	3	22.1	7.0		6.7					
84	9583F	LW2-G376	8	3	22.1	7.0		6.7					
86	9584F	LW2-G385	8	3	22.2	7.0		6.7					
98	9589F	LW2-G389	8	3	22.2	6.6		6.7					
101	9581F	LW2-G274	8	3	22.1	6.6		6.7					
3	9577F	LW2-G360	8	4	22.4								
13	9574F	Control	8	4	22.4								
19	9580F	LW2-G205	8	4	22.4								
32	9578F	LW2-G212	8	4	22.4								
34	9582F	LW2-G303	8	4	22.5								
48	9587F	LW2-G416	8	4	22.4								
64	9588F	LW2-G355	8	4	22.3								
65	9579F	LW2-G296	8	4	22.3								
70	9586F	LW2-G408	8	4	22.3								
77	9585F	LW2-G367	8	4	22.5								
84	9583F	LW2-G376	8	4	22.4								
86	9584F	LW2-G385	8	4	22.5								
98	9589F	LW2-G389	8	4	22.3								
101	9581F	LW2-G274	8	4	22.3								
3	9577F	LW2-G360	8	5	22.3								
13	9574F	Control	8	5	22.4								
19	9580F	LW2-G205	8	5	22.4								
32	9578F	LW2-G212	8	5	22.5								
34	9582F	LW2-G303	8	5	22.3								
48	9587F	LW2-G416	8	5	22.4								
64	9588F	LW2-G355	8	5	22.4								
65	9579F	LW2-G296	8	5	22.5								
70	9586F	LW2-G408	8	5	22.5								
77	9585F	LW2-G367	8	5	22.3								
84	9583F	LW2-G376	8	5	22.4								
86	9584F	LW2-G385	8	5	22.4								
98	9589F	LW2-G389	8	5	22.1								
101	9581F	LW2-G274	8	5	22.3								

ANC08562
BZTO104(e)008562

Test Number: P686-21

Freshwater Sediment Test
28-Day Hyalella azteca

	NAS	CLIENT			Overlying water							Interstitial water	
BKR	SMPL	DESCRIP	REPL	DAY	TEMP	DO	COND	pH	HARD	ALK	NH3	NH3	pH
3	9577F	LW2-G360	8	6	22.5	6.8		6.7					
13	9574F	Control	8	6	22.4	7.0		6.8					
19	9580F	LW2-G205	8	6	22.4	6.8		6.8					
32	9578F	LW2-G212	8	6	22.4	6.8		6.7					
34	9582F	LW2-G303	8	6	22.3	6.8		6.7					
48	9587F	LW2-G416	8	6	22.3	6.8		6.8					
64	9588F	LW2-G355	8	6	22.4	6.8		6.8					
65	9579F	LW2-G296	8	6	22.5	6.5		6.7					
70	9586F	LW2-G408	8	6	22.5	6.7		6.7					
77	9585F	LW2-G367	8	6	22.3	6.9		6.7					
84	9583F	LW2-G376	8	6	22.3	6.9		6.7					
86	9584F	LW2-G385	8	6	22.3	6.9		6.8					
98	9589F	LW2-G389	8	6	22.3	6.9		6.7					
101	9581F	LW2-G274	8	6	22.3	6.8		6.7					
3	9577F	LW2-G360	8	7	22.6								
13	9574F	Control	8	7	22.6								
19	9580F	LW2-G205	8	7	22.5								
32	9578F	LW2-G212	8	7	22.4								
34	9582F	LW2-G303	8	7	22.4								
48	9587F	LW2-G416	8	7	22.4								
64	9588F	LW2-G355	8	7	22.4								
65	9579F	LW2-G296	8	7	22.5								
70	9586F	LW2-G408	8	7	22.5								
77	9585F	LW2-G367	8	7	22.3								
84	9583F	LW2-G376	8	7	22.3								
86	9584F	LW2-G385	8	7	22.4								
98	9589F	LW2-G389	8	7	22.4								
101	9581F	LW2-G274	8	7	22.3								
3	9577F	LW2-G360	8	8	22.8	6.3	315	6.7					
13	9574F	Control	8	8	22.7	6.5	180	6.8					
19	9580F	LW2-G205	8	8	22.6	6.1	150	6.6					
32	9578F	LW2-G212	8	8	22.7	5.7	150	6.6					
34	9582F	LW2-G303	8	8	22.6	6.0	150	6.6					
48	9587F	LW2-G416	8	8	22.6	6.0	150	6.7					
64	9588F	LW2-G355	8	8	22.7	5.7	150	6.6					
65	9579F	LW2-G296	8	8	22.8	5.7	150	6.5					
70	9586F	LW2-G408	8	8	22.8	5.6	150	6.5					
77	9585F	LW2-G367	8	8	22.6	5.9	150	6.5					
84	9583F	LW2-G376	8	8	22.6	5.9	150	6.5					
86	9584F	LW2-G385	8	8	22.6	5.7	150	6.5					
98	9589F	LW2-G389	8	8	22.4	6.6	145	6.6					
101	9581F	LW2-G274	8	8	22.5	6.1	150	6.6					
3	9577F	LW2-G360	8	9	22.7								
13	9574F	Control	8	9	22.7								
19	9580F	LW2-G205	8	9	22.7								
32	9578F	LW2-G212	8	9	22.5								
34	9582F	LW2-G303	8	9	22.5								
48	9587F	LW2-G416	8	9	22.5								
64	9588F	LW2-G355	8	9	22.5								
65	9579F	LW2-G296	8	9	22.5								
70	9586F	LW2-G408	8	9	22.7								
77	9585F	LW2-G367	8	9	22.4								
84	9583F	LW2-G376	8	9	22.4								
86	9584F	LW2-G385	8	9	22.5								
98	9589F	LW2-G389	8	9	22.3								
101	9581F	LW2-G274	8	9	22.4								

ANC08563
BZTO104(e)008563

Test Number: P686-21

Freshwater Sediment Test
28-Day Hyalella azteca

	NAS	CLIENT			Overlying water							Interstitial water	
BKR	SMPL	DESCRIP	REPL	DAY	TEMP	DO	COND	pH	HARD	ALK	NH3	NH3	pH
3	9577F	LW2-G360	8	10	22.5	6.8		6.8					
13	9574F	Control	8	10	22.2	6.2		6.6					
19	9580F	LW2-G205	8	10	22.2	6.2		6.6					
32	9578F	LW2-G212	8	10	22.2	6.8		6.5					
34	9582F	LW2-G303	8	10	22.2	6.4		6.5					
48	9587F	LW2-G416	8	10	22.2	6.2		6.5					
64	9588F	LW2-G355	8	10	22.2	6.6		6.6					
65	9579F	LW2-G296	8	10	22.4	6.0		6.5					
70	9586F	LW2-G408	8	10	22.4	6.3		6.6					
77	9585F	LW2-G367	8	10	22.2	6.4		6.5					
84	9583F	LW2-G376	8	10	22.2	6.0		6.5					
86	9584F	LW2-G385	8	10	22.1	6.4		6.6					
98	9589F	LW2-G389	8	10	22.0	6.6		6.5					
101	9581F	LW2-G274	8	10	22.1	6.4		6.6					
3	9577F	LW2-G360	8	11	22.5								
13	9574F	Control	8	11	22.5								
19	9580F	LW2-G205	8	11	22.5								
32	9578F	LW2-G212	8	11	22.3								
34	9582F	LW2-G303	8	11	22.3								
48	9587F	LW2-G416	8	11	22.3								
64	9588F	LW2-G355	8	11	22.3								
65	9579F	LW2-G296	8	11	22.3								
70	9586F	LW2-G408	8	11	22.3								
77	9585F	LW2-G367	8	11	22.4								
84	9583F	LW2-G376	8	11	22.3								
86	9584F	LW2-G385	8	11	22.3								
98	9589F	LW2-G389	8	11	22.3								
101	9581F	LW2-G274	8	11	22.3								
3	9577F	LW2-G360	8	12	22.8								
13	9574F	Control	8	12	22.6								
19	9580F	LW2-G205	8	12	22.6								
32	9578F	LW2-G212	8	12	22.6								
34	9582F	LW2-G303	8	12	22.5								
48	9587F	LW2-G416	8	12	22.5								
64	9588F	LW2-G355	8	12	22.6								
65	9579F	LW2-G296	8	12	22.7								
70	9586F	LW2-G408	8	12	22.7								
77	9585F	LW2-G367	8	12	22.5								
84	9583F	LW2-G376	8	12	22.5								
86	9584F	LW2-G385	8	12	22.5								
98	9589F	LW2-G389	8	12	22.3								
101	9581F	LW2-G274	8	12	22.5								
3	9577F	LW2-G360	8	13	22.7	5.4		6.7					
13	9574F	Control	8	13	22.5	5.4		6.7					
19	9580F	LW2-G205	8	13	22.5	5.2		6.6					
32	9578F	LW2-G212	8	13	22.5	5.5		6.6					
34	9582F	LW2-G303	8	13	22.4	5.4		6.6					
48	9587F	LW2-G416	8	13	22.4	5.2		6.6					
64	9588F	LW2-G355	8	13	22.5	5.3		6.5					
65	9579F	LW2-G296	8	13	22.6	5.0		6.5					
70	9586F	LW2-G408	8	13	22.6	5.1		6.5					
77	9585F	LW2-G367	8	13	22.6	5.3		6.5					
84	9583F	LW2-G376	8	13	22.4	5.4		6.5					
86	9584F	LW2-G385	8	13	22.5	5.6		6.5					
98	9589F	LW2-G389	8	13	22.3	5.3		6.5					
101	9581F	LW2-G274	8	13	22.4	5.4		6.5					

ANC08564
BZTO104(e)008564

Test Number: P686-21

Freshwater Sediment Test
28-Day Hyalella azteca

	NAS	CLIENT			Overlying water							Interstitial water	
BKR	SMPL	DESCRIP	REPL	DAY	TEMP	DO	COND	pH	HARD	ALK	NH3	NH3	pH
3	9577F	LW2-G360	8	14	22.6								
13	9574F	Control	8	14	22.4								
19	9580F	LW2-G205	8	14	22.4								
32	9578F	LW2-G212	8	14	22.3								
34	9582F	LW2-G303	8	14	22.2								
48	9587F	LW2-G416	8	14	22.2								
64	9588F	LW2-G355	8	14	22.2								
65	9579F	LW2-G296	8	14	22.4								
70	9586F	LW2-G408	8	14	22.4								
77	9585F	LW2-G367	8	14	22.3								
84	9583F	LW2-G376	8	14	22.2								
86	9584F	LW2-G385	8	14	22.3								
98	9589F	LW2-G389	8	14	22.1								
101	9581F	LW2-G274	8	14	22.2								
3	9577F	LW2-G360	8	15	22.1	6.2	220	6.4					
13	9574F	Control	8	15	22.2	6.0	170	6.3					
19	9580F	LW2-G205	8	15	22.1	5.8	155	6.3					
32	9578F	LW2-G212	8	15	22.1	5.8	155	6.2					
34	9582F	LW2-G303	8	15	22.0	5.8	155	6.2					
48	9587F	LW2-G416	8	15	22.0	5.8	150	6.2					
64	9588F	LW2-G355	8	15	22.0	5.8	155	6.2					
65	9579F	LW2-G296	8	15	22.1	5.5	155	6.2					
70	9586F	LW2-G408	8	15	22.2	5.3	160	6.2					
77	9585F	LW2-G367	8	15	22.1	5.9	150	6.2					
84	9583F	LW2-G376	8	15	22.1	5.7	150	6.2					
86	9584F	LW2-G385	8	15	22.1	5.8	155	6.2					
98	9589F	LW2-G389	8	15	22.0	5.9	150	6.2					
101	9581F	LW2-G274	8	15	22.0	5.8	155	6.2					
3	9577F	LW2-G360	8	16	22.9								
13	9574F	Control	8	16	22.7								
19	9580F	LW2-G205	8	16	22.7								
32	9578F	LW2-G212	8	16	22.7								
34	9582F	LW2-G303	8	16	22.7								
48	9587F	LW2-G416	8	16	22.6								
64	9588F	LW2-G355	8	16	22.6								
65	9579F	LW2-G296	8	16	22.8								
70	9586F	LW2-G408	8	16	22.8								
77	9585F	LW2-G367	8	16	22.6								
84	9583F	LW2-G376	8	16	22.6								
86	9584F	LW2-G385	8	16	22.6								
98	9589F	LW2-G389	8	16	22.4								
101	9581F	LW2-G274	8	16	22.5								
3	9577F	LW2-G360	8	17	22.6	6.6		6.7					
13	9574F	Control	8	17	22.4	6.6		6.6					
19	9580F	LW2-G205	8	17	22.4	6.4		6.6					
32	9578F	LW2-G212	8	17	22.5	6.6		6.5					
34	9582F	LW2-G303	8	17	22.3	6.4		6.5					
48	9587F	LW2-G416	8	17	22.3	6.8		6.5					
64	9588F	LW2-G355	8	17	22.4	6.2		6.5					
65	9579F	LW2-G296	8	17	22.5	6.1		6.5					
70	9586F	LW2-G408	8	17	22.5	5.8		6.5					
77	9585F	LW2-G367	8	17	22.4	6.2		6.5					
84	9583F	LW2-G376	8	17	22.3	6.3		6.5					
86	9584F	LW2-G385	8	17	22.4	6.4		6.5					
98	9589F	LW2-G389	8	17	22.2	6.5		6.6					
101	9581F	LW2-G274	8	17	22.3	6.2		6.5					

ANC08565
BZTO104(e)008565

Test Number: P686-21

Freshwater Sediment Test
28-Day Hyalella azteca

	NAS	CLIENT			Overlying water							Interstitial water	
BKR	SMPL	DESCRIP	REPL	DAY	TEMP	DO	COND	pH	HARD	ALK	NH3	NH3	pH
3	9577F	LW2-G360	8	18	22.5								
13	9574F	Control	8	18	22.4								
19	9580F	LW2-G205	8	18	22.4								
32	9578F	LW2-G212	8	18	22.4								
34	9582F	LW2-G303	8	18	22.4								
48	9587F	LW2-G416	8	18	22.3								
64	9588F	LW2-G355	8	18	22.2								
65	9579F	LW2-G296	8	18	22.3								
70	9586F	LW2-G408	8	18	22.3								
77	9585F	LW2-G367	8	18	22.3								
84	9583F	LW2-G376	8	18	22.2								
86	9584F	LW2-G385	8	18	22.3								
98	9589F	LW2-G389	8	18	22.2								
101	9581F	LW2-G274	8	18	22.2								
3	9577F	LW2-G360	8	19	22.1								
13	9574F	Control	8	19	22.1								
19	9580F	LW2-G205	8	19	22.0								
32	9578F	LW2-G212	8	19	22.2								
34	9582F	LW2-G303	8	19	22.1								
48	9587F	LW2-G416	8	19	22.1								
64	9588F	LW2-G355	8	19	22.1								
65	9579F	LW2-G296	8	19	22.0								
70	9586F	LW2-G408	8	19	22.0								
77	9585F	LW2-G367	8	19	22.1								
84	9583F	LW2-G376	8	19	22.1								
86	9584F	LW2-G385	8	19	22.2								
98	9589F	LW2-G389	8	19	22.2								
101	9581F	LW2-G274	8	19	22.2								
3	9577F	LW2-G360	8	20	22.2	5.9		6.4					
13	9574F	Control	8	20	22.2	5.7		6.4					
19	9580F	LW2-G205	8	20	22.1	5.9		6.4					
32	9578F	LW2-G212	8	20	22.1	6.1		6.4					
34	9582F	LW2-G303	8	20	22.1	6.3		6.4					
48	9587F	LW2-G416	8	20	22.1	6.1		6.4					
64	9588F	LW2-G355	8	20	22.1	5.9		6.3					
65	9579F	LW2-G296	8	20	22.2	5.9		6.4					
70	9586F	LW2-G408	8	20	22.2	5.9		6.4					
77	9585F	LW2-G367	8	20	22.1	5.9		6.3					
84	9583F	LW2-G376	8	20	22.1	5.9		6.3					
86	9584F	LW2-G385	8	20	22.1	5.9		6.4					
98	9589F	LW2-G389	8	20	22.1	5.3		6.3					
101	9581F	LW2-G274	8	20	22.1	5.8		6.3					
3	9577F	LW2-G360	8	21	22.6								
13	9574F	Control	8	21	22.6								
19	9580F	LW2-G205	8	21	22.5								
32	9578F	LW2-G212	8	21	22.5								
34	9582F	LW2-G303	8	21	22.5								
48	9587F	LW2-G416	8	21	22.5								
64	9588F	LW2-G355	8	21	22.6								
65	9579F	LW2-G296	8	21	22.7								
70	9586F	LW2-G408	8	21	22.7								
77	9585F	LW2-G367	8	21	22.6								
84	9583F	LW2-G376	8	21	22.4								
86	9584F	LW2-G385	8	21	22.4								
98	9589F	LW2-G389	8	21	22.4								
101	9581F	LW2-G274	8	21	22.4								

ANC08566
BZTO104(e)008566

Test Number: P686-21

Freshwater Sediment Test
28-Day Hyalella azteca

	NAS	CLIENT			Overlying water							Interstitial water	
BKR	SMPL	DESCRIP	REPL	DAY	TEMP	DO	COND	pH	HARD	ALK	NH3	NH3	pH
3	9577F	LW2-G360	8	22	22.4	6.7	160						
13	9574F	Control	8	22	22.4	6.6	155						
19	9580F	LW2-G205	8	22	22.3	6.6	150						
32	9578F	LW2-G212	8	22	22.3	6.8	150						
34	9582F	LW2-G303	8	22	22.3	7.0	150						
48	9587F	LW2-G416	8	22	22.3	6.8	150						
64	9588F	LW2-G355	8	22	22.3	6.6	150						
65	9579F	LW2-G296	8	22	22.3	6.5	150						
70	9586F	LW2-G408	8	22	22.3	6.4	150						
77	9585F	LW2-G367	8	22	22.3	6.4	145						
84	9583F	LW2-G376	8	22	22.3	6.6	145						
86	9584F	LW2-G385	8	22	22.3	6.6	150						
98	9589F	LW2-G389	8	22	22.1	6.8	145						
101	9581F	LW2-G274	8	22	22.1	6.8	150						
3	9577F	LW2-G360	8	23	22.8								
13	9574F	Control	8	23	22.8								
19	9580F	LW2-G205	8	23	22.8								
32	9578F	LW2-G212	8	23	22.8								
34	9582F	LW2-G303	8	23	22.8								
48	9587F	LW2-G416	8	23	22.8								
64	9588F	LW2-G355	8	23	22.8								
65	9579F	LW2-G296	8	23	22.8								
70	9586F	LW2-G408	8	23	22.9								
77	9585F	LW2-G367	8	23	22.8								
84	9583F	LW2-G376	8	23	22.8								
86	9584F	LW2-G385	8	23	22.8								
98	9589F	LW2-G389	8	23	22.7								
101	9581F	LW2-G274	8	23	22.8								
3	9577F	LW2-G360	8	24	22.6	5.7		6.5					
13	9574F	Control	8	24	22.6	5.4		6.5					
19	9580F	LW2-G205	8	24	22.6	5.8		6.2					
32	9578F	LW2-G212	8	24	22.6	6.2		6.4					
34	9582F	LW2-G303	8	24	22.6	5.9		6.4					
48	9587F	LW2-G416	8	24	22.5	6.0		6.4					
64	9588F	LW2-G355	8	24	22.5	5.7		6.4					
65	9579F	LW2-G296	8	24	22.7	5.7		6.4					
70	9586F	LW2-G408	8	24	22.8	5.7		6.2					
77	9585F	LW2-G367	8	24	22.5	5.8		6.3					
84	9583F	LW2-G376	8	24	22.5	5.6		6.3					
86	9584F	LW2-G385	8	24	22.6	5.4		6.4					
98	9589F	LW2-G389	8	24	22.5	5.9		6.4					
101	9581F	LW2-G274	8	24	22.4	6.1		6.4					
3	9577F	LW2-G360	8	25	22.2								
13	9574F	Control	8	25	22.2								
19	9580F	LW2-G205	8	25	22.2								
32	9578F	LW2-G212	8	25	22.2								
34	9582F	LW2-G303	8	25	22.2								
48	9587F	LW2-G416	8	25	22.1								
64	9588F	LW2-G355	8	25	22.1								
65	9579F	LW2-G296	8	25	22.2								
70	9586F	LW2-G408	8	25	22.2								
77	9585F	LW2-G367	8	25	22.2								
84	9583F	LW2-G376	8	25	22.2								
86	9584F	LW2-G385	8	25	22.2								
98	9589F	LW2-G389	8	25	22.3								
101	9581F	LW2-G274	8	25	22.3								

ANC08567
BZTO104(e)008567

Test Number: P686-21

Freshwater Sediment Test
28-Day Hyalella azteca

	NAS	CLIENT			Overlying water							Interstitial water	
BKR	SMPL	DESCRIP	REPL	DAY	TEMP	DO	COND	pH	HARD	ALK	NH3	NH3	pH
3	9577F	LW2-G360	8	26	22.1								
13	9574F	Control	8	26	22.0								
19	9580F	LW2-G205	8	26	22.0								
32	9578F	LW2-G212	8	26	22.1								
34	9582F	LW2-G303	8	26	22.1								
48	9587F	LW2-G416	8	26	22.0								
64	9588F	LW2-G355	8	26	22.0								
65	9579F	LW2-G296	8	26	22.2								
70	9586F	LW2-G408	8	26	22.2								
77	9585F	LW2-G367	8	26	22.0								
84	9583F	LW2-G376	8	26	22.0								
86	9584F	LW2-G385	8	26	22.1								
98	9589F	LW2-G389	8	26	22.0								
101	9581F	LW2-G274	8	26	22.1								
3	9577F	LW2-G360	8	27	22.0	5.8		6.7					
13	9574F	Control	8	27	22.1	6.0		6.6					
19	9580F	LW2-G205	8	27	22.0	6.2		6.6					
32	9578F	LW2-G212	8	27	22.0	6.1		6.6					
34	9582F	LW2-G303	8	27	22.0	6.2		6.5					
48	9587F	LW2-G416	8	27	22.0	5.6		6.5					
64	9588F	LW2-G355	8	27	22.0	6.0		6.5					
65	9579F	LW2-G296	8	27	22.1	5.9		6.5					
70	9586F	LW2-G408	8	27	22.2	6.1		6.6					
77	9585F	LW2-G367	8	27	22.0	6.2		6.5					
84	9583F	LW2-G376	8	27	22.0	6.2		6.5					
86	9584F	LW2-G385	8	27	22.0	5.5		6.5					
98	9589F	LW2-G389	8	27	22.2	6.0		6.5					
101	9581F	LW2-G274	8	27	22.1	6.3		6.5					
3	9577F	LW2-G360	8	28	22.4	6.9	165	6.9	26	40	0.2		
13	9574F	Control	8	28	22.4	7.0	160	6.9	34	40	0.2		
19	9580F	LW2-G205	8	28	22.3	7.2	155	6.8	43	40	0.1		
32	9578F	LW2-G212	8	28	22.4	7.4	155	6.8	34	40	0.2		
34	9582F	LW2-G303	8	28	22.4	7.4	155	6.8	43	40	<0.1		
48	9587F	LW2-G416	8	28	22.4	7.3	155	6.9	43	40	<0.1		
64	9588F	LW2-G355	8	28	22.4	7.1	155	6.8	34	40	<0.1		
65	9579F	LW2-G296	8	28	22.4	7.2	155	6.8	34	30	0.1		
70	9586F	LW2-G408	8	28	22.4	7.2	155	6.8	34	40	<0.1		
77	9585F	LW2-G367	8	28	22.4	7.2	150	6.7	43	40	<0.1		
84	9583F	LW2-G376	8	28	22.4	7.3	150	6.7	34	40	<0.1		
86	9584F	LW2-G385	8	28	22.3	7.1	155	6.7	34	40	0.1		
98	9589F	LW2-G389	8	28	22.3	7.4	150	6.8	34	40	<0.1		
101	9581F	LW2-G274	8	28	22.4	7.4	150	6.7	51	40	<0.1		
				Mean	22.4	6.3	216	6.6	42	41	---	5.9	6.5
				SD	0.2	0.6	349	0.2	15	6	---	6.6	0.3
				n	406	196	84	182	28	28	28	14	14
				Min	22.0	5.0	145	6.2	26	30	<0.1	1.2	5.9
				Max	23.0	7.5	3010	7.0	111	70	2.8	26.2	7.0
	Data Entry Verified												

ANC08568
BZTO104(e)008568

CHAIN-OF-CUSTODY RECORDS

1 of 1

Windward Environmental

CHAIN-OF-CUSTODY/TEST REQUEST FORM

1340

Project/Client Name: LWG PORTLAND HARBOR RI/FS
Windward Project No:
Contact Name: HELLE ANDERSEN
Sampled By: BOB COMPLITA, ANGELITA RODRIQUEZ

Ship to: NORTHWESTERN AQUATIC SCIENCES
Attn: GERALD IRISSARRI
Shipping address: 7 AQUINA BAY ROAD NEWPORT OR

Shipping Date: 10/30/2004
Airbill Number:

Sample Collection Date (m/d/y)	Time	Sample Identification	Volume of Sample / # of Containers	Matrix	Test(s) Requested (check test(s) required) HYAELLA	CHIRONOMID						Comments / Instructions [Jar tag number(s)]
10/28/04	1703	LW2-G360	1L/4	Sediment	X	X						9577F
	1502	LW2-G212			X	X						9578F
	1436	LW2-G296			X	X						9579F
10/29/04	0901	LW2-G205			X	X						9580F
	0951	LW2-G274			X	X						9581F
	1057	LW2-G303			X	X						9582F
	1126	LW2-G376			X	X						9583F
	1156	LW2-G385			X	X						9584F
	1217	LW2-G367			X	X						9585F
	1335	LW2-G408			X	X						9586F
	1354	LW2-G416			X	X						9587F
	1436	LW2-G355			X	X						9588F
↓	1635	LW2-G389	↓	↓	X	X						9589F
		Total Number of Containers	52	Purchase Order / Statement of Work #								

4 to AH

1) Released by:	1) Rec'd by:	2) Released by:	1) Rec'd by:
Print name: ANGELITA RODRIQUEZ		Print name:	
Signature:	Company:	Signature:	Company:
Company: WINDWARD ENV		Company:	
Date/Time: 10.30.04 12:30	Date/Time:	Date/Time:	Date/Time:

* Distribution: White and yellow copies accompany shipment; pink-consignor's copy; white-consignee return with results; yellow-consignee's copy.
* Instructions for completion of Chain-of-Custody/Test Request Form on back.

Wind/Ward environmental LLC
• 200 West Mercer Street
Suite 401
Seattle, WA 98119
Tel: 206.378.1364
Fax: 206.217.0089

To be completed by Laboratory upon sample receipt:

Date of receipt: 10/30/04	Laboratory W.O. #
Condition upon receipt: good	Time of receipt: 12:30
Cooler temperature: 2.7 °C	Received by: Q. L. Caldwell

ANC08570
BZTO104(e)008570

APPENDIX II

RAW DATA – REFERENCE TOXICANT TEST

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS- _____

ACUTE TOXICITY TEST (ALL SPECIES)

Test No. 999-1862 Client: QC Test Investigator _____

Test Type (rangefinding/definitive) _____ Test Length (hr) 96

Species *Hyalella azteca*

STUDY MANAGEMENT

Client: QC test

Client's Study Monitor: QC test

Testing Laboratory: Northwestern Aquatic Sciences

Test Location: Newport Laboratory

Laboratory's Study Personnel:

Proj. Man./Study Dir. G.J. Irissarri GJI

QA Officer L. K. Nemeth LKN

1. G.C. Hayes GCH 2. Susan Gage SG

3. GABehler GAB 4. M.S. Redmond MSR

5. BB Pridgeon BBP

Test Beginning: 11-2-04 1220 Test Ending: 11-6-04 1100

TEST MATERIAL Lot No.: MALINCKRODT TNZ

Description: Cadmium as $CdCl_2 \cdot 2.5H_2O$ (1.0 mg/ml) Prepared: 7-13-04

NAS Sample No.				
Date of Collection:				
Date of Receipt:				
Temperature (deg C):				
Dissolved oxygen (mg/L):				
pH:				
Conductivity (umhos/cm):				
Hardness (mg/L):				
Alkalinity (mg/L):				
Salinity (ppt):				
Total chlorine (mg/L):				
Total ammonia-N (mg/L):				

DILUTION WATER

Description: Moderately hard synthetic water

Date of Preparation/Collection: 10-20-04

Water Quality: Cond. (umhos/cm): 320 Salinity (ppt) — pH 7.5

Hardness (mg/L as $CaCO_3$): 85 Alkalinity (mg/L as $CaCO_3$): 80

Treatments: Aerated ≥ 24 hrs

TEST LOCATION

Test conducted in (circle one): room 1 (room 2) trailer water bath other: _____

Randomization chart:

A	60	375	30	15	Ø	75				
B	75	30	Ø	60	375	15				

Error codes: 1) Correction of handwriting error
2) Written in wrong location; entry deleted
3) Wrong date deleted; replaced with correct date
[illegible] measurement repeated

ANC08572
BZTO104(e)008572

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-_____

ACUTE TOXICITY TEST (ALL SPECIES)

Test No. 999-1862 Client QC Test Investigator _____

TEST ORGANISMS

Species: *Hyalella azteca* Age: _____ Size: _____

Source: Chesapeake Cultures, Hayes, VA Date received: 10-29-04

Acclimation Data:

Date	Temp. (deg.C)	DO (mg/L)	pH	Cond. umhos/cm	Hardness (mg/L)	Alkalinity (mg/L)	Feeding * Amount	Feeding * description	Water changes
10-29-04	19.4	>15.0	7.6	390	154	210	10 mL/PAN	YTC	1/2 w/ ~~TEST DILUTION~~ TAP W
10-30-04	22.8	8.6	8.1	500	119	180	"	"	"
10-31-04	22.6	8.2	8.1	340	68	90	"	"	"
11-1-04	22.4	8.6	7.6	310	68	70	"	"	"
11-2-04	22.8	7.4	7.8	210	60	70	"	"	
Mean	22.0	9.6	7.8	350	94	124			
S.D.	1.5	3.1	0.3	106	41	66			
(N)	5	5	5	5	5	5			

Photoperiod during acclimation: 16:8, L:D

* ANIMALS WERE DIVIDED INTO 3 PANS. FEEDING IS PER PAN.

TEST PROCEDURES AND CONDITIONS

Test concentrations (50% series recommended): 60, 30, 15, 7.5, 3.75, 0 ug/L

Test chamber: 250 ml glass beakers Test volume: 100 ml

Replicates/treatment: 10 Organisms/treatment: 20 (10/rep)

Test water changes: None Aeration during test: None

Feeding: 0.5 ml YTC suspension per beaker on days 0 and 2

Duration: 24-hr, 48-hr, 96-hr Test temperature (deg.C) 23 ± 1 or 20 ± 1

Beaker placement: Stratified randomization Photoperiod: 16:8, L:D

MISCELLANEOUS NOTES

Test solution preparation:

1st working stock made by 1:99 (1ml ↑ 100 ml) dilution of concentrated 1.0 mg/ml Cd stock.
Final conc.: 10 ug/L.

2nd working stock made by 10:90 (10ml ↑ 100 ml) dilution of concentrated 1st working stock.
Final conc.: 1ug/L.

Test concentration (ug/L)	ml of 2nd working stock per **200** ml	Dilution water
60	12	Brought up to final volume of 200 ml with dilution water and distributed evenly between two replicates
30	6	
15	3	
7.5	1.5	
3.75	0.75	
0	0	

11-2-04 GJL

ANC08573
BZTO104(e)008573

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-_____

ACUTE TOXICITY TEST (ALL SPECIES)

Test No. 999-1862 Client QC Test

DAILY RECORD SHEET

Day 0 (11 / 2 /04) [illegible]

Conc. (ug/L)	Temp. (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	Survivors A	Survivors B
1. 60	23.3	8.2	295	7.9	85	80	10	10
2. 30	23.3	8.2	295	7.9			10	10
3. 15	23.2	8.2	295	7.8			10	10
4. 7.5	23.3	8.2	295	7.8			10	10
5. 3.75	23.3	8.2	295	7.8			10	10
6. 0	23.3	8.1	295	7.8	85	80	10	10
All animals fed 0.5 ml YTC suspension. Initials: [illegible]								

Day 1 (11 / 3 /04) BBP / [illegible]

Conc. (ug/L)	Temp. (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	Survivors A	Survivors B
1. 60	23.7	7.2	300	7.5			10	10
2. 30	23.8	7.3	295	7.5			10	10
3. 15	23.7	7.3	295	7.5			10	10
4. 7.5	23.7	7.5	300	7.5			10	10
5. 3.75	23.7	7.5	~~[illegible]~~ 290	7.5			10	10
6. 0	23.7	7.5	290	7.6			10	10

Day 2 (11 / 4 /04) BBP / GJI

Conc. (ug/L)	Temp. (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	Survivors A	Survivors B
1. 60	23.1	7.4	310	7.4			∅ (10D)	2 (8D)
2. 30	23.2	7.4	305	7.4			4 (6D)	5 (5D)
3. 15	23.2	7.4	305	7.4			8 (2D)	6 (4D)
4. 7.5	23.1	7.4	315	7.4			10	10
5. 3.75	23.1	7.2	305	7.4			10	10
6. 0	23.2	7.3	300	7.4			10	10
All animals fed 0.5 ml YTC suspension. Initials: GJI								

Day 3 (11 / 5 /04) BBP / GJI

Conc. (ug/L)	Temp. (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	Survivors A	Survivors B
1. 60	23.5	7.6	320	7.5			∅	∅ (2D)
2. 30	23.6	7.6	310	7.6			∅ (4D)	∅ (5D)
3. 15	23.6	7.6	310	7.6			∅ (8D)	∅ (6D)
4. 7.5	23.6	7.6	325	7.6			7 (3D)	4 (6D)
5. 3.75	23.7	7.4	310	7.6			10	9 (1D)
6. 0	23.8	7.5	310	7.6			10	10

Day 4 (11 / 6 /04) GJI

Conc. (ug/L)	Temp. (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	Survivors A	Survivors B
1. 60	–	–	–	–	–	–	∅	∅
2. 30	22.8	–	–	7.7			∅	∅
3. 15	22.9	–	–	7.7			∅	∅
4. 7.5	22.9	8.3	330	7.7			2 (5D)	∅ (4D)
5. 3.75	22.8	8.2	310	7.7			9 (1D)	9
6. 0	22.7	8.1	310	7.7	85		10	10
Mean	23.3	7.7	304	7.6	85	80		
SD	0.3	0.4	10	0.2	0	–		
n	29	27	27	29	3	2		

ANC08574

BZTO104(e)008574

Acute 96-hr Toxicity Test-96 Hr Survival

Start Date:	11/2/04 12:20	Test ID:	999-1862	Sample ID:	REF-Ref Toxicant
End Date:	11/6/04 11:00	Lab ID:	ORNAS-Northwestern Aquati	Sample Type:	CDCL-Cadmium chloride
Sample Date:		Protocol:	EPAF 91 EPA Freshwater	Test Species:	HA-Hyalella azteca
Comments:					

Conc-ug/L	1	2
D-Control	1.0000	1.0000
3.75	0.9000	0.9000
7.5	0.2000	0.0000
15	0.0000	0.0000
30	0.0000	0.0000
60	0.0000	0.0000

			Transform: Arcsin Square Root					Number	Total
Conc-ug/L	Mean	N-Mean	Mean	Min	Max	CV%	N	Resp	Number
D-Control	1.0000	1.0000	1.4120	1.4120	1.4120	0.000	2	0	20
3.75	0.9000	0.9000	1.2490	1.2490	1.2490	0.000	2	2	20
7.5	0.1000	0.1000	0.3112	0.1588	0.4636	69.269	2	18	20
15	0.0000	0.0000	0.1588	0.1588	0.1588	0.000	2	20	20
30	0.0000	0.0000	0.1588	0.1588	0.1588	0.000	2	20	20
60	0.0000	0.0000	0.1588	0.1588	0.1588	0.000	2	20	20

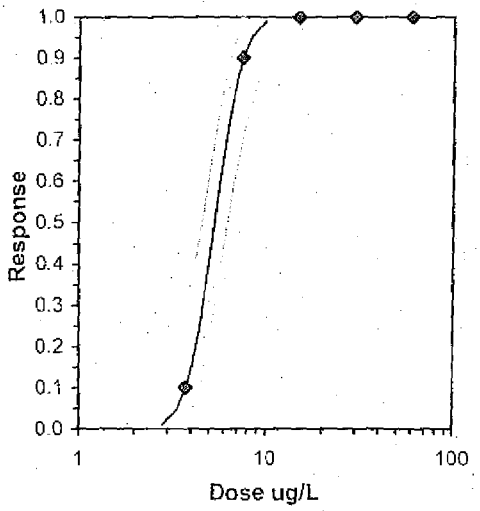
Auxiliary Tests	Statistic	Critical	Skew	Kurt
Normality of the data set cannot be confirmed				
Equality of variance cannot be confirmed				

Maximum Likelihood-Probit

Parameter	Value	SE	95% Fiducial Limits		Control	Chi-Sq	Critical	P-value	Mu	Sigma	Iter
Slope	8.52152	1.78509	5.02274	12.0203	0	0.00123	7.81472	1	0.7245	0.11735	3
Intercept	-1.1739	1.32236	-3.7657	1.41794							
TSCR											

Point	Probits	ug/L	95% Fiducial Limits	
EC01	2.674	2.82818	1.75661	3.52676
EC05	3.355	3.40002	2.37012	4.0706
EC10	3.718	3.75072	2.76981	4.41096
EC15	3.964	4.00755	3.06922	4.66821
EC20	4.158	4.22416	3.32341	4.89313
EC25	4.326	4.4193	3.55173	5.10399
EC40	4.747	4.95193	4.15739	5.7334
EC50	5.000	5.30279	4.53115	6.20213
EC60	5.253	5.67852	4.90309	6.75765
EC75	5.674	6.36291	5.51004	7.90668
EC80	5.842	6.65685	5.74819	8.44884
EC85	6.036	7.01665	6.02585	9.14751
EC90	6.282	7.49712	6.37798	10.1352
EC95	6.645	8.27043	6.91204	11.8431
EC99	7.326	9.94263	7.97882	15.9775

Significant heterogeneity detected ($p < 0.01$)



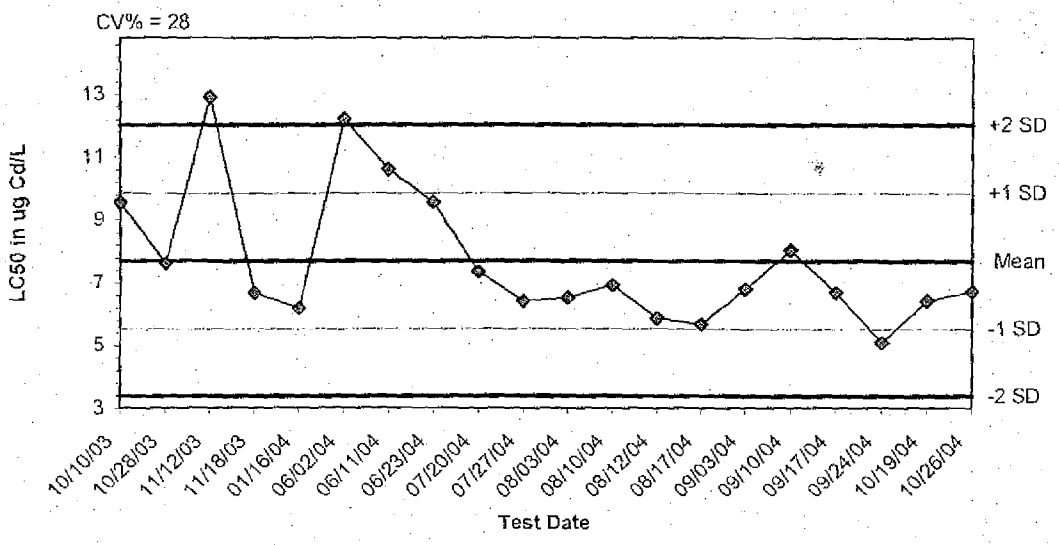
ANC08575
BZTO104(e)008575

Test: AT-Acute 96-hr Toxicity Test							Test ID: 999-1862		
Species: HA-Hyalella azteca							Protocol: EPAF 91-EPA Freshwater		
Sample ID: REF-Ref Toxicant							Sample Type: CDCL-Cadmium chloride		
Start Date: 11/2/04 12:20			End Date: 11/6/04 11:00				Lab ID: ORNAS-Northwestern Aquatic Sciences		
Pos	ID	Rep	Group	Start	24 Hr	48 Hr	72 Hr	96 Hr	Notes
	1	1	D-Control	10				10	
	2	2	D-Control	10				10	
	3	1	3.750	10				9	
	4	2	3.750	10				9	
	5	1	7.500	10				2	
	6	2	7.500	10				0	
	7	1	15.000	10				0	
	8	2	15.000	10				0	
	9	1	30.000	10				0	
	10	2	30.000	10				0	
	11	1	60.000	10				0	
	12	2	60.000	10				0	

Comments: Data entry verified against laboratory bench sheets
MSR 11-10-04

ANC08576
BZTO104(e)008576

Hyalella azteca 96-hr reference toxicant test - last 20 points



Dates	Values	Mean	-1 SD	-2 SD	+1 SD	+2 SD
10/10/03	9.5600	7.6930	5.5365	3.3800	9.8495	12.0060
10/28/03	7.6200	7.6930	5.5365	3.3800	9.8495	12.0060
11/12/03	12.9000	7.6930	5.5365	3.3800	9.8495	12.0060
11/18/03	6.6700	7.6930	5.5365	3.3800	9.8495	12.0060
01/16/04	6.1900	7.6930	5.5365	3.3800	9.8495	12.0060
06/02/04	12.2000	7.6930	5.5365	3.3800	9.8495	12.0060
06/11/04	10.6000	7.6930	5.5365	3.3800	9.8495	12.0060
06/23/04	9.5600	7.6930	5.5365	3.3800	9.8495	12.0060
07/20/04	7.3500	7.6930	5.5365	3.3800	9.8495	12.0060
07/27/04	6.4100	7.6930	5.5365	3.3800	9.8495	12.0060
08/03/04	6.5300	7.6930	5.5365	3.3800	9.8495	12.0060
08/10/04	6.9300	7.6930	5.5365	3.3800	9.8495	12.0060
08/12/04	5.8800	7.6930	5.5365	3.3800	9.8495	12.0060
08/17/04	5.6800	7.6930	5.5365	3.3800	9.8495	12.0060
09/03/04	6.8000	7.6930	5.5365	3.3800	9.8495	12.0060
09/10/04	8.0300	7.6930	5.5365	3.3800	9.8495	12.0060
09/17/04	6.6900	7.6930	5.5365	3.3800	9.8495	12.0060
09/24/04	5.1000	7.6930	5.5365	3.3800	9.8495	12.0060
10/19/04	6.4300	7.6930	5.5365	3.3800	9.8495	12.0060
10/26/04	6.7300	7.6930	5.5365	3.3800	9.8495	12.0060

mrk
11-10-04

Chesapeake Cultures

P.O. Box 507 Hayes, VA 23072 (804) 693-4046 (804)694-4704 fax
www.c-cultures.com
e-mail growfish@c-cultures.com

NAS
Shipment Information

Species Hyalella azteca Date 10/28/04

Age ~2-3d. ; ~1.0-1.3mm P.O. No. verbal

Quanitity 2400 + Invoice No. 4869

Temperature 24°C Salinity – pH 7.95

Notes Thank you!

recieved 10-28-04 BBP

Biologist [signature]

* *Please inspect shipment and report any problem immediately* *

Pg 7 of 7

ANC08578
BZTO104(e)008578

Report

of

Test No. 686-22

Toxicity of Portland Harbor RI/FS Freshwater Test Sediments (Batch 11) using a 10-day Midge, *Chironomus tentans*, Sediment Bioassay

Submitted to

Windward Environmental, Inc.
200 West Mercer Street, Suite 401
Seattle, WA 98119

Submitted by

Northwestern Aquatic Sciences
3814 Yaquina Bay Road
P.O. Box 1437
Newport, OR 97365

January 19, 2005

ANC08579
BZTO104(e)008579

TOXICITY TEST REPORT

TEST IDENTIFICATION

Test No.: 686-22

Title: Toxicity of Portland Harbor RI/FS freshwater test sediments (batch 11) using a 10-day midge, *Chironomus tentans*, sediment bioassay.

Protocol No.: NAS-686-CT4b, June 24, 2004. Based on ASTM 2003, Standard Method No. E 1706-00 and U.S. EPA Method 100.2 (EPA/600/R-99/064, 2000) This protocol can be found in Appendix B of the Portland Harbor RI/FS Round 2 Quality Assurance Project Plan, June 24, 2004.

STUDY MANAGEMENT

Study Sponsor: Windward Environmental, Inc., 200 West Mercer Street, Suite 401, Seattle, WA 98119.

Sponsor's Study Monitor: Ms. Helle Andersen

Testing Laboratory: Northwestern Aquatic Sciences, P.O. Box 1437, Newport, OR 97365

Test Location: Newport laboratory

Laboratory's Study Personnel: G.J. Irissarri, B.S., Proj. Man./Study Dir.; L.K. Nemeth, B.S., M.B.A., QA Officer; R.S. Caldwell, PhD, Sr. Toxicol.; G.A. Buhler, B.S., Aq. Toxicol.; W.T. Montgomery, A.A., Sr. Tech.; G. Hayes, B.S., Tech.; S.J. Gage, B.A., Tech.; B.B. Pridgeon, Lab Assist.

Study Schedule:

Test Beginning: 11-2-04, 1330 hrs.

Test Ending: 11-12-04, 1030 hrs.

Disposition of Study Records: All specimens, raw data, reports and other study records are stored according to Good Laboratory Practice regulations at Northwestern Aquatic Sciences, 3814 Yaquina Bay Rd., Newport, OR 97365.

Good Laboratory Practices: The test was conducted following the principles of Good Laboratory Practices (GLP) as defined in the EPA/TSCA Good Laboratory Practice regulations revised August 17, 1989 (40 CFR Part 792).

Statement of Quality Assurance: The test data were reviewed by the Quality Assurance Unit to assure that the study was performed in accordance with the protocol and standard operating procedures. This report is an accurate reflection of the raw data.

TEST MATERIAL

Test Sediments: Portland Harbor RI/FS freshwater test sediments (Batch 11). Details are as follows:

NAS Sample No.	9577F	9578F	9579F	9580F	9581F
Description	LW2-G360	LW2-G212	LW2-G296	LW2-G205	LW2-G274
Collection Date	10/28/04	10/28/04	10/28/04	10/29/04	10/29/04
Receipt Date	10/30/04	10/30/04	10/30/04	10/30/04	10/30/04

NAS Sample No.	9582F	9583F	9584F	9585F	9586F
Description	LW2-G303	LW2-G376	LW2-G385	LW2-G367	LW2-G408
Collection Date	10/29/04	10/29/04	10/29/04	10/29/04	10/29/04
Receipt Date	10/30/04	10/30/04	10/30/04	10/30/04	10/30/04

NAS Sample No.	9587F	9588F	9589F
Description	LW2-G416	LW2-G355	LW2-G389
Collection Date	10/29/04	10/29/04	10/29/04
Receipt Date	10/30/04	10/30/04	10/30/04

Control Sediment: The negative control sediment (NAS#9574F) was collected on 10-28-04 from an area approximately one mile east of the Hwy. 101 bridge at Beaver Creek, approx. 8 miles south of Newport, OR.

Treatments: Homogenized at test set up by mixing using stainless steel implements.

Storage: All test and control sediments were stored at 4°C in the dark in capped containers until used.

ANC08580
BZTO104(e)008580

TEST WATER

Source: Dechlorinated Newport, OR tap water.
Dates of Collection: Seven batches of test water were collected between 10/30/04 and 11/10/04
Water Quality (mean ± SD):
pH: 7.1 ± 0.2 (n=7)
conductivity: 152 ± 3 µmhos/cm (n=7)
hardness: 34 ± 0 mg/L as $CaCO_3$ (n=7)
alkalinity: 34 ± 5 mg/L as $CaCO_3$. (n=7)
chlorine: All batches were below 0.02 mg/L.
Pretreatment: Dechlorinated and aerated ≥24 hr.

TEST ORGANISMS

Species: *Chironomus tentans*, midge.
Size: 3rd instar, mean initial wt: 0.15 ± 0.01 mg
Source: NAS cultures, originally obtained from EPA, Duluth, MN.
Acclimation: Holding conditions prior to testing averaged: temperature, 22.8 ± 0.9°C; dissolved oxygen, 7.6 ± 1.0 mg/L; pH, 7.3 ± 0.3; conductivity, 286 ± 18 µmhos/cm; hardness, 82 ± 5 mg/L as $CaCO_3$; and alkalinity, 73 ± 6 mg/L as $CaCO_3$.

TEST PROCEDURES AND CONDITIONS

The following is an abbreviated statement of the test procedures and a statement of the test conditions actually employed. See the test protocol for a more detailed description of the test procedures used in this study.

Test Chambers: 300 ml high-form glass beakers
Test Volumes: 100 ml sediment layer; 175 ml test water.
Replicates/Treatment: 8
Organisms/Treatment: 80
Water Volume Changes: 2 water volumes per day
Aeration: None.
Feeding: Animals were fed 1.5 ml of Prime Tropical Flakes suspension (1.5 ml contains 6 mg dry solids) per beaker daily.
Effects Criteria: 1) survival after 10 days, and 2) average individual biomass (based on ash-free dry weight) after 10 days. Death is defined as no visible movement or response to tactile stimulation. Missing organisms were considered to be dead.
Water Quality and Other Test Conditions: The temperature, dissolved oxygen, conductivity, pH, hardness, alkalinity and ammonia-nitrogen were measured in the overlying water of one replicate test container per treatment on days 0 and 10 of the test. Temperature and dissolved oxygen were measured daily in the overlying water of one replicate test container per treatment. Interstitial ammonia was measured in the bulk sediment. Hardness and alkalinity were measured with titrimetric methods. Interstitial water samples were obtained by centrifugation, or by settling in the case of very sandy sediments. Total ammonia-N was measured using Hach reagents based on the salicylate (Clin. Chim. Acta 14:403, 1996) colorimetric method; samples were not distilled prior to analysis. The photoperiod was 16:8, L:D.

DATA ANALYSIS METHODS

Survival and individual biomass were calculated for each replicate as follows:

percent survival = 100 x (number surviving/initial number tested)
average individual ash-free dry wt. = (final wt. – ashed dry wt.)/number weighed,
where:
ash-free dry wt. = dry weight of organisms recovered on day 10 – ashed dry weight, in mg

Means and standard deviations for the biological endpoints described above, and for water quality data, were computed using Microsoft Excel 2000.

ANC08581
BZTO104(e)008581

PROTOCOL DEVIATIONS

None

REFERENCE TOXICANT TEST

The reference toxicant test is a multi-concentration toxicity test using potassium chloride, to evaluate the performance of the test organisms used in the sediment toxicity test. The performance is evaluated by comparing the results of this test with historical results obtained at the laboratory. A summary of the reference toxicant test result is given below. The reference toxicant test raw data are found in Appendix II.

Test No.: 999-1863
Reference Toxicant and Source: Potassium chloride (Fisher, Lot No. 020865A).
Test Date: 11-2-04
Dilution Water Used: Moderately hard synthetic water prepared from Milli-Q® deionized water.
Result: 96-hr LC50, 6.60 g/L. This result is within the laboratory's control chart warning limits (3.06 to 7.23 g/L).

TEST RESULTS

Observations of water quality in the overlying water throughout the test are summarized in Table 1. A detailed tabulation of the water quality results by sample and test day can be found in Appendix I. Interstitial ammonia and pH measurements are listed in Table 2. The means and standard deviations of percent mortality and growth (ash-free dry weight) of midges exposed for 10 days to sediments are summarized in Table 3. Detailed data organized by sample and replicate, and summary statistics for these observations, are given in Appendix I.

All water quality observations of overlying water temperature and dissolved oxygen were within the protocol specified ranges. Ammonia-N in the overlying water ranged from 0.1 to 1.3 mg/L in all day 0 and day 10 observations. Interstitial bulk sediment values for ammonia-N ranged from 1.2 to 26.2 mg/L. The test met the survival and weight acceptability criteria specified in the test protocol with 93.8% mean control survival (≥70% required) and a control individual mean ash-free dry weight of 1.04 mg per larvae (0.48 mg required). The reference toxicant (positive control) result was within the laboratory's control chart limits (6.60 g/L; control chart mean ± 2 S.D. = 5.14 ± 2.09). It is concluded, therefore, that the test has developed fully acceptable data for use in making management decisions.

REFERENCES

ASTM. 2003. Standard Test Methods for Measuring the Toxicity of Sediment-Associated Contaminants with Fresh Water Invertebrates. ASTM Standard Method No. E 1706-00. Am. Soc. Test. Mat., West Conshohocken, PA.

U.S. EPA. 2000. Section 12, Test Method 100.2, *Chironomus tentans* 10-d Survival and Growth Test for Sediments, pp 55-62 In: Methods for Measuring the Toxicity and Bioaccumulation of Sediment-associated Contaminants with Freshwater Invertebrates (Second Edition). EPA/600/R-99/064.

ANC08582
BZTO104(e)008582

STUDY APPROVAL

Project Manager/Study Director — Date: 1-21-05

Quality Assurance Unit — Date: 1/20/05

Laboratory Director — Date: 1/21/05

ANC08583
BZTO104(e)008583

Table 1. Summary of water quality conditions during tests of the midge, *Chironomus tentans*, exposed to freshwater sediments.

Water Quality Parameter	Mean ± S.D.	Minimum	Maximum	N
Temperature (°C)	22.6 ± 0.2	22.1	23.2	154
Dissolved oxygen (mg/L)	5.5 ± 1.0	3.8	7.6	154
Conductivity (µmhos/cm)	256 ± 398	140	2250	28
pH	6.6 ± 0.3	6.1	7.0	28
Hardness (mg/L as $CaCO_3$)	39 ± 9	34	77	28
Alkalinity (mg/L as $CaCO_3$)	41 ± 4	40	60	28
Total ammonia (mg/L)	0.3 ± 0.2	0.1	1.3	28

Table 2. Pore water ammonia-N and pH in bulk test sediments at the time of test setup.

NAS Sample No.	Sample Description	Ammonia (mg/L)	pH
9574F	Control	2.4	6.5
9577F	LW2-G360	26.2	6.7
9578F	LW2-G212	6.7	5.9
9579F	LW2-G296	1.2	7.0
9580F	LW2-G205	2.7	6.6
9581F	LW2-G274	2.2	6.5
9582F	LW2-G303	1.5	6.6
9583F	LW2-G376	3.5	6.6
9584F	LW2-G385	9.5	7.0
9585F	LW2-G367	2.1	5.9
9586F	LW2-G408	8.5	6.2
9587F	LW2-G416	4.6	6.2
9588F	LW2-G355	9.5	6.6
9589F	LW2-G389	1.6	6.6

ANC08584
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Table 3. Mortality and growth[1] results of *Chironomus tentans* 10-day sediment toxicity test

Sample description		Average percent mortality (Mean ± SD)	Average ash-free dry wt/midge (mg)[1] (Mean ± SD)
9574F	Control	6.3 ± 5.2	1.04 ± 0.14
9577F	LW2-G360	52.5 ± 21.2	0.90 ± 0.26
9578F	LW2-G212	13.8 ± 10.6	1.14 ± 0.12
9579F	LW2-G296	7.5 ± 7.1	1.09 ± 0.13
9580F	LW2-G205	11.3 ± 6.4	1.33 ± 0.09
9581F	LW2-G274	32.5 ± 17.5	0.59 ± 0.29
9582F	LW2-G303	11.3 ± 8.3	1.16 ± 0.14
9583F	LW2-G376	8.8 ± 9.9	1.08 ± 0.12
9584F	LW2-G385	10.0 ± 12.0	1.10 ± 0.16
9585F	LW2-G367	5.0 ± 5.3	1.04 ± 0.12
9586F	LW2-G408	12.5 ± 7.1	1.18 ± 0.10
9587F	LW2-G416	6.3 ± 7.4	0.98 ± 0.10
9588F	LW2-G355	12.5 ± 8.9	0.98 ± 0.15
9589F	LW2-G389	21.3 ± 11.3	1.19 ± 0.20

[1] Pupae were not included in the sample to estimate ash-free dry weight (as per EPA/600/R-99/064, p. 59, section 12.3.8.2)

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APPENDIX I

RAW DATA

TEST DESCRIPTION, MONITORING, AND RESULTS BENCHSHEETS

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-22 Client Windward Environmental Investigator

STUDY MANAGEMENT

Client: Windward Enviromental, 200 West Mercer Street, Suite 401, Seattle, WA 98119

Client's Study Monitor: Ms. Helle Anderson GJI

Testing Laboratory: Northwestern Aquatic Sciences

Test Location: Newport Laboratory

Laboratory's Study Personnel:

Proj. Man./Study Dir. G.J. Irissarri GJI

QA Officer L.K. Nemeth LN

1. GABehler NB
2. Susan Gage SG
3. G.C. Hayes GCH
4. B.B. Pridgeon BBP
5. William T. Montgomery WTM
6. R.S. Caldwell RSC
7.
8.

Study Schedule:

Test Beginning: 11-2-04 1330 Test Ending: 11-12-04 1030

TEST MATERIAL

General description (see sample logbook/chain-of-custody for details):

NAS Sample No.:	9574F	9577F	9578F	9579F	9580F
Description:	control	LW2-G360	LW2-G212	LW2-G296	LW2-G205
Collection Date:	10/28/04	10/28/04	10/28/04	10/28/04	10/29/04
Receipt Date:	10/28/04	10/30/04	10/30/04	10/30/04	10/30/04

NAS Sample No.:	9581F	9582F	9583F G GJI	9584F	9585F
Description:	LW2-G274	LW2-G303	LW2-376	LW2-G385	LW2-G367
Collection Date:	10/29/04	10/29/04	10/29/04	10/29/04	10/29/04
Receipt Date:	10/30/04	10/30/04	10/30/04	10/30/04	10/30/04

NAS Sample No.:	9586F	9587F	9588F	9589F	
Description:	LW2-G408	LW2-G416	LW2-G355	LW2-G389	
Collection Date:	10/29/04	10/29/04	10/29/04	10/29/04	
Receipt Date:	10/30/04	10/30/04	10/30/04	10/30/04	

NAS Sample No.:					
Description:					
Collection Date:					
Receipt Date:					

NAS Sample No.:					
Description:					
Collection Date:					
Receipt Date:					

Error codes: 1) correction of handwriting error
2) written in wrong location; entry deleted
3) wrong date deleted, replaced with corrrect date
4) error found in measurement; measurement repeated

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-22 Client Windward Environmental Investigator

SEDIMENT DESCRIPTIONS -- SUPPLEMENTAL NOTES

Sample No.	Description
9574F	Fine black mud
9577F	Fine black mud, 1 chironomid found
9578F	DARK GRAY MUD W/ FINE SAND AND WOOD DEBRIS
9579F	Fine dark grab mud
9580F	Dark gray sandy mud
9581F	BLACK SANDY MUD
9582F	Gray brown fine mud
9583F	Gray brown fine mud
9584F	Dark brown fine mud
9585F	Dark gray sandy mud w/ woody debris
9586F	Gray brown fine mud
9587F	Dark brown fine mud
9588F	Dark gray sandy mud
9589F	Gray/Green clay w/ debris

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NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-22 Client Windward Environmental Investigator _____

TEST WATER

Source: Dechlorinated Newport, OR tap water

Date of Collection: 10-28-04, 11-2-04, 11-4-04, 11-4-04 (2ND BATCH), 11-6-04, 11-9-04, 11-10-04

pH 7.2, 7.0, 6.9, 6.9, 7.2, 7.1, 7.3 ($\bar{x}$ = 7.1 ± 0.2)

Cond (umhos/cm^2) 155, 150, 150, 155, 150, 155, 150 ($\bar{x}$ = 152 ± 3)

Hardness (mg/L) 34, 34, 34, 34, 34, 34, 34 ($\bar{x}$ = 34 ± 0)

Alkalinity (mg/L) 30, 30, 30, 30, 40, 40, 40 ($\bar{x}$ = 34 ± 5)

Treatments: Aerated ≥ 24 hrs

TEST ORGANISMS

Species: *Chironomus tentans* Age: 3rd instar Date received: –

Source: NAS cultures

Acclimation Data:

Date	Temp. (deg.C)	DO (mg/L)	pH	Cond umhos/cm	Feeding amount (ml)	Feeding description*	Water changes	Hardness (mg/L)	Alkalinity (mg/L)
10-25-04	24.1	6.0	6.9	310	ANIMALS FED TETRA		CULTURE	–	–
10-26-04	21.9	8.6	7.5	275	FIN AND SELENASTRUM		TANKS	77	70
10-27-04	22.0	7.6	7.6	280			CHANGED	85	80
10-28-04	22.3	6.7	7.2	300	DETAILS RECORDED IN		TWICE	–	–
11-1-04	22.6	7.8	7.1	290	CHIRONOMID CULTURE		WEEKLY	–	–
11-2-04	23.6	8.6	7.6	260	DATA SHEET			85	70
Mean	22.8	7.6	7.3	286				82	73
S.D.	0.9	1.0	0.3	18				5	6
(N)	6	6	6	6				3	3

Photoperiod during acclimation: 16:8, L:D *S=Selenastrum, T=Tetra Fin suspension

TEST PROCEDURES AND CONDITIONS

Test chambers: 300 ml glass beakers

Test volumes: 100 ml of test sediment; 275 ml total volume

Replicates/treatment: (8) 8 Organisms/treatment: (80) 80 (10/REP)

Test water changes: Twice daily

Aeration: only if DO falls below 2.5 mg/L Beaker placement: Total randomization

Feeding: everyday beginning with day zero Photoperiod: 16:8, L:D

Test temperature (deg.C): 23

Control Sediment:

Source: From an area approximately one mile east of the Hwy. 101 bridge at Beaver Creek, approx. 8 miles south of Newport, OR.

Date collected: 10-28-04

Sieved through 0.5 -mm screen NAS# 9574F

Storage: 4°C in the dark in closed containers.

MISCELLANEOUS NOTES

LIGHT INTENSITY MEASUREMENTS:

	SITE A	SITE B
11-5-04	46 FT-CANDLES (495 LUX)	65 FT CANDLES (700 LUX)
11-11-04	53 FT-CANDLES (571 LUX)	66 FT CANDLES (710 LUX)

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NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-22 Client Windward Environmental Investigator _____

Test conducted in (circle one): room 1 (room 2) trailer water bath other:_____

Randomization chart:

5								165	
4								164	
3								163	168
2								162	167
1								161	166

Randomization chart:

Randomization chart:

Randomization chart:

ANC08591
BZTO104(e)008591

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-22 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 0 (11/2 104) AJ/BBP

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. * (umhos/cm)	pH *	Hardness* (mg/L)	Alkalinity* (mg/L)	S (ppm)	NH3 * (ppm)	Comments
9	23.0	7.6	150	7.0	43	40			Each beaker fed 1.5 ml
14	22.9	7.4	150	7.0	34	40			Prime Tropical Flakes
17	22.8	7.4	2250	6.7	77	60			suspension.
19	22.9	7.4	175	6.9	34	40			Initials: GJI
31	22.9	7.4	150	6.7	43	40			
50	23.1	7.0	140	6.8	34	40			
52	22.8	7.2	195	7.0	43	40			
72	22.7	7.1	150	7.0	34	40			
74	22.8	6.9	165	6.9	43	40			Water changed in all
85	23.1	7.3	500	7.0	51	40			beakers.
90	23.2	7.3	150	6.9	43	40			Time: 0655
94	22.9	7.3	145	6.9	34	40			Initials: GJI
97	22.8	6.0	165	6.6	34	40			
111	23.2	6.8	170	6.6	43	40			
									Water changed in all
									beakers.
									Time: 1710
									Initials: AJ

*Water quality measurements to be taken.

Day 1 (11/3 104) BBP

Beaker No.	Temp.* (deg.C)	DO * (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
9	23.2	7.0							Each beaker fed 1.5 ml
14	23.2	6.8							Prime Tropical Flakes
17	23.1	6.8							suspension.
19	23.1	6.8							Initials: GJI
31	23.0	6.9							
50	23.0	6.6							
52	23.2	6.7							
72	22.8	6.7							
74	22.8	6.8							Water changed in all
85	23.1	6.8							beakers.
90	23.2	6.8							Time: 0710
94	23.2	6.8							Initials: GJI
97	22.9	6.4							
111	22.8	6.6							
									Water changed in all
									beakers.
									Time: 1715
									Initials: BBP

*Water quality measurements to be taken.

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Test No. 686-22 Client Windward Environmental Investigator _____

DAILY RECORD SHEET

Day 2 (11/9/04) NB/BBP

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
9	22.6	6.6							Each beaker fed 1.5 ml
14	22.5	6.5							Prime Tropical Flakes
17	22.4	7.4							suspension.
19	22.3	6.6							Initials: GJL
31	22.4	6.8							
50	22.4	6.9							
52	~~22.7~~ 22.1	6.6							
72	22.2	6.6							
74	22.4	6.6							Water changed in all
85	22.7	6.6							beakers.
90	22.7	6.6							Time: 0740
94	22.3	6.7							Initials: NB
97	22.3	6.8							
111	22.5	6.8							
									Water changed in all
									beakers.
									Time: 1710
									Initials: AJ

*Water quality measurements to be taken.

Day 3 (11/5/04) NB/GOL/BBP

Beaker No.	Temp.* (deg.C)	DO * (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
9	22.7	5.8							Each beaker fed 1.5 ml
14	22.7	5.4							Prime Tropical Flakes
17	22.7	5.6							suspension.
19	22.6	5.2							Initials: GJL
31	22.6	5.4							
50	22.8	5.4							
52	22.4	5.4							
72	22.3	5.4							
74	22.3	4.8							Water changed in all
85	22.5	5.8							beakers.
90	22.8	5.2							Time: 0645
94	22.8	5.6							Initials: GJL
97	22.6	5.2							
111	22.5	5.2							
									Water changed in all
									beakers.
									Time: 1715
									Initials: AJ

*Water quality measurements to be taken.

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-22 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 4 (11/6/04) VB

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
9	22.9	5.9							Each beaker fed 1.5 ml
14	22.8	5.8							Prime Tropical Flakes
17	22.8	5.4							suspension.
19	22.8	5.3							Initials: VB
31	22.7	4.9							
50	22.6	5.1							
52	22.7	5.5							
72	22.6	5.2							
74	22.6	5.2							Water changed in all
85	22.7	5.3							beakers.
90	22.6	5.4							Time: 0715
94	22.6	5.2							Initials: VB
97	22.6	5.6							
111	22.5	5.7							
									Water changed in all
									beakers.
									Time: 1800
									Initials: BBP

*Water quality measurements to be taken.

Day 5 (11/7/04) GJ

Beaker No.	Temp.* (deg.C)	DO * (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
9	22.8	4.4							Each beaker fed 1.5 ml
14	22.7	3.8							Prime Tropical Flakes
17	22.7	5.2							suspension.
19	22.6	4.2							Initials: GJ
31	22.9	4.4							
50	22.9	4.6							
52	22.7	4.7							
72	22.7	4.0							
74	22.7	4.2							Water changed in all
85	22.9	5.4							beakers.
90	23.0	5.1							Time: 0715
94	22.8	4.5							Initials: GJ
97	22.8	4.7							
111	22.9	4.3							
									Water changed in all
									beakers.
									Time: 1730
									Initials: BBP

*Water quality measurements to be taken.

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NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-22 Client Windward Environmental Investigator _____

DAILY RECORD SHEET

Day 6 (11 / 8 04) AF/mm

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
9	22.6	4.6							Each beaker fed 1.5 ml
14	22.5	4.0							Prime Tropical Flakes
17	22.6	4.6							suspension.
19	22.4	4.3							Initials: mm
31	22.6	4.3							
50	22.7	4.6							
52	22.6	4.6							
72	22.5	4.3							
74	22.6	4.5							Water changed in all
85	22.7	4.6							beakers.
90	22.7	4.8							Time: 0715
94	22.6	4.8							Initials: bd
97	22.5	4.7							
111	22.7	4.4							
									Water changed in all
									beakers.
									Time: 1720
									Initials: AF

*Water quality measurements to be taken.

Day 7 (11 / 9 04) MS

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
9	22.6	4.6							Each beaker fed 1.5 ml
14	22.6	4.8							Prime Tropical Flakes
17	22.5	5.2							suspension.
19	22.6	5.0							Initials: mm
31	22.5	5.0							
50	22.7	5.0							
52	22.6	5.2							
72	22.6	5.1							
74	22.6	4.9							Water changed in all
85	22.8	5.0							beakers.
90	22.8	4.9							Time: 0705
94	22.6	5.0							Initials: bd
97	22.6	4.8							
111	22.8	4.6							
									Water changed in all
									beakers.
									Time: 1715
									Initials: BB

*Water quality measurements to be taken.

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Test No. 686-22 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 8 (11 / 10 04) JB/[illegible]

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
9	22.6	5.0							Each beaker fed 1.5 ml
14	22.6	4.0							Prime Tropical Flakes
17	22.5	4.9							suspension.
19	22.5	5.2							Initials: GJ1
31	22.5	5.2							
50	22.6	5.5							
52	22.6	4.7							
72	22.5	4.8							
74	22.5	4.1							Water changed in all
85	22.6	4.8							beakers.
90	22.7	4.8							Time: 0710
94	22.6	4.5							Initials: JB
97	22.5	4.5							
111	22.6	4.9							
									Water changed in all
									beakers.
									Time: 1725
									Initials: [illegible]

*Water quality measurements to be taken.

Day 9 (11 / 11 /04) BBP

Beaker No.	Temp.* (deg.C)	DO * (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
9	22.7	4.8							Each beaker fed 1.5 ml
14	22.6	4.6							Prime Tropical Flakes
17	22.6	4.7							suspension.
19	22.6	4.6							Initials: [illegible]
31	22.6	4.6							
50	22.8	4.8							
52	22.8	4.8							
72	22.6	4.6							
74	22.6	4.7							Water changed in all
85	22.6	3.8							beakers.
90	22.7	4.4							Time: 0650
94	22.8	4.7							Initials: GJ1
97	22.7	4.0							
111	22.7	4.7							
									Water changed in all
									beakers.
									Time: 1700
									Initials: BBP

*Water quality measurements to be taken.

Test No. 686-22 Client Windward Environmental Investigator _____

DAILY RECORD SHEET

Day 10 (11/12/00 VB/BBP

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond.* (umhos/cm)	pH *	Hardness* (mg/L)	Alkalinity* (mg/L)	S (ppm)	NH3 * (ppm)	Comments
9	22.3	6.6	150	6.5	34	40			Each beaker fed 1.5 ml
14	22.2	6.0	150	6.3	34	40			Prime Tropical Flakes
17	22.2	6.1	260	6.3	34	50			suspension.
19	22.3	6.4	165	6.2	34	40			Initials: —
31	22.2	6.3	160	6.2	34	40			
50	22.2	5.9	155	6.2	34	40			
52	22.2	6.2	160	6.1	34	40			
72	22.2	6.4	160	6.2	43	40			
74	22.1	6.4	160	6.1	34	40			Water changed in all
85	22.3	6.3	360	6.2	34	40			beakers.
90	22.3	6.1	170	6.3	51	40			Time: 0545
94	22.3	5.9	160	6.1	34	40			Initials: VB
97	22.2	5.8	160	6.4	43	40			
111	22.1	6.0	155	6.3	34	40			
									Water changed in all
									beakers.
									Time:
									Initials:

*Water quality measurements to be taken.

Day ____(/ /)

Beaker No.	Temp.* (deg.C)	DO * (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
									Each beaker fed 1.5 ml
									Prime Tropical Flakes
									suspension.
									Initials:
									Water changed in all
									beakers.
									Time:
									Initials:
									Water changed in all
									beakers.
									Time:
									Initials:

*Water quality measurements to be taken.

ANC08597
BZTO104(e)008597

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-22 Client Windward Enviromental Investigator _____

DAY 20 TEST TERMINATION SHEET

Beaker No.	Number of survivors	Initials
1	9	GJL
2	10	MB
3	6	MB
4	8	GJL
5	9	MB
6	8	GJL
7	9	MB
8	9	GJL
9	9	MB
10	7	GJL
11	9	GJL
12	8	MB
13	8	MB
14	9	MB
15	9	GJL
16	10	MB
17	5	GJL
18	9	MB
19	8	GJL
20	8	GJL
21	8	MB
22	9	GJL
23	9	MB
24	4	MB
25	10	MB
26	8	GJL
27	9	GJL
28	8	MB
29	8	GJL
30	9	MB
31	9	GJL
32	4	MB
33	9	MB
34	10	GJL
35	8	MB
36	8	GJL
37	9	GJL
38	9	MB
39	8	GJL
40	9	GJL
41	10	MB
42	8	MB
43	10	GJL
44	8	MB
45	10	GJL

Beaker No.	Number of survivors	Initials
46	9	GJL
47	8	GJL
48	4	GJL
49	4	MB
50	8	GJL
51	8	MB
52	8	GJL
53	10	MB
54	7	MB
55	7	GJL
56	8	GJL
57	9	GJL
58	10	MB
59	10	MB
60	10	MB
61	8	GJL
62	10	GJL
63	1	MB
64	10	GJL
65	5	MB
66	9	MB
67	9	MB
68	10	GJL
69	9	MB
70	10	GJL
71	10	MB
72	9	GJL
73	10	GJL
74	10	MB
75	7	GJL
76	7	MB
77	10	GJL
78	9	MB
79	10	MB
80	9	MB
81	10	GJL
82	10	MB
83	10	GJL
84	9	MB
85	9	GJL
86	10	GJL
87	9	MB
88	10	MB
89	10	MB
90	10	GJL

ANC08598
BZTO104(e)008598

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-22 Client Windward Enviromental Investigator _____

DAY 20 TEST TERMINATION SHEET

Beaker No.	Number of survivors	Initials
91	9	CB
92	5	GJL
93	10	GJL
94	9	GJL
95	9	CB
96	9	GJL
97	9	CB
98	8	GJL
99	7	CB
100	9	GJL
101	9	CB
102	8	GJL
103	6	GJL
104	9	CB
105	9	GJL
106	7	GJL
107	10	CB
108	9	CB
109	7	CB
110	8	GJL
111	10	CB
112	9	GJL

Beaker No.	Number of survivors	Initials

ANC08599
BZTO104(e)008599

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-22 Client Windward Environmental Investigator _____

Tare: Date 10-28-04 Oven temp (C.) 63 Drying time (hr.) 23 Initials JDF
Standard Weights: 10 mg: 10.005 100mg: 100.018

Final #1 Date 11-6-04 Oven temp (C.) 78 Drying time (hr.) 24 Initials GJI
Standard Weights: 10 mg: 10.006 100mg: 100.020

Final: #2 Date 11-7-04 Oven temp (C.) 73 Drying time (hr.) 22 Initials GJI
Standard Weights: 10 mg: 10.004 100mg: 100.002

Equip. used: Oven: Blue M #1 Balance: Sartorius M3P

(Dry overnight at 60-90 degrees C)

Pan #	Tare wt. (mg)	Total wt. (mg) 1	Total wt. (mg) 2	#weighed	Comments
1	97.72	100.63	100.57	20	
2	90.08	93.11 GJI	93.05	20	
3	93.72	97.04	96.98	20	

ANC08600
BZTO104(e)008600

NORTHWESTERN AQUATIC SCIENCES — PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-22 Client Windward Environmental Investigator

WEIGHING DATA SHEET

Tare: Date 11-8-04 Oven temp (C.) 550 Drying time (hr.) 2 Initials JMF
Standard Weights: 10 mg: 10.008 100mg: 100.022

Final #1: Date 11-15-04 Oven temp (C.) 68 Drying time (hr.) 24 Initials SMF
Standard Weights: 10 mg: 10.004 100mg: 100.013

Final #2: Date 11-17-04 Oven temp (C.) 62 Drying time (hr.) 24 Initials JMF
Standard Weights: 10 mg: 10.009 100mg: 100.004

Final #3: Date 12-18-04 Oven temp (C.) ~~68~~ 550 Drying time (hr.) 24 Initials JMF
Standard Weights: 10 mg: 10.007 100mg: 100.007

Equip. used: Oven Blue M #1 Balance Sartorius M3P
Furnace FISHER MUFFLE FURNACE 650 SERIES

(Dry overnight at 60-90 degrees C) (Final ashing is at 550 degrees C for 2 hours)

Bkr. #	Pan #	Tare wt. (mg)	Total wt. (mg) 1	Total wt. (mg) 2	no. weighed	put into pans-initials	Ashed weight (mg)
1	1	82.27	95.54	95.51	9	BBP	86.40
2	2	89.96	106.06	106.02	10	BBP	95.94
3	3	83.71	99.24	99.21	6	BBP	89.72
4	4	80.78	96.44	96.38	8	BBP	85.32
5	5	81.35	98.28	98.22	9	BBP	86.84
6	6	87.65	102.86	102.82	8	BBP	93.08
7	7	89.65	103.73	103.68	9	BBP	93.73
8	8	87.33	100.10	100.07	9	BBP	90.13
9	9	81.60	98.07	98.04	9	BBP	86.54
10	10	87.62	94.91	94.90	7	BBP	89.61
11	11	87.69	102.18	102.16	9	BBP	92.64
12	12	86.40	101.59	101.56	8	BBP	91.71
13	13	89.61	102.86	102.81	8	BBP	92.49
14	14	86.41	100.11	100.06	9	BBP	89.66
15	15	84.71	99.61	99.58	9	BBP	88.82
16	16	90.51	104.44	104.42	10	BBP	95.82
17	17	87.55	95.13	95.12	5	BBP	89.56
18	18	75.29	87.11	87.09	9	BBP	78.66
19	19	87.74	104.16	104.09	8	BBP	93.37
20	20	87.70	99.73	99.62	8	BBP	90.72
21	21	89.50	104.52	104.37	8	BBP	94.70
22	22	75.90	88.42	88.26	9	BBP	80.36
23	23	88.65	99.38	99.28	9	BBP	90.63
24	24	79.91	82.59	82.54	4	BBP	80.38
25	25	83.74	99.47	99.34	10	BBP	88.26
26	26	94.60	108.31	108.19	8	BBP	98.64
27	27	84.83	100.00	99.89	9	BBP	89.12
28	28	84.84	101.43	101.35	8	BBP	90.26
29	29	88.46	101.77	101.69	8	BBP	92.25
30	30	82.41	97.91	97.82	9	BBP	87.62
31	31	81.00	92.67	92.61	9	BBP	83.70
32	32	86.49	91.79	91.78	4	BBP	87.77
33	33	87.63	102.95	102.89	9	BBP	93.57

ANC08601
BZTO104(e)008601

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-22 Client Windward Environmental Investigator

WEIGHING DATA SHEET

See page _____ for information on drying times and temperatures, standard weights,etc.

Bkr. #	Pan #	Tare wt. (mg)	Total wt. (mg) 1	Total wt. (mg) 2	no. weighed	put into pans-initials	Ash weight (mg)
34	34	86.02	99.04	99.20	10	BBP	89.76
35	35	86.49	99.45	99.59	8	BBP	91.34
36	36	82.58	96.18	96.36	8	BBP	86.84
37	37	84.00	99.85	98.96	9	[illegible]	89.20
38	38	80.17	*99.67 67	94.41	9	[illegible]	83.54
39	39	87.81	102.06	102.06	8	[illegible]	92.32
40	40	84.18	99.58	99.59	9	[illegible]	88.19
41	41	84.59	98.97	98.99	10	[illegible]	89.01
42	42	84.49	100.35	100.37	8	[illegible]	90.05
43	43	79.75	96.87	96.85	10	[illegible]	84.41
44	44	79.64	92.86	92.86	8	[illegible]	83.10
45	45	85.63	100.01	100.02	10	[illegible]	90.10
46	46	88.94	94.37	94.39	9	[illegible]	89.80
47	47	84.66	98.14	98.15	8	[illegible]	89.37
48	48	81.40	82.21	82.24	4	[illegible]	81.48
49	49	83.34	87.55	87.57	4	[illegible]	84.38
50	50	81.30	96.11	96.09	8	[illegible]	87.51
51	51	83.47	101.26	101.25	8	[illegible]	90.93
52	52	86.29	96.83	96.83	8	[illegible]	90.50
53	53	86.04	97.02	97.02	10	[illegible]	89.03
54	54	86.82	95.12	95.13	7	[illegible]	88.12
55	55	79.19	90.40	90.36	7	[illegible]	82.60
56	56	86.64	94.01	94.02	8	[illegible]	88.27
57	57	84.88	97.79	97.79	9	[illegible]	89.02
58	58	81.75	95.94	95.95	10	[illegible]	85.97
59	59	77.51	95.19	95.20	10	[illegible]	84.60
60	60	90.34	104.62	104.64	10	[illegible]	93.85
61	61	78.48	91.54	91.53	8	[illegible]	83.22
62	62	84.29	98.60	98.60	10	[illegible]	88.08
63	63	86.01	87.23	87.25	1	[illegible]	86.40
64	64	87.92	103.46	103.48	10	[illegible]	93.34
65	65	80.56	90.07	90.08	5	[illegible]	83.16
66	66	78.93	90.91	90.93	9	[illegible]	82.56
67	67	83.59	97.84	97.84	9	[illegible]	86.55
68	68	79.44	89.71	89.72	10	[illegible]	81.69
69	69	83.96	98.92	98.93	9	[illegible]	89.46
70	70	81.54	95.23	95.23	10	[illegible]	85.86
71	71	82.47	95.66	95.68	10	[illegible]	85.73
72	72	80.33	96.66	96.68	9	[illegible]	85.91
73	73	84.49	101.75	101.69	10	BBP	90.40
74	74	80.54	96.66	96.60	10	BBP	86.23
75	75	89.20	97.95	97.92	7	BBP	91.22
76	76	82.93	97.57	97.52	7	BBP	89.18

ANC08602
BZTO104(e)008602

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-22 Client Windward Environmental Investigator

WEIGHING DATA SHEET

See page _____ for information on drying times and temperatures, standard weights,etc.

Bkr #	Pan #	Tare wt. (mg)	Total wt. (mg) 1	Total wt. (mg) 2	no. weighed	put into pans-initials	Ash weight (mg)
77	77	85.50	98.84	98.79	10	BBP	89.90
78	78	84.37	102.07	101.99	9	BBP	91.56
79	79	79.24	95.22	95.16	10	BBP	85.05
80	80	83.28	97.58	97.53	9	BBP	88.74
81	81	84.40	100.67	100.62	10	BBP	90.33
82	82	88.85	103.73	103.74	10	BBP	93.88
83	83	84.92	97.90	97.94	10	BBP	88.95
84	84	79.60	95.07	95.11	9	BBP	85.25
85	85	86.57	98.50	98.53	9	BBP	89.80
86	86	90.37	105.17	105.21	10	BBP	96.06
87	87	89.58	106.55	106.59	9	BBP	97.38
88	88	86.82	103.98	104.00	10	BBP	93.97
89	89	86.76	101.41	101.43	10	BBP	92.34
90	90	94.34	108.60	108.62	10	BBP	99.59
91	91	84.59	101.13	101.17	8	BBP	91.10
92	92	86.32	89.33	89.37	5	BBP	86.78
93	93	90.88	108.87	108.92	10	BBP	98.56
94	94	82.34	98.81	98.86	9	BBP	88.75
95	95	81.64	95.68	95.71	9	BBP	85.86
96	96	83.39	98.40	98.44	9	BBP	86.91
97	97	85.16	93.75	93.79	9	BBP	86.89
98	98	89.23	104.61	104.63	8	BBP	93.99
99	99	89.02	103.56	103.57	7	BBP	94.12
100	100	83.00	97.11	97.15	9	BBP	86.76
101	101	80.25	97.64	97.67	9	BBP	85.71
102	102	79.86	96.95	96.98	8	BBP	84.96
103	103	88.85	91.03	91.08	6	BBP	89.24
104	104	86.05	104.06	104.10	9	BBP	91.92
105	105	84.88	100.44	100.48	9	BBP	89.45
106	106	89.85	94.21	94.26	7	BBP	90.69
107	107	88.89	108.31	108.30	10	GBP	97.20
108	108	83.29	102.27	102.26	9	GBP	91.39
109	109	83.58	97.37	97.35	7	GBP	88.02
110	110	98.61	118.67	118.63	8	GBP	107.50
111	111	84.31	99.64	99.61	10	GBP	90.79
112	112	81.36	98.30	98.23	9	GBP	89.20

ANC08603
BZTO104(e)008603

10-Day *Chironomus tentans*
Randomization Key

BKR	NAS SMPL	CLIENT DESCRIP	REPL	
100	9574F	Control	1	
60	9574F	Control	2	
8	9574F	Control	3	
23	9574F	Control	4	
68	9574F	Control	5	
96	9574F	Control	6	
71	9574F	Control	7	
85	9574F	Control	8	wq replicate
65	9577F	LW2-G360	1	
63	9577F	LW2-G360	2	
49	9577F	LW2-G360	3	
24	9577F	LW2-G360	4	
10	9577F	LW2-G360	5	
32	9577F	LW2-G360	6	
56	9577F	LW2-G360	7	
17	9577F	LW2-G360	8	wq replicate
59	9578F	LW2-G212	1	
37	9578F	LW2-G212	2	
91	9578F	LW2-G212	3	
28	9578F	LW2-G212	4	
47	9578F	LW2-G212	5	
55	9578F	LW2-G212	6	
64	9578F	LW2-G212	7	
94	9578F	LW2-G212	8	wq replicate
108	9579F	LW2-G296	1	
78	9579F	LW2-G296	2	
88	9579F	LW2-G296	3	
16	9579F	LW2-G296	4	
12	9579F	LW2-G296	5	
69	9579F	LW2-G296	6	
93	9579F	LW2-G296	7	
72	9579F	LW2-G296	8	wq replicate
43	9580F	LW2-G205	1	
5	9580F	LW2-G205	2	
4	9580F	LW2-G205	3	
104	9580F	LW2-G205	4	
101	9580F	LW2-G205	5	
102	9580F	LW2-G205	6	
40	9580F	LW2-G205	7	
9	9580F	LW2-G205	8	wq replicate
54	9581F	LW2-G274	1	
92	9581F	LW2-G274	2	
103	9581F	LW2-G274	3	
106	9581F	LW2-G274	4	
75	9581F	LW2-G274	5	
48	9581F	LW2-G274	6	
46	9581F	LW2-G274	7	
97	9581F	LW2-G274	8	wq replicate

10-Day *Chironomus tentans*
Randomization Key

	NAS	CLIENT		
BKR	SMPL	DESCRIP	REPL	
2	9582F	LW2-G303	1	
30	9582F	LW2-G303	2	
110	9582F	LW2-G303	3	
67	9582F	LW2-G303	4	
11	9582F	LW2-G303	5	
107	9582F	LW2-G303	6	
6	9582F	LW2-G303	7	
19	9582F	LW2-G303	8	wq replicate
81	9583F	LW2-G376	1	
26	9583F	LW2-G376	2	
39	9583F	LW2-G376	3	
36	9583F	LW2-G376	4	
79	9583F	LW2-G376	5	
58	9583F	LW2-G376	6	
84	9583F	LW2-G376	7	
111	9583F	LW2-G376	8	wq replicate
53	9584F	LW2-G385	1	
29	9584F	LW2-G385	2	
73	9584F	LW2-G385	3	
44	9584F	LW2-G385	4	
82	9584F	LW2-G385	5	
109	9584F	LW2-G385	6	
7	9584F	LW2-G385	7	
74	9584F	LW2-G385	8	wq replicate
27	9585F	LW2-G367	1	
18	9585F	LW2-G367	2	
25	9585F	LW2-G367	3	
45	9585F	LW2-G367	4	
41	9585F	LW2-G367	5	
38	9585F	LW2-G367	6	
77	9585F	LW2-G367	7	
31	9585F	LW2-G367	8	wq replicate
20	9586F	LW2-G408	1	
62	9586F	LW2-G408	2	
13	9586F	LW2-G408	3	
98	9586F	LW2-G408	4	
95	9586F	LW2-G408	5	
105	9586F	LW2-G408	6	
15	9586F	LW2-G408	7	
14	9586F	LW2-G408	8	wq replicate
83	9587F	LW2-G416	1	
1	9587F	LW2-G416	2	
21	9587F	LW2-G416	3	
66	9587F	LW2-G416	4	
80	9587F	LW2-G416	5	
34	9587F	LW2-G416	6	
70	9587F	LW2-G416	7	
90	9587F	LW2-G416	8	wq replicate

Test Number: 686-22

Freshwater Sediment Test
10-Day *Chironomus tentans*
Randomization Key

10/30/04

	NAS	CLIENT		
BKR	SMPL	DESCRIP	REPL	
89	9588F	LW2-G355	1	
61	9588F	LW2-G355	2	
42	9588F	LW2-G355	3	
22	9588F	LW2-G355	4	
86	9588F	LW2-G355	5	
35	9588F	LW2-G355	6	
57	9588F	LW2-G355	7	
52	9588F	LW2-G355	8	wq replicate
33	9589F	LW2-G389	1	
51	9589F	LW2-G389	2	
76	9589F	LW2-G389	3	
99	9589F	LW2-G389	4	
87	9589F	LW2-G389	5	
112	9589F	LW2-G389	6	
3	9589F	LW2-G389	7	
50	9589F	LW2-G389	8	wq replicate

ANC08606
BZTO104(e)008606

TEST DATA ANALYSIS RECORDS

Endpoints Data Entry and Calculations File

BKR=beaker number
INIT=initial number
SURV=number survivors
MORT=number dead=INIT-SURV
PSURV=%survival=100(SURV/INIT)
PMORT=%mortality=100(MORT/INIT)

TARE WT= ashed weight of pan used for that replicate at test termination (mg), or dry weight of pan if ash-free dry weight is not an endpoint
WT COUNT= number of test organisms weighed at test end
DRY WT= TARE WT + dry weight of test organisms recovered at test termination (mg)
TWT=total biomass=DRY WT-TARE WT
WT=average individual biomass=TWT/WT COUNT

ASHED DRY WT= weight of ashed pan + weight of ashed test organisms recovered at test termination
TAFDW=DRY WT - ASHED DRY WT= total ash-free organism weight for given replicate
AFDW=average individual ash-free biomass=TAFDW/WT COUNT

INITIAL WEIGHT

pan #	tare wt (mg)	final wt (mg)	wt count	avg. wt/ organism
1	97.72	100.57	20	0.14
2	90.08	93.05	20	0.15
3	93.72	96.98	20	0.16

INDEX	BKR	NAS SMPL	CLIENT DESCRIP	REPL		INIT	SURV	MORT	PSURV	PMORT	TARE WT (mg)	WT COUNT	DRY WT (mg)	ASHED DRY WT (mg)	TWT (mg)	WT (mg)	TAFDW (mg)	AFDW (mg)
1	100	9574F	Control	1		10	9	1	90.0	10.0	83.00	9	97.15	86.76	14.15	1.57	10.39	1.15
2	60	9574F	Control	2		10	10	0	100.0	0.0	90.34	10	104.64	93.95	14.30	1.43	10.79	1.08
3	8	9574F	Control	3		10	9	1	90.0	10.0	87.33	9	100.07	90.13	12.74	1.42	9.94	1.10
4	23	9574F	Control	4		10	9	1	90.0	10.0	88.65	9	99.28	90.63	10.63	1.18	8.65	0.96
5	68	9574F	Control	5		10	10	0	100.0	0.0	79.44	10	89.72	81.69	10.28	1.03	8.03	0.80
6	96	9574F	Control	6		10	9	1	90.0	10.0	83.39	9	98.44	86.91	15.05	1.67	11.53	1.28
7	71	9574F	Control	7		10	10	0	100.0	0.0	82.47	10	95.68	85.73	13.21	1.32	9.95	1.00
8	85	9574F	Control	8	wq replicate	10	9	1	90.0	10.0	86.57	9	98.53	89.80	11.96	1.33	8.73	0.97
9	65	9577F	LW2-G360	1		10	5	5	50.0	50.0	80.56	5	90.08	83.16	9.52	1.90	6.92	1.38
10	63	9577F	LW2-G360	2		10	1	9	10.0	90.0	86.01	1	87.25	86.40	1.24	1.24	0.85	0.85
11	49	9577F	LW2-G360	3		10	4	6	40.0	60.0	83.34	4	87.57	84.38	4.23	1.06	3.19	0.80
12	24	9577F	LW2-G360	4		10	4	6	40.0	60.0	79.91	4	82.54	80.38	2.63	0.66	2.16	0.54
13	10	9577F	LW2-G360	5		10	7	3	70.0	30.0	87.62	7	94.90	89.61	7.28	1.04	5.29	0.76
14	32	9577F	LW2-G360	6		10	4	6	40.0	60.0	86.49	4	91.78	87.77	5.29	1.32	4.01	1.00
15	56	9577F	LW2-G360	7		10	8	2	80.0	20.0	86.64	8	94.02	88.27	7.38	0.92	5.75	0.72
16	17	9577F	LW2-G360	8	wq replicate	10	5	5	50.0	50.0	87.55	5	95.12	89.56	7.57	1.51	5.56	1.11
17	59	9578F	LW2-G212	1		10	10	0	100.0	0.0	77.51	10	95.20	84.60	17.69	1.77	10.60	1.06
18	37	9578F	LW2-G212	2		10	9	1	90.0	10.0	84.00	9	98.96	89.20	14.96	1.66	9.76	1.08
19	91	9578F	LW2-G212	3		10	8	2	80.0	20.0	84.59	8	101.17	91.10	16.58	2.07	10.07	1.26
20	28	9578F	LW2-G212	4		10	8	2	80.0	20.0	84.84	8	101.35	90.26	16.51	2.06	11.09	1.39
21	47	9578F	LW2-G212	5		10	8	2	80.0	20.0	84.66	8	98.15	89.37	13.49	1.69	8.78	1.10
22	55	9578F	LW2-G212	6		10	7	3	70.0	30.0	79.19	7	90.38	82.60	11.19	1.60	7.78	1.11
23	64	9578F	LW2-G212	7		10	10	0	100.0	0.0	87.92	10	103.48	93.34	15.56	1.56	10.14	1.01
24	94	9578F	LW2-G212	8	wq replicate	10	9	1	90.0	10.0	82.34	9	98.86	88.75	16.52	1.84	10.11	1.12
25	108	9579F	LW2-G296	1		10	9	1	90.0	10.0	83.29	9	102.26	91.39	18.97	2.11	10.87	1.21
26	78	9579F	LW2-G296	2		10	9	1	90.0	10.0	84.37	9	101.99	91.56	17.62	1.96	10.43	1.16
27	88	9579F	LW2-G296	3		10	10	0	100.0	0.0	86.82	10	104.00	93.97	17.18	1.72	10.03	1.00
28	16	9579F	LW2-G296	4		10	10	0	100.0	0.0	90.51	10	104.42	95.82	13.91	1.39	8.60	0.86
29	12	9579F	LW2-G296	5		10	8	2	80.0	20.0	86.40	8	101.56	91.71	15.16	1.90	9.85	1.23
30	69	9579F	LW2-G296	6		10	9	1	90.0	10.0	83.96	9	98.93	89.46	14.97	1.66	9.47	1.05
31	93	9579F	LW2-G296	7		10	10	0	100.0	0.0	90.88	10	108.92	98.56	18.04	1.80	10.36	1.04
32	72	9579F	LW2-G296	8	wq replicate	10	9	1	90.0	10.0	80.33	9	96.68	85.91	16.35	1.82	10.77	1.20
33	43	9580F	LW2-G205	1		10	10	0	100.0	0.0	79.75	10	96.85	84.41	17.10	1.71	12.44	1.24
34	5	9580F	LW2-G205	2		10	9	1	90.0	10.0	81.35	9	98.22	86.84	16.87	1.87	11.38	1.26
35	4	9580F	LW2-G205	3		10	8	2	80.0	20.0	80.78	8	96.38	85.32	15.60	1.95	11.06	1.38
36	104	9580F	LW2-G205	4		10	9	1	90.0	10.0	86.05	9	104.10	91.92	18.05	2.01	12.18	1.35
37	101	9580F	LW2-G205	5		10	9	1	90.0	10.0	80.25	9	97.67	85.71	17.42	1.94	11.96	1.33
38	102	9580F	LW2-G205	6		10	8	2	80.0	20.0	79.86	8	96.98	84.96	17.12	2.14	12.02	1.50
39	40	9580F	LW2-G205	7		10	9	1	90.0	10.0	84.18	9	99.59	88.19	15.41	1.71	11.40	1.27
40	9	9580F	LW2-G205	8	wq replicate	10	9	1	90.0	10.0	81.60	9	98.04	86.54	16.44	1.83	11.50	1.28

	SURV	MORT	PSURV	PMORT	WT	AFDW
Mean	9.4	0.6	93.8	6.3	1.37	1.04
SD	0.5	0.5	5.2	5.2	0.21	0.14
n	8	8	8	8	8	8
Mean	4.8	5.3	47.5	52.5	1.21	0.90
SD	2.1	2.1	21.2	21.2	0.38	0.26
n	8	8	8	8	8	8
Mean	8.6	1.4	86.3	13.8	1.78	1.14
SD	1.1	1.1	10.6	10.6	0.20	0.12
n	8	8	8	8	8	8
Mean	9.3	0.8	92.5	7.5	1.79	1.09
SD	0.7	0.7	7.1	7.1	0.21	0.13
n	8	8	8	8	8	8
Mean	8.9	1.1	88.8	11.3	1.89	1.33
SD	0.6	0.6	6.4	6.4	0.15	0.09
n	8	8	8	8	8	8

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ANC08608
BZTO104(e)008608

Test Number: 686-22

Freshwater Sediment Test
10-Day Chironomus tentans

INDEX	BKR	NAS SMPL	CLIENT DESCRIP	REPL		INIT	SURV	MORT	PSURV	PMORT	TARE WT (mg)	WT COUNT	DRY WT (mg)	ASHED DRY WT (mg)	TWT (mg)	WT (mg)	TAFDW (mg)	AFDW (mg)		SURV	MORT	PSURV	PMORT	WT	AFDW
41	54	9581F	LW2-G274	1		10	7	3	70.0	30.0	86.82	7	95.13	88.12	8.31	1.19	7.01	1.00							
42	92	9581F	LW2-G274	2		10	5	5	50.0	50.0	86.32	5	89.37	86.78	3.05	0.61	2.59	0.52							
43	103	9581F	LW2-G274	3		10	6	4	60.0	40.0	88.85	6	91.08	89.24	2.23	0.37	1.84	0.31							
44	106	9581F	LW2-G274	4		10	7	3	70.0	30.0	89.85	7	94.26	90.69	4.41	0.63	3.57	0.51							
45	75	9581F	LW2-G274	5		10	7	3	70.0	30.0	89.20	7	97.92	91.22	8.72	1.25	6.70	0.96	Mean	6.8	3.3	67.5	32.5	0.73	0.59
46	48	9581F	LW2-G274	6		10	4	6	40.0	60.0	81.40	4	82.24	81.48	0.84	0.21	0.76	0.19	SD	1.8	1.8	17.5	17.5	0.37	0.29
47	46	9581F	LW2-G274	7		10	9	1	90.0	10.0	88.94	9	94.39	89.80	5.45	0.61	4.59	0.51	n	8	8	8	8	8	8
48	97	9581F	LW2-G274	8	wq replicate	10	9	1	90.0	10.0	85.16	9	93.79	86.89	8.63	0.96	6.90	0.77							
49	2	9582F	LW2-G303	1		10	10	0	100.0	0.0	89.96	10	106.02	95.94	16.06	1.61	10.09	1.01							
50	30	9582F	LW2-G303	2		10	9	1	90.0	10.0	82.41	9	97.62	87.62	15.41	1.71	10.20	1.13							
51	110	9582F	LW2-G303	3		10	8	2	80.0	20.0	98.81	8	118.63	107.50	19.82	2.48	11.13	1.39							
52	67	9582F	LW2-G303	4		10	9	1	90.0	10.0	83.59	9	97.84	88.55	14.25	1.58	9.29	1.03							
53	11	9582F	LW2-G303	5		10	9	1	90.0	10.0	87.69	9	102.16	92.64	14.47	1.61	9.52	1.06	Mean	8.9	1.1	88.8	11.3	1.86	1.16
54	107	9582F	LW2-G303	6		10	10	0	100.0	0.0	88.89	10	108.30	97.20	19.41	1.94	11.10	1.11	SD	0.8	0.8	8.3	8.3	0.30	0.14
55	6	9582F	LW2-G303	7		10	8	2	80.0	20.0	87.65	8	102.82	93.08	15.17	1.90	9.74	1.22	n	8	8	8	8	8	8
56	19	9582F	LW2-G303	8	wq replicate	10	8	2	80.0	20.0	87.74	8	104.09	93.37	16.35	2.04	10.72	1.34							
57	81	9583F	LW2-G376	1		10	10	0	100.0	0.0	84.40	10	100.62	90.33	16.22	1.62	10.29	1.03							
58	26	9583F	LW2-G376	2		10	8	2	80.0	20.0	94.60	8	108.19	98.64	13.59	1.70	9.55	1.19							
59	38	9583F	LW2-G376	3		10	8	2	80.0	20.0	87.81	8	102.06	92.32	14.25	1.78	9.74	1.22							
60	36	9583F	LW2-G376	4		10	8	2	80.0	20.0	82.58	8	96.36	86.84	13.78	1.72	9.52	1.19							
61	79	9583F	LW2-G376	5		10	10	0	100.0	0.0	79.21	10	95.16	85.05	15.95	1.60	10.11	1.01	Mean	9.1	0.9	91.3	8.8	1.64	1.08
62	68	9583F	LW2-G376	6		10	10	0	100.0	0.0	81.75	10	95.95	85.97	14.20	1.42	9.98	1.00	SD	1.0	1.0	9.9	9.9	0.12	0.12
63	84	9583F	LW2-G376	7		10	9	1	90.0	10.0	79.60	9	95.11	85.25	15.51	1.72	9.86	1.10	n	8	8	8	8	8	8
64	111	9583F	LW2-G376	8	wq replicate	10	10	0	100.0	0.0	84.31	10	99.61	90.79	15.30	1.53	8.82	0.86							
65	53	9584F	LW2-G385	1		10	10	0	100.0	0.0	86.04	10	97.02	89.03	10.98	1.10	7.99	0.80							
66	29	9584F	LW2-G385	2		10	8	2	80.0	20.0	88.46	8	101.69	92.25	13.23	1.65	9.44	1.18							
67	73	9584F	LW2-G385	3		10	10	0	100.0	0.0	84.49	10	101.69	90.40	17.20	1.72	11.29	1.13							
68	44	9584F	LW2-G385	4		10	8	2	80.0	20.0	79.64	8	92.86	83.10	13.22	1.65	9.76	1.22							
69	82	9584F	LW2-G385	5		10	10	0	100.0	0.0	88.85	10	103.74	93.88	14.89	1.49	9.86	0.99	Mean	9.0	1.0	90.0	10.0	1.59	1.10
70	109	9584F	LW2-G385	6		10	7	3	70.0	30.0	83.58	7	97.35	88.02	13.77	1.97	9.33	1.33	SD	1.2	1.2	12.0	12.0	0.25	0.16
71	7	9584F	LW2-G385	7		10	9	1	90.0	10.0	89.65	9	103.68	93.73	14.03	1.56	9.95	1.11	n	8	8	8	8	8	8
72	74	9584F	LW2-G385	8	wq replicate	10	10	0	100.0	0.0	80.54	10	96.60	86.23	16.06	1.61	10.37	1.04							
73	27	9585F	LW2-G367	1		10	9	1	90.0	10.0	84.83	9	99.89	89.12	15.06	1.67	10.77	1.20							
74	18	9585F	LW2-G367	2		10	9	1	90.0	10.0	75.29	9	87.09	78.66	11.80	1.31	8.43	0.94							
75	25	9585F	LW2-G367	3		10	10	0	100.0	0.0	83.74	10	99.34	88.25	15.60	1.56	11.08	1.11							
76	45	9585F	LW2-G367	4		10	10	0	100.0	0.0	85.63	10	100.02	90.10	14.39	1.44	9.92	0.99							
77	41	9585F	LW2-G367	5		10	10	0	100.0	0.0	84.59	10	98.99	89.01	14.40	1.44	9.98	1.00	Mean	9.5	0.5	95.0	5.0	1.45	1.04
78	38	9585F	LW2-G367	6		10	9	1	90.0	10.0	80.17	9	94.41	83.54	14.24	1.58	10.87	1.21	SD	0.5	0.5	5.3	5.3	0.14	0.12
79	77	9585F	LW2-G367	7		10	10	0	100.0	0.0	85.50	10	98.79	89.90	13.29	1.33	8.89	0.89	n	8	8	8	8	8	8
80	31	9585F	LW2-G367	8	wq replicate	10	9	1	90.0	10.0	81.00	9	92.61	83.70	11.61	1.29	8.91	0.99							
81	20	9586F	LW2-G408	1		10	8	2	80.0	20.0	87.70	8	99.62	90.72	11.92	1.49	8.90	1.11							
82	62	9586F	LW2-G408	2		10	10	0	100.0	0.0	84.29	10	98.60	88.08	14.31	1.43	10.52	1.05							
83	13	9586F	LW2-G408	3		10	8	2	80.0	20.0	89.61	8	102.81	92.49	13.20	1.65	10.32	1.29							
84	98	9586F	LW2-G408	4		10	8	2	80.0	20.0	89.23	8	104.63	93.99	15.40	1.93	10.64	1.33							
85	95	9586F	LW2-G408	5		10	9	1	90.0	10.0	81.64	9	95.71	85.86	14.07	1.56	9.85	1.09	Mean	8.8	1.3	87.5	12.5	1.62	1.18
86	105	9586F	LW2-G408	6		10	9	1	90.0	10.0	84.88	9	100.48	89.45	15.60	1.73	11.03	1.23	SD	0.7	0.7	7.1	7.1	0.16	0.10
87	15	9586F	LW2-G408	7		10	9	1	90.0	10.0	84.71	9	99.58	88.82	14.87	1.65	10.76	1.20	n	8	8	8	8	8	8
88	14	9586F	LW2-G408	8	wq replicate	10	9	1	90.0	10.0	86.41	9	100.06	89.66	13.65	1.52	10.40	1.16							
89	83	9587F	LW2-G416	1		10	10	0	100.0	0.0	84.92	10	97.94	88.95	13.02	1.30	8.99	0.90							
90	1	9587F	LW2-G416	2		10	9	1	90.0	10.0	82.27	9	95.51	86.40	13.24	1.47	9.11	1.01							
91	21	9587F	LW2-G416	3		10	8	2	80.0	20.0	89.50	8	104.37	94.70	14.87	1.86	9.67	1.21							
92	66	9587F	LW2-G416	4		10	9	1	90.0	10.0	78.93	9	90.93	82.56	12.00	1.33	8.37	0.93							
93	80	9587F	LW2-G416	5		10	9	1	90.0	10.0	83.28	9	97.53	88.74	14.25	1.58	8.79	0.98	Mean	9.4	0.6	93.8	6.3	1.46	0.98
94	34	9587F	LW2-G416	6		10	10	0	100.0	0.0	86.02	10	99.20	89.76	13.18	1.32	9.44	0.94	SD	0.7	0.7	7.4	7.4	0.19	0.10
95	70	9587F	LW2-G416	7		10	10	0	100.0	0.0	81.54	10	95.23	85.86	13.69	1.37	9.37	0.94	n	8	8	8	8	8	8
96	90	9587F	LW2-G416	8	wq replicate	10	10	0	100.0	0.0	94.34	10	109.62	99.59	14.28	1.43	9.03	0.90							

ANC086090
BZTO104(e)008609

Test Number: 686-22

Freshwater Sediment Test
10-Day Chironomus tentans

INDEX	BKR	NAS SMPL	CLIENT DESCRIP	REPL		INIT	SURV	MORT	PSURV	PMORT	TARE WT (mg)	WT COUNT	DRY WT (mg)	ASHED DRY WT (mg)	TWT (mg)	WT (mg)	TAFDW (mg)	AFDW (mg)							
																				SURV	MORT	PSURV	PMORT	WT	AFDW
97	89	9588F	LW2-G355	1		10	10	0	100.0	0.0	86.76	10	101.43	92.34	14.67	1.47	9.09	0.91							
98	61	9588F	LW2-G355	2		10	8	2	80.0	20.0	78.48	8	91.53	83.22	13.05	1.63	8.31	1.04							
99	42	9588F	LW2-G355	3		10	8	2	80.0	20.0	84.49	8	100.37	90.05	15.88	1.99	10.32	1.29							
100	22	9588F	LW2-G355	4		10	9	1	90.0	10.0	75.90	9	88.28	80.38	12.38	1.38	7.90	0.88							
101	86	9588F	LW2-G355	5		10	10	0	100.0	0.0	90.37	10	105.21	96.06	14.84	1.48	9.15	0.91	Mean	8.8	1.3	87.5	12.5	1.54	0.98
102	35	9588F	LW2-G355	6		10	8	2	80.0	20.0	86.49	8	99.59	91.34	13.10	1.64	8.25	1.03	SD	0.9	0.9	8.9	8.9	0.21	0.15
103	57	9588F	LW2-G355	7		10	9	1	90.0	10.0	84.88	9	97.79	89.02	12.91	1.43	8.77	0.97	n	8	8	8	8	8	8
104	52	9588F	LW2-G355	8	wq replicate	10	8	2	80.0	20.0	86.29	8	98.83	90.50	10.54	1.32	6.33	0.79							
105	33	9589F	LW2-G389	1		10	9	1	90.0	10.0	87.63	9	102.89	93.57	15.26	1.70	9.32	1.04							
106	51	9589F	LW2-G389	2		10	8	2	80.0	20.0	83.47	8	101.25	90.93	17.78	2.22	10.32	1.29							
107	76	9589F	LW2-G389	3		10	7	3	70.0	30.0	82.93	7	97.52	89.18	14.59	2.08	8.34	1.19							
108	99	9589F	LW2-G389	4		10	7	3	70.0	30.0	89.02	7	103.57	94.12	14.55	2.08	9.45	1.35							
109	87	9589F	LW2-G389	5		10	9	1	90.0	10.0	89.58	9	106.59	97.38	17.01	1.89	9.21	1.02	Mean	7.9	2.1	78.8	21.3	2.03	1.19
110	112	9589F	LW2-G389	6		10	9	1	90.0	10.0	81.36	9	98.23	89.20	16.87	1.87	9.03	1.00	SD	1.1	1.1	11.3	11.3	0.28	0.20
111	3	9589F	LW2-G389	7		10	6	4	60.0	40.0	83.71	6	99.21	89.72	15.50	2.58	9.49	1.56	n	8	8	8	8	8	8
112	50	9589F	LW2-G389	8	wq replicate	10	8	2	80.0	20.0	81.30	8	96.09	87.51	14.79	1.85	8.58	1.07							

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ANC08610
BZTO104(e)008610

Water Quality Data

NAS SMPL	CLIENT DESCRIP	Bulk Sediment Interstitial water NH3	pH
9574F	Control	2.4	6.5
9577F	LW2-G360	26.2	6.7
9578F	LW2-G212	6.7	5.9
9579F	LW2-G296	1.2	7.0
9580F	LW2-G205	2.7	6.6
9581F	LW2-G274	2.2	6.5
9582F	LW2-G303	1.5	6.6
9583F	LW2-G376	3.5	6.6
9584F	LW2-G385	9.5	7.0
9585F	LW2-G367	2.1	5.9
9586F	LW2-G408	8.5	6.2
9587F	LW2-G416	4.6	6.2
9588F	LW2-G355	9.5	6.6
9589F	LW2-G389	1.6	6.6

BKR	NAS SMPL	CLIENT DESCRIP	REPL	DAY	Overlying water TEMP	DO	COND	pH	NH3	HARD	ALK
9	9580F	LW2-G205	8	0	23.0	7.6	150	7.0	0.6	43	40
14	9586F	LW2-G408	8	0	22.9	7.4	150	7.0	0.5	34	40
17	9577F	LW2-G360	8	0	22.8	7.4	2250	6.7	1.3	77	60
19	9582F	LW2-G303	8	0	22.9	7.4	175	6.9	0.3	34	40
31	9585F	LW2-G367	8	0	22.9	7.4	150	6.7	0.3	43	40
50	9589F	LW2-G389	8	0	23.1	7.0	140	6.8	0.2	34	40
52	9588F	LW2-G355	8	0	22.8	7.2	195	7.0	0.6	43	40
72	9579F	LW2-G296	8	0	22.7	7.1	150	7.0	0.3	34	40
74	9584F	LW2-G385	8	0	22.8	6.9	165	6.9	0.2	43	40
85	9574F	Control	8	0	23.1	7.3	500	7.0	0.2	51	40
90	9587F	LW2-G416	8	0	23.2	7.3	150	6.9	0.2	43	40
94	9578F	LW2-G212	8	0	22.9	7.3	145	6.9	0.3	34	40
97	9581F	LW2-G274	8	0	22.8	6.0	165	6.6	0.3	34	40
111	9583F	LW2-G376	8	0	23.2	6.8	170	6.6	0.7	43	40
9	9580F	LW2-G205	8	1	23.2	7.0					
14	9586F	LW2-G408	8	1	23.2	6.8					
17	9577F	LW2-G360	8	1	23.1	6.8					
19	9582F	LW2-G303	8	1	23.1	6.8					
31	9585F	LW2-G367	8	1	23.0	6.9					
50	9589F	LW2-G389	8	1	23.0	6.6					
52	9588F	LW2-G355	8	1	23.2	6.7					
72	9579F	LW2-G296	8	1	22.8	6.7					
74	9584F	LW2-G385	8	1	22.8	6.8					
85	9574F	Control	8	1	23.1	6.8					
90	9587F	LW2-G416	8	1	23.2	6.8					
94	9578F	LW2-G212	8	1	23.2	6.8					
97	9581F	LW2-G274	8	1	22.9	6.4					
111	9583F	LW2-G376	8	1	22.8	6.6					
9	9580F	LW2-G205	8	2	22.6	6.6					
14	9586F	LW2-G408	8	2	22.5	6.5					
17	9577F	LW2-G360	8	2	22.4	7.4					
19	9582F	LW2-G303	8	2	22.3	6.6					
31	9585F	LW2-G367	8	2	22.4	6.8					
50	9589F	LW2-G389	8	2	22.4	6.9					
52	9588F	LW2-G355	8	2	22.1	6.6					
72	9579F	LW2-G296	8	2	22.2	6.6					
74	9584F	LW2-G385	8	2	22.4	6.6					
85	9574F	Control	8	2	22.7	6.6					
90	9587F	LW2-G416	8	2	22.7	6.6					
94	9578F	LW2-G212	8	2	22.3	6.7					
97	9581F	LW2-G274	8	2	22.3	6.8					
111	9583F	LW2-G376	8	2	22.5	6.8					
9	9580F	LW2-G205	8	3	22.7	5.8					
14	9586F	LW2-G408	8	3	22.7	5.4					
17	9577F	LW2-G360	8	3	22.7	5.6					
19	9582F	LW2-G303	8	3	22.6	5.2					
31	9585F	LW2-G367	8	3	22.6	5.4					
50	9589F	LW2-G389	8	3	22.8	5.4					
52	9588F	LW2-G355	8	3	22.4	5.4					
72	9579F	LW2-G296	8	3	22.3	5.4					
74	9584F	LW2-G385	8	3	22.3	4.8					
85	9574F	Control	8	3	22.5	5.8					
90	9587F	LW2-G416	8	3	22.8	5.2					
94	9578F	LW2-G212	8	3	22.8	5.6					
97	9581F	LW2-G274	8	3	22.6	5.2					
111	9583F	LW2-G376	8	3	22.5	5.2					

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9	9580F	LW2-G205	8	4	22.9	5.9									
14	9586F	LW2-G408	8	4	22.8	5.8									
17	9577F	LW2-G360	8	4	22.8	5.4									
19	9582F	LW2-G303	8	4	22.8	5.3									
31	9585F	LW2-G367	8	4	22.7	4.9									
50	9589F	LW2-G389	8	4	22.6	5.1									
52	9588F	LW2-G355	8	4	22.7	5.5									
72	9579F	LW2-G296	8	4	22.6	5.2									
74	9584F	LW2-G385	8	4	22.6	5.2									
85	9574F	Control	8	4	22.7	5.3									
90	9587F	LW2-G416	8	4	22.6	5.4									
94	9578F	LW2-G212	8	4	22.6	5.2									
97	9581F	LW2-G274	8	4	22.6	5.6									
111	9583F	LW2-G376	8	4	22.5	5.7									
9	9580F	LW2-G205	8	5	22.8	4.4									
14	9586F	LW2-G408	8	5	22.7	3.8									
17	9577F	LW2-G360	8	5	22.7	5.2									
19	9582F	LW2-G303	8	5	22.6	4.2									
31	9585F	LW2-G367	8	5	22.9	4.4									
50	9589F	LW2-G389	8	5	22.9	4.6									
52	9588F	LW2-G355	8	5	22.7	4.7									
72	9579F	LW2-G296	8	5	22.7	4.0									
74	9584F	LW2-G385	8	5	22.7	4.2									
85	9574F	Control	8	5	22.9	5.4									
90	9587F	LW2-G416	8	5	23.0	5.1									
94	9578F	LW2-G212	8	5	22.8	4.5									
97	9581F	LW2-G274	8	5	22.8	4.7									
111	9583F	LW2-G376	8	5	22.9	4.3									
9	9580F	LW2-G205	8	6	22.6	4.6									
14	9586F	LW2-G408	8	6	22.5	4.0									
17	9577F	LW2-G360	8	6	22.6	4.6									
19	9582F	LW2-G303	8	6	22.4	4.3									
31	9585F	LW2-G367	8	6	22.6	4.3									
50	9589F	LW2-G389	8	6	22.7	4.5									
52	9588F	LW2-G355	8	6	22.6	4.6									
72	9579F	LW2-G296	8	6	22.5	4.3									
74	9584F	LW2-G385	8	6	22.6	4.5									
85	9574F	Control	8	6	22.7	4.6									
90	9587F	LW2-G416	8	6	22.7	4.8									
94	9578F	LW2-G212	8	6	22.6	4.8									
97	9581F	LW2-G274	8	6	22.5	4.7									
111	9583F	LW2-G376	8	6	22.7	4.4									
9	9580F	LW2-G205	8	7	22.6	4.6									
14	9586F	LW2-G408	8	7	22.6	4.8									
17	9577F	LW2-G360	8	7	22.5	5.2									
19	9582F	LW2-G303	8	7	22.6	5.0									
31	9585F	LW2-G367	8	7	22.5	5.0									
50	9589F	LW2-G389	8	7	22.7	5.0									
52	9588F	LW2-G355	8	7	22.6	5.2									
72	9579F	LW2-G296	8	7	22.6	5.1									
74	9584F	LW2-G385	8	7	22.6	4.9									
85	9574F	Control	8	7	22.8	5.0									
90	9587F	LW2-G416	8	7	22.8	4.9									
94	9578F	LW2-G212	8	7	22.6	5.0									
97	9581F	LW2-G274	8	7	22.6	4.8									
111	9583F	LW2-G376	8	7	22.8	4.6									
9	9580F	LW2-G205	8	8	22.6	5.0									
14	9586F	LW2-G408	8	8	22.6	4.0									
17	9577F	LW2-G360	8	8	22.5	4.9									
19	9582F	LW2-G303	8	8	22.5	5.2									
31	9585F	LW2-G367	8	8	22.5	5.2									
50	9589F	LW2-G389	8	8	22.6	5.5									
52	9588F	LW2-G355	8	8	22.6	4.7									
72	9579F	LW2-G296	8	8	22.5	4.8									
74	9584F	LW2-G385	8	8	22.5	4.1									
85	9574F	Control	8	8	22.6	4.8									
90	9587F	LW2-G416	8	8	22.7	4.8									
94	9578F	LW2-G212	8	8	22.6	4.5									
97	9581F	LW2-G274	8	8	22.5	4.5									
111	9583F	LW2-G376	8	8	22.6	4.9									
9	9580F	LW2-G205	8	9	22.7	4.8									
14	9586F	LW2-G408	8	9	22.6	4.6									
17	9577F	LW2-G360	8	9	22.6	4.7									
19	9582F	LW2-G303	8	9	22.6	4.6									
31	9585F	LW2-G367	8	9	22.6	4.6									
50	9589F	LW2-G389	8	9	22.8	4.8									
52	9588F	LW2-G355	8	9	22.8	4.8									
72	9579F	LW2-G296	8	9	22.6	4.6									
74	9584F	LW2-G385	8	9	22.6	4.7									
85	9574F	Control	8	9	22.6	3.8									

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90	9587F	LW2-G416	8	9	22.7	4.4								
94	9578F	LW2-G212	8	9	22.8	4.7								
97	9581F	LW2-G274	8	9	22.7	4.0								
111	9583F	LW2-G376	8	9	22.7	4.7								
9	9580F	LW2-G205	8	10	22.3	6.6	150	6.5	0.1	34	40			
14	9586F	LW2-G408	8	10	22.2	6.0	150	6.3	0.3	34	40			
17	9577F	LW2-G360	8	10	22.2	6.1	260	6.3	0.3	34	50			
19	9582F	LW2-G303	8	10	22.3	6.4	165	6.2	0.1	34	40			
31	9585F	LW2-G367	8	10	22.2	6.3	160	6.2	0.3	34	40			
50	9589F	LW2-G389	8	10	22.2	5.9	155	6.2	0.2	34	40			
52	9588F	LW2-G355	8	10	22.2	6.2	160	6.1	0.3	34	40			
72	9579F	LW2-G296	8	10	22.2	6.4	160	6.2	0.2	43	40			
74	9584F	LW2-G385	8	10	22.1	6.4	160	6.1	0.4	34	40			
85	9574F	Control	8	10	22.3	6.3	360	6.2	0.3	34	40			
90	9587F	LW2-G416	8	10	22.3	6.1	170	6.3	0.2	51	40			
94	9578F	LW2-G212	8	10	22.3	5.9	160	6.1	0.2	34	40			
97	9581F	LW2-G274	8	10	22.2	5.8	160	6.4	0.2	43	40			
111	9583F	LW2-G376	8	10	22.1	6.0	155	6.3	0.3	34	40			
				Mean	22.6	5.5	256	6.6	0.3	39	41		5.9	6.5
				SD	0.2	1.0	398	0.3	0.2	9	4		6.6	0.3
				n	154	154	28	28	28	28	28		14	14
				Min	22.1	3.8	140	6.1	0.1	34	40		1.2	5.9
				Max	23.2	7.6	2250	7.0	1.3	77	60		26.2	7.0

ANC08613
BZTO104(e)008613

AMMONIA EXPOSURE BENCHSHEETS AND ANALYSIS

Total Ammonia-N in Sediment Pore Water: Computation Worksheet

Salicylate Method (SOP #5492)

Result

	Sample description	Dilution factor	OD_{655}	NH_3-N (mg/L)	pH	Salinity (ppt)
	Blank	-----	-----	-----		
	1.0 mg/L NH_3-N Std.	-----	0.084	1.00		
	3.0 mg/L NH_3-N Std.	-----	0.274	3.00		
	6.0 mg/L NH_3-N Std.	-----	0.542	6.00		
	10.0 mg/L NH_3-N Std.	-----	0.895	10.00		
	3.0 mg/L spike	-----	0.285	3.17		
	3.0 mg/L spike dupl.	-----	0.277	3.09		
1.	9577F	5	0.470	26.17		
2.	9578F	5	0.120	6.68		
3.	9579F	5	0.022	1.23		
4.	9580F	5	0.049	2.73		
5.	9581F	5	0.040	2.23		
6.	9582F	5	0.026	1.45		
7.	9583F	5	0.062	3.45		
8.	9584F	5	0.170	9.47		
9.	9585F	5	0.038	2.12		
10.	9586F	5	0.153	8.52		
11.	9587F	5	0.082	4.57		
12.	9588F	5	0.171	9.52		
13.	9589F	5	0.029	1.61		
14.	9574F	5	0.043	2.39		
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23.		* insufficient sample for analysis				
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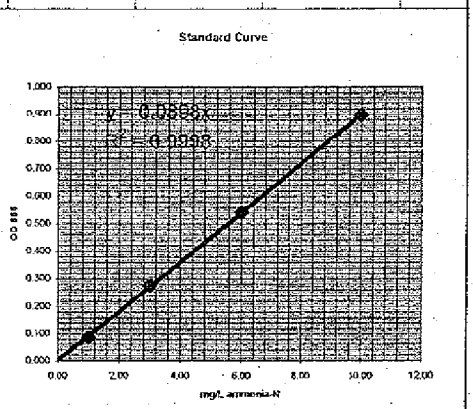

Reporting limit (mg/L) =	0.5
Recovery (%) =	104.3
Precision (RPD) =	2.85
Sample volume (ml):	0.10
Dilution factor	5

Sample Set Description:

Proj. No.: 686

Bulk sediment porewaters

Batch 11

Analyst: RSC

Date analysed: 11/1/2004

Total Ammonia-N in Sediment Pore Water: Computation Worksheet

Salicylate Method (SOP #5492)

Result

	Sample description	Dilution factor	OD_{655}	NH_3-N (mg/L)	pH	Salinity (ppt)
	Blank	* -----	----	----		
	1.0 mg/L NH_3-N Std.	-----	0.084	1.00		
	3.0 mg/L NH_3-N Std.	-----	0.274	3.00		
	6.0 mg/L NH_3-N Std.	-----	.554	6.00		
	10.0 mg/L NH_3-N Std.	-----	.895	10.00		
	3.0 mg/L spike	-----	.265			
	3.0 mg/L spike dupl.	-----	.277			
1.	9577F	5	.470		6.7	
2.	9578F	5	.120		5.9	
3.	9579F	5	.022		7.0	
4.	9580F	5	.049		6.6	
5.	9581F	5	.043		6.5	
6.	9582F	5	.026		6.6	
7.	9583F	5	.062		6.6	
8.	9584F	5	.170		7.0	
9.	9585F	5	.038		5.9	
10.	9586F	5	.153		6.2	
11.	9587F	5	.052		6.2	
12.	9588F	5	.171		6.6	
13.	9589F	5	.029		6.6	
14.	9574F		.043		6.5	
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23.		* insufficient sample for analysis				
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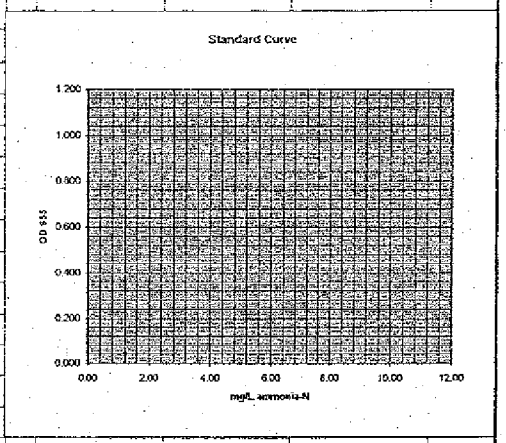


Reporting limit (mg/L) =	0.5
Recovery (%) =	#VALUE!
Precision (RPD) =	#VALUE!
Sample volume (ml):	0.10
Dilution factor	5

Sample Set Description:

Proj. No.: 686

Bulk sediment porewaters

Batch 11

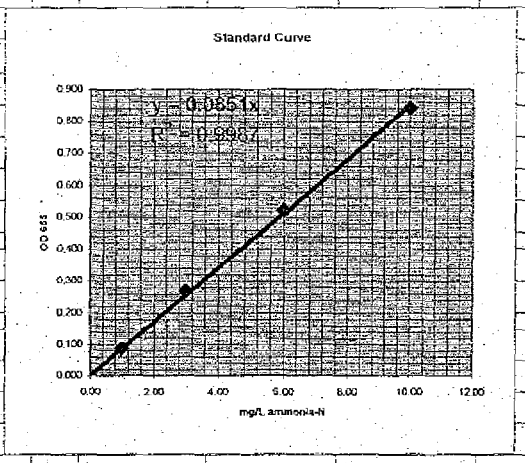
Analyst: RSC

Date analysed: 11/1/2004

Total Ammonia-N in Water: Computation Worksheet
Salicylate Method (SOP #5492)

Result

	Sample description	Dilution factor	OD_{655}	NH_3-N (mg/L)
	Blank	-----	-----	-----
	1.0 mg/L NH_3-N Std.	-----	0.087	1.00
	3.0 mg/L NH_3-N Std.	-----	0.268	3.00
	6.0 mg/L NH_3-N Std.	-----	0.522	6.00
	10.0 mg/L NH_3-N Std.	-----	0.840	10.00
	3.0 mg/L spike	-----	0.271	3.18
	3.0 mg/L spike dupl.	-----	0.268	3.15
1.	9	1	0.050	0.59
2.	14	1	0.040	0.47
3.	17	1	0.113	1.33
4.	19	1	0.029	0.34
5.	31	1	0.023	0.27
6.	50	1	0.014	0.16
7.	52	1	0.052	0.61
8.	72	1	0.026	0.31
9.	74	1	0.013	0.15
10.	85	1	0.013	0.15
11.	90	1	0.020	0.23
12.	94	1	0.027	0.32
13.	97	1	0.024	0.28
14.	111	1	0.059	0.69



Reporting limit (mg/L) =	0.1
Recovery (%) =	105.5
Precision (RPD) =	1.11
Sample volume (ml):	0.50
Dilution factor	1

Sample Set Description:

Test No.:	686-22
Test Day:	0 (11-2-04)
Species:	*Chironomus*

Overlying water

Analyst:	RSC
Date analysed:	12/1/2004

Total Ammonia-N in Water: Computation Worksheet
Salicylate Method (SOP #5492)

Result

	Sample description	Dilution factor	OD655	NH_3-N (mg/L)
	Blank	-----	-----	-----
	1.0 mg/L NH_3-N Std.	-----	.587	1.00
	3.0 mg/L NH_3-N Std.	-----	.268	3.00
	6.0 mg/L NH_3-N Std.	-----	.502	6.00
	10.0 mg/L NH_3-N Std.	-----	.840	10.00
	3.0 mg/L spike	-----	.271	
	3.0 mg/L spike dupl.	-----	.268	
1.	9	1	.050	
2.	14	1	.040	
3.	17	1	.013	
4.	19	1	.029	
5.	31	1	.023	
6.	50	1	.019	
7.	52	1	.052	
8.	72	1	.026	
9.	74	1	.013	
10.	85	1	.013	
11.	90	1	.020	
12.	94	1	.027	
13.	97	1	.024	
14.	111	1	.059	
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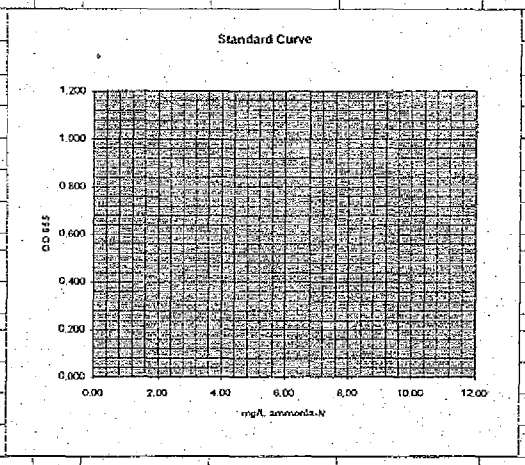

Reporting limit (mg/L) =	0.1
Recovery (%) =	#VALUE!
Precision (RPD) =	#VALUE!
Sample volume (ml):	0.50
Dilution factor	1

Sample Set Description:

Test No.:	686-22
Test Day:	0 (11-2-04)
Species:	*Chironomus*
Overlying water	
Analyst:	RSC
Date analysed:	12/1/2004

ANC08618
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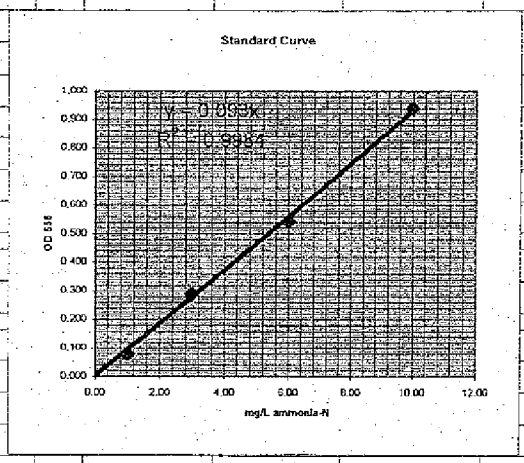
Total Ammonia-N in Water: Computation Worksheet

Salicylate Method (SOP #5492)

Result

	Sample description	Dilution factor	OD_{655}	NH_3-N (mg/L)
	Blank	-----	----	-----
	1.0 mg/L NH_3-N Std.	-----	0.078	1.00
	3.0 mg/L NH_3-N Std.	-----	0.287	3.00
	6.0 mg/L NH_3-N Std.	-----	0.541	6.00
	10.0 mg/L NH_3-N Std.	-----	0.940	10.00
	3.0 mg/L spike	-----	0.290	3.12
	3.0 mg/L spike dupl.	-----	0.283	3.04
1.	9	1	0.010	0.11
2.	14	1	0.030	0.32
3.	17	1	0.032	0.34
4.	19	1	0.013	0.14
5.	31	1	0.023	0.25
6.	50	1	0.019	0.20
7.	52	1	0.023	0.25
8.	72	1	0.019	0.20
9.	74	1	0.038	0.41
10.	85	1	0.024	0.26
11.	90	1	0.022	0.24
12.	94	1	0.018	0.19
13.	97	1	0.022	0.24
14.	111	1	0.027	0.29



Reporting limit (mg/L) =	0.1
Recovery (%) =	102.6
Precision (RPD) =	2.44
Sample volume (ml):	0.50
Dilution factor	1

Sample Set Description:

Test No.:	686-22
Test Day:	10 (11-12-04)
Species:	*Chironomus*
	Overlying water
Analyst:	RSC
Date analysed:	12/15/2004

ANC08619
BZTO104(e)008619

Total Ammonia-N in Water: Computation Worksheet

Salicylate Method (SOP #5492)

Result

	Sample description	Dilution factor	OD_{655}	NH_3-N (mg/L)
	Blank	----	----	----
	1.0 mg/L NH_3-N Std.	-----	.078	1.00
	3.0 mg/L NH_3-N Std.	-----	.287	3.00
	6.0 mg/L NH_3-N Std.	-----	.541	6.00
	10.0 mg/L NH_3-N Std.	-----	.940	10.00
	3.0 mg/L spike	-----	.290	
	3.0 mg/L spike dupl.	-----	.283	
1.	9	1	.010	
2.	14	1	.030	
3.	17	1	.032	
4.	19	1	.013	
5.	31	1	.023	
6.	50	1	.019	
7.	52	1	.023	
8.	72	1	.019	
9.	74	1	.038	
10.	85	1	.024	
11.	90	1	.022	
12.	94	1	.018	
13.	97	1	.022	
14.	111	1	.027	
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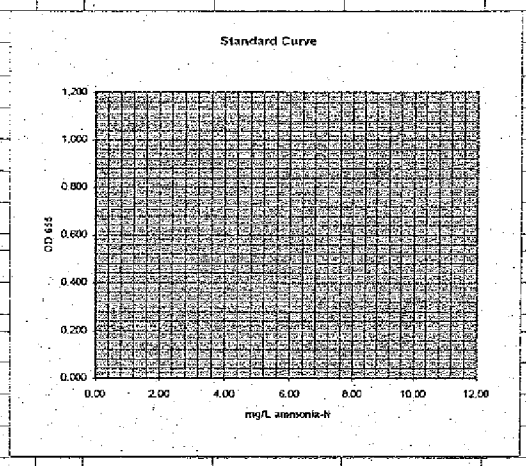


Reporting limit (mg/L) =	0.1
Recovery (%) =	#VALUE!
Precision (RPD) =	#VALUE!
Sample volume (ml):	0.50
Dilution factor	1

Sample Set Description:

Test No.:	686-22
Test Day:	10 (11-12-04)
Species:	*Chironomus*
Overlying water	
Analyst:	RSC
Date analysed:	12/15/2004

CHAIN-OF-CUSTODY RECORDS

1 of 12

Windward Environmental

CHAIN-OF-CUSTODY/TEST REQUEST FORM

1340

Project/Client Name: LWG PORTLAND HARBOR RI/FS
Windward Project No:
Contact Name: HELLE ANDERSEN
Sampled By: BOB COMPLITA, ANGELITA RODRIGUEZ

Ship to: NORTHWESTERN AQUATIC SCIENCES
Attn: GERALD IRISSARRI
Shipping address: YAQUINA BAY ROAD
NEWPORT OR

Shipping Date: 10/30/2004
Airbill Number:

Sample Collection Date (m/d/y)	Time	Sample Identification	Volume of Sample / # of Containers	Matrix	Test(s) Requested (check test(s) required) HYALELLA	CHIRONOMID						Comments / Instructions [Jar tag number(s)]
10/28/04	1703	LW2-G360	1L/4	Sediment	X	X						9577F
	1502	LW2-G212			X	X						9578F
	1436	LW2-G296			X	X						9579F
10/29/04	0901	LW2-G205			X	X						9580F
	0951	LW2-G274			X	X						9581F
	1057	LW2-G303			X	X						9582F
	1126	LW2-G376			X	X						9583F
	1156	LW2-G385			X	X						9584F
	1217	LW2-G367			X	X						9585F
	1335	LW2-G408			X	X						9586F
	1354	LW2-G416			X	X						9587F
	1436	LW2-G355			X	X						9588F
	1635	LW2-G389			X	X						9589F
Total Number of Containers			52	Purchase Order / Statement of Work #								

1) Released by:	1) Rec'd by:	2) Released by	1) Rec'd by:
Print name: ANGELITA RODRIGUEZ		Print name:	
Signature:	Company:	Signature:	Company:
Company: WINDWARD ENV		Company:	
Date/Time: 10.30.04 12:30	Date/Time:	Date/Time:	Date/Time:

* Distribution: White and yellow copies accompany shipment; pink-consignor's copy; white-consignee return with results; yellow-consignee's copy.
* Instructions for completion of Chain-of-Custody/Test Request Form on back.

Wind Ward environmental LLC
• 200 West Mercer Street
Suite 401
Seattle, WA 98119
Tel: 206.378.1364
Fax: 206.217.0089

To be completed by Laboratory upon sample receipt:

Date of receipt: 10/30/04	Laboratory W.O. #:
Condition upon receipt: good	Time of receipt: 12:30
Cooler temperature: 2.7°C	Received by: D. S. Caldwell

PAGE 32 OF 32

ANC08622
BZT0104(e)008622

APPENDIX II

RAW DATA – REFERENCE TOXICANT TEST

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-

ACUTE TOXICITY TEST (ALL SPECIES)

REVIEWED PAGES 1-7 -GJI

Test No. 999-1863 Client: QC Test Investigator

Test Type (rangefinding/definitive) Test Length (hr) 96

Species *Chironomus tentans*

STUDY MANAGEMENT

Client: QC test

Client's Study Monitor: QC test

Testing Laboratory: Northwestern Aquatic Sciences

Test Location: Newport Laboratory

Laboratory's Study Personnel:

Proj. Man./Study Dir. G.J. Irissarri GJI

QA Officer L. K. Nemeth JN

1. G.C. Hayes GCH 2. Susan Gage SJ

3. GABuller VB 4. M.S. Redmond MR

Study Schedule: 5. B.B. Pridgeon BBP

Test Beginning: 11-2-04 1240 Test Ending: 11-6-04 1110

TEST MATERIAL

Description: Potassium Chloride Crystals - Lot No.: FISHER 020865A

NAS Sample No.				
Date of Collection:				
Date of Receipt:				
Temperature (deg C):				
Dissolved oxygen (mg/L):				
pH:				
Conductivity (umhos/cm):				
Hardness (mg/L):				
Alkalinity (mg/L):				
Salinity (ppt):				
Total chlorine (mg/L):				
Total ammonia-N (mg/L):				

DILUTION WATER

Description: Moderately hard synthetic water

Date of Preparation/Collection: 10-20-04

Water Quality: Cond. (umhos/cm): 320 Salinity (ppt) — pH 7.5

Hardness (mg/L as $CaCO_3$): 85 Alkalinity (mg/L as $CaCO_3$): 80

Treatments: Aerated ≥ 24 hrs

TEST LOCATION

Test conducted in (circle one): room 1 (room 2) trailer water bath other:

Randomization chart:

5	10	Ø	2.5	10	1.25	Ø	20	2.5	10
20	2.5	5	10	5	2.5	5	Ø	10	2.5
1.25	Ø	20	1.25	20	Ø	20	10	Ø	5
10	5	1.25	5	2.5	5	1.25	2.5	20	1.25
2.5	1.25	10	20	Ø	20	10	5	1.25	Ø
Ø	20	2.5	Ø	1.25	10	2.5	1.25	5	20

Error codes: 1) Correction of handwriting error
2) Written in wrong location; entry deleted
3) Wrong date deleted; replaced with correct date
4) Error found in measurement; measurement repeated

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-_____

ACUTE TOXICITY TEST (ALL SPECIES)

Test No. 999-1863 Client QC Test Investigator _____

TEST ORGANISMS

Species: *Chironomus tentans* Age: — Size: 3rd instar

Source: NAS cultures Date received: —

Acclimation Data:

Date	Temp. (deg.C)	DO (mg/L)	pH	Cond. umhos/cm	Hardness (mg/L)	Alkalinity (mg/L)	Feeding Amount	Feeding description*	Water changes
10-25-04	24.1	6.0	6.9	310	—	—	ANIMALS FED		CULTURE
10-26-04	21.9	8.6	7.5	275	77	70	TETRA FIN		TANKS
10-27-04	22.0	7.6	7.6	280	85	80	AND SELENASTRUM		CHANGED
10-29-04	22.3	6.7	7.2	300	—	—			TWICE
11-1-04	22.6	7.8	7.1	290	—	—	DETAILS RECORDED		WEEKLY
11-2-04	23.6	8.6	7.6	260	85	70	IN CHIRONOMID		
Mean	22.8	7.6	7.3	286	82	73	CULTURE DATA		
S.D.	0.9	1.0	0.3	18	5	6	SHEET		
(N)	6	6	6	6	3	3			

Photoperiod during acclimation: 16:8, L:D *S=*Selenastrum*, T=Tetra Fin suspension

TEST PROCEDURES AND CONDITIONS

Test concentrations (50% series recommended): 20, 10, 5, 2.5, 1.25, 0 g/L

Test chamber: 30 ml plastic cups Test volume: 20 ml

Replicates/treatment: 10 Organisms/treatment: 10 (1/rep)

Test water changes: None Aeration during test: None

Feeding: 0.25 ml Prime Tropical Flakes (4g/L) suspension per cup on days 0 and 2

Duration: 24-hr, 48-hr, (96-hr) Test temperature (deg.C): 23 ± 1

Beaker placement: Stratified randomization Photoperiod: 16:8, L:D

MISCELLANEOUS NOTES

Test solution preparation:

Working stock: Dissolve 10g KCl crystals in dilution water and dilute to 500 mL.
Final conc.: 20 g/L.

Test concentration (g/L)	KCl working stock (ml/200ml)	ml of dilution water per 200 ml
20	200	0
10	100	100
5	50	150
2.5	25	175
1.25	12.5	187.5
0	0	0

11-2-04 631

ANC08625
BZTO104(e)008625

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-_____

ACUTE TOXICITY TEST (ALL SPECIES)

Test No. 999-1863 Client QC Test

DAILY RECORD SHEET

Day 0 (11 / 2 104) 626/BP Temp Beaker (°C): 23.1

Conc. (g/L)	Temp. (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	Comments
1. 20	23.3	8.3	20,000	8.0	85	80	
2. 10	23.3	8.2	14600	8.1			
3. 5	23.4	8.2	7810	8.0			
4. 2.5	23.5	8.2	4260	7.9			
5. 1.25	23.4	8.1	2310	7.8			
6. 0	23.4	8.1	295	7.8	85	80	
All animals fed 0.25 ml Prime Tropical Flakes suspension. Initials: MS							

Day 1 (11 / 3 104) BBP Temp Beaker (°C): 22.7

Conc. (g/L)	Temp. (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	Comments
1. 20							
2. 10							
3. 5							
4. 2.5							
5. 1.25							
6. 0							

Day 2 (11 / 4 104) BBP Temp Beaker (°C): 22.8

Conc. (g/L)	Temp. (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	Comments
1. 20							
2. 10							
3. 5							
4. 2.5							
5. 1.25							
6. 0							
All animals fed 0.25 ml Prime Tropical Flakes suspension. Initials: GJ1							

Day 3 (11 / 5 104) BBP Temp Beaker (°C): 23.2

Conc. (g/L)	Temp. (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	Comments
1. 20							
2. 10							
3. 5							
4. 2.5							
5. 1.25							
6. 0							

Day 4 (11 / 6 104) GJ1 Temp Beaker (°C): 23.2

Conc. (g/L)	Temp. (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	Comments
1. 20	—	—	—	—	—	—	
2. 10	—	—	—	—			
3. 5	23.3	7.4	7800	7.6			
4. 2.5	23.3	7.4	4300	7.7			
5. 1.25	23.3	7.4	2390	7.7			
6. 0	23.2	7.6	330	7.4	85	80	
Mean	23.3	7.9	312 (control)	7.8	85	80	
SD	0.1	0.4	—	0.2	0	0	
n	10	10	2	10	3	3	

ANC08626
BZTO104(e)008626

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-_____

ACUTE TOXICITY TEST (ALL SPECIES)

Test No.999-1863 Client _____ QC Test _____ Investigator _____

DAILY RECORD SHEET - Survivors

Day 0 (11/2 04)

Conc. (g/L)	Survivors in Replicate: 1	2	3	4	5	6	7	8	9	10	Total
1. 20	1	1	1	1	1	1	1	1	1	1	10
2. 10	1	1	1	1	1	1	1	1	1	1	10
3. 5	1	1	1	1	1	1	1	1	1	1	10
4. 2.5	1	1	1	1	1	1	1	1	1	1	10
5. 1.25	1	1	1	1	1	1	1	1	1	1	10
6. 0	1	1	1	1	1	1	1	1	1	1	10

Day 1 (11/3/04) VD

Conc. (g/L)	Survivors in Replicate: 1	2	3	4	5	6	7	8	9	10	Total
1. 20	X	1	1	1	X	1	1	X	1	X	6 (9D)
2. 10	1	X	1	1	1	1	1	1	1	1	9 (10)
3. 5	1	1	1	1	1	1	1	1	1	1	10
4. 2.5	1	1	1	1	1	1	1	1	1	1	10
5. 1.25	1	1	1	1	1	1	1	1	1	1	10
6. 0	1	1	1	1	1	1	1	1	1	1	10

Day 2 (11/4/04) GJ

Conc. (g/L)	Survivors in Replicate: 1	2	3	4	5	6	7	8	9	10	Total
1. 20	X	X	X	X	X	X	X	X	X	X	Ø (6D)
2. 10	X	X	X	X	X	X	X	X	X	X	Ø (9D)
3. 5	X	1	1	1	1	1	1	1	1	1	9 (10)
4. 2.5	1	1	1	1	1	1	1	1	1	1	10
5. 1.25	1	1	1	1	1	1	1	1	1	1	10
6. 0	1	1	1	1	1	1	1	1	1	1	10

Day 3 (11/5/04) GJ

Conc. (g/L)	Survivors in Replicate: 1	2	3	4	5	6	7	8	9	10	Total
1. 20	X	X	X	X	X	X	X	X	X	X	Ø
2. 10	X	X	X	X	X	X	X	X	X	X	Ø
3. 5	X	1	1	1	1	1	1	1	1	1	9
4. 2.5	1	1	1	1	1	1	1	1	1	1	10
5. 1.25	1	1	1	1	1	1	1	1	1	1	10
6. 0	1	1	1	1	1	1	1	1	1	1	10

Day 4 (11/6/04) GJ

Conc. (g/L)	Survivors in Replicate: 1	2	3	4	5	6	7	8	9	10	Total
1. 20	X	X	X	X	X	X	X	X	X	X	Ø
2. 10	X	X	X	X	X	X	X	X	X	X	Ø
3. 5	X	1	1	1	1	1	1	1	1	1	9
4. 2.5	1	1	1	1	1	1	1	1	1	1	10
5. 1.25	1	1	1	1	1	1	1	1	1	1	10
6. 0	1	1	1	1	1	1	1	1	1	1	10

ANC08627
BZTO104(e)008627

Acute 96-hr Toxicity Test-96 Hr Survival

Start Date:	11/2/04 12:40	Test ID:	999-1863	Sample ID:	REF-Ref Toxicant
End Date:	11/6/04 11:10	Lab ID:	ORNAS-Northwestern Aquati	Sample Type:	KCL-Potassium chloride
Sample Date:		Protocol:	EPAF 91-EPA Freshwater	Test Species:	CT-Chironomus tentans
Comments:					

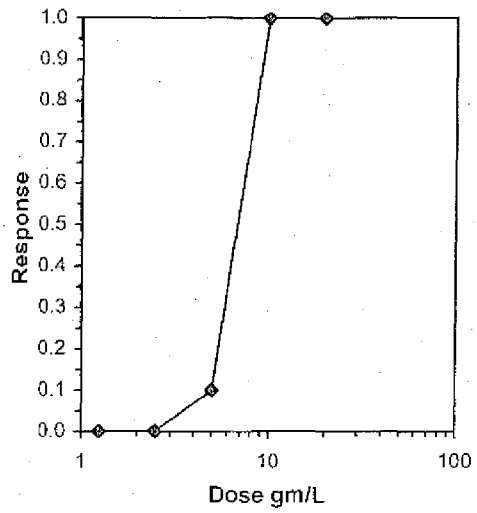
Conc-gm/L	1
D-Control	1.0000
1.25	1.0000
2.5	1.0000
5	0.9000
10	0.0000
20	0.0000

Conc-gm/L	Mean	N-Mean	Resp	Not Resp	Total	N	Fisher's Exact P	1-Tailed Critical	Number Resp	Total Number
D-Control	1.0000	1.0000	0	10	10	1			0	10
1.25	1.0000	1.0000	0	10	10	1	1.0000	0.0500	0	10
2.5	1.0000	1.0000	0	10	10	1	1.0000	0.0500	0	10
5	0.9000	0.9000	1	9	10	1	0.5000	0.0500	1	10
10	0.0000	0.0000	10	0	10	1			10	10
20	0.0000	0.0000	10	0	10	1			10	10

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU
Fisher's Exact Test	5	10	7.07107	

Trimmed Spearman-Karber

Trim Level	EC50	95% CL	
0.0%	6.5975	5.7845	7.5249
5.0%	6.7460	5.7246	7.9495
10.0%	6.8040	6.2734	7.3794
20.0%	6.8040	6.2734	7.3794
Auto-0.0%	6.5975	5.7845	7.5249



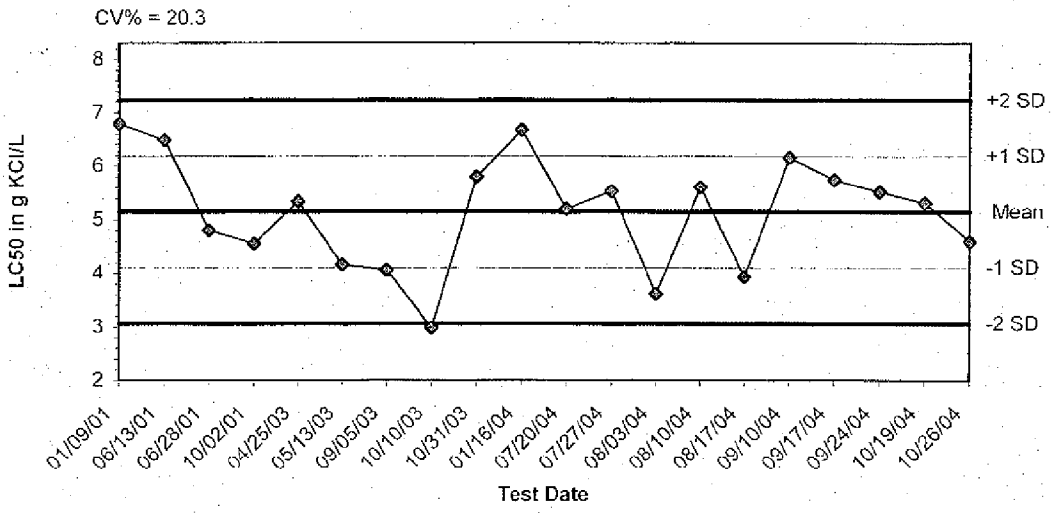
ANC08628
BZTO104(e)008628

Test: AT-Acute 96-hr Toxicity Test							Test ID: 999-1863		
Species: CT-Chironomus tentans							Protocol: EPAF 91-EPA Freshwater		
Sample ID: REF-Ref Toxicant							Sample Type: KCL-Potassium chloride		
Start Date: 11/2/04 12:40			End Date: 11/6/04 11:10				Lab ID: ORNAS-Northwestern Aquatic Sciences		
Pos	ID	Rep	Group	Start	24 Hr	48 Hr	72 Hr	96 Hr	Notes
	1	1	D-Control	10				10	
	2	1	1.250	10				10	
	3	1	2.500	10				10	
	4	1	5.000	10				9	
	5	1	10.000	10				0	
	6	1	20.000	10				0	

Comments: Data entry verified against laboratory bench sheets.
MLR 11-10-04

ANC08629
BZTO104(e)008629

Chironomus tentans 3rd instar 96-hr reference toxicant test - last 20 points



Dates	Values	Mean	-1 SD	-2 SD	+1 SD	+2 SD
01/09/01	6.7900	5.1430	4.0998	3.0567	6.1862	7.2293
06/13/01	6.4900	5.1430	4.0998	3.0567	6.1862	7.2293
06/28/01	4.8000	5.1430	4.0998	3.0567	6.1862	7.2293
10/02/01	4.5500	5.1430	4.0998	3.0567	6.1862	7.2293
04/25/03	5.3400	5.1430	4.0998	3.0567	6.1862	7.2293
05/13/03	4.1600	5.1430	4.0998	3.0567	6.1862	7.2293
09/05/03	4.0600	5.1430	4.0998	3.0567	6.1862	7.2293
10/10/03	2.9800	5.1430	4.0998	3.0567	6.1862	7.2293
10/31/03	5.8000	5.1430	4.0998	3.0567	6.1862	7.2293
01/16/04	6.6800	5.1430	4.0998	3.0567	6.1862	7.2293
07/20/04	5.2000	5.1430	4.0998	3.0567	6.1862	7.2293
07/27/04	5.5300	5.1430	4.0998	3.0567	6.1862	7.2293
08/03/04	3.6200	5.1430	4.0998	3.0567	6.1862	7.2293
08/10/04	5.6100	5.1430	4.0998	3.0567	6.1862	7.2293
08/17/04	3.9300	5.1430	4.0998	3.0567	6.1862	7.2293
09/10/04	6.1600	5.1430	4.0998	3.0567	6.1862	7.2293
09/17/04	5.7400	5.1430	4.0998	3.0567	6.1862	7.2293
09/24/04	5.5200	5.1430	4.0998	3.0567	6.1862	7.2293
10/19/04	5.3100	5.1430	4.0998	3.0567	6.1862	7.2293
10/26/04	4.5900	5.1430	4.0998	3.0567	6.1862	7.2293

MSR
11-10-04

ANC08630
BZTO104(e)008630

Report

of

Test No. 686-23

Toxicity of Portland Harbor RI/FS Freshwater Test Sediments (Batch 12) using a 28-day Amphipod, *Hyalella azteca*, Sediment Bioassay

Submitted to

Windward Environmental, Inc.
200 West Mercer Street, Suite 401
Seattle, WA 98119

Submitted by

Northwestern Aquatic Sciences
3814 Yaquina Bay Road
P.O. Box 1437
Newport, OR 97365

January 19, 2004

ANC08631
BZTO104(e)008631

TOXICITY TEST REPORT

TEST IDENTIFICATION

Test No.: 686-23

Title: Toxicity of Portland Harbor RI/FS freshwater test sediments (Batch 12) using a 28-day amphipod, *Hyalella azteca*, sediment bioassay.

Protocol No.: NAS-686-HA4c, June 24, 2004. Based on ASTM Method E 1706-00 (ASTM 2003) and EPA Method 100.4 (EPA/600/R-99/064, 2000). This protocol can be found in Appendix B of the Portland Harbor RI/FS Round 2 Quality Assurance Project Plan, June 24, 2004.

STUDY MANAGEMENT

Study Sponsor: Windward Environmental, Inc., 200 West Mercer Street, Suite 401, Seattle, WA 98119.

Sponsor's Study Monitor: Ms. Helle Andersen

Testing Laboratory: Northwestern Aquatic Sciences, P.O. Box 1437, Newport, OR 97365.

Test Location: Newport laboratory

Laboratory's Study Personnel: G.J. Irissarri, B.S., Proj. Man./Study Dir.; L.K. Nemeth, M.B.A., QA Officer; R.S. Caldwell, Ph.D., Sr. Toxicol.; M.S. Redmond, M.S., Aq. Toxicol.; G.A. Buhler, B.S., Aq. Toxicol.; W.T. Montgomery, A.A., Sr. Tech.; G. Hayes, B.S., Tech.; S.J. Gage, B.A., Tech.; B.B. Pridgeon, Lab Asst.

Study Schedule:

Test Beginning: 11-9-04, 1300 hrs.

Test Ending: 12-7-04, 1130 hrs.

Disposition of Study Records: All specimens, raw data, reports and other study records are stored according to Good Laboratory Practice regulations at Northwestern Aquatic Sciences, 3814 Yaquina Bay Rd., Newport, OR 97365.

Good Laboratory Practices: The test was conducted following the principles of Good Laboratory Practices (GLP) as defined in the EPA/TSCA Good Laboratory Practice regulations revised August 17, 1989 (40 CFR Part 792).

Statement of Quality Assurance: The test data were reviewed by the Quality Assurance Unit to assure that the study was performed in accordance with the protocol and standard operating procedures. This report is an accurate reflection of the raw data.

TEST MATERIAL

Test Sediments: Portland Harbor RI/FS freshwater test sediments (Batch 12). Details are as follows:

NAS Sample No.	9594F	9595F	9596F	9597F	9598F
Description	LW2-U5Q-1	LW2-U5Q-2	LW2-U5Q-3	LW2-U6TOC-1	LW2-U6TOC-2
Collection Date	11/4/04	11/4/04	11/4/04	11/4/04	11/4/04
Receipt Date	11/6/04	11/6/04	11/6/04	11/6/04	11/6/04

NAS Sample No.	9599F	9600F	9601F	9602F	9603F
Description	LW2-U6TOC-3	LW2-U4Q-1	LW2-U4Q-2	LW2-U4Q-3	LW2-U3C-1
Collection Date	11/4/04	11/4/04	11/4/04	11/4/04	11/4/04
Receipt Date	11/6/04	11/6/04	11/6/04	11/6/04	11/6/04

NAS Sample No.	9604F	9605F	9606F	9607F	9608F
Description	LW2-U3C-2	LW2-U3C-3	LW2-U2C-1	LW2-U2C-2	LW2-U2C-3
Collection Date	11/4/04	11/4/04	11/5/04	11/5/04	11/5/04
Receipt Date	11/6/04	11/6/04	11/6/04	11/6/04	11/6/04

NAS Sample No.	9609F	9610F	9611F	9612F	9613F
Description	LW2-U1C-1	LW2-U1C-2	LW2-U1C-3	LW2-D1-1	LW2-D2
Collection Date	11/5/04	11/5/04	11/5/04	11/5/04	11/5/04
Receipt Date	11/6/04	11/6/04	11/6/04	11/6/04	11/6/04

ANC08632
BZTO104(e)008632

Control Sediment: The negative control sediment (NAS#9574F) was collected on 10-28-04 from an area approximately one mile east of the Hwy. 101 bridge at Beaver Creek, approx. 8 miles south of Newport, OR.
Treatments: Homogenized at test set up by mixing using stainless steel implements.
Storage: All test and control sediments were stored at 4°C in the dark in capped containers until used.

TEST WATER

Source: Dechlorinated Newport, OR tap water.
Dates of Collection: Fifteen batches of test water were collected between 11-6-04 and 11-28-04
Water Quality (mean ± S.D.):
pH: 7.0 ± 0.2 (n=15)
conductivity: 149 ± 5 µmhos/cm (n=15)
hardness: 34 ± 0 mg/L as $CaCO_3$ (n=15)
alkalinity: 37 ± 5 mg/L as $CaCO_3$ (n=15)
chlorine: All batches were <0.02 mg/L.
Pretreatment: Dechlorinated and aerated ≥24 hr.

TEST ORGANISMS

Species: *Hyalella azteca,* amphipod.
Age/Size: 7-8 days old
Source: Chesapeake Cultures, Hayes, VA; received 11-5-04.
Acclimation: Holding conditions prior to testing averaged (n=5): temperature, 21.4 ± 1.7°C; dissolved oxygen, 9.7 ± 3.0 mg/L; pH, 7.4 ± 0.1; conductivity, 262 ± 77 µmhos/cm; hardness, 80 ± 36 mg/L as $CaCO_3$; and alkalinity, 100 ± 41 mg/L as $CaCO_3$. Half of the water was replaced daily with dechlorinated Newport, OR tap water during holding. Animals were fed YTC daily during holding.

TEST PROCEDURES AND CONDITIONS

The following is an abbreviated statement of the test procedures and a statement of the test conditions actually employed. See the test protocol for a more detailed description of the test procedures used in this study.

Test Chambers: 300 ml high-form glass beakers
Test Volumes: 100 ml sediment layer; 175 ml test water.
Replicates/Treatment: 8
Organisms/Treatment: 80
Water Volume Changes: 2 water volumes per day
Aeration: None.
Feeding: Animals are fed 1.0 ml of YTC suspension per beaker daily.
Effects Criteria: 1) survival after 28 days, and 2) average individual biomass (based on dry weight) after 28 days. Death is defined as no visible movement or response to tactile stimulation. Missing organisms were considered to be dead.
Water Quality and Other Test Conditions: The temperature, dissolved oxygen, conductivity, pH, hardness, alkalinity and ammonia-nitrogen were measured in the overlying water of one replicate test container per treatment on days 0 and 28 of the test. Temperature was measured daily, dissolved oxygen and pH three times per week, and conductivity weekly, in the overlying water of one replicate test container per treatment. Interstitial ammonia and pH were measured in the bulk sediment. Hardness and alkalinity were measured with titrimetric methods. Interstitial water samples from bulk sediments were obtained by centrifugation, or by settling in the case of very sandy sediments. Total ammonia-N was measured using Hach reagents based on the salicylate (Clin. Chim. Acta 14:403, 1996) colorimetric method. Samples were not distilled prior to analysis. The photoperiod was 16:8, L:D.

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DATA ANALYSIS METHODS

Survival and mortality were calculated for each replicate as follows:

percent survival = 100 x (number surviving/initial number tested)
percent mortality = 100 x (number dead/initial number tested)

average individual biomass = (final wt. - tare wt.)/number weighed,
where:
final wt. = tare wt. + dry weight of organisms recovered on day 28, in mg

Means and standard deviations for the biological endpoints described above, and for water quality data, were computed using Microsoft Excel 2000.

PROTOCOL DEVIATIONS

None

REFERENCE TOXICANT TEST

The reference toxicant test is a multi-concentration toxicity test using cadmium chloride, to evaluate the performance of the test organisms used in the sediment toxicity test. The performance is evaluated by comparing the results of this test with historical results obtained at the laboratory. A summary of the reference toxicant test result is given below. The reference toxicant test raw data are found in Appendix II.

Test No.: 999- 1869
Reference Toxicant and Source: Cadmium as $CdCl_2 \bullet 2½ H_2O$, Mallinckrodt Lot #TNZ, 1.0 mg/ml stock prepared 7-13-04.
Test Date: 11-9-04.
Dilution Water Used: Moderately hard synthetic water prepared from Milli-Q® deionized water.
Result: 96-hr LC50, 5.30 µg/L. This result is within the laboratory's control chart warning limits (3.13 – 11.8 µg/L).

TEST RESULTS

Observations of water quality in the overlying water throughout the test are summarized in Table 1. A detailed tabulation of the water quality results by sample and test day can be found in Appendix I. Interstitial ammonia measurements and pH for bulk sediments are listed in Table 2. The means and standard deviations of percent mortality of *Hyalella* exposed for 28 days to sediments, and the growth measured as dry weight are summarized in Table 3. Detailed data organized by sample and replicate, and summary statistics for these observations, are given in Appendix I.

All water quality observations of overlying water temperature and dissolved oxygen were within the protocol specified ranges. Ammonia-N in the overlying water ranged from <0.1 to 1.9 mg/L in all day 0 and day 28 observations. Interstitial bulk sediment values for ammonia-N ranged from <0.5 to 3.5 mg/L.

The test met the acceptability criteria specified in the test protocol with 96.3% control survival (≥80% required). The reference toxicant (positive control) result was within the laboratory's control chart limits (5.30 µg/L; control chart mean ± 2 S.D. = 7.48 ± 4.35). It is concluded, therefore, that the test has developed fully acceptable data for use in making management decisions.

ANC08634
BZTO104(e)008634

REFERENCES

ASTM. 2003. Standard Test Methods for Measuring the Toxicity of Sediment-Associated Contaminants with Fresh Water Invertebrates. ASTM Standard Method No. E 1706-00. Am. Soc. Test. Mat., West Conshohocken, PA.

U.S. EPA. 2000. Section 11, Test Method 100.1, *Hyalella azteca* 10-d Survival and Growth Test for Sediments, pp 47-54 In: Methods for Measuring the Toxicity and Bioaccumulation of Sediment-associated Contaminants with Freshwater Invertebrates (Second Edition). EPA/600/R-99/064.

STUDY APPROVAL

Gerald Luiserri 1-21-05
Project Manager/Study Director Date

Linda K. Nemeth 1/20/05
Quality Assurance Unit Date

Richard A. Caldwell 1/21/05
Laboratory Director Date

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Table 1. Summary of water quality conditions during tests of the amphipod, *Hyalella azteca*, exposed to freshwater sediments.

Water Quality Parameter	Mean ± S.D.	Minimum	Maximum	N
Temperature (°C)	22.5 ± 0.3	22.0	23.6	609
Dissolved oxygen (mg/L)	6.5 ± 0.6	5.1	7.9	294
Conductivity (µmhos/cm)	157 ± 29	140	440	126
pH	6.5 ± 0.2	6.1	7.0	294
Hardness (mg/L as $CaCO_3$)	41 ± 6	34	51	42
Alkalinity (mg/L as $CaCO_3$)	40 ± 3	30	50	42
Total ammonia (mg/L)	---	<0.1	1.9	42

Table 2. Pore water ammonia-N and pH in bulk test sediments at the time of test setup.

NAS Sample No.	Sample Description	Ammonia (mg/L)	pH
9574F	Control	2.3	6.6
9594F	LW2-U5Q-1	<0.5	6.8
9595F	LW2-U5Q-2	<0.5	6.5
9596F	LW2-U5Q-3	0.5	6.5
9597F	LW2-U6TOC-1	1.5	6.4
9598F	LW2-U6TOC-2	2.6	6.0
9599F	LW2-U6TOC-3	1.9	5.8
9600F	LW2-U4Q-1	2.0	6.0
9601F	LW2-U4Q-2	2.2	6.1
9602F	LW2-U4Q-3	1.9	6.2
9603F	LW2-U3C-1	3.5	6.5
9604F	LW2-U3C-2	2.2	6.7
9605F	LW2-U3C-3	1.3	6.7
9606F	LW2-U2C-1	1.4	6.6
9607F	LW2-U2C-2	1.1	6.3
9608F	LW2-U2C-3	0.6	6.2
9609F	LW2-U1C-1	1.3	6.3
9610F	LW2-U1C-2	1.1	6.1
9611F	LW2-U1C-3	0.5	6.0
9612F	LW2-D1-1	1.7	6.2
9613F	LW2-D2	1.1	6.3

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APPENDIX I

RAW DATA

RAW DATA DIVIDER PAGE
Test No. 686-23

TEST DESCRIPTION, MONITORING, AND RESULTS BENCHSHEETS

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-23 Client Windward Environmental Investigator

STUDY MANAGEMENT

Client: Windward Enviromental, 200 West Mercer Street, Suite 401, Seattle, WA 98119

Client's Study Monitor: Ms. Helle Anderson GJI

Testing Laboratory: Northwestern Aquatic Sciences

Test Location: Newport Laboratory

Laboratory's Study Personnel:

Proj. Man./Study Dir. G.J. Irissarri GJI

QA Officer L.K. Nemeth

1. GA Buhler GB
2. G.C. Hayes GCH
3. Susan Gage SG
4. B.B. Pridgeon BBP
5. M.S. Redmond MSR
6. William T. Montgomery WTM
7. R.S. Caldwell RSC

Study Schedule:

Test Beginning: 11-9-04 1300

Test Ending: 12-7-04 1130

TEST MATERIAL

General description (see sample logbook/chain-of-custody for details):

NAS Sample No.:	9574F	9594F	9595F	9596F	9597F
Description:	Control	LW2-U5Q-1	LW2-U5Q-2	LW2-U5Q-3	LW2-U6TOC-1
Collection Date:	10/28/04	11/4/04	11/4/04	11/4/04	11/4/04
Receipt Date:	10/28/04	11/6/04	11/6/04	11/6/04	11/6/04

NAS Sample No.:	9598F	9599F	9600F	9601F	9602F
Description:	LW2-U6TOC-2	LW2-U6TOC-3	LW2-U4Q-1	LW2-U4Q-2	LW2-U4Q-3
Collection Date:	11/4/04	11/4/04	11/4/04	11/4/04	11/4/04
Receipt Date:	11/6/04	11/6/04	11/6/04	11/6/04	11/6/04

NAS Sample No.:	9603F	9604F	9605F	9606F	9607F
Description:	LW2-U3C-1	LW2-U3C-2	LW2-U3C-3	LW2-U2C-1	LW2-U2C-2
Collection Date:	11/4/04	11/4/04	11/4/04	11/5/04	11/5/04
Receipt Date:	11/6/04	11/6/04	11/6/04	11/6/04	11/6/04

NAS Sample No.:	9608F	9609F	9610F	9611F	9612F
Description:	LW2-U2C-3	LW2-U1C-1	LW2-U1C-2	LW2-U1C-3	LW2-D1-1
Collection Date:	11/5/04	11/5/04	11/5/04	11/5/04	11/5/04
Receipt Date:	11/6/04	11/6/04	11/6/04	11/6/04	11/6/04

NAS Sample No.:	9613F GJI				
Description:	LW2-D2				
Collection Date:	11/5/04				
Receipt Date:	11/6/04				

NAS Sample No.:					
Description:					
Collection Date:					
Receipt Date:					

Error codes: 1) correction of handwriting error
2) written in wrong location; entry deleted
3) wrong date deleted, replaced with corrrect date

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-23 Client Windward Environmental Investigator _____

SEDIMENT DESCRIPTIONS -- SUPPLEMENTAL NOTES

Sample No.	Description
9574F	Dark brown mud
9594F	Dark brown Muddy Sand
9595F	Dark brown muddy sand
9596F	DARK BROWN MUDDY SAND
9597F	Dark gray smooth mud, + Chironomids found
9598F	Dark gray creamy mud
9599F	Dark brown sandy mud
9600F	Dark gray Mud
9601F	DARK GRAY/GREEN MUD W/ SAND
9602F	Dark gray mud
9603F	Dark brown muddy sand
9604F	Dark gray brown mud
9605F	DARK GRAY/GREEN FINE MUDDY SAND
9606F	Dark gray mud
9607F	Gray muddy sand
9608F	Brown sandy mud
9609F	DARK BROWN Muddy Sand W/ wood debris
9610F	Gray/brown sandy mud w/ wood debris
9611F	Dark brown muddy sand
9612F	DARK GRAY/GREEN FINE MUD
9613F	Dark gray sandy mud

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NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-23 Client Windward Environmental Investigator

TEST WATER

Source: Dechlorinated Newport, OR Tap Water

Date of Collection:

pH

Cond (umhos/cm2) (SEE NEXT PAGE)

Hardness (mg/La0

Alkalinity (mg/L)

Treatments: Aerated ≥24 hrs

TEST ORGANISMS

Species: *Hyalella azteca* Age: 7-8 DAYS Date received: 11-5-04

Source: Chesapeake Cultures, Hayes, VA

Acclimation Data:

Date	Temp. (deg.C)	DO (mg/L)	pH	Cond umhos/cm	Feeding * amount	Feeding * description	Water changes	Hardness (mg/L)	Alkalinity (mg/L)
11-5-04	18.3	>15.0	7.5	375	10 mL	YTC	50% w/ TAP WATER	137	160
11-6-04	22.3	8.3	7.4	310	"	"	"	94	120
11-7-04	22.0	8.4	7.2	220	"	"	"	68	90
11-8-04	22.1	8.5	7.3	205	"	"	"	51	70
11-9-04	22.3	8.4	7.5	200	"	"	—	51	60
Mean	21.4	9.7	7.4	262				80	100
S.D.	1.7	3.0	0.1	77				36	41
(N)	5	5	5	5				5	5

Photoperiod during acclimation: 16:8, L:D

* ANIMALS WERE DIVIDED INTO 3 PANS. FEEDING IS PER PAN.

TEST PROCEDURES AND CONDITIONS

Test chambers: 300 ml glass beakers

Test volumes: 100 ml of test sediment; 275 ml total volume

Replicates/treatment: (8) 8 Organisms/treatment: (80) 80 (10/REP)

Test water changes: Twice daily

Aeration: only if DO falls below 2.5 mg/L

Feeding: everyday beginning with day zero

Test temperature (deg.C): 23

Beaker placement: Total randomization

Photoperiod: 16:8, L:D

Control Sediment:

Source: From an area approximately one mile east of the Hwy. 101 bridge at Beaver Creek, approx. 8 miles south of Newport, OR.

Date collected: 10/28/04

Sieved through 0.5 -mm screen NAS# 9574F

Storage: 4°C in the dark in closed containers.

MISCELLANEOUS NOTES

LIGHT INTENSITY MEASUREMENTS:

	SITE A	SITE B
11-11-04	28 FT CANDLES (301 LUX)	70 FT-CANDLES (753 LUX)

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NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4b

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-23 Client Windward Environmental Investigator

Test Dilution Water: Dechlorinated Newport, OR Tap Water

Date of Collection	Total Chlorine (mg/L)	Hardness (mg/L)	Alkalinity (mg/L)	Conductivity (µmhos/cm)	pH
11-6-04	<0.02	34	40	150	7.2
11-9-04	<0.02	34	40	155	7.1
11-10-04	<0.02	34	40	150	7.3
11-11-04	<0.02	34	40	150	6.6
11-13-04	<0.02	34	40	150	6.8
11-14-04	<0.02	34	40	150	6.8
11-16-04	<0.02	34	40	150	7.2
11-17-04	<0.02	34	40	155	7.0
11-20-04	<0.02	34	40	150	7.1
11-21-04	<0.02	34	30	140	6.9
11-22-04	<0.02	34	40	145	6.8
11-25-04	<0.02	34	30	145	6.9
11-25-04	(2ND BATCH) <0.02	34	30	140	6.9
11-27-04	<0.02	34	40	150	6.9
11-28-04	<0.02	34	30	155	6.9
		$\bar{X}=34\pm0$	$\bar{X}=37\pm5$	$\bar{X}=149\pm5$	$\bar{X}=7.0\pm0.2$

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BZTO104(e)008642

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-23 Client Windward Environmental Investigator _____

Test conducted in (circle one): room 1 (room 2) trailer water bath other:_____

Randomization chart:

5								165	
4								164	
3								163	168
2								162	167
1								161	166

Randomization chart:

Randomization chart:

Randomization chart:

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NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No 686-23 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 0 (11/9 1041) CAB/BBP

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond.* umhos/cm	pH*	Hardness* (mg/L)	Alkalinity* (mg/L)	S (ppm)	NH3* (ppm)	Comments
4	22.5	7.2	225	6.6	34	40			Each beaker fed 1.0 ml
7	22.5	7.4	180	6.5	43	40			YTC suspension
19	22.6	7.7	440	6.5	51	40			Initials: CAB
21	22.5	7.0	170	6.6	34	40			
23	22.5	7.4	155	6.5	34	40			
35	22.6	7.4	150	6.5	34	40			
40	22.7	7.3	155	6.5	34	40			
48	22.5	7.3	150	6.5	34	40			
72	22.5	7.4	155	6.4	43	40			Water changed in all
79	22.5	7.6	165	6.5	43	50			beakers.
88	22.5	7.5	155	6.6	51	50			Time: 0705
89	22.7	7.7	145	6.6	34	40			Initials: GJL
95	22.5	7.8	150	6.6	43	40			
98	22.5	7.4	150	6.6	34	40			
103	22.5	7.5	145	6.5	34	40			
116	22.5	7.5	150	6.5	43	40			
126	22.5	7.2	150	6.5	43	40			Water changed in all
134	22.5	7.8	150	6.5	34	40			beakers.
141	22.7	7.4	165	6.5	43	40			Time: 1715
157	22.6	7.4	140	6.5	34	40			Initials: BBP
158	22.6	7.6	145	6.5	34	40			

*Water quality measurements to be taken.

Day 1 (11/10/04) AB/CAB/SAF

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond.* umhos/cm	pH*	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
4	22.6	7.1	155	6.7					Each beaker fed 1.0 ml
7	22.7	7.6	150	6.7					YTC suspension
19	22.7	7.2	290	6.7					Initials: GJL
21	22.7	7.1	155	6.7					
23	22.7	7.1	150	6.7					
35	22.9	7.2	155	6.7					
40	22.7	7.2	155	6.6					
48	22.7	7.2	155	6.6					
72	22.7	7.0	155	6.6					Water changed in all
79	22.9	7.1	160	6.6					beakers.
88	22.7	7.3	155	6.6					Time: 0710
89	22.8	7.2	150	6.6					Initials: CAB
95	22.9	7.2	155	6.6					
98	22.8	7.3	155	6.6					
103	22.8	7.2	150	6.6					
116	22.8	7.1	155	6.6					
126	22.8	7.5	155	6.7					Water changed in all
134	22.9	7.3	155	6.7					beakers.
141	22.9	7.2	160	6.7					Time: 1715
157	22.9	7.1	150	6.7					Initials: GJL
158	23.0	7.3	150	6.7					

*Water quality measurements to be taken.

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NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No 686-23 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 2 (11 / 11 /04) BBP

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. umhos/cm	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
4	22.3								Each beaker fed 1.0 ml
7	22.3								YTC suspension
19	22.4								Initials: LMM
21	22.5								
23	22.5								
35	22.5								
40	22.6								
48	22.6								
72	22.5								Water changed in all
79	22.4								beakers.
88	22.4								Time: 0650
89	22.6								Initials: BBP
95	22.7								
98	22.8								
103	22.7								
116	22.6								
126	22.7								Water changed in all
134	22.7								beakers.
141	22.8								Time: 1705
157	22.8								Initials: BBP
158	22.7								

*Water quality measurements to be taken.

Day 3 (11/12 04) MB/BBP

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. umhos/cm	pH*	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
4	22.4	7.4		6.3					Each beaker fed 1.0 ml
7	22.1	7.7		6.4					YTC suspension
19	22.1	7.6		6.4					Initials: BBP
21	22.2	7.4		6.4					
23	22.0	7.5		6.3					
35	22.3	7.6		6.4					
40	22.5	7.6		6.3					
48	22.2	7.6		6.4					
72	22.2	7.3		6.4					Water changed in all
79	22.5	7.5		6.4					beakers.
88	22.3	7.7		6.4					Time: 0650
89	22.5	7.6		6.4					Initials: MB
95	22.6	7.8		6.4					
98	22.4	7.3		6.4					
103	22.4	7.4		6.4					
116	22.4	7.8		6.4					
126	22.4	7.9		6.5					Water changed in all
134	22.6	7.6		6.5					beakers.
141	22.4	7.4		6.6					Time: 1725
157	22.4	7.7		6.6					Initials: BBP
158	22.5	7.6		6.6					

*Water quality measurements to be taken.

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NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No 686-23 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 4 (11 /13 /09) mm/dd

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. umhos/cm	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
4	22.4								Each beaker fed 1.0 ml
7	22.3								YTC suspension
19	22.3								Initials: mm
21	22.3								
23	22.3								
35	22.3								
40	22.4								
48	22.3								
72	22.2								Water changed in all
79	22.2								beakers.
88	22.3								Time: 0745
89	22.3								Initials: mm
95	22.4								
98	22.3								
103	22.3								
116	22.3								
126	22.3								Water changed in all
134	22.4								beakers.
141	22.4								Time: 1720
157	22.4								Initials: MLR
158	22.4								

*Water quality measurements to be taken.

Day 5 (11 /14 /09) GJ

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. umhos/cm	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
4	23.0								Each beaker fed 1.0 ml
7	22.6								YTC suspension
19	22.7								Initials: GJ
21	22.7								
23	22.5								
35	22.9								
40	23.0								
48	22.7								
72	22.6								Water changed in all
79	22.9								beakers.
88	22.7								Time: 0715
89	22.9								Initials: GJ
95	22.9								
98	22.8								
103	22.8								
116	22.8								
126	22.9								Water changed in all
134	23.1								beakers.
141	22.8								Time: 1715
157	22.9								Initials: GJ
158	22.9								

*Water quality measurements to be taken.

ANC08646
BZTO104(e)008646

Test No 686-23 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 6 (11/15 64) BBP

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. (umhos/cm)	pH*	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
4	22.8	6.1		6.6					Each beaker fed 1.0 ml
7	22.6	6.6		6.6					YTC suspension
19	22.5	6.4		6.7					Initials: [illegible]
21	22.5	6.5		6.7					
23	22.5	6.6		6.7					
35	22.6	6.3		6.7					
40	22.6	6.3		6.7					
48	22.4	6.2		6.7					
72	22.4	6.0		6.7					Water changed in all
79	22.6	6.3		6.8					beakers.
88	22.5	6.6		6.8					Time: 0725
89	22.6	6.4		6.7					Initials: GJI
95	22.7	6.6		6.7					
98	22.6	6.2		6.7					
103	22.5	6.2		6.7					
116	22.6	6.4		6.7					
126	22.6	6.7		6.7					Water changed in all
134	22.6	7.0		6.7					beakers.
141	22.6	6.2		6.7					Time: 1705
157	22.6	6.2		6.7					Initials: BBP
158	22.7	6.4		6.7					

*Water quality measurements to be taken.

Day 7 (11/16/04 VB/GBA

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
4	22.3								Each beaker fed 1.0 ml
7	22.1								YTC suspension
19	22.1								Initials: [illegible]
21	22.2								
23	22.1								
35	22.1								
40	22.4								
48	22.1								
72	22.4								Water changed in all
79	22.4								beakers.
88	22.4								Time: 0700
89	22.3								Initials: GJI
95	22.4								
98	22.4								
103	22.3								
116	22.3								
126	22.3								Water changed in all
134	22.4								beakers.
141	22.4								Time: 1705
157	22.5								Initials: GBA
158	22.5								

*Water quality measurements to be taken.

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-23 Client Windward Environmental Investigator _____

DAILY RECORD SHEET

Day 8 (11/17/04) CBA/BBP

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond.* µmhos/cm	pH*	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
4	22.4	6.4	160	6.2					Each beaker fed 1.0 ml
7	22.2	6.6	160	6.2					YTC suspension
19	22.2	6.7	155	6.2					Initials: [illegible]
21	22.2	6.7	170	6.2					
23	22.1	6.7	150	6.2					
35	22.2	6.8	150	6.1					
40	22.3	6.5	150	6.1					
48	22.1	6.4	150	6.1					
72	22.1	6.0	155	6.1					Water changed in all
79	22.1	6.0	160	6.1					beakers.
88	22.1	6.4	160	6.2					Time: 0725
89	22.1	6.4	155	6.2					Initials: [illegible]
95	22.2	6.6	155	6.2					
98	22.1	6.2	155	6.1					
103	22.1	6.1	160	6.2					
116	22.1	6.2	155	6.2					
126	22.2	6.6	155	6.2					Water changed in all
134	22.2	6.6	160	6.2					beakers.
141	22.3	6.3	160	6.2					Time: 1700
157	22.4	6.5	155	6.2					Initials: [illegible]
158	22.7	6.5	155	6.2					

*Water quality measurements to be taken.

Day 9 (11/18/04) [illegible]/BBP

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. µmhos/cm	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
4	22.7								Each beaker fed 1.0 ml
7	22.6								YTC suspension
19	22.7								Initials: [illegible]
21	22.7								
23	22.6								
35	22.8								
40	23.0								
48	22.7								
72	22.6								Water changed in all
79	22.9								beakers.
88	22.9								Time: 0730
89	22.9								Initials: [illegible]
95	23.1								
98	22.9								
103	22.8								
116	22.9								
126	22.9								Water changed in all
134	23.0								beakers.
141	23.0								Time: 1710
157	23.2								Initials: [illegible]
158	23.2								

*Water quality measurements to be taken.

ANC08648
BZTO104(e)008648

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No 686-23 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 10 (11/19/20) WBM/WB

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. (mhos/cm)	pH*	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
4	22.6	6.4		6.5					Each beaker fed 1.0 ml
7	22.4	7.0		6.4					YTC suspension
19	22.4	6.8		6.5					Initials: WBM
21	22.4	6.8		6.4					
23	22.3	6.7		6.4					
35	22.4	6.7		6.4					
40	22.6	6.8		6.4					
48	22.3	6.6		6.4					
72	22.3	6.6		6.5					Water changed in all
79	22.5	6.3		6.5					beakers.
88	22.4	6.8		6.5					Time: 0705
89	22.5	6.8		6.5					Initials: WB
95	22.6	6.8		6.5					
98	22.4	6.8		6.5					
103	22.4	6.6		6.5					
116	22.5	6.7		6.5					
126	22.5	6.8		6.5					Water changed in all
134	22.6	7.0		6.6					beakers.
141	22.5	6.8		6.6					Time: 1700
157	22.7	6.8		6.5					Initials: AJ
158	23.0	6.8		6.5					

*Water quality measurements to be taken.

Day 11 (11/20/19) WB

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. (mhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
4	22.5								Each beaker fed 1.0 ml
7	22.5								YTC suspension
19	22.3								Initials: WBM
21	22.3								
23	22.3								
35	22.3								
40	22.4								
48	22.3								
72	22.2								Water changed in all
79	22.2								beakers.
88	22.3								Time: 0713
89	22.3								Initials: WB
95	22.5								
98	22.5								
103	22.3								
116	22.4								
126	22.4								Water changed in all
134	22.4								beakers.
141	22.5								Time: 1715
157	22.5								Initials: AJ
158	22.4								

*Water quality measurements to be taken.

ANC08649
BZTO104(e)008649

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No 686-23 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 12 (11/21/04) 631

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. (mhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
4	22.1								Each beaker fed 1.0 ml
7	22.1								YTC suspension
19	22.2								Initials: MM
21	22.2								
23	22.2								
35	22.1								
40	22.1								
48	22.2								
72	22.3								Water changed in all
79	22.2								beakers.
88	22.2								Time: 0710
89	22.2								Initials: BSL
95	22.0								
98	22.1								
103	22.2								
116	22.3								
126	22.3								Water changed in all
134	22.2								beakers.
141	22.2								Time: 1700
157	22.3								Initials: RSL
158	22.3								

*Water quality measurements to be taken.

Day 13 (11/22/04) 632

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. (mhos/cm)	pH*	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
4	22.5	6.0		6.4					Each beaker fed 1.0 ml
7	22.3	5.8		6.4					YTC suspension
19	22.2	5.9		6.4					Initials: MM
21	22.3	6.1		6.3					
23	22.3	5.4		6.3					
35	22.3	5.9		6.3					
40	22.4	5.9		6.3					
48	22.5	5.9		6.3					
72	22.3	5.2		6.4					Water changed in all
79	22.5	5.4		6.4					beakers.
88	22.4	5.8		6.4					Time: 0705
89	22.4	5.7		6.3					Initials: BS
95	22.5	6.1		6.3					
98	22.5	5.8		6.4					
103	22.4	5.7		6.5					
116	22.4	5.7		6.4					
126	22.5	6.2		6.4					Water changed in all
134	22.5	6.2		6.4					beakers.
141	22.4	6.1		6.5					Time: 1700
157	22.4	5.9		6.4					Initials: RSL
158	22.5	5.9		6.4					

*Water quality measurements to be taken.

ANC08650
BZTO104(e)008650

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No 686-23 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 14 (11/23/04)/BJ

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. umhos/cm	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
4	22.5								Each beaker fed 1.0 ml
7	22.6								YTC suspension
19	22.3								Initials: MTM
21	22.4								
23	22.4								
35	22.4								
40	22.8								
48	22.3								
72	22.3								Water changed in all
79	22.3								beakers.
88	22.4								Time: 0720
89	22.6								Initials: BJL
95	22.8								
98	22.5								
103	22.5								
116	22.5								
126	22.8								Water changed in all
134	22.6								beakers.
141	22.6								Time: 1655
157	22.8								Initials: BJL
158	22.8								

*Water quality measurements to be taken.

Day 15 (11/24/04) MTM/BBF

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond.* umhos/cm	pH*	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
4	23.2	6.6	150	6.7					Each beaker fed 1.0 ml
7	22.9	6.8	150	6.1					YTC suspension
19	22.8	6.8	150	6.1					Initials: MB
21	22.6	6.8	150	6.5					
23	22.8	6.8	150	6.5					
35	22.9	6.7	150	6.5					
40	22.7	6.8	150	6.5					
48	22.6	6.7	150	6.6					
72	22.6	6.0	150	6.6					Water changed in all
79	22.8	6.3	160	6.6					beakers.
88	22.7	6.8	160	6.6					Time: 0705
89	22.9	6.5	150	6.6					Initials: BJL
95	22.9	7.1	150	6.6					
98	22.7	6.9	155	6.6					
103	22.7	6.7	155	6.6					
116	22.7	6.5	155	6.6					
126	22.8	7.0	155	6.6					Water changed in all
134	22.9	6.9	155	6.6					beakers.
141	22.8	6.6	155	6.6					Time: 16:50
157	22.8	6.6	150	6.6					Initials: MTM
158	22.9	6.7	155	6.6					

*Water quality measurements to be taken.

ANC08651
BZTO104(e)008651

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No 686-23 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 16 (11/25/04) GSL

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
4	22.9								Each beaker fed 1.0 ml
7	22.8								YTC suspension
19	22.8								Initials: GSL
21	22.8								
23	22.7								
35	22.7								
40	22.8								
48	22.4								
72	22.7								Water changed in all
79	22.8								beakers.
88	22.8								Time: 0715
89	22.8								Initials: GSL
95	22.8								
98	22.8								
103	22.7								
116	22.9								
126	22.9								Water changed in all
134	22.9								beakers.
141	22.9								Time: 1750
157	22.9								Initials: GSL
158	22.9								

*Water quality measurements to be taken.

Day 17 (11/26/04) GSL/AJ

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. (umhos/cm)	pH*	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
4	22.9	5.9		6.3					Each beaker fed 1.0 ml
7	22.7	6.2		6.3					YTC suspension
19	22.6	5.8		6.2					Initials: GSL
21	22.7	6.4		6.4					
23	22.5	6.1		6.4					
35	22.8	6.1		6.5					
40	22.9	6.2		6.4					
48	22.6	6.2		6.4					
72	22.6	5.8		6.5					Water changed in all
79	22.8	6.0		6.5					beakers.
88	22.7	6.0		6.4					Time: 0710
89	22.7	5.9		6.4					Initials: GSL
95	22.8	6.3		6.4					
98	22.7	6.0		6.5					
103	22.7	6.0		6.4					
116	22.7	5.9		6.5					
126	22.8	6.4		6.5					Water changed in all
134	22.9	6.2		6.5					beakers.
141	22.8	6.1		6.5					Time: 1720
157	22.7	6.1		6.4					Initials: GSL
158	22.9	6.3		6.4					

*Water quality measurements to be taken.

ANC08652
BZTO104(e)008652

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No 686-23 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 18 (11/27/04) MS

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. umhos/cm	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
4	22.6								Each beaker fed 1.0 ml
7	22.4								YTC suspension
19	22.4								Initials: GJL
21	22.3								
23	22.3								
35	22.2								
40	22.4								
48	22.3								
72	22.2								Water changed in all
79	22.3								beakers.
88	22.2								Time: 0700
89	22.2								Initials: MS
95	22.2								
98	22.2								
103	22.2								
116	22.3								
126	22.2								Water changed in all
134	22.2								beakers.
141	22.2								Time: 17:10
157	22.2								Initials: MSR
158	22.3								

*Water quality measurements to be taken.

Day 19 (11/28/04) GJL

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. umhos/cm	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
4	22.5								Each beaker fed 1.0 ml
7	22.2								YTC suspension
19	22.1								Initials: MSR
21	22.1								
23	22.0								
35	22.1								
40	22.3								
48	22.1								
72	22.1								Water changed in all
79	22.2								beakers.
88	22.1								Time: 0740
89	22.2								Initials: GJL
95	22.3								
98	22.2								
103	22.1								
116	22.1								
126	22.2								Water changed in all
134	22.4								beakers.
141	22.2								Time: 1710
157	22.3								Initials: ABO
158	22.4								

*Water quality measurements to be taken.

ANC08653
BZTO104(e)008653

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-23 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 20 (11/29/04)

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. umhos/cm	pH*	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
4	22.2	6.2		6.5					Each beaker fed 1.0 ml
7	22.0	6.2		6.5					YTC suspension
19	22.0	5.8		6.4					Initials: GJT
21	22.0	6.2		6.4					
23	22.0	6.0		6.4					
35	22.1	6.2		6.3					
40	22.1	6.4		6.4					
48	22.0	6.6		6.7					
72	22.3	5.7		6.7					Water changed in all
79	22.3	5.8		6.6					beakers.
88	22.0	6.0		6.4					Time: 0700
89	22.1	6.0		6.4					Initials: GJT
95	22.3	6.3		6.5					
98	22.1	6.0		6.5					
103	22.0	5.8		6.6					
116	22.1	6.0		6.6					
126	22.2	6.4		6.6					Water changed in all
134	22.3	6.4		6.6					beakers.
141	22.2	6.2		6.6					Time: 1700
157	22.3	6.2		6.5					Initials:
158	22.4	6.5		6.6					

*Water quality measurements to be taken.

Day 21 (12/30/04)

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. umhos/cm	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
4	22.8								Each beaker fed 1.0 ml
7	22.7								YTC suspension
19	22.6								Initials: GJT
21	22.7								
23	22.6								
35	22.7								
40	22.8								
48	22.7								
72	22.6								Water changed in all
79	22.6								beakers.
88	22.9								Time: 0630
89	22.8								Initials:
95	22.8								
98	22.9								
103	22.8								
116	22.8								
126	22.9								Water changed in all
134	23.0								beakers.
141	22.9								Time: 1705
157	22.9								Initials:
158	22.9								

*Water quality measurements to be taken.

ANC08654
BZTO104(e)008654

Test No 686-23 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 22 (12/1/04) AB/mm

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond.* umhos/cm)	pH*	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
4	23.1	5.2	155	6.6					Each beaker fed 1.0 ml
7	22.9	5.6	150	6.6					YTC suspension
19	22.8	5.1	150	6.6					Initials: GJL
21	22.9	5.8	155	6.6					
23	22.7	5.4	150	6.6					
35	22.9	5.6	150	6.5					
40	23.0	5.9	150	6.5					
48	22.8	6.0	150	6.5					
72	22.8	5.2	155	6.6					Water changed in all
79	23.0	5.2	165	6.6					beakers.
88	22.9	5.6	155	6.6					Time: 0630
89	23.0	5.8	155	6.6					Initials: LAB
95	23.1	6.2	155	6.6					
98	23.0	5.7	155	6.6					
103	23.0	5.6	160	6.6					
116	23.0	6.0	155	6.7					
126	23.1	6.4	150	6.7					Water changed in all
134	23.1	6.2	155	6.7					beakers.
141	23.1	5.8	155	6.7					Time: 1710
157	23.2	5.7	150	6.7					Initials: BBP
158	23.3	6.0	155	6.6					

*Water quality measurements to be taken.

Day 23 (12/2/04) AB/mm

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
4	22.5								Each beaker fed 1.0 ml
7	22.3								YTC suspension
19	22.3								Initials: GJL
21	22.3								
23	22.3								
35	22.3								
40	22.4								
48	22.2								
72	22.2								Water changed in all
79	22.4								beakers.
88	22.4								Time: 0640
89	22.3								Initials: GJL
95	22.5								
98	22.5								
103	22.4								
116	22.4								
126	22.4								Water changed in all
134	22.5								beakers.
141	22.6								Time: 1705
157	22.8								Initials: BBP
158	22.9								

*Water quality measurements to be taken.

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No 686-23 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 24 (12/3 04) BBP

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. umhos/cm	pH*	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
4	22.5	5.3		6.6					Each beaker fed 1.0 ml
7	22.3	5.8		6.6					YTC suspension
19	22.3	5.4		6.6					Initials: BSI
21	22.4	5.7		6.6					
23	22.2	5.8		6.6					
35	22.4	5.6		6.6					
40	22.5	5.8		6.6					
48	22.2	5.8		6.5					
72	22.3	5.4		6.6					Water changed in all
79	22.8	5.6		6.6					beakers.
88	22.5	6.1		6.7					Time: 0625
89	22.7	5.6		6.6					Initials: BSI
95	22.9	6.4		6.8					
98	22.7	5.8		6.8					
103	22.6	5.4		6.9					
116	22.7	5.8		6.8					
126	22.8	6.2		6.8					Water changed in all
134	23.0	5.8		6.9					beakers.
141	23.8	5.8		7.0					Time: 1700
157	23.2	5.2		6.8					Initials: BP
158	23.6	5.6		6.7					

*Water quality measurements to be taken.

Day 25 (12/4 04) UB

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. umhos/cm	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
4	22.2								Each beaker fed 1.0 ml
7	22.2								YTC suspension
19	22.2								Initials: UB
21	22.3								
23	22.2								
35	22.1								
40	22.1								
48	22.2								
72	22.2								Water changed in all
79	22.2								beakers.
88	22.2								Time: 0605
89	22.2								Initials: UB
95	22.3								
98	22.1								
103	22.2								
116	22.1								
126	22.2								Water changed in all
134	22.3								beakers.
141	22.4								Time: 1655
157	22.3								Initials: AF
158	22.4								

*Water quality measurements to be taken.

ANC08656
BZTO104(e)008656

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-23 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 26 (12/5/24) MM

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. (mhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
4	22.2								Each beaker fed 1.0 ml
7	22.1								YTC suspension
19	22.1								Initials: MM
21	22.1								
23	22.1								
35	22.1								
40	22.1								
48	22.0								
72	22.0								Water changed in all
79	22.1								beakers.
88	22.1								Time: 0915
89	22.1								Initials: MM
95	22.2								
98	22.1								
103	22.1								
116	22.1								
126	22.3								Water changed in all
134	22.3								beakers.
141	22.3								Time: 1715
157	22.6								Initials: AJ
158	22.8								

*Water quality measurements to be taken.

Day 27 (12/6/24) CB/BBP

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. (mhos/cm)	pH*	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
4	22.2	5.8		6.7					Each beaker fed 1.0 ml
7	22.0	6.4		6.6					YTC suspension
19	22.0	6.2		6.7					Initials: CB
21	22.1	6.4		6.7					
23	22.0	6.4		6.7					
35	22.1	6.4		6.5					
40	22.3	6.5		6.6					
48	22.0	6.6		6.6					
72	22.0	6.0		6.7					Water changed in all
79	22.3	6.2		6.7					beakers.
88	22.1	6.3		6.6					Time: 0650
89	22.2	6.0		6.6					Initials: CB
95	22.4	6.4		6.6					
98	22.3	6.4		6.7					
103	22.2	6.0		6.7					
116	22.3	6.6		6.8					
126	22.4	7.0		6.8					Water changed in all
134	22.7	6.3		6.6					beakers.
141	22.5	6.5		6.9					Time: 1700
157	22.9	6.1		6.7					Initials: BBP
158	23.2	6.2		6.7					

*Water quality measurements to be taken.

ANC08657
BZTO104(e)008657

Test No 686-23 Client Windward Environmental Investigator _____

DAILY RECORD SHEET

Day 28 (12/7/04) [illegible]

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond.* umhos/cm)	pH*	Hardness* (mg/L)	Alkalinity* (mg/L)	S (ppm)	NH3* (ppm)	Comments
4	22.5	6.5	150	6.7	43	40			Each beaker fed 1.0 ml
7	22.3	7.2	150	6.8	43	40			YTC suspension
19	22.3	6.7	150	6.7	34	40			Initials: —
21	22.2	7.0	150	6.7	43	40			
23	22.1	7.1	145	6.7	43	40			
35	22.1	7.2	150	6.6	34	40			
40	22.3	7.3	150	6.7	43	30			
48	22.1	7.2	145	6.7	51	40			
72	22.1	6.8	150	6.7	51	40			Water changed in all
79	22.1	7.1	150	6.7	43	40			beakers.
88	22.1	7.6	145	6.7	43	40			Time: 0630
89	22.1	7.2	145	6.7	34	40			Initials: GJL
95	22.2	7.6	145	6.7	43	40			
98	22.3	7.1	150	6.6	51	40			
103	22.1	6.8	150	6.6	51	40			
116	22.0	6.7	150	6.7	43	40			
126	22.0	7.9	145	6.7	51	40			Water changed in all
134	22.2	7.2	150	6.7	43	40			beakers.
141	22.2	7.4	150	6.7	51	40			Time:
157	22.2	7.1	150	6.7	43	40			Initials:
158	22.5	6.9	150	6.7	43	40			

*Water quality measurements to be taken.

Day _____ (/ /)

Beaker No.	Temp. (deg.C)	DO (ppm)	Cond. umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
4									Each beaker fed 1.0 ml
7									YTC suspension
19									Initials:
21									
23									
35									
40									
48									
72									Water changed in all
79									beakers.
88									Time:
89									Initials:
95									
98									
103									
116									
126									Water changed in all
134									beakers.
141									Time:
157									Initials:
158									

*Water quality measurements to be taken.

ANC08658
BZTO104(e)008658

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-23 Client Windward Environmental Investigator _____

DAY 28 TEST TERMINATION SHEET

Beaker No.	Number of survivors	Initials
1	9	GJL
2	10	MB
3	10	MB
4	9	MB
5	10	MB
6	9	GJL
7	10	GJL
8	10	MB
9	10	MB
10	10	GJL
11	10	GJL
12	10	MB
13	10	GJL
14	10	MB
15	10	MB
16	8	GJL
17	9	MB
18	9	GJL
19	10	GJL
20	9	MB
21	10	GJL
22	9	GJL
23	8	MB
24	10	MB
25	10	GJL
26	9	MB
27	10	GJL
28	10	MB
29	10	GJL
30	10	MB
31	9	GJL
32	10	MB
33	10	GJL
34	9	GJL
35	10	MB
36	10	MB
37	10	MB
38	10	GJL
39	10	MB
40	9	GJL
41	10	GJL
42	9	MB
43	10	MB
44	10	GJL
45	10	MB

Beaker No.	Number of survivors	Initials
46	10	GJL
47	10	MB
48	9	MB
49	10	MB
50	9	GJL
51	10	MB
52	9	GJL
53	9	MB
54	10	GJL
55	10	MB
56	10	MB
57	10	MB
58	10	GJL
59	9	GJL
60	10	MB
61	10	MB
62	8	GJL
63	10	MB
64	10	GJL
65	10	GJL
66	10	GJL
67	10	MB
68	9	GJL
69	10	MB
70	10	GJL
71	10	MB
72	10	MB
73	10	GJL
74	10	MB
75	10	GJL
76	8	MB
77	10	GJL
78	9	MB
79	10	GJL
80	10	MB
81	10	MB
82	10	GJL
83	10	MB
84	10	GJL
85	10	MB
86	9	MB
87	9	GJL
88	9	MB
89	10	MB
90	10 2 GJL	GJL

ANC08659
BZTO104(e)008659

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-23 Client Windward Environmental Investigator

DAY 28 TEST TERMINATION SHEET

Beaker No.	Number of survivors	Initials
91	10	CB
92	9	GJ
93	10	CB
94	10	MM
95	10	GJ
96	8	CB
97	9	MM
98	10	GJ
99	9	CB
100	10	GJ
101	10	GJ
102	10	CB
103	8	MM
104	10	CB
105	10	GJ
106	10	CB
107	8	GJ
108	10	CB
109	10	MM
110	10	CB
111	10	GJ
112	10	CB
113	9	MM
114	10	GJ
115	10	CB
116	10	GJ
117	10	GJ
118	8	CB
119	10	GJ
120	9	CB
121	10	GJ
122	10	CB
123	8	GJ
124	9	CB
125	9	GJ
126	10	CB
127	9	GJ
128	10	CB
129	10	MM
130	10	CB
131	10	GJ
132	10	MM
133	9	CB
134	10	GJ
135	10	MM

Beaker No.	Number of survivors	Initials
136	10	GJ
137	10	CB
138	10	GJ
139	9	CB
140	10	MM
141	10	GJ
142	10	GJ
143	10	CB
144	10	MM
145	10	GJ
146	10	GJ
147	10	MM
148	9	CB
149	10	GJ
150	9	CB
151	10	GJ
152	9	MM
153	8	GJ
154	8	CB
155	10	GJ
156	9	CB
157	10	GJ
158	9	MM
159	10	GJ
160	10	CB
161	9	GJ
162	10	CB
163	10	MM
164	8	GJ
165	9	CB
166	10	MM
167	9	CB
168	10	MM
169		
170		
171		
172		
173		
174		
175		
176		
177		
178		
179		
180		

ANC08660
BZTO104(e)008660

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 14-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-23 Client Windward Environmental Investigator _____

ZERO-TIME WEIGHING DATA SHEET

Tare: Date 11-9-04 Oven temp (C.) 62 Drying time (hr.) 24 Initials GJL
Standard Weights: 10 mg: 10.001 100mg: 100.011

Final: Date 11-10-04 Oven temp (C.) 71 Drying time (hr.) 24 Initials GJL
Standard Weights: 10 mg: 10.006 100mg: 100.016

Equip. used: Oven: BLUE M #1 Balance: SARTORIUS M3P

(Dry overnight at 60-90 degrees C)

Pan #	Tare wt. (mg)	Total wt. (mg)	#weighed	Comments
1	28.846	29.519	20	
2	28.497	29.178	20	
3	28.418	29.063	20	
4	30.138	30.759	20	
5	29.376	30.118	20	

ANC08661
BZTO104(e)008661

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-23 Client Windward Environmental Investigator

WEIGHING DATA SHEET

Tare: Date 12-1-04 Oven temp (C.) 61 Drying time (hr.) 24 Initials JRF
Standard Weights: 10 mg: 10.002 100mg: 100.016

Final #1: Date 12-8-04 Oven temp (C.) 70 Drying time (hr.) 23 Initials JRF
Standard Weights: 10 mg: 10.005 100mg: 100.007

Final #2: Date 12-13-04 Oven temp (C.) 71 Drying time (hr.) 24 Initials JRF
Standard Weights: 10 mg: 10.000 100mg: 100.001

Equip. used: Oven BLUE M #1 Balance SARTORIUS M3P
(Dry overnight at 60-90 degrees C)

Bkr. #	Pan #	Tare wt. (mg)	Total wt. (mg) 1	Total wt. (mg) 2	no. weighed	put into pans-initials	Comments
1	1	29.199	32.502	32.573	9	MJR	
2	2	29.600	31.910	31.963	10	MJR	
3	3	29.708	33.510	33.579	10	MJR	
4	4	28.226	30.740	30.790	9	MJR	
5	5	30.060	32.966	33.021	10	MJR	
6	6	27.912	30.780	30.833	9	MJR	
7	7	28.028	32.495	32.573	10	MJR	
8	8	29.371	32.807	32.876	10	MJR	
9	9	26.390	30.157	30.217	10	MJR	
10	10	30.302	33.679	33.723	10	MJR	
11	11	29.587	33.005	33.055	10	MJR	
12	12	29.017	32.225	32.256	10	MJR	
13	13	29.082	32.786	32.823	10 9	MJR	MJR 12-7-04
14	14	28.617	33.143	33.159	11	MJR	one animal from #13 appears to have been transferred to #14
15	15	29.498	32.733	32.736	10	MJR	
16	16	28.502	32.059	32.063	8	MJR	
17	17	29.778	32.426	32.419	9	MJR	
18	18	28.411	31.742	31.736	9	MJR	
19	19	28.937	33.108	33.102	10	MJR	
20	20	28.508	32.559	32.566	9	MJR	
21	21	28.524	30.715	30.707	10	MJR	
22	22	28.229	31.446	31.447	9	MJR	
23	23	29.980	34.047	34.050	8	MJR	
24	24	29.664	33.079	33.069	10	MJR	
25	25	28.274	30.723	30.716	10	MJR	
26	26	29.292	31.610	31.604	9	MJR	
27	27	26.099	28.983	28.967	10	MJR	
28	28	28.233	30.560	30.534	10	MJR	
29	29	30.742	34.091	34.077	10	MJR	
30	30	28.848	30.729	30.717	10	MJR	
31	31	27.211	31.442	31.438	9	MJR	
32	32	28.225	31.932	31.910	10	MJR	
33	33	27.721	29.911	29.872	10	BBA	

ANC08662
BZTO104(e)008662

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-23 Client Windward Environmental Investigator

WEIGHING DATA SHEET

See page _____ for information on drying times and temperatures, standard weights,etc.

Bkr. #	Pan #	Tare wt. (mg)	Total wt. (mg)		no. weighed	put into pans-initials	Comments
			1	2			
34	34	29.520	32.936	32.865	9	BBP	
35	35	28.637	32.081	32.043	10	BBP	
36	36	28.972	31.682	31.660	10	BBP	
37	37	30.427	33.607	33.777	10	BBP	
38	38	27.873	31.808	31.795	10	BBP	
39	39	30.983	34.159	34.144	10	BBP	
40	40	27.140	29.527	29.509	9	BBP	
41	41	27.832	30.672	30.663	10	BBP	
42	42	26.393	30.235	30.179	9	BBP	
43	43	28.766	33.662	33.616	10	BBP	
44	44	29.068	32.341	32.309	10	BBP	
45	45	28.418	32.366	32.340	10	BBP	
46	46	28.899	32.714	32.688	10	BBP	
47	47	29.413	33.262	32.222	10	BBP	
48	48	27.887	30.388	30.365	9	BBP	
49	49	27.621	31.241	31.220	10	BBP	
50	50	28.997	32.759	32.738	9	BBP	
51	51	28.708	32.763409	32.361	10	BBP	
52	52	28.465	32.634	32.577	9	BBP	
53	53	29.339	33.046	33.010	9	BBP	
54	54	27.990	32.057	32.011	10	BBP	
55	55	27.950	32.078	32.038	10	BBP	
56	56	25.999	30.715	30.686	10	BBP	
57	57	29.876	34.134	34.098	10	BBP	
58	58	30.782	34.520	34.496	10	BBP	
59	59	28.232	30.823	30.803	9	BBP	
60	60	28.391	31.109	31.065	10	BBP	
61	61	29.255	33.333	33.294	10	BBP	
62	62	30.826	34.662	34.628	8	BBP	
63	63	29.735	33.626	33.582	10	BBP	
64	64	27.546	30.824	30.888	10	BBP	
65	65	27.306	31.700	31.673679	10	BBP	
66	66	30.381	34.147	34.134	10	BBP	
67	67	29.309	32.012	32.000	10	BBP	
68	68	28.467	32.385	32.355	9	BBP	
69	69	28.476	30.974	30.951	10	BBP	
70	70	28.964	33.481	33.442	10	BBP	
71	71	28.883	30.593	30.576	10	BBP	
72	72	28.371	32.032	32.007	10	BBP	
73	73	29.851	32.464	32.433	10	BBP	
74	74	28.064	31.157	31.134	10	BBP	
75	75	28.579	31.529	31.504	10	BBP	
76	76	29.301	33.072	33.053	8	BBP	

ANC08663
BZTO104(e)008663

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-23 Client Windward Environmental Investigator

WEIGHING DATA SHEET

See page _____ for information on drying times and temperatures, standard weights,etc.

Bkr. #	Pan #	Tare wt. (mg)	Total wt. (mg) 1	Total wt. (mg) 2	no. weighed	put into pans-initials	Comments
77	77	28.230	31.258	31.234	10	BBP	
78	78	26.984	29.607	29.582	9	BBP	
79	79	27.971	30.970	30.941	10	BBP	
80	80	29.185	31.933	31.906	10	BBP	
81	81	26.991	30.337	30.314	10	BBP	
82	82	30.156	33.890	33.867	10	BBP	
83	83	29.567	33.487	33.464	10	BBP	
84	84	28.6665	32.551	32.549	10	BBP	
85	85	28.765	31.724	31.709	10	BBP	
86	86	29.498	30.733	30.713	9	BBP	
87	87	29.521	32.789	32.756	9	BBP	
88	88	29.981	33.628	33.596	9	BBP	
89	89	29.772	34.218	34.174	10	BBP	
90	90	29.236	34.763	34.716	12	BBP	
91	91	30.448	34.909	34.880	10	BBP	
92	92	28.702	31.583	31.559	9	BBP	
93	93	29.529	32.873	32.848	10	BBP	
94	94	29.739	33.601	33.585	10	BBP	
95	95	29.515	33.027	33.010	9	BBP	
96	96	27.669	30.951	30.921	8	BBP	
97	97	27.695	29.971	29.947	9	BBP	
98	98	28.980	32.718	32.686	10	BBP	
99	99	27.804	31.164	31.140	9	BBP	
100	100	26.099	29.883	29.865	10	BBP	
101	101	29.563	33.376	33.356	10	BBP	
102	102	28.546	32.024	32.005	10	BBP	
103	103	27.912	29.295	29.278	8	BBP	
104	104	27.436	30.270	30.246	10	BBP	
105	105	28.783	32.128	32.039	10	MSR	
106	106	27.396	30.935	30.852	10	MSR	
107	107	28.472	31.672	31.591	8	MSR	
108	108	27.163	32.114	32.011	10	MSR	
109	109	28.689	31.757	31.657	10	MSR	
110	110	28.471	32.082	31.964	10	MSR	
111	111	27.611	31.327	31.211	10	MSR	
112	112	27.552	31.802	31.067	10	MSR	
113	113	28.025	~~30.167~~ 31.003	30.916	9	MSR	
114	114	27.184	~~30.159~~	30.075	10	MSR	
115	115	28.458	~~30.775~~ 31.759	31.656	10	MSR	
116	116	29.039	33.715	33.610	10	MSR	
117	117	~~28.456~~ 27.500	30.464	30.382	10	MSR	
118	118	27.8009	30.600	30.481	8	MSR	
119	119	~~27.809~~ JF 28.292	30.433	30.350	10	MSR	

ANC08664
BZTO104(e)008664

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-23 Client Windward Environmental Investigator

WEIGHING DATA SHEET

See page _____ for information on drying times and temperatures, standard weights,etc.

Bkr. #	Pan #	Tare wt. (mg)	Total wt. (mg)		no. weighed	put into pans-initials	Comments
			1	2			
120	120	30.716	34.089	33.961	9	MsR	
121	121	28.722	31.062	30.986	10	MsR	
122	122	28.594	32.864	32.750	10	MsR	
123	123	28.760	32.826	32.706	8	MsR	
124	124	26.148	29.511	29.395	9	MsR	
125	125	27.992	31.847	31.730	9	MsR	
126	126	29.089	33.466	33.323	10	MsR	
127	127	25.776	27.545	27.479	9	MsR	
128	128	28.576	32.101	31.990	10	MsR	
129	129	28.335	31.618	31.524	10	MsR	
130	130	27.096	32.215	32.117	10	MsR	
131	131	27.707	31.899	31.789	10	MsR	
132	132	31.584	36.058	35.928	10	MsR	
133	133	28.590	31.457	31.364	9	MsR	
134	134	27.760	30.032	29.954	10	MsR	
135	135	31.127	34.535	34.424	10	MsR	
136	136	27.429	31.167	31.048	10	MsR	
137	137	28.704	30.982	30.984	10	WTM	
138	138	29.847	32.640	32.908	10	WTM	
139	139	28.958	30.906	31.174	9	WTM	
140	140	26.989	30.227	30.496	10	WTM	
141	141	27.917	31.030	31.304	10	WTM	
142	142	29.773	33.337	33.608	10	WTM	
143	143	28.883	31.839	32.115	10	WTM	
144	144	29.619	32.183	32.462	10	WTM	
145	145	29.672	31.750	32.205	10	WTM	
146	146	30.281	32.729	32.996	10	WTM	
147	147	28.490	29.861	30.115	10	WTM	
148	148	27.658	30.925	31.196	9	WTM	
149	149	27.748	30.259	30.269	10	MsR	
150	150	27.841	31.588	31.585	9	MsR	
151	151	29.765	33.741	34.007	10	BBP	
152	152	27.984	31.954	32.226	9	BBP	
153	153	29.193	31.676	31.955	8	BBP	
154	154	29.920	33.807	33.802	8	BBP	
155	155	27.119	29.851	30.131	10	BBP	
156	156	28.514	30.108	30.117	9	BBP	
157	157	29.718	33.816	34.084	10	BBP	
158	158	30.794	31.960	32.231	9	BBP	
159	159	28.765	33.014	33.291	10	BBP	
160	160	29.290	33.466	33.463	10	BBP	
161	161	29.555	32.748	32.757	9	MsR	
162	162	29.665	32.955	32.959	10	MsR	

ANC08665
BZTO104(e)008665

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-23 Client Windward Environmental Investigator

WEIGHING DATA SHEET

See page _____ for information on drying times and temperatures, standard weights,etc.

Bkr. #	Pan #	Tare wt. (mg)	Total wt. (mg) 1	Total wt. (mg) 2	no. weighed	put into pans-initials	Comments
163	163	28.676	31.878	31.663	10	MsR	
164	164	28.691	32.196	32.198	8	MsR	
165	165	28.593	32.193	32.196	9	MsR	
166	166	28.372	31.746	31.743	10	MsR	
167	167	26.600	32.616	32.618	9	MsR	
168	168	26.633	29.894	29.891	10	MsR	
169	169						
170	170						
171	171						
172	172						
173	173						
174	174						
175	175						
176	176						
177	177						
178	178						
179	179						
180	180						
181	181						
182	182						
183	183						
184	184						
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186	186						
187	187						
188	188						
189	189						
190	190						
191	191						
192	192						
193	193						
194	194						
195	195						
196	196						
197	197						
198	198						
199	199						
200	200						
201	201						
202	202						
203	203						
204	204						
205	205						

Test Number: P686-23

Freshwater Sediment Test
28-day Hyalella azteca

BKR	NAS SMPL	CLIENT DESCRIP	REPL	
57	9574F	Control	1	
142	9574F	Control	2	
44	9574F	Control	3	
165	9574F	Control	4	
118	9574F	Control	5	
46	9574F	Control	6	
100	9574F	Control	7	
19	9574F	Control	8	wq replicate
131	9594F	LW2-U5Q-1	1	
155	9594F	LW2-U5Q-1	2	
107	9594F	LW2-U5Q-1	3	
66	9594F	LW2-U5Q-1	4	
114	9594F	LW2-U5Q-1	5	
85	9594F	LW2-U5Q-1	6	
47	9594F	LW2-U5Q-1	7	
7	9594F	LW2-U5Q-1	8	wq replicate
8	9595F	LW2-U5Q-2	1	
43	9595F	LW2-U5Q-2	2	
14	9595F	LW2-U5Q-2	3	
84	9595F	LW2-U5Q-2	4	
91	9595F	LW2-U5Q-2	5	
20	9595F	LW2-U5Q-2	6	
38	9595F	LW2-U5Q-2	7	
126	9595F	LW2-U5Q-2	8	wq replicate
120	9596F	LW2-U5Q-3	1	
37	9596F	LW2-U5Q-3	2	
125	9596F	LW2-U5Q-3	3	
167	9596F	LW2-U5Q-3	4	
39	9596F	LW2-U5Q-3	5	
36	9596F	LW2-U5Q-3	6	
24	9596F	LW2-U5Q-3	7	
88	9596F	LW2-U5Q-3	8	wq replicate
25	9597F	LW2-U6TOC-1	1	
33	9597F	LW2-U6TOC-1	2	
73	9597F	LW2-U6TOC-1	3	
41	9597F	LW2-U6TOC-1	4	
59	9597F	LW2-U6TOC-1	5	
129	9597F	LW2-U6TOC-1	6	
121	9597F	LW2-U6TOC-1	7	
21	9597F	LW2-U6TOC-1	8	wq replicate
29	9598F	LW2-U6TOC-2	1	
42	9598F	LW2-U6TOC-2	2	
61	9598F	LW2-U6TOC-2	3	
143	9598F	LW2-U6TOC-2	4	
148	9598F	LW2-U6TOC-2	5	
22	9598F	LW2-U6TOC-2	6	
60	9598F	LW2-U6TOC-2	7	
103	9598F	LW2-U6TOC-2	8	wq replicate
86	9599F	LW2-U6TOC-3	1	
64	9599F	LW2-U6TOC-3	2	
156	9599F	LW2-U6TOC-3	3	
28	9599F	LW2-U6TOC-3	4	
71	9599F	LW2-U6TOC-3	5	
119	9599F	LW2-U6TOC-3	6	
26	9599F	LW2-U6TOC-3	7	
158	9599F	LW2-U6TOC-3	8	wq replicate

ANC08667
BZTO104(e)008667

Test Number: P686-23

Freshwater Sediment Test
28-day Hyalella azteca

BKR	NAS SMPL	CLIENT DESCRIP	REPL	
17	9600F	LW2-U4Q-1	1	
106	9600F	LW2-U4Q-1	2	
2	9600F	LW2-U4Q-1	3	
97	9600F	LW2-U4Q-1	4	
112	9600F	LW2-U4Q-1	5	
166	9600F	LW2-U4Q-1	6	
139	9600F	LW2-U4Q-1	7	
4	9600F	LW2-U4Q-1	8	wq replicate
30	9601F	LW2-U4Q-2	1	
81	9601F	LW2-U4Q-2	2	
115	9601F	LW2-U4Q-2	3	
78	9601F	LW2-U4Q-2	4	
104	9601F	LW2-U4Q-2	5	
92	9601F	LW2-U4Q-2	6	
138	9601F	LW2-U4Q-2	7	
40	9601F	LW2-U4Q-2	8	wq replicate
18	9602F	LW2-U4Q-3	1	
109	9602F	LW2-U4Q-3	2	
127	9602F	LW2-U4Q-3	3	
67	9602F	LW2-U4Q-3	4	
77	9602F	LW2-U4Q-3	5	
117	9602F	LW2-U4Q-3	6	
133	9602F	LW2-U4Q-3	7	
35	9602F	LW2-U4Q-3	8	wq replicate
111	9603F	LW2-U3C-1	1	
83	9603F	LW2-U3C-1	2	
10	9603F	LW2-U3C-1	3	
144	9603F	LW2-U3C-1	4	
153	9603F	LW2-U3C-1	5	
54	9603F	LW2-U3C-1	6	
135	9603F	LW2-U3C-1	7	
79	9603F	LW2-U3C-1	8	wq replicate
128	9604F	LW2-U3C-2	1	
110	9604F	LW2-U3C-2	2	
11	9604F	LW2-U3C-2	3	
162	9604F	LW2-U3C-2	4	
58	9604F	LW2-U3C-2	5	
5	9604F	LW2-U3C-2	6	
96	9604F	LW2-U3C-2	7	
141	9604F	LW2-U3C-2	8	wq replicate
53	9605F	LW2-U3C-3	1	
140	9605F	LW2-U3C-3	2	
51	9605F	LW2-U3C-3	3	
75	9605F	LW2-U3C-3	4	
137	9605F	LW2-U3C-3	5	
34	9605F	LW2-U3C-3	6	
102	9605F	LW2-U3C-3	7	
72	9605F	LW2-U3C-3	8	wq replicate
49	9606F	LW2-U2C-1	1	
9	9606F	LW2-U2C-1	2	
1	9606F	LW2-U2C-1	3	
3	9606F	LW2-U2C-1	4	
152	9606F	LW2-U2C-1	5	
50	9606F	LW2-U2C-1	6	
160	9606F	LW2-U2C-1	7	
98	9606F	LW2-U2C-1	8	wq replicate

ANC08668
BZTO104(e)008668

Test Number: P686-23

Freshwater Sediment Test
28-day Hyalella azteca

BKR	NAS SMPL	CLIENT DESCRIP	REPL	
124	9607F	LW2-U2C-2	1	
164	9607F	LW2-U2C-2	2	
65	9607F	LW2-U2C-2	3	
63	9607F	LW2-U2C-2	4	
82	9607F	LW2-U2C-2	5	
151	9607F	LW2-U2C-2	6	
93	9607F	LW2-U2C-2	7	
116	9607F	LW2-U2C-2	8	wq replicate
130	9608F	LW2-U2C-3	1	
90	9608F	LW2-U2C-3	2	
56	9608F	LW2-U2C-3	3	
122	9608F	LW2-U2C-3	4	
68	9608F	LW2-U2C-3	5	
154	9608F	LW2-U2C-3	6	
31	9608F	LW2-U2C-3	7	
95	9608F	LW2-U2C-3	8	wq replicate
13	9609F	LW2-U1C-1	1	
108	9609F	LW2-U1C-1	2	
74	9609F	LW2-U1C-1	3	
70	9609F	LW2-U1C-1	4	
123	9609F	LW2-U1C-1	5	
76	9609F	LW2-U1C-1	6	
16	9609F	LW2-U1C-1	7	
89	9609F	LW2-U1C-1	8	wq replicate
150	9610F	LW2-U1C-2	1	
105	9610F	LW2-U1C-2	2	
113	9610F	LW2-U1C-2	3	
55	9610F	LW2-U1C-2	4	
101	9610F	LW2-U1C-2	5	
159	9610F	LW2-U1C-2	6	
87	9610F	LW2-U1C-2	7	
157	9610F	LW2-U1C-2	8	wq replicate
62	9611F	LW2-U1C-3	1	
99	9611F	LW2-U1C-3	2	
94	9611F	LW2-U1C-3	3	
52	9611F	LW2-U1C-3	4	
45	9611F	LW2-U1C-3	5	
132	9611F	LW2-U1C-3	6	
32	9611F	LW2-U1C-3	7	
23	9611F	LW2-U1C-3	8	wq replicate
147	9612F	LW2-D1-1	1	
146	9612F	LW2-D1-1	2	
69	9612F	LW2-D1-1	3	
149	9612F	LW2-D1-1	4	
80	9612F	LW2-D1-1	5	
163	9612F	LW2-D1-1	6	
145	9612F	LW2-D1-1	7	
134	9612F	LW2-D1-1	8	wq replicate
136	9613F	LW2-D2	1	
168	9613F	LW2-D2	2	
12	9613F	LW2-D2	3	
27	9613F	LW2-D2	4	
6	9613F	LW2-D2	5	
15	9613F	LW2-D2	6	
161	9613F	LW2-D2	7	
48	9613F	LW2-D2	8	wq replicate

ANC08669
BZTO104(e)008669

Chesapeake Cultures

P.O. Box 507 Hayes, VA 23072 (804) 693-4046 (804)694-4704 fax
www.c-cultures.com
e-mail growfish@c-cultures.com

NAS
Shipment Information

DATE CORRECTION: EMAIL COMMUNICATION WITH ELIZABETH WILKINS AT CHESAPEAKE CULTURES. -GJ1

Species *Hyalella azteca* Date 11/4/04

Age/Size ~ 2-3 d; 1.0-1.3 mm P.O. No. verbal

Quanitity 2400 + Invoice No. 4877

Temperature 24 °C Salinity — pH 7.95

Notes Thank you!

RECEIVED 11-5-04
-GJ1

Biologist Elizabeth Williams

* *Please inspect shipment and report any problem immediately* *

ANC08670
BZTO104(e)008670

RAW DATA DIVIDER PAGE
Test No. 686-23

AMMONIA EXPOSURE BENCHSHEETS AND ANALYSIS

Total Ammonia-N in Sediment Pore Water: Computation Worksheet

Salicylate Method (SOP #5492)

Result

	Sample description	Dilution factor	OD_{655}	NH_3-N (mg/L)	pH	Salinity (ppt)
	Blank	----	----	----		
	1.0 mg/L NH_3-N Std.	----	0.089	1.00		
	3.0 mg/L NH_3-N Std.	----	0.287	3.00		
	6.0 mg/L NH_3-N Std.	----	0.545	6.00		
	10.0 mg/L NH_3-N Std.	----	0.920	10.00		
	3.0 mg/L spike	----	0.291	3.17		
	3.0 mg/L spike dupl.	----	0.305	3.32		
1.	9574F	5	0.043	2.34		
2.	9594F	5	0.008	ND		
3.	9595F	5	0.006	ND		
4.	9596F	5	0.010	0.54		
5.	9597F	5	0.027	1.47		
6.	9598F	5	0.047	2.56		
7.	9599F	5	0.035	1.90		
8.	9600F	5	0.036	1.96		
9.	9601F	5	0.041	2.23		
10.	9602F	5	0.034	1.85		
11.	9603F	5	0.065	3.54		
12.	9604F	5	0.040	2.18		
13.	9605F	5	0.024	1.31		
14.	9606F	5	0.025	1.36		
15.	9607F	5	0.020	1.09		
16.	9608F	5	0.011	0.60		
17.	9609F	5	0.023	1.25		
18.	9610F	5	0.020	1.09		
19.	9611F	5	0.010	0.54		
20.	9612F	5	0.031	1.69		
21.	9613F	5	0.021	1.14		
22.						
23.						
24.						
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26.						
27.						
28.						
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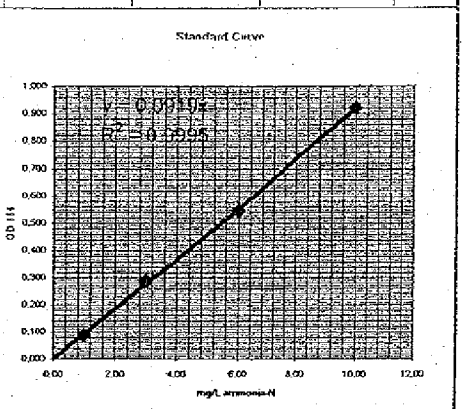
30.						
31.						
32.						
33.						
34.						
35.						



Reporting limit (mg/L) =	0.5
Recovery (%) =	108.1
Precision (RPD) =	-4.70
Sample volume (ml):	0.10
Dilution factor	5

Sample Set Description:

Proj. No.: 686
Bulk sediment porewaters
Batch 12

Analyst: RSC
Date analysed: 11/8/2004

ANC08672
BZTO104(e)008672

Total Ammonia-N in Sediment Pore Water: Computation Worksheet

Salicylate Method (SOP #5492)

Result

	Sample description	Dilution factor	OD655	NH3-N (mg/L)	pH	Salinity (ppt)
	Blank	-----	-----	-----		
	1.0 mg/L NH3-N Std.	-----	.089	1.00		
	3.0 mg/L NH3-N Std.	-----	.287	3.00		
	6.0 mg/L NH3-N Std.	-----	.545	6.00		
	10.0 mg/L NH3-N Std.	-----	.920	10.00		
	3.0 mg/L spike	-----	.19			
	3.0 mg/L spike dupl.	-----	.305			
1.	9574F	5	.043		6.6	
2.	9594F	5	.008		6.8	
3.	9595F	5	.006		6.5	
4.	9596F	5	.010		6.5	
5.	9597F	5	.027		6.4	
6.	9598F	5	.047		6.0	
7.	9599F	5	.035		6.8	
8.	9600F	5	.036		6.0	
9.	9601F	5	.041		6.1	
10.	9602F	5	.034		6.2	
11.	9603F	5	.065		6.5	
12.	9604F	5	.040		6.7	
13.	9605F	5	.024		6.7	
14.	9606F	5	.025		6.6	
15.	9607F	5	.020		6.3	
16.	9608F	5	.011		6.2	
17.	9609F	5	.023		6.3	
18.	9610F	5	.020		6.1	
19.	9611F	5	.010		6.0	
20.	9612F	5	.031		6.2	
21.	9613F	5	.021		6.3	
22.						
23.		* insufficient sample for analysis				
24.						
25.						
26.						
27.						
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30.						
31.						
32.						
33.						
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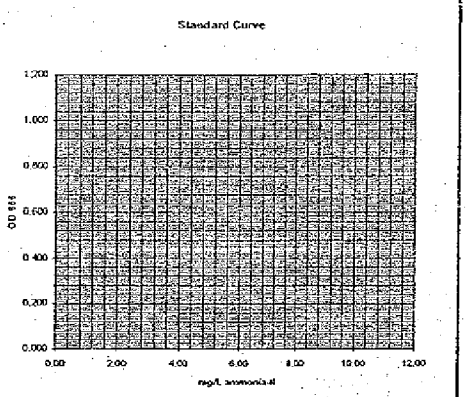
35.						



Reporting limit (mg/L) =	0.5
Recovery (%) =	#VALUE!
Precision (RPD) =	#VALUE!
Sample volume (ml):	0.10
Dilution factor	5

Sample Set Description:

Proj. No.: 686

Bulk sediment porewaters

Batch 12

Analyst: RSC

Date analysed: 11/8/2004

Total Ammonia-N in Water: Computation Worksheet

Salicylate Method (SOP #5492)

Result

	Sample description	Dilution factor	OD_{655}	NH_3-N (mg/L)
	Blank	-----	-----	-----
	1.0 mg/L NH_3-N Std.	-----	0.078	1.00
	3.0 mg/L NH_3-N Std.	-----	0.287	3.00
	6.0 mg/L NH_3-N Std.	-----	0.541	6.00
	10.0 mg/L NH_3-N Std.	-----	0.940	10.00
	3.0 mg/L spike	-----	0.290	3.12
	3.0 mg/L spike dupl.	-----	0.283	3.04
1.	4	1	0.020	0.21
2.	7	1	0.000	ND
3.	19	1	0.010	0.11
4.	21	1	0.020	0.21
5.	23	1	0.008	ND
6.	35	1	0.045	0.48
7.	40	1	0.030	0.32
8.	48	1	0.010	0.11
9.	72	1	0.018	0.19
10.	79	1	0.019	0.20
11.	88	1	0.003	ND
12.	89	1	0.013	0.14
13.	95	1	0.005	ND
14.	98	1	0.027	0.29
15.	103	1	0.031	0.33
16.	116	1	0.012	0.13
17.	126	1	0.003	ND
18.	134	1	0.022	0.24
19.	141	1	0.043	0.46
20.	157	1	0.019	0.20
21.	158	1	0.028	0.30
22.				
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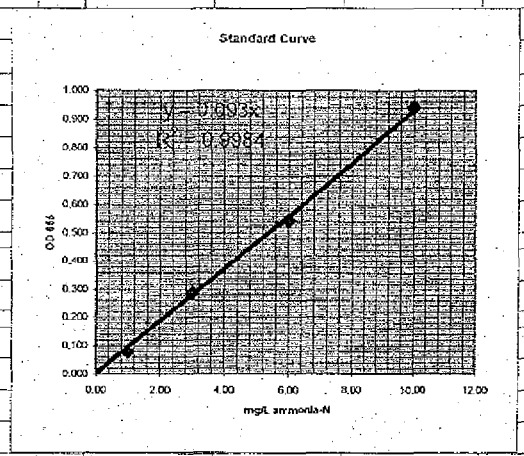

Reporting limit (mg/L) =	0.1
Recovery (%) =	102.6
Precision (RPD) =	2.44
Sample volume (ml):	0.50
Dilution factor	1

Sample Set Description:

Test No.:	686-23
Test Day:	0 (11-9-04)
Species:	*Hyalella*
Overlying water	
Analyst:	RSC
Date analysed:	12/15/2004

ANC08674
BZTO104(e)008674

Total Ammonia-N in Water: Computation Worksheet

Salicylate Method (SOP #5492)

Result

	Sample description	Dilution factor	OD_{655}	NH_3-N (mg/L)
	Blank	-----	----	----
	1.0 mg/L NH_3-N Std.	----	.078	1.00
	3.0 mg/L NH_3-N Std.	----	.257	3.00
	6.0 mg/L NH_3-N Std.	----	.541	6.00
	10.0 mg/L NH_3-N Std.	----	.940	10.00
	3.0 mg/L spike	-----	.290	
	3.0 mg/L spike dupl.	-----	.283	
1.	4	1	.020	
2.	7	1	.000	
3.	19	1	.010	
4.	21	1	.020	
5.	23	1	.005	
6.	35	1	.045	
7.	40	1	.070	
8.	48	1	.010	
9.	72	1	.018	
10.	79	1	.019	
11.	88	1	.003	
12.	89	1	.013	
13.	95	1	.005	
14.	98	1	.027	
15.	103	1	.031	
16.	116	1	.012	
17.	126	1	.003	
18.	134	1	.022	
19.	141	1	.043	
20.	157	1	.019	
21.	158	1	.025	
22.				
23.				
24.				
25.				
26.				
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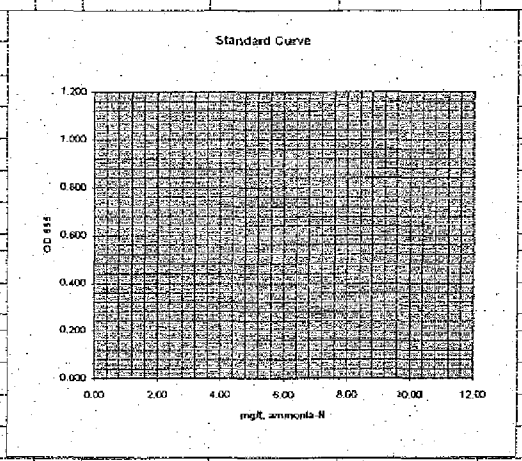
28.				
29.				
30.				
31.				
32.				
33.				
34.				
35.				
36.				



Reporting limit (mg/L) =	0.1
Recovery (%) =	#VALUE!
Precision (RPD) =	#VALUE!
Sample volume (ml):	0.50
Dilution factor	1

Sample Set Description:

Test No.:	686-23
Test Day:	0 (11-9-04)
Species:	*Hyalella*
Overlying water	
Analyst:	RSC
Date analysed:	12/15/2004

ANC08675
BZTO104(e)008675

Total Ammonia-N in Water: Computation Worksheet

Salicylate Method (SOP #5492)

Result

	Sample description	Dilution factor	OD_{655}	NH_3-N (mg/L)
	Blank	-----	----	-----
	1.0 mg/L NH_3-N Std.	-----	0.078	1.00
	3.0 mg/L NH_3-N Std.	-----	0.287	3.00
	6.0 mg/L NH_3-N Std.	-----	0.541	6.00
	10.0 mg/L NH_3-N Std.	-----	0.940	10.00
	3.0 mg/L spike	-----	0.290	3.12
	3.0 mg/L spike dupl.	-----	0.283	3.04
1.	4	1	0.012	0.13
2.	7	1	0.000	ND
3.	19	1	0.000	ND
4.	21	1	0.000	ND
5.	23	1	0.000	ND
6.	35	1	0.177	1.90
7.	40	1	0.000	ND
8.	48	1	0.000	ND
9.	72	1	0.000	ND
10.	79	1	0.000	ND
11.	88	1	0.000	ND
12.	89	1	0.000	ND
13.	95	1	0.000	ND
14.	98	1	0.000	ND
15.	103	1	0.000	ND
16.	116	1	0.000	ND
17.	126	1	0.000	ND
18.	134	1	0.000	ND
19.	141	1	0.000	ND
20.	157	1	0.000	ND
21.	158	1	0.000	ND
22.				
23.				
24.				
25.				
26.				
27.				
28.				
29.				
30.				
31.				
32.				
33.				
34.				
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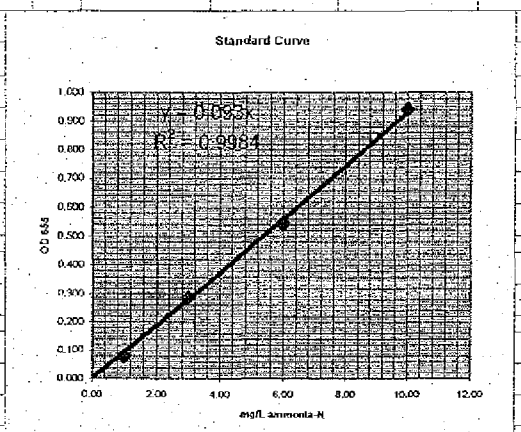
36.				



Reporting limit (mg/L) =	0.1
Recovery (%) =	102.6
Precision (RPD) =	2.44
Sample volume (ml):	0.50
Dilution factor	1

Sample Set Description:

Test No.:	686-23
Test Day:	28 (12-7-04)
Species:	*Hyalella*
Overlying water	
Analyst:	RSC
Date analysed:	12/15/2004

ANC08676
BZTO104(e)008676

Total Ammonia-N in Water: Computation Worksheet

Salicylate Method (SOP #5492)

Result

	Sample description	Dilution factor	OD_{655}	NH_3-N (mg/L)
	Blank	-----	-----	-----
	1.0 mg/L NH_3-N Std.	-----	.078	1.00
	3.0 mg/L NH_3-N Std.	-----	.247	3.00
	6.0 mg/L NH_3-N Std.	-----	.541	6.00
	10.0 mg/L NH_3-N Std.	-----	.940	10.00
	3.0 mg/L spike	-----	.290	
	3.0 mg/L spike dupl.	-----	.283	
1.	4	1	.012	
2.	7	1	.000	
3.	19	1	.000	
4.	21	1	.000	
5.	23	1	.000	
6.	35	1	.177	
7.	40	1	.000	
8.	48	1	.000	
9.	72	1	.000	
10.	79	1	.000	
11.	88	1	.000	
12.	89	1	.000	
13.	95	1	.000	
14.	98	1	.000	
15.	103	1	.000	
16.	116	1	.000	
17.	126	1	.000	
18.	134	1	.000	
19.	141	1	.000	
20.	157	1	.000	
21.	158	1	.000	
22.				
23.				
24.				
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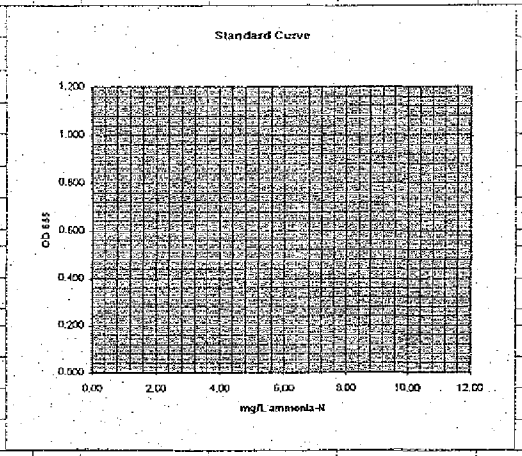

Reporting limit (mg/L) =	0.1
Recovery (%) =	#VALUE!
Precision (RPD) =	#VALUE!
Sample volume (ml):	0.50
Dilution factor	1

Sample Set Description:

Test No.:	686-23
Test Day:	28 (12-7-04)
Species:	*Hyalella*
Overlying water	
Analyst:	RSC
Date analysed:	12/15/2004

ANC08677
BZTO104(e)008677

TEST DATA ANALYSIS RECORDS

Test Number: P686-23

Freshwater Sediment Test
28-day Hyalella azteca

Endpoints Data Entry and Calculations File

BKR=beaker number
INIT=initial number
SURV=number survivors
MORT=number dead=INIT-SURV
PSURV=%survival=100(SURV/INIT)
PMORT=%mortality=100(MORT/INIT)

TARE WT= ashed weight of pan used for that replicate at test termination (mg), or
dry weight of pan if ash-free dry weight is not an endpoint
WT COUNT= number of test organisms weighed at test end
DRY WT= TARE WT + dry weight of test organisms recovered at test termination (mg)
TWT=total biomass=DRY WT-TARE WT
WT=average individual biomass=TWT/WT COUNT

INITIAL WEIGHT

pan #	tare wt (mg)	final wt (mg)	wt count	avg. wt/ organism
1	28.846	29.519	20	0.034
2	28.497	29.178	20	0.034
3	28.418	29.063	20	0.032
4	30.138	30.759	20	0.031
5	29.376	30.118	20	0.037

INDEX	BKR	NAS SMPL	CLIENT DESCRIP	REPL		INIT	SURV	MORT	PSURV	PMORT	TARE WT (mg)	WT COUNT	DRY WT (mg)	TWT (mg)	WT (mg)
1	57	9574F	Control	1		10	10	0	100.0	0.0	29.876	10	34.098	4.22	0.42
2	142	9574F	Control	2		10	10	0	100.0	0.0	29.773	10	33.608	3.84	0.38
3	44	9574F	Control	3		10	10	0	100.0	0.0	29.068	10	32.309	3.24	0.32
4	165	9574F	Control	4		10	9	1	90.0	10.0	28.593	9	32.196	3.60	0.40
5	118	9574F	Control	5		10	8	2	80.0	20.0	27.009	8	30.481	3.47	0.43
6	46	9574F	Control	6		10	10	0	100.0	0.0	28.899	10	32.688	3.79	0.38
7	100	9574F	Control	7		10	10	0	100.0	0.0	26.099	10	29.865	3.77	0.38
8	19	9574F	Control	8	wq replicate	10	10	0	100.0	0.0	28.937	10	33.102	4.17	0.42
9	131	9594F	LW2-U5Q-1	1		10	10	0	100.0	0.0	27.707	10	31.789	4.08	0.41
10	155	9594F	LW2-U5Q-1	2		10	10	0	100.0	0.0	27.119	10	30.131	3.01	0.30
11	107	9594F	LW2-U5Q-1	3		10	8	2	80.0	20.0	28.472	8	31.591	3.12	0.39
12	66	9594F	LW2-U5Q-1	4		10	10	0	100.0	0.0	30.381	10	34.134	3.75	0.38
13	114	9594F	LW2-U5Q-1	5		10	10	0	100.0	0.0	27.184	10	30.075	2.89	0.29
14	85	9594F	LW2-U5Q-1	6		10	10	0	100.0	0.0	28.765	10	31.709	2.94	0.29
15	47	9594F	LW2-U5Q-1	7		10	10	0	100.0	0.0	29.413	10	32.222	2.81	0.28
16	7	9594F	LW2-U5Q-1	8	wq replicate	10	10	0	100.0	0.0	28.028	10	32.573	4.55	0.45
17	8	9595F	LW2-U5Q-2	1		10	10	0	100.0	0.0	29.371	10	32.876	3.51	0.35
18	43	9595F	LW2-U5Q-2	2		10	10	0	100.0	0.0	28.766	10	33.616	4.85	0.49
19	14	9595F	LW2-U5Q-2	3		10	10	0	100.0	0.0	28.617				
20	84	9595F	LW2-U5Q-2	4		10	10	0	100.0	0.0	28.665	10	32.549	3.88	0.39
21	91	9595F	LW2-U5Q-2	5		10	10	0	100.0	0.0	30.448	10	34.880	4.43	0.44
22	20	9595F	LW2-U5Q-2	6		10	9	1	90.0	10.0	28.508	9	32.566	4.06	0.45
23	38	9595F	LW2-U5Q-2	7		10	10	0	100.0	0.0	27.873	10	31.795	3.92	0.39
24	128	9595F	LW2-U5Q-2	8	wq replicate	10	10	0	100.0	0.0	29.089	10	33.323	4.23	0.42
25	120	9596F	LW2-U5Q-3	1		10	9	1	90.0	10.0	30.716	9	33.961	3.25	0.36
26	37	9596F	LW2-U5Q-3	2		10	10	0	100.0	0.0	30.427	10	33.777	3.35	0.34
27	125	9596F	LW2-U5Q-3	3		10	9	1	90.0	10.0	27.992	9	31.730	3.74	0.42
28	167	9596F	LW2-U5Q-3	4		10	9	1	90.0	10.0	28.600	9	32.618	4.02	0.45
29	39	9596F	LW2-U5Q-3	5		10	10	0	100.0	0.0	30.983	10	34.144	3.16	0.32
30	36	9596F	LW2-U5Q-3	6		10	10	0	100.0	0.0	28.972	10	31.660	2.69	0.27
31	24	9596F	LW2-U5Q-3	7		10	10	0	100.0	0.0	29.664	10	33.069	3.41	0.34
32	88	9596F	LW2-U5Q-3	8	wq replicate	10	9	1	90.0	10.0	29.881	9	33.596	3.61	0.40

	SURV	MORT	PSURV	PMORT	WT
Mean	9.6	0.4	96.3	3.8	0.39
SD	0.7	0.7	7.4	7.4	0.03
n	8	8	8	8	8
Mean	9.8	0.3	97.5	2.5	0.35
SD	0.7	0.7	7.1	7.1	0.07
n	8	8	8	8	8
Mean	9.9	0.1	98.8	1.3	0.42
SD	0.4	0.4	3.5	3.5	0.05
n	8	8	8	8	7
Mean	9.5	0.5	95.0	5.0	0.36
SD	0.5	0.5	5.3	5.3	0.06
n	8	8	8	8	8

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ANC08679
BZTO104(e)008679

Test Number: P686-23

Freshwater Sediment Test
28-day Hyalella azteca

INDEX	BKR	NAS SMPL	CLIENT DESCRIP	REPL		INIT	SURV	MORT	PSURV	PMORT	TARE WT (mg)	WT COUNT	DRY WT (mg)	TWT (mg)	WT (mg)			SURV	MORT	PSURV	PMORT	WT
33	25	9597F	LW2-U6TOC-1	1		10	10	0	100.0	0.0	28.274	10	30.716	2.44	0.24							
34	33	9597F	LW2-U6TOC-1	2		10	10	0	100.0	0.0	27.721	10	29.872	2.15	0.22							
35	73	9597F	LW2-U6TOC-1	3		10	10	0	100.0	0.0	29.851	10	32.433	2.58	0.26							
36	41	9597F	LW2-U6TOC-1	4		10	10	0	100.0	0.0	27.832	10	30.663	2.83	0.28							
37	59	9597F	LW2-U6TOC-1	5		10	9	1	90.0	10.0	28.232	9	30.803	2.57	0.29	Mean		9.9	0.1	98.8	1.3	0.26
38	129	9597F	LW2-U6TOC-1	6		10	10	0	100.0	0.0	28.335	10	31.524	3.19	0.32	SD		0.4	0.4	3.5	3.5	0.04
39	121	9597F	LW2-U6TOC-1	7		10	10	0	100.0	0.0	28.722	10	30.986	2.26	0.23	n		8	8	8	8	8
40	21	9597F	LW2-U6TOC-1	8	wq replicate	10	10	0	100.0	0.0	28.524	10	30.707	2.18	0.22							
41	29	9598F	LW2-U6TOC-2	1		10	10	0	100.0	0.0	30.742	10	34.077	3.34	0.33							
42	42	9598F	LW2-U6TOC-2	2		10	9	1	90.0	10.0	26.393	9	30.179	3.79	0.42							
43	61	9598F	LW2-U6TOC-2	3		10	10	0	100.0	0.0	29.255	10	33.294	4.04	0.40							
44	143	9598F	LW2-U6TOC-2	4		10	10	0	100.0	0.0	28.883	10	32.115	3.23	0.32							
45	148	9598F	LW2-U6TOC-2	5		10	9	1	90.0	10.0	27.658	9	31.196	3.54	0.39	Mean		9.4	0.6	93.8	6.3	0.33
46	22	9598F	LW2-U6TOC-2	6		10	9	1	90.0	10.0	28.229	9	31.447	3.22	0.36	SD		0.7	0.7	7.4	7.4	0.08
47	60	9598F	LW2-U6TOC-2	7		10	10	0	100.0	0.0	28.391	10	31.065	2.67	0.27	n		8	8	8	8	8
48	103	9598F	LW2-U6TOC-2	8	wq replicate	10	8	2	80.0	20.0	27.912	8	29.278	1.37	0.17							
49	86	9599F	LW2-U6TOC-3	1		10	9	1	90.0	10.0	29.498	9	30.713	1.22	0.14							
50	64	9599F	LW2-U6TOC-3	2		10	10	0	100.0	0.0	27.546	10	30.808	3.26	0.33							
51	156	9599F	LW2-U6TOC-3	3		10	9	1	90.0	10.0	28.514	9	30.117	1.60	0.18							
52	28	9599F	LW2-U6TOC-3	4		10	10	0	100.0	0.0	28.233	10	30.534	2.30	0.23							
53	71	9599F	LW2-U6TOC-3	5		10	10	0	100.0	0.0	28.883	10	30.576	1.69	0.17	Mean		9.5	0.5	95.0	5.0	0.21
54	119	9599F	LW2-U6TOC-3	6		10	10	0	100.0	0.0	28.292	10	30.350	2.06	0.21	SD		0.5	0.5	5.3	5.3	0.06
55	26	9599F	LW2-U6TOC-3	7		10	9	1	90.0	10.0	29.292	9	31.604	2.31	0.26	n		8	8	8	8	8
56	158	9599F	LW2-U6TOC-3	8	wq replicate	10	9	1	90.0	10.0	30.794	9	32.231	1.44	0.16							
57	17	9600F	LW2-U4Q-1	1		10	9	1	90.0	10.0	29.778	9	32.419	2.64	0.29							
58	106	9600F	LW2-U4Q-1	2		10	10	0	100.0	0.0	27.396	10	30.852	3.46	0.35							
59	2	9600F	LW2-U4Q-1	3		10	10	0	100.0	0.0	29.600	10	31.963	2.36	0.24							
60	97	9600F	LW2-U4Q-1	4		10	9	1	90.0	10.0	27.695	9	29.947	2.25	0.25							
61	112	9600F	LW2-U4Q-1	5		10	10	0	100.0	0.0	27.552	10	31.067	3.52	0.35	Mean		9.5	0.5	95.0	5.0	0.29
62	166	9600F	LW2-U4Q-1	6		10	10	0	100.0	0.0	28.372	10	31.743	3.37	0.34	SD		0.5	0.5	5.3	5.3	0.05
63	139	9600F	LW2-U4Q-1	7		10	9	1	90.0	10.0	28.958	9	31.174	2.22	0.25	n		8	8	8	8	8
64	4	9600F	LW2-U4Q-1	8	wq replicate	10	9	1	90.0	10.0	28.226	9	30.790	2.56	0.28							
65	30	9601F	LW2-U4Q-2	1		10	10	0	100.0	0.0	28.848	10	30.717	1.87	0.19							
66	81	9601F	LW2-U4Q-2	2		10	10	0	100.0	0.0	26.991	10	30.314	3.32	0.33							
67	115	9601F	LW2-U4Q-2	3		10	10	0	100.0	0.0	28.458	10	31.656	3.20	0.32							
68	78	9601F	LW2-U4Q-2	4		10	9	1	90.0	10.0	26.984	9	29.582	2.60	0.29							
69	104	9601F	LW2-U4Q-2	5		10	10	0	100.0	0.0	27.436	10	30.246	2.81	0.28	Mean		9.6	0.4	96.3	3.8	0.29
70	92	9601F	LW2-U4Q-2	6		10	9	1	90.0	10.0	28.702	9	31.559	2.86	0.32	SD		0.5	0.5	5.2	5.2	0.05
71	138	9601F	LW2-U4Q-2	7		10	10	0	100.0	0.0	29.847	10	32.908	3.06	0.31	n		8	8	8	8	8
72	40	9601F	LW2-U4Q-2	8	wq replicate	10	9	1	90.0	10.0	27.140	9	29.509	2.37	0.26							

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ANC08680
BZTO104(e)008680

Test Number: P686-23

Freshwater Sediment Test
28-day Hyalella azteca

INDEX	BKR	NAS SMPL	CLIENT DESCRIP	REPL		INIT	SURV	MORT	PSURV	PMORT	TARE WT (mg)	WT COUNT	DRY WT (mg)	TWT (mg)	WT (mg)			SURV	MORT	PSURV	PMORT	WT
73	18	9602F	LW2-U4Q-3	1		10	9	1	90.0	10.0	28.411	9	31.736	3.33	0.37							
74	109	9602F	LW2-U4Q-3	2		10	10	0	100.0	0.0	28.689	10	31.657	2.97	0.30							
75	127	9602F	LW2-U4Q-3	3		10	9	1	90.0	10.0	25.776	9	27.479	1.70	0.19							
76	67	9602F	LW2-U4Q-3	4		10	10	0	100.0	0.0	29.309	10	32.000	2.69	0.27							
77	77	9602F	LW2-U4Q-3	5		10	10	0	100.0	0.0	28.230	10	31.234	3.00	0.30	Mean		9.6	0.4	96.3	3.8	0.30
78	117	9602F	LW2-U4Q-3	6		10	10	0	100.0	0.0	27.500	10	30.382	2.88	0.29	SD		0.5	0.5	5.2	5.2	0.05
79	133	9602F	LW2-U4Q-3	7		10	9	1	90.0	10.0	28.590	9	31.364	2.77	0.31	n		8	8	8	8	8
80	35	9602F	LW2-U4Q-3	8	wq replicate	10	10	0	100.0	0.0	28.637	10	32.043	3.41	0.34							
81	111	9603F	LW2-U3C-1	1		10	10	0	100.0	0.0	27.611	10	31.211	3.60	0.36							
82	83	9603F	LW2-U3C-1	2		10	10	0	100.0	0.0	29.567	10	33.464	3.90	0.39							
83	10	9603F	LW2-U3C-1	3		10	10	0	100.0	0.0	30.302	10	33.723	3.42	0.34							
84	144	9603F	LW2-U3C-1	4		10	10	0	100.0	0.0	29.619	10	32.462	2.84	0.28							
85	153	9603F	LW2-U3C-1	5		10	8	2	80.0	20.0	29.193	8	31.955	2.76	0.35	Mean		9.8	0.3	97.5	2.5	0.34
86	54	9603F	LW2-U3C-1	6		10	10	0	100.0	0.0	27.990	10	32.011	4.02	0.40	SD		0.7	0.7	7.1	7.1	0.04
87	135	9603F	LW2-U3C-1	7		10	10	0	100.0	0.0	31.127	10	34.424	3.30	0.33	n		8	8	8	8	8
88	79	9603F	LW2-U3C-1	8	wq replicate	10	10	0	100.0	0.0	27.971	10	30.941	2.97	0.30							
89	128	9604F	LW2-U3C-2	1		10	10	0	100.0	0.0	28.576	10	31.990	3.41	0.34							
90	110	9604F	LW2-U3C-2	2		10	10	0	100.0	0.0	28.471	10	31.964	3.49	0.35							
91	11	9604F	LW2-U3C-2	3		10	10	0	100.0	0.0	29.587	10	33.055	3.47	0.35							
92	162	9604F	LW2-U3C-2	4		10	10	0	100.0	0.0	29.665	10	32.959	3.29	0.33							
93	58	9604F	LW2-U3C-2	5		10	10	0	100.0	0.0	30.782	10	34.496	3.71	0.37	Mean		9.8	0.3	97.5	2.5	0.35
94	5	9604F	LW2-U3C-2	6		10	10	0	100.0	0.0	30.060	10	33.021	2.96	0.30	SD		0.7	0.7	7.1	7.1	0.03
95	96	9604F	LW2-U3C-2	7		10	8	2	80.0	20.0	27.669	8	30.921	3.25	0.41	n		8	8	8	8	8
96	141	9604F	LW2-U3C-2	8	wq replicate	10	10	0	100.0	0.0	27.917	10	31.304	3.39	0.34							
97	53	9605F	LW2-U3C-3	1		10	9	1	90.0	10.0	29.339	9	33.010	3.67	0.41							
98	140	9605F	LW2-U3C-3	2		10	10	0	100.0	0.0	26.989	10	30.496	3.51	0.35							
99	51	9605F	LW2-U3C-3	3		10	10	0	100.0	0.0	28.708	10	32.361	3.65	0.37							
100	75	9605F	LW2-U3C-3	4		10	10	0	100.0	0.0	28.579	10	31.504	2.93	0.29							
101	137	9605F	LW2-U3C-3	5		10	10	0	100.0	0.0	28.704	10	30.984	2.28	0.23	Mean		9.8	0.3	97.5	2.5	0.34
102	34	9605F	LW2-U3C-3	6		10	9	1	90.0	10.0	29.520	9	32.885	3.37	0.37	SD		0.5	0.5	4.6	4.6	0.06
103	102	9605F	LW2-U3C-3	7		10	10	0	100.0	0.0	28.546	10	32.005	3.46	0.35	n		8	8	8	8	8
104	72	9605F	LW2-U3C-3	8	wq replicate	10	10	0	100.0	0.0	28.371	10	32.007	3.64	0.36							
105	49	9606F	LW2-U2C-1	1		10	10	0	100.0	0.0	27.621	10	31.220	3.60	0.36							
106	9	9606F	LW2-U2C-1	2		10	10	0	100.0	0.0	26.390	10	30.217	3.83	0.38							
107	1	9606F	LW2-U2C-1	3		10	9	1	90.0	10.0	29.199	9	32.573	3.37	0.37							
108	3	9606F	LW2-U2C-1	4		10	10	0	100.0	0.0	29.708	10	33.579	3.87	0.39							
109	152	9606F	LW2-U2C-1	5		10	9	1	90.0	10.0	27.984	9	32.226	4.24	0.47	Mean		9.6	0.4	96.3	3.8	0.40
110	50	9606F	LW2-U2C-1	6		10	9	1	90.0	10.0	28.997	9	32.738	3.74	0.42	SD		0.5	0.5	5.2	5.2	0.04
111	160	9606F	LW2-U2C-1	7		10	10	0	100.0	0.0	29.290	10	33.463	4.17	0.42	n		8	8	8	8	8
112	98	9606F	LW2-U2C-1	8	wq replicate	10	10	0	100.0	0.0	28.980	10	32.686	3.71	0.37							

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ANC08681
BZTO104(e)008681

Test Number: P686-23

Freshwater Sediment Test
28-day Hyalella azteca

INDEX	BKR	NAS SMPL	CLIENT DESCRIP	REPL		INIT	SURV	MORT	PSURV	PMORT	TARE WT (mg)	WT COUNT	DRY WT (mg)	TWT (mg)	WT (mg)		SURV	MORT	PSURV	PMORT	WT
113	124	9607F	LW2-U2C-2	1		10	9	1	90.0	10.0	26.148	9	29.395	3.25	0.36						
114	164	9607F	LW2-U2C-2	2		10	8	2	80.0	20.0	28.691	8	32.198	3.51	0.44						
115	65	9607F	LW2-U2C-2	3		10	10	0	100.0	0.0	27.306	10	31.679	4.37	0.44						
116	63	9607F	LW2-U2C-2	4		10	10	0	100.0	0.0	29.735	10	33.582	3.85	0.38						
117	82	9607F	LW2-U2C-2	5		10	10	0	100.0	0.0	30.156	10	33.867	3.71	0.37	Mean	9.6	0.4	96.3	3.8	0.40
118	151	9607F	LW2-U2C-2	6		10	10	0	100.0	0.0	29.765	10	34.007	4.24	0.42	SD	0.7	0.7	7.4	7.4	0.04
119	93	9607F	LW2-U2C-2	7		10	10	0	100.0	0.0	29.529	10	32.848	3.32	0.33	n	8	8	8	8	8
120	116	9607F	LW2-U2C-2	8	wq replicate	10	10	0	100.0	0.0	29.039	10	33.610	4.57	0.46						
121	130	9608F	LW2-U2C-3	1		10	10	0	100.0	0.0	27.096	10	32.117	5.02	0.50						
122	90	9608F	LW2-U2C-3	2		12	12	0	100.0	0.0	29.236	12	34.716	5.48	0.46						
123	56	9608F	LW2-U2C-3	3		10	10	0	100.0	0.0	25.999	10	30.686	4.69	0.47						
124	122	9608F	LW2-U2C-3	4		10	10	0	100.0	0.0	28.594	10	32.750	4.16	0.42						
125	68	9608F	LW2-U2C-3	5		10	9	1	90.0	10.0	28.467	9	32.355	3.89	0.43	Mean	9.8	0.5	95.0	5.0	0.45
126	154	9608F	LW2-U2C-3	6		10	8	2	80.0	20.0	29.920	8	33.802	3.88	0.49	SD	1.2	0.8	7.6	7.6	0.04
127	31	9608F	LW2-U2C-3	7		10	9	1	90.0	10.0	27.211	9	31.438	4.23	0.47	n	8	8	8	8	8
128	95	9608F	LW2-U2C-3	8	wq replicate	10	10	0	100.0	0.0	29.515	9	33.010	3.50	0.39						
129	13	9609F	LW2-U1C-1	1		10	10	0	100.0	0.0	29.082	9	32.823	3.74	0.42						
130	108	9609F	LW2-U1C-1	2		10	10	0	100.0	0.0	27.163	10	32.011	4.85	0.48						
131	74	9609F	LW2-U1C-1	3		10	10	0	100.0	0.0	28.064	10	31.134	3.07	0.31						
132	70	9609F	LW2-U1C-1	4		10	10	0	100.0	0.0	28.964	10	33.442	4.48	0.45						
133	123	9609F	LW2-U1C-1	5		10	8	2	80.0	20.0	28.760	8	32.706	3.95	0.49	Mean	9.3	0.8	92.5	7.5	0.44
134	76	9609F	LW2-U1C-1	6		10	8	2	80.0	20.0	29.301	8	33.053	3.75	0.47	SD	1.0	1.0	10.4	10.4	0.06
135	16	9609F	LW2-U1C-1	7		10	8	2	80.0	20.0	28.502	8	32.063	3.56	0.45	n	8	8	8	8	8
136	89	9609F	LW2-U1C-1	8	wq replicate	10	10	0	100.0	0.0	29.772	10	34.174	4.40	0.44						
137	150	9610F	LW2-U1C-2	1		10	9	1	90.0	10.0	27.841	9	31.585	3.74	0.42						
138	105	9610F	LW2-U1C-2	2		10	10	0	100.0	0.0	28.783	10	32.039	3.26	0.33						
139	113	9610F	LW2-U1C-2	3		10	9	1	90.0	10.0	28.025	9	30.916	2.89	0.32						
140	55	9610F	LW2-U1C-2	4		10	10	0	100.0	0.0	27.950	10	32.038	4.09	0.41						
141	101	9610F	LW2-U1C-2	5		10	10	0	100.0	0.0	29.563	10	33.356	3.79	0.38	Mean	9.6	0.4	96.3	3.8	0.39
142	159	9610F	LW2-U1C-2	6		10	10	0	100.0	0.0	28.765	10	33.291	4.53	0.45	SD	0.5	0.5	5.2	5.2	0.05
143	87	9610F	LW2-U1C-2	7		10	9	1	90.0	10.0	29.521	9	32.756	3.24	0.36	n	8	8	8	8	8
144	157	9610F	LW2-U1C-2	8	wq replicate	10	10	0	100.0	0.0	29.718	10	34.084	4.37	0.44						
145	62	9611F	LW2-U1C-3	1		10	8	2	80.0	20.0	30.826	8	34.628	3.80	0.48						
146	99	9611F	LW2-U1C-3	2		10	9	1	90.0	10.0	27.804	9	31.140	3.34	0.37						
147	94	9611F	LW2-U1C-3	3		10	10	0	100.0	0.0	29.739	10	33.585	3.85	0.38						
148	52	9611F	LW2-U1C-3	4		10	9	1	90.0	10.0	28.465	9	32.577	4.11	0.46						
149	45	9611F	LW2-U1C-3	5		10	10	0	100.0	0.0	28.418	10	32.340	3.92	0.39	Mean	9.3	0.8	92.5	7.5	0.42
150	132	9611F	LW2-U1C-3	6		10	10	0	100.0	0.0	31.584	10	35.928	4.34	0.43	SD	0.9	0.9	8.9	8.9	0.05
151	32	9611F	LW2-U1C-3	7		10	10	0	100.0	0.0	28.225	10	31.910	3.69	0.37	n	8	8	8	8	8
152	23	9611F	LW2-U1C-3	8	wq replicate	10	8	2	80.0	20.0	29.980	8	34.050	4.07	0.51						

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ANC08682
BZTO104(e)008682

Test Number: P655-23

Freshwater Sediment Test
28-day Hyalella azteca

INDEX	BKR	NAS SMPL	CLIENT DESCRIP	REPL		INIT	SURV	MORT	PSURV	PMORT	TARE WT (mg)	WT COUNT	DRY WT (mg)	TWT (mg)	WT (mg)			SURV	MORT	PSURV	PMORT	WT
153	147	9612F	LW2-D1-1	1		10	10	0	100.0	0.0	28.490	10	30.115	1.63	0.16							
154	146	9612F	LW2-D1-1	2		10	10	0	100.0	0.0	30.281	10	32.996	2.72	0.27							
155	69	9612F	LW2-D1-1	3		10	10	0	100.0	0.0	28.476	10	30.951	2.48	0.25							
156	149	9612F	LW2-D1-1	4		10	10	0	100.0	0.0	27.748	10	30.269	2.52	0.25							
157	80	9612F	LW2-D1-1	5		10	10	0	100.0	0.0	29.185	10	31.906	2.72	0.27	Mean		10.0	0.0	100.0	0.0	0.25
158	183	9612F	LW2-D1-1	6		10	10	0	100.0	0.0	28.676	10	31.883	3.21	0.32	SD		0.0	0.0	0.0	0.0	0.05
159	145	9612F	LW2-D1-1	7		10	10	0	100.0	0.0	29.672	10	32.205	2.53	0.25	n		8	8	8	8	8
160	134	9612F	LW2-D1-1	8	wq replicate	10	10	0	100.0	0.0	27.760	10	29.954	2.19	0.22							
161	136	9613F	LW2-D2	1		10	10	0	100.0	0.0	27.429	10	31.048	3.62	0.36							
162	168	9613F	LW2-D2	2		10	10	0	100.0	0.0	26.633	10	29.891	3.26	0.33							
163	12	9613F	LW2-D2	3		10	10	0	100.0	0.0	29.017	10	32.256	3.24	0.32							
164	27	9613F	LW2-D2	4		10	10	0	100.0	0.0	26.099	10	28.967	2.87	0.29							
165	6	9613F	LW2-D2	5		10	9	1	90.0	10.0	27.912	9	30.833	2.92	0.32	Mean		9.6	0.4	96.3	3.8	0.34
166	15	9613F	LW2-D2	6		10	10	0	100.0	0.0	29.498	10	32.736	3.24	0.32	SD		0.5	0.5	5.2	5.2	0.03
167	161	9613F	LW2-D2	7		10	9	1	90.0	10.0	29.555	9	32.757	3.20	0.36	n		8	8	8	8	8
168	48	9613F	LW2-D2	8	wq replicate	10	9	1	90.0	10.0	27.887	9	31.365	3.48	0.39							

Beakers #13 and #95 each lost one animal in transfering to weighing pa Beaker #14 gained one animal from an unknown beaker during transfering to weighing pan and was therefore removed from weight assessment.

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ANC08683
BZTO104(e)008683

Test Number: P686-23

Freshwater Sediment Test
28-Day Hyalella azteca

Water Quality Data

	NAS	CLIENT			Overlying water							Interstitial water	
BKR	SMPL	DESCRIP	REPL	DAY	TEMP	DO	COND	pH	HARD	ALK	NH3	NH3	pH
BULK SEDIMENT POREWATER													
	9574F	Control										2.3	6.6
	9594F	LW2-U5Q-1										<0.5	6.8
	9595F	LW2-U5Q-2										<0.5	6.5
	9596F	LW2-U5Q-3										0.5	6.5
	9597F	LW2-U6TOC-1										1.5	6.4
	9598F	LW2-U6TOC-2										2.6	6.0
	9599F	LW2-U6TOC-3										1.9	5.8
	9600F	LW2-U4Q-1										2.0	6.0
	9601F	LW2-U4Q-2										2.2	6.1
	9602F	LW2-U4Q-3										1.9	6.2
	9603F	LW2-U3C-1										3.5	6.5
	9604F	LW2-U3C-2										2.2	6.7
	9605F	LW2-U3C-3										1.3	6.7
	9606F	LW2-U2C-1										1.4	6.6
	9607F	LW2-U2C-2										1.1	6.3
	9608F	LW2-U2C-3										0.6	6.2
	9609F	LW2-U1C-1										1.3	6.3
	9610F	LW2-U1C-2										1.1	6.1
	9611F	LW2-U1C-3										0.5	6.0
	9612F	LW2-D1-1										1.7	6.2
	9613F	LW2-D2										1.1	6.3

ANC08684
BZTO104(e)008684

Test Number: P686-23

Freshwater Sediment Test
28-Day Hyalella azteca

	NAS	CLIENT			Overlying water							Interstitial water	
BKR	SMPL	DESCRIP	REPL	DAY	TEMP	DO	COND	pH	HARD	ALK	NH3	NH3	pH
TEST OVERLYING WATER													
4	9600F	LW2-U4Q-1	8	0	22.5	7.2	225	6.6	34	40	0.2		
7	9594F	LW2-U5Q-1	8	0	22.5	7.4	180	6.5	43	40	<0.1		
19	9574F	Control	8	0	22.6	7.7	440	6.5	51	40	0.1		
21	9597F	LW2-U6TOC-1	8	0	22.5	7.0	170	6.6	34	40	0.2		
23	9611F	LW2-U1C-3	8	0	22.5	7.4	155	6.5	34	40	<0.1		
35	9602F	LW2-U4Q-3	8	0	22.6	7.4	150	6.5	34	40	0.5		
40	9601F	LW2-U4Q-2	8	0	22.7	7.3	155	6.5	34	40	0.3		
48	9613F	LW2-D2	8	0	22.5	7.3	150	6.5	34	40	0.1		
72	9605F	LW2-U3C-3	8	0	22.5	7.4	155	6.4	43	40	0.2		
79	9603F	LW2-U3C-1	8	0	22.5	7.6	165	6.5	43	50	0.2		
88	9596F	LW2-U5Q-3	8	0	22.5	7.5	155	6.6	51	50	<0.1		
89	9609F	LW2-U1C-1	8	0	22.7	7.7	145	6.6	34	40	0.1		
95	9608F	LW2-U2C-3	8	0	22.5	7.8	150	6.6	43	40	<0.1		
98	9606F	LW2-U2C-1	8	0	22.5	7.4	150	6.6	34	40	0.3		
103	9598F	LW2-U6TOC-2	8	0	22.5	7.5	145	6.5	34	40	0.3		
116	9607F	LW2-U2C-2	8	0	22.5	7.5	150	6.5	43	40	0.1		
126	9595F	LW2-U5Q-2	8	0	22.5	7.2	150	6.5	43	40	<0.1		
134	9612F	LW2-D1-1	8	0	22.5	7.8	150	6.5	34	40	0.2		
141	9604F	LW2-U3C-2	8	0	22.7	7.4	165	6.5	43	40	0.5		
157	9610F	LW2-U1C-2	8	0	22.6	7.4	140	6.5	34	40	0.2		
158	9599F	LW2-U6TOC-3	8	0	22.6	7.6	145	6.5	34	40	0.3		
4	9600F	LW2-U4Q-1	8	1	22.6	7.1	155	6.7					
7	9594F	LW2-U5Q-1	8	1	22.7	7.6	150	6.7					
19	9574F	Control	8	1	22.7	7.2	290	6.7					
21	9597F	LW2-U6TOC-1	8	1	22.7	7.1	155	6.7					
23	9611F	LW2-U1C-3	8	1	22.7	7.1	150	6.7					
35	9602F	LW2-U4Q-3	8	1	22.9	7.2	155	6.7					
40	9601F	LW2-U4Q-2	8	1	22.7	7.2	155	6.6					
48	9613F	LW2-D2	8	1	22.7	7.2	155	6.6					
72	9605F	LW2-U3C-3	8	1	22.7	7.0	155	6.6					
79	9603F	LW2-U3C-1	8	1	22.9	7.1	160	6.6					
88	9596F	LW2-U5Q-3	8	1	22.7	7.3	155	6.6					
89	9609F	LW2-U1C-1	8	1	22.8	7.2	150	6.6					
95	9608F	LW2-U2C-3	8	1	22.9	7.2	155	6.6					
98	9606F	LW2-U2C-1	8	1	22.8	7.3	155	6.6					
103	9598F	LW2-U6TOC-2	8	1	22.8	7.2	150	6.6					
116	9607F	LW2-U2C-2	8	1	22.8	7.1	155	6.6					
126	9595F	LW2-U5Q-2	8	1	22.8	7.5	155	6.7					
134	9612F	LW2-D1-1	8	1	22.9	7.3	155	6.7					
141	9604F	LW2-U3C-2	8	1	22.9	7.2	160	6.7					
157	9610F	LW2-U1C-2	8	1	22.9	7.1	150	6.7					
158	9599F	LW2-U6TOC-3	8	1	23.0	7.3	150	6.7					

ANC08685
BZTO104(e)008685

Test Number: P686-23

Freshwater Sediment Test
28-Day Hyalella azteca

	NAS	CLIENT			Overlying water							Interstitial water	
BKR	SMPL	DESCRIP	REPL	DAY	TEMP	DO	COND	pH	HARD	ALK	NH3	NH3	pH
4	9600F	LW2-U4Q-1	8	2	22.3								
7	9594F	LW2-U5Q-1	8	2	22.3								
19	9574F	Control	8	2	22.4								
21	9597F	LW2-U6TOC-1	8	2	22.5								
23	9611F	LW2-U1C-3	8	2	22.5								
35	9602F	LW2-U4Q-3	8	2	22.5								
40	9601F	LW2-U4Q-2	8	2	22.6								
48	9613F	LW2-D2	8	2	22.6								
72	9605F	LW2-U3C-3	8	2	22.5								
79	9603F	LW2-U3C-1	8	2	22.4								
88	9596F	LW2-U5Q-3	8	2	22.4								
89	9609F	LW2-U1C-1	8	2	22.6								
95	9608F	LW2-U2C-3	8	2	22.7								
98	9606F	LW2-U2C-1	8	2	22.8								
103	9598F	LW2-U6TOC-2	8	2	22.7								
116	9607F	LW2-U2C-2	8	2	22.6								
126	9595F	LW2-U5Q-2	8	2	22.7								
134	9612F	LW2-D1-1	8	2	22.7								
141	9604F	LW2-U3C-2	8	2	22.8								
157	9610F	LW2-U1C-2	8	2	22.8								
158	9599F	LW2-U6TOC-3	8	2	22.7								
4	9600F	LW2-U4Q-1	8	3	22.4	7.4		6.3					
7	9594F	LW2-U5Q-1	8	3	22.1	7.7		6.4					
19	9574F	Control	8	3	22.1	7.6		6.4					
21	9597F	LW2-U6TOC-1	8	3	22.2	7.4		6.4					
23	9611F	LW2-U1C-3	8	3	22.0	7.5		6.3					
35	9602F	LW2-U4Q-3	8	3	22.3	7.6		6.4					
40	9601F	LW2-U4Q-2	8	3	22.5	7.6		6.3					
48	9613F	LW2-D2	8	3	22.2	7.6		6.4					
72	9605F	LW2-U3C-3	8	3	22.2	7.3		6.4					
79	9603F	LW2-U3C-1	8	3	22.5	7.5		6.4					
88	9596F	LW2-U5Q-3	8	3	22.3	7.7		6.4					
89	9609F	LW2-U1C-1	8	3	22.5	7.6		6.4					
95	9608F	LW2-U2C-3	8	3	22.6	7.8		6.4					
98	9606F	LW2-U2C-1	8	3	22.4	7.3		6.4					
103	9598F	LW2-U6TOC-2	8	3	22.4	7.4		6.4					
116	9607F	LW2-U2C-2	8	3	22.4	7.8		6.4					
126	9595F	LW2-U5Q-2	8	3	22.4	7.9		6.5					
134	9612F	LW2-D1-1	8	3	22.6	7.6		6.5					
141	9604F	LW2-U3C-2	8	3	22.4	7.4		6.6					
157	9610F	LW2-U1C-2	8	3	22.4	7.4		6.6					
158	9599F	LW2-U6TOC-3	8	3	22.5	7.6		6.6					

ANC08686
BZTO104(e)008686

Test Number: P686-23

Freshwater Sediment Test
28-Day Hyalella azteca

	NAS	CLIENT			Overlying water							Interstitial water	
BKR	SMPL	DESCRIP	REPL	DAY	TEMP	DO	COND	pH	HARD	ALK	NH3	NH3	pH
4	9600F	LW2-U4Q-1	8	4	22.4								
7	9594F	LW2-U5Q-1	8	4	22.3								
19	9574F	Control	8	4	22.3								
21	9597F	LW2-U6TOC-1	8	4	22.3								
23	9611F	LW2-U1C-3	8	4	22.3								
35	9602F	LW2-U4Q-3	8	4	22.3								
40	9601F	LW2-U4Q-2	8	4	22.4								
48	9613F	LW2-D2	8	4	22.3								
72	9605F	LW2-U3C-3	8	4	22.2								
79	9603F	LW2-U3C-1	8	4	22.2								
88	9596F	LW2-U5Q-3	8	4	22.3								
89	9609F	LW2-U1C-1	8	4	22.3								
95	9608F	LW2-U2C-3	8	4	22.4								
98	9606F	LW2-U2C-1	8	4	22.3								
103	9598F	LW2-U6TOC-2	8	4	22.3								
116	9607F	LW2-U2C-2	8	4	22.3								
126	9595F	LW2-U5Q-2	8	4	22.3								
134	9612F	LW2-D1-1	8	4	22.4								
141	9604F	LW2-U3C-2	8	4	22.4								
157	9610F	LW2-U1C-2	8	4	22.4								
158	9599F	LW2-U6TOC-3	8	4	22.4								
4	9600F	LW2-U4Q-1	8	5	23.0								
7	9594F	LW2-U5Q-1	8	5	22.6								
19	9574F	Control	8	5	22.7								
21	9597F	LW2-U6TOC-1	8	5	22.7								
23	9611F	LW2-U1C-3	8	5	22.5								
35	9602F	LW2-U4Q-3	8	5	22.9								
40	9601F	LW2-U4Q-2	8	5	23.0								
48	9613F	LW2-D2	8	5	22.7								
72	9605F	LW2-U3C-3	8	5	22.6								
79	9603F	LW2-U3C-1	8	5	22.9								
88	9596F	LW2-U5Q-3	8	5	22.7								
89	9609F	LW2-U1C-1	8	5	22.9								
95	9608F	LW2-U2C-3	8	5	22.9								
98	9606F	LW2-U2C-1	8	5	22.8								
103	9598F	LW2-U6TOC-2	8	5	22.8								
116	9607F	LW2-U2C-2	8	5	22.8								
126	9595F	LW2-U5Q-2	8	5	22.9								
134	9612F	LW2-D1-1	8	5	23.1								
141	9604F	LW2-U3C-2	8	5	22.8								
157	9610F	LW2-U1C-2	8	5	22.9								
158	9599F	LW2-U6TOC-3	8	5	22.9								

ANC08687
BZTO104(e)008687

Test Number: P686-23

Freshwater Sediment Test
28-Day Hyalella azteca

	NAS	CLIENT			Overlying water							Interstitial water	
BKR	SMPL	DESCRIP	REPL	DAY	TEMP	DO	COND	pH	HARD	ALK	NH3	NH3	pH
4	9600F	LW2-U4Q-1	8	6	22.8	6.1		6.6					
7	9594F	LW2-U5Q-1	8	6	22.6	6.6		6.6					
19	9574F	Control	8	6	22.5	6.4		6.7					
21	9597F	LW2-U6TOC-1	8	6	22.5	6.5		6.7					
23	9611F	LW2-U1C-3	8	6	22.5	6.6		6.7					
35	9602F	LW2-U4Q-3	8	6	22.6	6.3		6.7					
40	9601F	LW2-U4Q-2	8	6	22.6	6.3		6.7					
48	9613F	LW2-D2	8	6	22.4	6.2		6.7					
72	9605F	LW2-U3C-3	8	6	22.4	6.0		6.7					
79	9603F	LW2-U3C-1	8	6	22.6	6.3		6.8					
88	9596F	LW2-U5Q-3	8	6	22.5	6.6		6.8					
89	9609F	LW2-U1C-1	8	6	22.6	6.4		6.7					
95	9608F	LW2-U2C-3	8	6	22.7	6.6		6.7					
98	9606F	LW2-U2C-1	8	6	22.6	6.2		6.7					
103	9598F	LW2-U6TOC-2	8	6	22.5	6.2		6.7					
116	9607F	LW2-U2C-2	8	6	22.6	6.4		6.7					
126	9595F	LW2-U5Q-2	8	6	22.6	6.7		6.7					
134	9612F	LW2-D1-1	8	6	22.6	7.0		6.7					
141	9604F	LW2-U3C-2	8	6	22.6	6.2		6.7					
157	9610F	LW2-U1C-2	8	6	22.6	6.2		6.7					
158	9599F	LW2-U6TOC-3	8	6	22.7	6.4		6.7					
4	9600F	LW2-U4Q-1	8	7	22.3								
7	9594F	LW2-U5Q-1	8	7	22.1								
19	9574F	Control	8	7	22.1								
21	9597F	LW2-U6TOC-1	8	7	22.2								
23	9611F	LW2-U1C-3	8	7	22.1								
35	9602F	LW2-U4Q-3	8	7	22.1								
40	9601F	LW2-U4Q-2	8	7	22.4								
48	9613F	LW2-D2	8	7	22.1								
72	9605F	LW2-U3C-3	8	7	22.4								
79	9603F	LW2-U3C-1	8	7	22.4								
88	9596F	LW2-U5Q-3	8	7	22.4								
89	9609F	LW2-U1C-1	8	7	22.3								
95	9608F	LW2-U2C-3	8	7	22.4								
98	9606F	LW2-U2C-1	8	7	22.4								
103	9598F	LW2-U6TOC-2	8	7	22.3								
116	9607F	LW2-U2C-2	8	7	22.3								
126	9595F	LW2-U5Q-2	8	7	22.3								
134	9612F	LW2-D1-1	8	7	22.4								
141	9604F	LW2-U3C-2	8	7	22.4								
157	9610F	LW2-U1C-2	8	7	22.5								
158	9599F	LW2-U6TOC-3	8	7	22.5								

ANC08688
BZTO104(e)008688

Test Number: P686-23

Freshwater Sediment Test
28-Day Hyalella azteca

	NAS	CLIENT			Overlying water							Interstitial water	
BKR	SMPL	DESCRIP	REPL	DAY	TEMP	DO	COND	pH	HARD	ALK	NH3	NH3	pH
4	9600F	LW2-U4Q-1	8	8	22.4	6.4	160	6.2					
7	9594F	LW2-U5Q-1	8	8	22.2	6.6	160	6.2					
19	9574F	Control	8	8	22.2	6.7	155	6.2					
21	9597F	LW2-U6TOC-1	8	8	22.2	6.7	170	6.2					
23	9611F	LW2-U1C-3	8	8	22.1	6.7	150	6.2					
35	9602F	LW2-U4Q-3	8	8	22.2	6.8	150	6.1					
40	9601F	LW2-U4Q-2	8	8	22.3	6.5	150	6.1					
48	9613F	LW2-D2	8	8	22.1	6.4	150	6.1					
72	9605F	LW2-U3C-3	8	8	22.1	6.0	155	6.1					
79	9603F	LW2-U3C-1	8	8	22.1	6.0	160	6.1					
88	9596F	LW2-U5Q-3	8	8	22.1	6.4	160	6.2					
89	9609F	LW2-U1C-1	8	8	22.1	6.4	155	6.2					
95	9608F	LW2-U2C-3	8	8	22.2	6.6	155	6.2					
98	9606F	LW2-U2C-1	8	8	22.1	6.2	155	6.1					
103	9598F	LW2-U6TOC-2	8	8	22.1	6.1	160	6.2					
116	9607F	LW2-U2C-2	8	8	22.1	6.2	155	6.2					
126	9595F	LW2-U5Q-2	8	8	22.2	6.6	155	6.2					
134	9612F	LW2-D1-1	8	8	22.2	6.6	160	6.2					
141	9604F	LW2-U3C-2	8	8	22.3	6.3	160	6.2					
157	9610F	LW2-U1C-2	8	8	22.4	6.5	155	6.2					
158	9599F	LW2-U6TOC-3	8	8	22.7	6.5	155	6.2					
4	9600F	LW2-U4Q-1	8	9	22.7								
7	9594F	LW2-U5Q-1	8	9	22.6								
19	9574F	Control	8	9	22.7								
21	9597F	LW2-U6TOC-1	8	9	22.7								
23	9611F	LW2-U1C-3	8	9	22.6								
35	9602F	LW2-U4Q-3	8	9	22.8								
40	9601F	LW2-U4Q-2	8	9	23.0								
48	9613F	LW2-D2	8	9	22.7								
72	9605F	LW2-U3C-3	8	9	22.6								
79	9603F	LW2-U3C-1	8	9	22.9								
88	9596F	LW2-U5Q-3	8	9	22.9								
89	9609F	LW2-U1C-1	8	9	22.9								
95	9608F	LW2-U2C-3	8	9	23.1								
98	9606F	LW2-U2C-1	8	9	22.9								
103	9598F	LW2-U6TOC-2	8	9	22.8								
116	9607F	LW2-U2C-2	8	9	22.9								
126	9595F	LW2-U5Q-2	8	9	22.9								
134	9612F	LW2-D1-1	8	9	23.0								
141	9604F	LW2-U3C-2	8	9	23.0								
157	9610F	LW2-U1C-2	8	9	23.2								
158	9599F	LW2-U6TOC-3	8	9	23.2								

ANC08689
BZTO104(e)008689

Test Number: P686-23

Freshwater Sediment Test
28-Day Hyalella azteca

	NAS	CLIENT			Overlying water							Interstitial water	
BKR	SMPL	DESCRIP	REPL	DAY	TEMP	DO	COND	pH	HARD	ALK	NH3	NH3	pH
4	9600F	LW2-U4Q-1	8	10	22.6	6.4		6.5					
7	9594F	LW2-U5Q-1	8	10	22.4	7.0		6.4					
19	9574F	Control	8	10	22.4	6.8		6.5					
21	9597F	LW2-U6TOC-1	8	10	22.4	6.8		6.4					
23	9611F	LW2-U1C-3	8	10	22.3	6.7		6.4					
35	9602F	LW2-U4Q-3	8	10	22.4	6.7		6.4					
40	9601F	LW2-U4Q-2	8	10	22.6	6.8		6.4					
48	9613F	LW2-D2	8	10	22.3	6.6		6.4					
72	9605F	LW2-U3C-3	8	10	22.3	6.6		6.5					
79	9603F	LW2-U3C-1	8	10	22.5	6.3		6.5					
88	9596F	LW2-U5Q-3	8	10	22.4	6.8		6.5					
89	9609F	LW2-U1C-1	8	10	22.5	6.8		6.5					
95	9608F	LW2-U2C-3	8	10	22.6	6.8		6.5					
98	9606F	LW2-U2C-1	8	10	22.4	6.8		6.5					
103	9598F	LW2-U6TOC-2	8	10	22.4	6.6		6.5					
116	9607F	LW2-U2C-2	8	10	22.5	6.7		6.5					
126	9595F	LW2-U5Q-2	8	10	22.5	6.8		6.5					
134	9612F	LW2-D1-1	8	10	22.6	7.0		6.6					
141	9604F	LW2-U3C-2	8	10	22.5	6.8		6.6					
157	9610F	LW2-U1C-2	8	10	22.7	6.8		6.5					
158	9599F	LW2-U6TOC-3	8	10	23.0	6.8		6.5					
4	9600F	LW2-U4Q-1	8	11	22.5								
7	9594F	LW2-U5Q-1	8	11	22.5								
19	9574F	Control	8	11	22.3								
21	9597F	LW2-U6TOC-1	8	11	22.3								
23	9611F	LW2-U1C-3	8	11	22.3								
35	9602F	LW2-U4Q-3	8	11	22.3								
40	9601F	LW2-U4Q-2	8	11	22.4								
48	9613F	LW2-D2	8	11	22.3								
72	9605F	LW2-U3C-3	8	11	22.2								
79	9603F	LW2-U3C-1	8	11	22.2								
88	9596F	LW2-U5Q-3	8	11	22.3								
89	9609F	LW2-U1C-1	8	11	22.3								
95	9608F	LW2-U2C-3	8	11	22.5								
98	9606F	LW2-U2C-1	8	11	22.5								
103	9598F	LW2-U6TOC-2	8	11	22.3								
116	9607F	LW2-U2C-2	8	11	22.4								
126	9595F	LW2-U5Q-2	8	11	22.4								
134	9612F	LW2-D1-1	8	11	22.4								
141	9604F	LW2-U3C-2	8	11	22.5								
157	9610F	LW2-U1C-2	8	11	22.5								
158	9599F	LW2-U6TOC-3	8	11	22.7								

ANC08690
BZTO104(e)008690

Test Number: P686-23

Freshwater Sediment Test
28-Day Hyalella azteca

	NAS	CLIENT			Overlying water							Interstitial water	
BKR	SMPL	DESCRIP	REPL	DAY	TEMP	DO	COND	pH	HARD	ALK	NH3	NH3	pH
4	9600F	LW2-U4Q-1	8	12	22.1								
7	9594F	LW2-U5Q-1	8	12	22.1								
19	9574F	Control	8	12	22.2								
21	9597F	LW2-U6TOC-1	8	12	22.2								
23	9611F	LW2-U1C-3	8	12	22.2								
35	9602F	LW2-U4Q-3	8	12	22.1								
40	9601F	LW2-U4Q-2	8	12	22.1								
48	9613F	LW2-D2	8	12	22.2								
72	9605F	LW2-U3C-3	8	12	22.3								
79	9603F	LW2-U3C-1	8	12	22.2								
88	9596F	LW2-U5Q-3	8	12	22.2								
89	9609F	LW2-U1C-1	8	12	22.2								
95	9608F	LW2-U2C-3	8	12	22.0								
98	9606F	LW2-U2C-1	8	12	22.1								
103	9598F	LW2-U6TOC-2	8	12	22.2								
116	9607F	LW2-U2C-2	8	12	22.3								
126	9595F	LW2-U5Q-2	8	12	22.3								
134	9612F	LW2-D1-1	8	12	22.2								
141	9604F	LW2-U3C-2	8	12	22.2								
157	9610F	LW2-U1C-2	8	12	22.3								
158	9599F	LW2-U6TOC-3	8	12	22.3								
4	9600F	LW2-U4Q-1	8	13	22.5	6.0		6.4					
7	9594F	LW2-U5Q-1	8	13	22.3	5.8		6.4					
19	9574F	Control	8	13	22.2	5.9		6.4					
21	9597F	LW2-U6TOC-1	8	13	22.3	6.1		6.3					
23	9611F	LW2-U1C-3	8	13	22.3	5.4		6.3					
35	9602F	LW2-U4Q-3	8	13	22.3	5.9		6.3					
40	9601F	LW2-U4Q-2	8	13	22.4	5.9		6.3					
48	9613F	LW2-D2	8	13	22.5	5.9		6.3					
72	9605F	LW2-U3C-3	8	13	22.3	5.2		6.4					
79	9603F	LW2-U3C-1	8	13	22.5	5.4		6.4					
88	9596F	LW2-U5Q-3	8	13	22.4	5.8		6.4					
89	9609F	LW2-U1C-1	8	13	22.4	5.7		6.3					
95	9608F	LW2-U2C-3	8	13	22.5	6.1		6.3					
98	9606F	LW2-U2C-1	8	13	22.5	5.8		6.4					
103	9598F	LW2-U6TOC-2	8	13	22.4	5.7		6.5					
116	9607F	LW2-U2C-2	8	13	22.4	5.7		6.4					
126	9595F	LW2-U5Q-2	8	13	22.5	6.2		6.4					
134	9612F	LW2-D1-1	8	13	22.5	6.2		6.4					
141	9604F	LW2-U3C-2	8	13	22.4	6.1		6.5					
157	9610F	LW2-U1C-2	8	13	22.4	5.9		6.4					
158	9599F	LW2-U6TOC-3	8	13	22.5	5.9		6.4					

ANC08691
BZTO104(e)008691

Test Number: P686-23

Freshwater Sediment Test
28-Day Hyalella azteca

	NAS	CLIENT			Overlying water							Interstitial water	
BKR	SMPL	DESCRIP	REPL	DAY	TEMP	DO	COND	pH	HARD	ALK	NH3	NH3	pH
4	9600F	LW2-U4Q-1	8	14	22.5								
7	9594F	LW2-U5Q-1	8	14	22.6								
19	9574F	Control	8	14	22.3								
21	9597F	LW2-U6TOC-1	8	14	22.4								
23	9611F	LW2-U1C-3	8	14	22.4								
35	9602F	LW2-U4Q-3	8	14	22.4								
40	9601F	LW2-U4Q-2	8	14	22.8								
48	9613F	LW2-D2	8	14	22.3								
72	9605F	LW2-U3C-3	8	14	22.3								
79	9603F	LW2-U3C-1	8	14	22.3								
88	9596F	LW2-U5Q-3	8	14	22.4								
89	9609F	LW2-U1C-1	8	14	22.6								
95	9608F	LW2-U2C-3	8	14	22.8								
98	9606F	LW2-U2C-1	8	14	22.5								
103	9598F	LW2-U6TOC-2	8	14	22.5								
116	9607F	LW2-U2C-2	8	14	22.5								
126	9595F	LW2-U5Q-2	8	14	22.8								
134	9612F	LW2-D1-1	8	14	22.6								
141	9604F	LW2-U3C-2	8	14	22.6								
157	9610F	LW2-U1C-2	8	14	22.8								
158	9599F	LW2-U6TOC-3	8	14	22.8								
4	9600F	LW2-U4Q-1	8	15	23.2	6.6	150	6.3					
7	9594F	LW2-U5Q-1	8	15	22.9	6.8	150	6.1					
19	9574F	Control	8	15	22.8	6.8	150	6.1					
21	9597F	LW2-U6TOC-1	8	15	22.6	6.8	150	6.5					
23	9611F	LW2-U1C-3	8	15	22.8	6.8	150	6.5					
35	9602F	LW2-U4Q-3	8	15	22.9	6.7	150	6.5					
40	9601F	LW2-U4Q-2	8	15	22.7	6.8	150	6.5					
48	9613F	LW2-D2	8	15	22.6	6.7	150	6.6					
72	9605F	LW2-U3C-3	8	15	22.6	6.0	150	6.6					
79	9603F	LW2-U3C-1	8	15	22.8	6.3	160	6.6					
88	9596F	LW2-U5Q-3	8	15	22.7	6.8	160	6.6					
89	9609F	LW2-U1C-1	8	15	22.9	6.5	150	6.6					
95	9608F	LW2-U2C-3	8	15	22.9	7.1	150	6.6					
98	9606F	LW2-U2C-1	8	15	22.7	6.9	155	6.6					
103	9598F	LW2-U6TOC-2	8	15	22.7	6.7	155	6.6					
116	9607F	LW2-U2C-2	8	15	22.7	6.5	155	6.6					
126	9595F	LW2-U5Q-2	8	15	22.8	7.0	155	6.6					
134	9612F	LW2-D1-1	8	15	22.9	6.9	155	6.6					
141	9604F	LW2-U3C-2	8	15	22.8	6.6	155	6.6					
157	9610F	LW2-U1C-2	8	15	22.8	6.6	150	6.6					
158	9599F	LW2-U6TOC-3	8	15	22.9	6.7	155	6.6					

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Test Number: P686-23

Freshwater Sediment Test
28-Day Hyalella azteca

	NAS	CLIENT			Overlying water							Interstitial water	
BKR	SMPL	DESCRIP	REPL	DAY	TEMP	DO	COND	pH	HARD	ALK	NH3	NH3	pH
4	9600F	LW2-U4Q-1	8	16	22.9								
7	9594F	LW2-U5Q-1	8	16	22.8								
19	9574F	Control	8	16	22.8								
21	9597F	LW2-U6TOC-1	8	16	22.8								
23	9611F	LW2-U1C-3	8	16	22.7								
35	9602F	LW2-U4Q-3	8	16	22.7								
40	9601F	LW2-U4Q-2	8	16	22.8								
48	9613F	LW2-D2	8	16	22.4								
72	9605F	LW2-U3C-3	8	16	22.7								
79	9603F	LW2-U3C-1	8	16	22.8								
88	9596F	LW2-U5Q-3	8	16	22.8								
89	9609F	LW2-U1C-1	8	16	22.8								
95	9608F	LW2-U2C-3	8	16	22.8								
98	9606F	LW2-U2C-1	8	16	22.8								
103	9598F	LW2-U6TOC-2	8	16	22.7								
116	9607F	LW2-U2C-2	8	16	22.9								
126	9595F	LW2-U5Q-2	8	16	22.9								
134	9612F	LW2-D1-1	8	16	22.9								
141	9604F	LW2-U3C-2	8	16	22.9								
157	9610F	LW2-U1C-2	8	16	22.9								
158	9599F	LW2-U6TOC-3	8	16	22.9								
4	9600F	LW2-U4Q-1	8	17	22.9	5.9		6.3					
7	9594F	LW2-U5Q-1	8	17	22.7	6.2		6.3					
19	9574F	Control	8	17	22.6	5.8		6.2					
21	9597F	LW2-U6TOC-1	8	17	22.7	6.4		6.6					
23	9611F	LW2-U1C-3	8	17	22.5	6.1		6.4					
35	9602F	LW2-U4Q-3	8	17	22.8	6.1		6.5					
40	9601F	LW2-U4Q-2	8	17	22.9	6.2		6.4					
48	9613F	LW2-D2	8	17	22.6	6.2		6.4					
72	9605F	LW2-U3C-3	8	17	22.6	5.8		6.5					
79	9603F	LW2-U3C-1	8	17	22.8	6.0		6.5					
88	9596F	LW2-U5Q-3	8	17	22.7	6.0		6.4					
89	9609F	LW2-U1C-1	8	17	22.7	5.9		6.4					
95	9608F	LW2-U2C-3	8	17	22.8	6.3		6.4					
98	9606F	LW2-U2C-1	8	17	22.7	6.0		6.5					
103	9598F	LW2-U6TOC-2	8	17	22.7	6.0		6.4					
116	9607F	LW2-U2C-2	8	17	22.7	5.9		6.5					
126	9595F	LW2-U5Q-2	8	17	22.8	6.4		6.5					
134	9612F	LW2-D1-1	8	17	22.9	6.2		6.5					
141	9604F	LW2-U3C-2	8	17	22.8	6.1		6.5					
157	9610F	LW2-U1C-2	8	17	22.7	6.1		6.4					
158	9599F	LW2-U6TOC-3	8	17	22.9	6.3		6.4					

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Test Number: P686-23

Freshwater Sediment Test
28-Day Hyalella azteca

	NAS	CLIENT			Overlying water								Interstitial water	
BKR	SMPL	DESCRIP	REPL	DAY	TEMP	DO	COND	pH	HARD	ALK	NH3		NH3	pH
4	9600F	LW2-U4Q-1	8	18	22.6									
7	9594F	LW2-U5Q-1	8	18	22.4									
19	9574F	Control	8	18	22.4									
21	9597F	LW2-U6TOC-1	8	18	22.3									
23	9611F	LW2-U1C-3	8	18	22.3									
35	9602F	LW2-U4Q-3	8	18	22.2									
40	9601F	LW2-U4Q-2	8	18	22.4									
48	9613F	LW2-D2	8	18	22.3									
72	9605F	LW2-U3C-3	8	18	22.2									
79	9603F	LW2-U3C-1	8	18	22.3									
88	9596F	LW2-U5Q-3	8	18	22.2									
89	9609F	LW2-U1C-1	8	18	22.2									
95	9608F	LW2-U2C-3	8	18	22.2									
98	9606F	LW2-U2C-1	8	18	22.2									
103	9598F	LW2-U6TOC-2	8	18	22.2									
116	9607F	LW2-U2C-2	8	18	22.3									
126	9595F	LW2-U5Q-2	8	18	22.2									
134	9612F	LW2-D1-1	8	18	22.2									
141	9604F	LW2-U3C-2	8	18	22.2									
157	9610F	LW2-U1C-2	8	18	22.2									
158	9599F	LW2-U6TOC-3	8	18	22.3									
4	9600F	LW2-U4Q-1	8	19	22.5									
7	9594F	LW2-U5Q-1	8	19	22.2									
19	9574F	Control	8	19	22.1									
21	9597F	LW2-U6TOC-1	8	19	22.1									
23	9611F	LW2-U1C-3	8	19	22.0									
35	9602F	LW2-U4Q-3	8	19	22.1									
40	9601F	LW2-U4Q-2	8	19	22.3									
48	9613F	LW2-D2	8	19	22.1									
72	9605F	LW2-U3C-3	8	19	22.1									
79	9603F	LW2-U3C-1	8	19	22.2									
88	9596F	LW2-U5Q-3	8	19	22.1									
89	9609F	LW2-U1C-1	8	19	22.2									
95	9608F	LW2-U2C-3	8	19	22.3									
98	9606F	LW2-U2C-1	8	19	22.2									
103	9598F	LW2-U6TOC-2	8	19	22.1									
116	9607F	LW2-U2C-2	8	19	22.1									
126	9595F	LW2-U5Q-2	8	19	22.2									
134	9612F	LW2-D1-1	8	19	22.4									
141	9604F	LW2-U3C-2	8	19	22.2									
157	9610F	LW2-U1C-2	8	19	22.3									
158	9599F	LW2-U6TOC-3	8	19	22.4									

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Test Number: P686-23

Freshwater Sediment Test
28-Day Hyalella azteca

	NAS	CLIENT			Overlying water							Interstitial water	
BKR	SMPL	DESCRIP	REPL	DAY	TEMP	DO	COND	pH	HARD	ALK	NH3	NH3	pH
4	9600F	LW2-U4Q-1	8	20	22.2	6.2		6.5					
7	9594F	LW2-U5Q-1	8	20	22.0	6.2		6.5					
19	9574F	Control	8	20	22.0	5.8		6.4					
21	9597F	LW2-U6TOC-1	8	20	22.0	6.2		6.4					
23	9611F	LW2-U1C-3	8	20	22.0	6.0		6.4					
35	9602F	LW2-U4Q-3	8	20	22.1	6.2		6.3					
40	9601F	LW2-U4Q-2	8	20	22.1	6.4		6.4					
48	9613F	LW2-D2	8	20	22.0	6.6		6.7					
72	9605F	LW2-U3C-3	8	20	22.3	5.7		6.7					
79	9603F	LW2-U3C-1	8	20	22.3	5.8		6.6					
88	9596F	LW2-U5Q-3	8	20	22.0	6.0		6.4					
89	9609F	LW2-U1C-1	8	20	22.1	6.0		6.4					
95	9608F	LW2-U2C-3	8	20	22.3	6.3		6.5					
98	9606F	LW2-U2C-1	8	20	22.1	6.0		6.5					
103	9598F	LW2-U6TOC-2	8	20	22.0	5.8		6.6					
116	9607F	LW2-U2C-2	8	20	22.1	6.0		6.6					
126	9595F	LW2-U5Q-2	8	20	22.2	6.4		6.6					
134	9612F	LW2-D1-1	8	20	22.3	6.4		6.6					
141	9604F	LW2-U3C-2	8	20	22.2	6.2		6.6					
157	9610F	LW2-U1C-2	8	20	22.3	6.2		6.5					
158	9599F	LW2-U6TOC-3	8	20	22.4	6.5		6.6					
4	9600F	LW2-U4Q-1	8	21	22.8								
7	9594F	LW2-U5Q-1	8	21	22.7								
19	9574F	Control	8	21	22.6								
21	9597F	LW2-U6TOC-1	8	21	22.7								
23	9611F	LW2-U1C-3	8	21	22.6								
35	9602F	LW2-U4Q-3	8	21	22.7								
40	9601F	LW2-U4Q-2	8	21	22.8								
48	9613F	LW2-D2	8	21	22.7								
72	9605F	LW2-U3C-3	8	21	22.6								
79	9603F	LW2-U3C-1	8	21	22.6								
88	9596F	LW2-U5Q-3	8	21	22.8								
89	9609F	LW2-U1C-1	8	21	22.8								
95	9608F	LW2-U2C-3	8	21	22.8								
98	9606F	LW2-U2C-1	8	21	22.9								
103	9598F	LW2-U6TOC-2	8	21	22.8								
116	9607F	LW2-U2C-2	8	21	22.8								
126	9595F	LW2-U5Q-2	8	21	22.9								
134	9612F	LW2-D1-1	8	21	23.0								
141	9604F	LW2-U3C-2	8	21	22.9								
157	9610F	LW2-U1C-2	8	21	22.9								
158	9599F	LW2-U6TOC-3	8	21	22.9								

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Test Number: P686-23

Freshwater Sediment Test
28-Day Hyalella azteca

	NAS	CLIENT			Overlying water							Interstitial water	
BKR	SMPL	DESCRIP	REPL	DAY	TEMP	DO	COND	pH	HARD	ALK	NH3	NH3	pH
4	9600F	LW2-U4Q-1	8	22	23.1	5.2	155	6.6					
7	9594F	LW2-U5Q-1	8	22	22.9	5.6	150	6.6					
19	9574F	Control	8	22	22.8	5.1	150	6.6					
21	9597F	LW2-U6TOC-1	8	22	22.9	5.8	155	6.6					
23	9611F	LW2-U1C-3	8	22	22.7	5.4	150	6.6					
35	9602F	LW2-U4Q-3	8	22	22.9	5.6	150	6.5					
40	9601F	LW2-U4Q-2	8	22	23.0	5.9	150	6.5					
48	9613F	LW2-D2	8	22	22.8	6.0	150	6.5					
72	9605F	LW2-U3C-3	8	22	22.8	5.2	155	6.6					
79	9603F	LW2-U3C-1	8	22	23.0	5.2	165	6.6					
88	9596F	LW2-U5Q-3	8	22	22.9	5.6	155	6.6					
89	9609F	LW2-U1C-1	8	22	23.0	5.8	155	6.6					
95	9608F	LW2-U2C-3	8	22	23.1	6.2	155	6.6					
98	9606F	LW2-U2C-1	8	22	23.0	5.7	155	6.6					
103	9598F	LW2-U6TOC-2	8	22	23.0	5.6	160	6.6					
116	9607F	LW2-U2C-2	8	22	23.0	6.0	155	6.7					
126	9595F	LW2-U5Q-2	8	22	23.1	6.4	150	6.7					
134	9612F	LW2-D1-1	8	22	23.1	6.2	155	6.7					
141	9604F	LW2-U3C-2	8	22	23.1	5.8	155	6.7					
157	9610F	LW2-U1C-2	8	22	23.2	5.7	150	6.7					
158	9599F	LW2-U6TOC-3	8	22	23.3	6.0	155	6.6					
4	9600F	LW2-U4Q-1	8	23	22.5								
7	9594F	LW2-U5Q-1	8	23	22.3								
19	9574F	Control	8	23	22.3								
21	9597F	LW2-U6TOC-1	8	23	22.3								
23	9611F	LW2-U1C-3	8	23	22.3								
35	9602F	LW2-U4Q-3	8	23	22.3								
40	9601F	LW2-U4Q-2	8	23	22.4								
48	9613F	LW2-D2	8	23	22.2								
72	9605F	LW2-U3C-3	8	23	22.2								
79	9603F	LW2-U3C-1	8	23	22.4								
88	9596F	LW2-U5Q-3	8	23	22.4								
89	9609F	LW2-U1C-1	8	23	22.3								
95	9608F	LW2-U2C-3	8	23	22.5								
98	9606F	LW2-U2C-1	8	23	22.5								
103	9598F	LW2-U6TOC-2	8	23	22.4								
116	9607F	LW2-U2C-2	8	23	22.4								
126	9595F	LW2-U5Q-2	8	23	22.4								
134	9612F	LW2-D1-1	8	23	22.5								
141	9604F	LW2-U3C-2	8	23	22.6								
157	9610F	LW2-U1C-2	8	23	22.8								
158	9599F	LW2-U6TOC-3	8	23	22.9								

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Test Number: P686-23

Freshwater Sediment Test
28-Day Hyalella azteca

	NAS	CLIENT			Overlying water							Interstitial water	
BKR	SMPL	DESCRIP	REPL	DAY	TEMP	DO	COND	pH	HARD	ALK	NH3	NH3	pH
4	9600F	LW2-U4Q-1	8	24	22.5	5.3		6.6					
7	9594F	LW2-U5Q-1	8	24	22.3	5.8		6.6					
19	9574F	Control	8	24	22.3	5.4		6.6					
21	9597F	LW2-U6TOC-1	8	24	22.4	5.7		6.6					
23	9611F	LW2-U1C-3	8	24	22.2	5.8		6.6					
35	9602F	LW2-U4Q-3	8	24	22.4	5.6		6.6					
40	9601F	LW2-U4Q-2	8	24	22.5	5.8		6.6					
48	9613F	LW2-D2	8	24	22.2	5.8		6.5					
72	9605F	LW2-U3C-3	8	24	22.3	5.4		6.6					
79	9603F	LW2-U3C-1	8	24	22.8	5.6		6.6					
88	9596F	LW2-U5Q-3	8	24	22.5	6.1		6.7					
89	9609F	LW2-U1C-1	8	24	22.7	5.6		6.6					
95	9608F	LW2-U2C-3	8	24	22.9	6.4		6.8					
98	9606F	LW2-U2C-1	8	24	22.7	5.8		6.8					
103	9598F	LW2-U6TOC-2	8	24	22.6	5.4		6.9					
116	9607F	LW2-U2C-2	8	24	22.7	5.8		6.8					
126	9595F	LW2-U5Q-2	8	24	22.8	6.2		6.8					
134	9612F	LW2-D1-1	8	24	23.0	5.8		6.9					
141	9604F	LW2-U3C-2	8	24	22.8	5.8		7.0					
157	9610F	LW2-U1C-2	8	24	23.2	5.2		6.8					
158	9599F	LW2-U6TOC-3	8	24	23.6	5.6		6.7					
4	9600F	LW2-U4Q-1	8	25	22.2								
7	9594F	LW2-U5Q-1	8	25	22.2								
19	9574F	Control	8	25	22.2								
21	9597F	LW2-U6TOC-1	8	25	22.2								
23	9611F	LW2-U1C-3	8	25	22.2								
35	9602F	LW2-U4Q-3	8	25	22.1								
40	9601F	LW2-U4Q-2	8	25	22.1								
48	9613F	LW2-D2	8	25	22.2								
72	9605F	LW2-U3C-3	8	25	22.2								
79	9603F	LW2-U3C-1	8	25	22.2								
88	9596F	LW2-U5Q-3	8	25	22.2								
89	9609F	LW2-U1C-1	8	25	22.2								
95	9608F	LW2-U2C-3	8	25	22.3								
98	9606F	LW2-U2C-1	8	25	22.1								
103	9598F	LW2-U6TOC-2	8	25	22.2								
116	9607F	LW2-U2C-2	8	25	22.1								
126	9595F	LW2-U5Q-2	8	25	22.2								
134	9612F	LW2-D1-1	8	25	22.3								
141	9604F	LW2-U3C-2	8	25	22.4								
157	9610F	LW2-U1C-2	8	25	22.3								
158	9599F	LW2-U6TOC-3	8	25	22.4								

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Test Number: P686-23

Freshwater Sediment Test
28-Day Hyalella azteca

	NAS	CLIENT			Overlying water							Interstitial water	
BKR	SMPL	DESCRIP	REPL	DAY	TEMP	DO	COND	pH	HARD	ALK	NH3	NH3	pH
4	9600F	LW2-U4Q-1	8	26	22.2								
7	9594F	LW2-U5Q-1	8	26	22.1								
19	9574F	Control	8	26	22.1								
21	9597F	LW2-U6TOC-1	8	26	22.1								
23	9611F	LW2-U1C-3	8	26	22.1								
35	9602F	LW2-U4Q-3	8	26	22.1								
40	9601F	LW2-U4Q-2	8	26	22.1								
48	9613F	LW2-D2	8	26	22.0								
72	9605F	LW2-U3C-3	8	26	22.0								
79	9603F	LW2-U3C-1	8	26	22.1								
88	9596F	LW2-U5Q-3	8	26	22.1								
89	9609F	LW2-U1C-1	8	26	22.1								
95	9608F	LW2-U2C-3	8	26	22.2								
98	9606F	LW2-U2C-1	8	26	22.1								
103	9598F	LW2-U6TOC-2	8	26	22.1								
116	9607F	LW2-U2C-2	8	26	22.1								
126	9595F	LW2-U5Q-2	8	26	22.3								
134	9612F	LW2-D1-1	8	26	22.3								
141	9604F	LW2-U3C-2	8	26	22.3								
157	9610F	LW2-U1C-2	8	26	22.6								
158	9599F	LW2-U6TOC-3	8	26	22.8								
4	9600F	LW2-U4Q-1	8	27	22.2	5.8		6.7					
7	9594F	LW2-U5Q-1	8	27	22.0	6.4		6.6					
19	9574F	Control	8	27	22.0	6.2		6.7					
21	9597F	LW2-U6TOC-1	8	27	22.1	6.4		6.7					
23	9611F	LW2-U1C-3	8	27	22.0	6.4		6.7					
35	9602F	LW2-U4Q-3	8	27	22.1	6.4		6.5					
40	9601F	LW2-U4Q-2	8	27	22.3	6.5		6.6					
48	9613F	LW2-D2	8	27	22.0	6.6		6.6					
72	9605F	LW2-U3C-3	8	27	22.0	6.0		6.7					
79	9603F	LW2-U3C-1	8	27	22.3	6.2		6.7					
88	9596F	LW2-U5Q-3	8	27	22.1	6.3		6.6					
89	9609F	LW2-U1C-1	8	27	22.2	6.0		6.6					
95	9608F	LW2-U2C-3	8	27	22.4	6.9		6.6					
98	9606F	LW2-U2C-1	8	27	22.3	6.4		6.7					
103	9598F	LW2-U6TOC-2	8	27	22.2	6.0		6.7					
116	9607F	LW2-U2C-2	8	27	22.3	6.6		6.8					
126	9595F	LW2-U5Q-2	8	27	22.4	7.0		6.8					
134	9612F	LW2-D1-1	8	27	22.7	6.3		6.6					
141	9604F	LW2-U3C-2	8	27	22.5	6.5		6.9					
157	9610F	LW2-U1C-2	8	27	22.9	6.1		6.7					
158	9599F	LW2-U6TOC-3	8	27	23.2	6.2		6.7					

ANC08698
BZTO104(e)008698

Test Number: P686-23

Freshwater Sediment Test
28-Day Hyalella azteca

	NAS	CLIENT			Overlying water							Interstitial water	
BKR	SMPL	DESCRIP	REPL	DAY	TEMP	DO	COND	pH	HARD	ALK	NH3	NH3	pH
4	9600F	LW2-U4Q-1	8	28	22.5	6.5	150	6.7	43	40	0.1		
7	9594F	LW2-U5Q-1	8	28	22.3	7.2	150	6.8	43	40	<0.1		
19	9574F	Control	8	28	22.3	6.7	150	6.7	34	40	<0.1		
21	9597F	LW2-U6TOC-1	8	28	22.2	7.0	150	6.7	43	40	<0.1		
23	9611F	LW2-U1C-3	8	28	22.1	7.1	145	6.7	43	40	<0.1		
35	9602F	LW2-U4Q-3	8	28	22.1	7.2	150	6.6	34	40	1.9		
40	9601F	LW2-U4Q-2	8	28	22.3	7.3	150	6.7	43	30	<0.1		
48	9613F	LW2-D2	8	28	22.1	7.2	145	6.7	51	40	<0.1		
72	9605F	LW2-U3C-3	8	28	22.1	6.8	150	6.7	51	40	<0.1		
79	9603F	LW2-U3C-1	8	28	22.1	7.1	150	6.7	43	40	<0.1		
88	9596F	LW2-U5Q-3	8	28	22.1	7.6	145	6.7	43	40	<0.1		
89	9609F	LW2-U1C-1	8	28	22.1	7.2	145	6.7	34	40	<0.1		
95	9608F	LW2-U2C-3	8	28	22.2	7.6	145	6.7	43	40	<0.1		
98	9606F	LW2-U2C-1	8	28	22.3	7.1	150	6.6	51	40	<0.1		
103	9598F	LW2-U6TOC-2	8	28	22.1	6.8	150	6.6	51	40	<0.1		
116	9607F	LW2-U2C-2	8	28	22.0	6.7	150	6.7	43	40	<0.1		
126	9595F	LW2-U5Q-2	8	28	22.0	7.9	145	6.7	51	40	<0.1		
134	9612F	LW2-D1-1	8	28	22.2	7.2	150	6.7	43	40	<0.1		
141	9604F	LW2-U3C-2	8	28	22.2	7.4	150	6.7	51	40	<0.1		
157	9610F	LW2-U1C-2	8	28	22.2	7.1	150	6.7	43	40	<0.1		
158	9599F	LW2-U6TOC-3	8	28	22.5	6.9	150	6.7	43	40	<0.1		
				Mean	22.5	6.5	157	6.5	41	40	---	---	6.3
				SD	0.3	0.6	29	0.2	6	3	---	---	0.3
				n	609	294	126	294	42	42	42	21	21
				Min	22.0	5.1	140	6.1	34	30	<0.1	<0.5	5.8
				Max	23.6	7.9	440	7.0	51	50	1.9	3.5	6.8
	Data Entry Verified												

ANC08699
BZTO104(e)008699

CHAIN-OF-CUSTODY RECORDS

Windward Environmental

CHAIN-OF-CUSTODY/TEST REQUEST FORM

1364

Project/Client Name: Portland RI/FS
Windward Project No:
Contact Name: Helle Andersen
Sampled By: Angelita Rodriquez

Ship to: Northwestern Aquatic Science
Attn: Gerald Irissarri
Shipoing address: Newport OR

Shipping Date: 11/6/04
Airbill Number:

Sample Collection Date (m/d/y)	Time	Sample Identification	Volume of Sample / # of Containers	Matrix	Test(s) Requested (check test(s) required)							Comments / Instructions (Jar tag number(s))
					Hyalella	Chironomid						
11/4/04	1143	LW2-U5Q-1	1L/4	Sed	X	X			NAS#	9594F		
	1201	LW2-U5Q-2			X	X				9595F		INTERNAL ICE CHEST
	1216	LW2-U5Q-3			X	X				9596F		TEMP AT LAB
	1318	LW2-U6TOC-1			X	X				9597F		RECEIPT:
	1331	LW2-U6TOC-2			X	X				9598F		#1 2.5 °C
	1343	LW2-U6TOC-3			X	X				9599F		#2 0.0°C
	1443	LW2-U4Q-1			X	X				9600F		#3 0.0°C
	1502	LW2-U4Q-2			X	X				9601F		#4 0.0°C
	1515	LW2-U4Q-3			X	X				9602F		#5 0.0°C
	1548	LW2-U3C-1			X	X				9603F		#6 0.0°C
	1607	LW2-U3C-2			X	X				9604F		
	1641	LW2-U3C-3			X	X				9605F		
										~~9606F~~ CJZ 11-6-04		
Total Number of Containers			48	Purchase Order / Statement of Work #								

1) Released by:
Print name: ANGELITA RODRIQUEZ
Signature: Angelita RA
Company: Windward Environmental
Date/Time: 11/6/04

1) Rec'd by: Gerald Irissarri
GERALD IRISSARRI
Company: NORTHWESTERN AQUATIC SCIENCES
Date/Time: 11-6-04 1240

2) Released by:
Print name:
Signature:
Company:
Date/Time:

1) Rec'd by:
Company:
Date/Time:

* Distribution: White and yellow copies accompany shipment; pink-consignor's copy; white-consignee return with results; yellow-consignee's copy.
* Instructions for completion of Chain-of-Custody/Test Request Form on back.

To be completed by Laboratory upon sample receipt:

Date of receipt:	Laboratory W.O. #:
Condition upon receipt:	Time of receipt:
Cooler temperature:	Received by:

Wind Ward environmental LLC
200 West Mercer Street
Suite 401
Seattle, WA 98119
Tel: 206.378.1364
Fax: 206.217.0089

ANC08701
BZTO104(e)008701

2 of 2

Windward Environmental

CHAIN-OF-CUSTODY/TEST REQUEST FORM

1336

Project/Client Name: Portland R1/FS
Windward Project No:
Contact Name: Helle Andersen
Sampled By: Angelita Rodriguez

Ship to: Northwestern Aquatic Science
Attn: Gerald Irissarri
Shipping address: Newport OR

Shipping Date: 11/6/04
Airbill Number:

Sample Collection Date (m/d/y)	Time	Sample Identification	Volume of Sample / # of Containers	Matrix	Test(s) Requested (check test(s) required)							Comments / Instructions [Jar tag number(s)]
					Hyalella	CHIRONOMID						
11/5/04	0902	LW2-U2C-1	1L/4	Sed	X	X			NAS#	9606F		
11/5/04	0917	LW2-U2C-2	1L/4	Sed	X	X				9607F		
11/5/04	0939	LW2-U2C-3	1L/4	Sed	X	X				9608F		
11/5/04	1020	LW2-U1C-1	1L/4	Sed	X	X				9609F		
11/5/04	1059	LW2-U1C-2	1L/4	Sed	X	X				9610F		
11/5/04	1114	LW2-U1C-3	1L/4	Sed	X	X				9611F		
11/5/04	1446	LW2-D1-1	1L/4	Sed	X	X				9612F		
11/5/04	1543	LW2-D2	1L/4	Sed	X	X				9613F		
~~11/5/04~~												

Total Number of Containers: 24
Purchase Order / Statement of Work #:

1) Released by:	1) Rec'd by:	2) Released by:	1) Rec'd by:
Print name: Angelita Rodriguez	GERALD IRISSARRI	Print name:	
Signature: Angelita Rodriguez		Signature:	
Company: Windward Environmental	Company: NORTHWESTERN AQUATIC SCIENCES	Company:	Company:
Date/Time: 11/6/04	Date/Time: 11-6-04 1240	Date/Time:	Date/Time:

* Distribution: White and yellow copies accompany shipment; pink-consignor's copy; white-consignee return with results; yellow-consignee's copy.
* Instructions for completion of Chain-of-Custody/Test Request Form on back.

Wind Ward environmental LLC
• 200 West Mercer Street
Suite 401
Seattle, WA 98119
Tel: 206.378.1364
Fax: 206.217.0089

To be completed by Laboratory upon sample receipt:

Date of receipt:	Laboratory W.O. #
Condition upon receipt:	Time of receipt:
Cooler temperature:	Received by:

ANC08702
BZTO104(e)008702

APPENDIX II

RAW DATA – REFERENCE TOXICANT TEST

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS- _____

ACUTE TOXICITY TEST (ALL SPECIES)

REVIEWED PAGES 1-6 JDS

Test No. 999-1869 Client: QC Test Investigator _____

Test Type (rangefinding/definitive) _____ Test Length (hr) 96

Species *Hyalella azteca*

STUDY MANAGEMENT

Client: QC test

Client's Study Monitor: QC test

Testing Laboratory: Northwestern Aquatic Sciences

Test Location: Newport Laboratory

Laboratory's Study Personnel:

Proj. Man./Study Dir. G.J. Irissarri GJI

QA Officer L. K. Nemeth

1. GA Burton GAB 2. M.S. Redmond MSR

3. G.C. Hayes GCH 4. B.B. Prideaux BBP

Test Beginning: 11-9-04 11:30 Test Ending: 11-13-04 1215 Susan Cage SJC

TEST MATERIAL Lot No.: MALINCKRODT TNZ

Description: Cadmium as $CdCl_2 \cdot 2.5H_2O$ (1.0 mg/ml) Prepared: 7-13-04

NAS Sample No.				
Date of Collection:				
Date of Receipt:				
Temperature (deg C):				
Dissolved oxygen (mg/L):				
pH:				
Conductivity (umhos/cm):				
Hardness (mg/L):				
Alkalinity (mg/L):				
Salinity (ppt):				
Total chlorine (mg/L):				
Total ammonia-N (mg/L):				
_____:				

DILUTION WATER

Description: Moderately hard synthetic water

Date of Preparation/Collection: 11-8-04

Water Quality: Cond. (umhos/cm): 305 Salinity (ppt) _____ pH 7.8

Hardness (mg/L as $CaCO_3$): 85 Alkalinity (mg/L as $CaCO_3$): 70

Treatments: Aerated ≥ 24 hrs

TEST LOCATION

Test conducted in (circle one): room 1 (room 2) trailer water bath other: _____

Randomization chart:

30	7.5	60	∅	15	3.75				
15	∅	3.75	30	7.5	60				

Error codes: 1) Correction of handwriting error
2) Written in wrong location; entry deleted
3) Wrong date deleted; replaced with correct date

ANC08704
BZTO104(e)008704

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-_____

ACUTE TOXICITY TEST (ALL SPECIES)

Test No. 999-1869 Client QC Test Investigator _____

TEST ORGANISMS

Species: *Hyalella azteca* Age: 7-8 DAYS Size: ~~11~~ 621

Source: Chesapeake Cultures, Hayes, VA Date received: 11-5-04

Acclimation Data:

Date	Temp. (deg.C)	DO (mg/L)	pH	Cond. umhos/cm	Hardness (mg/L)	Alkalinity (mg/L)	Feeding * Amount	Feeding * description	Water changes
11-5-04	18.3	>15.0	7.5	375	137	160	10 mL	YTC	YES
11-6-04	22.3	5.3	7.4	310	94	120	"	"	"
11-7-04	22.0	8.4	7.2	220	68	90	"	"	"
11-8-04	22.1	8.5	7.3	205	51	70	"	"	"
11-9-04	22.3	8.4	7.5	200	51	60	"	"	←
Mean	21.4	9.7	7.4	262	80	100			
S.D.	1.7	3.0	0.1	77	36	41			
(N)	5	5	5	5	5	5			

Photoperiod during acclimation: 16:8, L:D

* ANIMALS WERE DIVIDED INTO 3 PANS, FEEDING IS PER PAN.

TEST PROCEDURES AND CONDITIONS

Test concentrations (50% series recommended): 60, 30, 15, 7.5, 3.75, 0 ug/L

Test chamber: 250 ml glass beakers Test volume: 100 ml

Replicates/treatment: 10 Organisms/treatment: 20 (10/rep)

Test water changes: None Aeration during test: None

Feeding: 0.5 ml YTC suspension per beaker on days 0 and 2

Duration: 24-hr, 48-hr, (96-hr) Test temperature (deg.C): (23 ± 1) or 20 ± 1

Beaker placement: Stratified randomization Photoperiod: 16:8, L:D

MISCELLANEOUS NOTES

Test solution preparation:

1st working stock made by 1:99 (1ml ↑ 100 ml) dilution of concentrated 1.0 mg/ml Cd stock.
Final conc.: 10 ug/L.

2nd working stock made by 10:90 (10ml ↑ 100 ml) dilution of concentrated 1st working stock.
Final conc.: 1ug/L.

Test concentration (ug/L)	ml of 2nd working stock per **200** ml	Dilution water
60	12	Brought up to final volume of 200 ml with dilution water and distributed evenly between two replicates
30	6	
15	3	
7.5	1.5	
3.75	0.75	
0	0	

621 11-9-04

ANC08705
BZTO104(e)008705

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-_____

ACUTE TOXICITY TEST (ALL SPECIES)

Test No. 999-1869 Client QC Test

DAILY RECORD SHEET

Day 0 (11/9/04) SB/MLR

Conc. (ug/L)	Temp. (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	Survivors A	Survivors B
1. 60	22.7	8.8	290	7.8	85	70	10	10
2. 30	22.7	8.8	300	7.8			10	10
3. 15	22.6	8.8	310	7.8			10	10
4. 7.5	22.6	8.8	310	7.8			10	10
5. 3.75	22.6	8.9	310	7.8			10	10
6. 0	22.7	8.8	330	7.8	85	70	10	10
All animals fed 0.5 ml YTC suspension. Initials: GJ1								

Day 1 (11/10/04) [illegible]/GJ1

Conc. (ug/L)	Temp. (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	Survivors A	Survivors B
1. 60	23.0	7.6	295	7.3			10	10
2. 30	22.9	7.4	300	7.3			10	10
3. 15	23.1	7.6	310	7.3			10	10
4. 7.5	23.0	7.6	310	7.3			10	10
5. 3.75	23.2	7.6	315	7.3			10	10
6. 0	23.2	7.3	~~355~~ 345	7.2			10	10

Day 2 (11 / 11 /04) BBP

Conc. (ug/L)	Temp. (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	Survivors A	Survivors B
1. 60	23.1	7.1	305	7.5			Ø (10D)	Ø (10D)
2. 30	23.1	7.0	310	7.5			Ø (10D)	Ø (10D)
3. 15	23.1	6.7	315	7.5			7 (3D)	4 (6D)
4. 7.5	23.2	7.1	320	7.5			8 (2D)	7 (3D)
5. 3.75	23.1	7.0	325	7.4			10	9 (1D)
6. 0	23.0	6.7	350	7.4			10	10
All animals fed 0.5 ml YTC suspension. Initials: GJ1								

Day 3 (11 /12 /04) [illegible]

Conc. (ug/L)	Temp. (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	Survivors A	Survivors B
1. 60	~~23.3~~	—	~~310~~	~~7.2~~			Ø	Ø
2. 30	~~23.2~~	—	~~310~~	~~7.2~~			Ø	Ø
3. 15	23.4	7.8	320	7.2			Ø (7D)	Ø (4D)
4. 7.5	23.2	7.8	320	7.3			4 (4D)	3 (4D)
5. 3.75	23.6	7.8	325	7.2			9 (1D)	9
6. 0	23.4	7.4	355	7.1			10	10

Day 4 (11 /13 /04) GJ1

Conc. (ug/L)	Temp. (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	Survivors A	Survivors B
1. 60	—	—	—	—	—	—	Ø	Ø
2. 30	—	—	—	—			Ø	Ø
3. 15	—	—	—	—			Ø	Ø
4. 7.5	23.1	7.9	320	7.7			Ø (4D)	2 (1D)
5. 3.75	23.2	7.8	325	7.6			9	8 (1D)
6. 0	23.1	7.8	340	7.6	94	80	9 (1D)	10
Mean	23.0	7.8	318	7.5	88	73		
SD	0.3	0.7	16	0.2	5	6		
n	25	25	25	25	3	3		

Revised 12-5-01

ANC08706

BZTO104(e)008706

Acute 96-hr Toxicity Test 96 Hr Survival

Start Date:	11/9/04 11:30	Test ID:	999-1869	Sample ID:	REF-Ref Toxicant
End Date:	11/13/04 12:15	Lab ID:	ORNAS-Northwestern Aquati	Sample Type:	CDCL-Cadmium chloride
Sample Date:		Protocol:	EPAF 91-EPA Freshwater	Test Species:	HA-Hyalella azteca
Comments:					

Conc-ug/L	1	2
D-Control	0.9000	1.0000
3.75	0.9000	0.8000
7.5	0.0000	0.2000
15	0.0000	0.0000
30	0.0000	0.0000
60	0.0000	0.0000

			Transform: Arcsin Square Root					Number	Total
Conc-ug/L	Mean	N-Mean	Mean	Min	Max	CV%	N	Resp	Number
D-Control	0.9500	1.0000	1.3305	1.2490	1.4120	8.661	2	1	20
3.75	0.8500	0.8947	1.1781	1.1071	1.2490	8.517	2	3	20
7.5	0.1000	0.1053	0.3112	0.1588	0.4636	69.269	2	18	20
15	0.0000	0.0000	0.1588	0.1588	0.1588	0.000	2	20	20
30	0.0000	0.0000	0.1588	0.1588	0.1588	0.000	2	20	20
60	0.0000	0.0000	0.1588	0.1588	0.1588	0.000	2	20	20

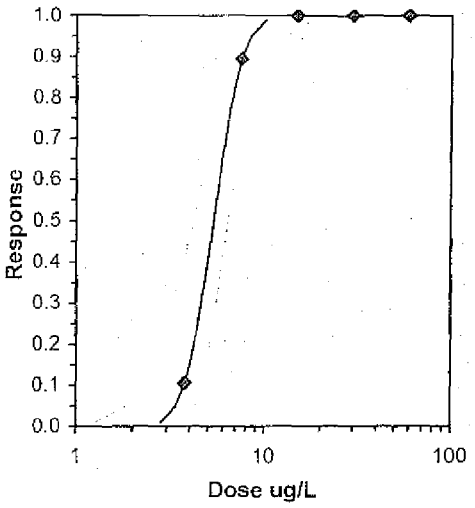
Auxiliary Tests	Statistic	Critical	Skew	Kurt
Normality of the data set cannot be confirmed				
Bartlett's Test indicates equal variances (p = 0.78)	0.48981	9.21035		

Maximum Likelihood-Probit

Parameter	Value	SE	95% Fiducial Limits		Control	Chi-Sq	Critical	P-value	Mu	Sigma	Iter
Slope	8.33083	2.1166	4.1823	12.4794	0.05	0.00166	7.81472	1	0.72454	0.12004	3
Intercept	-1.036	1.62273	-4.2165	2.14458							
TSCR	0.05006	0.04874	-0.0455	0.14559							

Point	Probits	ug/L	95% Fiducial Limits	
EC01	2.674	2.78798	1.27411	3.71788
EC05	3.355	3.36584	1.8331	4.26457
EC10	3.718	3.72137	2.21856	4.60222
EC15	3.964	3.98222	2.51851	4.85451
EC20	4.158	4.20252	2.78117	5.07287
EC25	4.326	4.40121	3.0238	5.27571
EC40	4.747	4.94452	3.70112	5.87415
EC50	5.000	5.30316	4.14377	6.32062
EC60	5.253	5.68782	4.59794	6.86231
EC75	5.674	6.38996	5.34031	8.05212
EC80	5.842	6.69206	5.62332	8.64646
EC85	6.036	7.06227	5.94459	9.43845
EC90	6.282	7.55731	6.33899	10.5987
EC95	6.645	8.35559	6.91485	12.6902
EC99	7.326	10.0874	8.01679	18.0638

Significant heterogeneity detected (p < 0.01)

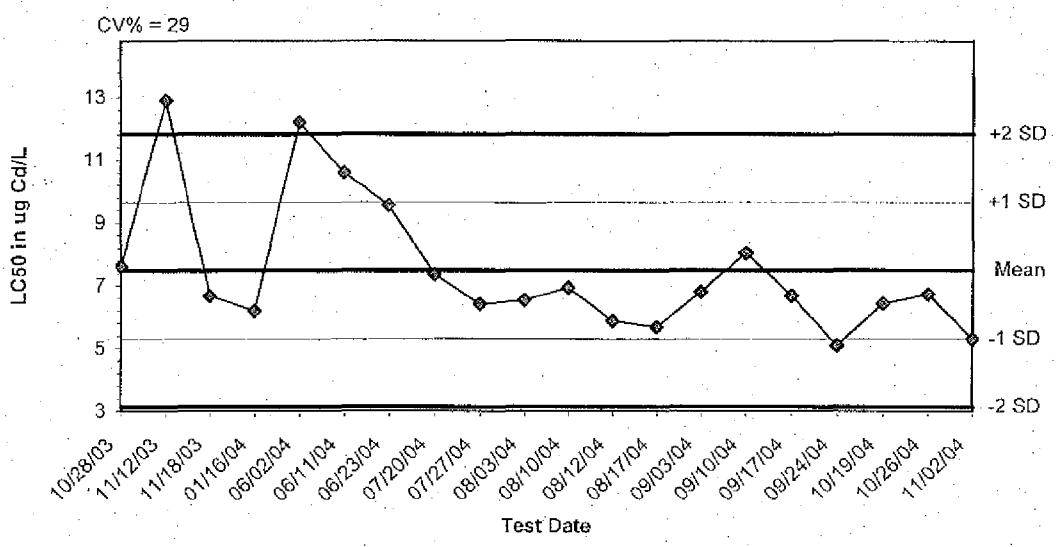


ANC08707
BZTO104(e)008707

Test: AT-Acute 96-hr Toxicity Test							Test ID: 999-1869		
Species: HA-Hyalella azteca							Protocol: EPAF 91-EPA Freshwater		
Sample ID: REF-Ref Toxicant							Sample Type: CDCL-Cadmium chloride		
Start Date: 11/9/04 11:30			End Date: 11/13/04 12:15				Lab ID: ORNAS-Northwestern Aquatic Sciences		
Pos	ID	Rep	Group	Start	24 Hr	48 Hr	72 Hr	96 Hr	Notes
	1	1	D-Control	10				9	
	2	2	D-Control	10				10	
	3	1	3.750	10				9	
	4	2	3.750	10				8	
	5	1	7.500	10				0	
	6	2	7.500	10				2	
	7	1	15.000	10				0	
	8	2	15.000	10				0	
	9	1	30.000	10				0	
	10	2	30.000	10				0	
	11	1	60.000	10				0	
	12	2	60.000	10				0	

Comments: Data entry verified against laboratory bench sheets.
TSK 11-22-04

Hyalella azteca 96-hr reference toxicant test - last 20 points



Dates	Values	Mean	-1 SD	-2 SD	+1 SD	+2 SD
10/28/03	7.6200	7.4800	5.3073	3.1346	9.6527	11.8254
11/12/03	12.9000	7.4800	5.3073	3.1346	9.6527	11.8254
11/18/03	6.6700	7.4800	5.3073	3.1346	9.6527	11.8254
01/16/04	6.1900	7.4800	5.3073	3.1346	9.6527	11.8254
06/02/04	12.2000	7.4800	5.3073	3.1346	9.6527	11.8254
06/11/04	10.6000	7.4800	5.3073	3.1346	9.6527	11.8254
06/23/04	9.5600	7.4800	5.3073	3.1346	9.6527	11.8254
07/20/04	7.3500	7.4800	5.3073	3.1346	9.6527	11.8254
07/27/04	6.4100	7.4800	5.3073	3.1346	9.6527	11.8254
08/03/04	6.5300	7.4800	5.3073	3.1346	9.6527	11.8254
08/10/04	6.9300	7.4800	5.3073	3.1346	9.6527	11.8254
08/12/04	5.8800	7.4800	5.3073	3.1346	9.6527	11.8254
08/17/04	5.6800	7.4800	5.3073	3.1346	9.6527	11.8254
09/03/04	6.8000	7.4800	5.3073	3.1346	9.6527	11.8254
09/10/04	8.0300	7.4800	5.3073	3.1346	9.6527	11.8254
09/17/04	6.6900	7.4800	5.3073	3.1346	9.6527	11.8254
09/24/04	5.1000	7.4800	5.3073	3.1346	9.6527	11.8254
10/19/04	6.4300	7.4800	5.3073	3.1346	9.6527	11.8254
10/26/04	6.7300	7.4800	5.3073	3.1346	9.6527	11.8254
11/02/04	5.3000	7.4800	5.3073	3.1346	9.6527	11.8254

msR
11-10-04

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Report

of

Test No. 686-24

Toxicity of Portland Harbor RI/FS Freshwater Test Sediments (Batch 12) using a 10-day Midge, *Chironomus tentans*, Sediment Bioassay

Submitted to

Windward Environmental, Inc.
200 West Mercer Street, Suite 401
Seattle, WA 98119

Submitted by

Northwestern Aquatic Sciences
3814 Yaquina Bay Road
P.O. Box 1437
Newport, OR 97365

January 19, 2005

TOXICITY TEST REPORT

TEST IDENTIFICATION

Test No.: 686-24

Title: Toxicity of Portland Harbor RI/FS freshwater test sediments (batch 12) using a 10-day midge, *Chironomus tentans*, sediment bioassay.

Protocol No.: NAS-686-CT4b, June 24, 2004. Based on ASTM 2003, Standard Method No. E 1706-00 and U.S. EPA Method 100.2 (EPA/600/R-99/064, 2000) This protocol can be found in Appendix B of the Portland Harbor RI/FS Round 2 Quality Assurance Project Plan, June 24, 2004.

STUDY MANAGEMENT

Study Sponsor: Windward Environmental, Inc., 200 West Mercer Street, Suite 401, Seattle, WA 98119.

Sponsor's Study Monitor: Ms. Helle Andersen

Testing Laboratory: Northwestern Aquatic Sciences, P.O. Box 1437, Newport, OR 97365

Test Location: Newport laboratory

Laboratory's Study Personnel: G.J. Irissarri, B.S., Proj. Man./Study Dir.; L.K. Nemeth, B.S., M.B.A., QA Officer; R.S. Caldwell, PhD, Sr. Toxicol; G.A. Buhler, B.S., Aq. Toxicol.; W.T. Montgomery, A.A., Sr. Tech.; G. Hayes, B.S., Tech.; S.J. Gage, B.A., Tech.; B.B. Pridgeon, Lab Assist.

Study Schedule:

Test Beginning: 11-9-04, 1200 hrs.

Test Ending: 11-19-04, 1330 hrs.

Disposition of Study Records: All specimens, raw data, reports and other study records are stored according to Good Laboratory Practice regulations at Northwestern Aquatic Sciences, 3814 Yaquina Bay Rd., Newport, OR 97365.

Good Laboratory Practices: The test was conducted following the principles of Good Laboratory Practices (GLP) as defined in the EPA/TSCA Good Laboratory Practice regulations revised August 17, 1989 (40 CFR Part 792).

Statement of Quality Assurance: The test data were reviewed by the Quality Assurance Unit to assure that the study was performed in accordance with the protocol and standard operating procedures. This report is an accurate reflection of the raw data.

TEST MATERIAL

Test Sediments: Portland Harbor RI/FS freshwater test sediments (Batch 12). Details are as follows:

NAS Sample No.	9594F	9595F	9596F	9597F	9598F
Description	LW2-U5Q-1	LW2-U5Q-2	LW2-U5Q-3	LW2-U6TOC-1	LW2-U6TOC-2
Collection Date	11/4/04	11/4/04	11/4/04	11/4/04	11/4/04
Receipt Date	11/6/04	11/6/04	11/6/04	11/6/04	11/6/04

NAS Sample No.	9599F	9600F	9601F	9602F	9603F
Description	LW2-U6TOC-3	LW2-U4Q-1	LW2-U4Q-2	LW2-U4Q-3	LW2-U3C-1
Collection Date	11/4/04	11/4/04	11/4/04	11/4/04	11/4/04
Receipt Date	11/6/04	11/6/04	11/6/04	11/6/04	11/6/04

NAS Sample No.	9604F	9605F	9606F	9607F	9608F
Description	LW2-U3C-2	LW2-U3C-3	LW2-U2C-1	LW2-U2C-2	LW2-U2C-3
Collection Date	11/4/04	11/4/04	11/5/04	11/5/04	11/5/04
Receipt Date	11/6/04	11/6/04	11/6/04	11/6/04	11/6/04

NAS Sample No.	9609F	9610F	9611F	9612F	9613F
Description	LW2-U1C-1	LW2-U1C-2	LW2-U1C-3	LW2-D1-1	LW2-D2
Collection Date	11/5/04	11/5/04	11/5/04	11/5/04	11/5/04
Receipt Date	11/6/04	11/6/04	11/6/04	11/6/04	11/6/04

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Control Sediment: The negative control sediment (NAS#9474F) was collected on 10-28-04 from an area approximately one mile east of the Hwy. 101 bridge at Beaver Creek, approx. 8 miles south of Newport, OR.
Treatments: Homogenized at test set up by mixing using stainless steel implements.
Storage: All test and control sediments were stored at 4°C in the dark in capped containers until used.

TEST WATER

Source: Dechlorinated Newport, OR tap water.
Dates of Collection: Eight batches of test water were collected between 11/6/04 and 11/17/04
Water Quality (mean ± SD):
pH: 7.0 ± 0.2 (n=8)
conductivity: 151 ± 2 µmhos/cm (n=8)
hardness: 34 ± 0 mg/L as $CaCO_3$ (n=8)
alkalinity: 39 ± 4 mg/L as $CaCO_3$. (n=8)
chlorine: All batches were below 0.02 mg/L.
Pretreatment: Dechlorinated and aerated ≥24 hr.

TEST ORGANISMS

Species: *Chironomus tentans*, midge.
Size: 3rd instar, mean initial wt: 0.12 ± 0.00 mg
Source: NAS cultures, originally obtained from EPA, Duluth, MN.
Acclimation: Holding conditions prior to testing averaged: temperature, 22.8 ± 0.4°C; dissolved oxygen, 8.0 ± 0.3 mg/L; pH, 7.4 ± 0.3; conductivity, 280 ± 11 µmhos/cm; hardness, 91 ± 10 mg/L as $CaCO_3$; and alkalinity, 73 ± 6 mg/L as $CaCO_3$.

TEST PROCEDURES AND CONDITIONS

The following is an abbreviated statement of the test procedures and a statement of the test conditions actually employed. See the test protocol for a more detailed description of the test procedures used in this study.

Test Chambers: 300 ml high-form glass beakers
Test Volumes: 100 ml sediment layer; 175 ml test water.
Replicates/Treatment: 8
Organisms/Treatment: 80
Water Volume Changes: 2 water volumes per day
Aeration: None.
Feeding: Animals were fed 1.5 ml of Prime Tropical Flakes suspension (1.5 ml contains 6 mg dry solids) per beaker daily.
Effects Criteria: 1) survival after 10 days, and 2) average individual biomass (based on ash-free dry weight) after 10 days. Death is defined as no visible movement or response to tactile stimulation. Missing organisms were considered to be dead.
Water Quality and Other Test Conditions: The temperature, dissolved oxygen, conductivity, pH, hardness, alkalinity and ammonia-nitrogen were measured in the overlying water of one replicate test container per treatment on days 0 and 10 of the test. Temperature and dissolved oxygen were measured daily in the overlying water of one replicate test container per treatment. Interstitial ammonia was measured in the bulk sediment. Hardness and alkalinity were measured with titrimetric methods. Interstitial water samples were obtained by centrifugation, or by settling in the case of very sandy sediments. Total ammonia-N was measured using Hach reagents based on the salicylate (Clin. Chim. Acta 14:403, 1996) colorimetric method; samples were not distilled prior to analysis. The photoperiod was 16:8, L:D.

DATA ANALYSIS METHODS

Survival and individual biomass were calculated for each replicate as follows:

percent survival = 100 x (number surviving/initial number tested)
average individual ash-free dry wt. = (final wt. – ashed dry wt.)/number weighed,
where:

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ash-free dry wt. = dry weight of organisms recovered on day 10 – ashed dry weight, in mg

Means and standard deviations for the biological endpoints described above, and for water quality data, were computed using Microsoft Excel 2000.

PROTOCOL DEVIATIONS

None

REFERENCE TOXICANT TEST

The reference toxicant test is a multi-concentration toxicity test using potassium chloride, to evaluate the performance of the test organisms used in the sediment toxicity test. The performance is evaluated by comparing the results of this test with historical results obtained at the laboratory. A summary of the reference toxicant test result is given below. The reference toxicant test raw data are found in Appendix II.

Test No.: 999-1870
Reference Toxicant and Source: Potassium chloride (Fisher, Lot No. 020865A).
Test Date: 11-9-04
Dilution Water Used: Moderately hard synthetic water prepared from Milli-Q® deionized water.
Result: 96-hr LC50, 3.93 g/L. This result is within the laboratory's control chart warning limits (3.08 to 7.19 g/L).

TEST RESULTS

Observations of water quality in the overlying water throughout the test are summarized in Table 1. A detailed tabulation of the water quality results by sample and test day can be found in Appendix I. Interstitial ammonia and pH measurements are listed in Table 2. The means and standard deviations of percent mortality and growth (ash-free dry weight) of midges exposed for 10 days to sediments are summarized in Table 3. Detailed data organized by sample and replicate, and summary statistics for these observations, are given in Appendix I.

All water quality observations of overlying water temperature and dissolved oxygen were within the protocol specified ranges. Ammonia-N in the overlying water ranged from 0.1 to 0.5 mg/L in all day 0 and day 10 observations. Interstitial bulk sediment values for ammonia-N ranged from <0.5 to 3.5 mg/L.

The test met the survival and weight acceptability criteria specified in the test protocol with 85.0% mean control survival (≥70% required) and a control individual mean ash-free dry weight of 1.05 mg per larvae (0.48 mg required). The reference toxicant (positive control) result was within the laboratory's control chart limits (3.93 g/L; control chart mean ± 2 S.D. = 5.13 ± 2.06). It is concluded, therefore, that the test has developed fully acceptable data for use in making management decisions.

REFERENCES

ASTM. 2003. Standard Test Methods for Measuring the Toxicity of Sediment-Associated Contaminants with Fresh Water Invertebrates. ASTM Standard Method No. E 1706-00. Am. Soc. Test. Mat., West Conshohocken, PA.

U.S. EPA. 2000. Section 12, Test Method 100.2, *Chironomus tentans* 10-d Survival and Growth Test for Sediments, pp 55-62 In: Methods for Measuring the Toxicity and Bioaccumulation of Sediment-associated Contaminants with Freshwater Invertebrates (Second Edition). EPA/600/R-99/064.

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BZTO104(e)008713

STUDY APPROVAL

Gerald Amidon 1-21-05
Project Manager/Study Director Date

Linda K. Nemeth 1/20/05
Quality Assurance Unit Date

Richard S. Caldwell 1/21/05
Laboratory Director Date

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Table 1. Summary of water quality conditions during tests of the midge, *Chironomus tentans*, exposed to freshwater sediments.

Water Quality Parameter	Mean ± S.D.	Minimum	Maximum	N
Temperature (°C)	22.6 ± 0.2	22.1	23.0	231
Dissolved oxygen (mg/L)	5.7 ± 0.9	3.6	7.9	231
Conductivity (µmhos/cm)	161 ± 42	140	425	42
pH	6.3 ± 0.3	6.0	6.8	42
Hardness (mg/L as $CaCO_3$)	38 ± 5	34	51	42
Alkalinity (mg/L as $CaCO_3$)	40 ± 2	40	50	42
Total ammonia (mg/L)	0.3 ± 0.1	0.1	0.5	42

Table 2. Pore water ammonia-N and pH in bulk test sediments at the time of test setup.

NAS Sample No.	Sample Description	Ammonia (mg/L)	pH
9574F	Control	2.3	6.6
9594F	LW2-U5Q-1	<0.5	6.8
9595F	LW2-U5Q-2	<0.5	6.5
9596F	LW2-U5Q-3	0.5	6.5
9597F	LW2-U6TOC-1	1.5	6.4
9598F	LW2-U6TOC-2	2.6	6.0
9599F	LW2-U6TOC-3	1.9	5.8
9600F	LW2-U4Q-1	2.0	6.0
9601F	LW2-U4Q-2	2.2	6.1
9602F	LW2-U4Q-3	1.9	6.2
9603F	LW2-U3C-1	3.5	6.5
9604F	LW2-U3C-2	2.2	6.7
9605F	LW2-U3C-3	1.3	6.7
9606F	LW2-U2C-1	1.4	6.6
9607F	LW2-U2C-2	1.1	6.3
9608F	LW2-U2C-3	0.6	6.2
9609F	LW2-U1C-1	1.3	6.3
9610F	LW2-U1C-2	1.1	6.1
9611F	LW2-U1C-3	0.5	6.0
9612F	LW2-D1-1	1.7	6.2
9613F	LW2-D2	1.1	6.3

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Table 3. Mortality and growth[1] results of *Chironomus tentans* 10-day sediment toxicity test

Sample description		Average percent mortality (Mean ± SD)	Average ash-free dry wt/midge (mg)[1] (Mean ± SD)
9574F	Control	15.0 ± 13.1	1.05 ± 0.10
9594F	LW2-U5Q-1	12.5 ± 4.6	1.14 ± 0.10
9595F	LW2-U5Q-2	22.5 ± 20.5	1.20 ± 0.21
9596F	LW2-U5Q-3	6.3 ± 7.4	1.14 ± 0.12
9597F	LW2-U6TOC-1	5.0 ± 7.6	1.09 ± 0.11
9598F	LW2-U6TOC-2	12.5 ± 13.9	1.23 ± 0.17
9599F	LW2-U6TOC-3	11.3 ± 13.6	1.12 ± 0.16
9600F	LW2-U4Q-1	6.3 ± 7.4	1.09 ± 0.05
9601F	LW2-U4Q-2	6.3 ± 7.4	1.25 ± 0.44
9602F	LW2-U4Q-3	8.8 ± 11.3	1.11 ± 0.09
9603F	LW2-U3C-1	10.0 ± 14.1	1.29 ± 0.13
9604F	LW2-U3C-2	11.3 ± 11.3	1.31 ± 0.16
9605F	LW2-U3C-3	3.8 ± 5.2	1.26 ± 0.12
9606F	LW2-U2C-1	11.3 ± 13.6	1.35 ± 0.18
9607F	LW2-U2C-2	10.0 ± 10.7	1.18 ± 0.39
9608F	LW2-U2C-3	11.3 ± 9.9	1.19 ± 0.09
9609F	LW2-U1C-1	5.0 ± 7.6	1.19 ± 0.12
9610F	LW2-U1C-2	11.3 ± 9.9	1.20 ± 0.17
9611F	LW2-U1C-3	6.3 ± 5.2	1.12 ± 0.10
9612F	LW2-D1-1	21.3 ± 32.7	1.04 ± 0.24
9613F	LW2-D2	8.8 ± 16.4	1.10 ± 0.16

[1] Pupae were not included in the sample to estimate ash-free dry weight (as per EPA/600/R-99/064, p. 59, section 12.3.8.2)

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APPENDIX I

RAW DATA

TEST DESCRIPTION, MONITORING, AND RESULTS BENCHSHEETS

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

REVIEWED PAGES 1-37 - GJI

Test No. 686-24 Client Windward Environmental Investigator

STUDY MANAGEMENT

Client: Windward Enviromental, 200 West Mercer Street, Suite 401, Seattle, WA 98119

Client's Study Monitor: Ms. Helle Anderson GJI

Testing Laboratory: Northwestern Aquatic Sciences

Test Location: Newport Laboratory

Laboratory's Study Personnel:

Proj. Man./Study Dir. G.J. Irissarri GJI

QA Officer L.K. Nemeth

1. [signature] UB 2. Susan Gage [signature]

3. BB Pridgeon BBP 4. R.S. Caldwell [signature]

5. William T. Montgomery [signature] 6. GEOFF C. HAYES

Study Schedule:

Test Beginning: 11-9-04 1200 Test Ending: 11-19-04 1330

TEST MATERIAL

General description (see sample logbook/chain-of-custody for details):

NAS Sample No.:	9574F	9594F	9595F	9596F	9597F
Description:	Control	LW2-U5Q-1	LW2-U5Q-2	LW2-U5Q-3	LW2-U6TOC-1
Collection Date:	10/28/04	11/4/04	11/4/04	11/4/04	11/4/04
Receipt Date:	10/28/04	11/6/04	11/6/04	11/6/04	11/6/04

NAS Sample No.:	9598F	9599F	9600F	9601F	9602F
Description:	LW2-U6TOC-2	LW2-U6TOC-3	LW2-U4Q-1	LW2-U4Q-2	LW2-U4Q-3
Collection Date:	11/4/04	11/4/04	11/4/04	11/4/04	11/4/04
Receipt Date:	11/6/04	11/6/04	11/6/04	11/6/04	11/6/04

NAS Sample No.:	9603F	9604F	9605F	9606F	9607F
Description:	LW2-U3C-1	LW2-U3C-2	LW2-U3C-3	LW2-U2C-1	LW2-U2C-2
Collection Date:	11/4/04	11/4/04	11/4/04	11/5/04	11/5/04
Receipt Date:	11/6/04	11/6/04	11/6/04	11/6/04	11/6/04

NAS Sample No.:	9608F	9609F	9610F	9611F	9612F
Description:	LW2-U2C-3	LW2-U1C-1	LW2-U1C-2	LW2-U1C-3	LW2-D1-1
Collection Date:	11/5/04	11/5/04	11/5/04	11/5/04	11/5/04
Receipt Date:	11/6/04	11/6/04	11/6/04	11/6/04	11/6/04

NAS Sample No.:	9613F~~F~~ GJI				
Description:	LW2-D2				
Collection Date:	11/5/04				
Receipt Date:	11/6/04				

NAS Sample No.:					
Description:					
Collection Date:					
Receipt Date:					

Error codes: 1) correction of handwriting error
2) written in wrong location; entry deleted
3) wrong date deleted, replaced with corrrect date
4) error found in measurement; measurement repeated

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-24 Client Windward Environmental Investigator

SEDIMENT DESCRIPTIONS -- SUPPLEMENTAL NOTES

Sample No.	Description
9574F	Dark brown mud
9594F	Dark brown muddy sand
9595F	Dark brown muddy sand
9596F	DARK BROWN MUDDY SAND
9597F	Dark gray smooth mud, 2 Chironomids found
9598F	Dark gray creamy mud
9599F	Dark olive fine mud
9600F	Dark gray Mud
9601F	DARK GRAY/GREEN MUD w/ SAND
9602F	Dark gray mud
9603F	Dark brown muddy sand
9604F	Dark gray brown Mud
9605F	DARK GRAY/GREEN FINE MUDDY SAND
9606F	Dark gray mud
9607F	Gray muddy sand
9608F	Brown sandy mud
9609F	Dark brown muddy sand w/ wood debris
9610F	Gray/brown sandy mud w/ wood debris
9611F	Dark brown muddy sand
9612F	DARK GRAY GREEN FINE MUD
9613F	Dark gray sandy mud

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NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-24 Client Windward Environmental Investigator

TEST WATER

Source: Dechlorinated Newport, OR tap water

Date of Collection: 11-8-04, 11-9-04, 11-10-04, 11-11-04, 11-13,04, 11-14,04, 11-16-04, 11-17-04

pH 7.2, 7.1, 7.3, 6.6, 6.8, 6.8, 7.2, 7.0 ($\bar{x}$ = 7± 0.2)

Cond (umhos/cm^2) 150, 155, 150, 150, 150, 150, 150, 155 ($\bar{x}$ = 151 ± 2)

Hardness (mg/L) 34, 34, 34, 34, 34, 34, 34, 34 ($\bar{x}$ = 34 ± 0)

Alkalinity (mg/L) 30, 40, 40, 40, 40, 40, 40, 40 ($\bar{x}$ = 39 ± 4)

Treatments: Aerated ≥ 24 hrs

TEST ORGANISMS

Species: *Chironomus tentans* Age: 3rd instar Date received: –

Source: NAS cultures

Acclimation Data:

Date	Temp. (deg.C)	DO (mg/L)	pH	Cond umhos/cm	Feeding amount (ml)	Feeding description*	Water changes	Hardness (mg/L)	Alkalinity (mg/L)
11-1-04	22.6	7.8	7.1	290	ANIMALS FED TETRA		CULTURE	–	–
11-2-04	23.6	8.6	7.6	260	FIN AND SELENASTRUM		TANKS	85	70
11-3-04	22.9	7.8	7.2	275			CHANGED	85	80
11-5-04	22.7	8.0	8.0	285	DETAILS RECORDED IN		TWICE	–	–
11-8-04	22.3	7.9	7.5	285	CHIRONOMID		WEEKLY	–	–
11-9-04	22.7	7.9	7.2	285	CULTURE DATA			102	70
Mean	22.8	8.0	7.4	280	SHEET			91	73
S.D.	0.4	0.3	0.3	11				10	6
(N)	6	6	6	6				3	3

Photoperiod during acclimation: 16:8, L:D *S=Selenastrum, T=Tetra Fin suspension

TEST PROCEDURES AND CONDITIONS

Test chambers: 300 ml glass beakers

Test volumes: 100 ml of test sediment; 275 ml total volume

Replicates/treatment: (8) 8 Organisms/treatment: (80) 80 (10/REP)

Test water changes: Twice daily

Aeration: only if DO falls below 2.5 mg/L

Feeding: everyday beginning with day zero

Test temperature (deg.C): 23

Beaker placement: Total randomization

Photoperiod: 16:8, L:D

Control Sediment:

Source: From an area approximately one mile east of the Hwy. 101 bridge at Beaver Creek, approx. 8 miles south of Newport, OR.

Date collected: 10/28/04

Sieved through 0.5 -mm screen NAS# 9574F

Storage: 4°C in the dark in closed containers.

MISCELLANEOUS NOTES

LIGHT INTENSITY MEASUREMENTS

	SITE A	SITE B
11-11-04	56 FT-CANDLES (603 LUX)	42 FT-CANDLES (452 LUX)

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Test No. 686-24 Client Windward Environmental Investigator _____

Test conducted in (circle one): room 1 (room 2) trailer water bath other:_____

Randomization chart:

5								168	
4								164	
3								163	168
2								162	167
1								161	166

Randomization chart:

Randomization chart:

Randomization chart:

ANC08722
BZTO104(e)008722

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No 686-24 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 0 (11/9/04) CB/RPP

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond.* umhos/cm	pH*	Hardness* (mg/L)	Alkalinity* (mg/L)	S (ppm)	NH3* (ppm)	Comments
1	22.9	7.4	185	6.8	34	40			Each beaker fed 1.5 ml
6	22.8	7.8	155	6.7	43	40			Prime Tropical Flakes
24	22.8	7.6	160	6.7	34	40			suspension.
27	22.8	7.4	150	6.6	43	40			Initials: GJL
28	22.7	7.2	140	6.6	34	40			
33	22.7	7.4	150	6.5	34	40			
40	22.9	7.3	150	6.6	34	40			
46	22.8	7.6	150	6.6	34	40			
47	22.6	7.5	150	6.6	34	40			Water changed in all
57	22.6	7.9	150	6.6	43	40			beakers.
60	22.6	7.7	150	6.6	43	40			Time: 0705
69	22.8	7.7	425	6.5	43	40			Initials: GJL
82	22.7	7.6	150	6.7	34	40			
86	22.6	7.4	150	6.6	34	40			
97	22.6	7.8	155	6.6	34	40			
103	22.5	7.6	150	6.6	43	40			
114	22.5	7.4	160	6.5	43	50			Water changed in all
146	22.6	7.4	155	6.6	34	40			beakers.
154	22.6	7.6	140	6.5	34	40			Time: 1715
155	22.6	7.7	145	6.5	34	40			Initials: GJL
159	22.7	7.2	145	6.5	43	40			

*Water quality measurements to be taken.

Day 1 (11/10/04) CB/RPP/SJ

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. umhos/cm	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
1	22.8	5.0							Each beaker fed 1.5 ml
6	22.8	6.5							Prime Tropical Flakes
24	22.7	6.2							suspension.
27	22.8	6.3							Initials: GJL
28	22.6	6.3							
33	22.5	6.5							
40	22.9	6.7							
46	22.7	6.7							
47	22.5	6.5							Water changed in all
57	22.6	6.3							beakers.
60	22.8	6.4							Time: 0710
69	22.6	6.6							Initials: CB
82	22.6	6.7							
86	22.7	6.2							
97	22.6	6.2							
103	22.5	6.2							
114	22.6	6.2							Water changed in all
146	22.7	6.4							beakers.
154	22.7	6.0							Time: 1725
155	22.8	6.5							Initials: SJ
159	22.7	6.6							

*Water quality measurements to be taken.

ANC08723
BZTO104(e)008723

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No 686-24 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 2 (11/11/04) BBP

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. umhos/cm	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
1	22.6	5.6							Each beaker fed 1.5 ml
6	22.7	5.6							Prime Tropical Flakes
24	22.6	5.8							suspension.
27	22.6	5.8							Initials: mbm
28	22.6	5.8							
33	22.6	5.9							
40	22.6	6.0							
46	22.8	6.0							
47	22.8	6.0							Water changed in all
57	22.7	6.1							beakers.
60	22.6	5.6							Time: 0650
69	22.8	6.2							Initials: BSL
82	22.8	6.2							
86	22.7	5.5							
97	22.5	5.6							
103	22.4	5.7							
114	22.4	5.8							Water changed in all
146	22.6	5.8							beakers.
154	22.6	5.7							Time: 1700
155	22.6	5.8							Initials: BSP
159	22.6	5.8							

*Water quality measurements to be taken.

Day 3 (11/12/04) MS/BBP

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. umhos/cm	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
1	22.6	5.8							Each beaker fed 1.5 ml
6	22.6	6.2							Prime Tropical Flakes
24	22.6	5.6							suspension.
27	22.6	6.1							Initials: BSL
28	22.4	6.4							
33	22.4	6.2							
40	22.8	6.4							
46	22.8	6.4							
47	22.6	6.2							Water changed in all
57	22.4	6.4							beakers.
60	22.7	5.7							Time: 0650
69	22.6	6.4							Initials: MS
82	22.5	6.4							
86	22.5	6.4							
97	22.4	6.3							
103	22.4	6.3							
114	22.3	5.6							Water changed in all
146	22.5	6.0							beakers.
154	22.5	6.2							Time: 1730
155	22.5	6.4							Initials:
159	22.7	6.5							

*Water quality measurements to be taken.

ANC08724
BZTO104(e)008724

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No 686-24 Client Windward Environmental Investigator _____

DAILY RECORD SHEET

Day 4 (11/13/04) MM/SF

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. umhos/cm	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
1	22.5	6.1							Each beaker fed 1.5 ml
6	22.5	6.1							Prime Tropical Flakes
24	22.5	6.2							suspension.
27	22.5	6.2							Initials: MM
28	22.4	6.2							
33	22.4	5.9							
40	22.4	5.9							
46	22.6	6.2							
47	22.5	6.1							Water changed in all
57	22.4	6.0							beakers.
60	22.4	5.8							Time: 0745
69	22.6	5.9							Initials: MM
82	22.5	6.1							
86	22.4	6.3							
97	22.4	5.8							
103	22.4	6.0							
114	22.4	5.7							Water changed in all
146	22.4	5.5							beakers.
154	22.5	5.9							Time: 1700
155	22.5	5.9							Initials: CK
159	22.5	6.2							

*Water quality measurements to be taken.

Day 5 (11/14/04) GJL

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. umhos/cm	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
1	22.9	4.7							Each beaker fed 1.5 ml
6	22.9	5.0							Prime Tropical Flakes
24	23.0	4.4							suspension.
27	22.8	4.8							Initials: GJL
28	22.8	5.2							
33	22.7	4.7							
40	22.8	4.7							
46	23.0	5.2							
47	22.8	4.4							Water changed in all
57	22.7	4.6							beakers.
60	23.0	4.2							Time: 0715
69	22.8	4.5							Initials: GJL
82	22.8	5.3							
86	22.7	4.7							
97	22.7	4.4							
103	22.6	4.0							
114	22.6	3.8							Water changed in all
146	22.8	4.0							beakers.
154	22.8	4.0							Time: 1715
155	23.0	4.4							Initials: SF
159	23.0	4.7							

*Water quality measurements to be taken.

ANC08725
BZTO104(e)008725

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No 686-24 Client Windward Environmental Investigator _____

DAILY RECORD SHEET

Day 6 (11/15 04) BBP

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. umhos/cm	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
1	22.7	4.8							Each beaker fed 1.5 ml
6	22.7	5.2							Prime Tropical Flakes
24	22.7	4.4							suspension.
27	22.7	5.0							Initials: WTH
28	22.6	4.9							
33	22.6	5.0							
40	22.6	4.9							
46	22.8	5.4							
47	22.6	4.2							Water changed in all
57	22.6	4.8							beakers.
60	22.8	4.6							Time: 0725
69	22.7	4.4							Initials: GM
82	22.6	4.5							
86	22.6	4.6							
97	22.6	3.8							
103	22.5	3.6							
114	22.5	3.8							Water changed in all
146	22.7	4.6							beakers.
154	22.7	4.2							Time: 1705
155	22.7	5.0							Initials: GM
159	22.8	5.3							

*Water quality measurements to be taken.

Day 7 (11/16 04) GM

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. umhos/cm	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
1	22.5	6.0							Each beaker fed 1.5 ml
6	22.4	6.5							Prime Tropical Flakes
24	22.4	5.6							suspension.
27	22.4	6.0							Initials: WTH
28	22.4	6.2							
33	22.4	6.0							
40	22.4	6.4							
46	22.5	5.5							
47	22.4	5.4							Water changed in all
57	22.4	6.0							beakers.
60	22.6	5.9							Time: 0700
69	22.4	5.5							Initials: GM
82	22.4	5.7							
86	22.4	4.8							
97	22.3	5.2							
103	22.3	4.8							
114	22.2	4.9							Water changed in all
146	22.4	5.2							beakers.
154	22.4	5.2							Time: 1705
155	22.5	5.4							Initials: AM
159	22.6	6.2							

*Water quality measurements to be taken.

ANC08726
BZTO104(e)008726

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No 686-24 Client Windward Environmental Investigator _____

DAILY RECORD SHEET

Day 8 (11/17/04) BBP

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. umhos/cm	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
1	22.4	4.5							Each beaker fed 1.5 ml
6	22.2	5.1							Prime Tropical Flakes
24	22.1	4.5							suspension.
27	22.3	5.0							Initials: mm
28	22.1	4.8							
33	22.1	5.2							
40	22.2	5.0							
46	22.4	5.8							
47	22.3	4.4							Water changed in all
57	22.2	4.7							beakers.
60	22.2	5.0							Time: 0725
69	22.4	3.8							Initials: BBP
82	22.2	4.6							
86	22.2	4.4							
97	22.1	4.0							
103	22.1	3.6							
114	22.1	3.8							Water changed in all
146	22.2	4.4							beakers.
154	22.3	4.6							Time: 1200
155	22.3	4.6							Initials: BBP
159	22.4	4.8							

*Water quality measurements to be taken.

Day 9 (11/18/04) mm BBP

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. umhos/cm	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
1	22.8	5.6							Each beaker fed 1.5 ml
6	22.9	5.8							Prime Tropical Flakes
24	22.9	5.0							suspension.
27	22.7	5.6							Initials: mm
28	22.7	5.4							
33	22.7	6.0							
40	23.0	5.6							
46	22.9	5.8							
47	22.9	4.4							Water changed in all
57	22.8	5.6							beakers.
60	22.7	5.6							Time: 0730
69	22.8	4.6							Initials: mm
82	22.8	5.2							
86	22.8	4.9							
97	22.7	5.4							
103	22.6	4.2							
114	22.6	4.6							Water changed in all
146	22.8	4.8							beakers.
154	22.8	5.0							Time: 1710
155	23.0	5.0							Initials: BBP
159	23.0	6.1							

*Water quality measurements to be taken.

ANC08727
BZTO104(e)008727

Test No 686-24 Client Windward Environmental Investigator _____

DAILY RECORD SHEET

Day ___10___(11 119 104)wm/CB/BBP

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond.* (umhos/cm)	pH*	Hardness* (mg/L)	Alkalinity* (mg/L)	S (ppm)	NH3* (ppm)	Comments
1	22.7	5.5	160	6.1	34	40			Each beaker fed 1.5 ml
6	22.6	6.2	160	6.1	34	40			Prime Tropical Flakes
24	22.4	5.3	160	6.0	43	40			suspension.
27	22.4	6.0	160	6.1	43	40			Initials: ——
28	22.2	6.0	155	6.0	34	40			
33	22.2	6.1	155	6.0	51	40			
40	22.5	6.2	160	6.0	34	40			
46	22.4	6.2	155	6.0	43	40			
47	22.3	5.3	155	6.0	34	40			Water changed in all
57	22.2	6.2	160	6.1	34	40			beakers.
60	22.4	6.3	155	6.1	34	40			Time: 0705
69	22.3	5.7	170	6.2	43	40			Initials: VB
82	22.3	6.3	155	6.1	43	40			
86	22.2	6.5	155	6.1	34	40			
97	22.2	5.8	155	6.1	34	40			
103	22.2	5.8	155	6.1	34	40			
114	22.1	6.1	155	6.1	34	40			Water changed in all
146	22.2	6.4	160	6.2	43	40			beakers.
154	22.2	6.4	150	6.2	51	40			Time:
155	22.3	6.1	155	6.3	34	40			Initials:
159	22.4	6.6	155	6.2	34	40			

*Water quality measurements to be taken.

Day _____(/ /)

Beaker No.	Temp. (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
1									Each beaker fed 1.5 ml
6									Prime Tropical Flakes
24									suspension.
27									Initials:
28									
33									
40									
46									
47									Water changed in all
57									beakers.
60									Time:
69									Initials:
82									
86									
97									
103									
114									Water changed in all
146									beakers.
154									Time:
155									Initials:
159									

*Water quality measurements to be taken.

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-24 Client Windward Enviromental Investigator

DAY 20 TEST TERMINATION SHEET

Beaker No.	Number of survivors	Initials
1	9	GJL
2	8	GJL
3	8	CAB
4	10	GJL
5	9	CAB
6	7	CAB
7	8	GJL
8	9	CAB
9	6	GJL
10	4	CAB
11	10	GJL
12	9	CAB
13	8	GJL
14	10	CAB
15	8	GJL
16	9	CAB
17	9	GJL
18	8	CAB
19	9	GJL
20	7	CAB
21	9	GJL
22	10	CAB
23	10	GJL
24	10	CAB
25	7	GJL
26	8	CAB
27	9	GJL
28	10	CAB
29	10	GJL
30	10	CAB
31	6	GJL
32	10	CAB
33	9	GJL
34	9	CAB
35	9	CAB
36	10	GJL
37	10	WTM
38	9	CAB
39	7	[illegible]
40	9	WTM
41	9	GJL
42	10	CAB
43	8	CAB
44	7	[illegible]
45	9	CAB

Beaker No.	Number of survivors	Initials
46	9	GJL
47	8	WTM
48	9	[illegible]
49	9	GJL
50	10	[illegible]
51	10	WTM
52	10	GJL
53	9	GJL
54	7	[illegible]
55	9	WTM
56	9	GJL
57	10	GJL
58	9	[illegible]
59	9	GJL
60	9	[illegible]
61	10	WTM
62	10	GJL
63	8	CAB
64	10	CAB
65	07 10	[illegible]
66	9	WTM
67	10	[illegible]
68	8	CAB
69	9	CAB
70	10	CAB
71	@ 7 8	CAB
72	9	[illegible]
73	9	WTM
74	9	WTM
75	9	[illegible]
76	10	CAB
77	10	[illegible]
78	10	WTM
79	8	WTM
80	9	[illegible]
81	10	WTM
82	10	GJL
83	10	CAB
84	9	WTM
85	10	[illegible]
86	6	GJL
87	10	CAB
88	10	[illegible]
89	10	WTM
90	6	GJL

ANC08729
BZTO104(e)008729

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-24 Client Windward Enviromental Investigator

DAY 20 TEST TERMINATION SHEET

Beaker No.	Number of survivors	Initials
91	9	UB
92	10	[illegible]
93	9	GJL
94	10	UB
95	10	GJL
96	9	UB
97	9	WTM
98	9	GJL
99	~~10~~ 9	[illegible]
100	8	UB
101	9	WTM
102	9	GJL
103	9	UB
104	9	[illegible]
105	8	GJL
106	7	UB
107	10	UB
108	10	[illegible]
109	6	WTM
110	1	GJL
111	10	GJL
112	8	UB
113	10	WTM
114	9	[illegible]
115	10	UB
116	10	GJL
117	6	WTM
118	6	UB
119	9	GJL
120	8	[illegible]
121	10	UB
122	10	GJL
123	10	[illegible]
124	8	WTM
125	10	GJL
126	10	[illegible]
127	10	UB
128	10	GJL
129	9	WTM
130	8	[illegible]
131	10	UB
132	10	UB
133	10	[illegible]
134	10	UB
135	10	WTM

Beaker No.	Number of survivors	Initials
136	9	GJL
137	10	[illegible]
138	10	UB
139	9	WTM
140	8	UB
141	10	GJL
142	10	UB
143	10	[illegible]
144	10	GJL
145	10	WTM
146	10	UB
147	10	[illegible]
148	8	GJL
149	9	UB
150	5	WTM
151	10	GJL
152	10	[illegible]
153	9	UB
154	8	WTM
155	10	GJL
156	10	UB
157	10	[illegible]
158	10	GJL
159	9	UB
160	9	GJL
161	9	WTM
162	9	UB
163	8	GJL
164	9	WTM
165	9	UB
166	10	GJL
167	9	[illegible]
168	10	GJL
169		
170		
171		
172		
173		
174		
175		
176		
177		
178		
179		
180		

ANC08730
BZTO104(e)008730

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-24 Client Windward Environmental Investigator

Tare: Date 11-9-04 Oven temp (C.) 62 Drying time (hr.) 24 Initials GSL
Standard Weights: 10 mg: 10.001 100mg: 100.011

Final #1 Date 11-10-04 Oven temp (C.) 71 Drying time (hr.) 24 Initials GSL
Standard Weights: 10 mg: 10.006 100mg: 100.016

Final: #2 Date 11-11-04 Oven temp (C.) 70 Drying time (hr.) 24 Initials GSL
Standard Weights: 10 mg: 10.003 100mg: 100.016

Equip. used: Oven: BLUE M #1 Balance: SARTORIUS M3P

(Dry overnight at 60-90 degrees C)

Pan #	Tare wt. (mg)	Total wt. (mg) 1	Total wt. (mg) 2	#weighed	Comments
1	108.45	110.70	110.68	20	
2	98.40	100.75	100.72	20	
3	101.82	104.25	104.21	20	

ANC08731
BZTO104(e)008731

NORTHWESTERN AQUATIC SCIENCES — PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-24 Client Windward Environmental Investigator

WEIGHING DATA SHEET

Tare:	Date 11-11-04	Oven temp (C.) 550	Drying time (hr.) 2	Initials JRF
	Standard Weights:	10 mg: 10.009	100mg: 100.09	
Final #1:	Date 11-22-04	Oven temp (C.) 62	Drying time (hr.) 23	Initials JRF
	Standard Weights:	10 mg: 10.002	100mg: 100.014	
Final #2:	Date 11-24-04	Oven temp (C.) 66	Drying time (hr.) 24	Initials JRF
	Standard Weights:	10 mg: 10.004	100mg: 100.015	
Final #3:	Date 11-29-04	Oven temp (C.) 550	Drying time (hr.) 2	Initials GJL
	Standard Weights:	10 mg: 10.006	100mg: 100.017	

Equip. used: Oven Blue M #1 Balance Sartorius M3P

Furnace FISHER MUFFLE FURNACE 650 SERIES

(Dry overnight at 60-90 degrees C) (Final ashing is at 550 degrees C for 2 hours)

Bkr. #	Pan #	Tare wt. (mg)	Total wt. (mg) 1	Total wt. (mg) 2	no. weighed	put into pans-initials	Ashed weight (mg)
1	1	88.93	104.00	104.17	9	JRF	94.55
2	2	85.84	98.78	98.93	8	JRF	89.57
3	3	82.39	96.56	96.73	8	JRF	87.63
4	4	88.26	102.88	103.08	10	JRF	93.35
5	5	84.53	98.69	98.89	9	JRF	89.05
6	6	84.95	98.26	*98.47	7	JRF	89.63
7	7	82.31	96.86	97.05	8	JRF	88.16
8	8	88.82	102.68	102.87	9	JRF	93.44
9	9	87.95	100.49	100.66	10	JRF	91.57
10	10	94.31	103.53	103.67	4	JRF	97.18
11	11	83.30	98.33	98.54	10	JRF	89.13
12	12	79.66	97.46	97.73	9	JRF	86.85
13	13	84.07	99.61	99.80	8	JRF	90.15
14	14	82.30	96.54	96.74	10	JRF	87.20
15	15	84.99	99.49	99.69	8	JRF	90.11
16	16	79.56	93.95	94.17	9	JRF	84.95
17	17	85.64	102.09	102.32	9	JRF	92.46
18	18	91.99	109.21	109.46	8	JRF	97.72
19	19	91.96	106.27	106.49	9	JRF	95.71
20	20	83.51	99.92	100.15	7	JRF	89.20
21	21	89.36	104.19	104.45	9	JRF	94.95
22	22	85.77	102.36	102.61	10	JRF	91.44
23	23	79.88	94.09	94.60	10	JRF	83.88
24	24	84.30	100.56	100.86	10	JRF	89.37
25	25	90.34	103.88	104.10	7	JRF	95.40
26	26	80.55	98.35	98.60	8	JRF	88.17
27	27	92.46	107.74	107.99	9	JRF	98.39
28	28	84.00	100.44	100.72	10	JRF	89.28
29	29	87.09	105.22	105.52	10	JRF	95.86
30	30	79.11	90.92	91.14	10	JRF	81.81
31	31	95.90	108.83	109.06	6	JRF	99.39
32	32	81.08	97.77	98.04	10	JRF	87.57
33	33	82.64	98.29	98.58	9	JRF	88.24

ANC08732
BZTO104(e)008732

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-24 Client Windward Environmental Investigator

WEIGHING DATA SHEET

See page _____ for information on drying times and temperatures, standard weights,etc.

Bkr. #	Pan #	Tare wt. (mg)	Total wt. (mg) 1	Total wt. (mg) 2	no. weighed	put into pans-initials	Ash weight (mg)
34	34	81.37	97.14	97.42	9	AJ	86.84
35	35	84.80	100.90	101.17	8	AJ	90.12
36	36	83.86	102.06	102.40	10	AJ	90.20
37	37	96.81	114.97	115.16	10	BBP	104.13
38	38	92.10	107.03	107.18	9	BBP	97.35
39	39	90.44	104.25	104.40	7	BBP	95.32
40	40	78.97	93.38	93.58	9	BBP	84.25
41	41	91.50	106.62	106.83	9	BBP	96.23
42	42	92.91	108.49	108.66	10	BBP	98.79
43	43	86.48	100.22	100.37	8	BBP	90.65
44	44	87.46	97.21	97.34	7	BBP	89.92
45	45	92.08	107.70	107.87	9	BBP	98.19
46	46	81.56	95.85	96.03	9	BBP	86.62
47	47	85.47	97.68	97.83	8	BBP	89.26
48	48	96.06	111.73	111.91	9	BBP	101.25
49	49	85.22	99.45	99.62	9	BBP	89.49
50	50	89.21	106.37	106.57	10	BBP	96.98
51	51	87.96	104.97	105.16	10	BBP	95.11
52	52	87.48	102.13	102.32	10	BBP	91.78
53	53	89.17	102.77	102.97	9	BBP	93.35
54	54	84.14	98.98	99.16	7	BBP	89.01
55	55	82.74	97.69	97.93	9	BBP	87.75
56	56	87.94	101.63	101.85	9	BBP	92.09
57	57	88.58	103.55	103.74	10	BBP	94.20
58	58	91.52	104.74	104.97	9	BBP	95.42
59	59	91.70	105.58	105.82	9	BBP	95.61
60	60	86.65	100.82	101.06	9	BBP	91.16
61	61	81.42	96.47	96.67	10	BBP	86.04
62	62	77.85	92.09	92.32	10	BBP	82.27
63	63	86.99	98.38	98.55	8	BBP	89.74
64	64	84.34	98.52	98.72	10	BBP	88.90
65	65	86.30	100.32	100.54	10	BBP	89.68
66	66	81.01	96.41	96.62	9	BBP	86.45
67	67	88.13	104.85	105.07	10	BBP	93.88
68	68	82.86	92.76	92.96	8	BBP	84.78
69	69	87.00	97.54	97.70	9	BBP	88.99
70	70	92.24	108.72	108.95	10	BBP	98.88
71	71	89.93	101.91	102.09	8	BBP	93.43
72	72	92.26	109.50	109.63	9	BBP	97.77
73	73	93.02	112.18	112.33	9	AJ	100.53
74	74	83.70	102.39	102.53	9	AJ	91.89
75	75	97.45	117.28	117.43	9	AJ	~~107.06~~ 97.01
76	76	88.44	109.60	109.76	~~9~~ 10 AJ	AJ	106.77

6JJ 11-29-04

ANC08733
BZTO104(e)008733

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-24 Client Windward Environmental Investigator

WEIGHING DATA SHEET

See page _____ for information on drying times and temperatures, standard weights,etc.

Bkr. #	Pan #	Tare wt. (mg)	Total wt. (mg) 1	Total wt. (mg) 2	no. weighed	put into pans-initials	Ash weight (mg)
77	77	91.93	108.98	109.11	10		98.87
78	78	89.27	107.72	107.90	10		96.56
79	79	80.24	92.33	92.45	8		83.64
80	80	78.22	97.26	97.41	9		85.17
81	81	91.44	107.62	107.77	10		98.06
82	82	982.42	106.99	107.09	10		98.77
83	83	91.34	107.66	107.79	10		97.91
84	84	86.77	102.14	102.28	9		92.21
85	85	88.92	103.54	103.67	10		94.94
86	86	86.77	99.99	100.10	6		92.90
87	87	94.53	112.14	112.28	10		101.63
88	88	92.60	109.45	109.58	10		98.65
89	89	95.01	111.78	111.92	10		101.07
90	90	85.15	98.46	98.57	6		89.66
91	91	92.23	111.66	111.83	9		98.67
92	92	82.30	99.40	99.59	10		87.79
93	93	89.98	106.37	106.51	9		95.09
94	94	96.02	113.28	113.43	10		102.59
95	95	96.32	112.17	112.32	10		101.91
96	96	84.10	101.04	101.19	9		89.71
97	97	82.17	99.10	99.26	9		88.66
98	98	96.85	113.83	113.97	9		102.12
99	99	88.71	105.73	105.92	9		EJJ ~~94.12~~
100	100	98.36	114.49	114.64	8		104.57
101	101	79.56	95.95	96.12	9		85.25
102	102	83.73	98.62	98.77	9		88.61
103	103	85.65	101.90	102.08	9		91.19
104	104	94.67	111.35	111.51	9		99.30
105	105	87.31	104.06	104.23	8		92.62
106	106	95.60	110.43	110.59	7		100.07
107	107	85.91	103.64	103.79	10		93.30
108	108	92.12	109.05	109.22	10		96.49
109	109	89.58	96.40	96.49	6		90.88
110	110	89.50	90.43	90.44	1		89.79
111	111	84.99	99.09	99.21	10		88.80
112	112	89.43	101.18	101.26	8		92.17
113	113	87.17	102.50	102.62	10		92.43
114	114	89.84	105.31	105.45	9		94.13
115	115	86.88	101.09	101.24	10		91.16
116	116	87.36	105.81	105.95	10		93.49
117	117	93.92	108.95	109.11	6		99.29
118	118	91.00	102.66	102.78	6		95.15
119	119	90.00	107.85	108.02	9		96.51

ANC08734
BZTO104(e)008734

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-24 Client Windward Environmental Investigator

WEIGHING DATA SHEET

See page _____ for information on drying times and temperatures, standard weights,etc.

Bkr. #	Pan #	Tare wt. (mg)	Total wt. (mg) 1	Total wt. (mg) 2	no. weighed	put into pans-initials	Ash weight (mg)
120	120	89.42	101.26	101.43	8		92.26
121	121	91.17	107.24	107.36	10		97.18
122	122	86.81	102.72	102.85	10		92.51
123	123	87.56	103.38	103.56	10		91.63
124	124	87.66	101.56	101.72	8		91.75
125	125	77.82	93.53	93.73	10		83.58
126	126	85.43	104.40	104.59	10		92.62
127	127	86.15	105.29	105.49	10		93.41
128	128	82.94	98.77	98.96	10		88.19
129	129	86.79	105.55	105.74	9		94.07
130	130	84.33	102.69	102.90	8		90.75
131	131	83.02	99.76	99.99	10		89.93
132	132	96.71	115.41	115.60	10		104.46
133	133	88.89	105.26	105.44	10		94.41
134	134	92.30	112.41	112.63	10		101.30
135	135	89.82	106.11	106.25	10		94.71
136	136	86.01	103.34	103.60	9		93.02
137	137	92.60	111.58	111.86	10		98.60
138	138	87.96	106.22	106.46	9		95.24
139	139	96.36	113.29	113.52	9		102.34
140	140	88.34	105.80	106.03	8		94.12
141	141	95.12	114.48	114.73	10		102.40
142	142	89.83	109.54	109.81	10		98.88
143	143	92.32	110.19	110.45	10		98.48
144	144	88.40	107.85	108.11	10		94.47
145	145	83.71	104.02	104.30	10		92.78
146	146	91.95	111.51	111.78	10		98.59
147	147	97.32	116.08	116.32	10		104.36
148	148	89.18	104.38	104.60	8		93.40
149	149	83.13	99.65	99.88	9		87.79
150	150	87.67	97.98	98.17	5		90.62
151	151	87.31	102.09	102.32	10		91.01
152	152	85.50	103.56	103.82	10		92.53
153	153	94.15	112.27	112.49	9		100.14
154	154	91.66	109.66	109.88	8	BBP	97.86
155	155	88.54	106.51	106.73	10	BBP	95.65
156	156	87.56	105.76	105.96	10	BBP	95.23
157	157	80.34	99.51	99.72	10	BBP	87.52
158	158	86.50	105.72	105.92	10	BBP	94.84
159	159	84.55	103.01	103.23	9	BBP	92.21
160	160	85.72	103.49	103.78	9	BBP	91.91
161	161	90.85	110.99	111.24	9	BBP	100.40
162	162	81.88	104.12	104.33	9	BBP	90.96

ANC08735
BZTO104(e)008735

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-24 Client Windward Environmental Investigator

WEIGHING DATA SHEET

See page _____ for information on drying times and temperatures, standard weights,etc.

Bkr. #	Pan #	Tare wt. (mg)	Total wt. (mg) 1	Total wt. (mg) 2	no. weighed	put into pans-initials	Ash weight (mg)
163	163	81.95	98.30	98.51	8	BBP	88.41
164	164	87.39	105.60	105.82	9	BBP	94.52
165	165	90.27	111.97	112.21	9	BBP	99.99
166	166	94.68	116.78	117.04	10	BBP	106.17
167	167	89.00	105.91	106.14	9	BBP	95.65
168	168	90.00	109.22	109.46	10	BBP	98.76
169	169						
170	170						
171	171						
172	172						
173	173						
174	174						
175	175						
176	176						
177	177						
178	178						
179	179						
180	180						
181	181						
182	182						
183	183						
184	184						
185	185						
186	186						
187	187						
188	188						
189	189						
190	190						
191	191						
192	192						
193	193						
194	194						
195	195						
196	196						
197	197						
198	198						
199	199						
200	200						
201	201						
202	202						
203	203						
204	204						
205	205						

ANC08736
BZTO104(e)008736

Test Number: 686-24

Freshwater Sediment Test
10-Day Chironomus tentans

BKR	NAS SMPL	CLIENT DESCRIP	REPL	
68	9574F	Control	1	
109	9574F	Control	2	
120	9574F	Control	3	
79	9574F	Control	4	
19	9574F	Control	5	
30	9574F	Control	6	
23	9574F	Control	7	
69	9574F	Control	8	wq replicate
63	9594F	LW2-U5Q-1	1	
167	9594F	LW2-U5Q-1	2	
164	9594F	LW2-U5Q-1	3	
58	9594F	LW2-U5Q-1	4	
53	9594F	LW2-U5Q-1	5	
112	9594F	LW2-U5Q-1	6	
160	9594F	LW2-U5Q-1	7	
46	9594F	LW2-U5Q-1	8	wq replicate
118	9595F	LW2-U5Q-2	1	
10	9595F	LW2-U5Q-2	2	
3	9595F	LW2-U5Q-2	3	
16	9595F	LW2-U5Q-2	4	
163	9595F	LW2-U5Q-2	5	
131	9595F	LW2-U5Q-2	6	
62	9595F	LW2-U5Q-2	7	
6	9595F	LW2-U5Q-2	8	wq replicate
152	9596F	LW2-U5Q-3	1	
100	9596F	LW2-U5Q-3	2	
12	9596F	LW2-U5Q-3	3	
129	9596F	LW2-U5Q-3	4	
84	9596F	LW2-U5Q-3	5	
115	9596F	LW2-U5Q-3	6	
132	9596F	LW2-U5Q-3	7	
57	9596F	LW2-U5Q-3	8	wq replicate
77	9597F	LW2-U6TOC-1	1	
102	9597F	LW2-U6TOC-1	2	
85	9597F	LW2-U6TOC-1	3	
158	9597F	LW2-U6TOC-1	4	
94	9597F	LW2-U6TOC-1	5	
15	9597F	LW2-U6TOC-1	6	
128	9597F	LW2-U6TOC-1	7	
103	9597F	LW2-U6TOC-1	8	wq replicate
2	9598F	LW2-U6TOC-2	1	
73	9598F	LW2-U6TOC-2	2	
31	9598F	LW2-U6TOC-2	3	
133	9598F	LW2-U6TOC-2	4	
43	9598F	LW2-U6TOC-2	5	
49	9598F	LW2-U6TOC-2	6	
143	9598F	LW2-U6TOC-2	7	
155	9598F	LW2-U6TOC-2	8	wq replicate
14	9599F	LW2-U6TOC-3	1	
90	9599F	LW2-U6TOC-3	2	
95	9599F	LW2-U6TOC-3	3	
8	9599F	LW2-U6TOC-3	4	
48	9599F	LW2-U6TOC-3	5	
156	9599F	LW2-U6TOC-3	6	
56	9599F	LW2-U6TOC-3	7	
47	9599F	LW2-U6TOC-3	8	wq replicate

ANC08737
BZTO104(e)008737

Test Number: 686-24

Freshwater Sediment Test
10-Day Chironomus tentans

BKR	NAS SMPL	CLIENT DESCRIP	REPL	
78	9600F	LW2-U4Q-1	1	
125	9600F	LW2-U4Q-1	2	
55	9600F	LW2-U4Q-1	3	
21	9600F	LW2-U4Q-1	4	
7	9600F	LW2-U4Q-1	5	
134	9600F	LW2-U4Q-1	6	
168	9600F	LW2-U4Q-1	7	
40	9600F	LW2-U4Q-1	8	wq replicate
75	9601F	LW2-U4Q-2	1	
161	9601F	LW2-U4Q-2	2	
26	9601F	LW2-U4Q-2	3	
142	9601F	LW2-U4Q-2	4	
138	9601F	LW2-U4Q-2	5	
64	9601F	LW2-U4Q-2	6	
17	9601F	LW2-U4Q-2	7	
82	9601F	LW2-U4Q-2	8	wq replicate
25	9602F	LW2-U4Q-3	1	
32	9602F	LW2-U4Q-3	2	
136	9602F	LW2-U4Q-3	3	
122	9602F	LW2-U4Q-3	4	
107	9602F	LW2-U4Q-3	5	
113	9602F	LW2-U4Q-3	6	
13	9602F	LW2-U4Q-3	7	
27	9602F	LW2-U4Q-3	8	wq replicate
9	9603F	LW2-U3C-1	1	
123	9603F	LW2-U3C-1	2	
148	9603F	LW2-U3C-1	3	
67	9603F	LW2-U3C-1	4	
137	9603F	LW2-U3C-1	5	
80	9603F	LW2-U3C-1	6	
92	9603F	LW2-U3C-1	7	
114	9603F	LW2-U3C-1	8	wq replicate
105	9604F	LW2-U3C-2	1	
93	9604F	LW2-U3C-2	2	
140	9604F	LW2-U3C-2	3	
108	9604F	LW2-U3C-2	4	
99	9604F	LW2-U3C-2	5	
52	9604F	LW2-U3C-2	6	
106	9604F	LW2-U3C-2	7	
24	9604F	LW2-U3C-2	8	wq replicate
91	9605F	LW2-U3C-3	1	
22	9605F	LW2-U3C-3	2	
98	9605F	LW2-U3C-3	3	
96	9605F	LW2-U3C-3	4	
89	9605F	LW2-U3C-3	5	
157	9605F	LW2-U3C-3	6	
116	9605F	LW2-U3C-3	7	
146	9605F	LW2-U3C-3	8	wq replicate
127	9606F	LW2-U2C-1	1	
165	9606F	LW2-U2C-1	2	
162	9606F	LW2-U2C-1	3	
144	9606F	LW2-U2C-1	4	
18	9606F	LW2-U2C-1	5	
117	9606F	LW2-U2C-1	6	
126	9606F	LW2-U2C-1	7	
60	9606F	LW2-U2C-1	8	wq replicate

ANC08738
BZTO104(e)008738

Test Number: 686-24

Freshwater Sediment Test
10-Day Chironomus tentans

BKR	NAS SMPL	CLIENT DESCRIP	REPL	
130	9607F	LW2-U2C-2	1	
76	9607F	LW2-U2C-2	2	
36	9607F	LW2-U2C-2	3	
20	9607F	LW2-U2C-2	4	
101	9607F	LW2-U2C-2	5	
147	9607F	LW2-U2C-2	6	
153	9607F	LW2-U2C-2	7	
1	9607F	LW2-U2C-2	8	wq replicate
39	9608F	LW2-U2C-3	1	
74	9608F	LW2-U2C-3	2	
124	9608F	LW2-U2C-3	3	
51	9608F	LW2-U2C-3	4	
66	9608F	LW2-U2C-3	5	
141	9608F	LW2-U2C-3	6	
139	9608F	LW2-U2C-3	7	
33	9608F	LW2-U2C-3	8	wq replicate
88	9609F	LW2-U1C-1	1	
151	9609F	LW2-U1C-1	2	
65	9609F	LW2-U1C-1	3	
59	9609F	LW2-U1C-1	4	
35	9609F	LW2-U1C-1	5	
135	9609F	LW2-U1C-1	6	
104	9609F	LW2-U1C-1	7	
28	9609F	LW2-U1C-1	8	wq replicate
61	9610F	LW2-U1C-2	1	
111	9610F	LW2-U1C-2	2	
44	9610F	LW2-U1C-2	3	
5	9610F	LW2-U1C-2	4	
72	9610F	LW2-U1C-2	5	
149	9610F	LW2-U1C-2	6	
41	9610F	LW2-U1C-2	7	
154	9610F	LW2-U1C-2	8	wq replicate
37	9611F	LW2-U1C-3	1	
45	9611F	LW2-U1C-3	2	
38	9611F	LW2-U1C-3	3	
87	9611F	LW2-U1C-3	4	
4	9611F	LW2-U1C-3	5	
34	9611F	LW2-U1C-3	6	
119	9611F	LW2-U1C-3	7	
159	9611F	LW2-U1C-3	8	wq replicate
11	9612F	LW2-D1-1	1	
150	9612F	LW2-D1-1	2	
81	9612F	LW2-D1-1	3	
110	9612F	LW2-D1-1	4	
42	9612F	LW2-D1-1	5	
83	9612F	LW2-D1-1	6	
71	9612F	LW2-D1-1	7	
97	9612F	LW2-D1-1	8	wq replicate
166	9613F	LW2-D2	1	
29	9613F	LW2-D2	2	
50	9613F	LW2-D2	3	
70	9613F	LW2-D2	4	
121	9613F	LW2-D2	5	
54	9613F	LW2-D2	6	
145	9613F	LW2-D2	7	
86	9613F	LW2-D2	8	wq replicate

ANC08739
BZTO104(e)008739

TEST DATA ANALYSIS RECORDS

Freshwater Sediment Test
10-Day Chironomus tentans

Endpoints Data Entry and Calculations File

BKR=beaker number
INIT=initial number
SURV=number survivors
MORT=number dead=INIT-SURV
PSURV=%survival=100(SURV/INIT)
PMORT=%mortality=100(MORT/INIT)

TARE WT= ashed weight of pan used for that replicate at test termination (mg), or dry weight of pan if ash-free dry weight is not an endpoint
WT COUNT= number of test organisms weighed at test end
DRY WT= TARE WT + dry weight of test organisms recovered at test termination (mg)
TWT=total biomass=DRY WT-TARE WT
WT=average individual biomass=TWT/WT COUNT

ASHED DRY WT= weight of ashed pan + weight of ashed test organisms recovered at test termination
TAFDW=DRY WT - ASHED DRY WT= total ash-free organism weight for given replicate
AFDW=average individual ash-free biomass=TAFDW/WT COUNT

INITIAL WEIGHT

pan #	tare wt (mg)	final wt (mg)	wt count	avg. wt/ organism
1	108.45	110.66	20	0.11
2	98.40	100.72	20	0.12
3	101.82	104.21	20	0.12

INDEX	BKR	NAS SMPL	CLIENT DESCRIP	REPL		INIT	SURV	MORT	PSURV	PMORT	TARE WT (mg)	WT COUNT	DRY WT (mg)	ASHED DRY WT (mg)	TWT (mg)	WT (mg)	TAFDW (mg)	AFDW (mg)
1	66	9574F	Control	1		10	8	2	80.0	20.0	82.86	6	92.96	84.78	76.78	0.83	8.18	1.02
2	109	9574F	Control	2		10	6	4	60.0	40.0	89.58	6	96.49	90.88	84.88	0.88	5.61	0.94
3	120	9574F	Control	3		10	8	2	80.0	20.0	89.42	8	101.43	92.26	84.26	0.63	9.17	1.15
4	79	9574F	Control	4		10	8	2	80.0	20.0	80.24	8	92.45	83.64	75.64	0.82	8.81	1.10
5	19	9574F	Control	5		10	9	1	90.0	10.0	91.96	9	106.49	95.71	86.71	0.81	10.78	1.20
6	30	9574F	Control	6		10	10	0	100.0	0.0	79.11	10	91.14	81.81	71.81	0.79	9.33	0.93
7	23	9574F	Control	7		10	10	0	100.0	0.0	79.58	10	94.60	83.88	73.88	0.78	10.72	1.07
8	69	9574F	Control	8	wq replicate	10	9	1	90.0	10.0	87.00	9	97.70	88.99	79.99	0.82	8.71	0.97
9	63	9594F	LW2-U5Q-1	1		10	8	2	80.0	20.0	86.99	8	98.55	89.74	81.74	0.83	8.81	1.10
10	167	9594F	LW2-U5Q-1	2		10	9	1	90.0	10.0	89.00	9	106.14	95.65	86.65	0.82	10.49	1.17
11	164	9594F	LW2-U5Q-1	3		10	9	1	90.0	10.0	87.39	9	105.62	94.52	85.52	0.81	11.30	1.26
12	58	9594F	LW2-U5Q-1	4		10	9	1	90.0	10.0	91.62	9	104.97	95.42	86.42	0.82	9.55	1.06
13	53	9594F	LW2-U5Q-1	5		10	9	1	90.0	10.0	89.17	9	102.97	93.35	84.35	0.82	9.62	1.07
14	112	9594F	LW2-U5Q-1	6		10	8	2	80.0	20.0	89.43	8	101.26	92.17	84.17	0.83	9.09	1.14
15	160	9594F	LW2-U5Q-1	7		10	9	1	90.0	10.0	85.72	9	103.78	91.91	82.91	0.80	11.87	1.32
16	46	9594F	LW2-U5Q-1	8	wq replicate	10	9	1	90.0	10.0	81.56	9	96.03	86.62	77.62	0.81	9.41	1.05
17	118	9595F	LW2-U5Q-2	1		10	6	4	60.0	40.0	91.00	6	102.78	95.15	89.15	0.87	7.63	1.27
18	10	9595F	LW2-U5Q-2	2		10	4	6	40.0	60.0	94.31	4	103.67	97.18	93.18	0.90	6.49	1.62
19	3	9595F	LW2-U5Q-2	3		10	8	2	80.0	20.0	82.39	8	96.73	87.63	79.63	0.82	9.10	1.14
20	16	9595F	LW2-U5Q-2	4		10	9	1	90.0	10.0	79.56	9	94.17	84.95	75.95	0.81	9.22	1.02
21	163	9595F	LW2-U5Q-2	5		10	8	2	80.0	20.0	81.95	8	98.51	88.41	80.41	0.82	10.10	1.26
22	131	9595F	LW2-U5Q-2	6		10	10	0	100.0	0.0	83.02	10	99.99	89.93	79.93	0.80	10.06	1.01
23	62	9595F	LW2-U5Q-2	7		10	10	0	100.0	0.0	77.85	10	92.32	82.27	72.27	0.78	10.05	1.01
24	8	9595F	LW2-U5Q-2	8	wq replicate	10	7	3	70.0	30.0	84.95	7	98.47	89.63	82.63	0.64	8.84	1.26
25	152	9596F	LW2-U5Q-3	1		10	10	0	100.0	0.0	85.50	10	103.92	92.53	82.53	0.79	11.29	1.13
26	100	9596F	LW2-U5Q-3	2		10	8	2	80.0	20.0	98.36	8	114.64	104.57	96.57	0.84	10.07	1.26
27	12	9596F	LW2-U5Q-3	3		10	9	1	90.0	10.0	79.66	9	97.73	86.85	77.85	0.80	10.88	1.21
28	129	9596F	LW2-U5Q-3	4		10	9	1	90.0	10.0	86.79	9	105.74	94.07	85.07	0.80	11.67	1.30
29	84	9596F	LW2-U5Q-3	5		10	9	1	90.0	10.0	86.77	9	102.28	92.21	83.21	0.81	10.07	1.12
30	115	9596F	LW2-U5Q-3	6		10	10	0	100.0	0.0	88.58	10	101.24	91.16	81.16	0.80	10.06	1.01
31	132	9596F	LW2-U5Q-3	7		10	10	0	100.0	0.0	96.71	10	115.60	104.46	94.46	0.82	11.14	1.11
32	57	9596F	LW2-U5Q-3	8	wq replicate	10	10	0	100.0	0.0	88.58	10	103.74	94.20	84.20	0.81	9.54	0.95
33	77	9597F	LW2-U6TOC-1	1		10	10	0	100.0	0.0	91.93	10	109.11	98.87	88.87	0.81	10.24	1.02
34	102	9597F	LW2-U6TOC-1	2		10	9	1	90.0	10.0	83.73	9	98.77	88.61	79.61	0.81	10.16	1.13
35	85	9597F	LW2-U6TOC-1	3		10	10	0	100.0	0.0	88.92	10	103.67	94.94	84.94	0.82	8.73	0.87
36	158	9597F	LW2-U6TOC-1	4		10	10	0	100.0	0.0	86.50	10	105.92	94.84	84.84	0.80	11.08	1.11
37	94	9597F	LW2-U6TOC-1	5		10	10	0	100.0	0.0	96.02	10	113.43	102.59	92.59	0.82	10.84	1.08
38	15	9597F	LW2-U6TOC-1	6		10	8	2	80.0	20.0	84.99	8	99.69	90.11	82.11	0.82	9.58	1.20
39	128	9597F	LW2-U6TOC-1	7		10	10	0	100.0	0.0	82.94	10	98.96	88.19	78.19	0.79	10.77	1.08
40	103	9597F	LW2-U6TOC-1	8	wq replicate	10	9	1	90.0	10.0	85.65	9	102.08	91.19	82.19	0.81	10.89	1.21

	SURV	MORT	PSURV	PMORT	WT	AFDW
Mean	8.5	1.5	85.0	15.0	0.82	1.05
SD	1.3	1.3	13.1	13.1	0.03	0.10
n	8	8	8	8	8	8
Mean	8.8	1.3	87.5	12.5	0.82	1.14
SD	0.5	0.5	4.6	4.6	0.01	0.10
n	8	8	8	8	8	8
Mean	7.8	2.3	77.5	22.5	0.83	1.20
SD	2.1	2.1	20.5	20.5	0.04	0.21
n	8	8	8	8	8	8
Mean	9.4	0.6	93.8	6.3	0.81	1.14
SD	0.7	0.7	7.4	7.4	0.02	0.12
n	8	8	8	8	8	8
Mean	9.5	0.5	95.0	5.0	0.81	1.09
SD	0.8	0.8	7.6	7.6	0.01	0.11
n	8	8	8	8	8	8

ANC08741
BZTO104(e)008741

Test Number: 686-24

Freshwater Sediment Test
10-Day Chironomus tentans

INDEX	BKR	NAS SMPL	CLIENT DESCRIP	REPL		INIT	SURV	MORT	PSURV	PMORT	TARE WT (mg)	WT COUNT	DRY WT (mg)	ASHED DRY WT (mg)	TWT (mg)	WT (mg)	TAFDW (mg)	AFDW (mg)
41	2	9598F	LW2-U6TOC-2	1		10	8	2	80.0	20.0	85.84	8	98.93	89.57	87.57	0.82	9.36	1.17
42	73	9598F	LW2-U6TOC-2	2		10	9	1	90.0	10.0	93.02	9	112.33	100.53	91.53	0.81	11.80	1.31
43	31	9598F	LW2-U6TOC-2	3		10	6	4	60.0	40.0	95.90	6	109.06	99.39	93.39	0.86	9.67	1.61
44	133	9598F	LW2-U6TOC-2	4		10	10	0	100.0	0.0	88.89	10	105.44	94.41	84.41	0.80	11.03	1.10
45	43	9598F	LW2-U6TOC-2	5		10	8	2	80.0	20.0	86.48	8	100.37	90.65	82.65	0.82	9.72	1.22
46	49	9598F	LW2-U6TOC-2	6		10	9	1	90.0	10.0	85.22	9	99.62	89.49	80.49	0.81	10.13	1.13
47	143	9598F	LW2-U6TOC-2	7		10	10	0	100.0	0.0	92.32	10	110.45	98.48	88.48	0.80	11.97	1.20
48	155	9598F	LW2-U6TOC-2	8	wq replicate	10	10	0	100.0	0.0	88.54	10	106.73	95.65	85.65	0.80	11.08	1.11
49	14	9599F	LW2-U6TOC-3	1		10	10	0	100.0	0.0	82.30	10	96.74	97.20	77.20	0.80	9.54	0.95
50	90	9599F	LW2-U6TOC-3	2		10	6	4	60.0	40.0	85.15	6	98.57	89.65	83.66	0.85	8.91	1.49
51	95	9599F	LW2-U6TOC-3	3		10	10	0	100.0	0.0	96.32	10	112.32	101.91	91.91	0.82	10.41	1.04
52	8	9599F	LW2-U6TOC-3	4		10	9	1	90.0	10.0	88.82	9	102.87	93.44	84.44	0.82	9.43	1.05
53	48	9599F	LW2-U6TOC-3	5		10	9	1	90.0	10.0	96.06	9	111.91	101.25	92.25	0.82	10.66	1.18
54	156	9599F	LW2-U6TOC-3	6		10	10	0	100.0	0.0	87.56	10	105.96	95.23	85.23	0.80	10.73	1.07
55	56	9599F	LW2-U6TOC-3	7		10	9	1	90.0	10.0	87.94	9	101.85	92.09	83.09	0.82	9.76	1.08
56	47	9599F	LW2-U6TOC-3	8	wq replicate	10	8	2	80.0	20.0	85.47	8	97.83	89.26	81.26	0.83	8.57	1.07
57	78	9600F	LW2-U4Q-1	1		10	10	0	100.0	0.0	89.27	10	107.90	96.56	86.56	0.80	11.34	1.13
58	125	9600F	LW2-U4Q-1	2		10	10	0	100.0	0.0	77.82	10	93.73	83.56	73.56	0.79	10.15	1.02
59	55	9600F	LW2-U4Q-1	3		10	9	1	90.0	10.0	82.74	9	97.93	87.75	78.75	0.80	10.18	1.13
60	21	9600F	LW2-U4Q-1	4		10	9	1	90.0	10.0	89.36	9	104.45	94.95	85.95	0.82	9.50	1.06
61	7	9600F	LW2-U4Q-1	5		10	8	2	80.0	20.0	82.31	8	97.05	88.16	80.16	0.83	8.89	1.11
62	134	9600F	LW2-U4Q-1	6		10	10	0	100.0	0.0	92.30	10	112.63	101.30	91.30	0.81	11.33	1.13
63	168	9600F	LW2-U4Q-1	7		10	10	0	100.0	0.0	90.00	10	109.46	98.76	88.76	0.81	10.70	1.07
64	40	9600F	LW2-U4Q-1	8	wq replicate	10	9	1	90.0	10.0	78.97	9	93.58	84.25	75.25	0.80	9.33	1.04
65	75	9601F	LW2-U4Q-2	1		10	9	1	90.0	10.0	97.45	9	117.43	97.01	88.01	0.75	20.42	2.27
66	161	9601F	LW2-U4Q-2	2		10	9	1	90.0	10.0	90.85	9	111.24	100.40	91.40	0.82	10.84	1.20
67	26	9601F	LW2-U4Q-2	3		10	8	2	80.0	20.0	80.55	8	98.60	88.17	80.17	0.81	10.43	1.30
68	142	9601F	LW2-U4Q-2	4		10	10	0	100.0	0.0	89.83	10	109.81	98.88	88.88	0.81	10.93	1.09
69	138	9601F	LW2-U4Q-2	5		10	10	0	100.0	0.0	87.96	9	106.46	95.24	86.24	0.81	11.22	1.25
70	64	9601F	LW2-U4Q-2	6		10	10	0	100.0	0.0	84.34	10	98.72	88.90	78.90	0.80	9.82	0.98
71	17	9601F	LW2-U4Q-2	7		10	9	1	90.0	10.0	85.64	9	102.32	92.46	83.46	0.82	9.86	1.10
72	82	9601F	LW2-U4Q-2	8	wq replicate	10	10	0	100.0	0.0	92.42	10	107.09	98.77	88.77	0.83	8.32	0.83
73	25	9602F	LW2-U4Q-3	1		10	7	3	70.0	30.0	90.34	7	104.10	95.40	88.40	0.85	8.70	1.24
74	32	9602F	LW2-U4Q-3	2		10	10	0	100.0	0.0	81.08	10	98.04	87.57	77.57	0.79	10.47	1.05
75	136	9602F	LW2-U4Q-3	3		10	9	1	90.0	10.0	86.01	9	103.60	93.02	84.02	0.81	10.58	1.18
76	122	9602F	LW2-U4Q-3	4		10	10	0	100.0	0.0	86.81	10	102.85	92.51	82.51	0.80	10.34	1.03
77	107	9602F	LW2-U4Q-3	5		10	10	0	100.0	0.0	85.91	10	103.79	93.30	83.30	0.80	10.49	1.05
78	113	9602F	LW2-U4Q-3	6		10	10	0	100.0	0.0	87.17	10	102.62	92.43	82.43	0.80	10.19	1.02
79	13	9602F	LW2-U4Q-3	7		10	8	2	80.0	20.0	84.07	8	99.80	90.15	82.15	0.82	9.65	1.21
80	27	9602F	LW2-U4Q-3	8	wq replicate	10	9	1	90.0	10.0	92.46	9	107.99	98.39	89.39	0.83	9.60	1.07
81	9	9603F	LW2-U3C-1	1		10	6	4	60.0	40.0	87.95	6	100.66	91.57	85.57	0.85	9.09	1.52
82	123	9603F	LW2-U3C-1	2		10	10	0	100.0	0.0	87.56	10	103.58	91.63	81.63	0.79	11.95	1.20
83	148	9603F	LW2-U3C-1	3		10	8	2	80.0	20.0	89.18	8	104.60	93.40	85.40	0.82	11.20	1.40
84	67	9603F	LW2-U3C-1	4		10	10	0	100.0	0.0	88.13	10	105.07	93.88	83.88	0.80	11.19	1.12
85	137	9603F	LW2-U3C-1	5		10	10	0	100.0	0.0	92.60	10	111.86	98.60	88.60	0.79	13.25	1.33
86	80	9603F	LW2-U3C-1	6		10	9	1	90.0	10.0	78.22	9	97.41	85.17	76.17	0.78	12.24	1.36
87	92	9603F	LW2-U3C-1	7		10	10	0	100.0	0.0	82.30	10	99.59	87.79	77.79	0.78	11.80	1.18
88	114	9603F	LW2-U3C-1	8	wq replicate	10	9	1	90.0	10.0	89.84	9	105.45	94.13	85.13	0.81	11.32	1.26
89	105	9604F	LW2-U3C-2	1		10	8	2	80.0	20.0	87.31	8	104.23	92.62	84.62	0.81	11.61	1.45
90	93	9604F	LW2-U3C-2	2		10	9	1	90.0	10.0	89.98	9	106.51	95.09	86.09	0.81	11.42	1.27
91	140	9604F	LW2-U3C-2	3		10	8	2	80.0	20.0	88.34	8	106.03	94.12	86.12	0.81	11.91	1.49
92	108	9604F	LW2-U3C-2	4		10	10	0	100.0	0.0	92.12	10	109.22	96.49	86.49	0.79	12.73	1.27
93	99	9604F	LW2-U3C-2	5		10	9	1	90.0	10.0	88.71	9	105.92	94.12	85.12	0.80	11.80	1.31
94	52	9604F	LW2-U3C-2	6		10	10	0	100.0	0.0	87.48	10	102.32	91.78	81.78	0.80	10.54	1.05
95	106	9604F	LW2-U3C-2	7		10	7	3	70.0	30.0	95.60	7	110.59	100.07	93.07	0.84	10.52	1.50
96	24	9604F	LW2-U3C-2	8	wq replicate	10	10	0	100.0	0.0	84.30	10	100.86	89.37	79.37	0.79	11.49	1.15

	SURV	MORT	PSURV	PMORT	WT	AFDW
Mean	8.8	1.3	87.5	12.5	0.82	1.23
SD	1.4	1.4	13.9	13.9	0.02	0.17
n	8	8	8	8	8	8
Mean	8.9	1.1	88.8	11.3	0.82	1.12
SD	1.4	1.4	13.6	13.6	0.02	0.16
n	8	8	8	8	8	8
Mean	9.4	0.6	93.8	6.3	0.81	1.09
SD	0.7	0.7	7.4	7.4	0.01	0.05
n	8	8	8	8	8	8
Mean	9.4	0.6	93.8	6.3	0.81	1.25
SD	0.7	0.7	7.4	7.4	0.02	0.44
n	8	8	8	8	8	8
Mean	9.1	0.9	91.3	8.8	0.81	1.11
SD	1.1	1.1	11.3	11.3	0.02	0.09
n	8	8	8	8	8	8
Mean	9.0	1.0	90.0	10.0	0.80	1.29
SD	1.4	1.4	14.1	14.1	0.02	0.13
n	8	8	8	8	8	8
Mean	8.9	1.1	88.8	11.3	0.81	1.31
SD	1.1	1.1	11.3	11.3	0.02	0.16
n	8	8	8	8	8	8

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ANC08742
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Test Number: 686-24

Freshwater Sediment Test
10-Day Chironomus tentans

INDEX	BKR	NAS SMPL	CLIENT DESCRIP	REPL		INIT	SURV	MORT	PSURV	PMORT	TARE WT (mg)	WT COUNT	DRY WT (mg)	ASHED DRY WT (mg)	TWT (mg)	WT (mg)	TAFDW (mg)	AFDW (mg)		SURV	MORT	PSURV	PMORT	WT	AFDW
97	91	9605F	LW2-U3C-3	1		10	9	1	90.0	10.0	92.23	9	111.83	96.67	89.67	0.80	13.16	1.46							
98	22	9605F	LW2-U3C-3	2		10	10	0	100.0	0.0	85.77	10	102.61	91.44	81.44	0.79	11.17	1.12							
99	98	9605F	LW2-U3C-3	3		10	9	1	90.0	10.0	96.85	9	113.97	102.12	93.12	0.82	11.85	1.32							
100	96	9605F	LW2-U3C-3	4		10	9	1	90.0	10.0	84.10	9	101.19	89.71	80.71	0.80	11.48	1.28							
101	89	9605F	LW2-U3C-3	5		10	10	0	100.0	0.0	95.01	10	111.92	101.07	91.07	0.81	10.85	1.09	Mean	9.6	0.4	96.3	3.8	0.80	1.26
102	157	9605F	LW2-U3C-3	6		10	10	0	100.0	0.0	80.34	10	99.72	87.52	77.52	0.78	12.20	1.22	SD	0.5	0.5	5.2	5.2	0.01	0.12
103	116	9605F	LW2-U3C-3	7		10	10	0	100.0	0.0	87.36	10	105.95	93.49	83.49	0.79	12.46	1.25	n	6	6	6	6	6	6
104	146	9605F	LW2-U3C-3	8	wq replicate	10	10	0	100.0	0.0	91.95	10	111.78	98.59	88.59	0.79	13.19	1.32							
105	127	9606F	LW2-U2C-1	1		10	10	0	100.0	0.0	86.15	10	105.49	93.41	83.41	0.79	12.08	1.21							
106	165	9606F	LW2-U2C-1	2		10	9	1	90.0	10.0	90.27	9	112.21	99.99	90.99	0.81	12.22	1.36							
107	162	9606F	LW2-U2C-1	3		10	9	1	90.0	10.0	81.88	9	104.33	90.96	81.96	0.79	13.37	1.49							
108	144	9606F	LW2-U2C-1	4		10	10	0	100.0	0.0	88.40	10	108.11	94.47	84.47	0.78	13.64	1.36							
109	18	9606F	LW2-U2C-1	5		10	8	2	80.0	20.0	91.99	8	109.46	97.72	89.72	0.82	11.74	1.47	Mean	8.9	1.1	88.8	11.3	0.81	1.35
110	117	9606F	LW2-U2C-1	6		10	6	4	60.0	40.0	93.92	6	109.11	99.29	93.29	0.86	9.82	1.64	SD	1.4	1.4	13.6	13.6	0.02	0.18
111	126	9606F	LW2-U2C-1	7		10	10	0	100.0	0.0	85.43	10	104.59	92.62	82.62	0.79	11.97	1.20	n	6	6	6	6	6	6
112	60	9606F	LW2-U2C-1	8	wq replicate	10	9	1	90.0	10.0	86.65	9	101.06	91.16	82.16	0.81	9.90	1.10							
113	130	9607F	LW2-U2C-2	1		10	8	2	80.0	20.0	84.33	8	102.90	90.75	82.75	0.80	12.15	1.52							
114	76	9607F	LW2-U2C-2	2		10	10	0	100.0	0.0	88.44	10	109.76	106.77	96.77	0.88	2.99	0.30							
115	36	9607F	LW2-U2C-2	3		10	10	0	100.0	0.0	83.86	10	102.40	90.20	80.20	0.78	12.20	1.22							
116	20	9607F	LW2-U2C-2	4		10	7	3	70.0	30.0	83.51	7	100.15	89.20	82.20	0.82	10.95	1.56							
117	101	9607F	LW2-U2C-2	5		10	9	1	90.0	10.0	79.56	9	96.12	85.25	76.25	0.79	10.87	1.21	Mean	9.0	1.0	90.0	10.0	0.82	1.18
118	147	9607F	LW2-U2C-2	6		10	10	0	100.0	0.0	97.32	10	116.32	104.36	94.36	0.81	11.96	1.20	SD	1.1	1.1	10.7	10.7	0.03	0.39
119	153	9607F	LW2-U2C-2	7		10	9	1	90.0	10.0	94.15	9	112.49	100.14	91.14	0.81	12.35	1.37	n	6	6	6	6	6	6
120	1	9607F	LW2-U2C-2	8	wq replicate	10	9	1	90.0	10.0	88.93	9	104.17	94.55	85.55	0.82	9.62	1.07							
121	39	9608F	LW2-U2C-3	1		10	7	3	70.0	30.0	90.44	7	104.40	95.32	86.32	0.85	9.08	1.30							
122	74	9608F	LW2-U2C-3	2		10	9	1	90.0	10.0	83.70	9	102.53	91.89	82.89	0.81	10.64	1.18							
123	124	9608F	LW2-U2C-3	3		10	8	2	80.0	20.0	87.65	8	101.72	91.75	83.75	0.82	9.97	1.25							
124	51	9608F	LW2-U2C-3	4		10	10	0	100.0	0.0	87.95	10	105.16	95.11	85.11	0.81	10.05	1.01							
125	66	9608F	LW2-U2C-3	5		10	9	1	90.0	10.0	81.01	9	96.62	86.45	77.45	0.80	10.17	1.13	Mean	8.9	1.1	88.8	11.3	0.82	1.19
126	141	9608F	LW2-U2C-3	6		10	10	0	100.0	0.0	95.12	10	114.73	102.40	92.40	0.81	12.33	1.23	SD	1.0	1.0	9.9	9.9	0.01	0.09
127	139	9608F	LW2-U2C-3	7		10	9	1	90.0	10.0	95.36	9	113.52	102.34	93.34	0.82	11.18	1.24	n	6	6	6	6	6	6
128	33	9608F	LW2-U2C-3	8	wq replicate	10	9	1	90.0	10.0	82.64	9	98.58	88.24	79.24	0.80	10.34	1.15							
129	88	9609F	LW2-U1C-1	1		10	10	0	100.0	0.0	92.60	10	109.58	98.65	88.65	0.81	10.93	1.09							
130	151	9609F	LW2-U1C-1	2		10	10	0	100.0	0.0	87.31	10	102.32	91.01	81.01	0.79	11.31	1.13							
131	65	9609F	LW2-U1C-1	3		10	10	0	100.0	0.0	86.30	10	100.54	89.66	79.66	0.79	10.86	1.09							
132	59	9609F	LW2-U1C-1	4		10	9	1	90.0	10.0	91.70	9	105.82	95.61	86.61	0.82	10.21	1.13							
133	35	9609F	LW2-U1C-1	5		10	8	2	80.0	20.0	84.80	8	101.17	90.12	82.12	0.81	11.05	1.38	Mean	9.5	0.5	95.0	5.0	0.80	1.19
134	135	9609F	LW2-U1C-1	6		10	10	0	100.0	0.0	89.82	10	106.25	94.71	84.71	0.80	11.54	1.15	SD	0.8	0.8	7.6	7.6	0.01	0.12
135	104	9609F	LW2-U1C-1	7		10	9	1	90.0	10.0	94.67	9	111.51	99.30	90.30	0.81	12.21	1.36	n	6	6	6	6	6	6
136	28	9609F	LW2-U1C-1	8	wq replicate	10	10	0	100.0	0.0	84.00	10	100.72	89.28	79.28	0.79	11.44	1.14							
137	61	9610F	LW2-U1C-2	1		10	10	0	100.0	0.0	81.42	10	96.67	86.04	76.04	0.79	10.63	1.06							
138	111	9610F	LW2-U1C-2	2		10	10	0	100.0	0.0	84.99	10	99.21	88.80	78.80	0.79	10.41	1.04							
139	44	9610F	LW2-U1C-2	3		10	7	3	70.0	30.0	87.46	7	97.34	89.92	82.92	0.85	7.42	1.06							
140	5	9610F	LW2-U1C-2	4		10	9	1	90.0	10.0	84.53	9	98.89	89.05	80.05	0.81	9.84	1.09							
141	72	9610F	LW2-U1C-2	5		10	9	1	90.0	10.0	92.26	9	109.63	97.77	88.77	0.81	11.86	1.32	Mean	8.9	1.1	88.8	11.3	0.81	1.20
142	149	9610F	LW2-U1C-2	6		10	9	1	90.0	10.0	83.13	9	99.88	87.79	78.79	0.79	12.09	1.34	SD	1.0	1.0	9.9	9.9	0.02	0.17
143	41	9610F	LW2-U1C-2	7		10	9	1	90.0	10.0	91.50	9	106.83	96.23	87.23	0.82	10.60	1.18	n	6	6	6	6	6	6
144	154	9610F	LW2-U1C-2	8	wq replicate	10	8	2	80.0	20.0	91.66	8	109.68	97.86	89.86	0.82	12.02	1.50							
145	37	9611F	LW2-U1C-3	1		10	10	0	100.0	0.0	96.81	10	115.16	104.13	94.13	0.82	11.03	1.10							
146	45	9611F	LW2-U1C-3	2		10	9	1	90.0	10.0	92.08	9	107.87	98.19	89.19	0.83	9.68	1.08							
147	38	9611F	LW2-U1C-3	3		10	9	1	90.0	10.0	92.10	9	107.18	97.35	88.35	0.82	9.83	1.09							
148	87	9611F	LW2-U1C-3	4		10	10	0	100.0	0.0	94.53	10	112.28	101.63	91.63	0.82	10.65	1.07							
149	4	9611F	LW2-U1C-3	5		10	10	0	100.0	0.0	88.26	10	103.08	93.35	83.35	0.81	9.73	0.97	Mean	9.4	0.6	93.8	6.3	0.81	1.12
150	34	9611F	LW2-U1C-3	6		10	9	1	90.0	10.0	91.37	9	97.42	86.84	77.84	0.80	10.58	1.18	SD	0.5	0.5	5.2	5.2	0.01	0.10
151	119	9611F	LW2-U1C-3	7		10	9	1	90.0	10.0	90.00	9	108.02	96.51	87.51	0.81	11.51	1.28	n	6	6	6	6	6	6
152	153	9611F	LW2-U1C-3	8	wq replicate	10	9	1	90.0	10.0	84.55	9	103.23	92.21	83.21	0.81	11.02	1.22							

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Test Number: 686-24

Freshwater Sediment Test
10-Day Chironomus tentans

INDEX	BKR	NAS SMPL	CLIENT DESCRIP	REPL		INIT	SURV	MORT	PSURV	PMORT	TARE WT (mg)	WT COUNT	DRY WT (mg)	ASHED DRY WT (mg)	TWT (mg)	WT (mg)	TAFDW (mg)	AFDW (mg)		SURV	MORT	PSURV	PMORT	WT	AFDW
153	11	9612F	LW2-D1-1	1		10	10	0	100.0	0.0	83.30	10	98.54	89.13	79.13	0.80	9.41	0.94							
154	150	9612F	LW2-D1-1	2		10	5	5	50.0	50.0	87.67	5	98.17	90.62	85.62	0.87	7.55	1.51							
155	81	9612F	LW2-D1-1	3		10	10	0	100.0	0.0	91.44	10	107.77	98.06	88.06	0.82	9.71	0.97							
156	110	9612F	LW2-D1-1	4		10	1	9	10.0	90.0	89.50	1	90.44	89.79	88.79	0.98	0.65	0.65							
157	42	9612F	LW2-D1-1	5		10	10	0	100.0	0.0	92.91	10	108.66	98.79	88.79	0.82	9.87	0.99	Mean	7.9	2.1	78.8	21.3	0.84	1.04
158	83	9612F	LW2-D1-1	6		10	10	0	100.0	0.0	91.34	10	107.79	97.91	87.91	0.82	9.88	0.99	SD	3.3	3.3	32.7	32.7	0.06	0.24
159	71	9612F	LW2-D1-1	7		10	8	2	80.0	20.0	89.93	8	102.09	93.43	85.43	0.84	8.66	1.08	n	8	8	8	8	8	8
160	97	9612F	LW2-D1-1	8	wq replicate	10	9	1	90.0	10.0	82.17	9	99.26	88.66	79.66	0.80	10.60	1.18							
161	166	9613F	LW2-D2	1		10	10	0	100.0	0.0	94.58	10	117.04	106.17	96.17	0.82	10.87	1.09							
162	29	9613F	LW2-D2	2		10	10	0	100.0	0.0	87.09	10	105.52	95.86	85.86	0.81	9.66	0.97							
163	50	9613F	LW2-D2	3		10	10	0	100.0	0.0	89.21	10	106.57	96.98	86.98	0.82	9.59	0.96							
164	70	9613F	LW2-D2	4		10	10	0	100.0	0.0	92.24	10	108.95	98.86	88.86	0.82	10.07	1.01							
165	121	9613F	LW2-D2	5		10	10	0	100.0	0.0	91.17	10	107.36	97.18	87.18	0.81	10.18	1.02	Mean	9.1	0.9	91.3	8.8	0.82	1.10
166	54	9613F	LW2-D2	6		10	7	3	70.0	30.0	84.14	7	99.16	89.01	82.01	0.83	10.15	1.45	SD	1.6	1.6	16.4	16.4	0.02	0.16
167	145	9613F	LW2-D2	7		10	10	0	100.0	0.0	83.71	10	104.30	92.78	82.78	0.79	11.52	1.15	n	8	8	8	8	8	8
168	86	9613F	LW2-D2	8	wq replicate	10	6	4	60.0	40.0	86.77	6	100.10	92.90	86.90	0.87	7.20	1.20							
		Beaker #138 one animal was lost or damaged in transfering to weighing pan.																							

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Water Quality Data

NAS SMPL	CLIENT DESCRIP	Bulk Sediment Interstitial water NH3	pH
9574F	Control	2.3	6.6
9594F	LW2-U5Q-1	<0.5	6.8
9595F	LW2-U5Q-2	<0.5	6.5
9596F	LW2-U5Q-3	0.5	6.5
9597F	LW2-U6TOC-1	1.5	6.4
9598F	LW2-U6TOC-2	2.6	6.0
9599F	LW2-U6TOC-3	1.9	5.8
9600F	LW2-U4Q-1	2.0	6.0
9601F	LW2-U4Q-2	2.2	6.1
9602F	LW2-U4Q-3	1.9	6.2
9603F	LW2-U3C-1	3.5	6.5
9604F	LW2-U3C-2	2.2	6.7
9605F	LW2-U3C-3	1.3	6.7
9606F	LW2-U2C-1	1.4	6.6
9607F	LW2-U2C-2	1.1	6.3
9608F	LW2-U2C-3	0.6	6.2
9609F	LW2-U1C-1	1.3	6.3
9610F	LW2-U1C-2	1.1	6.1
9611F	LW2-U1C-3	0.5	6.0
9612F	LW2-D1-1	1.7	6.2
9613F	LW2-D2	1.1	6.3

BKR	NAS SMPL	CLIENT DESCRIP	REPL	DAY	Overlying water TEMP	DO	COND	pH	NH3	HARD	ALK
1	9607F	LW2-U2C-2	8	0	22.9	7.4	185	6.8	<0.1	34	40
6	9595F	LW2-U5Q-2	8	0	22.8	7.8	155	6.7	<0.1	43	40
24	9604F	LW2-U3C-2	8	0	22.8	7.6	160	6.7	0.3	34	40
27	9602F	LW2-U4Q-3	8	0	22.8	7.4	150	6.6	0.2	43	40
28	9609F	LW2-U1C-1	8	0	22.7	7.2	140	6.6	<0.1	34	40
33	9608F	LW2-U2C-3	8	0	22.7	7.4	150	6.5	<0.1	34	40
40	9600F	LW2-U4Q-1	8	0	22.9	7.3	150	6.6	0.2	34	40
46	9594F	LW2-U5Q-1	8	0	22.8	7.6	150	6.6	<0.1	34	40
47	9599F	LW2-U6TOC-3	8	0	22.6	7.5	150	6.6	0.2	34	40
57	9596F	LW2-U5Q-3	8	0	22.6	7.9	150	6.5	<0.1	43	40
60	9606F	LW2-U2C-1	8	0	22.6	7.7	150	6.5	0.1	43	40
69	9547F	Control	8	0	22.8	7.7	425	6.5	0.1	43	40
82	9601F	LW2-U4Q-2	8	0	22.7	7.6	150	6.7	0.2	34	40
86	9613F	LW2-D2	8	0	22.6	7.4	150	6.6	0.1	34	40
97	9612F	LW2-D1-1	8	0	22.6	7.8	155	6.6	0.2	34	40
103	9597F	LW2-U6TOC-1	8	0	22.5	7.6	150	6.6	0.1	43	40
114	9603F	LW2-U3C-1	8	0	22.5	7.4	160	6.5	<0.1	43	50
146	9605F	LW2-U3C-3	8	0	22.6	7.4	155	6.6	<0.1	34	40
154	9610F	LW2-U1C-2	8	0	22.6	7.6	140	6.5	<0.1	34	40
155	9598F	LW2-U6TOC-2	8	0	22.6	7.7	145	6.5	0.3	34	40
159	9611F	LW2-U1C-3	8	0	22.7	7.2	145	6.5	<0.1	43	40
1	9607F	LW2-U2C-2	8	1	22.8	5.0					
6	9595F	LW2-U5Q-2	8	1	22.8	6.5					
24	9604F	LW2-U3C-2	8	1	22.7	6.2					
27	9602F	LW2-U4Q-3	8	1	22.8	6.3					
28	9609F	LW2-U1C-1	8	1	22.6	6.3					
33	9608F	LW2-U2C-3	8	1	22.5	6.5					
40	9600F	LW2-U4Q-1	8	1	22.9	6.7					
46	9594F	LW2-U5Q-1	8	1	22.7	6.7					
47	9599F	LW2-U6TOC-3	8	1	22.5	6.5					
57	9596F	LW2-U5Q-3	8	1	22.5	6.3					
60	9606F	LW2-U2C-1	8	1	22.8	6.4					
69	9547F	Control	8	1	22.6	6.6					
82	9601F	LW2-U4Q-2	8	1	22.6	6.9					
86	9613F	LW2-D2	8	1	22.7	6.2					
97	9612F	LW2-D1-1	8	1	22.6	6.2					
103	9597F	LW2-U6TOC-1	8	1	22.5	6.2					
114	9603F	LW2-U3C-1	8	1	22.6	6.2					
146	9605F	LW2-U3C-3	8	1	22.7	6.4					
154	9610F	LW2-U1C-2	8	1	22.7	6.0					
155	9598F	LW2-U6TOC-2	8	1	22.8	6.5					
159	9611F	LW2-U1C-3	8	1	22.7	6.6					
1	9607F	LW2-U2C-2	8	2	22.6	5.6					
6	9595F	LW2-U5Q-2	8	2	22.7	5.6					
24	9604F	LW2-U3C-2	8	2	22.6	5.8					
27	9602F	LW2-U4Q-3	8	2	22.6	5.8					
28	9609F	LW2-U1C-1	8	2	22.6	5.8					
33	9608F	LW2-U2C-3	8	2	22.6	5.9					
40	9600F	LW2-U4Q-1	8	2	22.6	6.0					
46	9594F	LW2-U5Q-1	8	2	22.8	6.0					
47	9599F	LW2-U6TOC-3	8	2	22.8	6.0					

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57	9596F	LW2-U5Q-3	8	2	22.7	6.1									
60	9606F	LW2-U2C-1	8	2	22.6	5.6									
69	9547F	Control	8	2	22.8	6.2									
82	9601F	LW2-U4Q-2	8	2	22.8	6.2									
86	9613F	LW2-D2	8	2	22.7	5.5									
97	9612F	LW2-D1-1	8	2	22.5	5.6									
103	9597F	LW2-U6TOC-1	8	2	22.4	5.7									
114	9603F	LW2-U3C-1	8	2	22.4	5.8									
146	9605F	LW2-U3C-3	8	2	22.6	5.8									
154	9610F	LW2-U1C-2	8	2	22.6	5.7									
155	9598F	LW2-U6TOC-2	8	2	22.6	5.8									
159	9611F	LW2-U1C-3	8	2	22.6	5.8									
1	9607F	LW2-U2C-2	8	3	22.6	5.8									
6	9595F	LW2-U5Q-2	8	3	22.6	6.2									
24	9604F	LW2-U3C-2	8	3	22.6	5.6									
27	9602F	LW2-U4Q-3	8	3	22.6	6.1									
28	9609F	LW2-U1C-1	8	3	22.4	6.2									
33	9608F	LW2-U2C-3	8	3	22.4	6.2									
40	9600F	LW2-U4Q-1	8	3	22.8	6.4									
46	9594F	LW2-U5Q-1	8	3	22.8	6.4									
47	9599F	LW2-U6TOC-3	8	3	22.6	6.2									
57	9596F	LW2-U5Q-3	8	3	22.4	6.4									
60	9606F	LW2-U2C-1	8	3	22.7	5.7									
69	9547F	Control	8	3	22.6	6.4									
82	9601F	LW2-U4Q-2	8	3	22.5	6.4									
86	9613F	LW2-D2	8	3	22.5	6.4									
97	9612F	LW2-D1-1	8	3	22.4	6.3									
103	9597F	LW2-U6TOC-1	8	3	22.4	6.3									
114	9603F	LW2-U3C-1	8	3	22.3	5.6									
146	9605F	LW2-U3C-3	8	3	22.5	6.0									
154	9610F	LW2-U1C-2	8	3	22.5	6.2									
155	9598F	LW2-U6TOC-2	8	3	22.5	6.4									
159	9611F	LW2-U1C-3	8	3	22.7	6.5									
1	9607F	LW2-U2C-2	8	4	22.5	6.1									
6	9595F	LW2-U5Q-2	8	4	22.5	6.1									
24	9604F	LW2-U3C-2	8	4	22.5	6.2									
27	9602F	LW2-U4Q-3	8	4	22.5	6.2									
28	9609F	LW2-U1C-1	8	4	22.4	6.2									
33	9608F	LW2-U2C-3	8	4	22.4	5.9									
40	9600F	LW2-U4Q-1	8	4	22.4	5.9									
46	9594F	LW2-U5Q-1	8	4	22.6	6.2									
47	9599F	LW2-U6TOC-3	8	4	22.5	6.1									
57	9596F	LW2-U5Q-3	8	4	22.4	6.0									
60	9606F	LW2-U2C-1	8	4	22.4	5.8									
69	9547F	Control	8	4	22.6	5.9									
82	9601F	LW2-U4Q-2	8	4	22.5	6.1									
86	9613F	LW2-D2	8	4	22.4	6.3									
97	9612F	LW2-D1-1	8	4	22.4	5.8									
103	9597F	LW2-U6TOC-1	8	4	22.4	6.0									
114	9603F	LW2-U3C-1	8	4	22.4	5.7									
146	9605F	LW2-U3C-3	8	4	22.4	5.5									
154	9610F	LW2-U1C-2	8	4	22.5	5.9									
155	9598F	LW2-U6TOC-2	8	4	22.5	5.9									
159	9611F	LW2-U1C-3	8	4	22.5	6.2									
1	9607F	LW2-U2C-2	8	5	22.9	4.7									
6	9595F	LW2-U5Q-2	8	5	22.9	5.0									
24	9604F	LW2-U3C-2	8	5	23.0	4.4									
27	9602F	LW2-U4Q-3	8	5	22.8	4.8									
28	9609F	LW2-U1C-1	8	5	22.8	5.2									
33	9608F	LW2-U2C-3	8	5	22.7	4.7									
40	9600F	LW2-U4Q-1	8	5	22.8	4.7									
46	9594F	LW2-U5Q-1	8	5	23.0	5.2									
47	9599F	LW2-U6TOC-3	8	5	22.8	4.4									
57	9596F	LW2-U5Q-3	8	5	22.7	4.6									
60	9606F	LW2-U2C-1	8	5	23.0	4.2									
69	9547F	Control	8	5	22.8	4.5									
82	9601F	LW2-U4Q-2	8	5	22.8	5.3									
86	9613F	LW2-D2	8	5	22.7	4.7									
97	9612F	LW2-D1-1	8	5	22.7	4.4									
103	9597F	LW2-U6TOC-1	8	5	22.6	4.0									
114	9603F	LW2-U3C-1	8	5	22.6	3.8									
146	9605F	LW2-U3C-3	8	5	22.8	4.0									
154	9610F	LW2-U1C-2	8	5	22.8	4.0									
155	9598F	LW2-U6TOC-2	8	5	23.0	4.4									
159	9611F	LW2-U1C-3	8	5	23.0	4.7									
1	9607F	LW2-U2C-2	8	6	22.7	4.8									
6	9595F	LW2-U5Q-2	8	6	22.7	5.2									
24	9604F	LW2-U3C-2	8	6	22.7	4.4									
27	9602F	LW2-U4Q-3	8	6	22.7	5.0									
28	9609F	LW2-U1C-1	8	6	22.6	4.9									
33	9608F	LW2-U2C-3	8	6	22.6	5.0									

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40	9600F	LW2-U4Q-1	8	6	22.6	4.9								
46	9594F	LW2-U5Q-1	8	6	22.8	5.4								
47	9599F	LW2-U6TOC-3	8	6	22.6	4.2								
57	9596F	LW2-U5Q-3	8	6	22.6	4.8								
60	9606F	LW2-U2C-1	8	6	22.8	4.8								
69	9547F	Control	8	6	22.7	4.4								
82	9601F	LW2-U4Q-2	8	6	22.6	4.5								
86	9613F	LW2-D2	8	6	22.6	4.6								
97	9612F	LW2-D1-1	8	6	22.6	3.8								
103	9597F	LW2-U6TOC-1	8	6	22.5	3.6								
114	9603F	LW2-U3C-1	8	6	22.5	3.8								
146	9605F	LW2-U3C-3	8	6	22.7	4.6								
154	9610F	LW2-U1C-2	8	6	22.7	4.2								
155	9598F	LW2-U6TOC-2	8	6	22.7	5.0								
159	9611F	LW2-U1C-3	8	6	22.8	5.3								
1	9607F	LW2-U2C-2	8	7	22.5	6.0								
6	9595F	LW2-U5Q-2	8	7	22.4	6.5								
24	9604F	LW2-U3C-2	8	7	22.4	5.6								
27	9602F	LW2-U4Q-3	8	7	22.4	6.0								
28	9609F	LW2-U1C-1	8	7	22.4	6.2								
33	9608F	LW2-U2C-3	8	7	22.4	6.0								
40	9600F	LW2-U4Q-1	8	7	22.4	6.4								
46	9594F	LW2-U5Q-1	8	7	22.5	5.5								
47	9599F	LW2-U6TOC-3	8	7	22.4	5.4								
57	9596F	LW2-U5Q-3	8	7	22.4	6.0								
60	9606F	LW2-U2C-1	8	7	22.6	5.9								
69	9547F	Control	8	7	22.4	5.5								
82	9601F	LW2-U4Q-2	8	7	22.4	5.7								
86	9613F	LW2-D2	8	7	22.4	4.8								
97	9612F	LW2-D1-1	8	7	22.3	5.2								
103	9597F	LW2-U6TOC-1	8	7	22.3	4.8								
114	9603F	LW2-U3C-1	8	7	22.2	4.9								
146	9605F	LW2-U3C-3	8	7	22.4	5.2								
154	9610F	LW2-U1C-2	8	7	22.4	5.2								
155	9598F	LW2-U6TOC-2	8	7	22.5	5.4								
159	9611F	LW2-U1C-3	8	7	22.6	6.2								
1	9607F	LW2-U2C-2	8	8	22.4	4.5								
6	9595F	LW2-U5Q-2	8	8	22.2	5.1								
24	9604F	LW2-U3C-2	8	8	22.1	4.5								
27	9602F	LW2-U4Q-3	8	8	22.3	5.0								
28	9609F	LW2-U1C-1	8	8	22.1	4.8								
33	9608F	LW2-U2C-3	8	8	22.1	5.2								
40	9600F	LW2-U4Q-1	8	8	22.2	5.0								
46	9594F	LW2-U5Q-1	8	8	22.4	5.8								
47	9599F	LW2-U6TOC-3	8	8	22.3	4.4								
57	9596F	LW2-U5Q-3	8	8	22.2	4.7								
60	9606F	LW2-U2C-1	8	8	22.2	5.0								
69	9547F	Control	8	8	22.4	3.8								
82	9601F	LW2-U4Q-2	8	8	22.2	4.6								
86	9613F	LW2-D2	8	8	22.2	4.4								
97	9612F	LW2-D1-1	8	8	22.1	4.0								
103	9597F	LW2-U6TOC-1	8	8	22.1	3.6								
114	9603F	LW2-U3C-1	8	8	22.1	3.8								
146	9605F	LW2-U3C-3	8	8	22.2	4.4								
154	9610F	LW2-U1C-2	8	8	22.3	4.6								
155	9598F	LW2-U6TOC-2	8	8	22.3	4.6								
159	9611F	LW2-U1C-3	8	8	22.4	4.8								
1	9607F	LW2-U2C-2	8	9	22.8	5.6								
6	9595F	LW2-U5Q-2	8	9	22.9	5.8								
24	9604F	LW2-U3C-2	8	9	22.9	5.0								
27	9602F	LW2-U4Q-3	8	9	22.7	5.6								
28	9609F	LW2-U1C-1	8	9	22.7	5.4								
33	9608F	LW2-U2C-3	8	9	22.7	6.0								
40	9600F	LW2-U4Q-1	8	9	23.0	5.6								
46	9594F	LW2-U5Q-1	8	9	22.9	5.8								
47	9599F	LW2-U6TOC-3	8	9	22.9	4.4								
57	9596F	LW2-U5Q-3	8	9	22.8	5.6								
60	9606F	LW2-U2C-1	8	9	22.7	5.6								
69	9547F	Control	8	9	22.8	4.6								
82	9601F	LW2-U4Q-2	8	9	22.8	5.2								
86	9613F	LW2-D2	8	9	22.8	4.9								
97	9612F	LW2-D1-1	8	9	22.7	5.4								
103	9597F	LW2-U6TOC-1	8	9	22.6	4.2								
114	9603F	LW2-U3C-1	8	9	22.6	4.6								
146	9605F	LW2-U3C-3	8	9	22.8	4.8								
154	9610F	LW2-U1C-2	8	9	22.8	5.0								
155	9598F	LW2-U6TOC-2	8	9	23.0	5.0								
159	9611F	LW2-U1C-3	8	9	23.0	6.1								
1	9607F	LW2-U2C-2	8	10	22.7	5.5	160	6.1	0.3	34	40			
6	9595F	LW2-U5Q-2	8	10	22.6	6.2	160	6.1	0.1	34	40			
24	9604F	LW2-U3C-2	8	10	22.4	5.3	160	6.0	0.5	43	40			

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BZTO104(e)008747

27	9602F	LW2-U4Q-3	8	10	22.4	6.0	160	6.1	0.5	43	40		
28	9609F	LW2-U1C-1	8	10	22.2	6.0	155	6.0	0.2	34	40		
33	9608F	LW2-U2C-3	8	10	22.2	6.2	155	6.0	0.3	51	40		
40	9600F	LW2-U4Q-1	8	10	22.5	6.2	160	6.0	0.4	34	40		
46	9594F	LW2-U5Q-1	8	10	22.4	6.2	155	6.0	0.2	43	40		
47	9599F	LW2-U6TOC-3	8	10	22.3	5.3	155	6.0	0.4	34	40		
57	9596F	LW2-U5Q-3	8	10	22.2	6.2	160	6.1	0.1	34	40		
60	9606F	LW2-U2C-1	8	10	22.4	6.3	155	6.1	0.2	34	40		
69	9547F	Control	8	10	22.3	5.7	170	6.2	0.4	43	40		
82	9601F	LW2-U4Q-2	8	10	22.3	6.3	155	6.1	0.4	43	40		
86	9613F	LW2-D2	8	10	22.2	6.5	155	6.1	0.3	34	40		
97	9612F	LW2-D1-1	8	10	22.2	5.8	155	6.1	0.2	34	40		
103	9597F	LW2-U6TOC-1	8	10	22.2	5.8	155	6.1	0.4	34	40		
114	9603F	LW2-U3C-1	8	10	22.1	6.1	155	6.1	0.3	34	40		
146	9605F	LW2-U3C-3	8	10	22.2	6.4	160	6.2	0.2	43	40		
154	9610F	LW2-U1C-2	8	10	22.2	6.4	150	6.2	0.2	51	40		
155	9598F	LW2-U6TOC-2	8	10	22.3	6.1	155	6.3	0.4	34	40		
159	9611F	LW2-U1C-3	8	10	22.4	6.6	155	6.2	0.2	34	40		
				Mean	22.6	5.7	161	6.3	0.3	38	40	—	6.3
				SD	0.2	0.9	42	0.3	0.1	5	2	—	0.3
				n	231	231	42	42	42	42	42	21	21
				Min	22.1	3.6	140	6.0	0.1	34	40	<0.5	5.6
				Max	23.0	7.9	425	6.8	0.5	51	50	3.5	6.8

ANC08748
BZTO104(e)008748

AMMONIA EXPOSURE BENCHSHEETS AND ANALYSIS

Total Ammonia-N in Sediment Pore Water: Computation Worksheet

Salicylate Method (SOP #5492)

Result

	Sample description	Dilution factor	OD_{655}	NH_3-N (mg/L)	pH	Salinity (ppt)
	Blank	----	----	----		
	1.0 mg/L NH_3-N Std.	----	0.089	1.00		
	3.0 mg/L NH_3-N Std.	----	0.287	3.00		
	6.0 mg/L NH_3-N Std.	----	0.545	6.00		
	10.0 mg/L NH_3-N Std.	----	0.920	10.00		
	3.0 mg/L spike	----	0.291	3.17		
	3.0 mg/L spike dupl.	----	0.305	3.32		
1.	9574F	5	0.043	2.34		
2.	9594F	5	0.008	ND		
3.	9595F	5	0.006	ND		
4.	9596F	5	0.010	0.54		
5.	9597F	5	0.027	1.47		
6.	9598F	5	0.047	2.56		
7.	9599F	5	0.035	1.90		
8.	9600F	5	0.036	1.96		
9.	9601F	5	0.041	2.23		
10.	9602F	5	0.034	1.85		
11.	9603F	5	0.065	3.54		
12.	9604F	5	0.040	2.18		
13.	9605F	5	0.024	1.31		
14.	9606F	5	0.025	1.36		
15.	9607F	5	0.020	1.09		
16.	9608F	5	0.011	0.60		
17.	9609F	5	0.023	1.25		
18.	9610F	5	0.020	1.09		
19.	9611F	5	0.010	0.54		
20.	9612F	5	0.031	1.69		
21.	9613F	5	0.021	1.14		
22.						
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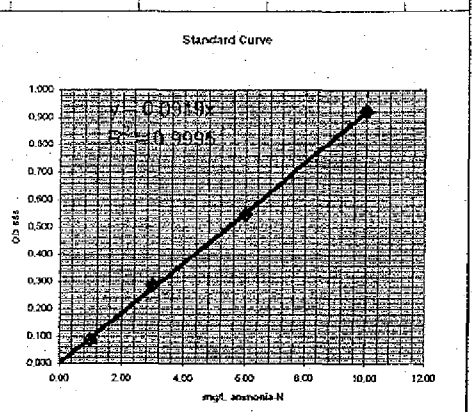
34.						
35.						



Reporting limit (mg/L) =	0.5
Recovery (%) =	108.1
Precision (RPD) =	-4.70
Sample volume (ml):	0.10
Dilution factor	5

Sample Set Description:

Proj. No.: 686

Bulk sediment porewaters

Batch 12

Analyst: RSC

Date analysed: 11/8/2004

ANC08750
BZTO104(e)008750

Total Ammonia-N in Sediment Pore Water: Computation Worksheet

Salicylate Method (SOP #5492)

Result

	Sample description	Dilution factor	OD655	NH3-N (mg/L)	pH	Salinity (ppt)
	Blank	-----	----	----		
	1.0 mg/L NH3-N Std.	-----	.089	1.00		
	3.0 mg/L NH3-N Std.	-----	.287	3.00		
	6.0 mg/L NH3-N Std.	-----	.545	6.00		
	10.0 mg/L NH3-N Std.	-----	.920	10.00		
	3.0 mg/L spike	-----	.281			
	3.0 mg/L spike dupl.	-----	.306			
1.	9574F	5	.043		6.6	
2.	9594F	5	.008		6.8	
3.	9595F	5	.006		6.5	
4.	9596F	5	.010		6.5	
5.	9597F	5	.027		6.7	
6.	9598F	5	.047		6.0	
7.	9599F	5	.035		6.8	
8.	9600F	5	.036		6.0	
9.	9601F	5	.041		6.1	
10.	9602F	5	.034		6.2	
11.	9603F	5	.065		6.3	
12.	9604F	5	.040		6.7	
13.	9605F	5	.024		6.7	
14.	9606F	5	.025		6.6	
15.	9607F	5	.028		6.3	
16.	9608F	5	.017		6.2	
17.	9609F	5	.023		6.3	
18.	9610F	5	.020		6.1	
19.	9611F	5	.010		6.0	
20.	9612F	5	.031		6.2	
21.	9613F	5	.021		6.3	
22.						
23.		* insufficient sample for analysis				
24.						
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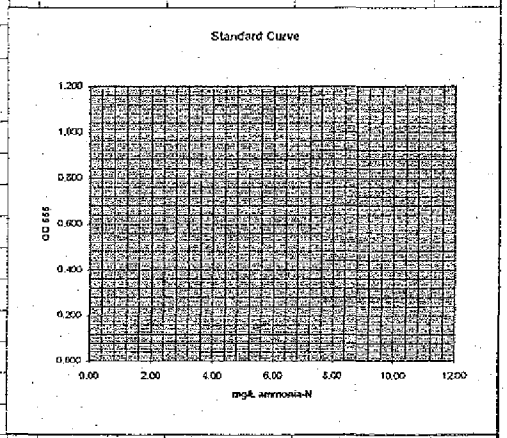

Reporting limit (mg/L) =	0.5
Recovery (%) =	#VALUE!
Precision (RPD) =	#VALUE!
Sample volume (ml):	0.10
Dilution factor	5

Sample Set Description:

Proj. No.: 686

Bulk sediment porewaters

Batch 12

Analyst:	RSC
Date analysed:	11/8/2004

Total Ammonia-N in Water: Computation Worksheet

Salicylate Method (SOP #5492)

Result

	Sample description	Dilution factor	OD_{655}	NH_3-N (mg/L)
	Blank	-----	-----	-----
	1.0 mg/L NH_3-N Std.	-----	0.078	1.00
	3.0 mg/L NH_3-N Std.	-----	0.287	3.00
	6.0 mg/L NH_3-N Std.	-----	0.541	6.00
	10.0 mg/L NH_3-N Std.	-----	0.940	10.00
	3.0 mg/L spike	-----	0.290	3.12
	3.0 mg/L spike dupl.	-----	0.283	3.04
1.	1	1	0.009	ND
2.	6	1	0.000	ND
3.	24	1	0.032	0.34
4.	27	1	0.020	0.21
5.	28	1	0.000	ND
6.	33	1	0.000	ND
7.	40	1	0.018	0.19
8.	46	1	0.000	ND
9.	47	1	0.016	0.17
10.	57	1	0.000	ND
11.	60	1	0.013	0.14
12.	69	1	0.010	0.11
13.	82	1	0.019	0.20
14.	86	1	0.011	0.12
15.	97	1	0.017	0.18
16.	103	1	0.010	0.11
17.	114	1	0.007	ND
18.	146	1	0.008	ND
19.	154	1	0.008	ND
20.	155	1	0.029	0.31
21.	159	1	0.002	ND
22.				
23.				
24.				
25.				
26.				
27.				
28.				
29.				
30.				
31.				
32.				
33.				
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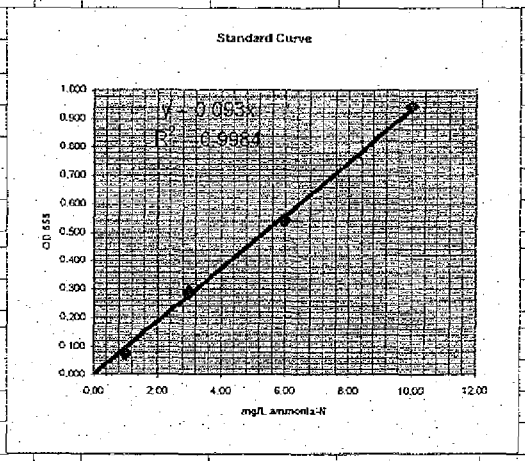


Reporting limit (mg/L) =	0.1
Recovery (%) =	102.6
Precision (RPD) =	2.44
Sample volume (ml):	0.50
Dilution factor	1

Sample Set Description:

Test No.:	686-24
Test Day:	0 (11-9-04)
Species:	*Chironomus*
Overlying water	
Analyst:	RSC
Date analysed:	12/15/2004

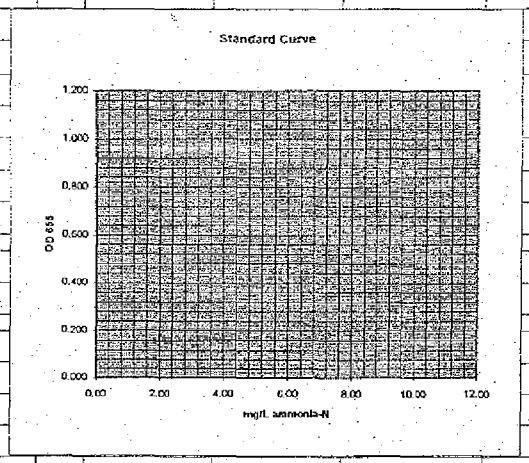
ANC08752
BZTO104(e)008752

Total Ammonia-N in Water: Computation Worksheet

Salicylate Method (SOP #5492)

Result

	Sample description	Dilution factor	OD655	NH3-N (mg/L)
	Blank	----	----	----
	1.0 mg/L NH3-N Std.	----	.078	1.00
	3.0 mg/L NH3-N Std.	----	.287	3.00
	6.0 mg/L NH3-N Std.	----	.541	6.00
	10.0 mg/L NH3-N Std.	----	.940	10.00
	3.0 mg/L spike	----	.290	
	3.0 mg/L spike dupl.	----	.288	
1.	1	1	.009	
2.	6	1	.000	
3.	24	1	.032	
4.	27	1	.020	
5.	28	1	.000	
6.	33	1	.000	
7.	40	1	.018	
8.	46	1	.000	
9.	47	1	.016	
10.	57	1	.000	
11.	60	1	.013	
12.	69	1	.010	
13.	82	1	.019	
14.	86	1	.011	
15.	97	1	.017	
16.	103	1	.010	
17.	114	1	.007	
18.	146	1	.005	
19.	154	1	.008	
20.	155	1	.029	
21.	159	1	.002	
22.				
23.				
24.				
25.				
26.				
27.				
28.				
29.				
30.				
31.				
32.				
33.				
34.				
35.				
36.				



Reporting limit (mg/L) =	0.1
Recovery (%) =	#VALUE!
Precision (RPD) =	#VALUE!
Sample volume (ml):	0.50
Dilution factor	1

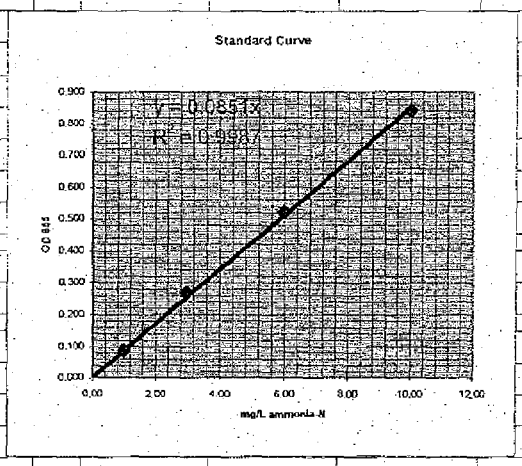
Sample Set Description:

Test No.:	686-24
Test Day:	0 (11-9-04)
Species:	*Chironomus*
Overlying water	
Analyst:	RSC
Date analysed:	12/15/2004

Total Ammonia-N in Water: Computation Worksheet
Salicylate Method (SOP #5492)

Result

	Sample description	Dilution factor	OD655	NH_3-N (mg/L)
	Blank	-----	-----	-----
	1.0 mg/L NH_3-N Std.	-----	0.087	1.00
	3.0 mg/L NH_3-N Std.	-----	0.268	3.00
	6.0 mg/L NH_3-N Std.	-----	0.522	6.00
	10.0 mg/L NH_3-N Std.	-----	0.840	10.00
	3.0 mg/L spike	-----	0.271	3.18
	3.0 mg/L spike dupl.	-----	0.268	3.15
1.	1	1	0.022	0.26
2.	6	1	0.011	0.13
3.	24	1	0.042	0.49
4.	27	1	0.040	0.47
5.	28	1	0.015	0.18
6.	33	1	0.022	0.26
7.	40	1	0.031	0.36
8.	46	1	0.020	0.23
9.	47	1	0.030	0.35
10.	57	1	0.012	0.14
11.	60	1	0.016	0.19
12.	69	1	0.037	0.43
13.	82	1	0.030	0.35
14.	86	1	0.023	0.27
15.	97	1	0.019	0.22
16.	103	1	0.031	0.36
17.	114	1	0.025	0.29
18.	146	1	0.019	0.22
19.	154	1	0.020	0.23
20.	155	1	0.033	0.39
21.	159	1	0.020	0.23
22.				
23.				
24.				
25.				
26.				
27.				
28.				
29.				
30.				
31.				
32.				
33.				
34.				
35.				
36.				



Reporting limit (mg/L) =	0.1
Recovery (%) =	105.5
Precision (RPD) =	1.11
Sample volume (ml):	0.50
Dilution factor	1

Sample Set Description:

Test No.:	686-24
Test Day:	10 (11-19-04)
Species:	*Chironomus*
Overlying water	
Analyst:	RSC
Date analysed:	12/1/2004

ANC08754
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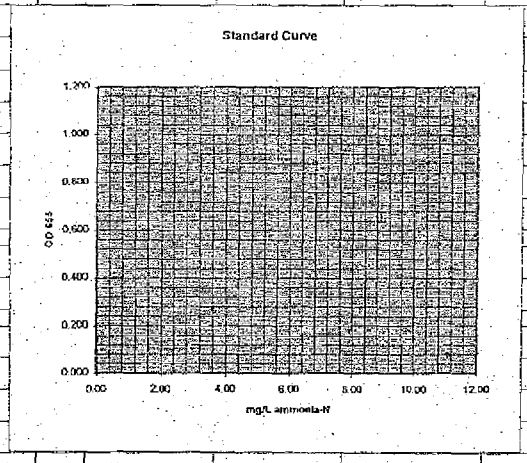
Total Ammonia-N in Water: Computation Worksheet

Salicylate Method (SOP #5492)

Result

	Sample description	Dilution factor	OD655	NH_3-N (mg/L)
	Blank	-----	----	----
	1.0 mg/L NH_3-N Std.	-----	.087	1.00
	3.0 mg/L NH_3-N Std.	-----	.268	3.00
	6.0 mg/L NH_3-N Std.	-----	.522	6.00
	10.0 mg/L NH_3-N Std.	-----	.890	10.00
	3.0 mg/L spike	-----	.271	
	3.0 mg/L spike dupl.	-----	.268	
1.	1	1	.022	
2.	6	1	.017	
3.	24	1	.042	
4.	27	1	.040	
5.	28	1	.015	
6.	33	1	.012	
7.	40	1	.021	
8.	46	1	.020	
9.	47	1	.030	
10.	57	1	.012	
11.	60	1	.016	
12.	69	1	.027	
13.	82	1	.030	
14.	86	1	.023	
15.	97	1	.019	
16.	103	1	.031	
17.	114	1	.025	
18.	146	1	.019	
19.	154	1	.023	
20.	155	1	.033	
21.	159	1	.020	
22.				
23.				
24.				
25.				
26.				
27.				
28.				
29.				
30.				
31.				
32.				
33.				
34.				
35.				
36.				



Reporting limit (mg/L) =	0.1
Recovery (%) =	#VALUE!
Precision (RPD) =	#VALUE!
Sample volume (ml):	0.50
Dilution factor	1

Sample Set Description:

Test No.:	686-24
Test Day:	10 (11-19-04)
Species:	*Chironomus*

Overlying water

Analyst:	RSC
Date analysed:	12/1/2004

CHAIN-OF-CUSTODY RECORDS

Windward Environmental

CHAIN-OF-CUSTODY/TEST REQUEST FORM

1364

Project/Client Name: Portland RI/FS
Windward Project No:
Contact Name: Helle Andersen
Sampled By: Angelita Rodriguez

Ship to: Northwestern Aquatic Science
Attn: Gerald Irissarri
Shipping address: Newport OR

Shipping Date: 11/6/04
Airbill Number:

Sample Collection Date (m/d/y)	Time	Sample Identification	Volume of Sample / # of Containers	Matrix	Test(s) Requested (check test(s) required)							Comments / Instructions [Jar tag number(s)]
					Hyalella	Chironomid						
11/4/04	1143	LW2-U5Q-1	1L/4	Sed	X	X			NAS#	9594F		
	1201	LW2-U5Q-2			X	X				9595F		INTERNAL ICE CHEST
	1216	LW2-U5Q-3			X	X				9596F		TEMP AT LAB
	1318	LW2-U6TOC-1			X	X				9597F		RECEIPT:
	1331	LW2-U6TOC-2			X	X				9598F		#1 2.5 °C
	1343	LW2-U6TOC-3			X	X				9599F		#2 0.0°C
	1443	LW2-U4Q-1			X	X				9600F		#3 0.0°C
	1502	LW2-U4Q-2			X	X				9601F		#4 0.0°C
	1515	LW2-U4Q-3			X	X				9602F		#5 0.0°C
	1548	LW2-U3C-1			X	X				9603F		#6 0.0°C
	1607	LW2-U3C-2			X	X				9604F		
	1641	LW2-U3C-3			X	X				9605F		
										~~9606F~~		CJT 11-6-04

Total Number of Containers: 48
Purchase Order / Statement of Work #:

1) Released by:	1) Rec'd by:	2) Released by:	1) Rec'd by:
Print name: ANGELITA RODRIGUEZ	Gerald Irissarri	Print name:	
Signature: Angelita RA	GERALD IRISSARRI	Signature:	
Company: Windward Environmental	Company: NORTHWESTERN AQUATIC SCIENCES	Company:	Company:
Date/Time: 11/6/04	Date/Time: 11-6-04 1240	Date/Time:	Date/Time:

* Distribution: White and yellow copies accompany shipment; pink-consignor's copy; white-consignee return with results; yellow-consignee's copy.
* Instructions for completion of Chain-of-Custody/Test Request Form on back.

Wind Ward environmental llc
200 West Mercer Street
Suite 401
Seattle, WA 98119
Tel: 206.378.1364
Fax: 206.217.0089

To be completed by Laboratory upon sample receipt:

Date of receipt:	Laboratory W.O. #:
Condition upon receipt:	Time of receipt:
Cooler temperature:	Received by:

ANC08757
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2 of 2

Windward Environmental

CHAIN-OF-CUSTODY/TEST REQUEST FORM

1336

Project/Client Name: Portland R1/FS
Windward Project No:
Contact Name: Helle Andersen
Sampled By: Angelita Rodriguez

Ship to: Northwestern Aquatic Science
Attn: Gerald Irissarri
Shipping address: Newport OR

Shipping Date: 11/6/04
Airbill Number:

Sample Collection Date (m/d/y)	Time	Sample Identification	Volume of Sample / # of Containers	Matrix	Test(s) Requested (check test(s) required)							Comments / Instructions [Jar tag number(s)]
					Hyalella	Chironomoid						
11/5/04	0902	LW2-U2C-1	1L/4	Sed	X	X			NAS#	9606F		
11/5/04	0917	LW2-U2C-2	1L/4	Sed	X	X				9607F		
11/5/04	0939	LW2-U2C-3	1L/4	Sed	X	X				9608F		
11/5/04	1020	LW2-U1C-1	1L/4	Sed	X	X				9609F		
11/5/04	1059	LW2-U1C-2	1L/4	Sed	X	X				9610F		
11/5/04	1114	LW2-U1C-3	1L/4	Sed	X	X				9611F		
11/5/04	1446	LW2-D1-1	1L/4	Sed	X	X				9612F		
11/5/04	1543	LW2-D2	1L/4	Sed	X	X				9613F		
~~11/5/04~~												

Total Number of Containers: 24

Purchase Order / Statement of Work #:

1) Released by:	1) Rec'd by:	2) Released by:	1) Rec'd by:
Print name: Angelita Rodriguez	GERALD IRISSARRI	Print name:	
Signature: Angelita Rodriguez		Signature:	
Company: Windward Environmental	Company: NORTHWESTERN AQUATIC SCIENCES	Company:	Company:
Date/Time: 11/6/04	Date/Time: 11-6-04 1240	Date/Time:	Date/Time:

* Distribution: White and yellow copies accompany shipment; pink-consignor's copy; white-consignee return with results; yellow-consignee's copy.
* Instructions for completion of Chain-of-Custody/Test Request Form on back.

Wind Ward environmental LLC
• 200 West Mercer Street
Suite 401
Seattle, WA 98119
Tel: 206.378.1364
Fax: 206.217.0089

To be completed by Laboratory upon sample receipt:

Date of receipt:	Laboratory W.O. #:
Condition upon receipt:	Time of receipt:
Cooler temperature:	Received by:

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APPENDIX II

RAW DATA – REFERENCE TOXICANT TEST

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-

ACUTE TOXICITY TEST (ALL SPECIES)

REVIEWED PAGES 1-4 GJI

Test No. 999-1870 Client: QC Test Investigator

Test Type (rangefinding/definitive) Test Length (hr) 96

Species *Chironomus tentans*

STUDY MANAGEMENT

Client: QC test

Client's Study Monitor: QC test

Testing Laboratory: Northwestern Aquatic Sciences

Test Location: Newport Laboratory

Laboratory's Study Personnel:

Proj. Man./Study Dir. G.J. Irissarri GJI

QA Officer L. K. Nemeth

1. LA Brisbin LAB 2. G.C. Hayes GCH

3. B.B. Pridgeon BBP 4. M.S. Redmond MSR

Study Schedule:

Test Beginning: 11-9-04 1120 Test Ending: 11-13-04 1230

TEST MATERIAL

Description: Potassium Chloride Crystals - Lot No.: FISHER 020865 A

NAS Sample No.				
Date of Collection:				
Date of Receipt:				
Temperature (deg C):				
Dissolved oxygen (mg/L):				
pH:				
Conductivity (umhos/cm):				
Hardness (mg/L):				
Alkalinity (mg/L):				
Salinity (ppt):				
Total chlorine (mg/L):				
Total ammonia-N (mg/L):				
:				

DILUTION WATER

Description: Moderately hard synthetic water

Date of Preparation/Collection: 11-8-04

Water Quality: Cond. (umhos/cm): 305 Salinity (ppt) pH 7.8

Hardness (mg/L as $CaCO_3$): 85 Alkalinity (mg/L as $CaCO_3$): 70

Treatments: Aerated ≥ 24 hrs

TEST LOCATION

Test conducted in (circle one): room 1 (room 2) trailer water bath other:

Randomization chart:

10	5	1.25	10	2.5	2.5	1.25	10	∅	5
1.25	1.25	2.5	5	5	∅	10	∅	10	2.5
5	2.5	∅	2.5	1.25	20	5	20	5	1.25
∅	∅	5	20	20	10	20	2.5	1.25	∅
20	20	10	1.25	∅	5 GJI	2.5	1.25	20	20
2.5	10	20	∅	10	1.25	∅	5	2.5	10

Error codes: 1) Correction of handwriting error
2) Written in wrong location; entry deleted
3) Wrong date deleted; replaced with correct date
4) Error found in measurement; measurement repeated

ANC08760
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NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-

ACUTE TOXICITY TEST (ALL SPECIES)

Test No. 999-1870 Client QC Test Investigator

TEST ORGANISMS

Species: *Chironomus tentans* Age: — Size: 3rd instar

Source: NAS cultures Date received: —

Acclimation Data:

Date	Temp. (deg.C)	DO (mg/L)	pH	Cond. umhos/cm	Hardness (mg/L)	Alkalinity (mg/L)	Feeding Amount	Feeding description*	Water changes
11-1-04	22.6	7.8	7.1	290	—	—	ANIMALS FED		CULTURE
11-2-04	23.6	8.6	7.6	260	85	70	TETRA FIN AND		TANKS
11-3-04	22.9	7.8	7.2	275	85	80	SELENASTRUM		CHANGED
11-5-04	22.7	8.0	8.0	285	—	—			TWICE
11-8-04	22.3	7.9	7.5	285	—	—	DETAILS RECORDED		WEEKLY
11-9-04	22.7	7.9	7.2	285	102	70	IN CHIRONOMID		
Mean	22.8	8.0	7.4	280	91	73	CULTURE DATA		
S.D.	0.4	0.3	0.3	11	10	6	SHEET.		
(N)	6	6	6	6	3	3			

Photoperiod during acclimation: 16:8, L:D *S=*Selenastrum*, T=Tetra Fin suspension

TEST PROCEDURES AND CONDITIONS

Test concentrations (50% series recommended): 20, 10, 5, 2.5, 1.25, 0 g/L

Test chamber: 30 ml plastic cups Test volume: 20 ml

Replicates/treatment: 10 Organisms/treatment: 10 (1/rep)

Test water changes: None Aeration during test: None

Feeding: 0.25 ml Prime Tropical Flakes (4g/L) suspension per cup on days 0 and 2

Duration: 24-hr, 48-hr, (96-hr) Test temperature (deg.C): 23 ± 1

Beaker placement: Stratified randomization Photoperiod: 16:8, L:D

MISCELLANEOUS NOTES

Test solution preparation:

Working stock: Dissolve 10g KCl crystals in dilution water and dilute to 500 mL.
Final conc.: 20 g/L.

Test concentration (g/L)	KCl working stock (ml/200ml)	ml of dilution water per 200 ml
20	200	0
10	100	100
5	50	150
2.5	25	175
1.25	12.5	187.5
0	0	0

EJL 11-9-04

ANC08761
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NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-_____

ACUTE TOXICITY TEST (ALL SPECIES)

Test No. 999-1870 Client QC Test

DAILY RECORD SHEET

Day 0 (11 / 9 /04) BB Temp Beaker (°C): 22.7

Conc. (g/L)	Temp. (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	Comments
1. 20	22.9	8.8	>20,000	7.7	85	70	
2. 10	22.9	8.8	13,960	7.7			
3. 5	22.9	8.8	7,560	7.8			
4. 2.5	23.0	8.8	4,210	7.8			
5. 1.25	23.0	8.8	2229	7.6			
6. 0	23.0	8.8	310	7.4	85	70	
All animals fed 0.25 ml Prime Tropical Flakes suspension. Initials: GJ							

Day 1 (11 /10 /04) GJ Temp Beaker (°C): 22.8

Conc. (g/L)	Temp. (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	Comments
1. 20							
2. 10							
3. 5							
4. 2.5							
5. 1.25							
6. 0							

Day 2 (11 /11 /04 BB Temp Beaker (°C): 22.9

Conc. (g/L)	Temp. (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	Comments
1. 20							
2. 10							
3. 5							
4. 2.5							
5. 1.25							
6. 0							
All animals fed 0.25 ml Prime Tropical Flakes suspension. Initials: GJ							

Day 3 (11 /12 /04) GJ Temp Beaker (°C): 23.1

Conc. (g/L)	Temp. (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	Comments
1. 20							
2. 10							
3. 5							
4. 2.5							
5. 1.25							
6. 0							

Day 4 (11 /13 /04) GJ Temp Beaker (°C):

Conc. (g/L)	Temp. (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	Comments
1. 20	—	—	—	—	—	—	
2. 10	—	—	—	—			
3. 5	23.3	7.6	7,310	7.8			
4. 2.5	23.4	7.4	4120	7.7			
5. 1.25	23.4	7.2	2260	7.7			
6. 0	23.2	7.2	360	7.6	94	80	
Mean	23.1	8.2	control 335	7.7	88	73	
SD	0.2	0.8	-	0.1	5	6	
n	10	10	2	10	3	3	

Revised 12-5-01

ANC08762
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NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-_____

ACUTE TOXICITY TEST (ALL SPECIES)

Test No. 999-1870 Client QC Test Investigator _____

DAILY RECORD SHEET - Survivors

Day 0 (11 /9 /04) GJL

Conc. (g/L)	Survivors in Replicate: 1	2	3	4	5	6	7	8	9	10	Total
1. 20	1	1	1	1	1	1	1	1	1	1	10
2. 10	1	1	1	1	1	1	1	1	1	1	10
3. 5	1	1	1	1	1	1	1	1	1	1	10
4. 2.5	1	1	1	1	1	1	1	1	1	1	10
5. 1.25	1	1	1	1	1	1	1	1	1	1	10
6. 0	1	1	1	1	1	1	1	1	1	1	10

Day 1 (11 /10 /04) GJL

Conc. (g/L)	Survivors in Replicate: 1	2	3	4	5	6	7	8	9	10	Total
1. 20	X	X	X	X	X	X	X	X	X	X	Ø (10 D)
2. 10	X	X	X	X	X	X	X	X	X	X	Ø (10 D)
3. 5	1	X	X	X	X	1	1	X	1	1	5 (5 D)
4. 2.5	1	1	1	1	1	1	1	1	1	1	10
5. 1.25	1	1	1	1	1	1	1	1	1	1	10
6. 0	1	1	1	1	1	1	1	1	1	1	10

Day 2 (11 /11 /04) GJL

Conc. (g/L)	Survivors in Replicate: 1	2	3	4	5	6	7	8	9	10	Total
1. 20	X	X	X	X	X	X	X	X	X	X	Ø
2. 10	X	X	X	X	X	X	X	X	X	X	Ø
3. 5	1	X	X	X	X	1	1	X	1	1	5
4. 2.5	1	1	1	1	1	1	1	1	1	1	10
5. 1.25	1	1	1	1	1	1	1	1	1	1	10
6. 0	1	1	1	1	1	1	1	1	1	1	10

Day 3 (11 /12 /04) GJL

Conc. (g/L)	Survivors in Replicate: 1	2	3	4	5	6	7	8	9	10	Total
1. 20	X	X	X	X	X	X	X	X	X	X	Ø
2. 10	X	X	X	X	X	X	X	X	X	X	Ø
3. 5	1	X	X	X	X	1	X	X	1	1	4 (10)
4. 2.5	1	X	1	1	1	1	1	1	1	1	9 (10)
5. 1.25	1	1	1	1	X	1	1	1	1	1	9 (10)
6. 0	1	1	1	1	1	1	1	1	1	1	10

Day 4 (11 /13 /04) GJL

Conc. (g/L)	Survivors in Replicate: 1	2	3	4	5	6	7	8	9	10	Total
1. 20	X	X	X	X	X	X	X	X	X	X	Ø
2. 10	X	X	X	X	X	X	X	X	X	X	Ø
3. 5	1	X	X	X	X	1	X	X	1	1	4
4. 2.5	1	X	1	1	1	1	1	1	1	1	9
5. 1.25	1	1	1	1	X	1	1	1	1	1	9
6. 0	1	1	1	1	1	1	1	1	1	1	10

ANC08763
BZTO104(e)008763

Acute 96-hr Toxicity Test-96 Hr Survival

Start Date:	11/9/04 11:20	Test ID:	999-1870	Sample ID:	REF-Ref Toxicant
End Date:	11/13/04 12:30	Lab ID:	ORNAS-Northwestern Aquati	Sample Type:	KCL-Potassium chloride
Sample Date:		Protocol:	EPAF 91-EPA Freshwater	Test Species:	CT-Chironomus tentans
Comments:					

Conc-gm/L	1
D-Control	1.0000
1.25	0.9000
2.5	0.9000
5	0.4000
10	0.0000
20	0.0000

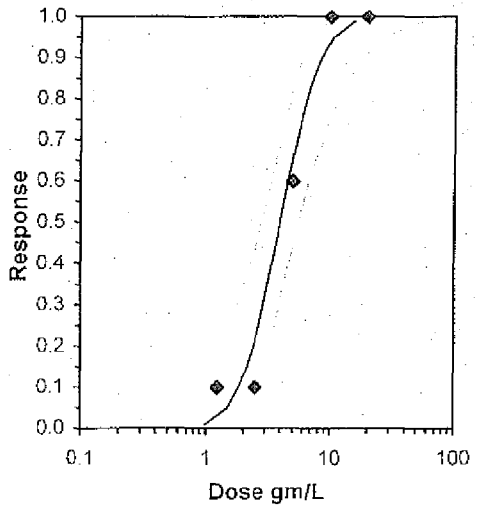
Conc-gm/L	Mean	N-Mean	Resp	Not Resp	Total	N	Fisher's Exact P	1-Tailed Critical	Number Resp	Total Number
D-Control	1.0000	1.0000	0	10	10	1			0	10
1.25	0.9000	0.9000	1	9	10	1	0.5000	0.0500	1	10
2.5	0.9000	0.9000	1	9	10	1	0.5000	0.0500	1	10
*5	0.4000	0.4000	6	4	10	1	0.0054	0.0500	6	10
10	0.0000	0.0000	10	0	10	1			10	10
20	0.0000	0.0000	10	0	10	1			10	10

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU
Fisher's Exact Test	2.5	5	3.53553	

Maximum Likelihood-Probit

Parameter	Value	SE	95% Fiducial Limits		Control	Chi-Sq	Critical	P-value	Mu	Sigma	Iter
Slope	3.89358	0.92699	2.07668	5.71049	0	3.75693	7.81472	0.29	0.59428	0.25683	5
Intercept	2.68611	0.61183	1.48691	3.8853							
TSCR											

Point	Probits	gm/L	95% Fiducial Limits	
EC01	2.674	0.99266	0.27609	1.6479
EC05	3.355	1.48536	0.57408	2.22084
EC10	3.718	1.84136	0.84152	2.62416
EC15	3.964	2.1286	1.08332	2.95293
EC20	4.158	2.38852	1.31798	3.25857
EC25	4.326	2.63665	1.55238	3.56194
EC40	4.747	3.38233	2.28116	4.5822
EC50	5.000	3.92902	2.80054	5.47455
EC60	5.253	4.56407	3.35862	6.69564
EC75	5.674	5.85484	4.34108	9.79264
EC80	5.842	6.46309	4.7511	11.52
EC85	6.036	7.25227	5.24856	14
EC90	6.282	8.38356	5.91188	18.0054
EC95	6.645	10.3929	6.99194	26.369
EC99	7.326	15.5513	9.4312	54.7812



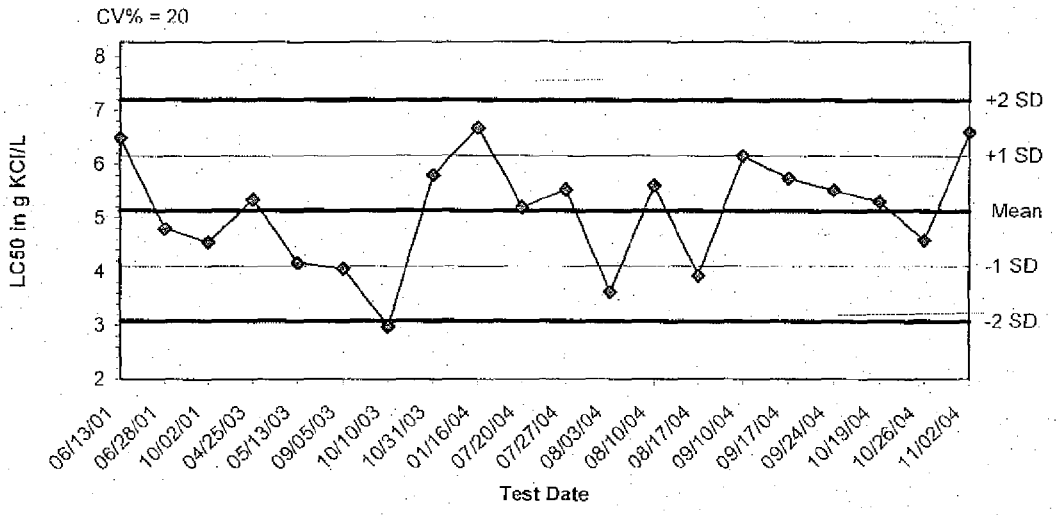
ANC08764
BZTO104(e)008764

Test: AT-Acute 96-hr Toxicity Test							Test ID: 999-1870		
Species: CT-Chironomus tentans							Protocol: EPAF 91-EPA Freshwater		
Sample ID: REF-Ref Toxicant							Sample Type: KCL-Potassium chloride		
Start Date: 11/9/04 11:20			End Date: 11/13/04 12:30				Lab ID: ORNAS-Northwestern Aquatic Sciences		
Pos	ID	Rep	Group	Start	24 Hr	48 Hr	72 Hr	96 Hr	Notes
	1	1	D-Control	10				10	
	2	1	1.250	10				9	
	3	1	2.500	10				9	
	4	1	5.000	10				4	
	5	1	10.000	10				0	
	6	1	20.000	10				0	

Comments: Data entry verified against laboratory bench sheets. MSR 11-22-04

ANC08765
BZTO104(e)008765

Chironomus tentans 3rd instar 96-hr reference toxicant test - last 20 points



Dates	Values	Mean	-1 SD	-2 SD	+1 SD	+2 SD
06/13/01	6.4900	5.1335	4.1054	3.0772	6.1616	7.1898
06/28/01	4.8000	5.1335	4.1054	3.0772	6.1616	7.1898
10/02/01	4.5500	5.1335	4.1054	3.0772	6.1616	7.1898
04/25/03	5.3400	5.1335	4.1054	3.0772	6.1616	7.1898
05/13/03	4.1600	5.1335	4.1054	3.0772	6.1616	7.1898
09/05/03	4.0600	5.1335	4.1054	3.0772	6.1616	7.1898
10/10/03	2.9800	5.1335	4.1054	3.0772	6.1616	7.1898
10/31/03	5.8000	5.1335	4.1054	3.0772	6.1616	7.1898
01/16/04	6.6800	5.1335	4.1054	3.0772	6.1616	7.1898
07/20/04	5.2000	5.1335	4.1054	3.0772	6.1616	7.1898
07/27/04	5.5300	5.1335	4.1054	3.0772	6.1616	7.1898
08/03/04	3.6200	5.1335	4.1054	3.0772	6.1616	7.1898
08/10/04	5.6100	5.1335	4.1054	3.0772	6.1616	7.1898
08/17/04	3.9300	5.1335	4.1054	3.0772	6.1616	7.1898
09/10/04	6.1600	5.1335	4.1054	3.0772	6.1616	7.1898
09/17/04	5.7400	5.1335	4.1054	3.0772	6.1616	7.1898
09/24/04	5.5200	5.1335	4.1054	3.0772	6.1616	7.1898
10/19/04	5.3100	5.1335	4.1054	3.0772	6.1616	7.1898
10/26/04	4.5900	5.1335	4.1054	3.0772	6.1616	7.1898
11/02/04	6.6000	5.1335	4.1054	3.0772	6.1616	7.1898

msR
11-10-04

ANC08766
BZTO104(e)008766

Report

of

Test No. 686-3

Toxicity of Portland Harbor RI/FS Freshwater Test Sediments (Batch 2) using a 28-day Amphipod, *Hyalella azteca*, Sediment Bioassay

Submitted to

Windward Environmental, Inc.
200 West Mercer Street, Suite 401
Seattle, WA 98119

Submitted by

Northwestern Aquatic Sciences
3814 Yaquina Bay Road
P.O. Box 1437
Newport, OR 97365

January 18, 2005

ANC08767
BZTO104(e)008767

DATA ANALYSIS METHODS

Survival and mortality were calculated for each replicate as follows:

percent survival = 100 x (number surviving/initial number tested)
percent mortality = 100 x (number dead/initial number tested)

average individual biomass = (final wt. - tare wt.)/number weighed,
where:
final wt. = tare wt. + dry weight of organisms recovered on day 28, in mg

Means and standard deviations for the biological endpoints described above, and for water quality data, were computed using Microsoft Excel 2000.

PROTOCOL DEVIATIONS

1. The maximum light intensity recorded during the test measured 1141 lux, which slightly exceeded the 100-1000 lux parameters described in the protocol. Light levels were reduced to below 1000 lux part way through this test and for all subsequent tests. This deviation is considered minor and would not have affected the test results.

REFERENCE TOXICANT TEST

The reference toxicant test is a multi-concentration toxicity test using cadmium chloride, to evaluate the performance of the test organisms used in the sediment toxicity test. The performance is evaluated by comparing the results of this test with historical results obtained at the laboratory. A summary of the reference toxicant test result is given below. The reference toxicant test raw data are found in Appendix II.

Test No.: 999- 1813
Reference Toxicant and Source: Cadmium as $CdCl_2 \bullet 2½ H_2O$, Mallinckrodt Lot #TNZ, 1.0 mg/ml stock prepared 4-2-03.
Test Date: 8-3-04.
Dilution Water Used: Moderately hard synthetic water prepared from Milli-Q® deionized water.
Result: 96-hr LC50, 6.53 µg/L. This result is within the laboratory's control chart warning limits (3.92 - 16.6 µg/L).

TEST RESULTS

Observations of water quality in the overlying water throughout the test are summarized in Table 1. A detailed tabulation of the water quality results by sample and test day can be found in Appendix I. Interstitial ammonia measurements and pH for bulk sediments are listed in Table 2. The means and standard deviations of percent mortality of *Hyalella* exposed for 28 days to sediments, and the growth measured as dry weight are summarized in Table 3. Detailed data organized by sample and replicate, and summary statistics for these observations, are given in Appendix I.

All water quality observations of overlying water temperature and dissolved oxygen were within the protocol specified ranges. Ammonia-N in the overlying water ranged from <0.1 to 0.9 mg/L in all day 0 and day 10 observations. Interstitial bulk sediment values for ammonia-N ranged from <0.5 to 10.9 mg/L.

The test met the acceptability criteria specified in the test protocol with 97.5% mean control survival (≥80% required). The reference toxicant (positive control) result was within the laboratory's control chart limits (6.53 µg/L; control chart mean ± 2 S.D. = 10.3 ± 6.35). It is concluded, therefore, that the test has developed fully acceptable data for use in making management decisions.

ANC08768
BZTO104(e)008768

APPENDIX I

RAW DATA

TEST DESCRIPTION, MONITORING, AND RESULTS BENCHSHEETS

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-3 Client Windward Environmental Investigator

STUDY MANAGEMENT

Client: Windward Enviromental, 200 West Mercer Street, Suite 401, Seattle, WA 98119

Client's Study Monitor: Ms. Helle Anderson

Testing Laboratory: Northwestern Aquatic Sciences

Test Location: Newport Laboratory

Laboratory's Study Personnel:

Proj. Man./Study Dir. G.J. Irissarri GJI

QA Officer L.K. Nemeth

1. GA Buhler GAB 2. BB Pridgeon BBP

3. M.S. Redmond MSR 4. G.C. Hayes GCH

Study Schedule: Susan Gose SAG (P.S. Caldwell PSC W.T. Montgomery)

Test Beginning: 8-3-04 1350 Test Ending: 8-31-04 1300

TEST MATERIAL

General description (see sample logbook/chain-of-custody for details):

NAS Sample No.:	9208F	9303F	9304F	9305F	9306F
Description:	Control	LW2-G020	LW2-G024	LW2-G025	LW2-G027
Collection Date:	7/20/2004	7/26/2004	7/26/2004	7/26/2004	7/26/2004
Receipt Date:	7/20/2004	7/29/2004	7/29/2004	7/29/2004	7/29/2004

NAS Sample No.:	9307F	9308F	9309F	9310F	9311F
Description:	LW2-G033	LW2-G034	LW2-G035	LW2-G061	LW2-G062
Collection Date:	7/26/2004	7/26/2004	7/26/2004	7/27/2004	7/27/2004
Receipt Date:	7/29/2004	7/29/2004	7/29/2004	7/29/2004	7/29/2004

NAS Sample No.:	9312F	9313F	9314F	9315F	9316F
Description:	LW2-G067	LW2-G073	LW2-G074	LW2-G085	LW2-G092
Collection Date:	7/27/2004	7/27/2004	7/27/2004	7/28/2004	7/28/2004
Receipt Date:	7/29/2004	7/29/2004	7/29/2004	7/29/2004	7/29/2004

NAS Sample No.:	9317F	9318F	9319F	9320F	9321F
Description:	LW2-G089	LW2-G080	LW2-G079	LW2-G078	LW2-G111
Collection Date:	7/28/2004	7/28/2004	7/28/2004	7/28/2004	7/28/2004
Receipt Date:	7/29/2004	7/29/2004	7/29/2004	7/29/2004	7/29/2004

NAS Sample No.:	9322F				
Description:	LW2-G083				
Collection Date:	7/28/2004				
Receipt Date:	7/29/2004				

NAS Sample No.:					
Description:					
Collection Date:					
Receipt Date:					

Error codes: 1) correction of handwriting error
2) written in wrong location; entry deleted
3) wrong date deleted, replaced with corrrect date
4) error found in measurement; measurement repeated

ANC08771
BZTO104(e)008771

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-3 Client Windward Environmental Investigator

SEDIMENT DESCRIPTIONS -- SUPPLEMENTAL NOTES

Sample No.	Description
9208F	BLACK FINE MUD
9303F	Fine grain brown mud
9304F	Fine grain brown mud
9305F	Dark grey course sand w/ gravel
9306F	BROWN/GRAY MUDDY SAND
9307F	Brown sandy mud
9308F	Brown sandy mud
9309F	DARK GRAY FINE MUD W/ LIGHT SAND
9310F	Brown fine mud with faint petroleum odor
9311F	Gray muddy sand
9312F	Brown/Gray sandy mud
9313F	Gray Sand
9314F	Brown muddy sand
9315F	Brown fine grain mud.
9316F	DARK GRAY/BROWN MUDDY SAND
9317F	Gray wet sand with light petroleum odor
9318F	Dark gray muddy sand
9319F	Gray sandy mud
9320F	Brown sandy mud.
9321F	Brown fine grain mud w/ debris
9322F	BROWN sandy Mud ONE large Chironomid found

ANC08772
BZTO104(e)008772

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-3 Client Windward Environmental Investigator

TEST WATER

Source: DECHLORINATED NEWPORT, OR TAP WATER

Date of Collection: 7-29-04

pH 7.2

Cond (umhos/cm2) 160

Hardness (mg/La0 34

Alkalinity (mg/L) 30

(See Attached Sheet pg 59)

Treatments: AERATED ≥ 24 HRS

TEST ORGANISMS

Species: *Hyalella azteca* Age: 7-8 DAYS Date received: 7-30-04

Source: Chesapeake Cultures, Hayes, VA

Acclimation Data:

Date	Temp. (deg.C)	DO (mg/L)	pH	Cond umhos/cm	Feeding amount	Feeding description	Water changes*	Hardness (mg/L)	Alkalinity (mg/L)
7-30-04	23.6	>15.0	7.5	470	10 mL/pan*	YTC	YES	119	200
7-31-04	22.6	7.9	7.8	365	"	"	YES	51	60
8-1-04	21.6	8.6	7.7	290	"	"	YES	68	70
8-2-04	21.7	8.4	7.9	235	"	"	YES	77	80
8-3-04	22.3	8.2	8.0	210	"	"	—	60	70
Mean	22.4	9.6	7.8	314				75	96
S.D.	0.8	3.0	0.2	106				26	59
(N)	5	5	5	5				5	5

Photoperiod during acclimation: 16:8, L:D

* ANIMALS DIVIDED INTO 3 PANS
* WATER EXCHANGED W/ TEST DILUTION WATER

TEST PROCEDURES AND CONDITIONS

Test chambers: 300 ml glass beakers

Test volumes: 100 ml of test sediment; 275 ml total volume

Replicates/treatment: (8) 8 Organisms/treatment: (80) 80 (10/REP)

Test water changes: Twice daily

Aeration: only if DO falls below 2.5 mg/L

Beaker placement: Total randomization

Feeding: everyday beginning with day zero

Photoperiod: 16:8, L:D

Test temperature (deg.C): 23

Control Sediment:

Source: From an area approximately one mile east of the Hwy. 101 bridge at Beaver Creek, approx. 8 miles south of Newport, OR.

Date collected: 7/20/04

Sieved through 0.5 -mm screen NAS# 9208F

Storage: 4°C in the dark in closed containers.

MISCELLANEOUS NOTES

LIGHT INTENSITY MEASUREMENTS:

8-3-04 109, 64 FT-CANDLES

8-8-04 85, 61 " "

8-15-04 66, 53 " "

ANC08773
BZTO104(e)008773

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-3 Client Windward Environmental Investigator _____

Test conducted in (circle one): room 1 (room 2) trailer water bath other: _____

Randomization chart: TOP SHELF

5								165	
4								164	
3							→	163	168
2								162	167
1								161	166

Randomization chart:

Randomization chart:

Randomization chart:

ANC08774
BZTO104(e)008774

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No 686-3 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 0 (8/3 04) UBI BBP

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond.* umhos/cm	pH*	Hardness* (mg/L)	Alkalinity* (mg/L)	S (ppm)	NH3* (ppm)	Comments
14	23.0	7.4	200	7.3	43	40			Each beaker fed 1.0 ml
21	22.9	7.4	165	7.2	43	50			YTC suspension
23	23.0	7.3	170	7.1	51	50			Initials: UB
30	23.2	7.4	170	7.1	60	50			
37	23.0	7.8	165	7.1	51	50			
39	23.0	7.6	160	7.1	51	50			
40	23.0	7.2	205	7.3	68	60			
47	22.9	7.8	165	7.1	51	40			
52	22.9	7.2	160	7.1	60	50			Water changed in all
53	22.9	7.2	170	7.1	51	40			beakers.
62	22.9	7.1	170	7.1	51	40			Time: 0705
67	22.8	7.3	180	7.1	51	40			Initials: GM
70	23.2	7.4	175	7.1	51	50			
89	23.0	7.2	160	7.0	43	40			
97	23.0	7.4	165	7.0	43	40			
105	23.2	7.3	160	7.1	43	40			
125	23.2	7.7	170	7.1	43	40			Water changed in all
129	23.0	7.2	175	7.1	51	50			beakers.
134	22.9	7.4	170	7.1	51	40			Time: 1715
140	23.2	7.6	215	9.9	60	60			Initials: UBI/BBP
142	23.0	7.4	170	7.1	51	50			

*Water quality measurements to be taken.

Day 1 (8/4 1041 mm/UB

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond.* umhos/cm	pH*	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
14	22.8	6.8	180	7.2					Each beaker fed 1.0 ml
21	22.7	6.7	165	7.0					YTC suspension
23	22.7	6.2	170	7.0					Initials: UB
30	22.9	6.4	170	7.0					
37	22.7	6.6	170	7.0					
39	22.8	6.6	165	7.0					
40	23.0	6.5	190	7.2					
47	22.8	6.7	170	7.2					
52	22.7	6.4	165	7.1					Water changed in all
53	22.7	6.7	170	7.0					beakers.
62	22.7	6.4	170	7.0					Time: 0710
67	22.7	6.6	175	7.0					Initials: GM
70	22.9	6.5	175	7.0					
89	22.9	6.6	160	6.9					
97	22.7	6.4	170	7.0					
105	23.0	6.5	165	7.0					
125	23.0	6.7	170	7.1					Water changed in all
129	22.9	6.7	170	7.0					beakers.
134	22.9	6.5	170	7.1					Time: 1725
140	23.0	7.1	215	9.9					Initials: UBI
142	22.7	6.6	160	7.1					

*Water quality measurements to be taken.

ANC08775
BZTO104(e)008775

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No 686-3 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 2 (6/5 04) CB

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. µmhos/cm	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
14	23.2								Each beaker fed 1.0 ml
21	23.2								YTC suspension
23	23.2								Initials: CB
30	23.2								
37	23.2								
39	23.4								
40	23.4								
47	23.3								
52	23.3								Water changed in all
53	23-3								beakers.
62	23.2								Time: 0710
67	23.2								Initials: GJL
70	23.2								
89	23.3								
97	23.3								
105	23.3								
125	23.3								Water changed in all
129	23.5								beakers.
134	23.5								Time: 1845
140	23.4								Initials: BBP
142	23.3								

*Water quality measurements to be taken.

Day 3 (6/6 04) CB/GJL

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. µmhos/cm	pH*	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
14	22.9	7.2		7.3					Each beaker fed 1.0 ml
21	22.9	6.8		7.0					YTC suspension
23	22.9	6.6		7.0					Initials: CB
30	22.9	6.8		7.0					
37	22.9	7.1		7.1					
39	23.0	7.2		7.1					
40	23.1	6.6		7.2					
47	23.0	7.2		7.2					
52	22.9	7.5		7.2					Water changed in all
53	22.9	7.2		7.1					beakers.
62	22.9	7.1		7.0					Time: 0705
67	22.9	6.8		7.0					Initials: GJL
70	23.2	6.9		7.0					
89	23.1	6.8		6.9					
97	22.9	6.7		6.9					
105	23.2	7.2		7.0					
125	23.2	7.2		7.1					Water changed in all
129	23.0	6.9		7.1					beakers.
134	23.0	6.8		7.1					Time: 1800
140	23.2	7.3		9.3					Initials: BBP
142	22.9	6.8		7.2					

*Water quality measurements to be taken.

ANC08776
BZTO104(e)008776

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No 686-3 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 4 (8 / 7 /04) GJL

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. (mhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
14	23.0								Each beaker fed 1.0 ml
21	23.1								YTC suspension
23	23.0								Initials: GJL
30	23.0								
37	23.1								
39	23.1								
40	23.2								
47	23.1								
52	23.1								Water changed in all
53	23.0								beakers.
62	23.1								Time: 0720
67	23.0								Initials: GJL
70	23.3								
89	23.2								
97	23.0								
105	23.3								
125	23.3								Water changed in all
129	23.2								beakers.
134	23.2								Time: 1830
140	23.3								Initials: GJL
142	23.0								

*Water quality measurements to be taken.

Day 5 (8 / 8 /04) CB

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. (mhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
14	23.1								Each beaker fed 1.0 ml
21	23.1								YTC suspension
23	23.1								Initials: CB
30	23.2								
37	23.2								
39	23.2								
40	23.3								
47	23.2								
52	23.1								Water changed in all
53	23.1								beakers.
62	23.1								Time: 0645
67	23.1								Initials: CB
70	23.4								
89	23.2								
97	23.2								
105	23.4								
125	23.3								Water changed in all
129	23.2								beakers.
134	23.2								Time: 1820
140	23.3								Initials: GJL
142	23.3								

*Water quality measurements to be taken.

ANC08777
BZTO104(e)008777

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No 686-3 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 6 (8/9/04) GSL/JMR/mam

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. umhos/cm	pH*	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
14	22.6	6.8		7.0					Each beaker fed 1.0 ml
21	22.6	6.8		7.0					YTC suspension
23	22.5	6.8		7.0					Initials: CB
30	22.5	6.5		6.9					
37	22.6	6.8		7.0					
39	22.7	7.1		7.0					
40	22.8	6.1		7.0					
47	22.6	7.1		7.0					
52	22.6	6.9		7.0					Water changed in all
53	22.5	6.4		6.9					beakers.
62	22.5	6.4		7.0					Time: 0700
67	22.5	6.4		6.9					Initials: GSL/CB
70	22.9	6.2		7.0					
89	22.7	6.5		6.9					
97	22.5	6.4		6.9					
105	22.9	7.0		6.9					
125	22.8	6.7		7.0					Water changed in all
129	22.7	6.9		6.9					beakers.
134	22.7	6.4		6.9					Time: 1730
140	22.8	7.1		9.2					Initials: CB
142	22.5	6.2		7.0					

*Water quality measurements to be taken.

Day 7 (8/10/04) CB/GSL

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. umhos/cm	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
14	23.1								Each beaker fed 1.0 ml
21	23.1								YTC suspension
23	23.0								Initials: CB
30	23.3								
37	23.1								
39	23.1								
40	23.3								
47	23.3								
52	23.1								Water changed in all
53	23.0								beakers.
62	23.1								Time: 0705
67	23.0								Initials: GSL
70	23.3								
89	23.2								
97	23.0								
105	23.3								
125	23.3								Water changed in all
129	23.1								beakers.
134	23.1								Time: 1750
140	23.2								Initials: CB GSL @ 8-10-04
142	23.0								

*Water quality measurements to be taken.

ANC08778
BZTO104(e)008778

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No 686-3 . Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 8 (8/11/04) arm/BBP

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond.* mhos/cm	pH*	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
14	23.0	5.0	170	7.2					Each beaker fed 1.0 ml
21	23.0	5.4	165	7.2					YTC suspension
23	23.0	5.2	170	6.9					Initials: GJL
30	23.2	5.0	170	7.0					
37	23.1	5.4	165	6.9					
39	23.1	5.6	170	6.9					
40	23.2	4.8	180	7.0					
47	23.1	5.6	170	7.0					
52	23.0	5.4	165	6.9					Water changed in all
53	23.0	4.8	170	6.9					beakers.
62	23.0	5.0	170	6.9					Time: 0655
67	23.0	4.8	170	6.9					Initials: GJL
70	23.3	4.8	175	7.0					
89	23.2	5.2	165	6.9					
97	23.0	5.0	170	6.9					
105	23.3	5.6	165	6.9					
125	23.3	5.6	170	7.0					Water changed in all
129	23.2	5.2	170	6.9					beakers.
134	23.2	4.8	170	6.9					Time: 17:30
140	23.2	5.8	190	9.2					Initials: arm
142	23.0	4.8	170	7.0					

*Water quality measurements to be taken.

Day 9 (8/12/04) GJL

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. mhos/cm	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
14	23.1								Each beaker fed 1.0 ml
21	23.1								YTC suspension
23	23.0								Initials: GJL
30	23.3								
37	23.1								
39	23.1								
40	23.3								
47	23.1								
52	23.1								Water changed in all
53	23.1								beakers.
62	23.1								Time: 0715
67	23.0								Initials: GJL
70	23.4								
89	23.2								
97	23.0								
105	23.0								
125	23.2								Water changed in all
129	23.1								beakers.
134	23.1								Time: 1710
140	23.2								Initials: arm
142	22.9								

*Water quality measurements to be taken.

ANC08779
BZTO104(e)008779

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No 686-3 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 10 (8/13 04) AD/GSL/BBP

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. umhos/cm	pH*	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
14	22.6	5.9		7.2					Each beaker fed 1.0 ml
21	22.7	6.0		7.0					YTC suspension
23	22.6	5.8		7.0					Initials: GSL
30	22.8	5.8		7.0					
37	22.7	6.2		7.1					
39	22.8	6.4		7.0					
40	22.9	5.4		7.1					
47	22.7	6.0		7.1					
52	22.7	6.2		7.0					Water changed in all
53	22.6	6.0		7.0					beakers.
62	22.7	6.0		7.0					Time: 0710
67	22.6	5.8		7.1					Initials: JB
70	22.9	5.8		7.1					
89	22.7	6.1		7.1					
97	22.6	6.0		7.1					
105	22.8	6.0		7.1					
125	22.7	6.3		7.1					Water changed in all
129	22.7	6.2		7.0					beakers.
134	22.6	6.1		7.0					Time: 1720
140	22.7	6.2		9.2					Initials: [illegible]
142	22.5	6.2		7.1					

*Water quality measurements to be taken.

Day 11 (8/14/04 JB/GSL/MKR

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. umhos/cm	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
14	23.1								Each beaker fed 1.0 ml
21	23.1								YTC suspension
23	23.0								Initials: GSL
30	23.3								
37	23.1								
39	23.2								
40	23.3								
47	23.1								
52	23.1								Water changed in all
53	23.1								beakers.
62	23.1								Time: 0740
67	23.0								Initials: JB
70	23.4								
89	23.2								
97	23.0								
105	23.0								
125	23.2								Water changed in all
129	23.1								beakers.
134	23.1								Time: ~~1730~~ 1810
140	23.2								Initials: ~~BBP~~ MKR (2)
142	23.0								

*Water quality measurements to be taken.

ANC08780
BZTO104(e)008780

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-3 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 12 (8/15 GJ/MB/GJL

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. umhos/cm	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
14	23.1								Each beaker fed 1.0 ml
21	23.1								YTC suspension
23	23.1								Initials: GJL
30	23.3								
37	23.1								
39	23.2								
40	23.3								
47	23.1								
52	23.1								Water changed in all
53	23.1								beakers.
62	23.1								Time: 0745
67	23.1								Initials: MB
70	23.4								
89	23.2								
97	23.0								
105	23.3								
125	23.2								Water changed in all
129	23.1								beakers.
134	23.1								Time: 1750
140	23.2								Initials: GJL
142	23.0								

*Water quality measurements to be taken.

Day 13 (8/16 GJ/MB/GJL

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. umhos/cm	pH*	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
14	23.0	5.7		7.3					Each beaker fed 1.0 ml
21	23.0	6.0		7.2					YTC suspension
23	22.9	5.9		7.1					Initials: GJL
30	23.2	5.4		7.1					
37	23.0	6.0		7.1					
39	23.1	6.2		7.1					
40	23.3	5.2		7.1					
47	23.0	6.0		7.1					
52	23.0	6.0		7.1					Water changed in all
53	23.0	5.6		7.1					beakers.
62	23.0	5.6		7.1					Time: 0705
67	23.0	5.4		7.1					Initials: MB
70	23.2	5.6		7.1					
89	23.1	5.8		7.1					
97	22.9	5.6		7.1					
105	23.2	6.1		7.1					
125	23.2	5.5		7.1					Water changed in all
129	23.0	5.8		7.1					beakers.
134	23.0	5.6		7.1					Time: 1735
140	23.1	6.5		8.3					Initials: GJL
142	22.9	5.7		7.3					

*Water quality measurements to be taken.

ANC08781
BZTO104(e)008781

Test No 686-3 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 14 (8/17/04) [illegible]

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
14	23.0								Each beaker fed 1.0 ml
21	23.1								YTC suspension
23	23.1								Initials: [illegible]
30	23.1								
37	23.1								
39	23.2								
40	23.3								
47	23.2								
52	23.2								Water changed in all
53	23.2								beakers.
62	23.1								Time: 0710
67	23.1								Initials: GJL
70	23.1								
89	23.2								
97	23.1								
105	23.3								
125	23.3								Water changed in all
129	23.3								beakers.
134	23.3								Time: 1730
140	23.2								Initials: [illegible]
142	23.1								

*Water quality measurements to be taken.

Day 15 (8/18/04) [illegible]

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond.* (umhos/cm)	pH*	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
14	22.5	5.6	160	7.1					Each beaker fed 1.0 ml
21	22.5	5.9	160	6.8					YTC suspension
23	22.5	6.0	165	6.7					Initials: [illegible]
30	22.7	5.5	165	6.7					
37	22.5	5.9	165	6.7					
39	22.6	5.9	165	6.6					
40	22.5	5.0	170	6.8					
47	22.6	5.7	165	6.7					
52	22.5	5.9	160	6.7					Water changed in all
53	22.5	5.4	170	6.9					beakers.
62	22.5	5.9	165	6.8					Time: 0700
67	22.6	5.5	170	6.8					Initials: GJL
70	22.9	5.4	170	6.8					
89	22.7	5.9	165	6.7					
97	22.6	5.6	165	6.8					
105	22.8	6.1	165	6.7					
125	22.8	6.0	170	6.8					Water changed in all
129	22.7	6.0	165	6.8					beakers.
134	22.6	5.4	165	6.7					Time: 1730
140	22.8	6.3	185	8.8					Initials: [illegible]
142	22.5	5.3	165	6.9					

*Water quality measurements to be taken.

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No 686-3 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 16 (8/19/04) AS

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
14	22.4								Each beaker fed 1.0 ml
21	22.5								YTC suspension
23	22.4								Initials: GJ
30	22.4								
37	22.5								
39	22.5								
40	22.6								
47	22.7								
52	22.5								Water changed in all
53	22.5								beakers.
62	22.4								Time: 0700
67	22.4								Initials: wm
70	22.7								
89	22.6								
97	22.5								
105	22.4								
125	22.6								Water changed in all
129	22.6								beakers.
134	22.5								Time: 1730
140	22.5								Initials: AS
142	22.4								

*Water quality measurements to be taken.

Day 17 (8/20/04) AS/DB

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. (umhos/cm)	pH*	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
14	22.9	5.9		7.3					Each beaker fed 1.0 ml
21	22.9	6.3		7.0					YTC suspension
23	22.9	6.4		7.0					Initials: DB
30	23.1	5.8		7.0					
37	23.0	6.4		7.0					
39	23.0	6.2		7.0					
40	23.1	5.9		7.0					
47	23.0	6.3		7.0					
52	23.0	6.3		7.0					Water changed in all
53	22.9	6.2		7.1					beakers.
62	23.0	6.2		7.0					Time: 0715
67	23.0	6.1		7.0					Initials: GJ
70	23.2	6.1		7.0					
89	22.9	6.4		7.0					
97	22.9	6.3		7.0					
105	23.1	6.7		7.0					
125	23.1	6.3		7.0					Water changed in all
129	23.0	6.4		6.9					beakers.
134	23.0	6.3		6.9					Time: 1420
140	23.2	6.6		8.7					Initials: AS
142	22.9	5.8		7.1					

*Water quality measurements to be taken.

ANC08783
BZTO104(e)008783

Test No 686-3 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 18 (8/4/04) VB/GJL

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
14	22.9								Each beaker fed 1.0 ml
21	23.0								YTC suspension
23	23.2								Initials: GJL
30	23.2								
37	23.0								
39	23.1								
40	23.2								
47	23.1								
52	23.0								Water changed in all
53	23.0								beakers.
62	23.6								Time: 6750
67	23.0								Initials: VB
70	23.3								
89	23.2								
97	23.0								
105	23.3								
125	23.3								Water changed in all
129	23.1								beakers.
134	23.1								Time: 1750
140	23.2								Initials: BBP
142	23.0								

*Water quality measurements to be taken.

Day 19 (8/23/04) [illegible]

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
14	23.0								Each beaker fed 1.0 ml
21	23.0								YTC suspension
23	23.0								Initials: [illegible]
30	23.1								
37	23.1								
39	23.1								
40	23.0								
47	23.0								
52	23.0								Water changed in all
53	23.0								beakers.
62	23.0								Time: 0745
67	23.0								Initials: [illegible]
70	23.2								
89	23.1								
97	23.0								
105	23.2								
125	23.1								Water changed in all
129	23.1								beakers.
134	23.0								Time: 1730
140	23.1								Initials: BBP
142	23.0								

*Water quality measurements to be taken.

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No 686-3 Client Windward Environmental Investigator _____

DAILY RECORD SHEET

Day 20 (8/23/04) 686/AF

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. umhos/cm	pH*	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
14	22.9	5.4		6.9					Each beaker fed 1.0 ml
21	22.9	5.9		6.6					YTC suspension
23	22.9	5.8		6.5					Initials: ATM
30	23.0	5.1		6.6					
37	22.9	6.0		6.6					
39	23.0	6.1		6.6					
40	23.0	5.2		6.6					
47	22.9	5.8		6.6					
52	22.9	5.6		6.5					Water changed in all
53	22.9	5.3		6.6					beakers.
62	22.9	5.8		6.6					Time: 0715
67	22.9	5.6		6.6					Initials: GSL
70	23.1	5.5		6.6					
89	23.0	5.8		6.5					
97	22.8	5.8		6.5					
105	23.0	6.3		6.6					
125	23.0	5.8		6.6					Water changed in all
129	22.9	5.8		6.6					beakers.
134	22.9	5.4		6.5					Time: 1715
140	22.0	6.2		8.3					Initials: AF
142	22.8	5.2		6.7					

*Water quality measurements to be taken.

Day 21 (8/24/04) AF/ATM

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. umhos/cm	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
14	23.2								Each beaker fed 1.0 ml
21	23.2								YTC suspension
23	23.2								Initials: ATM
30	23.4								
37	23.3								
39	23.3								
40	23.4								
47	23.3								
52	23.3								Water changed in all
53	23.3								beakers.
62	23.2								Time: 0705
67	23.2								Initials: GSL
70	23.5								
89	23.4								
97	23.4								
105	23.4								
125	23.5								Water changed in all
129	23.4								beakers.
134	23.3								Time: 1710
140	23.4								Initials: AF
142	23.3								

*Water quality measurements to be taken.

ANC08785
BZTO104(e)008785

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No 686-3 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 22 (8/25/04) DJ

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond.* umhos/cm	pH*	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
14	23.2	5.6	170	6.8					Each beaker fed 1.0 ml
21	23.2	6.1	160	6.6					YTC suspension
23	23.2	6.2	160	6.6					Initials: WTM
30	23.4	5.1	160	6.6					
37	23.2	6.1	160	6.6					
39	23.3	6.4	165	6.6					
40	23.4	5.6	160	6.6					
47	23.3	6.1	160	6.6					
52	23.3	6.2	160	6.6					Water changed in all
53	23.3	5.5	170	6.6					beakers.
62	23.3	5.9	160	6.7					Time: 0720
67	23.3	6.1	160	6.7					Initials: DJ
70	23.5	5.6	170	6.7					
89	23.4	6.0	160	6.6					
97	23.3	5.9	160	6.6					
105	23.5	6.4	160	6.6					
125	23.5	6.2	165	6.6					Water changed in all
129	23.3	5.8	160	6.6					beakers.
134	23.3	5.6	160	6.6					Time: 1715
140	23.5	6.3	180	8.5					Initials: DJ
142	23.3	5.3	165	6.8					

*Water quality measurements to be taken.

Day 23 (8/26/04) DJ

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. umhos/cm	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
14	22.9								Each beaker fed 1.0 ml
21	22.9								YTC suspension
23	22.8								Initials: WTM
30	23.0								
37	22.9								
39	23.0								
40	23.2								
47	23.0								
52	23.0								Water changed in all
53	22.9								beakers.
62	22.9								Time: 0730
67	22.9								Initials: DJ
70	23.3								
89	23.0								
97	22.9								
105	23.3								
125	23.3								Water changed in all
129	23.1								beakers.
134	23.0								Time: 1715
140	23.3								Initials: DJ
142	22.9								

*Water quality measurements to be taken.

ANC08786
BZTO104(e)008786

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No 686-3 Client Windward Environmental Investigator _____

DAILY RECORD SHEET

Day 24 (8/27/04) wtrm/DS

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. umhos/cm	pH*	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
14	23.1	5.7		6.7					Each beaker fed 1.0 ml
21	23.1	6.3		6.6					YTC suspension
23	23.1	5.9		6.4					Initials: GSL
30	23.3	5.2		6.4					
37	23.1	6.0		6.4					
39	23.2	6.1		6.3					
40	23.3	5.4		6.3					
47	23.1	5.9		6.3					
52	23.1	6.1		6.3					Water changed in all
53	23.0	5.1		6.4					beakers.
62	23.1	5.5		6.4					Time: 0655
67	23.0	5.5		6.4					Initials: GSL
70	23.0	5.4		6.4					
89	23.2	5.9		6.3					
97	23.1	5.7		6.3					
105	22.2	6.4		6.3					
125	23.2	6.4		6.4					Water changed in all
129	23.1	6.1		6.4					beakers.
134	23.1	4.6		6.3					Time: 1705
140	23.1	5.7		8.0					Initials:
142	23.0	5.1		6.5					

*Water quality measurements to be taken.

Day 25 (8/28/04) wtrm

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. umhos/cm	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
14	23.1								Each beaker fed 1.0 ml
21	23.0								YTC suspension
23	23.1								Initials: GSL
30	23.2								
37	23.1								
39	23.1								
40	23.2								
47	23.1								
52	23.1								Water changed in all
53	23.1								beakers.
62	23.1								Time: 0730
67	23.3								Initials: GSL
70	23.2								
89	23.1								
97	23.1								
105	23.3								
125	23.3								Water changed in all
129	23.2								beakers.
134	23.1								Time: 1930
140	23.2								Initials: DSC
142	23.1								

*Water quality measurements to be taken.

ANC08787
BZTO104(e)008787

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No 686-3 Client Windward Environmental Investigator _____

DAILY RECORD SHEET

Day 26 (8/29/04) wm

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. umhos/cm	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
14	23.2								Each beaker fed 1.0 ml
21	23.2								YTC suspension
23	23.2								Initials: wm
30	23.2								
37	23.2								
39	23.3								
40	23.2								
47	23.2								
52	23.2								Water changed in all
53	23.2								beakers.
62	23.2								Time: 0745
67	23.3								Initials: wm
70	23.4								
89	23.2								
97	23.4								
105	23.4								
125	23.2								Water changed in all
129	23.2								beakers.
134	23.2								Time: 1730
140	23.3								Initials: [illegible]
142	23.2								

*Water quality measurements to be taken.

Day 27 (8/30/04) wm/af

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. umhos/cm	pH*	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
14	23.1	4.6		6.7					Each beaker fed 1.0 ml
21	23.1	5.4		6.6					YTC suspension
23	23.0	4.9		6.4					Initials: wm
30	23.0	4.0		6.5					
37	23.1	5.3		6.5					
39	23.2	5.1		6.5					
40	23.2	4.5		6.5					
47	23.1	5.4		6.6					
52	23.1	5.4		6.5					Water changed in all
53	23.1	4.5		6.5					beakers.
62	23.1	4.9		6.6					Time: 0710
67	23.1	4.8		6.6					Initials: [illegible]
70	23.3	4.5		6.6					
89	23.2	5.4		6.5					
97	23.1	5.1		6.5					
105	23.3	5.6		6.6					
125	23.2	6.1		6.5					Water changed in all
129	23.2	6.0		6.6					beakers.
134	23.1	4.7		6.5					Time: 1715
140	23.2	5.4		8.1					Initials: [illegible]
142	23.0	4.6		6.7					

*Water quality measurements to be taken.

ANC08788
BZTO104(e)008788

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No 686-3 Client Windward Environmental Investigator _____

DAILY RECORD SHEET

Day 28 (8 31 04) [illegible] / UB / [illegible] / BBP

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond.* (umhos/cm)	pH*	Hardness* (mg/L)	Alkalinity* (mg/L)	S (ppm)	NH3* (ppm)	Comments
14	23.3	5.8	165	6.7	43	50			Each beaker fed 1.0 ml
21	23.1	6.4	160	6.4	34	40			YTC suspension
23	23.2	5.8	160	6.3	43	50			Initials: —
30	23.2	5.4	160	6.3	43	50			
37	23.1	7.0	155	6.4	43	50			
39	23.2	6.8	160	6.3	43	40			
40	23.3	6.8	165	6.4	43	40			
47	23.1	6.8	160	6.4	43	40			
52	23.1	7.0	155	6.4	43	40			Water changed in all
53	23.0	5.8	165	6.6	43	50			beakers.
62	23.0	6.4	160	6.6	43	40			Time: 0670
67	23.0	6.0	160	6.6	34	50			Initials: UB
70	23.3	6.4	165	6.6	51	50			
89	23.2	6.3	155	6.3	43	40			
97	22.9	6.6	155	6.4	43	40			
105	23.2	7.1	160	6.5	43	50			
125	23.1	7.8	160	6.6	43	50			Water changed in all
129	23.1	7.6	160	6.6	43	40			beakers.
134	23.0	6.4	160	6.5	43	40			Time:
140	23.1	6.8	180	8.6	51	60			Initials:
142	22.9	6.4	160	6.5	43	50			

*Water quality measurements to be taken.

Day _____ (/ /)

Beaker No.	Temp. (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
14									Each beaker fed 1.0 ml
21									YTC suspension
23									Initials:
30									
37									
39									
40									
47									
52									Water changed in all
53									beakers.
62									Time:
67									Initials:
70									
89									
97									
105									
125									Water changed in all
129									beakers.
134									Time:
140									Initials:
142									

*Water quality measurements to be taken.

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NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-3 Client Windward Environmental Investigator

DAY 28 TEST TERMINATION SHEET

Beaker No.	Number of survivors	Initials
1	9	GJL
2	8	CAB
3	9	CAB
4	8	GJL
5	9	CAB
6	10	GJL
7	0	CAB
8	10	GJL
9	10	CAB
10	8	GJL
11	9	CAB
12	10	GJL
13	9	GJL
14	10	GJL
15	9	CAB
16	8	GJL
17	10	CAB
18	9	GJL
19	10	CAB
20	9	GJL
21	10	CAB
22	10	CAB
23	9	GJL
24	10	GJL
25	10	CAB
26	10	CAB
27	10	GJL
28	8	GJL
29	8	CAB
30	8	CAB
31	10	GJL
32	10	GJL
33	10	CAB
34	10	GJL
35	9	GJL
36	9	CAB
37	8	GJL
38	10	CAB
39	8	CAB
40	8	GJL
41	10	GJL
42	10	GJL
43	9	CAB
44	10	GJL
45	9	CAB

Beaker No.	Number of survivors	Initials
46	10	GJL
47	9	CAB
48	10	CAB
49	10	GJL
50	7	CAB
51	10	GJL
52	6	GJL
53	10	CAB
54	10	GJL
55	10	GJL
56	9	GJL
57	10	GJL
58	9	GJL
59	10	GJL
60	10	CAB
61	10	GJL
62	9	CAB
63	6	GJL
64	10	CAB
65	9	GJL
66	8	CAB
67	10	CAB
68	10	GJL
69	0	GJL
70	10	GJL
71	10	GJL
72	10	GJL
73	9	GJL
74	7	CAB
75	10	GJL
76	9	CAB
77	9	GJL
78	11	CAB
79	8	GJL
80	8	CAB
81	10	CAB
82	10	GJL
83	9	CAB
84	0	GJL
85	10	GJL
86	9	CAB
87	10	GJL
88	9	CAB
89	10	CAB
90	0	CAB

ANC08790
BZTO104(e)008790

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-3 Client Windward Environmental Investigator

DAY 28 TEST TERMINATION SHEET

Beaker No.	Number of survivors	Initials
91	9	GJ
92	9	CB
93	10	MM
94	9	GJ
95	8	CB
96	9	MM
97	10	GJ
98	10	CB
99	10	MM
100	8	GJ
101	9	CB
102	12	MM
103	6	GJ
104	10	CB
105	8	CB
106	9	GJ
107	10	MM
108	10	CB
109	7	GJ
110	9	CB
111	8	MM
112	8	CB
113	10	GJ
114	10	MM
115	0	CB
116	10	CB
117	9	GJ
118	8	CB
119	9	GJ
120	10	CB
121	10	GJ
122	8	CB
123	10	CB
124	10	GJ
125	10	GJ
126	10	CB
127	④ 10 11	MM
128	9	GJ
129	10	CB
130	10	GJ
131	10	MM
132	10	CB
133	9	GJ
134	10	GJ
135	8	CB

Beaker No.	Number of survivors	Initials
136	10	MM
137	9	GJ
138	10	CB
139	10	MM
140	0	GJ
141	10	CB
142	10	GJ
143	9	CB
144	10	MM
145	10	GJ
146	9	CB
147	10	GJ
148	10	MM
149	10	GJ
150	10	CB
151	10	MM
152	10	GJ
153	0	CB
154	10	CB
155	10	GJ
156	8	MM
157	10	CB
158	10	GJ
159	10	GJ
160	10	MM
161	9	GJ
162	8	CB
163	10	GJ
164	9	MM
165	9	CB
166	10	GJ
167	8	GJ
168	8	CB
169		
170		
171		
172		
173		
174		
175		
176		
177		
178		
179		
180		

ANC08791
BZTO104(e)008791

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 14-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-3 Client Windward Environmental Investigator

ZERO-TIME WEIGHING DATA SHEET

Tare: Date 8-3-04 Oven temp (C.) 64 Drying time (hr.) 24 Initials GJL
Standard Weights: 10 mg: 10.006 100mg: 100.017

Final: Date 8-4-04 Oven temp (C.) 64 Drying time (hr.) 24 Initials GJL
Standard Weights: 10 mg: 10.004 100mg: 100.014

Equip. used: Oven: BLUE M Balance: SARTORIUS M3P

(Dry overnight at 60-90 degrees C)

Pan #	Tare wt. (mg)	Total wt. (mg)	#weighed	Comments
1	30.139	30.911	20	
2	28.372	29.065	20	
3	29.059	29.775	20	
4	29.090	29.784	20	
5	27.970	28.729	20	

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BZTO104(e)008792

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-3 Client Windward Environmental Investigator

WEIGHING DATA SHEET

Tare: Date 8-31-04 Oven temp (C.) 64 Drying time (hr.) 24 Initials GSL
Standard Weights: 10 mg: 10.005 100mg: 100.013

Final #1: Date 9-1-04 Oven temp (C.) 67 Drying time (hr.) 24 Initials JRF
Standard Weights: 10 mg: 10.001 100mg: 100.000

Final #2: Date 9-2-04 Oven temp (C.) 64 Drying time (hr.) 24 Initials JRF
Standard Weights: 10 mg: 10.000 100mg: 100.012

Equip. used: Oven Blue M #1 Balance Sartorius
(Dry overnight at 60-90 degrees C)

Bkr. #	Pan #	Tare wt. (mg)	Total wt. (mg) 1	Total wt. (mg) 2	no. weighed	put into pans-initials	Comments
1	1	29.512	33.513	33.478	9	AF	
2	2	28.979	31.292	31.330	8	AF	
3	3	29.700	31.158	31.193	9	AF	
4	4	29.820	30.957	31.007	8	AF	
5	5	28.622	32.871	32.835	9	AF	
6	6	32.165	35.641	35.618	10	AF	
7	7	30.439	—	—	0	AF	
8	8	27.452	28.665	28.726	10	AF	
9	9	29.563	32.284	32.312	10	AF	
10	10	26.833	29.966	29.988	8	AF	
11	11	30.527	33.255	33.316	9	GSL	
12	12	27.501	30.018	30.090	10	GSL	
13	13	27.649	30.120	30.141	9	GSL	
14	14	31.707	34.284	34.298	10	GSL	
15	15	29.648	31.713	31.780	9	GSL	
16	16	26.952	28.776	28.832	8	GSL	
17	17	29.173	33.085	33.102	10	GSL	
18	18	31.532	33.504	33.563	9	GSL	
19	19	28.834	31.018	31.060	10	GSL	
20	20	28.981	31.935	31.965	9	GSL	
21	21	28.436	31.443	31.456	10	AF	
22	22	28.496	29.395	29.457	10	AF	
23	23	30.294	32.473	32.531	9	AF	
24	24	29.350	30.976	31.030	10	AF	
25	25	27.685	30.057	30.091	10	AF	
26	26	29.150	31.971	31.998	10	AF	
27	27	29.519	32.198	32.229	10	AF	
28	28	29.411	31.754	31.794	8	AF	
29	29	29.977	31.196	31.244	8	AF	
30	30	30.565	31.940	31.991	8	AF	
31	31	28.218	30.843	30.867	10	BBP	
32	32	29.395	31.851	31.895	10	BBP	
33	33	27.959	28.814	28.870	10	BBP	

ANC08793
BZTO104(e)008793

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-3 Client Windward Environmental Investigator

WEIGHING DATA SHEET

See page ____ for information on drying times and temperatures, standard weights,etc.

Bkr. #	Pan #	Tare wt. (mg)	Total wt. (mg) 1	Total wt. (mg) 2	no. weighed	put into pans-initials	Comments
34	34	29.636	32.171	32.193	10	BBP	
35	35	29.140	31.464	31.495	9	BBP	
36	36	31.040	32.801	32.836	9	BBP	
37	37	31.288	33.084	33.126	8	BBP	
38	38	31.348	34.047	34.066	10	BBP	
39	39	32.746	34.158	34.204	8	BBP	
40	40	31.626	34.146	34.173	8	BBP	
41	41	29.369	31.916	31.943	10	GDG	
42	42	30.745	33.805	33.814	10	GDG	
43	43	26.123	27.091	27.131	9	GDG	
44	44	28.800	32.017	32.073	10	GDG	
45	45	29.640	32.492	32.512	9	GDG	
46	46	27.871	33.108	33.127	10	GDG	
47	47	30.111	33.098	33.139	9	GDG	
48	48	30.235	33.791	33.787	10	GDG	
49	49	29.839	32.325	32.344	10	GDG	
50	50	27.856	29.126	29.178	7	GDG	
51	51	31.254	34.212	34.226	10	GDG	
52	52	30.033	32.081	32.098	6	GDG	
53	53	29.734	32.058	32.090	10	GDG	
54	54	27.258	29.437	29.467	10	GDG	
55	55	25.956	28.372	28.331	10	GDG	
56	56	30.908	33.955	33.880	9	GDG	
57	57	29.343	31.796	31.783	10	GDG	
58	58	28.008	30.650	30.627	9	GDG	
59	59	30.731	33.925	33.850	10	GDG	
60	60	29.201	32.770	32.682	10	GDG	
61	61	31.041	33.543	33.495	10	BBP	
62	62	27.874	29.806	29.799	9	BBP	
63	63	30.536	32.864	32.831	6	BBP	
64	64	30.729	31.832	31.830	10	BBP	
65	65	30.161	33.449	33.446	9	BBP	
66	66	28.683	32.157	32.172	8	BBP	
67	67	31.301	32.710	32.698	10	BBP	
68	68	29.167	32.035	32.049	10	BBP	
69	69	28.856	—	—	0	BBP	
70	70	28.408	30.137	30.152	10	BBP	
71	71	30.282	32.772	32.746	10	SK	
72	72	29.227	32.119	32.126	10	GDG	
73	73	26.948	32.093	31.974	9	GDG	
74	74	27.393	29.778	29.780	7	GDG	
75	75	26.255	29.235	29.241	10	GDG	
76	76	30.935	32.979	32.995	9	GDG	

ANC08794
BZTO104(e)008794

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-3 Client Windward Environmental Investigator

WEIGHING DATA SHEET

See page _____ for information on drying times and temperatures, standard weights,etc.

Bkr. #	Pan #	Tare wt. (mg)	Total wt. (mg) 1	Total wt. (mg) 2	no. weighed	put into pans-initials	Comments
77	77	26.821	28.470	28.459	9	[illegible]	
78	78	29.661	32.266	~~28.~~ 32.246 JF	11	[illegible]	
79	79	29.643	31.394	31.433	8	[illegible]	
80	80	28.195	29.573	29.610	8	[illegible]	
81	81	28.984	31.297	31.297	10	BBP	
82	82	29.879	31.811	31.842	10	BBP	
83	83	30.642	33.018	33.038	9	BBP	
84	84	27.614	~~27.563~~ JF	~~29.627~~ JF	0	BBP	
85	85	30.050	32.201	32.227	10	BBP	
86	86	27.496	29.779	29.775	9	BBP	
87	87	29.519	31.274	31.304	10	BBP	
88	88	29.104	31.415	31.383	9	BBP	
89	89	29.220	31.571	31.580	10	BBP	
90	90	27.960	~~27.904~~ JF	~~27.~~ JF	0	BBP	
91	91	29.451	30.939	30.962	9	[illegible]	
92	92	29.708	32.662	32.690	9	[illegible]	
93	93	29.745	32.222	32.063	10	[illegible]	
94	94	27.956	30.720	30.699	9	[illegible]	
95	95	30.522	32.138	32.186	8	[illegible]	
96	96	29.167	31.589	31.615	9	[illegible]	
97	97	30.526	32.477	32.500	10	[illegible]	
98	98	27.925	29.645	29.682	10	[illegible]	
99	99	29.989	35.024	34.986	10	[illegible]	
100	100	28.984	31.778	31.813	8	[illegible]	
101	101	26.737	28.863	28.897	9	BBP	
102	102	30.191	33.993	34.008	12	BBP	
103	103	29.289	30.959	31.012	6	BBP	
104	104	29.242	31.113	31.135	10	BBP	
105	105	30.270	32.868	32.832	8	BBP	
106	106	29.320	32.771	32.714	9	BBP	
107	107	29.646	31.178	31.156	10	BBP	
108	108	31.551	34.542	34.496	10	BBP	
109	109	29.839	31.856	31.836	7	BBP	
110	110	27.900	31.597	31.563	9	BBP	
111	111	29.485	32.406	32.370	8	BBP	
112	112	26.788	28.803	28.780	8	BBP	
113	113	29.127	31.934	31.894	10	BBP	
114	114	26.293	29.539	29.492	10	BBP	
115	115	29.421	~~29.408~~ JF	—	0	BBP	
116	116	30.087	32.326	32.303	10	BBP	
117	117	31.067	33.939	33.909	9	BBP	
118	118	30.957	33.922	~~30.~~ 33.890	8	BBP	
119	119	27.719	30.215	30.190	9	BBP	

ANC08795
BZTO104(e)008795

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-3 Client Windward Environmental Investigator

WEIGHING DATA SHEET

See page _____ for information on drying times and temperatures, standard weights,etc.

Bkr. #	Pan #	Tare wt. (mg)	Total wt. (mg) 1	Total wt. (mg) 2	no. weighed	put into pans-initials	Comments
120	120	29.284	32.453	32.428	10	BBP	
121	121	29.770	37.695	37.562	10	BBP	
122	122	29.930	32.464	32.463	8	BBP	
123	123	30.610	33.432	33.392	10	BBP	
124	124	29.545	31.888	31.862	10	BBP	
125	125	31.162	36.679	36.621	10	BBP	
126	126	27.973	31.310	31.270	10	BBP	
127	127	28.943	31.966	31.942	11	BBP	
128	128	31.974	34.693	34.667	9	BBP	
129	129	30.679	32.361	32.351	10	BBP	
130	130	27.715	30.228	30.204	10	BBP	
131	131	27.743	31.271	31.226	10	BBP	
132	132	27.510	29.859	29.831	10	BBP	
133	133	29.636	33.594	33.553	9	BBP	
134	134	28.731	31.386	31.375	10	BBP	
135	135	28.704	31.342	31.314	8	BBP	
136	136	32.269	36.589	36.518	10	BBP	
137	137	29.200	31.077	31.062	9	BBP	
138	138	30.614	36.118	36.036	10	BBP	
139	139	28.231	31.068	31.046	10	BBP	
140	140	29.094	—	—	0	BBP	
141	141	29.115	31.741	31.717	10	GZG	
142	142	30.208	32.940	32.926	10	GZG	
143	143	31.455	34.903	34.865	9	GZG	
144	144	29.914	32.250	32.212	10	GZG	
145	145	35.262	37.371	37.344	10	GZG	
146	146	31.374	35.174	35.109	9	GZG	
147	147	31.286	33.920	33.897	10	GZG	
148	148	27.538	29.998	29.948	10	GZG	
149	149	29.610	32.438	32.418	10	GZG	
150	150	30.531	32.754	32.713	10	GZG	
151	151	28.478	30.930	30.909	10	GZG	
152	152	29.588	32.692	32.672	10	GZG	
153	153	30.656	—	—	0	GZG	
154	154	28.548	31.594	31.563	10	GZG	
155	155	31.573	33.392	33.350	10	GZG	
156	156	28.820	31.390	31.354	8	GZG	
157	157	28.588	30.626	30.621	10	GZG	
158	158	28.380	31.571	31.501	10	GZG	
159	159	30.650	33.331	33.300	9	GZG	
160	160	28.471	31.152	31.108	10	GZG	
161	161	28.664	30.499	30.486	9	GZG	
162	162	29.258	31.896	31.885	8	GZG	

ANC08796
BZTO104(e)008796

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-3 Client Windward Environmental Investigator

WEIGHING DATA SHEET

See page _____ for information on drying times and temperatures, standard weights,etc.

Bkr. #	Pan #	Tare wt. (mg)	Total wt. (mg) 1	Total wt. (mg) 2	no. weighed	put into pans-initials	Comments
163	163	29.497	31.260	31.255	10	[illegible]	
164	164	31.423	33.942	33.922	9	[illegible]	
165	165	28.285	30.675	30.652	9	[illegible]	
166	166	27.551	29.450	29.456	10	[illegible]	
167	167	27.794	—	—	0	[illegible]	
168	168	29.257	30.534	30.560	8	[illegible]	
169	169						
170	170						
171	171						
172	172						
173	173						
174	174						
175	175						
176	176						
177	177						
178	178						
179	179						
180	180						
181	181						
182	182						
183	183						
184	184						
185	185						
186	186						
187	187						
188	188						
189	189						
190	190						
191	191						
192	192						
193	193						
194	194						
195	195						
196	196						
197	197						
198	198						
199	199						
200	200						
201	201						
202	202						
203	203						
204	204						
205	205						

ANC08797
BZTO104(e)008797

Chesapeake Cultures

P.O. Box 507 Hayes, VA 23072 (804) 693-4046 (804)694-4704 fax
www.c-cultures.com
e-mail growfish@c-cultures.com

NAS
Shipment Information

Species Hyalella azteca Date 7/29/04

Age/Size 2-3d ~ 1.0-1.2mm P.O. No. verbal

Quanitity 2500 + Invoice No. 4791

Temperature 24 °C Salinity - pH 7.97

Notes Thank you!

Received by Bill Montgomery on 7-30-04
William T. Montgomery

Biologist [signature]

* *Please inspect shipment and report any problem immediately* *

28 06 61

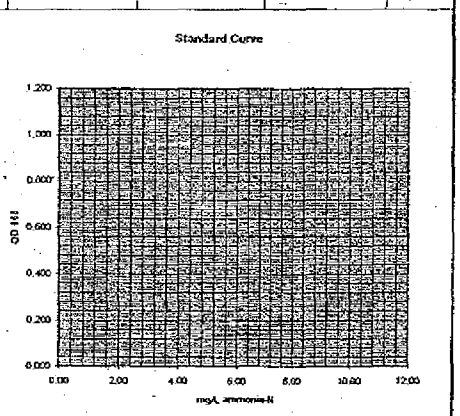
AMMONIA EXPOSURE BENCHSHEETS AND ANALYSIS

Total Ammonia-N in Sediment Pore Water: Computation Worksheet

Salicylate Method (SOP #5492)

Result

	Sample description	Dilution factor	OD655	NH_3-N (mg/L)	pH	Salinity (ppt)
	Blank	-----	----	----		
	1.0 mg/L NH_3-N Std.	-----	.110	1.00		
	3.0 mg/L NH_3-N Std.	-----	.247	3.00		
	6.0 mg/L NH_3-N Std.	-----	.480	6.00		
	10.0 mg/L NH_3-N Std.	-----	.875	10.00		
	3.0 mg/L spike	----	.238			
	3.0 mg/L spike dupl.	----	.248			
1.	9303F	5	.132		6.7	
2.	9304F	5	.072		6.4	
3.	9305F	5	—		—	
4.	9306F	5	.018		6.8	
5.	9307F	5	.071		6.6	
6.	9308F	5	.038		6.5	
7.	9309F	5	.076		6.4	
8.	9310F	5	.093		6.4	
9.	9311F	5	.029		6.6	
10.	9312F	5	.080		6.9	
11.	9313F	5	—		—	
12.	9314F	5	.003		6.6	
13.	9315F	5	.084		7.0	
14.	9316F	5	.131		11.3	
15.	9317F	5	.059		—	
16.	9318F	5	—		—	
17.	9319F	5	.010		6.9	
18.	9320F	5	.032		6.8	
19.	9321F	5	.068		7.0	
20.	9322F	5	.074		6.9	
21.		5				
22.		5				
23.		5				
24.		5				
25.		5				
26.		5				
27.		5				
28.		5				
29.		5				
30.		5				
31.		5				
32.		5				
33.		5				
34.		5				
35.		5				
36.		5				



Reporting limit (mg/L) =	0.5
Recovery (%) =	#VALUE!
Precision (RPD) =	#VALUE!
Sample volume (ml):	0.10
Dilution factor	5

Sample Set Description:

Proj. No.:	686
Bulk sediment porewaters	

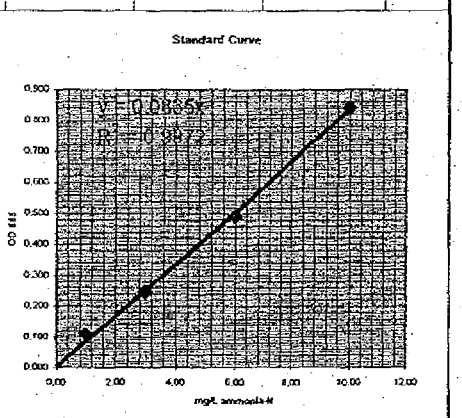
Analyst:	RSC
Date analysed:	8/2/2004

Total Ammonia-N in Sediment Pore Water: Computation Worksheet

Salicylate Method (SOP #5492)

Result

	Sample description	Dilution factor	OD_{655}	NH_3-N (mg/L)	pH	Salinity (ppt)
	Blank	-----	----	----		
	1.0 mg/L NH_3-N Std.	-----	0.110	1.00		
	3.0 mg/L NH_3-N Std.	-----	0.247	3.00		
	6.0 mg/L NH_3-N Std.	-----	0.490	6.00		
	10.0 mg/L NH_3-N Std.	-----	0.840	10.00		
	3.0 mg/L spike	-----	0.233	2.79		
	3.0 mg/L spike dupl.	-----	0.243	2.91		
1.	9303F	5	0.132	7.90		
2.	9304F	5	0.072	4.31		
3.	9305F	5	–	– *		
4.	9306F	5	0.018	1.08		
5.	9307F	5	0.072	4.31		
6.	9308F	5	0.038	2.27		
7.	9309F	5	0.071	4.25		
8.	9310F	5	0.093	5.56		
9.	9311F	5	0.028	1.68		
10.	9312F	5	0.080	4.79		
11.	9313F	5	–	– *		
12.	9314F	5	0.003	ND		
13.	9315F	5	0.182	10.89		
14.	9316F	5	0.131	7.84		
15.	9317F	5	0.059	3.53		
16.	9318F	5	–	– *		
17.	9319F	5	0.010	0.60		
18.	9320F	5	0.032	1.91		
19.	9321F	5	0.080	4.79		
20.	9322F	5	0.074	4.43		
21.		5				
22.		5				
23.		5				
24.		5	* Environment sample for analysis			
25.		5				
26.		5				
27.		5				
28.		5				
29.		5				
30.		5				
31.		5				
32.		5				
33.		5				
34.		5				
35.		5				
36.		5				



Reporting limit (mg/L) =	0.5
Recovery (%) =	94.9
Precision (RPD) =	-4.20
Sample volume (ml):	0.10
Dilution factor	5

Sample Set Description:

Proj. No.: 686

Bulk sediment porewaters

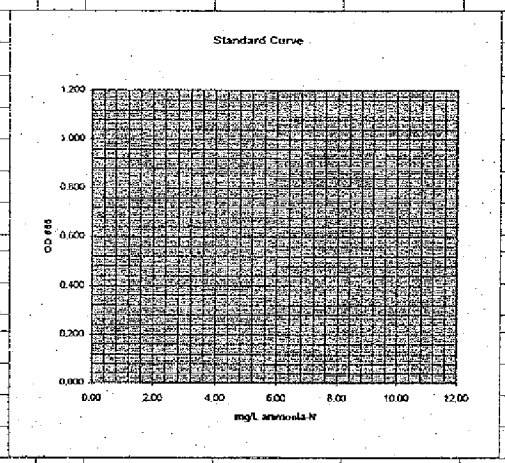
Analyst:	RSC
Date analysed:	8/2/2004

ANC08801
BZTO104(e)008801

Total Ammonia-N in Water: Computation Worksheet
Salicylate Method (SOP #5492)

Result

	Sample description	Dilution factor	OD655	NH3-N (mg/L)
	Blank	----	----	----
	1.0 mg/L NH3-N Std.	----	.111	1.00
	3.0 mg/L NH3-N Std.	----	.351	3.00
	6.0 mg/L NH3-N Std.	----	.535	6.00
	10.0 mg/L NH3-N Std.	----	.870	10.00
	3.0 mg/L spike	----	.349	
	3.0 mg/L spike dupl.	----	.350	
1.	14	1	.002	
2.	21	1	.020	
3.	23	1	.021	
4.	30	1	.033	
5.	37	1	.034	
6.	39	1	.012	
7.	40	1	.017	
8.	47	1	.009	
9.	52	1	.040	
10.	53	1	.040	
11.	62	1	.038	
12.	67	1	.031	
13.	70	1	.001	
14.	89	1	.001	
15.	97	1	.000	
16.	105	1	.000	
17.	125	1	.000	
18.	129	1	.000	
19.	134	1	.000	
20.	140	1	.000	
21.	142	1	.000	
22.		1		
23.		1		
24.		1		
25.		1		
26.		1		
27.		1		
28.		1		
29.		1		
30.		1		
31.		1		
32.		1		
33.		1		
34.		1		
35.		1		
36.		1		



Reporting limit (mg/L) =	0.1
Recovery (%) =	#VALUE!
Precision (RPD) =	#VALUE!
Sample volume (ml):	0.50
Dilution factor	1

Sample Set Description:

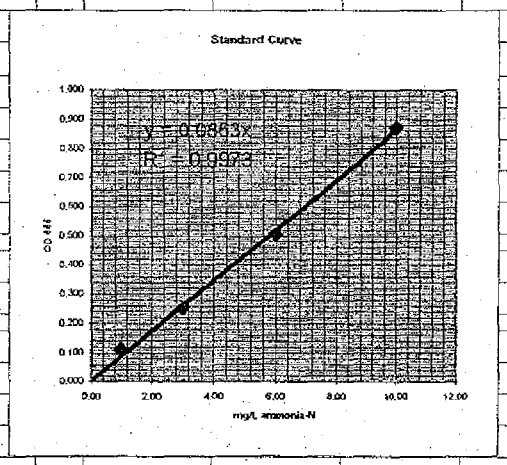
Test No.:	686-3
Test Day:	0 (8-3-04)
Species:	*Hyalella*
Overlying water	
Analyst:	RSC
Date analysed:	8/3/2004

Total Ammonia-N in Water: Computation Worksheet

Salicylate Method (SOP #5492)

Result

	Sample description	Dilution factor	OD_{655}	NH_3-N (mg/L)
	Blank	-----	----	----
	1.0 mg/L NH_3-N Std.	-----	0.111	1.00
	3.0 mg/L NH_3-N Std.	-----	0.251	3.00
	6.0 mg/L NH_3-N Std.	-----	0.505	6.00
	10.0 mg/L NH_3-N Std.	-----	0.870	10.00
	3.0 mg/L spike	-----	0.244	2.83
	3.0 mg/L spike dupl.	-----	0.250	2.90
1.	14	1	0.002	ND
2.	21	1	0.020	0.23
3.	23	1	0.022	0.25
4.	30	1	0.057	0.66
5.	37	1	0.039	0.45
6.	39	1	0.012	0.14
7.	40	1	0.077	0.89
8.	47	1	0.009	0.10
9.	52	1	0.040	0.46
10.	53	1	0.040	0.46
11.	62	1	0.038	0.44
12.	67	1	0.031	0.36
13.	70	1	0.001	ND
14.	89	1	0.001	ND
15.	97	1	0.000	ND
16.	105	1	0.000	ND
17.	125	1	0.000	ND
18.	129	1	0.000	ND
19.	134	1	0.000	ND
20.	140	1	0.000	ND
21.	142	1	0.000	ND
22.		1		
23.		1		
24.		1		
25.		1		
26.		1		
27.		1		
28.		1		
29.		1		
30.		1		
31.		1		
32.		1		
33.		1		
34.		1		
35.		1		
36.		1		



Reporting limit (mg/L) =	0.1
Recovery (%) =	95.4
Precision (RPD) =	-2.43
Sample volume (ml):	0.50
Dilution factor	1

Sample Set Description:

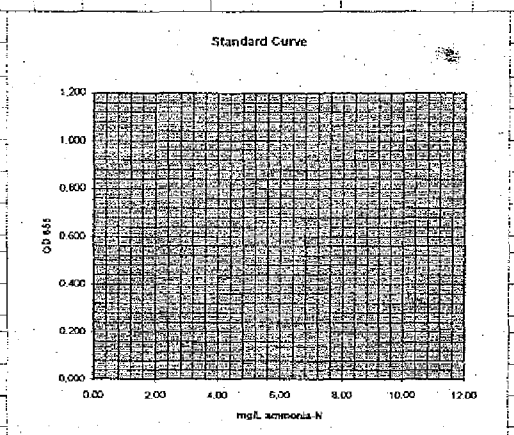
Test No.:	686-3
Test Day:	0 (8-3-04)
Species:	*Hyalella*
Overlying water	
Analyst:	RSC
Date analysed:	8/3/2004

Total Ammonia-N in Water: Computation Worksheet

Salicylate Method (SOP #5492)

Result

	Sample description	Dilution factor	OD655	NH_3-N (mg/L)
	Blank	----	----	----
	1.0 mg/L NH_3-N Std.	-----	.117	1.00
	3.0 mg/L NH_3-N Std.	-----	.308	3.00
	6.0 mg/L NH_3-N Std.	-----	.561	6.00
	10.0 mg/L NH_3-N Std.	----	.900	10.00
	3.0 mg/L spike	-----	.307	
	3.0 mg/L spike dupl.	-----	.301	
1.	14	1	.078	
2.	21	1	.018	
3.	23	1	.004	
4.	30	1	.017	
5.	37	1	.006	
6.	39	1	.011	
7.	40	1	.009	
8.	47	1	.010	
9.	52	1	.002	
10.	53	1	<.004	
11.	62	1	.001	
12.	67	1	.012	
13.	70	1	.001	
14.	89	1	.002	
15.	97	1	.003	
16.	105	1	.000	
17.	125	1	.001	
18.	129	1	.000	
19.	134	1	.002	
20.	140	1	.007	
21.	142	1	.007	
22.		1		
23.		1		
24.		1		
25.		1		
26.		1		
27.		1		
28.		1		
29.		1		
30.		1		
31.		1		
32.		1		
33.		1		
34.		1		
35.		1		
36.		1		



Reporting limit (mg/L) =	0.1
Recovery (%) =	#VALUE!
Precision (RPD) =	#VALUE!
Sample volume (ml):	0.50
Dilution factor	1

Sample Set Description:

Test No.:	686-3
Test Day:	28 (8-31-04)
Species:	*Hyalella*
Overlying water	
Analyst:	RSC
Date analysed:	8/31/2004

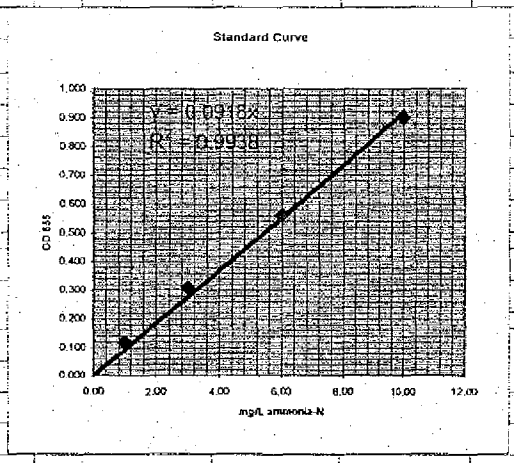
ANC08804
BZTO104(e)008804

Total Ammonia-N in Water: Computation Worksheet

Salicylate Method (SOP #5492)

Result

	Sample description	Dilution factor	OD_{655}	NH_3-N (mg/L)
	Blank	----	----	----
	1.0 mg/L NH_3-N Std.	-----	0.117	1.00
	3.0 mg/L NH_3-N Std.	-----	0.308	3.00
	6.0 mg/L NH_3-N Std.	-----	0.561	6.00
	10.0 mg/L NH_3-N Std.	-----	0.900	10.00
	3.0 mg/L spike	-----	0.307	3.34
	3.0 mg/L spike dupl.	-----	0.301	3.27
1.	14	1	0.078	0.85
2.	21	1	0.018	0.20
3.	23	1	0.004	ND
4.	30	1	0.017	0.18
5.	37	1	0.006	ND
6.	39	1	0.011	0.12
7.	40	1	0.009	ND
8.	47	1	0.010	0.11
9.	52	1	0.002	ND
10.	53	1	0.004	ND
11.	62	1	0.001	ND
12.	67	1	0.012	0.13
13.	70	1	0.001	ND
14.	89	1	0.002	ND
15.	97	1	0.003	ND
16.	105	1	0.000	ND
17.	125	1	0.001	ND
18.	129	1	0.000	ND
19.	134	1	0.002	ND
20.	140	1	0.007	ND
21.	142	1	0.007	ND
22.		1		
23.		1		
24.		1		
25.		1		
26.		1		
27.		1		
28.		1		
29.		1		
30.		1		
31.		1		
32.		1		
33.		1		
34.		1		
35.		1		
36.		1		



Reporting limit (mg/L) =	0.1
Recovery (%) =	110.2
Precision (RPD) =	1.97
Sample volume (ml):	0.50
Dilution factor	1

Sample Set Description:

Test No.:	686-3
Test Day:	28 (8-31-04)
Species:	*Hyalella*

Overlying water

Analyst:	RSC
Date analysed:	8/31/2004

TEST DATA ANALYSIS RECORDS

Test Number: P686-3

Freshwater Sediment Test
28-day Hyalella azteca

BKR	NAS SMPL	CLIENT DESCRIP	REPL	
11	9208F	Control	1	
131	9208F	Control	2	
120	9208F	Control	3	
60	9208F	Control	4	
158	9208F	Control	5	
152	9208F	Control	6	
133	9208F	Control	7	
14	9208F	Control	8	wq replicate
32	9303F	LW2-G020	1	
9	9303F	LW2-G020	2	
130	9303F	LW2-G020	3	
147	9303F	LW2-G020	4	
82	9303F	LW2-G020	5	
164	9303F	LW2-G020	6	
83	9303F	LW2-G020	7	
53	9303F	LW2-G020	8	wq replicate
144	9304F	LW2-G024	1	
107	9304F	LW2-G024	2	
157	9304F	LW2-G024	3	
36	9304F	LW2-G024	4	
163	9304F	LW2-G024	5	
137	9304F	LW2-G024	6	
43	9304F	LW2-G024	7	
30	9304F	LW2-G024	8	wq replicate
1	9305F	LW2-G025	1	
99	9305F	LW2-G025	2	
73	9305F	LW2-G025	3	
5	9305F	LW2-G025	4	
46	9305F	LW2-G025	5	
138	9305F	LW2-G025	6	
121	9305F	LW2-G025	7	
125	9305F	LW2-G025	8	wq replicate
6	9306F	LW2-G027	1	
135	9306F	LW2-G027	2	
114	9306F	LW2-G027	3	
128	9306F	LW2-G027	4	
149	9306F	LW2-G027	5	
160	9306F	LW2-G027	6	
127	9306F	LW2-G027	7	
47	9306F	LW2-G027	8	wq replicate
119	9307F	LW2-G033	1	
38	9307F	LW2-G033	2	
12	9307F	LW2-G033	3	
58	9307F	LW2-G033	4	
29	9307F	LW2-G033	5	
33	9307F	LW2-G033	6	
51	9307F	LW2-G033	7	
62	9307F	LW2-G033	8	wq replicate
143	9308F	LW2-G034	1	
78	9308F	LW2-G034	2	
108	9308F	LW2-G034	3	
151	9308F	LW2-G034	4	
49	9308F	LW2-G034	5	
159	9308F	LW2-G034	6	
75	9308F	LW2-G034	7	
129	9308F	LW2-G034	8	wq replicate

ANC08807
BZTO104(e)008807

Test Number: P686-3

Freshwater Sediment Test
28-day Hyalella azteca

BKR	NAS SMPL	CLIENT DESCRIP	REPL	
54	9309F	LW2-G035	1	
122	9309F	LW2-G035	2	
10	9309F	LW2-G035	3	
141	9309F	LW2-G035	4	
136	9309F	LW2-G035	5	
165	9309F	LW2-G035	6	
113	9309F	LW2-G035	7	
70	9309F	LW2-G035	8	wq replicate
57	9310F	LW2-G061	1	
3	9310F	LW2-G061	2	
55	9310F	LW2-G061	3	
148	9310F	LW2-G061	4	
64	9310F	LW2-G061	5	
8	9310F	LW2-G061	6	
94	9310F	LW2-G061	7	
142	9310F	LW2-G061	8	wq replicate
132	9311F	LW2-G062	1	
19	9311F	LW2-G062	2	
106	9311F	LW2-G062	3	
81	9311F	LW2-G062	4	
166	9311F	LW2-G062	5	
150	9311F	LW2-G062	6	
124	9311F	LW2-G062	7	
23	9311F	LW2-G062	8	wq replicate
56	9312F	LW2-G067	1	
87	9312F	LW2-G067	2	
116	9312F	LW2-G067	3	
93	9312F	LW2-G067	4	
34	9312F	LW2-G067	5	
126	9312F	LW2-G067	6	
24	9312F	LW2-G067	7	
97	9312F	LW2-G067	8	wq replicate
48	9313F	LW2-G073	1	
72	9313F	LW2-G073	2	
27	9313F	LW2-G073	3	
68	9313F	LW2-G073	4	
66	9313F	LW2-G073	5	
146	9313F	LW2-G073	6	
162	9313F	LW2-G073	7	
105	9313F	LW2-G073	8	wq replicate
123	9314F	LW2-G074	1	
45	9314F	LW2-G074	2	
41	9314F	LW2-G074	3	
20	9314F	LW2-G074	4	
161	9314F	LW2-G074	5	
110	9314F	LW2-G074	6	
59	9314F	LW2-G074	7	
39	9314F	LW2-G074	8	wq replicate
79	9315F	LW2-G085	1	
18	9315F	LW2-G085	2	
50	9315F	LW2-G085	3	
118	9315F	LW2-G085	4	
63	9315F	LW2-G085	5	
42	9315F	LW2-G085	6	
95	9315F	LW2-G085	7	
40	9315F	LW2-G085	8	wq replicate

ANC08808
BZTO104(e)008808

Test Number: P686-3

Freshwater Sediment Test
28-day Hyalella azteca

BKR	NAS SMPL	CLIENT DESCRIP	REPL	
153	9316F	LW2-G092	1	
7	9316F	LW2-G092	2	
69	9316F	LW2-G092	3	
84	9316F	LW2-G092	4	
167	9316F	LW2-G092	5	
115	9316F	LW2-G092	6	
90	9316F	LW2-G092	7	
140	9316F	LW2-G092	8	wq replicate
91	9317F	LW2-G089	1	
22	9317F	LW2-G089	2	
168	9317F	LW2-G089	3	
71	9317F	LW2-G089	4	
2	9317F	LW2-G089	5	
154	9317F	LW2-G089	6	
117	9317F	LW2-G089	7	
89	9317F	LW2-G089	8	wq replicate
65	9318F	LW2-G080	1	
100	9318F	LW2-G080	2	
17	9318F	LW2-G080	3	
44	9318F	LW2-G080	4	
92	9318F	LW2-G080	5	
25	9318F	LW2-G080	6	
26	9318F	LW2-G080	7	
21	9318F	LW2-G080	8	wq replicate
85	9319F	LW2-G079	1	
102	9319F	LW2-G079	2	
74	9319F	LW2-G079	3	
13	9319F	LW2-G079	4	
155	9319F	LW2-G079	5	
35	9319F	LW2-G079	6	
88	9319F	LW2-G079	7	
52	9319F	LW2-G079	8	wq replicate
111	9320F	LW2-G078	1	
156	9320F	LW2-G078	2	
15	9320F	LW2-G078	3	
103	9320F	LW2-G078	4	
101	9320F	LW2-G078	5	
28	9320F	LW2-G078	6	
109	9320F	LW2-G078	7	
37	9320F	LW2-G078	8	wq replicate
76	9321F	LW2-G111	1	
61	9321F	LW2-G111	2	
96	9321F	LW2-G111	3	
145	9321F	LW2-G111	4	
98	9321F	LW2-G111	5	
31	9321F	LW2-G111	6	
16	9321F	LW2-G111	7	
134	9321F	LW2-G111	8	wq replicate
86	9322F	LW2-G083	1	
80	9322F	LW2-G083	2	
104	9322F	LW2-G083	3	
77	9322F	LW2-G083	4	
4	9322F	LW2-G083	5	
112	9322F	LW2-G083	6	
139	9322F	LW2-G083	7	
67	9322F	LW2-G083	8	wq replicate

ANC08809
BZTO104(e)008809

Test Number: P688-3

Freshwater Sediment Test
28-day Hyalella azteca

Endpoints Data Entry and Calculations File

BKR=beaker number
INIT=initial number
SURV=number survivors
MORT=number dead=INIT-SURV
PSURV=%survival=100(SURV/INIT)
PMORT=%mortality=100(MORT/INIT)

TARE WT= ashed weight of pan used for that replicate at test termination (mg), or dry weight of pan if ash-free dry weight is not an endpoint
WT COUNT= number of test organisms weighed at test end
DRY WT= TARE WT + dry weight of test organisms recovered at test termination (mg)
TWT=total biomass=DRY WT-TARE WT
WT=average individual biomass=TWT/WT COUNT

INITIAL WEIGHT

pan #	tare wt (mg)	final wt (mg)	wt count	avg. wt/ organism
1	30.139	30.911	20	0.039
2	28.372	29.065	20	0.035
3	29.059	29.775	20	0.036
4	29.090	29.784	20	0.035
5	27.970	28.729	20	0.038

INDEX	BKR	NAS SMPL	CLIENT DESCRIP	REPL		INIT	SURV	MORT	PSURV	PMORT	TARE WT (mg)	WT COUNT	DRY WT (mg)	TWT (mg)	WT (mg)
1	11	9208F	Control	1		10	9	1	90.0	10.0	30.527	9	33.316	2.79	0.31
2	131	9208F	Control	2		10	10	0	100.0	0.0	27.743	10	31.226	3.48	0.35
3	120	9208F	Control	3		10	10	0	100.0	0.0	29.284	10	32.428	3.14	0.31
4	60	9208F	Control	4		10	10	0	100.0	0.0	29.201	10	32.682	3.48	0.35
5	158	9208F	Control	5		10	10	0	100.0	0.0	28.380	10	31.501	3.12	0.31
6	152	9208F	Control	6		10	10	0	100.0	0.0	29.568	10	32.672	3.08	0.31
7	133	9208F	Control	7		10	9	1	90.0	10.0	29.636	9	33.553	3.92	0.44
8	14	9208F	Control	8	wq replicate	10	10	0	100.0	0.0	31.707	10	34.298	2.59	0.26
9	32	9303F	LW2-G020	1		10	10	0	100.0	0.0	29.395	10	31.895	2.50	0.25
10	9	9303F	LW2-G020	2		10	10	0	100.0	0.0	29.563	10	32.312	2.75	0.27
11	130	9303F	LW2-G020	3		10	10	0	100.0	0.0	27.715	10	30.204	2.49	0.25
12	147	9303F	LW2-G020	4		10	10	0	100.0	0.0	31.286	10	33.897	2.61	0.26
13	82	9303F	LW2-G020	5		10	10	0	100.0	0.0	29.879	10	31.842	1.96	0.20
14	164	9303F	LW2-G020	6		10	9	1	90.0	10.0	31.423	9	33.922	2.50	0.28
15	83	9303F	LW2-G020	7		10	9	1	90.0	10.0	30.642	9	33.038	2.40	0.27
16	53	9303F	LW2-G020	8	wq replicate	10	10	0	100.0	0.0	29.734	10	32.090	2.36	0.24
17	144	9304F	LW2-G024	1		10	10	0	100.0	0.0	29.914	10	32.212	2.30	0.23
18	107	9304F	LW2-G024	2		10	10	0	100.0	0.0	28.646	10	31.156	2.51	0.25
19	157	9304F	LW2-G024	3		10	10	0	100.0	0.0	28.588	10	30.621	2.03	0.20
20	36	9304F	LW2-G024	4		10	9	1	90.0	10.0	31.040	9	32.836	1.80	0.20
21	163	9304F	LW2-G024	5		10	10	0	100.0	0.0	29.497	10	31.255	1.76	0.18
22	137	9304F	LW2-G024	6		10	9	1	90.0	10.0	29.200	9	31.062	1.86	0.21
23	43	9304F	LW2-G024	7		10	9	1	90.0	10.0	26.123	9	27.131	1.01	0.11
24	30	9304F	LW2-G024	8	wq replicate	10	8	2	80.0	20.0	30.565	8	31.991	1.43	0.18
25	1	9305F	LW2-G025	1		10	9	1	90.0	10.0	29.512	9	33.478	3.97	0.44
26	99	9305F	LW2-G025	2		10	10	0	100.0	0.0	29.989	10	34.986	5.00	0.50
27	73	9305F	LW2-G025	3		10	9	1	90.0	10.0	26.948	9	31.974	5.03	0.56
28	5	9305F	LW2-G025	4		10	9	1	90.0	10.0	28.622	9	32.835	4.21	0.47
29	46	9305F	LW2-G025	5		10	10	0	100.0	0.0	27.871	10	33.127	5.26	0.53
30	138	9305F	LW2-G025	6		10	10	0	100.0	0.0	30.614	10	36.036	5.42	0.54
31	121	9305F	LW2-G025	7		10	10	0	100.0	0.0	29.770	10	37.562	7.79	0.78
32	125	9305F	LW2-G025	8	wq replicate	10	10	0	100.0	0.0	31.162	10	36.821	5.66	0.57

	SURV	MORT	PSURV	PMORT	WT
Mean	9.8	0.3	97.5	2.5	0.33
SD	0.5	0.5	4.6	4.6	0.05
n	8	8	8	8	8
Mean	9.8	0.3	97.5	2.5	0.25
SD	0.5	0.5	4.6	4.6	0.03
n	8	8	8	8	8
Mean	9.4	0.6	93.8	6.3	0.19
SD	0.7	0.7	7.4	7.4	0.04
n	8	8	8	8	8
Mean	9.6	0.4	96.3	3.8	0.55
SD	0.5	0.5	5.2	5.2	0.10
n	8	8	8	8	8

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ANC08810
BZTO104(e)008810

Test Number: P686-3

Freshwater Sediment Test
28-day Hyalella azteca

INDEX	BKR	NAS SMPL	CLIENT DESCRIP	REPL		INIT	SURV	MORT	PSURV	PMORT	TARE WT (mg)	WT COUNT	DRY WT (mg)	TWT (mg)	WT (mg)		SURV	MORT	PSURV	PMORT	WT
33	6	9306F	LW2-G027	1		10	10	0	100.0	0.0	32.165	10	35.618	3.45	0.35						
34	135	9306F	LW2-G027	2		10	8	2	80.0	20.0	28.704	8	31.314	2.61	0.33						
35	114	9306F	LW2-G027	3		10	10	0	100.0	0.0	26.293	10	29.492	3.20	0.32						
36	128	9306F	LW2-G027	4		10	9	1	90.0	10.0	31.974	9	34.667	2.69	0.30						
37	149	9306F	LW2-G027	5		10	10	0	100.0	0.0	29.610	10	32.418	2.81	0.28	Mean	9.6	0.5	95.0	5.0	0.31
38	160	9306F	LW2-G027	6		10	10	0	100.0	0.0	28.471	10	31.108	2.64	0.26	SD	0.9	0.8	7.6	7.6	0.03
39	127	9306F	LW2-G027	7		11	11	0	100.0	0.0	28.943	11	31.942	3.00	0.27	n	8	8	8	8	8
40	47	9306F	LW2-G027	8	wq replicate	10	9	1	90.0	10.0	30.111	9	33.139	3.03	0.34						
41	119	9307F	LW2-G033	1		10	9	1	90.0	10.0	27.719	9	30.190	2.47	0.27						
42	38	9307F	LW2-G033	2		10	10	0	100.0	0.0	31.348	10	34.068	2.72	0.27						
43	12	9307F	LW2-G033	3		10	10	0	100.0	0.0	27.501	10	30.090	2.59	0.26						
44	58	9307F	LW2-G033	4		10	9	1	90.0	10.0	28.008	9	30.627	2.62	0.29						
45	29	9307F	LW2-G033	5		10	8	2	80.0	20.0	29.977	8	31.244	1.27	0.16	Mean	9.4	0.6	93.8	6.3	0.23
46	33	9307F	LW2-G033	6		10	10	0	100.0	0.0	27.969	10	28.870	0.90	0.09	SD	0.7	0.7	7.4	7.4	0.07
47	51	9307F	LW2-G033	7		10	10	0	100.0	0.0	31.254	10	34.226	2.97	0.30	n	8	8	8	8	8
48	62	9307F	LW2-G033	8	wq replicate	10	9	1	90.0	10.0	27.874	9	29.799	1.93	0.21						
49	143	9308F	LW2-G034	1		10	9	1	90.0	10.0	31.455	9	34.865	3.41	0.38						
50	78	9308F	LW2-G034	2		11	11	0	100.0	0.0	29.661	11	32.246	2.59	0.24						
51	108	9308F	LW2-G034	3		10	10	0	100.0	0.0	31.551	10	34.496	2.95	0.29						
52	151	9308F	LW2-G034	4		10	10	0	100.0	0.0	28.478	10	30.909	2.43	0.24						
53	49	9308F	LW2-G034	5		10	10	0	100.0	0.0	29.839	10	32.344	2.51	0.25	Mean	10.0	0.1	98.8	1.3	0.27
54	159	9308F	LW2-G034	6		10	10	0	100.0	0.0	30.650	9	33.300	2.65	0.29	SD	0.5	0.4	3.5	3.5	0.06
55	75	9308F	LW2-G034	7		10	10	0	100.0	0.0	26.255	10	29.241	2.99	0.30	n	8	8	8	8	8
56	129	9308F	LW2-G034	8	wq replicate	10	10	0	100.0	0.0	30.679	10	32.351	1.67	0.17						
57	54	9309F	LW2-G035	1		10	10	0	100.0	0.0	27.258	10	29.467	2.21	0.22						
58	122	9309F	LW2-G035	2		10	8	2	80.0	20.0	29.930	8	32.463	2.53	0.32						
59	10	9309F	LW2-G035	3		10	8	2	80.0	20.0	26.833	8	29.988	3.16	0.39						
60	141	9309F	LW2-G035	4		10	10	0	100.0	0.0	29.115	10	31.717	2.60	0.26						
61	136	9309F	LW2-G035	5		10	10	0	100.0	0.0	32.269	10	36.518	4.25	0.42	Mean	9.4	0.6	93.8	6.3	0.29
62	165	9309F	LW2-G035	6		10	9	1	90.0	10.0	28.285	9	30.652	2.37	0.26	SD	0.9	0.9	9.2	9.2	0.08
63	113	9309F	LW2-G035	7		10	10	0	100.0	0.0	29.127	10	31.894	2.77	0.28	n	8	8	8	8	8
64	70	9309F	LW2-G035	8	wq replicate	10	10	0	100.0	0.0	28.408	10	30.152	1.74	0.17						
65	57	9310F	LW2-G061	1		10	10	0	100.0	0.0	29.343	10	31.783	2.44	0.24						
66	3	9310F	LW2-G061	2		10	9	1	90.0	10.0	29.700	9	31.193	1.49	0.17						
67	55	9310F	LW2-G061	3		10	10	0	100.0	0.0	25.956	10	28.331	2.38	0.24						
68	148	9310F	LW2-G061	4		10	10	0	100.0	0.0	27.538	10	29.948	2.41	0.24						
69	64	9310F	LW2-G061	5		10	10	0	100.0	0.0	30.729	10	31.830	1.10	0.11	Mean	9.8	0.3	97.5	2.5	0.21
70	8	9310F	LW2-G061	6		10	10	0	100.0	0.0	27.452	10	28.726	1.27	0.13	SD	0.5	0.5	4.6	4.6	0.07
71	94	9310F	LW2-G061	7		10	9	1	90.0	10.0	27.956	9	30.699	2.74	0.30	n	8	8	8	8	8
72	142	9310F	LW2-G061	8	wq replicate	10	10	0	100.0	0.0	30.208	10	32.926	2.72	0.27						

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ANC08811
BZTO104(e)00811

Test Number: P686-3

Freshwater Sediment Test
28-day Hyalella azteca

INDEX	BKR	NAS SMPL	CLIENT DESCRIP	REPL		INIT	SURV	MORT	PSURV	PMORT	TARE WT (mg)	WT COUNT	DRY WT (mg)	TWT (mg)	WT (mg)		SURV	MORT	PSURV	PMORT	WT
73	132	9311F	LW2-G062	1		10	10	0	100.0	0.0	27.510	10	29.931	2.32	0.23						
74	19	9311F	LW2-G062	2		10	10	0	100.0	0.0	28.834	10	31.060	2.23	0.22						
75	106	9311F	LW2-G062	3		10	9	1	90.0	10.0	29.320	9	32.714	3.39	0.38						
76	81	9311F	LW2-G062	4		10	10	0	100.0	0.0	28.984	10	31.297	2.31	0.23						
77	166	9311F	LW2-G062	5		10	10	0	100.0	0.0	27.551	10	29.456	1.91	0.19	Mean	9.8	0.3	97.5	2.5	0.24
78	150	9311F	LW2-G062	6		10	10	0	100.0	0.0	30.531	10	32.713	2.18	0.22	SD	0.5	0.5	4.6	4.6	0.06
79	124	9311F	LW2-G062	7		10	10	0	100.0	0.0	29.545	10	31.862	2.32	0.23	n	8	8	8	8	8
80	23	9311F	LW2-G062	8	wq replicate	10	9	1	90.0	10.0	30.294	9	32.531	2.24	0.25						
81	56	9312F	LW2-G067	1		10	9	1	90.0	10.0	30.908	9	33.880	2.97	0.33						
82	87	9312F	LW2-G067	2		10	10	0	100.0	0.0	29.519	10	31.304	1.79	0.18						
83	116	9312F	LW2-G067	3		10	10	0	100.0	0.0	30.087	10	32.303	2.22	0.22						
84	93	9312F	LW2-G067	4		10	10	0	100.0	0.0	29.745	10	32.083	2.32	0.23						
85	34	9312F	LW2-G067	5		10	10	0	100.0	0.0	29.636	10	32.193	2.56	0.26	Mean	9.9	0.1	98.8	1.3	0.24
86	126	9312F	LW2-G067	6		10	10	0	100.0	0.0	27.973	10	31.270	3.30	0.33	SD	0.4	0.4	3.5	3.5	0.06
87	24	9312F	LW2-G067	7		10	10	0	100.0	0.0	29.350	10	31.030	1.68	0.17	n	8	8	8	8	8
88	97	9312F	LW2-G067	8	wq replicate	10	10	0	100.0	0.0	30.526	10	32.500	1.97	0.20						
89	48	9313F	LW2-G073	1		10	10	0	100.0	0.0	30.235	10	33.787	3.55	0.36						
90	72	9313F	LW2-G073	2		10	10	0	100.0	0.0	29.227	10	32.126	2.90	0.29						
91	27	9313F	LW2-G073	3		10	10	0	100.0	0.0	29.519	10	32.229	2.71	0.27						
92	68	9313F	LW2-G073	4		10	10	0	100.0	0.0	29.167	10	32.049	2.88	0.29						
93	66	9313F	LW2-G073	5		10	8	2	80.0	20.0	28.683	8	32.172	3.49	0.44	Mean	9.1	0.9	91.3	8.8	0.34
94	146	9313F	LW2-G073	6		10	9	1	90.0	10.0	31.374	9	35.109	3.74	0.42	SD	1.0	1.0	9.9	9.9	0.06
95	162	9313F	LW2-G073	7		10	8	2	80.0	20.0	29.258	8	31.885	2.63	0.33	n	8	8	8	8	8
96	105	9313F	LW2-G073	8	wq replicate	10	8	2	80.0	20.0	30.270	8	32.632	2.56	0.32						
97	123	9314F	LW2-G074	1		10	10	0	100.0	0.0	30.610	10	33.392	2.78	0.28						
98	45	9314F	LW2-G074	2		10	9	1	90.0	10.0	29.640	9	32.512	2.87	0.32						
99	41	9314F	LW2-G074	3		10	10	0	100.0	0.0	29.369	10	31.943	2.57	0.26						
100	20	9314F	LW2-G074	4		10	9	1	90.0	10.0	28.981	9	31.965	2.98	0.33						
101	161	9314F	LW2-G074	5		10	9	1	90.0	10.0	28.664	9	30.486	1.82	0.20	Mean	9.3	0.8	92.5	7.5	0.29
102	110	9314F	LW2-G074	6		10	9	1	90.0	10.0	27.900	9	31.563	3.66	0.41	SD	0.7	0.7	7.1	7.1	0.07
103	59	9314F	LW2-G074	7		10	10	0	100.0	0.0	30.731	10	33.850	3.12	0.31	n	8	8	8	8	8
104	39	9314F	LW2-G074	8	wq replicate	10	8	2	80.0	20.0	32.746	8	34.204	1.46	0.18						
105	79	9315F	LW2-G085	1		10	8	2	80.0	20.0	29.643	8	31.433	1.79	0.22						
106	18	9315F	LW2-G085	2		10	9	1	90.0	10.0	31.532	9	33.563	2.03	0.23						
107	50	9315F	LW2-G085	3		10	7	3	70.0	30.0	27.856	7	29.178	1.32	0.19						
108	118	9315F	LW2-G085	4		10	8	2	80.0	20.0	30.957	8	33.890	2.93	0.37						
109	63	9315F	LW2-G085	5		10	6	4	60.0	40.0	30.536	6	32.831	2.30	0.38	Mean	8.0	2.0	80.0	20.0	0.28
110	42	9315F	LW2-G085	6		10	10	0	100.0	0.0	30.745	10	33.814	3.07	0.31	SD	1.2	1.2	12.0	12.0	0.08
111	95	9315F	LW2-G085	7		10	8	2	80.0	20.0	30.522	8	32.186	1.66	0.21	n	8	8	8	8	8
112	40	9315F	LW2-G085	8	wq replicate	10	8	2	80.0	20.0	31.626	8	34.173	2.55	0.32						

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ANC08812
BZTO104(e)008812

Test Number: P886-3

Freshwater Sediment Test
28-day Hyalella azteca

INDEX	BKR	NAS SMPL	CLIENT DESCRIP	REPL		INIT	SURV	MORT	PSURV	PMORT	TARE WT (mg)	WT COUNT	DRY WT (mg)	TWT (mg)	WT (mg)		SURV	MORT	PSURV	PMORT	WT
113	153	9316F	LW2-G092	1		10	0	10	0.0	100.0	30.656	0									
114	7	9316F	LW2-G092	2		10	0	10	0.0	100.0	30.439	0									
115	69	9316F	LW2-G092	3		10	0	10	0.0	100.0	28.856	0									
116	84	9316F	LW2-G092	4		10	0	10	0.0	100.0	27.614	0									
117	167	9316F	LW2-G092	5		10	0	10	0.0	100.0	27.794	0				Mean	0.0	10.0	0.0	100.0	
118	115	9316F	LW2-G092	6		10	0	10	0.0	100.0	29.421	0				SD	0.0	0.0	0.0	0.0	
119	90	9316F	LW2-G092	7		10	0	10	0.0	100.0	27.960	0				n	8	8	8	8	0
120	140	9316F	LW2-G092	8	wq replicate	10	0	10	0.0	100.0	27.094	0									
121	91	9317F	LW2-G089	1		10	9	1	90.0	10.0	29.451	9	30.962	1.51	0.17						
122	22	9317F	LW2-G089	2		10	10	0	100.0	0.0	28.496	10	29.457	0.96	0.10						
123	168	9317F	LW2-G089	3		10	8	2	80.0	20.0	29.257	8	30.560	1.30	0.16						
124	71	9317F	LW2-G089	4		10	10	0	100.0	0.0	30.282	10	32.746	2.46	0.25						
125	2	9317F	LW2-G089	5		10	8	2	80.0	20.0	28.979	8	31.338	2.36	0.29	Mean	9.3	0.8	92.5	7.5	0.23
126	154	9317F	LW2-G089	6		10	10	0	100.0	0.0	28.548	10	31.563	3.02	0.30	SD	0.9	0.9	8.9	8.9	0.08
127	117	9317F	LW2-G089	7		10	9	1	90.0	10.0	31.067	9	33.909	2.84	0.32	n	8	8	8	8	8
128	89	9317F	LW2-G089	8	wq replicate	10	10	0	100.0	0.0	29.220	10	31.580	2.36	0.24						
129	65	9318F	LW2-G080	1		10	9	1	90.0	10.0	30.161	9	33.446	3.29	0.37						
130	100	9318F	LW2-G080	2		10	8	2	80.0	20.0	28.984	8	31.813	2.83	0.35						
131	17	9318F	LW2-G080	3		10	10	0	100.0	0.0	29.173	10	33.102	3.93	0.39						
132	44	9318F	LW2-G080	4		10	10	0	100.0	0.0	28.800	10	32.073	3.27	0.33						
133	92	9318F	LW2-G080	5		10	9	1	90.0	10.0	29.708	9	32.690	2.98	0.33	Mean	9.5	0.5	95.0	5.0	0.32
134	25	9318F	LW2-G080	6		10	10	0	100.0	0.0	27.685	10	30.091	2.41	0.24	SD	0.8	0.8	7.6	7.6	0.05
135	26	9318F	LW2-G080	7		10	10	0	100.0	0.0	29.150	10	31.998	2.85	0.28	n	8	8	8	8	8
136	21	9318F	LW2-G080	8	wq replicate	10	10	0	100.0	0.0	28.436	10	31.458	3.02	0.30						
137	85	9319F	LW2-G079	1		10	10	0	100.0	0.0	30.050	10	32.227	2.18	0.22						
138	102	9319F	LW2-G079	2		12	12	0	100.0	0.0	30.191	12	34.008	3.82	0.32						
139	74	9319F	LW2-G079	3		10	7	3	70.0	30.0	27.393	7	29.780	2.39	0.34						
140	13	9319F	LW2-G079	4		10	9	1	90.0	10.0	27.649	9	30.141	2.49	0.28						
141	155	9319F	LW2-G079	5		10	10	0	100.0	0.0	31.573	10	33.350	1.78	0.18	Mean	9.0	1.3	87.5	12.5	0.27
142	35	9319F	LW2-G079	6		10	9	1	90.0	10.0	29.140	9	31.495	2.36	0.26	SD	1.9	1.5	14.9	14.9	0.06
143	88	9319F	LW2-G079	7		10	9	1	90.0	10.0	29.104	9	31.383	2.28	0.25	n	8	8	8	8	8
144	52	9319F	LW2-G079	8	wq replicate	10	6	4	60.0	40.0	30.033	6	32.098	2.07	0.34						
145	111	9320F	LW2-G078	1		10	8	2	80.0	20.0	29.485	8	32.370	2.89	0.36						
146	156	9320F	LW2-G078	2		10	8	2	80.0	20.0	28.820	8	31.354	2.53	0.32						
147	15	9320F	LW2-G078	3		10	9	1	90.0	10.0	29.648	9	31.780	2.13	0.24						
148	103	9320F	LW2-G078	4		10	6	4	60.0	40.0	29.289	6	31.012	1.72	0.29						
149	101	9320F	LW2-G078	5		10	9	1	90.0	10.0	26.737	9	28.897	2.16	0.24	Mean	7.9	2.1	78.8	21.3	0.28
150	28	9320F	LW2-G078	6		10	8	2	80.0	20.0	29.411	8	31.794	2.38	0.30	SD	1.0	1.0	9.9	9.9	0.05
151	109	9320F	LW2-G078	7		10	7	3	70.0	30.0	29.839	7	31.838	2.00	0.29	n	8	8	8	8	8
152	37	9320F	LW2-G078	8	wq replicate	10	8	2	80.0	20.0	31.288	8	33.128	1.84	0.23						

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ANC08813
BZTO104(e)008813

Test Number: P686-3

Freshwater Sediment Test
28-day Hyalella azteca

INDEX	BKR	NAS SMPL	CLIENT DESCRIP	REPL		INIT	SURV	MORT	PSURV	PMORT	TARE WT (mg)	WT COUNT	DRY WT (mg)	TWT (mg)	WT (mg)		SURV	MORT	PSURV	PMORT	WT
153	76	9321F	LW2-G111	1		10	9	1	90.0	10.0	30.935	9	32.995	2.06	0.23						
154	61	9321F	LW2-G111	2		10	10	0	100.0	0.0	31.041	10	33.495	2.45	0.25						
155	96	9321F	LW2-G111	3		10	9	1	90.0	10.0	29.167	9	31.615	2.45	0.27						
156	145	9321F	LW2-G111	4		10	10	0	100.0	0.0	35.262	10	37.344	2.08	0.21						
157	98	9321F	LW2-G111	5		10	10	0	100.0	0.0	27.925	10	29.682	1.76	0.18	Mean	9.5	0.5	95.0	5.0	0.24
158	31	9321F	LW2-G111	6		10	10	0	100.0	0.0	28.218	10	30.867	2.65	0.26	SD	0.8	0.8	7.6	7.6	0.03
159	16	9321F	LW2-G111	7		10	8	2	80.0	20.0	26.752	8	28.832	2.08	0.26	n	8	8	8	8	8
160	134	9321F	LW2-G111	8	wq replicate	10	10	0	100.0	0.0	28.731	10	31.375	2.64	0.26						
161	86	9322F	LW2-G083	1		10	9	1	90.0	10.0	27.496	9	29.775	2.28	0.25						
162	80	9322F	LW2-G083	2		10	8	2	80.0	20.0	28.195	8	29.610	1.42	0.18						
163	104	9322F	LW2-G083	3		10	10	0	100.0	0.0	29.242	10	31.135	1.89	0.19						
164	77	9322F	LW2-G083	4		10	9	1	90.0	10.0	26.821	9	28.459	1.64	0.18						
165	4	9322F	LW2-G083	5		10	8	2	80.0	20.0	29.820	8	31.007	1.19	0.15	Mean	9.0	1.0	90.0	10.0	0.20
166	112	9322F	LW2-G083	6		10	8	2	80.0	20.0	26.788	8	28.780	1.99	0.25	SD	0.9	0.9	9.3	9.3	0.05
167	139	9322F	LW2-G083	7		10	10	0	100.0	0.0	28.231	10	31.046	2.82	0.28	n	8	8	8	8	8
168	67	9322F	LW2-G083	8	wq replicate	10	10	0	100.0	0.0	31.301	10	32.698	1.40	0.14						
	One animal lost in beaker 159 during transfering into weighing pan.																				

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ANC08814
BZTO104(e)008814

Test Number: 686-3

Freshwater Sediment Test
28-Day Hyalella azteca

Water Quality Data

	NAS	CLIENT			Overlying water							Interstitial water	
BKR	SMPL	DESCRIP	REPL	DAY	TEMP	DO	COND	pH	HARD	ALK	NH3	NH3	pH
BULK SEDIMENT POREWATER													
	9208F	Control										---*	---*
	9303F	LW2-G020										7.9	6.4
	9304F	LW2-G024										4.3	6.4
	9305F	LW2-G025										---*	---*
	9306F	LW2-G027										1.1	6.8
	9307F	LW2-G033										4.3	6.6
	9308F	LW2-G034										2.3	6.5
	9309F	LW2-G035										4.3	6.4
	9310F	LW2-G061										5.6	6.4
	9311F	LW2-G062										1.7	6.6
	9312F	LW2-G067										4.8	6.4
	9313F	LW2-G073										---*	---*
	9314F	LW2-G074										<0.5	6.6
	9315F	LW2-G085										10.9	7.0
	9316F	LW2-G092										7.8	11.3
	9317F	LW2-G089										3.5	---*
	9318F	LW2-G080										---*	---*
	9319F	LW2-G079										0.6	6.9
	9320F	LW2-G078										1.9	6.8
	9321F	LW2-G111										4.8	7.0
	9322F	LW2-G083										4.4	6.9

* Insufficient water for analysis

ANC08815
BZTO104(e)008815

Water Quality Data

	NAS	CLIENT			Overlying water							Interstitial water	
BKR	SMPL	DESCRIP	REPL	DAY	TEMP	DO	COND	pH	HARD	ALK	NH3	NH3	pH
OVERLYING WATER													
14	9208F	Control	8	0	23.0	7.4	200	7.3	43	40	<0.1		
21	9318F	LW2-G080	8	0	22.9	7.4	165	7.2	43	50	0.2		
23	9311F	LW2-G062	8	0	23.0	7.3	170	7.1	51	50	0.3		
30	9304F	LW2-G024	8	0	23.2	7.4	170	7.1	60	50	0.7		
37	9320F	LW2-G078	8	0	23.0	7.8	165	7.1	51	50	0.5		
39	9314F	LW2-G074	8	0	23.0	7.6	160	7.1	51	50	0.1		
40	9315F	LW2-G085	8	0	23.0	7.2	205	7.3	68	60	0.9		
47	9306F	LW2-G027	8	0	22.9	7.8	165	7.1	51	40	0.1		
52	9319F	LW2-G079	8	0	22.9	7.2	160	7.1	60	50	0.5		
53	9303F	LW2-G020	8	0	22.9	7.2	170	7.1	51	40	0.5		
62	9307F	LW2-G033	8	0	22.9	7.1	170	7.1	51	40	0.4		
67	9322F	LW2-G083	8	0	22.8	7.3	180	7.1	51	40	0.4		
70	9309F	LW2-G035	8	0	23.2	7.4	175	7.1	51	50	<0.1		
89	9317F	LW2-G089	8	0	23.0	7.2	160	7.0	43	40	<0.1		
97	9312F	LW2-G067	8	0	23.0	7.4	165	7.0	43	40	<0.1		
105	9313F	LW2-G073	8	0	23.2	7.3	160	7.1	43	40	<0.1		
125	9305F	LW2-G025	8	0	23.2	7.7	170	7.1	43	40	<0.1		
129	9308F	LW2-G034	8	0	23.0	7.2	175	7.1	51	50	<0.1		
134	9321F	LW2-G111	8	0	22.9	7.4	170	7.1	51	40	<0.1		
140	9316F	LW2-G092	8	0	23.2	7.6	215	9.9	60	60	<0.1		
142	9310F	LW2-G061	8	0	23.0	7.4	170	7.1	51	50	<0.1		
14	9208F	Control	8	1	22.8	6.8	180	7.2					
21	9318F	LW2-G080	8	1	22.7	6.7	165	7.0					
23	9311F	LW2-G062	8	1	22.7	6.2	170	7.0					
30	9304F	LW2-G024	8	1	22.9	6.4	170	7.0					
37	9320F	LW2-G078	8	1	22.7	6.6	170	7.0					
39	9314F	LW2-G074	8	1	22.8	6.6	165	7.0					
40	9315F	LW2-G085	8	1	23.0	6.5	190	7.2					
47	9306F	LW2-G027	8	1	22.8	6.7	170	7.2					
52	9319F	LW2-G079	8	1	22.7	6.4	165	7.1					
53	9303F	LW2-G020	8	1	22.7	6.7	170	7.0					
62	9307F	LW2-G033	8	1	22.7	6.4	170	7.0					
67	9322F	LW2-G083	8	1	22.7	6.6	175	7.0					
70	9309F	LW2-G035	8	1	22.9	6.5	175	7.0					
89	9317F	LW2-G089	8	1	22.9	6.6	160	6.9					
97	9312F	LW2-G067	8	1	22.7	6.4	170	7.0					
105	9313F	LW2-G073	8	1	23.0	6.5	165	7.0					
125	9305F	LW2-G025	8	1	23.0	6.7	170	7.1					
129	9308F	LW2-G034	8	1	22.9	6.7	170	7.0					
134	9321F	LW2-G111	8	1	22.9	6.5	170	7.1					
140	9316F	LW2-G092	8	1	23.0	7.1	215	9.9					
142	9310F	LW2-G061	8	1	22.7	6.6	160	7.1					

ANC08816
BZTO104(e)008816

Test Number: 686-3

Freshwater Sediment Test
28-Day Hyalella azteca

Water Quality Data

	NAS	CLIENT			Overlying water								Interstitial water	
BKR	SMPL	DESCRIP	REPL	DAY	TEMP	DO	COND	pH	HARD	ALK	NH3		NH3	pH
14	9208F	Control	8	2	23.2									
21	9318F	LW2-G080	8	2	23.2									
23	9311F	LW2-G062	8	2	23.2									
30	9304F	LW2-G024	8	2	23.2									
37	9320F	LW2-G078	8	2	23.2									
39	9314F	LW2-G074	8	2	23.4									
40	9315F	LW2-G085	8	2	23.4									
47	9306F	LW2-G027	8	2	23.3									
52	9319F	LW2-G079	8	2	23.3									
53	9303F	LW2-G020	8	2	23.3									
62	9307F	LW2-G033	8	2	23.2									
67	9322F	LW2-G083	8	2	23.2									
70	9309F	LW2-G035	8	2	23.2									
89	9317F	LW2-G089	8	2	23.3									
97	9312F	LW2-G067	8	2	23.3									
105	9313F	LW2-G073	8	2	23.3									
125	9305F	LW2-G025	8	2	23.5									
129	9308F	LW2-G034	8	2	23.5									
134	9321F	LW2-G111	8	2	23.5									
140	9316F	LW2-G092	8	2	23.4									
142	9310F	LW2-G061	8	2	23.3									
14	9208F	Control	8	3	22.9	7.2		7.3						
21	9318F	LW2-G080	8	3	22.9	6.8		7.0						
23	9311F	LW2-G062	8	3	22.9	6.6		7.0						
30	9304F	LW2-G024	8	3	22.9	6.8		7.0						
37	9320F	LW2-G078	8	3	22.9	7.1		7.1						
39	9314F	LW2-G074	8	3	23.0	7.2		7.1						
40	9315F	LW2-G085	8	3	23.1	6.6		7.2						
47	9306F	LW2-G027	8	3	23.0	7.2		7.2						
52	9319F	LW2-G079	8	3	22.9	7.5		7.2						
53	9303F	LW2-G020	8	3	22.9	7.2		7.1						
62	9307F	LW2-G033	8	3	22.9	7.1		7.0						
67	9322F	LW2-G083	8	3	22.9	6.8		7.0						
70	9309F	LW2-G035	8	3	23.2	6.9		7.0						
89	9317F	LW2-G089	8	3	23.1	6.8		6.9						
97	9312F	LW2-G067	8	3	22.9	6.7		6.9						
105	9313F	LW2-G073	8	3	23.2	7.2		7.0						
125	9305F	LW2-G025	8	3	23.2	7.2		7.1						
129	9308F	LW2-G034	8	3	23.0	6.9		7.1						
134	9321F	LW2-G111	8	3	23.0	6.8		7.1						
140	9316F	LW2-G092	8	3	23.2	7.3		9.3						
142	9310F	LW2-G061	8	3	22.9	6.8		7.2						

ANC08817
BZTO104(e)008817

Test Number: 686-3

Freshwater Sediment Test
28-Day Hyalella azteca

Water Quality Data

	NAS	CLIENT			Overlying water							Interstitial water	
BKR	SMPL	DESCRIP	REPL	DAY	TEMP	DO	COND	pH	HARD	ALK	NH3	NH3	pH
14	9208F	Control	8	4	23.0								
21	9318F	LW2-G080	8	4	23.1								
23	9311F	LW2-G062	8	4	23.0								
30	9304F	LW2-G024	8	4	23.0								
37	9320F	LW2-G078	8	4	23.1								
39	9314F	LW2-G074	8	4	23.1								
40	9315F	LW2-G085	8	4	23.2								
47	9306F	LW2-G027	8	4	23.1								
52	9319F	LW2-G079	8	4	23.1								
53	9303F	LW2-G020	8	4	23.0								
62	9307F	LW2-G033	8	4	23.1								
67	9322F	LW2-G083	8	4	23.0								
70	9309F	LW2-G035	8	4	23.3								
89	9317F	LW2-G089	8	4	23.2								
97	9312F	LW2-G067	8	4	23.0								
105	9313F	LW2-G073	8	4	23.3								
125	9305F	LW2-G025	8	4	23.3								
129	9308F	LW2-G034	8	4	23.2								
134	9321F	LW2-G111	8	4	23.2								
140	9316F	LW2-G092	8	4	23.3								
142	9310F	LW2-G061	8	4	23.0								
14	9208F	Control	8	5	23.1								
21	9318F	LW2-G080	8	5	23.1								
23	9311F	LW2-G062	8	5	23.1								
30	9304F	LW2-G024	8	5	23.2								
37	9320F	LW2-G078	8	5	23.2								
39	9314F	LW2-G074	8	5	23.2								
40	9315F	LW2-G085	8	5	23.3								
47	9306F	LW2-G027	8	5	23.2								
52	9319F	LW2-G079	8	5	23.1								
53	9303F	LW2-G020	8	5	23.1								
62	9307F	LW2-G033	8	5	23.1								
67	9322F	LW2-G083	8	5	23.1								
70	9309F	LW2-G035	8	5	23.4								
89	9317F	LW2-G089	8	5	23.2								
97	9312F	LW2-G067	8	5	23.2								
105	9313F	LW2-G073	8	5	23.4								
125	9305F	LW2-G025	8	5	23.3								
129	9308F	LW2-G034	8	5	23.2								
134	9321F	LW2-G111	8	5	23.2								
140	9316F	LW2-G092	8	5	23.3								
142	9310F	LW2-G061	8	5	23.3								

ANC08818
BZTO104(e)008818

Test Number: 686-3

Freshwater Sediment Test
28-Day Hyalella azteca

Water Quality Data

	NAS	CLIENT			Overlying water								Interstitial water	
BKR	SMPL	DESCRIP	REPL	DAY	TEMP	DO	COND	pH	HARD	ALK	NH3		NH3	pH
14	9208F	Control	8	6	22.6	6.8		7.0						
21	9318F	LW2-G080	8	6	22.6	6.8		7.0						
23	9311F	LW2-G062	8	6	22.5	6.8		7.0						
30	9304F	LW2-G024	8	6	22.5	6.5		6.9						
37	9320F	LW2-G078	8	6	22.6	6.8		7.0						
39	9314F	LW2-G074	8	6	22.7	7.1		7.0						
40	9315F	LW2-G085	8	6	22.8	6.1		7.0						
47	9306F	LW2-G027	8	6	22.6	7.1		7.0						
52	9319F	LW2-G079	8	6	22.6	6.9		7.0						
53	9303F	LW2-G020	8	6	22.5	6.4		6.9						
62	9307F	LW2-G033	8	6	22.5	6.4		7.0						
67	9322F	LW2-G083	8	6	22.5	6.4		6.9						
70	9309F	LW2-G035	8	6	22.9	6.2		7.0						
89	9317F	LW2-G089	8	6	22.7	6.5		6.9						
97	9312F	LW2-G067	8	6	22.5	6.4		6.9						
105	9313F	LW2-G073	8	6	22.9	7.0		6.9						
125	9305F	LW2-G025	8	6	22.8	6.7		7.0						
129	9308F	LW2-G034	8	6	22.7	6.9		6.9						
134	9321F	LW2-G111	8	6	22.7	6.4		6.9						
140	9316F	LW2-G092	8	6	22.8	7.1		9.2						
142	9310F	LW2-G061	8	6	22.5	6.2		7.0						
14	9208F	Control	8	7	23.1									
21	9318F	LW2-G080	8	7	23.1									
23	9311F	LW2-G062	8	7	23.0									
30	9304F	LW2-G024	8	7	23.3									
37	9320F	LW2-G078	8	7	23.1									
39	9314F	LW2-G074	8	7	23.1									
40	9315F	LW2-G085	8	7	23.3									
47	9306F	LW2-G027	8	7	23.3									
52	9319F	LW2-G079	8	7	23.1									
53	9303F	LW2-G020	8	7	23.0									
62	9307F	LW2-G033	8	7	23.1									
67	9322F	LW2-G083	8	7	23.0									
70	9309F	LW2-G035	8	7	23.3									
89	9317F	LW2-G089	8	7	23.2									
97	9312F	LW2-G067	8	7	23.0									
105	9313F	LW2-G073	8	7	23.3									
125	9305F	LW2-G025	8	7	23.3									
129	9308F	LW2-G034	8	7	23.1									
134	9321F	LW2-G111	8	7	23.1									
140	9316F	LW2-G092	8	7	23.2									
142	9310F	LW2-G061	8	7	23.0									

ANC08819
BZTO104(e)008819

Test Number: 686-3

Freshwater Sediment Test
28-Day Hyalella azteca

Water Quality Data

	NAS	CLIENT			Overlying water							Interstitial water	
BKR	SMPL	DESCRIP	REPL	DAY	TEMP	DO	COND	pH	HARD	ALK	NH3	NH3	pH
14	9208F	Control	8	8	23.0	5.0	170	7.2					
21	9318F	LW2-G080	8	8	23.0	5.4	165	7.2					
23	9311F	LW2-G062	8	8	23.0	5.2	170	6.9					
30	9304F	LW2-G024	8	8	23.2	5.0	170	7.0					
37	9320F	LW2-G078	8	8	23.1	5.4	165	6.9					
39	9314F	LW2-G074	8	8	23.1	5.6	170	6.9					
40	9315F	LW2-G085	8	8	23.2	4.8	180	7.0					
47	9306F	LW2-G027	8	8	23.1	5.6	170	7.0					
52	9319F	LW2-G079	8	8	23.0	5.4	165	6.9					
53	9303F	LW2-G020	8	8	23.0	4.8	170	6.9					
62	9307F	LW2-G033	8	8	23.0	5.0	170	6.9					
67	9322F	LW2-G083	8	8	23.0	4.8	170	6.9					
70	9309F	LW2-G035	8	8	23.3	4.8	175	7.0					
89	9317F	LW2-G089	8	8	23.2	5.2	165	6.9					
97	9312F	LW2-G067	8	8	23.0	5.0	170	6.9					
105	9313F	LW2-G073	8	8	23.3	5.6	165	6.9					
125	9305F	LW2-G025	8	8	23.3	5.6	170	7.0					
129	9308F	LW2-G034	8	8	23.2	5.2	170	6.9					
134	9321F	LW2-G111	8	8	23.2	4.8	170	6.9					
140	9316F	LW2-G092	8	8	23.2	5.8	190	9.2					
142	9310F	LW2-G061	8	8	23.0	4.8	170	7.0					
14	9208F	Control	8	9	23.1								
21	9318F	LW2-G080	8	9	23.1								
23	9311F	LW2-G062	8	9	23.0								
30	9304F	LW2-G024	8	9	23.3								
37	9320F	LW2-G078	8	9	23.1								
39	9314F	LW2-G074	8	9	23.1								
40	9315F	LW2-G085	8	9	23.3								
47	9306F	LW2-G027	8	9	23.1								
52	9319F	LW2-G079	8	9	23.1								
53	9303F	LW2-G020	8	9	23.1								
62	9307F	LW2-G033	8	9	23.1								
67	9322F	LW2-G083	8	9	23.0								
70	9309F	LW2-G035	8	9	23.4								
89	9317F	LW2-G089	8	9	23.2								
97	9312F	LW2-G067	8	9	23.0								
105	9313F	LW2-G073	8	9	23.0								
125	9305F	LW2-G025	8	9	23.2								
129	9308F	LW2-G034	8	9	23.1								
134	9321F	LW2-G111	8	9	23.1								
140	9316F	LW2-G092	8	9	23.2								
142	9310F	LW2-G061	8	9	22.9								

ANC08820
BZTO104(e)008820

Water Quality Data

	NAS	CLIENT			Overlying water								Interstitial water	
BKR	SMPL	DESCRIP	REPL	DAY	TEMP	DO	COND	pH	HARD	ALK	NH3		NH3	pH
14	9208F	Control	8	10	22.6	5.9		7.2						
21	9318F	LW2-G080	8	10	22.7	6.0		7.0						
23	9311F	LW2-G062	8	10	22.6	5.8		7.0						
30	9304F	LW2-G024	8	10	22.8	5.8		7.0						
37	9320F	LW2-G078	8	10	22.7	6.2		7.1						
39	9314F	LW2-G074	8	10	22.8	5.4		7.0						
40	9315F	LW2-G085	8	10	22.9	5.4		7.1						
47	9306F	LW2-G027	8	10	22.7	6.0		7.1						
52	9319F	LW2-G079	8	10	22.7	6.2		7.0						
53	9303F	LW2-G020	8	10	22.6	6.0		7.0						
62	9307F	LW2-G033	8	10	22.7	6.0		7.0						
67	9322F	LW2-G083	8	10	22.6	5.8		7.1						
70	9309F	LW2-G035	8	10	22.9	5.8		7.1						
89	9317F	LW2-G089	8	10	22.7	6.1		7.1						
97	9312F	LW2-G067	8	10	22.6	6.0		7.1						
105	9313F	LW2-G073	8	10	22.8	6.0		7.1						
125	9305F	LW2-G025	8	10	22.7	6.3		7.1						
129	9308F	LW2-G034	8	10	22.7	6.2		7.0						
134	9321F	LW2-G111	8	10	22.6	6.1		7.0						
140	9316F	LW2-G092	8	10	22.7	6.2		9.2						
142	9310F	LW2-G061	8	10	22.5	6.2		7.1						
14	9208F	Control	8	11	23.1									
21	9318F	LW2-G080	8	11	23.1									
23	9311F	LW2-G062	8	11	23.0									
30	9304F	LW2-G024	8	11	23.3									
37	9320F	LW2-G078	8	11	23.1									
39	9314F	LW2-G074	8	11	23.2									
40	9315F	LW2-G085	8	11	23.3									
47	9306F	LW2-G027	8	11	23.1									
52	9319F	LW2-G079	8	11	23.1									
53	9303F	LW2-G020	8	11	23.1									
62	9307F	LW2-G033	8	11	23.1									
67	9322F	LW2-G083	8	11	23.0									
70	9309F	LW2-G035	8	11	23.4									
89	9317F	LW2-G089	8	11	23.2									
97	9312F	LW2-G067	8	11	23.0									
105	9313F	LW2-G073	8	11	23.0									
125	9305F	LW2-G025	8	11	23.2									
129	9308F	LW2-G034	8	11	23.1									
134	9321F	LW2-G111	8	11	23.1									
140	9316F	LW2-G092	8	11	23.2									
142	9310F	LW2-G061	8	11	23.0									

ANC08821
BZTO104(e)008821

Test Number: 686-3

Freshwater Sediment Test
28-Day Hyalella azteca

Water Quality Data

	NAS	CLIENT			Overlying water							Interstitial water	
BKR	SMPL	DESCRIP	REPL	DAY	TEMP	DO	COND	pH	HARD	ALK	NH3	NH3	pH
14	9208F	Control	8	12	23.1								
21	9318F	LW2-G080	8	12	23.1								
23	9311F	LW2-G062	8	12	23.1								
30	9304F	LW2-G024	8	12	23.3								
37	9320F	LW2-G078	8	12	23.1								
39	9314F	LW2-G074	8	12	23.2								
40	9315F	LW2-G085	8	12	23.3								
47	9306F	LW2-G027	8	12	23.1								
52	9319F	LW2-G079	8	12	23.1								
53	9303F	LW2-G020	8	12	23.1								
62	9307F	LW2-G033	8	12	23.1								
67	9322F	LW2-G083	8	12	23.1								
70	9309F	LW2-G035	8	12	23.4								
89	9317F	LW2-G089	8	12	23.2								
97	9312F	LW2-G067	8	12	23.0								
105	9313F	LW2-G073	8	12	23.3								
125	9305F	LW2-G025	8	12	23.2								
129	9308F	LW2-G034	8	12	23.1								
134	9321F	LW2-G111	8	12	23.1								
140	9316F	LW2-G092	8	12	23.2								
142	9310F	LW2-G061	8	12	23.0								
14	9208F	Control	8	13	23.0	5.7		7.3					
21	9318F	LW2-G080	8	13	23.0	6.0		7.2					
23	9311F	LW2-G062	8	13	22.9	5.9		7.1					
30	9304F	LW2-G024	8	13	23.2	5.4		7.1					
37	9320F	LW2-G078	8	13	23.0	6.0		7.1					
39	9314F	LW2-G074	8	13	23.1	6.2		7.1					
40	9315F	LW2-G085	8	13	23.3	5.2		7.1					
47	9306F	LW2-G027	8	13	23.0	6.0		7.1					
52	9319F	LW2-G079	8	13	23.0	6.0		7.1					
53	9303F	LW2-G020	8	13	23.0	5.6		7.1					
62	9307F	LW2-G033	8	13	23.0	5.6		7.1					
67	9322F	LW2-G083	8	13	23.0	5.4		7.1					
70	9309F	LW2-G035	8	13	23.2	5.6		7.1					
89	9317F	LW2-G089	8	13	23.1	5.8		7.1					
97	9312F	LW2-G067	8	13	22.9	5.6		7.1					
105	9313F	LW2-G073	8	13	23.2	6.1		7.1					
125	9305F	LW2-G025	8	13	23.2	5.5		7.1					
129	9308F	LW2-G034	8	13	23.0	5.8		7.1					
134	9321F	LW2-G111	8	13	23.0	5.6		7.1					
140	9316F	LW2-G092	8	13	23.1	6.5		8.3					
142	9310F	LW2-G061	8	13	22.9	5.7		7.3					

ANC08822
BZTO104(e)008822

Test Number: 686-3

Freshwater Sediment Test
28-Day Hyalella azteca

Water Quality Data

	NAS	CLIENT			Overlying water								Interstitial water	
BKR	SMPL	DESCRIP	REPL	DAY	TEMP	DO	COND	pH	HARD	ALK	NH3		NH3	pH
14	9208F	Control	8	14	23.0									
21	9318F	LW2-G080	8	14	23.1									
23	9311F	LW2-G062	8	14	23.1									
30	9304F	LW2-G024	8	14	23.1									
37	9320F	LW2-G078	8	14	23.1									
39	9314F	LW2-G074	8	14	23.2									
40	9315F	LW2-G085	8	14	23.3									
47	9306F	LW2-G027	8	14	23.2									
52	9319F	LW2-G079	8	14	23.2									
53	9303F	LW2-G020	8	14	23.2									
62	9307F	LW2-G033	8	14	23.1									
67	9322F	LW2-G083	8	14	23.1									
70	9309F	LW2-G035	8	14	23.1									
89	9317F	LW2-G089	8	14	23.2									
97	9312F	LW2-G067	8	14	23.1									
105	9313F	LW2-G073	8	14	23.3									
125	9305F	LW2-G025	8	14	23.3									
129	9308F	LW2-G034	8	14	23.3									
134	9321F	LW2-G111	8	14	23.3									
140	9316F	LW2-G092	8	14	23.2									
142	9310F	LW2-G061	8	14	23.1									
14	9208F	Control	8	15	22.5	5.6	160	7.1						
21	9318F	LW2-G080	8	15	22.5	5.9	160	6.8						
23	9311F	LW2-G062	8	15	22.5	6.0	165	6.7						
30	9304F	LW2-G024	8	15	22.7	5.5	165	6.7						
37	9320F	LW2-G078	8	15	22.5	5.9	165	6.7						
39	9314F	LW2-G074	8	15	22.6	5.9	165	6.6						
40	9315F	LW2-G085	8	15	22.5	5.0	170	6.8						
47	9306F	LW2-G027	8	15	22.6	5.7	165	6.7						
52	9319F	LW2-G079	8	15	22.5	5.9	160	6.7						
53	9303F	LW2-G020	8	15	22.5	5.4	170	6.9						
62	9307F	LW2-G033	8	15	22.5	5.9	165	6.8						
67	9322F	LW2-G083	8	15	22.6	5.5	170	6.8						
70	9309F	LW2-G035	8	15	22.9	5.4	170	6.8						
89	9317F	LW2-G089	8	15	22.7	5.9	165	6.7						
97	9312F	LW2-G067	8	15	22.6	5.6	165	6.8						
105	9313F	LW2-G073	8	15	22.8	6.1	165	6.7						
125	9305F	LW2-G025	8	15	22.8	6.0	170	6.8						
129	9308F	LW2-G034	8	15	22.7	6.0	165	6.8						
134	9321F	LW2-G111	8	15	22.6	5.4	165	6.7						
140	9316F	LW2-G092	8	15	22.8	6.3	185	8.8						
142	9310F	LW2-G061	8	15	22.5	5.3	165	6.9						

ANC08823
BZTO104(e)008823

Water Quality Data

	NAS	CLIENT			Overlying water								Interstitial water	
BKR	SMPL	DESCRIP	REPL	DAY	TEMP	DO	COND	pH	HARD	ALK	NH3		NH3	pH
14	9208F	Control	8	16	22.4									
21	9318F	LW2-G080	8	16	22.5									
23	9311F	LW2-G062	8	16	22.4									
30	9304F	LW2-G024	8	16	22.4									
37	9320F	LW2-G078	8	16	22.5									
39	9314F	LW2-G074	8	16	22.5									
40	9315F	LW2-G085	8	16	22.6									
47	9306F	LW2-G027	8	16	22.7									
52	9319F	LW2-G079	8	16	22.5									
53	9303F	LW2-G020	8	16	22.5									
62	9307F	LW2-G033	8	16	22.4									
67	9322F	LW2-G083	8	16	22.4									
70	9309F	LW2-G035	8	16	22.7									
89	9317F	LW2-G089	8	16	22.6									
97	9312F	LW2-G067	8	16	22.5									
105	9313F	LW2-G073	8	16	22.4									
125	9305F	LW2-G025	8	16	22.6									
129	9308F	LW2-G034	8	16	22.6									
134	9321F	LW2-G111	8	16	22.5									
140	9316F	LW2-G092	8	16	22.5									
142	9310F	LW2-G061	8	16	22.4									
14	9208F	Control	8	17	22.9	5.9		7.3						
21	9318F	LW2-G080	8	17	22.9	6.3		7.0						
23	9311F	LW2-G062	8	17	22.9	6.4		7.0						
30	9304F	LW2-G024	8	17	23.1	5.8		7.0						
37	9320F	LW2-G078	8	17	23.0	6.4		7.0						
39	9314F	LW2-G074	8	17	23.0	6.2		7.0						
40	9315F	LW2-G085	8	17	23.1	5.9		7.0						
47	9306F	LW2-G027	8	17	23.0	6.3		7.0						
52	9319F	LW2-G079	8	17	23.0	6.3		7.0						
53	9303F	LW2-G020	8	17	22.9	6.2		7.1						
62	9307F	LW2-G033	8	17	23.0	6.2		7.0						
67	9322F	LW2-G083	8	17	23.0	6.1		7.0						
70	9309F	LW2-G035	8	17	23.2	6.1		7.0						
89	9317F	LW2-G089	8	17	22.9	6.4		7.0						
97	9312F	LW2-G067	8	17	22.9	6.3		7.0						
105	9313F	LW2-G073	8	17	23.1	6.7		7.0						
125	9305F	LW2-G025	8	17	23.1	6.3		7.0						
129	9308F	LW2-G034	8	17	23.0	6.4		6.9						
134	9321F	LW2-G111	8	17	23.0	6.3		6.9						
140	9316F	LW2-G092	8	17	23.2	6.6		8.7						
142	9310F	LW2-G061	8	17	22.9	5.8		7.1						

ANC08824
BZTO104(e)008824

Test Number: 686-3

Freshwater Sediment Test
28-Day Hyalella azteca

Water Quality Data

	NAS	CLIENT			Overlying water								Interstitial water	
BKR	SMPL	DESCRIP	REPL	DAY	TEMP	DO	COND	pH	HARD	ALK	NH3		NH3	pH
14	9208F	Control	8	18	22.9									
21	9318F	LW2-G080	8	18	23.0									
23	9311F	LW2-G062	8	18	23.2									
30	9304F	LW2-G024	8	18	23.2									
37	9320F	LW2-G078	8	18	23.0									
39	9314F	LW2-G074	8	18	23.1									
40	9315F	LW2-G085	8	18	23.2									
47	9306F	LW2-G027	8	18	23.1									
52	9319F	LW2-G079	8	18	23.0									
53	9303F	LW2-G020	8	18	23.0									
62	9307F	LW2-G033	8	18	23.0									
67	9322F	LW2-G083	8	18	23.0									
70	9309F	LW2-G035	8	18	23.3									
89	9317F	LW2-G089	8	18	23.2									
97	9312F	LW2-G067	8	18	23.0									
105	9313F	LW2-G073	8	18	23.3									
125	9305F	LW2-G025	8	18	23.3									
129	9308F	LW2-G034	8	18	23.1									
134	9321F	LW2-G111	8	18	23.1									
140	9316F	LW2-G092	8	18	23.2									
142	9310F	LW2-G061	8	18	23.0									
14	9208F	Control	8	19	23.0									
21	9318F	LW2-G080	8	19	23.0									
23	9311F	LW2-G062	8	19	23.0									
30	9304F	LW2-G024	8	19	23.1									
37	9320F	LW2-G078	8	19	23.1									
39	9314F	LW2-G074	8	19	23.1									
40	9315F	LW2-G085	8	19	23.0									
47	9306F	LW2-G027	8	19	23.0									
52	9319F	LW2-G079	8	19	23.0									
53	9303F	LW2-G020	8	19	23.0									
62	9307F	LW2-G033	8	19	23.0									
67	9322F	LW2-G083	8	19	23.0									
70	9309F	LW2-G035	8	19	23.2									
89	9317F	LW2-G089	8	19	23.1									
97	9312F	LW2-G067	8	19	23.0									
105	9313F	LW2-G073	8	19	23.2									
125	9305F	LW2-G025	8	19	23.1									
129	9308F	LW2-G034	8	19	23.1									
134	9321F	LW2-G111	8	19	23.0									
140	9316F	LW2-G092	8	19	23.1									
142	9310F	LW2-G061	8	19	23.0									

ANC08825
BZTO104(e)008825

Test Number: 686-3

Freshwater Sediment Test
28-Day Hyalella azteca

Water Quality Data

	NAS	CLIENT			Overlying water							Interstitial water	
BKR	SMPL	DESCRIP	REPL	DAY	TEMP	DO	COND	pH	HARD	ALK	NH3	NH3	pH
14	9208F	Control	8	20	22.9	5.4		6.9					
21	9318F	LW2-G080	8	20	22.9	5.9		6.6					
23	9311F	LW2-G062	8	20	22.9	5.8		6.5					
30	9304F	LW2-G024	8	20	23.0	5.1		6.6					
37	9320F	LW2-G078	8	20	22.9	6.0		6.6					
39	9314F	LW2-G074	8	20	23.0	6.1		6.6					
40	9315F	LW2-G085	8	20	23.0	5.2		6.6					
47	9306F	LW2-G027	8	20	22.9	5.8		6.6					
52	9319F	LW2-G079	8	20	22.9	5.6		6.5					
53	9303F	LW2-G020	8	20	22.9	5.3		6.6					
62	9307F	LW2-G033	8	20	22.9	5.8		6.6					
67	9322F	LW2-G083	8	20	22.9	5.6		6.6					
70	9309F	LW2-G035	8	20	23.1	5.5		6.6					
89	9317F	LW2-G089	8	20	23.0	5.8		6.5					
97	9312F	LW2-G067	8	20	22.8	5.8		6.5					
105	9313F	LW2-G073	8	20	23.0	6.3		6.6					
125	9305F	LW2-G025	8	20	23.0	5.8		6.6					
129	9308F	LW2-G034	8	20	22.9	5.8		6.6					
134	9321F	LW2-G111	8	20	22.9	5.4		6.5					
140	9316F	LW2-G092	8	20	22.0	6.2		8.3					
142	9310F	LW2-G061	8	20	22.8	5.2		6.7					
14	9208F	Control	8	21	23.2								
21	9318F	LW2-G080	8	21	23.2								
23	9311F	LW2-G062	8	21	23.2								
30	9304F	LW2-G024	8	21	23.4								
37	9320F	LW2-G078	8	21	23.3								
39	9314F	LW2-G074	8	21	23.3								
40	9315F	LW2-G085	8	21	23.4								
47	9306F	LW2-G027	8	21	23.3								
52	9319F	LW2-G079	8	21	23.3								
53	9303F	LW2-G020	8	21	23.3								
62	9307F	LW2-G033	8	21	23.2								
67	9322F	LW2-G083	8	21	23.2								
70	9309F	LW2-G035	8	21	23.5								
89	9317F	LW2-G089	8	21	23.4								
97	9312F	LW2-G067	8	21	23.4								
105	9313F	LW2-G073	8	21	23.4								
125	9305F	LW2-G025	8	21	23.5								
129	9308F	LW2-G034	8	21	23.4								
134	9321F	LW2-G111	8	21	23.3								
140	9316F	LW2-G092	8	21	23.4								
142	9310F	LW2-G061	8	21	23.3								

ANC08826
BZTO104(e)008826

Test Number: 686-3

Freshwater Sediment Test
28-Day Hyalella azteca

Water Quality Data

	NAS	CLIENT			Overlying water							Interstitial water	
BKR	SMPL	DESCRIP	REPL	DAY	TEMP	DO	COND	pH	HARD	ALK	NH3	NH3	pH
14	9208F	Control	8	22	23.2	5.6	170	6.8					
21	9318F	LW2-G080	8	22	23.2	6.1	160	6.6					
23	9311F	LW2-G062	8	22	23.2	6.2	160	6.6					
30	9304F	LW2-G024	8	22	23.4	5.1	160	6.6					
37	9320F	LW2-G078	8	22	23.2	6.1	160	6.6					
39	9314F	LW2-G074	8	22	23.3	6.4	165	6.6					
40	9315F	LW2-G085	8	22	23.4	5.6	160	6.6					
47	9306F	LW2-G027	8	22	23.3	6.1	160	6.6					
52	9319F	LW2-G079	8	22	23.3	6.2	160	6.6					
53	9303F	LW2-G020	8	22	23.3	5.5	170	6.6					
62	9307F	LW2-G033	8	22	23.3	5.9	160	6.7					
67	9322F	LW2-G083	8	22	23.3	6.1	160	6.7					
70	9309F	LW2-G035	8	22	23.5	5.6	170	6.7					
89	9317F	LW2-G089	8	22	23.4	6.0	160	6.6					
97	9312F	LW2-G067	8	22	23.3	5.9	160	6.6					
105	9313F	LW2-G073	8	22	23.5	6.4	160	6.6					
125	9305F	LW2-G025	8	22	23.5	6.2	165	6.6					
129	9308F	LW2-G034	8	22	23.3	5.8	160	6.6					
134	9321F	LW2-G111	8	22	23.3	5.6	160	6.6					
140	9316F	LW2-G092	8	22	23.5	6.3	180	8.5					
142	9310F	LW2-G061	8	22	23.3	5.3	165	6.8					
14	9208F	Control	8	23	22.9								
21	9318F	LW2-G080	8	23	22.9								
23	9311F	LW2-G062	8	23	22.8								
30	9304F	LW2-G024	8	23	23.0								
37	9320F	LW2-G078	8	23	22.9								
39	9314F	LW2-G074	8	23	23.0								
40	9315F	LW2-G085	8	23	23.2								
47	9306F	LW2-G027	8	23	23.0								
52	9319F	LW2-G079	8	23	23.0								
53	9303F	LW2-G020	8	23	22.9								
62	9307F	LW2-G033	8	23	22.9								
67	9322F	LW2-G083	8	23	22.9								
70	9309F	LW2-G035	8	23	23.3								
89	9317F	LW2-G089	8	23	23.0								
97	9312F	LW2-G067	8	23	22.9								
105	9313F	LW2-G073	8	23	23.3								
125	9305F	LW2-G025	8	23	23.3								
129	9308F	LW2-G034	8	23	23.1								
134	9321F	LW2-G111	8	23	23.0								
140	9316F	LW2-G092	8	23	23.3								
142	9310F	LW2-G061	8	23	22.9								

ANC08827
BZTO104(e)008827

Test Number: 686-3

Freshwater Sediment Test
28-Day Hyalella azteca

Water Quality Data

	NAS	CLIENT			Overlying water							Interstitial water	
BKR	SMPL	DESCRIP	REPL	DAY	TEMP	DO	COND	pH	HARD	ALK	NH3	NH3	pH
14	9208F	Control	8	24	23.1	5.7		6.7					
21	9318F	LW2-G080	8	24	23.1	6.3		6.6					
23	9311F	LW2-G062	8	24	23.1	5.9		6.4					
30	9304F	LW2-G024	8	24	23.3	5.2		6.4					
37	9320F	LW2-G078	8	24	23.1	6.0		6.4					
39	9314F	LW2-G074	8	24	23.2	6.1		6.3					
40	9315F	LW2-G085	8	24	23.3	5.4		6.3					
47	9306F	LW2-G027	8	24	23.1	5.9		6.3					
52	9319F	LW2-G079	8	24	23.1	6.1		6.3					
53	9303F	LW2-G020	8	24	23.0	5.1		6.4					
62	9307F	LW2-G033	8	24	23.1	5.5		6.4					
67	9322F	LW2-G083	8	24	23.0	5.5		6.4					
70	9309F	LW2-G035	8	24	23.0	5.4		6.4					
89	9317F	LW2-G089	8	24	23.2	5.9		6.3					
97	9312F	LW2-G067	8	24	23.1	5.7		6.3					
105	9313F	LW2-G073	8	24	23.2	6.4		6.3					
125	9305F	LW2-G025	8	24	23.2	6.4		6.4					
129	9308F	LW2-G034	8	24	23.1	6.1		6.4					
134	9321F	LW2-G111	8	24	23.1	4.6		6.3					
140	9316F	LW2-G092	8	24	23.1	5.7		8.0					
142	9310F	LW2-G061	8	24	23.0	5.1		6.5					
14	9208F	Control	8	25	23.1								
21	9318F	LW2-G080	8	25	23.0								
23	9311F	LW2-G062	8	25	23.1								
30	9304F	LW2-G024	8	25	23.2								
37	9320F	LW2-G078	8	25	23.1								
39	9314F	LW2-G074	8	25	23.1								
40	9315F	LW2-G085	8	25	23.2								
47	9306F	LW2-G027	8	25	23.1								
52	9319F	LW2-G079	8	25	23.1								
53	9303F	LW2-G020	8	25	23.1								
62	9307F	LW2-G033	8	25	23.1								
67	9322F	LW2-G083	8	25	23.3								
70	9309F	LW2-G035	8	25	23.2								
89	9317F	LW2-G089	8	25	23.1								
97	9312F	LW2-G067	8	25	23.1								
105	9313F	LW2-G073	8	25	23.3								
125	9305F	LW2-G025	8	25	23.3								
129	9308F	LW2-G034	8	25	23.2								
134	9321F	LW2-G111	8	25	23.1								
140	9316F	LW2-G092	8	25	23.2								
142	9310F	LW2-G061	8	25	23.1								

ANC08828
BZTO104(e)008828

Water Quality Data

	NAS	CLIENT			Overlying water							Interstitial water	
BKR	SMPL	DESCRIP	REPL	DAY	TEMP	DO	COND	pH	HARD	ALK	NH3	NH3	pH
14	9208F	Control	8	26	23.2								
21	9318F	LW2-G080	8	26	23.2								
23	9311F	LW2-G062	8	26	23.2								
30	9304F	LW2-G024	8	26	23.2								
37	9320F	LW2-G078	8	26	23.2								
39	9314F	LW2-G074	8	26	23.3								
40	9315F	LW2-G085	8	26	23.2								
47	9306F	LW2-G027	8	26	23.2								
52	9319F	LW2-G079	8	26	23.2								
53	9303F	LW2-G020	8	26	23.2								
62	9307F	LW2-G033	8	26	23.2								
67	9322F	LW2-G083	8	26	23.3								
70	9309F	LW2-G035	8	26	23.4								
89	9317F	LW2-G089	8	26	23.2								
97	9312F	LW2-G067	8	26	23.4								
105	9313F	LW2-G073	8	26	23.4								
125	9305F	LW2-G025	8	26	23.2								
129	9308F	LW2-G034	8	26	23.2								
134	9321F	LW2-G111	8	26	23.2								
140	9316F	LW2-G092	8	26	23.3								
142	9310F	LW2-G061	8	26	23.2								
14	9208F	Control	8	27	23.1	4.6		6.7					
21	9318F	LW2-G080	8	27	23.1	5.4		6.6					
23	9311F	LW2-G062	8	27	23.0	4.9		6.4					
30	9304F	LW2-G024	8	27	23.0	4.0		6.5					
37	9320F	LW2-G078	8	27	23.1	5.3		6.5					
39	9314F	LW2-G074	8	27	23.2	5.1		6.5					
40	9315F	LW2-G085	8	27	23.2	4.5		6.5					
47	9306F	LW2-G027	8	27	23.1	5.4		6.6					
52	9319F	LW2-G079	8	27	23.1	5.4		6.5					
53	9303F	LW2-G020	8	27	23.1	4.5		6.5					
62	9307F	LW2-G033	8	27	23.1	4.9		6.6					
67	9322F	LW2-G083	8	27	23.1	4.8		6.6					
70	9309F	LW2-G035	8	27	23.3	4.5		6.6					
89	9317F	LW2-G089	8	27	23.2	5.4		6.5					
97	9312F	LW2-G067	8	27	23.1	5.1		6.5					
105	9313F	LW2-G073	8	27	23.3	5.6		6.5					
125	9305F	LW2-G025	8	27	23.2	6.1		6.5					
129	9308F	LW2-G034	8	27	23.2	6.0		6.6					
134	9321F	LW2-G111	8	27	23.1	4.7		6.5					
140	9316F	LW2-G092	8	27	23.2	5.4		8.1					
142	9310F	LW2-G061	8	27	23.0	4.6		6.7					

ANC08829
BZTO104(e)008829

Water Quality Data

	NAS	CLIENT			Overlying water							Interstitial water	
BKR	SMPL	DESCRIP	REPL	DAY	TEMP	DO	COND	pH	HARD	ALK	NH3	NH3	pH
14	9208F	Control	8	28	23.3	5.8	165	6.7	43	50	0.9		
21	9318F	LW2-G080	8	28	23.1	6.4	160	6.4	34	40	0.2		
23	9311F	LW2-G062	8	28	23.2	5.8	160	6.3	43	50	<0.1		
30	9304F	LW2-G024	8	28	23.2	5.4	160	6.3	43	50	0.2		
37	9320F	LW2-G078	8	28	23.1	7.0	155	6.4	43	50	<0.1		
39	9314F	LW2-G074	8	28	23.2	6.8	160	6.3	43	40	0.1		
40	9315F	LW2-G085	8	28	23.3	5.8	165	6.4	43	40	<0.1		
47	9306F	LW2-G027	8	28	23.1	6.8	160	6.4	43	40	0.1		
52	9319F	LW2-G079	8	28	23.1	7.0	155	6.4	43	40	<0.1		
53	9303F	LW2-G020	8	28	23.0	5.8	165	6.6	43	50	<0.1		
62	9307F	LW2-G033	8	28	23.0	6.4	160	6.6	43	40	<0.1		
67	9322F	LW2-G083	8	28	23.0	6.0	160	6.6	34	50	0.1		
70	9309F	LW2-G035	8	28	23.3	6.4	165	6.6	51	50	<0.1		
89	9317F	LW2-G089	8	28	23.2	6.3	155	6.3	43	40	<0.1		
97	9312F	LW2-G067	8	28	22.9	6.6	155	6.4	43	40	<0.1		
105	9313F	LW2-G073	8	28	23.2	7.1	160	6.5	43	50	<0.1		
125	9305F	LW2-G025	8	28	23.1	7.8	160	6.6	43	50	<0.1		
129	9308F	LW2-G034	8	28	23.1	7.6	160	6.6	43	40	<0.1		
134	9321F	LW2-G111	8	28	23.0	6.4	160	6.5	43	40	<0.1		
140	9316F	LW2-G092	8	28	23.1	6.8	180	8.6	51	60	<0.1		
142	9310F	LW2-G061	8	28	22.9	6.4	160	6.5	43	50	<0.1		
				Mean	23.0	6.1	168	6.9	47	46	—	—	6.9
				SD	0.2	0.7	10	0.5	7	6	—	—	1.2
				n	609	294	127	294	42	42	42	21	21
				Min	22.0	4.0	155	6.3	34	40	<0.1	<0.5	6.4
				Max	23.5	7.8	215	9.9	68	60	0.9	10.9	11.3

ANC08830
BZTO104(e)008830

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4b

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-3 Client Windward Environmental Investigator

Test Dilution Water: Dechlorinated Newport, OR Tap Water

Date of Collection	Total Chlorine (mg/L)	Hardness (mg/L)	Alkalinity (mg/L)	Conductivity (µmhos/cm)	pH
7-29-04	< 0.02	34	30	160	7.2
8-2-04	< 0.02	34	30	160	7.1
8-3-04	< 0.02	34	30	155	7.1
8-5-04	< 0.02	34	30	155	7.1
8-7-04	< 0.02	34	30	155	7.1
8-9-04	< 0.02	34	30	160	7.0
8-10-04	< 0.02	34	30	155	7.1
8-12-04	< 0.02	34	~~30~~ 30	160	7.2
8-14-04	< 0.02	34	40	150	7.2
8-14-04 2nd batch	< 0.02	34	40	160	7.2
8-16-04	< 0.02	34	50	160	7.0
8-17-04	< 0.02	34	40	160	7.0
8-18-04	< 0.02	34	50	140	7.2
8-19-04	< 0.02	34	50	160	6.9
8-20-04	< 0.02	34	40	160	7.0
8-23-04	< 0.02	34	30	150	7.1
8-23-04 2nd batch	< 0.02	34	30	160	7.1
8-25-04	< 0.02	34	40	155	7.1
8-27-04	< 0.02	34	40	170	7.1
	Mean	34	36	157	7.1
	SD	0	8	6	0.1
	n	19	19	19	19

ANC08831
BZTO104(e)008831

CHAIN-OF-CUSTODY RECORDS

Windward Environmental

CHAIN-OF-CUSTODY/TEST REQUEST FORM

1244

Project/Client Name: PORTLAND HARBOR RI/FS ROUND 2 — Ship to: NAS

Windward Project No: 04-28-04 — Attn: GERALD IRISSARI — Shipping Date: 7/29/04

Contact Name: HELLE ANDERSEN — Shipping address: — Airbill Number:

Sampled By: WINDWARD ENVIRONMENTAL

Sample Collection Date (m/d/y)	Time	Sample Identification	Volume of Sample / # of Containers	Matrix	Test(s) Requested (check test(s) required)							Comments / Instructions [Jar tag number(s)]
					10-DAY CHIRONOMUS	28-DAY HYALELLA						
7.26.04	1156	LW2-G020	1L/4	Sediment	X	X			NAS#	9303F		INTERNAL TEMP
7.26.04	1218	LW2-G024	1L/4	Sediment	X	X				9304F		OF COOLERS UPON
7.26.04	1252	LW2-G025	2L/4	Sediment	X	X				9305F		RECEIPT @ LAB (NAS):
7.26.04	1344	LW2-G027	1L/4	Sediment	X	X				9306F		#1 2.0°C
7.26.04	1404	LW2-G033	2L/4	Sediment	X	X				9307F		#2 1.5°C
7.26.04	1427	LW2-G034	2L/4	Sediment	X	X				9308F		#3 3.5°C
7.26.04	1447	LW2-G035	2L/4	Sediment	X	X				9309F		#4 2.5°C
7.27.04	0948	LW2-G061	1L/4	Sediment	X	X				9310F		#5 3.5°C
7.27.04	1043	LW2-G062	1L/4	Sediment	X	X				9311F		#6 1.5°C
7.27.04	1122	LW2-G067	1L/4	Sediment	X	X				9312F		
7.27.04	1309	LW2-G073	1L/4	Sediment	X	X				9313F		
7.27.04	1333	LW2-G074	1L/4	Sediment	X	X				9314F		
7.28.04	0924	LW2-G085	1L/4	Sediment	X	X				9315F		
		Total Number of Containers	52	Purchase Order / Statement of Work #								

19 7 C 09

1) Released by:	1) Rec'd by:	2) Released by:	1) Rec'd by:
Print name: ANGELITA RODRIGUEZ	Print name: GERALD IRISSARRI	Print name:	
Signature: Angelita RG	Signature: Gerald Irissarri	Signature:	
Company: WINDWARD ENVIRONMENTAL	Company: NORTHWESTERN AQUATIC SCIENCES	Company:	Company:
Date/Time: 7/29/04 11:00 AM	Date/Time: 7-29-04 1100 HRS	Date/Time:	Date/Time:

Distribution: White and yellow copies accompany shipment; pink-consignor's copy; white-consignee return with results; yellow-consignee's copy.

Instructions for completion of Chain-of-Custody/Test Request Form on back.

Windward environmental LLC
200 West Mercer Street
Suite 401
Seattle, WA 98119
Tel: 206.378.1364
Fax: 206.217.0089

To be completed by Laboratory upon sample receipt:

Date of receipt:	Laboratory W.O. #:
Condition upon receipt:	Time of receipt:
Cooler temperature:	Received by:

ANC08833
BZTO104(e)008833

____ of ____

Windward Environmental

CHAIN-OF-CUSTODY/TEST REQUEST FORM

1245

Project/Client Name: ROUND 2 PORTLAND HARBOR RI/FS
Ship to: NAS
Windward Project No: 04-28-04
Attn: GERALD IRISSARI
Shipping Date: 7/29/04
Contact Name: HELLE ANDERSEN
Shipping address:
Airbill Number:
Sampled By: WINDWARD ENVIRONMENTAL

Sample Collection Date (m/d/y)	Time	Sample Identification	Volume of Sample / # of Containers	Matrix	Test(s) Requested (check test(s) required)							Comments / Instructions [Jar tag number(s)]
					10-DAY CHIRONOMUS	28-DAY HYALELLA						
7.28.04	0944	LW2-G092	12L/4	Sediment	X	X			NAS*	9316F		
7.28.04	1008	LW2-G089	12/4	Sediment	X	X				9317F		
7.28.04	1024	LW2-G080	12/4	Sediment	X	X				9318F		
7.28.04	1127	LW2-G079	12/4	Sediment	X	X				9319F		
7.28.04	1338	LW2-G078	12/4	Sediment	X	X				9320F		
7.28.04	1443	LW2-G111	12/4	Sediment	X	X				9321F		
7.28.04	1400	LW2-G083	12/4	Sediment	X	X				9322F		
		Total Number of Containers	28	Purchase Order / Statement of Work #								

19 of 19

1) Released by:	1) Rec'd by:	2) Released by:	1) Rec'd by:
Print name: ANGELITA RODRIQUEZ	GERALD IRISSARI	Print name:	
Signature: Angelita RG	Signature: Gerald Irissarri	Signature:	
Company: WINDWARD ENVIRONMENTAL	Company: NORTHWESTERN AQUATIC SCIENCES	Company:	Company:
Date/Time: 7/29/04 11:00AM	Date/Time: 7-29-04 1100 HRS	Date/Time:	Date/Time:

*Distribution: White and yellow copies accompany shipment; pink-consignor's copy; white-consignee return with results; yellow-consignee's copy.

*Instructions for completion of Chain-of-Custody/Test Request Form on back.

Wind Ward environmental LLC
200 West Mercer Street
Suite 401
Seattle, WA 98119
Tel: 206.378.1364
Fax: 206.217.0089

To be completed by Laboratory upon sample receipt:

Date of receipt:	Laboratory W.O. #:
Condition upon receipt:	Time of receipt:
Cooler temperature:	Received by:

ANC08834
BZTO104(e)008834

APPENDIX II

RAW DATA – REFERENCE TOXICANT TEST

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS- _____

ACUTE TOXICITY TEST (ALL SPECIES)

Test No. 999-1813 Client: QC Test Investigator _____

Test Type (rangefinding/definitive) _____ Test Length (hr) 96

Species *Hyalella azteca*

STUDY MANAGEMENT

Client: QC test

Client's Study Monitor: QC test

Testing Laboratory: Northwestern Aquatic Sciences

Test Location: Newport Laboratory

Laboratory's Study Personnel:

Proj. Man./Study Dir. G.J. Irissarri GJI

QA Officer L. K. Nemeth

1. GABRIEL DB 2. G.C. Hayes GCH

3. M.S. Redmond MSR 4. William T. Montgomery WTM

Test Beginning: 8-3-04 1255 Test Ending: 8-7-04 1250

TEST MATERIAL Lot No.: MALLINKRODT TNZ

Description: Cadmium as $CdCl_2 \cdot 2.5H_2O$ (1.0 mg/ml) Prepared: 4-2-03

NAS Sample No.				
Date of Collection:				
Date of Receipt:				
Temperature (deg C):				
Dissolved oxygen (mg/L):				
pH:				
Conductivity (umhos/cm):				
Hardness (mg/L):				
Alkalinity (mg/L):				
Salinity (ppt):				
Total chlorine (mg/L):				
Total ammonia-N (mg/L):				
_____				

DILUTION WATER

Description: Moderately hard synthetic water

Date of Preparation/Collection: 7-28-04

Water Quality: Cond. (umhos/cm): 290 Salinity (ppt) — pH 7.8

Hardness (mg/L as $CaCO_3$): 77 Alkalinity (mg/L as $CaCO_3$): 70

Treatments: Aerated ≥ 24 hrs

TEST LOCATION

Test conducted in (circle one): room 1 (room 2) trailer water bath other: _____

Randomization chart:

REP A	3.75	60	30	7.5	ϕ	15				
REP B	15	ϕ	7.5	60	3.75	30				

Error codes: 1) Correction of handwriting error
2) Written in wrong location; entry deleted
3) Wrong date deleted; replaced with correct date
4) Error found in measurement; measurement repeated

Revised 12-5-01

ANC08836
BZTO104(e)008836

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-_____

ACUTE TOXICITY TEST (ALL SPECIES)

Test No. 999-1813 Client QC Test Investigator _____

TEST ORGANISMS

Species: *Hyalella azteca* Age: 7-8 DAYS Size: _____

Source: Chesapeake Cultures, Hayes, VA Date received: 7-30-04

Acclimation Data:

Date	Temp. (deg.C)	DO (mg/L)	pH	Cond. umhos/cm	Hardness (mg/L)	Alkalinity (mg/L)	Feeding Amount	Feeding description	Water changes
7-30-04	23.6	215.0	7.5	470	119	200	10 mL*	YTC	YES
7-31-04	22.6	7.9	7.8	365	51	60	10mL	YTC	YES
8-1-04	21.6	8.6	7.7	290	68	70	"	YTC	YES
8-2-04	21.7	8.4	7.9	235	77	80	"	YTC	YES
8-3-04	22.3	8.2	8.0	210	60	70	"	YTC	-
Mean	22.4	9.6	7.8	314	75	96			
S.D.	0.8	3.0	0.1	106	26	59			
(N)	5	5	5	5	5	5			

½ WATER REPLACED W/ TAP WATER

Photoperiod during acclimation: 16:8, L:D

* PER PAN, ANIMALS DIVIDED INTO 3 PANS

TEST PROCEDURES AND CONDITIONS

Test concentrations (50% series recommended): 60, 30, 15, 7.5, 3.75, 0 ug/L

Test chamber: 250 ml glass beakers Test volume: 100 ml

Replicates/treatment: 10 Organisms/treatment: 20 (10/rep)

Test water changes: None Aeration during test: None

Feeding: 0.5 ml YTC suspension per beaker on days 0 and 2

Duration: 24-hr, 48-hr, (96-hr) Test temperature (deg.C): (23 ± 1) or 20 ± 1

Beaker placement: Stratified randomization Photoperiod: 16:8, L:D

MISCELLANEOUS NOTES

Test solution preparation:

1st working stock made by 1:99 (1ml ↑ 100 ml) dilution of concentrated 1.0 mg/ml Cd stock.
Final conc.: 10 ug/L.

2nd working stock made by 10:90 (10ml ↑ 100 ml) dilution of concentrated 1st working stock.
Final conc.: 1ug/L.

6J1 8-3-04

Test concentration (ug/L)	ml of 2nd working stock per 200 ml	Dilution water
60	12	Brought up to final volume of 200 ml with dilution water and distributed evenly between two replicates
30	6	
15	3	
7.5	1.5	
3.75	0.75	
0	0	

ANC08837
BZTO104(e)008837

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-_____

ACUTE TOXICITY TEST (ALL SPECIES)

Test No. 999-1813 Client QC Test

DAILY RECORD SHEET

Day 0 (8 / 3 /04) [illegible]

Conc. (ug/L)	Temp. (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	Survivors A	Survivors B
1. 60	23.2	8.6	345	7.7	85	70	10	10
2. 30	23.2	8.6	345	7.7			10	10
3. 15	23.3	8.7	345	7.7			10	10
4. 7.5	23.3	8.7	345	7.7			10	10
5. 3.75	23.2	8.6	345	7.7			10	10
6. 0	23.2	8.7	345	7.8	85	70	10	10
All animals fed 0.5 ml YTC suspension. Initials: GJL								

Day 1 (8 / 4 /04) [illegible]/[illegible]

Conc. (ug/L)	Temp. (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	Survivors A	Survivors B
1. 60	23.4	8.1	360	7.7			8(2D)	9(1D)
2. 30	23.4	8.1	355	7.6			10	10
3. 15	23.5	8.2	350	7.7			10	10
4. 7.5	23.4	8.1	345	7.7			10	10
5. 3.75	23.3	8.0	350	7.6			10	10
6. 0	23.3	8.2	350	7.7			10	10

Day 2 (8 / 5 /04) [illegible]/[illegible]

Conc. (ug/L)	Temp. (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	Survivors A	Survivors B
1. 60	23.6	7.8	355	7.6			0(8d)	0(9d)
2. 30	23.6	8.0	350	7.6			8(2d)	7(3d)
3. 15	23.5	7.9	345	7.6			9(1d)	9(1d)
4. 7.5	23.6	7.7	340	7.6			8(2d)	9(1d)
5. 3.75	23.5	7.9	350	7.6			10	10
6. 0	23.6	7.8	350	7.6			10	10
All animals fed 0.5 ml YTC suspension. Initials: GJL								

Day 3 (8 / 6 /04) [illegible]/GJL

Conc. (ug/L)	Temp. (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	Survivors A	Survivors B
1. 60	—	—	—	—			Ø	Ø
2. 30	23.6	8.2	355	7.6			4(4D)	3(4D)
3. 15	23.7	8.1	355	7.7			5(4D)	3(6D)
4. 7.5	23.6	8.3	340	7.6			7(1D)	8(1D)
5. 3.75	23.6	8.4	360	7.6			10	10
6. 0	23.6	8.4	360	7.6			10	10

Day 4 (8 / 7 /04) GJL

Conc. (ug/L)	Temp. (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	Survivors A	Survivors B
1. 60	—	—	—	—	—	—	Ø	Ø
2. 30	23.6	8.2	355	7.8			Ø(4D)	Ø(3D)
3. 15	23.6	8.2	370	7.8			Ø(5D)	Ø(3D)
4. 7.5	23.6	8.1	345	7.8			4(8D)	2(6D)
5. 3.75	23.5	8.1	350	7.8			10	10
6. 0	23.5	8.2	360	7.8	94	70	10	10
Mean	23.5	8.2	351	7.7				
SD	0.2	0.3	7	0.1				
n	28	28	28	28				

Revised 12-5-01

ANC08838

BZTO104(e)008838

Acute 96-hr Toxicity Test, 96 Hr Survival

Start Date:	8/3/04 12:55	Test ID:	999-1813	Sample ID:	REF-Ref Toxicant
End Date:	8/7/04 12:50	Lab ID:	ORNAS-Northwestern Aquati	Sample Type:	CDCL-Cadmium chloride
Sample Date:		Protocol:	EPAA 91-EPA Acute	Test Species:	HA-Hyalella azteca
Comments:					

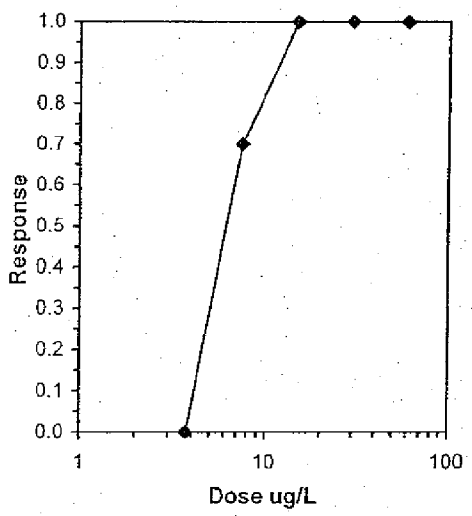
Conc-ug/L	1	2
D-Control	1.0000	1.0000
3.75	1.0000	1.0000
7.5	0.4000	0.2000
15	0.0000	0.0000
30	0.0000	0.0000
60	0.0000	0.0000

			Transform: Arcsin Square Root					Number	Total
Conc-ug/L	Mean	N-Mean	Mean	Min	Max	CV%	N	Resp	Number
D-Control	1.0000	1.0000	1.4120	1.4120	1.4120	0.000	2	0	20
3.75	1.0000	1.0000	1.4120	1.4120	1.4120	0.000	2	0	20
7.5	0.3000	0.3000	0.5742	0.4636	0.6847	27.225	2	14	20
15	0.0000	0.0000	0.1588	0.1588	0.1588	0.000	2	20	20
30	0.0000	0.0000	0.1588	0.1588	0.1588	0.000	2	20	20
60	0.0000	0.0000	0.1588	0.1588	0.1588	0.000	2	20	20

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Normality of the data set cannot be confirmed				
Equality of variance cannot be confirmed				

Trimmed Spearman-Karber

Trim Level	EC50	95% CL	
0.0%	6.5291	5.6645	7.5257
5.0%	6.4411	5.5105	7.5289
10.0%	6.3590	5.3675	7.5337
20.0%	6.2206	5.1246	7.5509
Auto-0.0%	6.5291	5.6645	7.5257



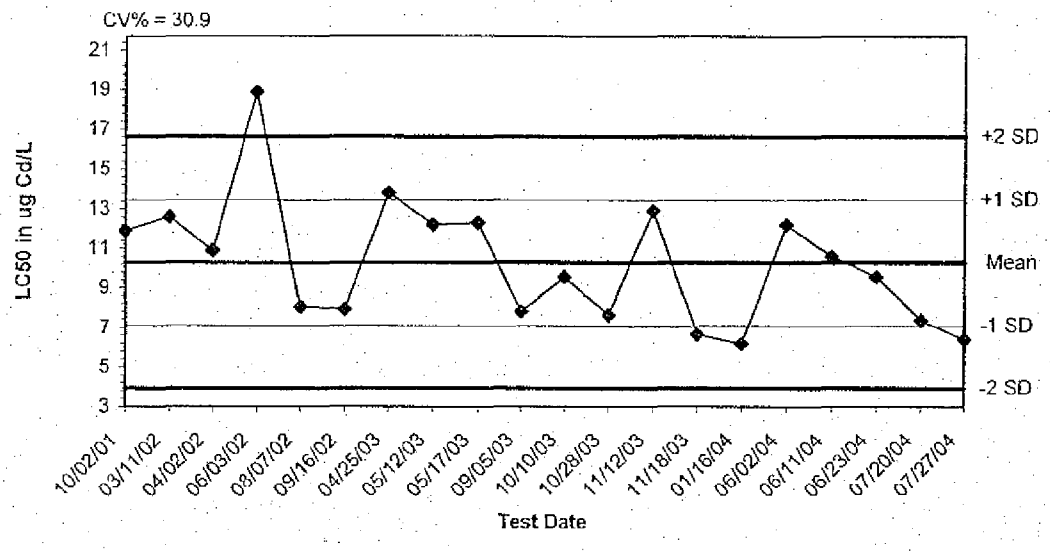
ANC08839
BZTO104(e)008839

Test: AT-Acute 96-hr Toxicity Test							Test ID: 999-1813		
Species: HA-Hyalella azteca							Protocol: EPAA 91-EPA Acute		
Sample ID: REF-Ref Toxicant							Sample Type: CDCL-Cadmium chloride		
Start Date: 8/3/04 12:55			End Date: 8/7/04 12:50				Lab ID: ORNAS-Northwestern Aquatic Sciences		
Pos	ID	Rep	Group	Start	24 Hr	48 Hr	72 Hr	96 Hr	Notes
	1	1	D-Control	10				10	
	2	2	D-Control	10				10	
	3	1	3.750	10				10	
	4	2	3.750	10				10	
	5	1	7.500	10				4	
	6	2	7.500	10				2	
	7	1	15.000	10				0	
	8	2	15.000	10				0	
	9	1	30.000	10				0	
	10	2	30.000	10				0	
	11	1	60.000	10				0	
	12	2	60.000	10				0	

Comments: Data entry verified against laboratory bench sheets
TMR 8-19-04

ANC08840
BZTO104(e)008840

Hyalella azteca 96-hr reference toxicant test - last 20 points



Dates	Values	Mean	-1 SD	-2 SD	+1 SD	+2 SD
10/02/01	11.9000	10.2705	7.0939	3.9173	13.4471	16.6237
03/11/02	12.6000	10.2705	7.0939	3.9173	13.4471	16.6237
04/02/02	10.9000	10.2705	7.0939	3.9173	13.4471	16.6237
06/03/02	18.9000	10.2705	7.0939	3.9173	13.4471	16.6237
08/07/02	8.0400	10.2705	7.0939	3.9173	13.4471	16.6237
09/16/02	7.9200	10.2705	7.0939	3.9173	13.4471	16.6237
04/25/03	13.8000	10.2705	7.0939	3.9173	13.4471	16.6237
05/12/03	12.2000	10.2705	7.0939	3.9173	13.4471	16.6237
05/17/03	12.3000	10.2705	7.0939	3.9173	13.4471	16.6237
09/05/03	7.7900	10.2705	7.0939	3.9173	13.4471	16.6237
10/10/03	9.5600	10.2705	7.0939	3.9173	13.4471	16.6237
10/28/03	7.6200	10.2705	7.0939	3.9173	13.4471	16.6237
11/12/03	12.9000	10.2705	7.0939	3.9173	13.4471	16.6237
11/18/03	6.6700	10.2705	7.0939	3.9173	13.4471	16.6237
01/16/04	6.1900	10.2705	7.0939	3.9173	13.4471	16.6237
06/02/04	12.2000	10.2705	7.0939	3.9173	13.4471	16.6237
06/11/04	10.6000	10.2705	7.0939	3.9173	13.4471	16.6237
06/23/04	9.5600	10.2705	7.0939	3.9173	13.4471	16.6237
07/20/04	7.3500	10.2705	7.0939	3.9173	13.4471	16.6237
07/27/04	6.4100	10.2705	7.0939	3.9173	13.4471	16.6237

msk
8-20-04

ANC08841
BZTO104(e)008841

Report

of

Test No. 686-4

Toxicity of Portland Harbor RI/FS Freshwater Test Sediments (Batch 2) using a 10-day Midge, *Chironomus tentans*, Sediment Bioassay

Submitted to

Windward Environmental, Inc.
200 West Mercer Street, Suite 401
Seattle, WA 98119

Submitted by

Northwestern Aquatic Sciences
3814 Yaquina Bay Road
P.O. Box 1437
Newport, OR 97365

January 18, 2005

ANC08842
BZTO104(e)008842

TOXICITY TEST REPORT

TEST IDENTIFICATION

Test No.: 686-4

Title: Toxicity of Portland Harbor RI/FS freshwater test sediments (batch 2) using a 10-day midge, *Chironomus tentans*, sediment bioassay.

Protocol No.: NAS-686-CT4b, June 24, 2004. Based on ASTM 2003, Standard Method No. E 1706-00 and U.S. EPA Method 100.2 (EPA/600/R-99/064, 2000) This protocol can be found in Appendix B of the Portland Harbor RI/FS Round 2 Quality Assurance Project Plan, June 24, 2004.

STUDY MANAGEMENT

Study Sponsor: Windward Environmental, Inc., 200 West Mercer Street, Suite 401, Seattle, WA 98119.

Sponsor's Study Monitor: Ms. Helle Anderson

Testing Laboratory: Northwestern Aquatic Sciences, P.O. Box 1437, Newport, OR 97365

Test Location: Newport laboratory

Laboratory's Study Personnel: G.J. Irissarri, B.S., Proj. Man./Study Dir.; L.K. Nemeth, M.B.A., QA Officer; R.S. Caldwell, PhD, Sr. Toxicol.; M.S. Redmond, M.S., Aq. Toxicol.; G.A. Buhler, B.S., Aq. Toxicol.; W.T. Montgomery, A.A., Sr. Tech.; G. Hayes, B.S., Tech.; S.J. Gage, B.A., Tech.; B.B. Pridgeon, Lab Asst; J. M. Gray, Lab Asst.

Study Schedule:

Test Beginning: 8-3-04, 1530 hrs.

Test Ending: 8-13-04, 1500 hrs.

Disposition of Study Records: All specimens, raw data, reports and other study records are stored according to Good Laboratory Practice regulations at Northwestern Aquatic Sciences, 3814 Yaquina Bay Rd., Newport, OR 97365.

Good Laboratory Practices: The test was conducted following the principles of Good Laboratory Practices (GLP) as defined in the EPA/TSCA Good Laboratory Practice regulations revised August 17, 1989 (40 CFR Part 792).

Statement of Quality Assurance: The test data were reviewed by the Quality Assurance Unit to assure that the study was performed in accordance with the protocol and standard operating procedures. This report is an accurate reflection of the raw data.

TEST MATERIAL

Test Sediments: Portland Harbor RI/FS freshwater test sediments (Batch 2). Details are as follows:

NAS Sample No.	9303F	9304F	9305F	9306F	9307F
Description	LW2-G020	LW2-G024	LW2-G025	LW2-G027	LW2-G033
Collection Date	7/26/04	7/26/04	7/26/04	7/26/04	7/26/04
Receipt Date	7/29/04	7/29/04	7/29/04	7/29/04	7/29/04
NAS Sample No.	9308F	9309F	9310F	9311F	9312F
Description	LW2-G034	LW2-G035	LW2-G061	LW2-G062	LW2-G067
Collection Date	7/26/04	7/26/04	7/27/04	7/27/04	7/27/04
Receipt Date	7/29/04	7/29/04	7/29/04	7/29/04	7/29/04
NAS Sample No.	9313F	9314F	9315F	9316F	9317F
Description	LW2-G073	LW2-G074	LW2-G085	LW2-G092	LW2-G089
Collection Date	7/27/04	7/27/04	7/28/04	7/28/04	7/28/04
Receipt Date	7/29/04	7/29/04	7/29/04	7/29/04	7/29/04
NAS Sample No.	9318F	9319F	9320F	9321F	9322F
Description	LW2-G080	LW2-G079	LW2-G078	LW2-G111	LW2-G083
Collection Date	7/28/04	7/28/04	7/28/04	7/28/04	7/28/04
Receipt Date	7/29/04	7/29/04	7/29/04	7/29/04	7/29/04

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Control Sediment: The negative control sediment (NAS#9208F) was collected on 7-20-04 from an area approximately one mile east of the Hwy. 101 bridge at Beaver Creek, approx. 8 miles south of Newport, OR.
Treatments: Homogenized at test set up by mixing using stainless steel implements.
Storage: All test and control sediments were stored locked at 4°C in the dark in capped containers until used.

TEST WATER

Source: Dechlorinated Newport, OR tap water.
Dates of Collection: Seven batches of test water were collected between 8/2/04 and 8/12/04
Water Quality (mean ± SD):
pH: 7.1 ± 0.1(n=7)
conductivity: 157 ± 3 µmhos/cm (n=7)
hardness: 34 ± 0 mg/L as $CaCO_3$ (n=7)
alkalinity: 31 ± 4 mg/L as $CaCO_3$. (n=7)
chlorine: All batches were below 0.02 mg/L.
Pretreatment: Dechlorinated and aerated ≥24 hr.

TEST ORGANISMS

Species: *Chironomus tentans*, midge.
Size: 3rd instar, mean initial wt: 0.20 ± 0.01 mg
Source: NAS cultures, originally obtained from EPA, Duluth, MN.
Acclimation: Holding conditions prior to testing averaged: temperature, 23.9 ± 0.2°C; dissolved oxygen, 7.7 ± 0.8 mg/L; pH, 7.5 ± 0.2; conductivity, 314 ± 32 µmhos/cm; hardness, 80 ± 21 mg/L as $CaCO_3$; and alkalinity, 73 ± 15 mg/L as $CaCO_3$.

TEST PROCEDURES AND CONDITIONS

The following is an abbreviated statement of the test procedures and a statement of the test conditions actually employed. See the test protocol for a more detailed description of the test procedures used in this study.

Test Chambers: 300 ml high-form glass beakers
Test Volumes: 100 ml sediment layer; 175 ml test water.
Replicates/Treatment: 8
Organisms/Treatment: 80
Water Volume Changes: 2 water volumes per day
Aeration: None.
Feeding: Animals were fed 1.5 ml of Prime Tropical Flakes suspension (1.5 ml contains 6 mg dry solids) per beaker daily.
Effects Criteria: 1) survival after 10 days, and 2) average individual biomass (based on ash-free dry weight) after 10 days. Death is defined as no visible movement or response to tactile stimulation. Missing organisms were considered to be dead.
Water Quality and Other Test Conditions: The temperature, dissolved oxygen, conductivity, pH, hardness, alkalinity and ammonia-nitrogen were measured in the overlying water of one replicate test container per treatment on days 0 and 10 of the test. Temperature and dissolved oxygen were measured daily in the overlying water of one replicate test container per treatment. Interstitial ammonia was measured in the bulk sediment. Hardness and alkalinity were measured with titrimetric methods. Interstitial water samples were obtained by centrifugation, or by settling in the case of very sandy sediments. Total total ammonia-N was measured using Hach reagents based on the salicylate (Clin. Chim. Acta 14:403, 1996) colorimetric method; samples were not distilled prior to analysis. The photoperiod was 16:8, L:D.

DATA ANALYSIS METHODS

Survival and individual biomass were calculated for each replicate as follows:

percent survival = 100 x (number surviving/initial number tested)
average individual ash-free dry wt. = (final wt. – ashed dry wt.)/number weighed,

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where:
ash-free dry wt. = dry weight of organisms recovered on day 10 – ashed dry weight, in mg

Means and standard deviations for the biological endpoints described above, and for water quality data, were computed using Microsoft Excel 2000.

PROTOCOL DEVIATIONS

The maximum light intensity recorded during the test measured 1087 lux, which slightly exceeded the 100-1000 lux parameters described in the protocol. Light levels were reduced to below 1000 lux part way through this test and for all subsequent tests. This deviation is considered minor and not likely to have affected the test results.

REFERENCE TOXICANT TEST

The reference toxicant test is a multi-concentration toxicity test using potassium chloride, to evaluate the performance of the test organisms used in the sediment toxicity test. The performance is evaluated by comparing the results of this test with historical results obtained at the laboratory. A summary of the reference toxicant test result is given below. The reference toxicant test raw data are found in Appendix II.

Test No.: 999-1814
Reference Toxicant and Source: Potassium chloride (Fisher, Lot No. 006829).
Test Date: 8-3-04
Dilution Water Used: Moderately hard synthetic water prepared from Milli-Q® deionized water.
Result: 96-hr LC50, 3.62 g/L. This result is within the laboratory's control chart warning limits (2.77 to 7.46 g/L).

TEST RESULTS

Observations of water quality in the overlying water throughout the test are summarized in Table 1. A detailed tabulation of the water quality results by sample and test day can be found in Appendix I. Interstitial ammonia and pH measurements are listed in Table 2. The means and standard deviations of percent mortality and growth (weight) of midges exposed for 10 days to sediments are summarized in Table 3. Detailed data organized by sample and replicate, and summary statistics for these observations, are given in Appendix II.

All water quality observations of overlying water temperature and dissolved oxygen were within the protocol specified ranges. Ammonia-N in the overlying water ranged from <0.10 to 0.9 mg/L in all day 0 and day 10 observations. Interstitial bulk sediment values for ammonia-N ranged from <0.5 to 10.9 mg/L.
The test met the survival and weight acceptability criteria specified in the test protocol with 85.0% mean control survival (≥70% required) and a control individual mean ash-free dry weight of 1.02 mg per larvae (0.48 mg required). The reference toxicant (positive control) result was within the laboratory's control chart limits (3.62 g/L; control chart mean ± 2 S.D. = 5.11 ± 2.35). It is concluded, therefore, that the test has developed fully acceptable data for use in making management decisions.

REFERENCES

ASTM. 2003. Standard Test Methods for Measuring the Toxicity of Sediment-Associated Contaminants with Fresh Water Invertebrates. ASTM Standard Method No. E 1706-00. Am. Soc. Test. Mat., West Conshohocken, PA.

U.S. EPA. 2000. Section 12, Test Method 100.2, *Chironomus tentans* 10-d Survival and Growth Test for Sediments, pp 55-62 In: Methods for Measuring the Toxicity and Bioaccumulation of Sediment-associated Contaminants with Freshwater Invertebrates (Second Edition). EPA/600/R-99/064.

ANC08845
BZTO104(e)008845

STUDY APPROVAL

Gerald Insiarri 1-20-05
Project Manager/Study Director Date

Linda K. Nemeth 1/14/05
Quality Assurance Unit Date

Richard S. Caldwell 1/20/05
Laboratory Director Date

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BZTO104(e)008846

Table 1. Summary of water quality conditions during tests of the midge, *Chironomus tentans*, exposed to freshwater sediments.

Water Quality Parameter	Mean ± S.D.	Minimum	Maximum	N
Temperature (°C)	23.0 ± 0.2	22.5	23.4	231
Dissolved oxygen (mg/L)	5.0 ± 1.1	2.8	7.7	231
Conductivity (µmhos/cm)	168 ± 13	150	230	42
PH	7.0 ± 0.6	6.6	10.1	42
Hardness (mg/L as $CaCO_3$)	48 ± 7	34	68	42
Alkalinity (mg/L as $CaCO_3$)	44 ± 5	40	60	42
Total ammonia (mg/L)	---	<0.1	0.9	42

Table 2. Pore water ammonia-N and pH in bulk test sediments at the time of test setup.

NAS Sample No.	Sample Description	Ammonia (mg/L)	pH
9303F	LW2-G020	7.9	6.4
9304F	LW2-G024	4.3	6.4
9305F	LW2-G025	---	---
9306F	LW2-G027	1.1	6.8
9307F	LW2-G033	4.3	6.6
9308F	LW2-G034	2.3	6.5
9309F	LW2-G035	4.3	6.4
9310F	LW2-G061	5.6	6.4
9311F	LW2-G062	1.7	6.6
9312F	LW2-G067	4.8	6.4
9313F	LW2-G073	---	---
9314F	LW2-G074	<0.5	6.6
9315F	LW2-G085	10.9	7.0
9316F	LW2-G092	7.8	11.3
9317F	LW2-G089	3.5	---
9318F	LW2-G080	---	---
9319F	LW2-G079	0.6	6.9
9320F	LW2-G078	1.9	6.8
9321F	LW2-G111	4.8	7.0
9322F	LW2-G083	4.4	6.9

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Table 3. Mortality and growth[1] results of *Chironomus tentans* 10-day sediment toxicity test

Sample description		Average Percent mortality (Mean ± SD)	Average ash-free dry wt/midge (mg)[1] (Mean ± SD)
9208F	Control	15.0 ± 17.7	1.02 ± 0.23
9303F	LW2-G020	13.8 ± 13.0	1.02 ± 0.14
9304F	LW2-G024	17.5 ± 21.9	1.09 ± 0.20
9305F	LW2-G025	18.8 ± 18.9	1.26 ± 0.24
9306F	LW2-G027	12.5 ± 14.9	1.20 ± 0.10
9307F	LW2-G033	18.8 ± 14.6	1.00 ± 0.20
9308F	LW2-G034	16.3 ± 10.6	1.20 ± 0.18
9309F	LW2-G035	11.3 ± 13.6	0.97 ± 0.21
9310F	LW2-G061	12.5 ± 12.8	1.00 ± 0.13
9311F	LW2-G062	22.5 ± 14.9	1.06 ± 0.19
9312F	LW2-G067	10.0 ± 14.1	1.07 ± 0.13
9313F	LW2-G073	16.3 ± 15.1	1.10 ± 0.19
9314F	LW2-G074	12.5 ± 12.8	1.20 ± 0.21
9315F	LW2-G085	40.0 ± 26.2	0.53 ± 0.17
9316F	LW2-G092	100.0 ± 0.0	---
9317F	LW2-G089	41.3 ± 36.8	0.88 ± 0.09
9318F	LW2-G080	15.0 ± 17.7	1.13 ± 0.12
9319F	LW2-G079	18.8 ± 19.6	1.09 ± 0.24
9320F	LW2-G078	17.5 ± 18.3	1.08 ± 0.15
9321F	LW2-G111	26.3 ± 32.5	1.10 ± 0.07
9322F	LW2-G083	10.0 ± 10.7	1.11 ± 0.14

[1] Pupae were not included in the sample to estimate ash-free dry weight (as per EPA/600/R-99/064, p. 59, section 12.3.8.2)

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APPENDIX I

RAW DATA

TEST DESCRIPTION, MONITORING, AND RESULTS BENCHSHEETS

NORTHWESTERN AQUATIC SCIENCES — PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-4 Client Windward Environmental Investigator

STUDY MANAGEMENT

Client: Windward Enviromental, 200 West Mercer Street, Suite 401, Seattle, WA 98119

Client's Study Monitor: Ms. Helle Anderson

Testing Laboratory: Northwestern Aquatic Sciences

Test Location: Newport Laboratory

Laboratory's Study Personnel:

Proj. Man./Study Dir. G.J. Irissarri GJI

QA Officer L.K. Nemeth

1. [illegible] 2. M.S. Redmond MSR

3. William T. Montgomery WTM 4. G.C. Hayes GCH

Study Schedule: 6. R.S. Caldwell RSC 5. B.B. Prideaux BBP 7. J.M. GRAY

Test Beginning: 8-3-04 1330 Test Ending: 8-13-04 1500

TEST MATERIAL

General description (see sample logbook/chain-of-custody for details):

NAS Sample No.:	9208F	9303F	9304F	9305F	9306F
Description:	Control	LW2-G020	LW2-G024	LW2-G025	LW2-G027
Collection Date:	7/20/2004	7/26/2004	7/26/2004	7/26/2004	7/26/2004
Receipt Date:	7/20/2004	7/29/2004	7/29/2004	7/29/2004	7/29/2004

NAS Sample No.:	9307F	9308F	9309F	9310F	9311F
Description:	LW2-G033	LW2-G034	LW2-G035	LW2-G061	LW2-G062
Collection Date:	7/26/2004	7/26/2004	7/26/2004	7/27/2004	7/27/2004
Receipt Date:	7/29/2004	7/29/2004	7/29/2004	7/29/2004	7/29/2004

NAS Sample No.:	9312F	9313F	9314F	9315F	9316F
Description:	LW2-G067	LW2-G073	LW2-G074	LW2-G085	LW2-G092
Collection Date:	7/27/2004	7/27/2004	7/27/2004	7/28/2004	7/28/2004
Receipt Date:	7/29/2004	7/29/2004	7/29/2004	7/29/2004	7/29/2004

NAS Sample No.:	9317F	9318F	9319F	9320F	9321F
Description:	LW2-G089	LW2-G080	LW2-G079	LW2-G078	LW2-G111
Collection Date:	7/28/2004	7/28/2004	7/28/2004	7/28/2004	7/28/2004
Receipt Date:	7/29/2004	7/29/2004	7/29/2004	7/29/2004	7/29/2004

NAS Sample No.:	9322F				
Description:	LW2-G083				
Collection Date:	7/28/2004				
Receipt Date:	7/29/2004				

NAS Sample No.:					
Description:					
Collection Date:					
Receipt Date:					

Error codes: 1) correction of handwriting error
2) written in wrong location: entry deleted
3) wrong date deleted, replaced with corrrect date
4) error found in measurement; measurement repeated

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NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-4 Client Windward Environmental Investigator

SEDIMENT DESCRIPTIONS -- SUPPLEMENTAL NOTES

Sample No.	Description
9208F	BLACK FINE MUD
9303F	Fine grain Brown mud
9304F	Fine grain Brown mud
9305F	Dark grey course sand & gravel
9306F	BROWN/GRAY MUDDY SAND
9307F	Brown Sandy mud
9308F	Brown sandy mud
9309F	DARK GRAY FINE MUD W/ LIGHT SAND
9310F	Brown fine mud with, faint petroleum odor
9311F	Fray muddy sand
9312F	Brown / Gray sandy mud
9313F	Gray sand (dark) w/ some mud
9314F	Brown muddy sand
9315F	Brown fine grain mud.
9316F	DARK GRAY/BROWN MUDDY SAND
9317F	Fray wet sand with light petroleum odor.
9318F	Dark gray muddy sand
9319F	Grey Sandy mud
9320F	Brown Sandy mud
9321F	Brown fine grain mud w debris
9322F	BROWN Sandy Mud one larve Chironomid found

ANC08852
BZTO104(e)008852

NORTHWESTERN AQUATIC SCIENCES — PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-4 Client Windward Environmental Investigator

TEST WATER

Source: Dechlorinated Newport, OR tap water

Date of Collection: 8-2-04, 8-3-04, 8-5-04, 8-7-04, 8-9-04, 8-10-04, 8-12-04

pH 7.1, 7.1, 7.1 7.1, 7.0, 7.1, 7.2 ($\bar{X}$ = 7.1 ± 0.1)

Cond (umhos/cm²) 160, 155, 155, 155, 160, 155, 160 ($\bar{X}$ = 157 ± 3)

Hardness (mg/L) 34, 34, 34, 34, 34, 34, 34 ($\bar{X}$ = 34 ± 0)

Alkalinity (mg/L) 30, 30, 30, 30, 30, 30, 40 ($\bar{X}$ = 31 ± 4)

Treatments: Aerated ≥ 24 hrs

TEST ORGANISMS

Species: *Chironomus tentans* Age: 3rd instar Date received: –

Source: NAS cultures

Acclimation Data:

Date	Temp. (deg.C)	DO (mg/L)	pH	Cond umhos/cm	Feeding amount (ml)	Feeding description*	Water changes	Hardness (mg/L)	Alkalinity (mg/L)
7-26-04	23.8	8.6 7.8 6d	7.8	335	4 + 3	S + T	YES	–	–
7-27-04	24.0	8.5	7.5	290	–	–	–	60	70
7-28-04	23.9	6.9 6d	7.4	345	–	–	–	102	90
7-30-04	24.0	7.2	7.2	330	4+3 fed on 8-1-04	S + T	–	–	–
8-2-04	23.6	7.6	7.6	325	4 + 3	S + T	YES	–	–
8-3-04	24.2	8.8 6d	7.4	260	–	–	–	77	60
Mean	23.9	7.8 7 6d	7.5	314				80	73
S.D.	0.2	0.8	0.2	32				21	15
(N)	6	6	6	6				3	3

Photoperiod during acclimation: 16:8, L:D

*S=Selenastrum, T=Tetra Fin suspension

TEST PROCEDURES AND CONDITIONS

Test chambers: 300 ml glass beakers

Test volumes: 100 ml of test sediment; 275 ml total volume

Replicates/treatment: (8) 8 Organisms/treatment: (80) 80 (10/REP)

Test water changes: Twice daily

Aeration: only if DO falls below 2.5 mg/L

Feeding: everyday beginning with day zero

Test temperature (deg.C): 23

Beaker placement: Total randomization

Photoperiod: 16:8, L:D

Control Sediment:

Source: From an area approximately one mile east of the Hwy. 101 bridge at Beaver Creek, approx. 8 miles south of Newport, OR.

Date collected: 7/20/04

Sieved through 0.5 -mm screen NAS# 9208F

Storage: 4°C in the dark in closed containers.

MISCELLANEOUS NOTES

LIGHT INTENSITY MEASUREMENTS:

8-3-04 101, 57 FT-CANDLES

8-8-04 42, 54 "

-631

ANC08853
BZTO104(e)008853

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-4 Client Windward Environmental Investigator _____

Test conducted in (circle one): room 1 (room 2) trailer water bath other:_____

Randomization chart: TOP AND BOTTOM SHELVES

5								165	
4								164	
3	→							163	168
2								162	167
1								161	166

Randomization chart:

Randomization chart:

Randomization chart:

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Test No 686-4 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 0 (8 13 '09) UB/BBP

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond.* (umhos/cm)	pH*	Hardness* (mg/L)	Alkalinity* (mg/L)	S (ppm)	NH3* (ppm)	Comments
13	23.0	170	7.3	7.1	60	40			Each beaker fed 1.5 ml
15	23.0	170	7.6	7.1	51	50			Prime Tropical Flakes
22	23.0	160	7.4	7.1	51	40			suspension.
24	23.1	230	7.4	10.1	60	40			Initials: GJL
30	23.0	160	7.4	7.1	~~54~~ @BBP 51	40			
31	23.0	200	7.2	7.2	68	50			
41	23.0	190	7.3	7.1	43	50			
68	22.9	170	7.2	6.9	60	50			
77	23.0	165	7.6	7.1	51	40			Water changed in all
80	23.1	170	7.4	7.1	51	50			beakers.
83	23.1	160	7.7	6.9	43	40			Time: 0705
90	23.0	170	7.4	7.1	51	40			Initials: GJL
101	22.9	165	7.2	7.0	43	40			
103	23.0	160	7.3	7.1	34	40			
122	23.0	170	7.4	7.1	51	50			
124	23.1	175	7.4	7.1	51	50			
137	23.0	170	7.7	7.2	51 ~~43~~ @BBP 8-3-04	40			Water changed in all
138	22.9	175	7.5	7.1	43	40			beakers.
140	22.9	160	7.2	7.1	43 ~~51~~ @BBP 8-3-04	40 ~~40~~ @BBP 8-3-04			Time: 1715
157	22.9	165	7.3	7.2	51	50			Initials: WTM/BBP
164	22.9	170	7.4	7.1	43	50			

*Water quality measurements to be taken.

Day 1 (8 14 '09 UB/WTM

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
13	22.8	5.6							Each beaker fed 1.5 ml
15	22.8	5.2							Prime Tropical Flakes
22	22.8	5.8							suspension.
24	22.9	7.0							Initials: GAS
30	23.0	5.8							
31	22.9	6.4							
41	22.9	6.0							
68	22.9	5.6							
77	22.9	5.8							Water changed in all
80	23.1	5.2							beakers.
83	23.1	5.1							Time: 0710
90	22.9	6.1							Initials: GJL
101	22.8	5.8							
103	22.7	5.8							
122	22.8	5.6							
124	22.8	5.7							
137	22.8	5.2							Water changed in all
138	22.9	5.6							beakers.
140	22.9	5.8							Time: 1725
157	22.9	5.8							Initials: WTM
164	22.9	5.5							

*Water quality measurements to be taken.

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No 686-4 Client Windward Environmental Investigator _____

DAILY RECORD SHEET

Day 2 (8/5 6:1) LB

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. µmhos/cm	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
13	23.1	5.2							Each beaker fed 1.5 ml
15	23.1	5.5							Prime Tropical Flakes
22	23.1	5.3							suspension.
24	23.1	6.8							Initials: LB
30	23.2	5.6							
31	23.4	5.6							
41	23.3	5.4							
68	23.3	5.2							
77	23.4	5.5							Water changed in all
80	23.4	5.4							beakers.
83	23.4	5.4							Time: 0710
90	23.2	5.3							Initials: GJ
101	23.2	6.2							
103	23.2	5.1							
122	23.2	5.4							
124	23.2	5.5							
137	23.2	5.6							Water changed in all
138	23.2	5.6							beakers.
140	23.2	5.5							Time: 1845
157	23.3	5.8							Initials: BBP
164	23.3	5.7							

*Water quality measurements to be taken.

Day 3 (8/6 6:1) LB/GJ

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. µmhos/cm	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
13	23.0	5.0							Each beaker fed 1.5 ml
15	23.2	5.2							Prime Tropical Flakes
22	23.2	5.4							suspension.
24	23.1	6.5							Initials: LB
30	23.2	5.2							
31	23.1	5.5							
41	23.1	5.2							
68	23.1	4.6							
77	23.1	4.5							Water changed in all
80	23.3	4.8							beakers.
83	23.2	5.0							Time: 0705
90	23.0	5.0							Initials: GJ
101	23.0	4.6							
103	23.0	4.8							
122	23.0	4.9							
124	23.0	4.8							
137	23.1	5.0							Water changed in all
138	23.0	4.4							beakers.
140	23.0	5.0							Time: 1800
157	23.1	5.2							Initials: BBP
164	23.1	5.4							

*Water quality measurements to be taken.

ANC08856
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NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No 686-4 Client Windward Environmental Investigator _____

DAILY RECORD SHEET

Day 4 (8/7 04) GSL

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. umhos/cm	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
13	23.1	4.2							Each beaker fed 1.5 ml
15	23.4	5.0							Prime Tropical Flakes
22	23.1	5.2							suspension.
24	23.2	6.6							Initials: GSL
30	23.4	5.6							
31	23.3	5.2							
41	23.2	4.6							
68	23.1	4.2							
77	23.1	4.1							Water changed in all
80	23.3	4.1							beakers.
83	23.3	4.6							Time: 0720
90	23.1	4.5							Initials: GSL
101	23.0	5.1							
103	22.9	4.1							
122	23.0	5.1							
124	23.0	4.5							
137	23.1	4.1							Water changed in all
138	23.0	4.2							beakers.
140	23.1	4.6							Time: 1830
157	23.1	5.0							Initials: GSL
164	23.1	5.2							

*Water quality measurements to be taken.

Day 5 (8/8 04) GSL

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. umhos/cm	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
13	23.0	4.4							Each beaker fed 1.5 ml
15	23.4	4.8							Prime Tropical Flakes
22	23.0	5.1							suspension.
24	23.1	6.4							Initials: CB
30	23.3	5.2							
31	23.1	4.8							
41	23.1	5.2							
68	23.0	4.3							
77	22.9	4.2							Water changed in all
80	22.9	4.6							beakers.
83	22.9	4.4							Time: 0645
90	22.8	4.8							Initials: CB
101	22.9	5.3							
103	23.0	5.0							
122	23.0	5.1							
124	23.0	4.4							
137	23.1	4.6							Water changed in all
138	23.0	4.5							beakers.
140	23.2	4.8							Time: 1820
157	23.1	4.9							Initials: GSL
164	23.0	4.9							

*Water quality measurements to be taken.

ANC08857
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Test No 686-4 Client Windward Environmental Investigator _____

DAILY RECORD SHEET

Day 6 (8/9/04) MSR/[illegible]

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
13	22.5	3.8							Each beaker fed 1.5 ml
15	22.8	4.1							Prime Tropical Flakes
22	22.5	4.0							suspension.
24	22.7	5.9							Initials: CB
30	22.9	4.4							
31	22.7	5.1							
41	22.7	3.9							
68	22.6	3.6							
77	22.6	3.8							Water changed in all
80	22.9	3.4							beakers.
83	22.8	4.2							Time: 0700
90	22.7	4.3							Initials: GJL/CB
101	22.6	4.7							
103	22.5	3.3							
122	22.6	3.6							
124	22.5	3.8							
137	22.6	3.3							Water changed in all
138	22.6	3.5							beakers.
140	22.7	3.8							Time: 1730
157	22.7	4.2							Initials: CB
164	22.7	3.9							

*Water quality measurements to be taken.

Day 7 (8/10/04) CB/

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
13	22.8	3.8							Each beaker fed 1.5 ml
15	23.0	4.1							Prime Tropical Flakes
22	22.9	3.9							suspension.
24	23.0	6.2							Initials: CB
30	23.0	4.4							
31	23.0	5.0							
41	23.1	4.0							
68	22.9	3.2							
77	22.9	4.0							Water changed in all
80	23.0	3.4							beakers.
83	23.0	3.8							Time: 0705
90	22.9	4.2							Initials: GJL
101	22.8	4.8							
103	22.8	4.4							
122	22.7	4.9							
124	22.8	4.0							
137	22.8	4.2							Water changed in all
138	22.8	3.6							beakers.
140	22.9	3.8							Time: 1750
157	22.9	4.6							Initials: GJL
164	22.9	4.0							

*Water quality measurements to be taken.

NORTHWESTERN AQUATIC SCIENCES — PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No 686-4 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 8 (8/11/04) GJ

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. µmhos/cm	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
13	22.9	3.2							Each beaker fed 1.5 ml
15	23.1	2.8							Prime Tropical Flakes
22	23.1	4.6							suspension.
24	23.1	3.7							Initials: GJ
30	23.2	4.3							
31	23.1	4.7							
41	23.1	3.4							
68	23.1	3.0							
77	23.1	3.8							Water changed in all
80	23.1	3.1							beakers.
83	23.2	3.6							Time: 0655
90	23.1	2.9							Initials: GJ
101	23.0	3.2							
103	22.9	3.1							
122	23.0	2.9							
124	23.0	3.2							
137	23.0	3.2							Water changed in all
138	23.0	2.9							beakers.
140	23.0	3.0							Time: 1730
157	23.0	3.6							Initials: CPM
164	23.0	3.2							

*Water quality measurements to be taken.

Day 9 (8/12/04) MM/GJ

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. µmhos/cm	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
13	23.0	4.1							Each beaker fed 1.5 ml
15	23.1	4.4							Prime Tropical Flakes
22	23.0	4.1							suspension.
24	23.0	5.2							Initials: GJ
30	23.1	5.0							
31	23.1	5.2							
41	23.1	4.3							
68	23.0	4.2							
77	22.9	4.7							Water changed in all
80	23.1	4.7							beakers.
83	23.1	5.1							Time: 0715
90	23.0	3.4							Initials: GJ
101	23.0	3.9							
103	22.9	3.7							
122	23.0	3.8							
124	23.0	4.2							
137	23.1	4.2							Water changed in all
138	23.1	2.9							beakers.
140	23.1	4.2							Time: 1715
157	23.1	4.6							Initials: MM/GJ
164	23.1	4.1							

*Water quality measurements to be taken.

ANC08859
BZTO104(e)008859

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No 686-4 Client Windward Environmental Investigator _____

DAILY RECORD SHEET

Day 10 (8/3/04 CB/CJJ/BBP

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond.* umhos/cm	pH*	Hardness* (mg/L)	Alkalinity* (mg/L)	S (ppm)	NH3* (ppm)	Comments
13	23.0	4.3	150	6.8	43	40			Each beaker fed 1.5 ml
15	23.2	5.9	165	6.8	43	40			Prime Tropical Flakes
22	23.1	5.8	160	6.7	43	40			suspension.
24	23.1	6.4	180	8.9	60	60			Initials: —
30	23.3	6.2	158	6.7	43	40			
31	23.2	6.0	165	6.8	43	50			
41	23.2	5.8	170	6.8	43	40			
68	23.1	5.4	160	6.7	43	40			
77	23.0	5.7	160	6.7	43	40			Water changed in all
80	23.2	5.2	165	6.6	43	40			beakers.
83	23.1	5.3	160	6.8	43	40			Time: 0710
90	23.1	4.6	160	6.6	43	50			Initials: CB
101	23.0	5.4	160	6.6	43	40			
103	22.9	5.1	160	6.6	43	50			
122	23.1	5.2	160	6.6	43	40			
124	23.0	5.2	165	6.6	43	40			
137	23.1	5.2	170	6.7	51	40			Water changed in all
138	23.1	5.8	170	6.6	43	40			beakers.
140	23.2	5.1	165	6.6	43	40			Time:
157	23.2	5.3	165	6.7	51	40			Initials:
164	23.1	6.0	165	6.7	60	50			

*Water quality measurements to be taken.

Day _____(/ /)

Beaker No.	Temp. (deg.C)	DO (ppm)	Cond. umhos/cm	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
13									Each beaker fed 1.5 ml
15									Prime Tropical Flakes
22									suspension.
24									Initials:
30									
31									
41									
68									
77									Water changed in all
80									beakers.
83									Time:
90									Initials:
101									
103									
122									
124									
137									Water changed in all
138									beakers.
140									Time:
157									Initials:
164									

*Water quality measurements to be taken.

ANC08860
BZTO104(e)008860

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-4 Client Windward Enviromental Investigator _____

DAY 20 TEST TERMINATION SHEET

Beaker No.	Number of survivors	Initials
1	6	UB
2	Ø	GJL
3	Ø	GJL
4	6	UB
5	6	GJL
6	10	UB
7	7	GJL
8	Ø	UB
9	7	UB
10	7	GJL
11	9	UB
12	6	GJL
13	7	UB
14	9	UB
15	9	GJL
16	6	UB
17	8	GJL
18	10	GJL
19	8	UB
20	9	GJL
21	Ø	UB
22	3	UB
23	8	WTM
24	Ø	GJL
25	10	UB
26	10	GJL
27	10	GJL
28	4	UB
29	6	UB
30	6	GJL
31	Ø	UB
32	8	WTM
33	5	GJL
34	5	WTM
35	7	UB
36	7	WTM
37	8	UB
38	6	GJL
39	6	UB
40	8	GJL
41	8	UB
42	10	GJL
43	10	UB
44	8	WTM
45	5	UB

Beaker No.	Number of survivors	Initials
46	9	GJL
47	Ø	UB
48	9	WTM
49	10	UB
50	10	GJL
51	10	UB
52	10	WTM
53	10	GJL
54	10	UB
55	9	WTM
56	10	UB
57	Ø	GJL
58	9	GJL
59	7	UB
60	8	WTM
61	7	GJL
62	5	UB
63	5	UB
64	8	WTM
65	6	WTM
66	10	WTM
67	7	UB
68	9	UB
69	9	WTM
70	9	UB
71	8	UB
72	7	UB
73	9	UB
74	6	UB
75	8	UB
76	10	UB
77	10	UB
78	6	UB
79	7	UB
80	9	UB
81	5	UB
82	10	UB
83	9	UB
84	10	RBM
85	9	GJL
86	10	UB
87	7	UB
88	9	GJL
89	Ø	RBM
90	7	UB

ANC08861
BZTO104(e)008861

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-4 Client Windward Enviromental Investigator _____

DAY 20 TEST TERMINATION SHEET

Beaker No.	Number of survivors	Initials
91	9	GJ2
92	10	CB
93	10	GJ2
94	10	GR
95	9	CB
96	10	WTM
97	10	GJ2
98	10	CB
99	7	GR
100	Ø - 1 larva	CB
101	7	WTM
102	10	GJ2
103	9	GR
104	8	WTM
105	9	CB
106	9	GJ2
107	7	CB
108	10	GJ2
109	7	GR
110	9	WTM
111	8	CB
112	7	GR
113	5	GJ2
114	7	WTM
115	7	CB
116	9	CB
117	Ø	GR
118	8	GJ2
119	7	WTM
120	8	GR
121	9	CB
122	10	GJ2
123	8	WTM
124	10	GJ2
125	10	GR
126	9	CB
127	10	WTM
128	10	CB
129	10	GR
130	7	GJ2
131	9	CB
132	9	GJ2
133	7	WTM
134	10	CB
135	9	CB

Beaker No.	Number of survivors	Initials
136	8	CB
137	9	GJ2
138	8	WTM
139	10	CB
140	10	GJ2
141	10	CB
142	9	WTM
143	10	CB
144	9	GJ2
145	Ø	CB
146	Ø	WTM
147	9	CB
148	8	GJ2
149	10	CB
150	9	WTM
151	9	CB
152	8	GJ2
153	11	CB
154	8	WTM
155	10	CB
156	10	CB
157	10	GJ2
158	8	WTM
159	9	CB
160	10	GJ2
161	9	CB
162	7	CB
163	9	GJ2
164	9	CB
165	7	GJ2
166	10	CB
167	9	CB
168	9	GJ2
169		
170		
171		
172		
173		
174		
175		
176		
177		
178		
179		
180		

ANC08862
BZTO104(e)008862

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-4 Client Windward Environmental Investigator

Tare: Date 8-3-04 Oven temp (C.) 64 Drying time (hr.) 24 Initials GJL
Standard Weights: 10 mg: 10.006 100mg: 100.017

Final #1 Date 8-4-04 Oven temp (C.) 64 Drying time (hr.) 24 Initials GJL
Standard Weights: 10 mg: 10.004 100mg: 100.014

Final: #2 Date 8-6-04 Oven temp (C.) 64 Drying time (hr.) 24 Initials GJL
Standard Weights: 10 mg: 10.007 100mg: 100.017

Equip. used: Oven: BLUE M Balance: SARTORIUS M3P

(Dry overnight at 60-90 degrees C)

Pan #	Tare wt. (mg)	Total wt. (mg) 1	Total wt. (mg) 2	#weighed	Comments
1	103.88	109.64	107.54	20	
2	100.15	104.29	104.18	20	
3	106.54	110.70	110.60	20	

ANC08863
BZTO104(e)008863

NORTHWESTERN AQUATIC SCIENCES — PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-4 Client Windward Environmental Investigator

WEIGHING DATA SHEET

Tare: Date 8-31-04 Oven temp (C.) 550 Drying time (hr.) 2 Initials JMF
Standard Weights: 10 mg: 10.0085 JF 100mg: 100.0884 0.5 F

Final #1: Date 8-16-04 Oven temp (C.) 64 Drying time (hr.) 24 Initials JMF
Standard Weights: 10 mg: 10.007 100mg: 100.019

Final #2: Date 8-18-04 Oven temp (C.) 67 Drying time (hr.) 24 Initials JMF
Standard Weights: 10 mg: 10.007 100mg: 100.020

Final #3: Date 8-19-04 Oven temp (C.) 550 Drying time (hr.) 2 Initials JMF
Standard Weights: 10 mg: 10.007 100mg: 100.022

Equip. used: Oven BLUE M Balance Sartorius M3P
Furnace

(Dry overnight at 60-90 degrees C) (Final ashing is at 550 degrees C for 2 hours)

Bkr. #	Pan #	Tare wt. (mg)	Total wt. (mg) 1	Total wt. (mg) 2	no. weighed	put into pans-initials	Ashed weight (mg)
1	1	101.89	110.14	110.18	6	MSR	103.95
2	2	112.34	—	—	Ø		—
3	3	96.62	—	—	Ø		—
4	4	104.93	113.71	113.74	6	MSR	107.19
5	5	101.61	109.85	109.87	6	MSR	103.77
6	6	95.05	104.76	104.78	10	MSR	97.17
7	7	104.44	110.83	110.87	7	MSR	105.83
8	8	98.44	—	—	Ø		—
9	9	107.66	117.14	117.16	7	MSR	109.93
10	10	100.76	109.03	109.07	7	MSR	102.32
11	11	97.16	105.93	105.95	9	MSR	99.74
12	12	105.98	112.49	112.49	6	MSR	107.41
13	13	117.12	126.54	126.58	7	MSR	119.78
14	14	104.13	115.46	115.50	9	MSR	107.67
15	15	110.81	122.84	122.89	9	MSR	114.79
16	16	96.28	104.34	104.36	6	MSR	98.14
17	17	99.45	108.45	108.48	8	MSR	101.99
18	18	99.07	112.82	112.83	10	MSR	102.50
19	19	115.16	127.11	127.14	8	MSR	118.53
20	20	108.99	120.20	120.25	8 *	MSR	~~111.66~~
21	21	96.93	—	—	Ø		—
22	22	107.44	118.27	118.31	8	MSR	110.99
23	23	102.92	111.70	111.72	8	MSR	105.40
24	24	94.99	—	—	Ø		—
25	25	99.15	~~111.45~~ 53 JF	111.57	10	MSR	101.62
26	26	109.27	122.84	122.88	10	MSR	112.97
27	27	102.41	113.78	113.83	10	MSR	105.50
28	28	98.64	104.75	104.80	4	MSR	100.65
29	29	102.00	108.98	109.02	6	MSR	103.61
30	30	110.91	120.71	120.74	6	MSR	113.48
31	31	101.15	—	—	Ø	JMF	—
32	32	103.74	112.27	112.22	8	JMF	106.24
33	33	118.85	125.77	125.74	5	JMF	119.79

* one missing; there was a small piece of red sand that might have been counted as a larva - MSR

ANC08864
BZTO104(e)008864

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-4 Client Windward Environmental Investigator _____

WEIGHING DATA SHEET

See page _____ for information on drying times and temperatures, standard weights,etc.

Bkr. #	Pan #	Tare wt. (mg)	Total wt. (mg) 1	Total wt. (mg) 2	no. weighed	put into pans-initials	Ash weight (mg)
34	34	96.37	105.24	105.21	6	JMH	99.00
35	35	101.81	110.21	110.19	7	JMH	104.00
36	36	111.21	122.80	122.77	7	JMH	115.85
37	37	100.42	108.49	108.47	8	JMH	102.57
38	38	113.26	122.92	122.88	6	JMH	116.33
39	39	111.41	120.71	120.68	6	JMH	113.85
40	40	96.66	109.63	109.60	8	JMH	100.89
41	41	107.47	118.88	118.87	8	JMH	110.34
42	42	105.26	118.97	118.94	9	JMH	108.52
43	43	116.26	132.95	132.88	10	JMH	121.15
44	44	96.47	104.96	104.95	8	JMH	98.75
45	45	117.02	126.93	126.92	5	JMH	119.66
46	46	99.10	111.67	111.66	9	JMH	102.12
47	47	102.81	—	—	0	JMH	—
48	48	97.42	107.06	107.07	9	JMH	99.60
49	49	97.26	JF 111.6496	111.45	10	JMH	102.43
50	50	96.08	110.44	110.43	10	JMH	101.07
51	51	100.21	114.10	114.11	10	WTM	103.71
52	52	95.09	107.08	107.08	10	WTM	99.22
53	53	98.44	109.53	109.57	10	WTM	101.14
54	54	107.33	120.77	120.81	10	WTM	111.28
55	55	102.26	113.03	113.07	9	WTM	105.38
56	56	100.83	111.02	111.06	10	WTM	104.12
57	57	110.80	—	—	0	WTM	—
58	58	106.87	116.88	116.93	9	WTM	110.43
59	59	97.47	105.67	105.72	7	WTM	100.48
60	60	102.87	115.56	115.60	8	WTM	107.36
61	61	105.64	119.94	119.91	7	WTM	109.93
62	62	99.41	109.59	109.56	5	WTM	102.09
63	63	96.78	103.62	103.61	5	WTM	98.25
64	64	115.09	130.12	130.06	8	WTM	118.83
65	65	111.56	124.49	124.44	WTM 2&6	WTM	114.28
66	66	105.49	120.64	120.77	10	WTM	110.52
67	67	104.72	117.01	117.02	7	WTM	109.41
68	68	103.96	118.01	118.02	9	WTM	108.80
69	69	97.50	112.30	112.30	9	WTM	102.56
70	70	111.82	129.38	129.41	9	WTM	119.00
71	71	98.92	111.45	111.44	8	JMH	103.61
72	72	103.00	107.61	107.63	7	JMH	104.27
73	73	113.53	126.08	126.02	9	JMH	117.84
74	74	99.20	112.56	112.63	6	JMH	104.24
75	75	104.04	114.09	114.14	8	JMH	106.90
76	76	108.99	121.95	121.98	10	JMH	112.89

ANC08865
BZTO104(e)008865

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-4 Client Windward Environmental Investigator

WEIGHING DATA SHEET

See page _____ for information on drying times and temperatures, standard weights,etc.

Bkr. #	Pan #	Tare wt. (mg)	Total wt. (mg) 1	Total wt. (mg) 2	no. weighed	put into pans-initials	Ash weight (mg)
77	77	96.50	111.11	111.15	10	JMH	101.47
78	78	104.07	107.81	107.84	6	JMH	105.06
79	79	98.96	108.78	108.83	7	JMH	101.76
80	80	114.54	129.77	129.84	9	JMH	119.96
81	81	107.98	109.46	109.49	5	JMH	108.24
82	82	104.69	120.11	120.22	10	JMH	110.13
83	83	97.12	111.10	111.15	9	JMH	101.56
84	84	105.57	122.40	122.45	10	JMH	111.27
85	85	103.56	118.20	118.29	9	JMH	108.64
86	86	98.61	115.32	115.39	10	JMH	104.50
87	87	98.78	109.50	109.56	7	JMH	102.47
88	88	101.22	114.75	114.81	9	JMH	106.02
89	89	95.97	—	—	0		—
90	90	92.02	104.51	104.57	7	JMH	96.21
91	91	108.58	122.21	122.35	9	MJR	113.32
92	92	103.83	122.32	122.50	10	MJR	110.98
93	93	98.04	111.83	112.00	10	MJR	102.00
94	94	96.94	112.58	112.81	9 *	MJR	101.84
95	95	102.56	112.37	112.53	9	MJR	104.96
96	96	99.03	115.99	116.26	10	MJR	105.59
97	97	100.20	117.26	117.47	10	MJR	105.68
98	98	98.95	115.74	115.95	10	MJR	105.09
99	99	108.27	120.90	121.06	7	MJR	112.80
100	100	105.25	—	—	0	MJR	—
101	101	105.80	113.51	113.61	7	MJR	107.61
102	102	107.52	121.79	122.98	10	MJR	111.89
103	103	96.98	112.39	112.58	9	MJR	101.77
104	104	106.53	120.29	120.46	8	MJR	110.59
105	105	107.01	122.19	122.38	9	MJR	111.05
106	106	106.94	120.59	120.79	9	MJR	110.66
107	107	112.09	122.31	122.45	7	MJR	115.18
108	108	104.28	117.74	117.93	10	MJR	107.39
109	109	98.17	103.68	103.77	7	MJR	99.06
110	110	105.71	119.07	119.25	9	MJR	109.18
111	111	100.06	114.88	115.03	8	MJR	104.35
112	112	102.56	115.78	115.94	7	MJR	105.81
113	113	101.84	110.69	110.82	5	MJR	103.96
114	114	103.56	114.35	114.49	7	MJR	106.22
115	115	97.18	110.45	110.59	7	MJR	101.16
116	116	89.86	103.78	103.93	9	MJR	93.67
117	117	91.49	—	—	0	MJR	—
118	118	106.65	119.00	119.11	8	MJR	109.79
119	119	101.05	112.87	112.98	7	MJR	103.26

* one missing

ANC08866
BZTO104(e)008866

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-4 Client Windward Environmental Investigator

WEIGHING DATA SHEET

See page _____ for information on drying times and temperatures, standard weights,etc.

Bkr. #	Pan #	Tare wt. (mg)	Total wt. (mg) 1	Total wt. (mg) 2	no. weighed	put into pans-initials	Ash weight (mg)
120	120	99.02	108.11	108.19	8 9	JMH (3)	100.604
121	121	102.23	117.53	117.56	9 10	JMH	106.47
122	122	103.40	118.76	118.80	10	JMH	108.14
123	123	113.79	128.39	128.42	8	JMH	118.53
124	124	108.92	124.68	124.73	10	JMH	113.60
125	125	109.20	124.85	124.90	10	JMH	114.44
126	126	101.15	116.12	116.15	9	JMH	104.39
127	127	99.36	116.70	116.73	10	JMH	104.12
128	128	98.31	113.26	113.31	10	JMH	102.63
129	129	108.38	121.55	121.62	10	JMH	112.26
130	130	104.95	118.92	118.99	7	JMH	108.30
131	131	100.25	113.48	113.53	9	JMH	104.26
132	132	95.10	110.80	110.86	9	JMH	99.27
133	133	109.60	114.38	114.44	7	JMH	110.55
134	134	104.20	121.80	121.89	10	JMH	109.43
135	135	106.83	122.20	122.29	9	JMH	111.06
136	136	107.41	121.35	121.41	8	JMH	111.42
137	137	97.21	113.54	113.61	9	JMH	100.56
138	138	114.22	127.44	127.50	8	JMH	117.79
139	139	112.74	129.19	129.23	10	JMH	117.98
140	140	103.52	122.12	122.18	10	JMH	110.91
141	141	108.61	120.89	120.95	10	JMH	111.94
142	142	102.95	115.40	115.45	9	JMH	105.84
143	143	109.28	124.47	124.52	10	JMH	113.83
144	144	100.70	116.05	116.10	9	JMH	104.12
145	145	97.70	—	—	0	JMH	—
146	146	97.74	107.56	107.63	8	JMH	99.60
147	147	98.55	111.93	111.99	7	JMH	101.84
148	148	117.22	127.74	127.80	8	JMH	119.60
149	149	106.02	118.25	118.31	10	JMH	108.80
150	150	94.26	109.43	109.58	9	MLR	98.40
151	151	114.39	127.38	127.50	9	MLR	117.65
152	152	110.13	123.69	123.82	8	MLR	113.95
153	153	107.89	123.83	123.98	11	MLR	112.91
154	154	111.14	116.04	116.13	8	MLR	112.14
155	155	105.91	120.75	120.87	10	MLR	110.66
156	156	101.76	119.35	119.48	10	MLR	107.48
157	157	100.53	115.86	115.98	10	MLR	104.44
158	158	97.67	110.49	110.60	8	MLR	101.34
159	159	100.28	114.04	114.16	9	MLR	103.82
160	160	97.28	110.99	111.08	10	JMH	101.70
161	161	108.16	120.92	121.01	9	JMH	110.92
162	162	108.61	121.33	121.42	7	JMH	111.30

ANC08867
BZTO104(e)008867

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-4 Client Windward Environmental Investigator _____

WEIGHING DATA SHEET

See page _____ for information on drying times and temperatures, standard weights,etc.

Bkr. #	Pan #	Tare wt. (mg)	Total wt. (mg) 1	Total wt. (mg) 2	no. weighed	put into pans-initials	Ash weight (mg)
163	163	107.19	122.85	122.95	9	JMH	111.63
164	164	94.92	109.94	110.06	9	JMH	99.84
165	165	96.93	109.16	109.29	7	JMH	100.17
166	166	89.09	105.37	105.49	10	JMH	93.72
167	167	110.21	124.15	124.27	9	JMH	113.86
168	168	106.26	120.60	120.70	9	JMH	109.24
169	169						
170	170						
171	171						
172	172						
173	173						
174	174						
175	175						
176	176						
177	177						
178	178						
179	179						
180	180						
181	181						
182	182						
183	183						
184	184						
185	185						
186	186						
187	187						
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189	189						
190	190						
191	191						
192	192						
193	193						
194	194						
195	195						
196	196						
197	197						
198	198						
199	199						
200	200						
201	201						
202	202						
203	203						
204	204						
205	205						

ANC08868
BZTO104(e)008868

Test Number: 686-4

Freshwater Sediment Test
10-Day Chironomus tentans

BKR	NAS SMPL	CLIENT DESCRIP	REPL	
42	9208F	Control	1	
53	9208F	Control	2	
7	9208F	Control	3	
48	9208F	Control	4	
161	9208F	Control	5	
93	9208F	Control	6	
45	9208F	Control	7	
41	9208F	Control	8	wq replicate
17	9303F	LW2-G020	1	
106	9303F	LW2-G020	2	
82	9303F	LW2-G020	3	
87	9303F	LW2-G020	4	
49	9303F	LW2-G020	5	
76	9303F	LW2-G020	6	
118	9303F	LW2-G020	7	
90	9303F	LW2-G020	8	wq replicate
128	9304F	LW2-G024	1	
58	9304F	LW2-G024	2	
74	9304F	LW2-G024	3	
88	9304F	LW2-G024	4	
123	9304F	LW2-G024	5	
28	9304F	LW2-G024	6	
134	9304F	LW2-G024	7	
122	9304F	LW2-G024	8	wq replicate
119	9305F	LW2-G025	1	
51	9305F	LW2-G025	2	
33	9305F	LW2-G025	3	
46	9305F	LW2-G025	4	
168	9305F	LW2-G025	5	
65	9305F	LW2-G025	6	
25	9305F	LW2-G025	7	
137	9305F	LW2-G025	8	wq replicate
144	9306F	LW2-G027	1	
163	9306F	LW2-G027	2	
9	9306F	LW2-G027	3	
127	9306F	LW2-G027	4	
105	9306F	LW2-G027	5	
43	9306F	LW2-G027	6	
4	9306F	LW2-G027	7	
157	9306F	LW2-G027	8	wq replicate
143	9307F	LW2-G033	1	
34	9307F	LW2-G033	2	
136	9307F	LW2-G033	3	
67	9307F	LW2-G033	4	
59	9307F	LW2-G033	5	
56	9307F	LW2-G033	6	
71	9307F	LW2-G033	7	
68	9307F	LW2-G033	8	wq replicate
111	9308F	LW2-G034	1	
61	9308F	LW2-G034	2	
70	9308F	LW2-G034	3	
64	9308F	LW2-G034	4	
35	9308F	LW2-G034	5	
150	9308F	LW2-G034	6	
85	9308F	LW2-G034	7	
124	9308F	LW2-G034	8	wq replicate

ANC08869
BZTO104(e)008869

Test Number: 686-4

Freshwater Sediment Test
10-Day Chironomus tentans

BKR	NAS SMPL	CLIENT DESCRIP	REPL	
32	9309F	LW2-G035	1	
156	9309F	LW2-G035	2	
129	9309F	LW2-G035	3	
29	9309F	LW2-G035	4	
11	9309F	LW2-G035	5	
135	9309F	LW2-G035	6	
139	9309F	LW2-G035	7	
15	9309F	LW2-G035	8	wq replicate
110	9310F	LW2-G061	1	
99	9310F	LW2-G061	2	
73	9310F	LW2-G061	3	
26	9310F	LW2-G061	4	
23	9310F	LW2-G061	5	
98	9310F	LW2-G061	6	
54	9310F	LW2-G061	7	
13	9310F	LW2-G061	8	wq replicate
162	9311F	LW2-G062	1	
146	9311F	LW2-G062	2	
159	9311F	LW2-G062	3	
141	9311F	LW2-G062	4	
10	9311F	LW2-G062	5	
12	9311F	LW2-G062	6	
16	9311F	LW2-G062	7	
80	9311F	LW2-G062	8	wq replicate
102	9312F	LW2-G067	1	
52	9312F	LW2-G067	2	
84	9312F	LW2-G067	3	
40	9312F	LW2-G067	4	
125	9312F	LW2-G067	5	
167	9312F	LW2-G067	6	
1	9312F	LW2-G067	7	
103	9312F	LW2-G067	8	wq replicate
39	9313F	LW2-G073	1	
153	9313F	LW2-G073	2	
91	9313F	LW2-G073	3	
55	9313F	LW2-G073	4	
147	9313F	LW2-G073	5	
5	9313F	LW2-G073	6	
132	9313F	LW2-G073	7	
83	9313F	LW2-G073	8	wq replicate
18	9314F	LW2-G074	1	
69	9314F	LW2-G074	2	
112	9314F	LW2-G074	3	
97	9314F	LW2-G074	4	
130	9314F	LW2-G074	5	
86	9314F	LW2-G074	6	
126	9314F	LW2-G074	7	
22	9314F	LW2-G074	8	wq replicate
72	9315F	LW2-G085	1	
133	9315F	LW2-G085	2	
78	9315F	LW2-G085	3	
81	9315F	LW2-G085	4	
44	9315F	LW2-G085	5	
109	9315F	LW2-G085	6	
154	9315F	LW2-G085	7	
31	9315F	LW2-G085	8	wq replicate

ANC08870
BZTO104(e)008870

Test Number: 686-4

Freshwater Sediment Test
10-Day Chironomus tentans

BKR	NAS SMPL	CLIENT DESCRIP	REPL	
21	9316F	LW2-G092	1	
8	9316F	LW2-G092	2	
89	9316F	LW2-G092	3	
47	9316F	LW2-G092	4	
57	9316F	LW2-G092	5	
117	9316F	LW2-G092	6	
145	9316F	LW2-G092	7	
24	9316F	LW2-G092	8	wq replicate
95	9317F	LW2-G089	1	
79	9317F	LW2-G089	2	
2	9317F	LW2-G089	3	
3	9317F	LW2-G089	4	
75	9317F	LW2-G089	5	
120	9317F	LW2-G089	6	
37	9317F	LW2-G089	7	
101	9317F	LW2-G089	8	wq replicate
63	9318F	LW2-G080	1	
165	9318F	LW2-G080	2	
19	9318F	LW2-G080	3	
131	9318F	LW2-G080	4	
121	9318F	LW2-G080	5	
94	9318F	LW2-G080	6	
149	9318F	LW2-G080	7	
140	9318F	LW2-G080	8	wq replicate
66	9319F	LW2-G079	1	
62	9319F	LW2-G079	2	
14	9319F	LW2-G079	3	
6	9319F	LW2-G079	4	
152	9319F	LW2-G079	5	
114	9319F	LW2-G079	6	
160	9319F	LW2-G079	7	
30	9319F	LW2-G079	8	wq replicate
50	9320F	LW2-G078	1	
113	9320F	LW2-G078	2	
96	9320F	LW2-G078	3	
104	9320F	LW2-G078	4	
142	9320F	LW2-G078	5	
36	9320F	LW2-G078	6	
107	9320F	LW2-G078	7	
77	9320F	LW2 G078	8	wq replicate
60	9321F	LW2-G111	1	
100	9321F	LW2-G111	2	
108	9321F	LW2-G111	3	
166	9321F	LW2-G111	4	
148	9321F	LW2-G111	5	
20	9321F	LW2-G111	6	
38	9321F	LW2-G111	7	
138	9321F	LW2-G111	8	wq replicate
92	9322F	LW2-G083	1	
115	9322F	LW2-G083	2	
155	9322F	LW2-G083	3	
27	9322F	LW2-G083	4	
158	9322F	LW2-G083	5	
116	9322F	LW2-G083	6	
151	9322F	LW2-G083	7	
164	9322F	LW2-G083	8	wq replicate

ANC08871
BZTO104(e)008871

TEST DATA ANALYSIS RECORDS

Test Number: 686-4

Freshwater Sediment Test
10-Day Chironomus tentans

Endpoints Data Entry and Calculations File

BKR=beaker number
INIT=initial number
SURV=number survivors
MORT=number dead=INIT-SURV
PSURV=%survival=100(SURV/INIT)
PMORT=%mortality=100(MORT/INIT)

TARE WT= ashed weight of pan used for that replicate at test termination (mg), or dry weight of pan if ash-free dry weight is not an endpoint
WT COUNT= number of test organisms weighed at test end
DRY WT= TARE WT + dry weight of test organisms recovered at test termination (mg)
TWT=total biomass=DRY WT-TARE WT
WT=average individual biomass=TWT/WT COUNT

ASHED DRY WT= weight of ashed pan + weight of ashed test organisms recovered at test termination
TAFDW=DRY WT - ASHED DRY WT= total ash-free organism weight for given replicate
AFDW=average individual ash-free biomass=TAFDW/WT COUNT

INITIAL WEIGHT

pan #	tare wt (mg)	final wt (mg)	wt count	avg. wt/ organism
1	103.88	107.64	20	0.19
2	100.15	104.18	20	0.20
3	106.54	110.60	20	0.20

INDEX	BKR	NAS SMPL	CLIENT DESCRIP	REPL		INIT	SURV	MORT	PSURV	PMORT	TARE WT (mg)	WT COUNT	DRY WT (mg)	ASHED DRY WT (mg)	TWT (mg)	WT (mg)	TAFDW (mg)	AFDW (mg)		SURV	MORT	PSURV	PMORT	WT	AFDW
1	42	9208F	Control	1		10	10	0	100.0	0.0	105.26	9	118.94	106.52	13.68	1.52	10.42	1.16							
2	53	9208F	Control	2		10	10	0	100.0	0.0	98.44	10	109.57	101.14	11.13	1.11	8.43	0.84							
3	7	9208F	Control	3		10	7	3	70.0	30.0	104.44	7	110.87	105.83	6.43	0.92	5.04	0.72							
4	48	9208F	Control	4		10	9	1	90.0	10.0	97.42	9	107.07	99.60	9.65	1.07	7.47	0.83							
5	161	9208F	Control	5		10	9	1	90.0	10.0	108.16	9	121.01	110.92	12.85	1.43	10.09	1.12	Mean	8.5	1.5	85.0	15.0	1.36	1.02
6	93	9208F	Control	6		10	10	0	100.0	0.0	98.04	10	112.00	102.00	13.96	1.40	10.00	1.00	SD	1.8	1.8	17.7	17.7	0.33	0.23
7	45	9208F	Control	7		10	5	5	50.0	50.0	117.02	5	126.92	119.66	9.90	1.98	7.26	1.45	n	8	8	8	8	8	8
8	41	9208F	Control	8	wq replicate	10	8	2	80.0	20.0	107.47	8	118.87	110.34	11.40	1.43	8.53	1.07							
9	17	9303F	LW2-G020	1		10	8	2	80.0	20.0	99.45	8	108.48	101.99	9.03	1.13	6.49	0.81							
10	106	9303F	LW2-G020	2		10	9	1	90.0	10.0	106.94	9	120.79	110.66	13.85	1.54	10.13	1.13							
11	82	9303F	LW2-G020	3		10	10	0	100.0	0.0	104.69	10	120.22	110.13	15.53	1.55	10.09	1.01							
12	87	9303F	LW2-G020	4		10	7	3	70.0	30.0	98.78	7	109.56	102.47	10.78	1.54	7.09	1.01							
13	49	9303F	LW2-G020	5		10	10	0	100.0	0.0	97.26	10	111.45	102.43	14.19	1.42	9.02	0.90	Mean	8.6	1.4	86.3	13.8	1.48	1.02
14	76	9303F	LW2-G020	6		10	10	0	100.0	0.0	108.99	10	121.98	112.89	12.99	1.30	9.09	0.91	SD	1.3	1.3	13.0	13.0	0.20	0.14
15	118	9303F	LW2-G020	7		10	8	2	80.0	20.0	106.65	8	119.11	109.79	12.46	1.56	9.32	1.17	n	8	8	8	8	8	8
16	90	9303F	LW2-G020	8	wq replicate	10	7	3	70.0	30.0	92.02	7	104.57	96.21	12.55	1.79	8.36	1.19							
17	128	9304F	LW2-G024	1		10	10	0	100.0	0.0	98.31	10	113.31	102.63	15.00	1.50	10.68	1.07							
18	58	9304F	LW2-G024	2		10	9	1	90.0	10.0	106.87	9	116.93	110.43	10.06	1.12	6.50	0.72							
19	74	9304F	LW2-G024	3		10	6	4	60.0	40.0	99.20	6	112.63	104.24	13.43	2.24	8.39	1.40							
20	88	9304F	LW2-G024	4		10	9	1	90.0	10.0	101.22	9	114.81	106.02	13.59	1.51	8.79	0.98							
21	123	9304F	LW2-G024	5		10	8	2	80.0	20.0	113.79	8	128.42	118.53	14.63	1.83	9.69	1.24	Mean	8.3	1.8	82.5	17.5	1.63	1.09
22	28	9304F	LW2-G024	6		10	4	6	40.0	60.0	98.64	4	104.80	100.65	6.16	1.54	4.15	1.04	SD	2.2	2.2	21.9	21.9	0.32	0.20
23	134	9304F	LW2-G024	7		10	10	0	100.0	0.0	104.20	10	121.89	109.43	17.69	1.77	12.46	1.25	n	8	8	8	8	8	8
24	122	9304F	LW2-G024	8	wq replicate	10	10	0	100.0	0.0	103.40	10	118.80	108.14	15.40	1.54	10.66	1.07							
25	119	9305F	LW2-G025	1		10	7	3	70.0	30.0	101.05	7	112.98	103.28	11.93	1.70	9.70	1.39							
26	51	9305F	LW2-G025	2		10	10	0	100.0	0.0	100.21	10	114.11	103.71	13.90	1.39	10.40	1.04							
27	33	9305F	LW2-G025	3		10	5	5	50.0	50.0	118.65	5	125.74	119.79	6.89	1.38	5.95	1.19							
28	46	9305F	LW2-G025	4		10	9	1	90.0	10.0	99.10	9	111.66	102.12	12.56	1.40	9.54	1.06							
29	168	9305F	LW2-G025	5		10	9	1	90.0	10.0	106.26	9	120.70	109.24	14.44	1.60	11.46	1.27	Mean	8.1	1.9	81.3	18.8	1.59	1.25
30	65	9305F	LW2-G025	6		10	6	4	60.0	40.0	111.56	6	124.44	114.28	12.88	2.15	10.16	1.69	SD	1.9	1.9	18.9	18.9	0.30	0.24
31	25	9305F	LW2-G025	7		10	10	0	100.0	0.0	99.15	10	111.57	101.62	12.42	1.24	9.95	0.99	n	8	8	8	8	8	8
32	137	9305F	LW2-G025	8	wq replicate	10	9	1	90.0	10.0	97.21	9	113.61	100.56	16.40	1.82	13.05	1.45							
33	144	9306F	LW2-G027	1		10	9	1	90.0	10.0	100.70	9	116.10	104.12	15.40	1.71	11.98	1.33							
34	153	9306F	LW2-G027	2		10	9	1	90.0	10.0	107.19	9	122.95	111.63	15.76	1.75	11.32	1.26							
35	9	9306F	LW2-G027	3		10	7	3	70.0	30.0	107.66	7	117.16	109.93	9.50	1.36	7.23	1.03							
36	127	9306F	LW2-G027	4		10	10	0	100.0	0.0	99.36	10	116.73	104.12	17.37	1.74	12.61	1.26							
37	105	9306F	LW2-G027	5		10	9	1	90.0	10.0	107.01	9	122.38	111.05	15.37	1.71	11.33	1.26	Mean	8.6	1.3	87.5	12.5	1.62	1.20
38	43	9306F	LW2-G027	6		10	10	0	100.0	0.0	116.26	10	132.86	121.15	16.62	1.66	11.73	1.17	SD	1.5	1.5	14.9	14.9	0.14	0.10
39	4	9306F	LW2-G027	7		10	6	4	60.0	40.0	104.93	6	113.74	107.19	8.81	1.47	6.55	1.09	n	8	8	8	8	8	8
40	157	9306F	LW2-G027	8	wq replicate	10	10	0	100.0	0.0	100.53	10	115.98	104.44	15.45	1.55	11.54	1.15							

ANC08873
BZTO104(e)008873

Test Number: 686-4

Freshwater Sediment Test
10-Day Chironomus tentans

INDEX	BKR	NAS SMPL	CLIENT DESCRIP	REPL		INIT	SURV	MORT	PSURV	PMORT	TARE WT (mg)	WT COUNT	DRY WT (mg)	ASHED DRY WT (mg)	TWT (mg)	WT (mg)	TAFDW (mg)	AFDW (mg)			SURV	MORT	PSURV	PMORT	WT	AFDW
41	143	9307F	LW2-G033	1		10	10	0	100.0	0.0	109.28	10	124.52	113.83	15.24	1.52	10.69	1.07								
42	34	9307F	LW2-G033	2		10	6	4	60.0	40.0	96.37	6	105.21	99.00	8.84	1.47	6.21	1.04								
43	136	9307F	LW2-G033	3		10	8	2	80.0	20.0	107.41	8	121.41	111.42	14.00	1.76	9.99	1.25								
44	67	9307F	LW2-G033	4		10	7	3	70.0	30.0	104.72	7	117.02	108.41	12.30	1.76	8.61	1.23								
45	59	9307F	LW2-G033	5		10	7	3	70.0	30.0	97.47	7	105.72	100.48	8.25	1.18	5.24	0.75	Mean	8.1	1.9	81.3	18.8	1.48	1.00
46	56	9307F	LW2-G033	6		10	10	0	100.0	0.0	100.83	10	111.06	104.12	10.23	1.02	6.94	0.69	SD	1.5	1.5	14.6	14.6	0.28	0.20
47	71	9307F	LW2-G033	7		10	8	2	80.0	20.0	98.92	8	111.44	103.61	12.52	1.67	7.83	0.98	n	8	8	8	8	8	8
48	68	9307F	LW2-G033	8	wq replicate	10	9	1	90.0	10.0	103.96	9	118.02	108.80	14.06	1.56	9.22	1.02								
49	111	9308F	LW2-G034	1		10	8	2	80.0	20.0	100.06	8	115.03	104.35	14.97	1.67	10.88	1.34								
50	51	9308F	LW2-G034	2		10	7	3	70.0	30.0	105.64	7	119.91	109.93	14.27	2.04	9.98	1.43								
51	70	9308F	LW2-G034	3		10	9	1	90.0	10.0	111.82	9	129.41	119.00	17.59	1.95	10.41	1.16								
52	54	9308F	LW2-G034	4		10	8	2	80.0	20.0	115.09	8	130.06	118.83	14.97	1.87	11.23	1.40								
53	35	9308F	LW2-G034	5		10	7	3	70.0	30.0	101.81	7	110.19	104.00	8.38	1.20	6.19	0.88	Mean	8.4	1.6	83.8	16.3	1.73	1.20
54	150	9308F	LW2-G034	6		10	9	1	90.0	10.0	94.26	9	109.56	98.40	15.32	1.70	11.18	1.24	SD	1.1	1.1	10.6	10.6	0.27	0.18
55	85	9308F	LW2-G034	7		10	9	1	90.0	10.0	103.56	9	118.29	108.64	14.73	1.64	9.65	1.07	n	8	8	8	8	8	8
56	124	9308F	LW2-G034	8	wq replicate	10	10	0	100.0	0.0	108.92	10	124.73	113.60	15.81	1.58	11.13	1.11								
57	32	9309F	LW2-G035	1		10	8	2	80.0	20.0	103.74	8	112.22	105.29	8.48	1.06	5.93	0.74								
58	156	9309F	LW2-G035	2		10	10	0	100.0	0.0	101.76	10	119.48	107.48	17.72	1.77	12.00	1.20								
59	129	9309F	LW2-G035	3		10	10	0	100.0	0.0	108.38	10	121.62	112.26	13.24	1.32	9.36	0.94								
60	29	9309F	LW2-G035	4		10	6	4	60.0	40.0	102.00	6	109.02	103.61	7.02	1.17	5.41	0.90								
61	11	9309F	LW2-G035	5		10	9	1	90.0	10.0	97.16	9	105.95	99.74	8.79	0.98	6.21	0.69	Mean	8.9	1.1	88.8	11.3	1.38	0.97
62	135	9309F	LW2-G035	6		10	9	1	90.0	10.0	106.83	9	122.28	111.06	15.46	1.72	11.23	1.25	SD	1.4	1.4	13.6	13.6	0.31	0.21
63	139	9309F	LW2-G035	7		10	10	0	100.0	0.0	112.74	10	129.23	117.98	16.49	1.65	11.25	1.13	n	8	8	8	8	8	8
64	15	9309F	LW2-G035	8	wq replicate	10	9	1	90.0	10.0	110.81	9	122.89	114.79	12.08	1.34	8.10	0.90								
65	110	9310F	LW2-G061	1		10	9	1	90.0	10.0	105.71	9	119.25	109.18	13.54	1.50	10.07	1.12								
66	99	9310F	LW2-G061	2		10	7	3	70.0	30.0	108.27	7	121.06	112.60	12.79	1.83	8.26	1.18								
67	73	9310F	LW2-G061	3		10	9	1	90.0	10.0	113.53	9	126.02	117.84	12.49	1.39	8.18	0.91								
68	26	9310F	LW2-G061	4		10	10	0	100.0	0.0	109.27	10	122.66	112.97	13.61	1.36	9.91	0.99								
69	23	9310F	LW2-G061	5		10	8	2	80.0	20.0	102.92	8	111.72	105.40	8.80	1.10	6.32	0.79	Mean	8.8	1.3	87.5	12.5	1.45	1.00
70	98	9310F	LW2-G061	6		10	10	0	100.0	0.0	98.95	10	115.95	106.09	17.00	1.70	10.86	1.09	SD	1.3	1.3	12.8	12.8	0.23	0.13
71	54	9310F	LW2-G061	7		10	10	0	100.0	0.0	107.33	10	120.81	111.28	13.48	1.35	9.53	0.95	n	8	8	8	8	8	8
72	13	9310F	LW2-G061	8	wq replicate	10	7	3	70.0	30.0	117.12	7	126.58	119.78	9.46	1.35	6.80	0.97								
73	162	9311F	LW2-G062	1		10	7	3	70.0	30.0	108.61	7	121.42	111.30	12.81	1.83	10.12	1.45								
74	146	9311F	LW2-G062	2		10	8	2	80.0	20.0	97.74	8	107.63	99.60	9.89	1.24	8.03	1.00								
75	159	9311F	LW2-G062	3		10	9	1	90.0	10.0	100.28	9	114.16	103.62	13.86	1.54	10.34	1.15								
76	141	9311F	LW2-G062	4		10	10	0	100.0	0.0	108.61	10	120.95	111.94	12.34	1.23	9.01	0.90								
77	10	9311F	LW2-G062	5		10	7	3	70.0	30.0	100.76	7	109.07	102.32	8.31	1.19	6.75	0.96	Mean	7.8	2.3	77.5	22.5	1.40	1.06
78	12	9311F	LW2-G062	6		10	6	4	60.0	40.0	105.98	6	112.49	107.41	6.51	1.09	5.08	0.85	SD	1.5	1.5	14.9	14.9	0.27	0.19
79	16	9311F	LW2-G062	7		10	6	4	60.0	40.0	96.28	6	104.36	98.14	8.08	1.35	6.22	1.04	n	8	8	8	8	8	8
80	80	9311F	LW2-G062	8	wq replicate	10	9	1	90.0	10.0	114.54	9	129.84	119.96	15.30	1.70	9.88	1.10								
81	102	9312F	LW2-G067	1		10	10	0	100.0	0.0	107.52	10	122.98	111.89	15.46	1.55	11.09	1.11								
82	52	9312F	LW2-G067	2		10	10	0	100.0	0.0	95.09	10	107.08	99.22	11.99	1.20	7.86	0.79								
83	84	9312F	LW2-G067	3		10	10	0	100.0	0.0	105.57	10	122.45	111.27	16.88	1.69	11.18	1.12								
84	40	9312F	LW2-G067	4		10	8	2	80.0	20.0	96.66	8	109.60	100.89	12.94	1.62	8.71	1.09								
85	125	9312F	LW2-G067	5		10	10	0	100.0	0.0	109.20	10	124.90	114.44	15.70	1.57	10.46	1.05	Mean	9.0	1.0	90.0	10.0	1.54	1.07
86	167	9312F	LW2-G067	6		10	9	1	90.0	10.0	110.21	9	124.27	113.88	14.06	1.56	10.39	1.15	SD	1.4	1.4	14.1	14.1	0.17	0.13
87	1	9312F	LW2-G067	7		10	6	4	60.0	40.0	101.89	6	110.18	103.95	8.29	1.38	6.23	1.04	n	8	8	8	8	8	8
88	103	9312F	LW2-G067	8	wq replicate	10	9	1	90.0	10.0	96.98	9	112.58	101.77	15.60	1.73	10.81	1.20								
89	39	9313F	LW2-G073	1		10	6	4	60.0	40.0	111.41	6	120.68	113.86	9.27	1.55	6.83	1.14								
90	153	9313F	LW2-G073	2		11	11	0	100.0	0.0	107.89	11	123.98	112.91	16.09	1.46	11.07	1.01								
91	91	9313F	LW2-G073	3		10	9	1	90.0	10.0	108.56	9	122.35	113.32	13.77	1.53	9.03	1.00								
92	55	9313F	LW2-G073	4		10	9	1	90.0	10.0	102.28	9	113.07	105.38	10.81	1.20	7.59	0.85								
93	147	9313F	LW2-G073	5		10	9	1	90.0	10.0	98.55	7	111.99	101.84	13.44	1.92	10.15	1.45	Mean	8.5	1.5	83.8	16.3	1.54	1.10
94	5	9313F	LW2-G073	6		10	6	4	60.0	40.0	101.61	6	109.97	103.77	8.26	1.38	6.10	1.02	SD	1.7	1.5	15.1	15.1	0.22	0.19
95	132	9313F	LW2-G073	7		10	9	1	90.0	10.0	95.10	9	110.96	99.27	15.76	1.75	11.59	1.29	n	8	8	8	8	8	8
96	83	9313F	LW2-G073	8	wq replicate	10	9	1	90.0	10.0	97.12	9	111.15	101.56	14.03	1.56	9.59	1.07								

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Test Number: 686-4

Freshwater Sediment Test
10-Day Chironomus tentans

INDEX	BKR	NAS SMPL	CLIENT DESCRIP	REPL		INIT	SURV	MORT	PSURV	PMORT	TARE WT (mg)	WT COUNT	DRY WT (mg)	ASHED DRY WT (mg)	TWT (mg)	WT (mg)	TAFDW (mg)	AFDW (mg)		SURV	MORT	PSURV	PMORT	WT	AFDW
97	18	9314F	LW2-G074	1		10	10	0	100.0	0.0	99.07	10	112.83	102.50	13.76	1.38	10.33	1.03							
98	69	9314F	LW2-G074	2		10	9	1	90.0	10.0	97.50	9	112.30	102.56	14.80	1.64	9.74	1.08							
99	112	9314F	LW2-G074	3		10	7	3	70.0	30.0	102.56	7	115.94	105.81	13.38	1.91	10.13	1.45							
100	97	9314F	LW2-G074	4		10	10	0	100.0	0.0	100.20	10	117.47	105.68	17.27	1.73	11.79	1.18							
101	130	9314F	LW2-G074	5		10	7	3	70.0	30.0	104.95	7	118.99	108.30	14.04	2.01	10.69	1.53	Mean	8.8	1.3	87.5	12.5	1.67	1.20
102	86	9314F	LW2-G074	6		10	10	0	100.0	0.0	98.61	10	115.39	104.50	16.78	1.68	10.69	1.09	SD	1.3	1.3	12.8	12.8	0.23	0.21
103	126	9314F	LW2-G074	7		10	9	1	90.0	10.0	101.15	9	116.15	104.39	15.00	1.67	11.76	1.31	n	8	8	8	8	8	8
104	22	9314F	LW2-G074	8	wq replicate	10	8	2	80.0	20.0	107.44	8	118.31	110.99	10.87	1.36	7.32	0.92							
137	72	9315F	LW2-G085	1		10	7	3	70.0	30.0	103.00	7	107.63	104.27	4.63	0.66	3.36	0.48							
138	133	9315F	LW2-G085	2		10	7	3	70.0	30.0	109.60	7	114.44	110.55	4.84	0.69	3.89	0.56							
139	76	9315F	LW2-G085	3		10	6	4	60.0	40.0	104.07	6	107.84	105.06	3.77	0.63	2.78	0.46							
140	81	9315F	LW2-G085	4		10	5	5	50.0	50.0	107.98	5	109.49	108.24	1.51	0.30	1.25	0.25							
141	44	9315F	LW2-G085	5		10	8	2	80.0	20.0	96.47	8	104.95	98.75	8.48	1.06	6.20	0.78	Mean	8.0	4.0	60.0	40.0	0.68	0.53
142	109	9315F	LW2-G085	6		10	7	3	70.0	30.0	98.17	7	103.77	99.06	5.60	0.90	4.71	0.67	SD	2.6	2.6	26.2	26.2	0.23	0.17
143	154	9315F	LW2-G085	7		10	8	2	80.0	20.0	111.14	8	116.13	112.14	4.99	0.62	3.99	0.50	n	8	8	8	8	7	7
144	31	9315F	LW2-G085	8	wq replicate	10	0	10	0.0	100.0	101.15	0													
153	21	9316F	LW2-G092	1		10	0	10	0.0	100.0	96.93	0													
154	8	9316F	LW2-G092	2		10	0	10	0.0	100.0	98.44	0													
155	89	9316F	LW2-G092	3		10	0	10	0.0	100.0	95.97	0													
156	47	9316F	LW2-G092	4		10	0	10	0.0	100.0	102.81	0													
157	57	9316F	LW2-G092	5		10	0	10	0.0	100.0	110.80	0							Mean	0.0	10.0	0.0	100.0	0.00	0.00
158	117	9316F	LW2-G092	6		10	0	10	0.0	100.0	91.49	0							SD	0.0	0.0	0.0	0.0	0.00	0.00
159	145	9316F	LW2-G092	7		10	0	10	0.0	100.0	97.70	0							n	8	8	8	8	0	0
160	24	9316F	LW2-G092	8	wq replicate	10	0	10	0.0	100.0	94.99	0													
145	95	9317F	LW2-G089	1		10	9	1	90.0	10.0	102.56	9	112.53	104.96	9.97	1.11	7.57	0.84							
146	79	9317F	LW2-G089	2		10	7	3	70.0	30.0	98.96	7	108.83	101.76	9.87	1.41	7.07	1.01							
147	2	9317F	LW2-G089	3		10	0	10	0.0	100.0	112.34	0													
148	3	9317F	LW2-G089	4		10	0	10	0.0	100.0	96.02	0													
149	75	9317F	LW2-G089	5		10	8	2	80.0	20.0	104.04	8	114.14	105.90	10.10	1.26	7.24	0.90	Mean	5.9	4.1	58.8	41.3	1.17	0.88
150	120	9317F	LW2-G089	6		10	8	2	80.0	20.0	99.02	8	109.19	100.84	9.17	1.15	7.55	0.94	SD	3.7	3.7	36.8	36.8	0.14	0.09
151	37	9317F	LW2-G089	7		10	8	2	80.0	20.0	100.42	8	108.47	102.57	8.05	1.01	5.90	0.74	n	8	8	8	8	6	6
152	101	9317F	LW2-G089	8	wq replicate	10	7	3	70.0	30.0	105.60	7	113.61	107.61	7.81	1.12	6.00	0.86							
121	63	9318F	LW2-G080	1		10	5	5	50.0	50.0	96.78	5	103.61	98.25	6.83	1.37	5.36	1.07							
122	165	9318F	LW2-G080	2		10	7	3	70.0	30.0	96.43	7	109.29	100.17	12.86	1.84	9.12	1.30							
123	19	9318F	LW2-G080	3		10	8	2	80.0	20.0	115.16	8	127.14	118.53	11.98	1.50	8.61	1.08							
124	131	9318F	LW2-G080	4		10	9	1	90.0	10.0	100.25	9	113.53	104.26	13.28	1.46	9.27	1.03							
125	121	9318F	LW2-G080	5		10	9	1	90.0	10.0	102.23	9	117.56	106.47	15.33	1.70	11.09	1.23	Mean	8.5	1.5	85.0	15.0	1.59	1.13
126	94	9318F	LW2-G080	6		10	10	0	100.0	0.0	96.94	9	112.81	101.64	15.87	1.76	10.97	1.22	SD	1.8	1.8	17.7	17.7	0.23	0.12
127	149	9318F	LW2-G080	7		10	10	0	100.0	0.0	106.02	10	118.31	108.80	12.29	1.23	9.51	0.95	n	8	8	8	8	8	8
128	140	9318F	LW2-G080	8	wq replicate	10	10	0	100.0	0.0	103.52	10	122.18	110.91	18.66	1.87	11.27	1.13							
113	66	9319F	LW2-G079	1		10	10	0	100.0	0.0	105.49	10	120.77	110.52	15.28	1.53	10.25	1.03							
114	82	9319F	LW2-G079	2		10	5	5	50.0	50.0	99.41	5	109.56	102.09	10.15	2.03	7.47	1.49							
115	14	9319F	LW2-G079	3		10	9	1	90.0	10.0	104.13	9	116.50	107.67	11.37	1.26	7.83	0.87							
116	6	9319F	LW2-G079	4		10	10	0	100.0	0.0	95.05	10	104.78	97.17	9.73	0.97	7.61	0.76							
117	152	9319F	LW2-G079	5		10	8	2	80.0	20.0	110.13	8	123.82	113.95	13.69	1.71	9.87	1.23	Mean	8.1	1.9	81.3	18.8	1.51	1.09
118	114	9319F	LW2-G079	6		10	7	3	70.0	30.0	103.56	7	114.49	106.22	10.93	1.56	8.27	1.18	SD	2.0	2.0	19.6	19.6	0.32	0.24
119	160	9319F	LW2-G079	7		10	10	0	100.0	0.0	97.28	10	111.08	101.70	13.80	1.38	9.38	0.94	n	8	8	8	8	8	8
120	30	9319F	LW2-G079	8	wq replicate	10	6	4	60.0	40.0	110.91	6	120.74	113.48	9.83	1.64	7.26	1.21							

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Test Number: 686-4

Freshwater Sediment Test
10-Day Chironomus tentans

INDEX	BKR	NAS SMPL	CLIENT DESCRIP	REPL		INIT	SURV	MORT	PSURV	PMORT	TARE WT (mg)	WT COUNT	DRY WT (mg)	ASHED DRY WT (mg)	TWT (mg)	WT (mg)	TAFDW (mg)	AFDW (mg)		SURV	MORT	PSURV	PMORT	WT	AFDW
105	50	9320F	LW2-G078	1		10	10	0	100.0	0.0	96.08	10	110.43	101.07	14.35	1.44	9.35	0.94							
106	113	9320F	LW2-G078	2		10	5	5	50.0	50.0	101.84	5	110.82	103.96	8.98	1.80	6.86	1.37							
107	96	9320F	LW2-G078	3		10	10	0	100.0	0.0	99.03	10	116.26	105.59	17.23	1.72	10.67	1.07							
108	104	9320F	LW2-G078	4		10	8	2	80.0	20.0	106.53	8	120.46	110.59	13.93	1.74	9.87	1.23							
109	142	9320F	LW2-G078	5		10	9	1	90.0	10.0	102.95	9	116.45	105.84	12.50	1.39	9.61	1.07	Mean	8.3	1.8	82.5	17.5	1.59	1.08
110	36	9320F	LW2-G078	6		10	7	3	70.0	30.0	111.21	7	122.77	115.85	11.56	1.65	6.92	0.99	SD	1.8	1.8	18.3	18.3	0.16	0.15
111	107	9320F	LW2-G078	7		10	7	3	70.0	30.0	112.09	7	122.45	115.18	10.36	1.48	7.27	1.04	n	6	6	6	6	6	6
112	77	9320F	LW2-G078	8 wq replicate		10	10	0	100.0	0.0	96.50	10	111.15	101.47	14.65	1.47	9.68	0.97							
161	60	9321F	LW2-G111	1		10	8	2	80.0	20.0	102.87	8	115.60	107.36	12.73	1.59	8.24	1.03							
162	100	9321F	LW2-G111	2		10	0	10	0.0	100.0	105.25	0													
163	109	9321F	LW2-G111	3		10	10	0	100.0	0.0	104.28	10	117.93	107.39	13.65	1.37	10.54	1.05							
164	166	9321F	LW2-G111	4		10	10	0	100.0	0.0	89.09	10	105.49	93.72	16.40	1.64	11.77	1.18							
165	148	9321F	LW2-G111	5		10	8	2	80.0	20.0	117.22	8	127.80	119.60	10.58	1.32	8.20	1.03	Mean	7.4	2.6	73.8	26.3	1.51	1.10
166	20	9321F	LW2-G111	6		10	9	1	90.0	10.0	108.99	8	120.25	111.66	11.26	1.41	8.59	1.07	SD	3.2	3.2	32.5	32.5	0.14	0.07
167	38	9321F	LW2-G111	7		10	6	4	60.0	40.0	113.26	6	122.88	116.33	9.62	1.60	6.55	1.09	n	8	8	8	8	7	7
168	139	9321F	LW2-G111	8 wq replicate		10	8	2	80.0	20.0	114.22	8	127.60	117.79	13.28	1.66	9.71	1.21							
129	92	9322F	LW2-G083	1		10	10	0	100.0	0.0	103.83	10	122.50	110.96	18.67	1.87	11.52	1.15							
130	115	9322F	LW2-G083	2		10	7	3	70.0	30.0	97.18	7	110.59	101.16	13.41	1.92	9.43	1.35							
131	155	9322F	LW2-G083	3		10	10	0	100.0	0.0	105.91	10	120.87	110.66	14.96	1.50	10.21	1.02							
132	27	9322F	LW2-G083	4		10	10	0	100.0	0.0	102.41	10	113.63	105.50	11.42	1.14	8.33	0.83							
133	158	9322F	LW2-G083	5		10	8	2	80.0	20.0	97.67	8	110.60	101.34	12.93	1.62	9.26	1.16	Mean	9.0	1.0	90.0	10.0	1.59	1.11
134	116	9322F	LW2-G083	6		10	9	1	90.0	10.0	89.66	9	103.93	93.87	14.07	1.56	10.06	1.12	SD	1.1	1.1	10.7	10.7	0.24	0.14
135	151	9322F	LW2-G083	7		10	9	1	90.0	10.0	114.39	9	127.50	117.65	13.11	1.46	9.85	1.09	n	8	8	8	8	8	8
136	164	9322F	LW2-G083	8 wq replicate		10	9	1	90.0	10.0	94.92	9	110.06	99.84	15.14	1.68	10.22	1.14							

One animal lost or damaged during transfer into weighing pans for beakers 20, 42, and 94. Two animals lost or damaged during transfer into weighing pan for beaker 147.

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Test Number: 686-4

Freshwater Sediment Test
10-Day Chironomus tentans

Water Quality Data

NAS SMPL	CLIENT DESCRIP	Bulk Sediment Interstitial water NH3	pH
9303F	LW2-G020	7.9	6.4
9304F	LW2-G024	4.3	6.4
9305F	LW2-G025	---	---
9306F	LW2-G027	1.1	6.8
9307F	LW2-G033	4.3	6.6
9308F	LW2-G034	2.3	6.5
9309F	LW2-G035	4.3	6.4
9310F	LW2-G061	5.6	6.4
9311F	LW2-G062	1.7	6.6
9312F	LW2-G067	4.8	6.4
9313F	LW2-G073	---	---
9314F	LW2-G074	<0.5	6.6
9315F	LW2-G085	10.9	7.0
9316F	LW2-G092	7.8	11.3
9317F	LW2-G089	3.5	---
9318F	LW2-G080	---	---
9319F	LW2-G079	0.6	6.9
9320F	LW2-G078	1.9	6.8
9321F	LW2-G111	4.8	7.0
9322F	LW2-G083	4.4	6.9

BKR	SMPL	DESCRIP	REPL	DAY	Overlying water TEMP	DO	COND	pH	NH3	HARD	ALK
13	9310F	LW2-G061	8	0	23.0	7.3	170	7.1	0.7	60	40
15	9309F	LW2-G035	8	0	23.0	7.6	170	7.1	0.4	51	50
22	9314F	LW2-G074	8	0	23.0	7.4	160	7.1	0.1	51	40
24	9316F	LW2-G092	8	0	23.1	7.4	230	10.1	0.4	60	40
30	9319F	LW2-G079	8	0	23.0	7.4	160	7.1	0.4	51	40
31	9315F	LW2-G085	8	0	23.0	7.2	200	7.2	0.7	68	50
41	9208F	Control	8	0	23.0	7.3	190	7.1	0.3	43	50
68	9307F	LW2-G033	8	0	22.9	7.2	170	6.9	0.5	60	50
77	9320F	LW2-G078	8	0	23.0	7.6	165	7.1	0.2	51	40
80	9311F	LW2-G062	8	0	23.1	7.4	170	7.1	0.2	51	50
83	9313F	LW2-G073	8	0	23.1	7.7	160	6.9	<0.1	43	40
90	9303F	LW2-G020	8	0	23.0	7.4	170	7.1	0.6	51	40
101	9317F	LW2-G089	8	0	22.9	7.2	165	7.0	0.2	43	40
103	9312F	LW2-G067	8	0	23.0	7.3	160	7.1	0.6	34	40
122	9304F	LW2-G024	8	0	23.0	7.4	170	7.1	0.5	51	50
124	9308F	LW2-G034	8	0	23.1	7.4	175	7.1	0.2	51	50
137	9305F	LW2-G025	8	0	23.0	7.7	170	7.2	0.2	51	40
138	9321F	LW2-G111	8	0	22.9	7.5	175	7.1	0.6	43	40
140	9318F	LW2-G080	8	0	22.9	7.2	160	7.1	0.2	43	40
157	9306F	LW2-G027	8	0	22.9	7.3	165	7.2	<0.1	51	50
164	9322F	LW2-G083	8	0	22.9	7.4	170	7.1	0.3	43	50
13	9310F	LW2-G061	8	1	22.8	5.6					
15	9309F	LW2-G035	8	1	22.8	5.2					
22	9314F	LW2-G074	8	1	22.8	5.8					
24	9316F	LW2-G092	8	1	22.9	7.0					
30	9319F	LW2-G079	8	1	23.0	5.8					
31	9315F	LW2-G085	8	1	22.9	6.4					
41	9208F	Control	8	1	22.9	6.0					
68	9307F	LW2-G033	8	1	22.9	5.6					

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77	9320F	LW2-G078	8	1	22.9	5.8								
80	9311F	LW2-G062	8	1	23.1	5.2								
83	9313F	LW2-G073	8	1	23.1	5.1								
90	9303F	LW2-G020	8	1	22.9	6.1								
101	9317F	LW2-G089	8	1	22.8	5.8								
103	9312F	LW2-G067	8	1	22.7	5.8								
122	9304F	LW2-G024	8	1	22.8	5.6								
124	9308F	LW2-G034	8	1	22.8	5.7								
137	9305F	LW2-G025	8	1	22.8	5.2								
138	9321F	LW2-G111	8	1	22.8	5.6								
140	9318F	LW2-G080	8	1	22.9	5.8								
157	9306F	LW2-G027	8	1	22.9	5.8								
164	9322F	LW2-G083	8	1	22.9	5.5								
13	9310F	LW2-G061	8	2	23.1	5.2								
15	9309F	LW2-G035	8	2	23.1	5.5								
22	9314F	LW2-G074	8	2	23.1	5.3								
24	9316F	LW2-G092	8	2	23.1	6.8								
30	9319F	LW2-G079	8	2	23.2	5.6								
31	9315F	LW2-G085	8	2	23.4	5.6								
41	9208F	Control	8	2	23.3	5.4								
68	9307F	LW2-G033	8	2	23.3	5.2								
77	9320F	LW2-G078	8	2	23.4	5.5								
80	9311F	LW2-G062	8	2	23.4	5.4								
83	9313F	LW2-G073	8	2	23.4	5.4								
90	9303F	LW2-G020	8	2	23.2	5.3								
101	9317F	LW2-G089	8	2	23.2	6.2								
103	9312F	LW2-G067	8	2	23.2	5.1								
122	9304F	LW2-G024	8	2	23.2	5.4								
124	9308F	LW2-G034	8	2	23.2	5.5								
137	9305F	LW2-G025	8	2	23.2	5.6								
138	9321F	LW2-G111	8	2	23.2	5.6								
140	9318F	LW2-G080	8	2	23.2	5.5								
157	9306F	LW2-G027	8	2	23.3	5.8								
164	9322F	LW2-G083	8	2	23.3	5.7								
13	9310F	LW2-G061	8	3	23.0	5.0								
15	9309F	LW2-G035	8	3	23.2	5.2								
22	9314F	LW2-G074	8	3	23.2	5.4								
24	9316F	LW2-G092	8	3	23.1	6.5								
30	9319F	LW2-G079	8	3	23.2	5.2								
31	9315F	LW2-G085	8	3	23.1	5.5								
41	9208F	Control	8	3	23.1	5.2								
68	9307F	LW2-G033	8	3	23.1	4.6								
77	9320F	LW2-G078	8	3	23.1	4.5								
80	9311F	LW2-G062	8	3	23.3	4.8								
83	9313F	LW2-G073	8	3	23.2	5.0								
90	9303F	LW2-G020	8	3	23.0	5.0								
101	9317F	LW2-G089	8	3	23.0	4.6								
103	9312F	LW2-G067	8	3	23.0	4.8								
122	9304F	LW2-G024	8	3	23.0	4.9								
124	9308F	LW2-G034	8	3	23.0	4.8								
137	9305F	LW2-G025	8	3	23.1	5.0								
138	9321F	LW2-G111	8	3	23.0	4.4								
140	9318F	LW2-G080	8	3	23.0	5.0								
157	9306F	LW2-G027	8	3	23.1	5.2								
164	9322F	LW2-G083	8	3	23.1	5.4								
13	9310F	LW2-G061	8	4	23.1	4.2								
15	9309F	LW2-G035	8	4	23.4	5.0								

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22	9314F	LW2-G074	8	4	23.1	5.2								
24	9316F	LW2-G092	8	4	23.2	6.6								
30	9319F	LW2-G079	8	4	23.4	5.6								
31	9315F	LW2-G085	8	4	23.3	5.2								
41	9208F	Control	8	4	23.2	4.6								
68	9307F	LW2-G033	8	4	23.1	4.2								
77	9320F	LW2-G078	8	4	23.1	4.1								
80	9311F	LW2-G062	8	4	23.3	4.1								
83	9313F	LW2-G073	8	4	23.3	4.6								
90	9303F	LW2-G020	8	4	23.1	4.5								
101	9317F	LW2-G089	8	4	23.0	5.1								
103	9312F	LW2-G067	8	4	22.9	4.1								
122	9304F	LW2-G024	8	4	23.0	5.1								
124	9308F	LW2-G034	8	4	23.0	4.5								
137	9305F	LW2-G025	8	4	23.1	4.1								
138	9321F	LW2-G111	8	4	23.0	4.2								
140	9318F	LW2-G080	8	4	23.1	4.6								
157	9306F	LW2-G027	8	4	23.1	5.0								
164	9322F	LW2-G083	8	4	23.1	5.2								
13	9310F	LW2-G061	8	5	23.0	4.4								
15	9309F	LW2-G035	8	5	23.4	4.8								
22	9314F	LW2-G074	8	5	23.0	5.1								
24	9316F	LW2-G092	8	5	23.1	6.4								
30	9319F	LW2-G079	8	5	23.3	5.2								
31	9315F	LW2-G085	8	5	23.1	4.8								
41	9208F	Control	8	5	23.1	5.2								
68	9307F	LW2-G033	8	5	23.0	4.3								
77	9320F	LW2-G078	8	5	22.9	4.2								
80	9311F	LW2-G062	8	5	22.9	4.6								
83	9313F	LW2-G073	8	5	22.9	4.4								
90	9303F	LW2-G020	8	5	22.8	4.8								
101	9317F	LW2-G089	8	5	22.9	5.3								
103	9312F	LW2-G067	8	5	23.0	5.0								
122	9304F	LW2-G024	8	5	23.0	5.1								
124	9308F	LW2-G034	8	5	23.0	4.4								
137	9305F	LW2-G025	8	5	23.1	4.6								
138	9321F	LW2-G111	8	5	23.0	4.5								
140	9318F	LW2-G080	8	5	23.2	4.8								
157	9306F	LW2-G027	8	5	23.1	4.9								
164	9322F	LW2-G083	8	5	23.0	4.9								
13	9310F	LW2-G061	8	6	22.5	3.8								
15	9309F	LW2-G035	8	6	22.8	4.1								
22	9314F	LW2-G074	8	6	22.5	4.0								
24	9316F	LW2-G092	8	6	22.7	5.9								
30	9319F	LW2-G079	8	6	22.9	4.4								
31	9315F	LW2-G085	8	6	22.7	5.1								
41	9208F	Control	8	6	22.7	3.9								
68	9307F	LW2-G033	8	6	22.6	3.6								
77	9320F	LW2-G078	8	6	22.6	3.8								
80	9311F	LW2-G062	8	6	22.9	3.4								
83	9313F	LW2-G073	8	6	22.8	4.2								
90	9303F	LW2-G020	8	6	22.7	4.3								
101	9317F	LW2-G089	8	6	22.6	4.7								
103	9312F	LW2-G067	8	6	22.5	3.3								
122	9304F	LW2-G024	8	6	22.6	3.6								
124	9308F	LW2-G034	8	6	22.5	3.8								
137	9305F	LW2-G025	8	6	22.6	3.3								

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138	9321F	LW2-G111	8	6	22.6	3.5									
140	9318F	LW2-G080	8	6	22.7	3.8									
157	9306F	LW2-G027	8	6	22.7	4.2									
164	9322F	LW2-G083	8	6	22.7	3.9									
13	9310F	LW2-G061	8	7	22.8	3.8									
15	9309F	LW2-G035	8	7	23.0	4.1									
22	9314F	LW2-G074	8	7	22.9	3.9									
24	9316F	LW2-G092	8	7	23.0	6.2									
30	9319F	LW2-G079	8	7	23.0	4.4									
31	9315F	LW2-G085	8	7	23.0	5.0									
41	9208F	Control	8	7	23.1	4.0									
68	9307F	LW2-G033	8	7	22.9	3.2									
77	9320F	LW2-G078	8	7	22.9	4.0									
80	9311F	LW2-G062	8	7	23.0	3.4									
83	9313F	LW2-G073	8	7	23.0	3.8									
90	9303F	LW2-G020	8	7	22.9	4.2									
101	9317F	LW2-G089	8	7	22.8	4.8									
103	9312F	LW2-G067	8	7	22.8	4.4									
122	9304F	LW2-G024	8	7	22.7	4.9									
124	9308F	LW2-G034	8	7	22.8	4.0									
137	9305F	LW2-G025	8	7	22.8	4.2									
138	9321F	LW2-G111	8	7	22.8	3.6									
140	9318F	LW2-G080	8	7	22.9	3.8									
157	9306F	LW2-G027	8	7	22.9	4.6									
164	9322F	LW2-G083	8	7	22.9	4.0									
13	9310F	LW2-G061	8	8	22.9	3.2									
15	9309F	LW2-G035	8	8	23.1	2.8									
22	9314F	LW2-G074	8	8	23.1	4.6									
24	9316F	LW2-G092	8	8	23.1	3.7									
30	9319F	LW2-G079	8	8	23.2	4.3									
31	9315F	LW2-G085	8	8	23.1	4.2									
41	9208F	Control	8	8	23.1	3.4									
68	9307F	LW2-G033	8	8	23.1	3.0									
77	9320F	LW2-G078	8	8	23.1	3.8									
80	9311F	LW2-G062	8	8	23.1	3.1									
83	9313F	LW2-G073	8	8	23.2	3.6									
90	9303F	LW2-G020	8	8	23.1	2.9									
101	9317F	LW2-G089	8	8	23.0	3.2									
103	9312F	LW2-G067	8	8	22.9	3.1									
122	9304F	LW2-G024	8	8	23.0	2.9									
124	9308F	LW2-G034	8	8	23.0	3.2									
137	9305F	LW2-G025	8	8	23.0	3.2									
138	9321F	LW2-G111	8	8	23.0	2.9									
140	9318F	LW2-G080	8	8	23.0	3.0									
157	9306F	LW2-G027	8	8	23.0	3.6									
164	9322F	LW2-G083	8	8	23.0	3.2									
13	9310F	LW2-G061	8	9	23.0	4.1									
15	9309F	LW2-G035	8	9	23.1	4.4									
22	9314F	LW2-G074	8	9	23.0	4.1									
24	9316F	LW2-G092	8	9	23.0	5.2									
30	9319F	LW2-G079	8	9	23.1	5.0									
31	9315F	LW2-G085	8	9	23.1	5.2									
41	9208F	Control	8	9	23.1	4.3									
68	9307F	LW2-G033	8	9	23.0	4.2									
77	9320F	LW2-G078	8	9	22.9	4.7									
80	9311F	LW2-G062	8	9	23.1	4.7									
83	9313F	LW2-G073	8	9	23.1	5.1									

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90	9303F	LW2-G020	8	9	23.0	3.4								
101	9317F	LW2-G089	8	9	23.0	3.9								
103	9312F	LW2-G067	8	9	22.9	3.7								
122	9304F	LW2-G024	8	9	23.0	3.8								
124	9308F	LW2-G034	8	9	23.0	4.2								
137	9305F	LW2-G025	8	9	23.1	4.2								
138	9321F	LW2-G111	8	9	23.1	2.9								
140	9318F	LW2-G080	8	9	23.1	4.2								
157	9306F	LW2-G027	8	9	23.1	4.6								
164	9322F	LW2-G083	8	9	23.1	4.1								
13	9310F	LW2-G061	8	10	23.0	4.3	150	6.8	0.9	43	40			
15	9309F	LW2-G035	8	10	23.2	5.9	165	6.8	0.6	43	40			
22	9314F	LW2-G074	8	10	23.1	5.8	160	6.7	0.4	43	40			
24	9316F	LW2-G092	8	10	23.1	6.4	180	8.9	0.5	60	60			
30	9319F	LW2-G079	8	10	23.3	6.2	158	6.7	0.3	43	40			
31	9315F	LW2-G085	8	10	23.2	6.0	165	6.8	0.5	43	50			
41	9208F	Control	8	10	23.2	5.8	170	6.8	0.4	43	40			
68	9307F	LW2-G033	8	10	23.1	5.4	160	6.7	0.6	43	40			
77	9320F	LW2-G078	8	10	23.0	5.7	160	6.7	0.3	43	40			
80	9311F	LW2-G062	8	10	23.2	5.2	165	6.6	0.3	43	40			
83	9313F	LW2-G073	8	10	23.1	5.8	160	6.8	0.3	43	40			
90	9303F	LW2-G020	8	10	23.1	4.6	160	6.6	0.7	43	50			
101	9317F	LW2-G089	8	10	23.0	5.4	160	6.6	0.2	43	40			
103	9312F	LW2-G067	8	10	22.9	5.1	160	6.6	0.5	43	50			
122	9304F	LW2-G024	8	10	23.1	5.2	160	6.6	0.4	43	40			
124	9308F	LW2-G034	8	10	23.0	5.2	165	6.6	0.1	43	40			
137	9305F	LW2-G025	8	10	23.1	5.2	170	6.7	0.4	51	40			
138	9321F	LW2-G111	8	10	23.1	3.8	170	6.6	0.8	43	40			
140	9318F	LW2-G080	8	10	23.2	5.1	165	6.6	0.4	43	40			
157	9306F	LW2-G027	8	10	23.2	5.8	165	6.7	0.1	51	40			
164	9322F	LW2-G083	8	10	23.1	6.0	165	6.7	0.3	60	50			
				Mean	23.0	5.0	168	7.0	---	48	44		4.4	6.9
				SD	0.2	1.1	13	0.6	---	7	5		2.7	1.2
				n	231	231	42	42	42	42	42		20	20
				Min	22.5	2.8	150	6.6	<0.1	34	40		<0.5	6.4
				Max	23.4	7.7	230	10.1	0.9	68	60		10.9	11.3

ANC08881
BZTO104(e)008881

AMMONIA EXPOSURE BENCHSHEETS AND ANALYSIS

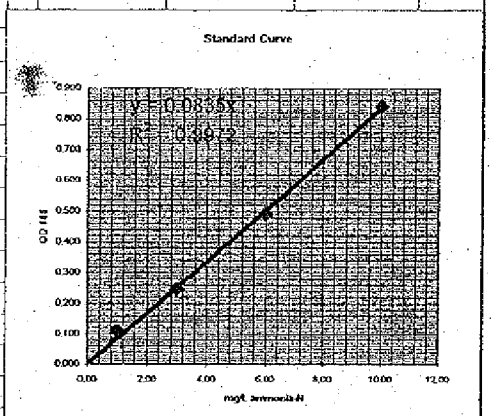
Total Ammonia-N in Sediment Pore Water: Computation Worksheet
Salicylate Method (SOP #5492)

Result

	Sample description	Dilution factor	OD655	NH_3-N (mg/L)	pH	Salinity (ppt)
	Blank	----	----	----		
	1.0 mg/L NH_3-N Std.	-----	0.110	1.00		
	3.0 mg/L NH_3-N Std.	-----	0.247	3.00		
	6.0 mg/L NH_3-N Std.	-----	0.490	6.00		
	10.0 mg/L NH_3-N Std.	-----	0.840	10.00		
	3.0 mg/L spike	-----	0.233	2.79		
	3.0 mg/L spike dupl.	-----	0.243	2.91		
1.	9303F	5	0.132	7.90		
2.	9304F	5	0.072	4.31		
3.	9305F	5	— *	— *		
4.	9306F	5	0.018	1.08		
5.	9307F	5	0.072	4.31		
6.	9308F	5	0.038	2.27		
7.	9309F	5	0.071	4.25		
8.	9310F	5	0.093	5.56		
9.	9311F	5	0.028	1.68		
10.	9312F	5	0.080	4.79		
11.	9313F	5	— *	— *		
12.	9314F	5	0.003	ND		
13.	9315F	5	0.182	10.89		
14.	9316F	5	0.131	7.84		
15.	9317F	5	0.059	3.53		
16.	9318F	5	— *	— *		
17.	9319F	5	0.010	0.60		
18.	9320F	5	0.032	1.91		
19.	9321F	5	0.080	4.79		
20.	9322F	5	0.074	4.43		
21.		5				
22.		5				
23.		5				
24.		5				
25.		5				
26.		5				
27.		5				
28.		5				
29.		5				
30.		5				
31.		5				
32.		5				
33.		5				
34.		5				
35.		5				
36.		5				

* insufficient sample for analysis

RSC 9/15/04



Reporting limit (mg/L) =	0.5
Recovery (%) =	94.9
Precision (RPD) =	-4.20
Sample volume (ml):	0.10
Dilution factor	5

Sample Set Description:

Proj. No.: 686

Bulk sediment porewaters

Analyst: RSC

Date analysed: 8/2/2004

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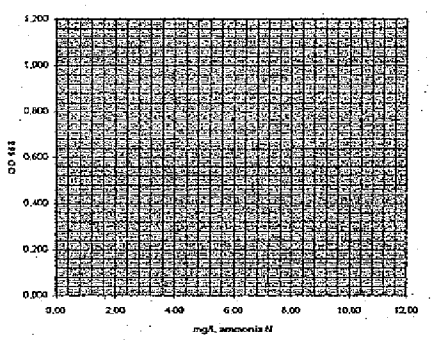
Total Ammonia-N in Sediment Pore Water: Computation Worksheet

Salicylate Method (SOP #5492)

Result

	Sample description	Dilution factor	OD_{655}	NH_3-N (mg/L)	pH	Salinity (ppt)
	Blank	----	----	----		
	1.0 mg/L NH_3-N Std.	----	.110	1.00		
	3.0 mg/L NH_3-N Std.	----	.247	3.00		
	6.0 mg/L NH_3-N Std.	----	.490	6.00		
	10.0 mg/L NH_3-N Std.	----	.845	10.00		
	3.0 mg/L spike	----	.238			
	3.0 mg/L spike dupl.	----	.245			
1.	9303F	5	.132		6.7	
2.	9304F	5	.072		6.4	
3.	9305F	5	—		—	
4.	9306F	5	.018		6.8	
5.	9307F	5	.071		6.6	
6.	9308F	5	.038		6.5	
7.	9309F	5	.076		6.4	
8.	9310F	5	.093		6.4	
9.	9311F	5	.028		6.6	
10.	9312F	5	.080		6.4	
11.	9313F	5	—		—	
12.	9314F	5	.043		6.6	
13.	9315F	5	.182		7.0	
14.	9316F	5	.131		11.3	
15.	9317F	5	.059		—	
16.	9318F	5	—		—	
17.	9319F	5	.010		6.9	
18.	9320F	5	.032		6.8	
19.	9321F	5	.088		7.0	
20.	9322F	5	.014		6.9	
21.		5				
22.		5				
23.		5				
24.		5				
25.		5				
26.		5				
27.		5				
28.		5				
29.		5				
30.		5				
31.		5				
32.		5				
33.		5				
34.		5				
35.		5				
36.		5				

Standard Curve



Reporting limit (mg/L) =	0.5
Recovery (%) =	#VALUE!
Precision (RPD) =	#VALUE!
Sample volume (ml):	0.10
Dilution factor	5

Sample Set Description:

Proj. No.: 686

Bulk sediment porewaters

Analyst:	RSC
Date analysed:	8/2/2004

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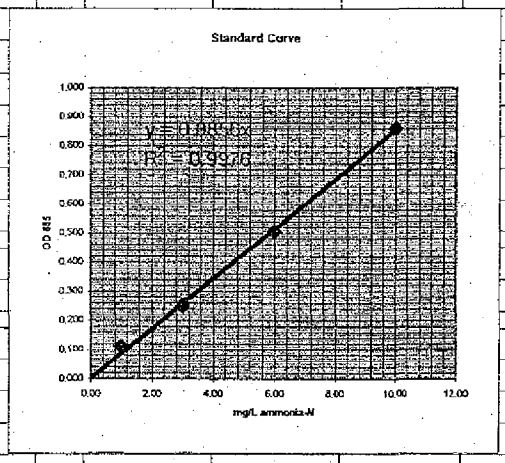
Total Ammonia-N in Water: Computation Worksheet

Salicylate Method (SOP #5492)

Result

	Sample description	Dilution factor	OD_{655}	NH_3-N (mg/L)
	Blank	----	----	----
	1.0 mg/L NH_3-N Std.	-----	0.111	1.00
	3.0 mg/L NH_3-N Std.	-----	0.250	3.00
	6.0 mg/L NH_3-N Std.	-----	0.505	6.00
	10.0 mg/L NH_3-N Std.	-----	0.860	10.00
	3.0 mg/L spike	----	0.243	2.84
	3.0 mg/L spike dupl.	-----	0.248	2.90
1.	13	1	0.058	0.68
2.	15	1	0.038	0.44
3.	22	1	0.012	0.14
4.	24	1	0.030	0.35
5.	30	1	0.033	0.39
6.	31	1	0.060	0.70
7.	41	1	0.021	0.25
8.	68	1	0.040	0.47
9.	77	1	0.018	0.21
10.	80	1	0.020	0.23
11.	83	1	0.008	ND
12.	90	1	0.053	0.62
13.	101	1	0.017	0.20
14.	103	1	0.048	0.56
15.	122	1	0.041	0.48
16.	124	1	0.017	0.20
17	137	1	0.017	0.20
18.	138	1	0.047	0.55
19.	140	1	0.017	0.20
20.	157	1	0.008	ND
21.	164	1	0.023	0.27
22.		1		
23.		1		
24.		1		
25.		1		
26.		1		
27.		1		
28.		1		
29.		1		
30.		1		
31.		1		
32.		1		
33.		1		
34.		1		
35.		1		
36.		1		



Reporting limit (mg/L) =	0.1
Recovery (%) =	95.6
Precision (RPD) =	-2.04
Sample volume (ml):	0.50
Dilution factor	1

Sample Set Description:

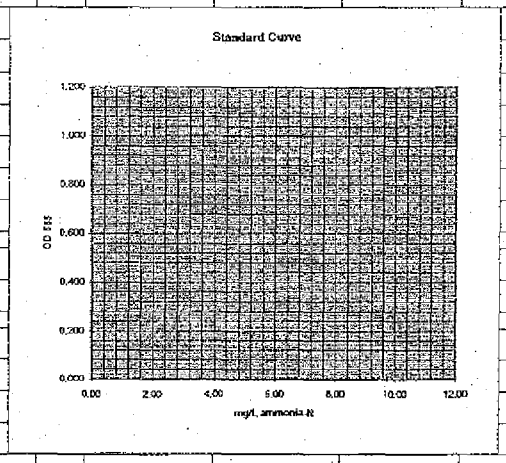
Test No.:	686-4
Test Day:	0 (8-3-04)
Species:	*Chironomus*
Overlying water	
Analyst:	RSC
Date analysed:	8/3/2004

Total Ammonia-N in Water: Computation Worksheet

Salicylate Method (SOP #5492)

Result

	Sample description	Dilution factor	OD655	NH_3-N (mg/L)
	Blank	-----	-----	-----
	1.0 mg/L NH_3-N Std.	-----	.111	1.00
	3.0 mg/L NH_3-N Std.	-----	.250	3.00
	6.0 mg/L NH_3-N Std.	-----	.505	6.00
	10.0 mg/L NH_3-N Std.	-----	.860	10.00
	3.0 mg/L spike	-----	.243	
	3.0 mg/L spike dupl.	-----	.248	
1.	13	1	.058	
2.	15	1	.038	
3.	22	1	.012	
4.	24	1	.030	
5.	30	1	.033	
6.	31	1	.060	
7.	41	1	.021	
8.	68	1	.040	
9.	77	1	.018	
10.	80	1	.020	
11.	83	1	.008	
12.	90	1	.053	
13.	101	1	.017	
14.	103	1	.048	
15.	122	1	.041	
16.	124	1	.017	
17.	137	1	.017	
18.	138	1	.047	
19.	140	1	.017	
20.	157	1	.008	
21.	164	1	.023	
22.		1		
23.		1		
24.		1		
25.		1		
26.		1		
27.		1		
28.		1		
29.		1		
30.		1		
31.		1		
32.		1		
33.		1		
34.		1		
35.		1		
36.		1		



Reporting limit (mg/L) =	0.1
Recovery (%) =	#VALUE!
Precision (RPD) =	#VALUE!
Sample volume (ml):	0.50
Dilution factor	1

Sample Set Description:

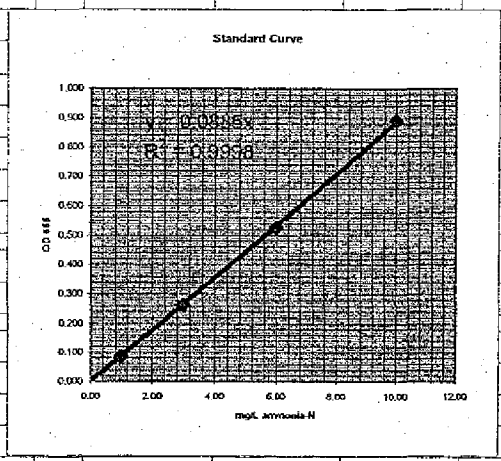
Test No.:	686-4
Test Day:	0 (8-3-04)
Species:	*Chironomus*
Overlying water	
Analyst:	RSC
Date analysed:	8/3/2004

ANC08886
BZTO104(e)008886

Total Ammonia-N in Water: Computation Worksheet
Salicylate Method (SOP #5492)

Result

	Sample description	Dilution factor	OD_{655}	NH_3-N (mg/L)
	Blank	----	----	----
	1.0 mg/L NH_3-N Std.	----	0.085	1.00
	3.0 mg/L NH_3-N Std.	----	0.262	3.00
	6.0 mg/L NH_3-N Std.	----	0.525	6.00
	10.0 mg/L NH_3-N Std.	----	0.890	10.00
	3.0 mg/L spike	----	0.277	3.13
	3.0 mg/L spike dupl.	----	0.267	3.02
1.	13	1	0.077	0.87
2.	15	1	0.057	0.64
3.	22	1	0.038	0.43
4.	24	1	0.041	0.46
5.	30	1	0.027	0.31
6.	31	1	0.040	0.45
7.	41	1	0.039	0.44
8.	68	1	0.055	0.62
9.	77	1	0.025	0.28
10.	80	1	0.030	0.34
11.	83	1	0.028	0.32
12.	90	1	0.063	0.71
13.	101	1	0.021	0.24
14.	103	1	0.041	0.46
15.	122	1	0.038	0.43
16.	124	1	0.011	0.12
17.	137	1	0.035	0.40
18.	138	1	0.068	0.77
19.	140	1	0.031	0.35
20.	157	1	0.010	0.11
21.	164	1	0.029	0.33
22.		1		
23.		1		
24.		1		
25.		1		
26.		1		
27.		1		
28.		1		
29.		1		
30.		1		
31.		1		
32.		1		
33.		1		
34.		1		
35.		1		
36.		1		



Reporting limit (mg/L) =	0.1
Recovery (%) =	102.4
Precision (RPD) =	3.68
Sample volume (ml):	0.50
Dilution factor	1

Sample Set Description:

Test No.:	686-4
Test Day:	10 (8-13-04)
Species:	*Chironomus*
Overlying water	
Analyst:	RSC
Date analysed:	8/17/2004

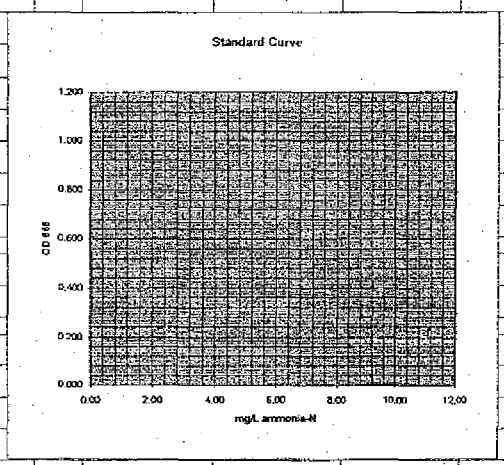
ANC08887
BZTO104(e)008887

Total Ammonia-N in Water: Computation Worksheet

Salicylate Method (SOP #5492)

Result

	Sample description	Dilution factor	OD_{655}	NH_3-N (mg/L)
	Blank	-----	----	----
	1.0 mg/L NH_3-N Std.	-----	.085	1.00
	3.0 mg/L NH_3-N Std.	-----	.262	3.00
	6.0 mg/L NH_3-N Std.	-----	.525	6.00
	10.0 mg/L NH_3-N Std.	-----	.890	10.00
	3.0 mg/L spike	-----	.279	
	3.0 mg/L spike dupl.	-----	.267	
1.	13	1	.077	
2.	15	1	.057	
3.	22	1	.038	
4.	24	1	.041	
5.	30	1	.027	
6.	31	1	.040	
7.	41	1	.039	
8.	68	1	.055	
9.	77	1	.026	
10.	80	1	.030	
11.	83	1	.028	
12.	90	1	.263	
13.	101	1	.021	
14.	103	1	.041	
15.	122	1	.038	
16.	124	1	.011	
17.	137	1	.035	
18.	138	1	.066	
19.	140	1	.031	
20.	157	1	.010	
21.	164	1	.029	
22.		1		
23.		1		
24.		1		
25.		1		
26.		1		
27.		1		
28.		1		
29.		1		
30.		1		
31.		1		
32.		1		
33.		1		
34.		1		
35.		1		
36.		1		



Reporting limit (mg/L) =	0.1
Recovery (%) =	#VALUE!
Precision (RPD) =	#VALUE!
Sample volume (ml):	0.50
Dilution factor	1

Sample Set Description:

Test No.:	686-4
Test Day:	10 (8-13-04)
Species:	*Chironomus*
Overlying water	
Analyst:	RSC
Date analysed:	8/17/2004

CHAIN-OF-CUSTODY RECORDS

___ of ___

Windward Environmental

CHAIN-OF-CUSTODY/TEST REQUEST FORM

1244

Project/Client Name: ROUND 2 PORTLAND HARBOR RI/FS
Windward Project No.: 04-28-04
Contact Name: HELLE ANDERSEN
Sampled By: WINDWARD ENVIRONMENTAL

Ship to: NAS
Attn: JGERALD IRISSARI
Shipping address:

Shipping Date: 7/29/04
Airbill Number:

Sample Collection Date (m/d/y)	Time	Sample Identification	Volume of Sample / # of Containers	Matrix	Test(s) Requested (check test(s) required)						Comments / Instructions [Jar tag number(s)]
					10-DAY CHIRONOMUS	28-DAY HYALELLA					
7.26.04	1156	LW2-G020	1L/4	Sediment	X	X			NAS#	9303F	INTERNAL TEMP
7.26.04	1218	LW2-G024	1L/4	Sediment	X	X				9304F	OF COOLERS UPON
7.26.04	1252	LW2-G025	2 1L/4	Sediment	X	X				9305F	RECEIPT AT LAB (NAS):
7.26.04	1344	LW2-G027	1L/4	Sediment	X	X				9306F	#1 2.0°C
7.26.04	1404	LW2-G033	2 1L/4	Sediment	X	X				9307F	#2 1.5°C
7.26.04	1427	LW2-G034	2 1L/4	Sediment	X	X				9308F	#3 3.5°C
7.26.04	1447	LW2-G035	2 1L/4	Sediment	X	X				9309F	#4 2.5°C
7.27.04	0948	LW2-G061	1 1L/4	Sediment	X	X				9310F	#5 3.5°C
7.27.04	1043	LW2-G062	1 1L/4	Sediment	X	X				9311F	#6 1.5°C
7.27.04	1122	LW2-G067	1 1L/4	Sediment	X	X				9312F	
7.27.04	1309	LW2-G073	1L/4	Sediment	X	X				9313F	
7.27.04	1333	LW2-G074	1 1L/4	Sediment	X	X				9314F	
7.28.04	0924	LW2-G085	1L/4	Sediment	X	X				9315F	
		Total Number of Containers	52	Purchase Order / Statement of Work #							

85 to LW

1) Released by:	1) Rec'd by:	2) Released by:	1) Rec'd by:
Print name: ANGELITA RODRIGUEZ	Print name: GERALD IRISSARI	Print name:	
Signature:	Signature:	Signature:	Signature:
Company: WINDWARD ENVIRONMENTAL	Company: NORTHWESTERN AQUATIC SCIENCES	Company:	Company:
Date/Time: 7/29/04 11:00 AM	Date/Time: 7-29-04 1100 HRS	Date/Time:	Date/Time:

Distribution: White and yellow copies accompany shipment; pink-consignor's copy; white-consignee return with results; yellow-consignee's copy.
Instructions for completion of Chain-of-Custody/Test Request Form on back.

Wind Ward environmental LLC
200 West Mercer Street
Suite 401
Seattle, WA 98119
Tel: 206.378.1364
Fax: 206.217.0089

To be completed by Laboratory upon sample receipt:

Date of receipt:	Laboratory W.O. #
Condition upon receipt:	Time of receipt:
Cooler temperature:	Received by:

ANC08890
BZTO104(e)008890

___ of ___

Windward Environmental

CHAIN-OF-CUSTODY/TEST REQUEST FORM

1245

Project/Client Name: ROUND 2 PORTLAND HARBOR R1/FS
Windward Project No.: 04-28-04
Contact Name: HELLE ANDERSEN
Sampled By: WINDWARD ENVIRONMENTAL

Ship to: NAS
Attn: GERALD IRISSARI
Shipping address:

Shipping Date: 7/29/04
Airbill Number:

Sample Collection Date (m/d/y)	Time	Sample Identification	Volume of Sample / # of Containers	Matrix	Test(s) Requested (check test(s) required)							Comments / Instructions [Jar tag number(s)]
					10-DAY CHIRONOMUS	28-DAY HYALELLA						
7.28.04	0944	LW2-G092	1L/4	Sediment	X	X			NAS#	9316F		
7.28.04	1008	LW2-G089	1L/4	Sediment	X	X				9317F		
7.28.04	1024	LW2-G080	1L/4	Sediment	X	X				9318F		
7.28.04	1127	LW2-G079	1L/4	Sediment	X	X				9319F		
7.28.04	1338	LW2-G078	1L/4	Sediment	X	X				9320F		
7.28.04	1443	LW2-G111	1L/4	Sediment	X	X				9321F		
7.28.04	1400	LW2-G083	1L/4	Sediment	X	X				9322F		
		Total Number of Containers	28	Purchase Order / Statement of Work #								

AE JC DS

1) Released by:	1) Rec'd by:	2) Released by:	1) Rec'd by:
Print name: ANGELITA RODRIQUEZ	GERALD IRISSARI	Print name:	
Signature: Angelita Pf	Gerald Irissarri	Signature:	
Company: WINDWARD ENVIRONMENTAL	Company: NORTHWESTERN AQUATIC SCIENCES	Company:	Company:
Date/Time: 7/29/04 11:00AM	Date/Time: 7-29-04 1100 HRS	Date/Time:	Date/Time:

*Distribution: White and yellow copies accompany shipment; pink-consignor's copy; white-consignee return with results; yellow-consignee's copy.
*Instructions for completion of Chain-of-Custody/Test Request Form on back.

To be completed by Laboratory upon sample receipt:

Date of receipt:	Laboratory W.O. #
Condition upon receipt:	Time of receipt:
Cooler temperature:	Received by:

Wind Ward environmental LLC
• 200 West Mercer Street
Suite 401
Seattle, WA 98119
Tel: 206.378.1364
Fax: 206.217.0089

ANC08891
BZTO104(e)008891

APPENDIX II

RAW DATA – REFERENCE TOXICANT TEST

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS- _____

ACUTE TOXICITY TEST (ALL SPECIES)

Test No. 999-1814 Client: QC Test Investigator _____

Test Type (rangefinding/definitive) _____ Test Length (hr) 96

Species Chironomus tentans

STUDY MANAGEMENT

Client: QC test

Client's Study Monitor: QC test

Testing Laboratory: Northwestern Aquatic Sciences

Test Location: Newport Laboratory

Laboratory's Study Personnel:

Proj. Man./Study Dir. G.J. Irissarri GJI

QA Officer L. K. Nemeth

1. [illegible] VAB 2. G.C. Hayes GCH

3. M.S. Redmond MSR 4. William T. Montgomery WTM

Study Schedule:

Test Beginning: 8-3-04 1310 Test Ending: 8-7-04 1230

TEST MATERIAL

Description: Potassium Chloride Crystals - Fisher Lot No.: 006829

NAS Sample No.				
Date of Collection:				
Date of Receipt:				
Temperature (deg C):				
Dissolved oxygen (mg/L):				
pH:				
Conductivity (umhos/cm):				
Hardness (mg/L):				
Alkalinity (mg/L):				
Salinity (ppt):				
Total chlorine (mg/L):				
Total ammonia-N (mg/L):				
_____:				

DILUTION WATER

Description: Moderately hard synthetic water

Date of Preparation/Collection: 7-28-04

Water Quality: Cond. (umhos/cm): 290 Salinity (ppt) — pH 7.8

Hardness (mg/L as $CaCO_3$): 77 Alkalinity (mg/L as $CaCO_3$): 70

Treatments: Aerated ≥ 24 hrs

TEST LOCATION

Test conducted in (circle one): room 1 (room 2) trailer water bath other: _____

Randomization chart:

5	10	Ø	2.5	10	1.25	20	2.5	Ø	10
20	2.5	5	10	5	2.5	Ø	10	5	2.5
1.25	Ø	20	1.25	20	Ø	10	Ø	20	5
Ø	10	2.5	Ø	1.25	10	1.25	5	2.5	20
10	5	1.25	5	2.5	5	2.5	10	1.25	1.25
2.5	1.25	10	20	Ø	20	5	1.25	10	Ø

Error codes: 1) Correction of handwriting error
2) Written in wrong location; entry deleted
3) Wrong date deleted; replaced with correct date
4) Error found in measurement; measurement repeated

Revised 12-5-01

ANC08893
BZTO104(e)008893

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-_____

ACUTE TOXICITY TEST (ALL SPECIES)

Test No. 999-1814 Client QC Test Investigator _____

TEST ORGANISMS

Species: *Chironomus tentans* Age: _____ Size: 3rd instar

Source: NAS CULTURES Date received: —

Acclimation Data:

Date	Temp. (deg.C)	DO (mg/L)	pH	Cond. umhos/cm	Hardness (mg/L)	Alkalinity (mg/L)	Feeding Amount	Feeding description*	Water changes
7-26-04	23.8	8.6	7.8	335	–	–	4+3mL	S+T	YES
7-27-04	24.0	8.5	7.5	290	60	70	–	–	–
7-28-04	23.9	6.4	7.4	345	102	90	–	–	–
7-30-04	24.0	7.2	7.2	330	–	–	4+3mL	FED 8-1-04 S+T	–
8-2-04	23.6	7.6	7.6	325	–	–	4+3mL	S+T	YES
8-3-04	24.2	8.0	7.4	260	77	60	–		
Mean	23.9	7.7	7.5	314	80	73			
S.D.	0.2	0.8	0.2	32	21	15			
(N)	6	6	6	6	3	3			

Photoperiod during acclimation: 16:8, L:D *S=Selenastrum, T=Tetra Fin suspension

TEST PROCEDURES AND CONDITIONS

Test concentrations (50% series recommended): 20, 10, 5, 2.5, 1.25, 0 g/L

Test chamber: 30 ml plastic cups Test volume: 20 ml

Replicates/treatment: 10 Organisms/treatment: 10 (1/rep)

Test water changes: None Aeration during test: None

Feeding: 0.25 ml Tetra Fin (4g/L) suspension per cup on days 0 and 2

Duration: 24-hr, 48-hr, (96-hr) Test temperature (deg.C): 23 ± 1

Beaker placement: Stratified randomization Photoperiod: 16:8, L:D

MISCELLANEOUS NOTES

Test solution preparation:

Working stock: Dissolve 10g KCl crystals in dilution water and dilute to 500 mL.
Final conc.: 20 g/L.

Test concentration (g/L)	KCl working stock (ml/200ml)	ml of dilution water per 200 ml
20	200	0
10	100	100
5	50	150
2.5	25	175
1.25	12.5	187.5
0	0	0

631
8-3-04

ANC08894
BZTO104(e)008894

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-_____

ACUTE TOXICITY TEST (ALL SPECIES)

Test No. 999-1814 Client QC Test

DAILY RECORD SHEET

Day 0 (8 / 3 04) VB Temp Beaker (°C): 23.3

Conc. (g/L)	Temp. (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	Comments
1. 20	23.2	8.6	>20,000	7.9	85	80	
2. 10	23.2	8.6	14,710	7.9			
3. 5	23.3	8.6	8,040	80			
4. 2.5	23.2	8.6	4,530	7.9			
5. 1.25	23.3	8.7	2,490	7.9			
6. 0	23.3	8.7	365	7.9	85	70	
All animals fed 0.25 ml Tetra Fin suspension. Initials:							

Day 1 (8 / 4 / 04) [illegible] Temp Beaker (°C): 23.3

Conc. (g/L)	Temp. (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	Comments
1. 20							
2. 10							
3. 5							
4. 2.5							
5. 1.25							
6. 0							

Day 2 (8 / 5 / 04) VB Temp Beaker (°C): 23.6

Conc. (g/L)	Temp. (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	Comments
1. 20							
2. 10							
3. 5							
4. 2.5							
5. 1.25							
6. 0							
All animals fed 0.25 ml Tetra Fin suspension. Initials: GJ1							

Day 3 (8 / 6 / 04) VB Temp Beaker (°C): 23.4

Conc. (g/L)	Temp. (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	Comments
1. 20							
2. 10							
3. 5							
4. 2.5							
5. 1.25							
6. 0							

Day 4 (8 / 7 / 04) GJ1 Temp Beaker (°C): 23.5

Conc. (g/L)	Temp. (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	Comments
1. 20	–	–	–	–	–	–	
2. 10	–	–	–	–			
3. 5	23.6		7720	7.7			
4. 2.5	23.6		4410	7.6			
5. 1.25	23.6		2450	7.5			
6. 0	23.5		395	7.5	94	70	
Mean	23.4	8.6	380 CONTROL	7.8	88	73	
SD	0.2	0.1	–	0.2	5	6	
n	10	6	2	10	3	3	

Revised 12-5-01

ANC08895

BZTO104(e)008895

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-_____

ACUTE TOXICITY TEST (ALL SPECIES)

Test No. 999-1814 Client QC Test Investigator _____

DAILY RECORD SHEET - Survivors

Day 0 (8/3/04) 6S1

Conc. (g/L)	Survivors in Replicate: 1	2	3	4	5	6	7	8	9	10	Total
1. 20	1	1	1	1	1	1	1	1	1	1	10
2. 10	1	1	1	1	1	1	1	1	1	1	10
3. 5	1	1	1	1	1	1	1	1	1	1	10
4. 2.5	1	1	1	1	1	1	1	1	1	1	10
5. 1.25	1	1	1	1	1	1	1	1	1	1	10
6. 0	1	1	1	1	1	1	1	1	1	1	10

Day 1 (8/4/04) 652

Conc. (g/L)	Survivors in Replicate: 1	2	3	4	5	6	7	8	9	10	Total
1. 20	X	X	1	X	1	X	X	X	X	X	2 (8D)
2. 10	X	1	X	1	X	X	X	X	X	1	3 (7D)
3. 5	X	1	1	1	X	1	X	X	1	1	6 (4D)
4. 2.5	1	1	1	1	1	1	1	1	1	1	10
5. 1.25	1	1	1	1	1	1	1	1	1	1	10
6. 0	1	1	1	1	1	1	1	1	1	1	10

Day 2 (8/5/04) ~~6S2~~

Conc. (g/L)	Survivors in Replicate: 1	2	3	4	5	6	7	8	9	10	Total
1. 20	X	X	X	X	X	X	X	X	X	X	0 (2d)
2. 10	X	X	X	1	X	X	X	X	X	X	1 (2d)
3. 5	X	1	1	1	X	1	X	X	1	X	5 (1d)
4. 2.5	1	X	1	1	X	1	1	1	1	1	8 (2d)
5. 1.25	1	1	1	1	1	X	1	X	1X	1	~~7 (3d)~~ 8 (2d) ANC08896 BZTO104(e)008896
6. 0	1	1	1	1	1	1	1	1	1	1	10

Day 3 (8/6/04) 653

Conc. (g/L)	Survivors in Replicate: 1	2	3	4	5	6	7	8	9	10	Total
1. 20	X	X	X	X	X	X	X	X	X	X	0
2. 10	X	X	X	X	X	X	X	X	X	X	0 (1D)
3. 5	X	1	1	1	X	1	X	X	1	X	5
4. 2.5	1	X	1	1	X	1	1	1	1	1	8
5. 1.25	1	1	1	1	1	X	1	X	1	1	8
6. 0	1	1	1	1	1	1	1	1	1	1	10

Day 4 (8/7/04) 654

Conc. (g/L)	Survivors in Replicate: 1	2	3	4	5	6	7	8	9	10	Total
1. 20	X	X	X	X	X	X	X	X	X	X	0
2. 10	X	X	X	X	X	X	X	X	X	X	0
3. 5	X	1	1	1	X	1	X	X	1	X	5
4. 2.5	1	X	1	1	X	1	1	1	1	1	8
5. 1.25	1	1	1	1	1	X	1	X	1	1	8
6. 0	1	1	1	1	1	1	1	1	1	1	10

ANC08896
BZTO104(e)008896

Acute 96-hr Toxicity Test-96 Hr Survival

Start Date:	8/3/04 13:10	Test ID:	999-1814	Sample ID:	REF-Ref Toxicant
End Date:	8/7/04 12:30	Lab ID:	ORNAS-Northwestern Aquati	Sample Type:	KCL-Potassium chloride
Sample Date:		Protocol:	EPAF 91-EPA Freshwater	Test Species:	CT-Chironomus tentans
Comments:					

Conc-gm/L	1
D-Control	1.0000
1.25	0.8000
2.5	0.8000
5	0.5000
10	0.0000
20	0.0000

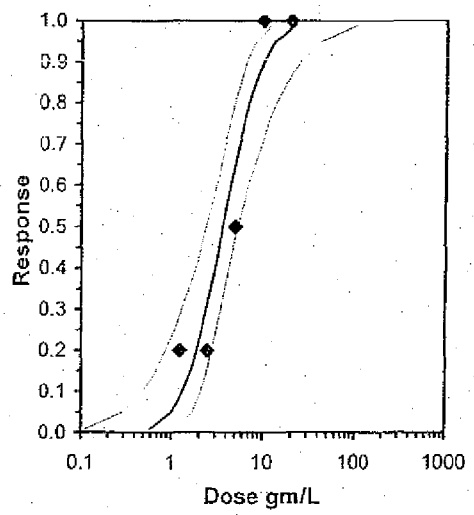
Conc-gm/L	Mean	N-Mean	Resp	Not Resp	Total	N	Fisher's Exact P	1-Tailed Critical	Number Resp	Total Number
D-Control	1.0000	1.0000	0	10	10	1			0	10
1.25	0.8000	0.8000	2	8	10	1	0.2368	0.0500	2	10
2.5	0.8000	0.8000	2	8	10	1	0.2368	0.0500	2	10
*5	0.5000	0.5000	5	5	10	1	0.0163	0.0500	5	10
10	0.0000	0.0000	10	0	10	1			10	10
20	0.0000	0.0000	10	0	10	1			10	10

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU
Fisher's Exact Test	2.5	5	3.53553	

Maximum Likelihood-Probit

Parameter	Value	SE	95% Fiducial Limits		Control	Chi-Sq	Critical	P-value	Mu	Sigma	Iter
Slope	2.95301	0.69191	1.59687	4.30915	0	4.63145	7.81472	0.2	0.5593	0.33864	5
Intercept	3.34839	0.46822	2.43068	4.26611							
TSCR											

Point	Probits	gm/L	95% Fiducial Limits	
EC01	2.674	0.59089	0.11115	1.14534
EC05	3.355	1.00528	0.28986	1.68874
EC10	3.718	1.33449	0.47934	2.09376
EC15	3.964	1.61555	0.66922	2.43433
EC20	4.158	1.88058	0.86817	2.75773
EC25	4.326	2.14234	1.08004	3.08434
EC40	4.747	2.97511	1.81374	4.22172
EC50	5.000	3.6249	2.39643	5.27164
EC60	5.253	4.41661	3.06507	6.8001
EC75	5.674	6.13343	4.3171	11.0975
EC80	5.842	6.98716	4.86273	13.7083
EC85	6.036	8.13338	5.54217	17.6762
EC90	6.282	9.84639	6.47757	24.5494
EC95	6.645	13.0709	8.06999	40.4015
EC99	7.326	22.2374	11.9521	104.893



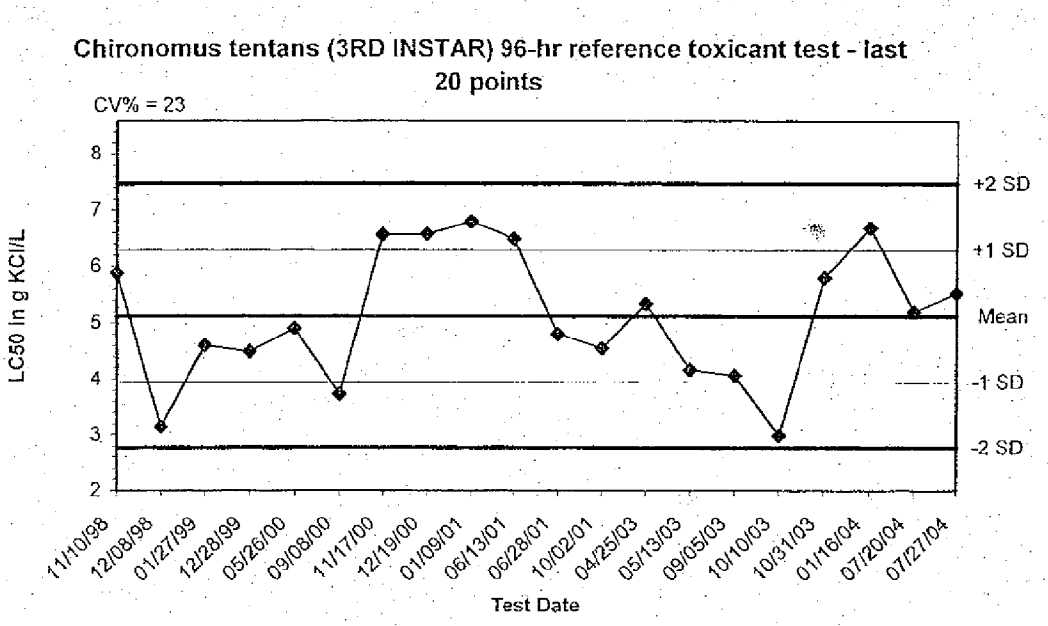
ANC08897

BZTO104(e)008897

Test: AT-Acute 96-hr Toxicity Test							Test ID: 999-1814		
Species: CT-Chironomus tentans							Protocol: EPAF 91-EPA Freshwater		
Sample ID: REF-Ref Toxicant							Sample Type: KCL-Potassium chloride		
Start Date: 8/3/04 13:10			End Date: 8/7/04 12:30				Lab ID: ORNAS-Northwestern Aquatic Sciences		
Pos	ID	Rep	Group	Start	24 Hr	48 Hr	72 Hr	96 Hr	Notes
	1	1	D-Control	10				10	
	2	1	1.250	10				8	
	3	1	2.500	10				8	
	4	1	5.000	10				5	
	5	1	10.000	10				0	
	6	1	20.000	10				0	

Comments: Data entry verified against laboratory bench sheets - MSR 8-20-04

ANC08898
BZTO104(e)008898



Dates	Values	Mean	-1 SD	-2 SD	+1 SD	+2 SD
11/10/98	5.8800	5.1125	3.9392	2.7658	6.2858	7.4592
12/08/98	3.1400	5.1125	3.9392	2.7658	6.2858	7.4592
01/27/99	4.6000	5.1125	3.9392	2.7658	6.2858	7.4592
12/28/99	4.4900	5.1125	3.9392	2.7658	6.2858	7.4592
05/26/00	4.9000	5.1125	3.9392	2.7658	6.2858	7.4592
09/08/00	3.7300	5.1125	3.9392	2.7658	6.2858	7.4592
11/17/00	6.5600	5.1125	3.9392	2.7658	6.2858	7.4592
12/19/00	6.5700	5.1125	3.9392	2.7658	6.2858	7.4592
01/09/01	6.7900	5.1125	3.9392	2.7658	6.2858	7.4592
06/13/01	6.4900	5.1125	3.9392	2.7658	6.2858	7.4592
06/28/01	4.8000	5.1125	3.9392	2.7658	6.2858	7.4592
10/02/01	4.5500	5.1125	3.9392	2.7658	6.2858	7.4592
04/25/03	5.3400	5.1125	3.9392	2.7658	6.2858	7.4592
05/13/03	4.1600	5.1125	3.9392	2.7658	6.2858	7.4592
09/05/03	4.0600	5.1125	3.9392	2.7658	6.2858	7.4592
10/10/03	2.9800	5.1125	3.9392	2.7658	6.2858	7.4592
10/31/03	5.8000	5.1125	3.9392	2.7658	6.2858	7.4592
01/16/04	6.6800	5.1125	3.9392	2.7658	6.2858	7.4592
07/20/04	5.2000	5.1125	3.9392	2.7658	6.2858	7.4592
07/27/04	5.5300	5.1125	3.9392	2.7658	6.2858	7.4592

YMR
8-20-04

Report

of

Test No. 686-5

Toxicity of Portland Harbor RI/FS Freshwater Test Sediments (Batch 3) using a 28-day Amphipod, *Hyalella azteca*, Sediment Bioassay

Submitted to

Windward Environmental, Inc.
200 West Mercer Street, Suite 401
Seattle, WA 98119

Submitted by

Northwestern Aquatic Sciences
3814 Yaquina Bay Road
P.O. Box 1437
Newport, OR 97365

January 18, 2005

ANC08900
BZTO104(e)008900

TOXICITY TEST REPORT

TEST IDENTIFICATION

Test No.: 686-5

Title: Toxicity of Portland Harbor RI/FS freshwater test sediments (Batch 3) using a 28-day amphipod, *Hyalella azteca*, sediment bioassay.

Protocol No.: NAS-686-HA4c, June 24, 2004. Based on ASTM Method E 1706-00 (ASTM 2003) and EPA Method 100.4 (EPA/600/R-99/064, 2000). This protocol can be found in Appendix B of the Portland Harbor RI/FS Round 2 Quality Assurance Project Plan, June 24, 2004.

STUDY MANAGEMENT

Study Sponsor: Windward Environmental, Inc., 200 West Mercer Street, Suite 401, Seattle, WA 98119.

Sponsor's Study Monitor: Ms. Helle Anderson

Testing Laboratory: Northwestern Aquatic Sciences, P.O. Box 1437, Newport, OR 97365

Test Location: Newport laboratory

Laboratory's Study Personnel: G.J. Irissarri, B.S., Proj. Man./Study Dir.; L.K. Nemeth, M.B.A., QA Officer; R.S. Caldwell, Ph.D., Sr. Toxicol.; M.S. Redmond, M.S., Aq. Toxicol.; G.A. Buhler, B.S., Aq. Toxicol.; W.T. Montgomery, A.A., Sr. Tech.; G. Hayes, B.S., Tech.; S.J. Gage, B.A., Tech.; B.B. Pridgeon, Lab Asst.

Study Schedule:

Test Beginning: 8-10-04, 1330 hrs.

Test Ending: 9-7-04, 1300 hrs.

Disposition of Study Records: All specimens, raw data, reports and other study records are stored according to Good Laboratory Practice regulations at Northwestern Aquatic Sciences, 3814 Yaquina Bay Rd., Newport, OR 97365.

Good Laboratory Practices: The test was conducted following the principles of Good Laboratory Practices (GLP) as defined in the EPA/TSCA Good Laboratory Practice regulations revised August 17, 1989 (40 CFR Part 792).

Statement of Quality Assurance: The test data were reviewed by the Quality Assurance Unit to assure that the study was performed in accordance with the protocol and standard operating procedures. This report is an accurate reflection of the raw data.

TEST MATERIAL

Test Sediments: Portland Harbor RI/FS freshwater test sediments (Batch 3). Details are as follows:

NAS Sample No.	9325F	9326F	9327F	9328F	9329F
Description	LW2-G082	LW2-G088	LW2-G086	LW2-G090	LW2-G091
Collection Date	8/2/04	8/2/04	8/2/04	8/2/04	8/2/04
Receipt Date	8/5/04	8/5/04	8/5/04	8/5/04	8/5/04
NAS Sample No.	9330F	9331F	9332F	9333F	9334F
Description	LW2-G096	LW2-G099	LW2-G103	LW2-G106	LW2-G109
Collection Date	8/3/04	8/3/04	8/3/04	8/3/04	8/3/04
Receipt Date	8/5/04	8/5/04	8/5/04	8/5/04	8/5/04
NAS Sample No.	9335F	9336F	9337F	9338F	9339F
Description	LW2-G112	LW2-G077	LW2-G105	LW2-G117	LW2-G121
Collection Date	8/3/04	8/3/04	8/3/04	8/3/04	8/3/04
Receipt Date	8/5/04	8/5/04	8/5/04	8/5/04	8/5/04
NAS Sample No.	9341F	9342F	9343F	9344F	9345F
Description	LW2-G122	LW2-G235	LW2-G164	LW2-G178	LW2-G180
Collection Date	8/3/04	8/4/04	8/4/04	8/4/04	8/4/04
Receipt Date	8/5/04	8/5/04	8/5/04	8/5/04	8/5/04

ANC08901
BZTO104(e)008901

Control Sediment: The negative control sediment (NAS#9323F) was collected on 8-4-04 from an area approximately one mile east of the Hwy. 101 bridge at Beaver Creek, approx. 8 miles south of Newport, OR.
Treatments: Homogenized at test set up by mixing using stainless steel implements.
Storage: All test and control sediments were stored locked at 4°C in the dark in capped containers until used.

TEST WATER

Source: Dechlorinated Newport, OR tap water.
Dates of Collection: Nineteen batches of test water were collected between 8-7-04 and 9-5-04
Water Quality (mean ± S.D.):
pH: 7.1 ± 0.1 (n=19)
conductivity: 158 ± 7µmhos/cm (n=19)
hardness: 34 ± 0 mg/L as $CaCO_3$ (n=19)
alkalinity: 36 ± 8 mg/L as $CaCO_3$ (n=19)
chlorine: All batches were <0.02 mg/L.
Pretreatment: Dechlorinated and aerated ≥24 hr.

TEST ORGANISMS

Species: *Hyalella azteca,* amphipod.
Age/Size: 7-8 days old
Source: Chesapeake Cultures, Hayes, VA; received 8-6-04
Acclimation: Holding conditions prior to testing averaged (n=5): temperature, 22.4 ± 0.3°C; dissolved oxygen, 9.8 ± 2.9 mg/L; pH, 7.4 ± 0.2; conductivity, 178 ± 7 µmhos/cm; hardness, 36 ± 7 mg/L as $CaCO_3$; and alkalinity, 40 ± 7 mg/L as $CaCO_3$.
Half of the water was replaced daily with dechlorinated Newport, OR tap water during holding. Animals were fed YTC daily during holding.

TEST PROCEDURES AND CONDITIONS

The following is an abbreviated statement of the test procedures and a statement of the test conditions actually employed. See the test protocol for a more detailed description of the test procedures used in this study.

Test Chambers: 300 ml high-form glass beakers
Test Volumes: 100 ml sediment layer; 175 ml test water.
Replicates/Treatment: 8
Organisms/Treatment: 80
Water Volume Changes: 2 water volumes per day
Aeration: None.
Feeding: Animals are fed 1.0 ml of YTC suspension per beaker daily.
Effects Criteria: 1) survival after 28 days, and 2) average individual biomass (based on dry weight) after 28 days. Death is defined as no visible movement or response to tactile stimulation. Missing organisms were considered to be dead.
Water Quality and Other Test Conditions: The temperature, dissolved oxygen, conductivity, pH, hardness, alkalinity and ammonia-nitrogen were measured in the overlying water of one replicate test container per treatment on days 0 and 28 of the test. Temperature was measured daily, dissolved oxygen and pH three times per week, and conductivity weekly, in the overlying water of one replicate test container per treatment. Interstitial ammonia and pH were measured in the bulk sediment. Hardness and alkalinity were measured with titrimetric methods. Interstitial water samples from bulk sediments were obtained by centrifugation, or by settling in the case of very sandy sediments. Total ammonia-N was measured using Hach reagents based on the salicylate (Clin. Chim. Acta 14:403, 1996) colorimetric method. Samples were not distilled prior to analysis. The photoperiod was 16:8, L:D.

ANC08902
BZTO104(e)008902

DATA ANALYSIS METHODS

Survival and mortality were calculated for each replicate as follows:

percent survival = 100 x (number surviving/initial number tested)
percent mortality = 100 x (number dead/initial number tested)

average individual biomass = (final wt. - tare wt.)/number weighed,
where:
final wt. = tare wt. + dry weight of organisms recovered on day 28, in mg

Means and standard deviations for the biological endpoints described above, and for water quality data, were computed using Microsoft Excel 2000.

PROTOCOL DEVIATIONS

None

REFERENCE TOXICANT TEST

The reference toxicant test is a multi-concentration toxicity test using cadmium chloride, to evaluate the performance of the test organisms used in the sediment toxicity test. The performance is evaluated by comparing the results of this test with historical results obtained at the laboratory. A summary of the reference toxicant test result is given below. The reference toxicant test raw data are found in Appendix II.

Test No.: 999- 1821
Reference Toxicant and Source: Cadmium as $CdCl_2 \bullet 2½ H_2O$, Mallinckrodt Lot #TNZ, 1.0 mg/ml stock prepared 4-2-03.
Test Date: 8-10-04.
Dilution Water Used: Moderately hard synthetic water prepared from Milli-Q® deionized water.
Result: 96-hr LC50, 6.93 µg/L. This result is within the laboratory's control chart warning limits (3.49 - 16.5 µg/L).

TEST RESULTS

Observations of water quality in the overlying water throughout the test are summarized in Table 1. A detailed tabulation of the water quality results by sample and test day can be found in Appendix I. Interstitial ammonia measurements and pH for bulk sediments are listed in Table 2. The means and standard deviations of percent mortality of *Hyalella* exposed for 28 days to sediments, and the growth measured as dry weight are summarized in Table 3. Detailed data organized by sample and replicate, and summary statistics for these observations, are given in Appendix I.

All water quality observations of overlying water temperature and dissolved oxygen were within the protocol specified ranges. Ammonia-N in the overlying water ranged from <0.1 to 1.4 mg/L in all day 0 and day 28 observations. Interstitial bulk sediment values for ammonia-N ranged from <0.5 to 10.6 mg/L.

The test met the acceptability criteria specified in the test protocol with 95.0% mean control survival (≥80% required). The reference toxicant (positive control) result was within the laboratory's control chart limits (6.93 µg/L; control chart mean ± 2 S.D. = 10.0 ± 6.52). It is concluded, therefore, that the test has developed fully acceptable data for use in making management decisions.

REFERENCES

ASTM. 2003. Standard Test Methods for Measuring the Toxicity of Sediment-Associated Contaminants with Fresh Water Invertebrates. ASTM Standard Method No. E 1706-00. Am. Soc. Test. Mat., West Conshohocken, PA.

ANC08903
BZTO104(e)008903

U.S. EPA. 2000. Section 11, Test Method 100.1, *Hyalella azteca* 10-d Survival and Growth Test for Sediments, pp 47-54 In: Methods for Measuring the Toxicity and Bioaccumulation of Sediment-associated Contaminants with Freshwater Invertebrates (Second Edition). EPA/600/R-99/064.

STUDY APPROVAL

Gerald Lussier 1-20-05
Project Manager/Study Director Date

Linda K. Denton 1/14/05
Quality Assurance Unit Date

Richard A. Caldwell 1/20/05
Laboratory Director Date

ANC08904
BZTO104(e)008904

Table 1. Summary of water quality conditions during tests of the amphipod, *Hyalella azteca*, exposed to freshwater sediments.

Water Quality Parameter	Mean ± S.D.	Minimum	Maximum	N
Temperature (°C)	23.0 ± 0.2	22.3	23.4	609
Dissolved oxygen (mg/L)	5.9 ± 0.7	4.4	8.4	294
Conductivity (µmhos/cm)	166 ± 10	155	215	126
pH	6.6 ± 0.5	4.1	7.2	294
Hardness (mg/L as $CaCO_3$)	45 ± 6	26	60	42
Alkalinity (mg/L as $CaCO_3$)	42 ± 5	40	60	42
Total ammonia (mg/L)	---	<0.1	1.4	42

Table 2. Pore water ammonia-N and pH in bulk test sediments at the time of test setup.

NAS Sample No.	Sample Description	Ammonia (mg/L)	pH
9323F	Control	3.7	7.0
9325F	LW2-G082	1.1	7.0
9326F	LW2-G088	9.3	6.5
9327F	LW2-G086	9.0	6.6
9328F	LW2-G090	9.7	6.6
9329F	LW2-G091	10.6	6.6
9330F	LW2-G096	2.0	6.7
9331F	LW2-G099	6.5	6.5
9332F	LW2-G103	4.6	6.5
9333F	LW2-G106	4.8	6.5
9334F	LW2-G109	6.0	6.6
9335F	LW2-G112	5.6	6.6
9336F	LW2-G077	6.3	6.5
9337F	LW2-G105	3.4	6.5
9338F	LW2-G117	9.2	6.5
9339F	LW2-G121	7.9	6.6
9341F	LW2-G122	9.5	6.6
9342F	LW2-G235	---*	---*
9343F	LW2-G164	<0.5	6.8
9344F	LW2-G178	2.5	6.7
9345F	LW2-G180	4.3	6.8

* Insufficient water for analysis

ANC08905
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Table 3. Mortality and growth results of *Hyalella* 28-day sediment toxicity test

NAS Sample No.	Sample Description	Average Percent mortality (Mean ± SD)	Average dry wt/amphipod (mg) (Mean ± SD)
9323F	Control	5.0 ± 7.6	0.30 ± 0.06
9325F	LW2-G082	6.3 ± 7.4	0.31 ± 0.03
9326F	LW2-G088	5.0 ± 5.3	0.26 ± 0.06
9327F	LW2-G086	3.8 ± 7.4	0.30 ± 0.06
9328F	LW2-G090	5.0 ± 9.3	0.29 ± 0.05
9329F	LW2-G091	6.3 ± 11.9	0.33 ± 0.04
9330F	LW2-G096	5.0 ± 7.6	0.30 ± 0.05
9331F	LW2-G099	1.3 ± 3.5	0.28 ± 0.08
9332F	LW2-G103	3.8 ± 5.2	0.26 ± 0.05
9333F	LW2-G106	7.5 ± 8.9	0.29 ± 0.08
9334F	LW2-G109	2.5 ± 4.6	0.26 ± 0.04
9335F	LW2-G112	6.3 ± 11.9	0.29 ± 0.06
9336F	LW2-G077	3.8 ± 5.2	0.26 ± 0.08
9337F	LW2-G105	2.5 ± 4.6	0.34 ± 0.08
9338F	LW2-G117	17.5 ± 10.4	0.31 ± 0.04
9339F	LW2-G121	5.0 ± 7.6	0.28 ± 0.08
9341F	LW2-G122	0.0 ± 0.0	0.22 ± 0.05
9342F	LW2-G235	5.0 ± 10.7	0.27 ± 0.06
9343F	LW2-G164	2.5 ± 4.6	0.30 ± 0.02
9344F	LW2-G178	3.8 ± 5.2	0.30 ± 0.06
9345F	LW2-G180	3.8 ± 10.6	0.31 ± 0.04

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APPENDIX I

RAW DATA

TEST DESCRIPTION, MONITORING, AND RESULTS BENCHSHEETS

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-5 Client Windward Environmental Investigator

STUDY MANAGEMENT

Client: Windward Enviromental, 200 West Mercer Street, Suite 401, Seattle, WA 98119

Client's Study Monitor: Ms. Helle Anderson

Testing Laboratory: Northwestern Aquatic Sciences

Test Location: Newport Laboratory

Laboratory's Study Personnel:

Proj. Man./Study Dir. G.J. Irissarri GJI

QA Officer L.K. Nemeth

1. GA Buhler GAB 2. G.C. Hayes GCH

3. Susan Gage SAG 4. R.S. Caldwell RSC

Study Schedule: 5. Will Montgomery WM 6. B.B. Pridgeon BBP 7. W.S. Redmond WSR

Test Beginning: 8-10-04 1330 Test Ending: 9-7-04 1300

TEST MATERIAL

General description (see sample logbook/chain-of-custody for details):

NAS Sample No.:	9323F	9325F	9326F	9327F	9328F
Description:	Control	LW2-G082	LW2-G088	LW2-G086	LW2-G090
Collection Date:	8/4/04	8/2/04	8/2/04	8/2/04	8/2/04
Receipt Date:	8/4/04	8/5/04	8/5/04	8/5/04	8/5/04
:					

NAS Sample No.:	9329F	9330F	9331F	9332F	9333F
Description:	LW2-G091	LW2-G096	LW2-G099	LW2-G103	LW2-G106
Collection Date:	8/2/04	8/3/04	8/3/04	8/3/04	8/3/04
Receipt Date:	8/5/04	8/5/04	8/5/04	8/5/04	8/5/04
:					

NAS Sample No.:	9334F	9335F	9336F	9337F	9338F
Description:	LW2-G109	LW2-G112	LW2-G077	LW2-G105	LW2-G117
Collection Date:	8/3/04	8/3/04	8/3/04	8/3/04	8/3/04
Receipt Date:	8/5/04	8/5/04	8/5/04	8/5/04	8/5/04
:					

NAS Sample No.:	9339F	9341F	9342F	9343F	9344F
Description:	LW2-G121	LW2-G122	LW2-G235	LW2-G164	LW2-G178
Collection Date:	8/3/04	8/3/04	8/4/04	8/4/04	8/4/04
Receipt Date:	8/5/04	8/5/04	8/5/04	8/5/04	8/5/04
:					

NAS Sample No.:	9345F				
Description:	LW2-G180				
Collection Date:	8/4/04				
Receipt Date:	8/5/04 5 GJI (3) 8-10-04				
:					

NAS Sample No.:					
Description:					
Collection Date:					
Receipt Date:					
:					

Error codes: 1) correction of handwriting error
2) written in wrong location; entry deleted
3) wrong date deleted, replaced with corrrect date
4) error found in measurement; measurement repeated

ANC08909
BZTO104(e)008909

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-5 Client Windward Environmental Investigator _____

SEDIMENT DESCRIPTIONS -- SUPPLEMENTAL NOTES

Sample No.	Description
9323F	BLACK FINE MUD
9325F	Gray brown muddy sand
9326F	FINE DARK GRAY/BROWN MUD W/ LIGHT SAND
9327F	Gray brown fine mud, one large Chironomid found
9328F	Brown mud
9329F	grey - Brown muddy fine sand
9330F	GRAY/BROWN MUDDY SAND
9331F	Dark gray brown, sandy mud
9332F	Gray brown mud w/ rocks
9333F	Brown muddy sand
9334F	Dark brown fine grain mud.
9335F	DARK GRAY/BROWN FINE MUD
9336F	Brown mud
9337F	BROWN Mud W/ lots of wood debris
9338F	Dark brown fine grain mud w/ some wood chunks
9339F	Brown creamy mud
9341F	DARK GRAY/BROWN FINE MUD
9342F	Brown coarse dry sand
9343F	DARK BROWN MUDDY SAND W/ SOME SMALL ROCKS
9344F	Dark Gray Brown Sandy Mud
9345F	GRAY/BROWN MUDDY SAND

ANC08910
BZTO104(e)008910

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-5 Client Windward Environmental Investigator

TEST WATER

Source: DECHLORINATED NEWPORT, OR TAP WATER

Date of Collection: 8-7-04

pH 7.1 (SEE ATTACHED SHEET)

Cond (umhos/cm2) 155

Hardness (mg/La0 34

Alkalinity (mg/L) 30

Treatments: AERATED ≥ 24 HRS

TEST ORGANISMS

Species: *Hyalella azteca* Age: 7-8 DAYS Date received: 8-6-04

Source: Chesapeake Cultures, Hayes, VA

Acclimation Data:

Date	Temp. (deg.C)	DO (mg/L)	pH	Cond umhos/cm	Feeding amount	Feeding description	Water changes	Hardness (mg/L)	Alkalinity (mg/L)
8-6-04	22.8	>15.0	7.1	185	10 mL/PAN*	YTC	½ REPLACED W/ DILUTION WATER	26	30
8-7-04	22.1	8.7	7.5	175	"	"	"	43	40
8-8-04	22.7	8.5	7.3	185	"	"	"	34	40
8-9-04	22.1	8.6	7.5	175	"	"	"	43	50
8-10-04	22.5	8.4	7.4	170	"	"	—	34	40
Mean	22.4	9.8	7.4	178				36	40
S.D.	0.3	2.9	0.2	7				7	7
(N)	5	5	5	5				5	5

Photoperiod during acclimation: 16:8, L:D

* ANIMALS DIVIDED INTO 3 PANS

TEST PROCEDURES AND CONDITIONS

Test chambers: 300 ml glass beakers

Test volumes: 100 ml of test sediment; 275 ml total volume

Replicates/treatment: (8) 8 Organisms/treatment: (80) 80 (10/REPL)

Test water changes: Twice daily

Aeration: only if DO falls below 2.5 mg/L

Feeding: everyday beginning with day zero

Test temperature (deg.C): 23

Beaker placement: Total randomization

Photoperiod: 16:8, L:D

Control Sediment:

Source: From an area approximately one mile east of the Hwy. 101 bridge at Beaver Creek, approx. 8 miles south of Newport, OR.

Date collected: 8-4-04

Sieved through 0.5 -mm screen NAS# 9323F

Storage: 4°C in the dark in closed containers.

MISCELLANEOUS NOTES

ANC08911
BZTO104(e)008911

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4b

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686- 5 Client Windward Environmental Investigator

Test Dilution Water: Dechlorinated Newport, OR Tap Water

Date of Collection		Total Chlorine (mg/L)	Hardness (mg/L)	Alkalinity (mg/L)	Conductivity (µmhos/cm)	pH
8-7-04		<0.02	34	30	155	7.1
8-9-04		<0.02	34	30	160	7.0
8-10-04		<0.02	34	30	155	7.1
8-12-04		<0.02	34	30	160	7.2
8-14-04		<0.02	34	40	150	7.2
8-14-04	2ND BATCH	<0.02	34	40	160	7.2
8-16-04		<0.02	34	50	160	7.0
8-17-04		<0.02	34	40	160	7.0
8-18-04		<0.02	34	50	140	7.2
8-19-04		<0.02	34	50	160	6.9
8-20-04		<0.02	34	40	160	7.0
8-23-04		<0.02	34	30	150	7.1
8-23-04	2ND BATCH	<0.02	34	30	160	7.1
8-25-04		<0.02	34	40	155	7.1
8-27-04		<0.02	34	40	170	7.1
8-30-04		<0.02	34	30	160	7.2
8-31-04		<0.02	34	30	160	7.2
9-3-04		<0.02	34	30	170	7.1
9-5-04		<0.02	34	30	165	7.0
		$\bar{X}$ = ~~0.02~~ GM	34	36	158	7.1
		SD = —	0	8	7	0.1
		N =	19	19	19	19

ANC08912
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NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-5 Client Windward Environmental Investigator _____

Test conducted in (circle one): room 1 (room 2) trailer water bath other:_____

Randomization chart:

5								165	
4								164	
3								163	168
2								162	167
1								161	166

Randomization chart:

Randomization chart:

Randomization chart:

ANC08913
BZTO104(e)008913

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No 686-5 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 0 (8 10 04) BBP

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond.* umhos/cm	pH*	Hardness* (mg/L)	Alkalinity* (mg/L)	S (ppm)	NH3* (ppm)	Comments
1	22.8	6.2	210	6.9	60	60			Each beaker fed 1.0 ml
5	23.0	6.9	165	7.0	51	60			YTC suspension
7	22.8	6.9	180	7.0	43	50			Initials: BS
22	22.8	7.0	170	7.0	51	40			
28	22.8	7.2	160	7.0	26	50			
29	22.9	7.0	160	7.0	43	40			
39	22.9	7.1	175	7.0	43	50			
44	22.9	7.5	160	7.0	43	40			
52	22.8	6.8	165	6.9	51	40			Water changed in all
68	22.8	6.8	190	7.0	51	40			beakers.
80	23.0	7.1	170	6.9	51	40			Time: 0705
91	22.9	6.2	215	7.2	43	40			Initials: GJ
93	22.9	7.0	195	7.0	60	40			
102	22.8	7.0	170	7.0	51	40			
107	22.8	7.2	170	7.2	43	40			
145	22.9	7.2	160	7.1	51	40			
151	22.8	7.2	170	7.0	43	40			Water changed in all
156	22.8	7.4	160	7.0	43	40			beakers.
157	22.8	7.2	170	7.0	60	40			Time: 1750
159	22.8	7.4	160	7.1	43	40			Initials: GJ
164	22.9	7.0	160	6.9	43	40			

*Water quality measurements to be taken.

Day 1 (8 11 04) BBP

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond.* umhos/cm	pH*	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
1	23.2	5.2	190	7.1					Each beaker fed 1.0 ml
5	23.2	5.2	170	7.0					YTC suspension
7	23.1	5.6	185	7.0					Initials: GJ
22	23.1	5.4	170	7.0					
28	23.1	5.4	165	7.0					
29	23.2	5.2	175	7.0					
39	23.2	5.0	175	6.9					
44	23.2	5.2	165	7.0					
52	23.1	5.2	170	6.9					Water changed in all
68	23.1	5.2	190	7.1					beakers.
80	23.3	5.4	170	6.9					Time: 0655
91	23.1	6.0	205	7.2					Initials: GJ
93	23.1	5.4	195	7.0					
102	23.1	5.4	170	7.0					
107	23.1	5.8	170	7.0					
145	23.2	5.6	165	6.9					
151	23.1	6.0	170	6.9					Water changed in all
156	23.1	6.2	165	7.0					beakers.
157	23.1	4.6	170	6.9					Time: 1730
159	23.1	6.6	165	7.0					Initials: AMM
164	23.2	5.6	160	6.7					

*Water quality measurements to be taken.

ANC08914
BZTO104(e)008914

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No 686-5 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 2 (9 /12 04) ugm

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. umhos/cm	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
1	23.0								Each beaker fed 1.0 ml
5	23.0								YTC suspension
7	22.9								Initials: GJI
22	22.9								
28	22.9								
29	23.0								
39	23.0								
44	23.0								
52	23.0								Water changed in all
68	23.0								beakers.
80	23.1								Time: 0715
91	23.0								Initials: GJI
93	23.0								
102	23.0								
107	23.0								
145	23.0								
151	23.0								Water changed in all
156	22.9								beakers.
157	22.9								Time: 1710
159	22.9								Initials: /BBP
164	22.9								

*Water quality measurements to be taken.

Day 3 (9 /13 04) /BBP

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. umhos/cm	pH*	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
1	22.8	6.0		7.2					Each beaker fed 1.0 ml
5	22.8	6.3		7.1					YTC suspension
7	22.8	6.4		7.1					Initials: GJI
22	22.8	6.4		7.0					
28	22.8	6.4		7.1					
29	22.8	6.4		7.0					
39	22.8	6.4		6.9					
44	22.8	6.5		7.1					
52	22.8	6.3		7.0					Water changed in all
68	22.8	6.4		7.2					beakers.
80	22.9	6.5		7.0					Time: 0710
91	22.8	6.4		7.2					Initials: MB
93	22.8	6.0		7.0					
102	22.8	6.0		7.0					
107	22.6	6.2		7.2					
145	22.6	6.4		7.2					
151	22.6	6.4		7.0					Water changed in all
156	22.6	6.4		7.1					beakers. BBP
157	22.6	6.5		7.0					Time: 1710 1710
159	22.6	6.9		7.2					Initials: MB BBP
164	22.7	6.5		7.0					

*Water quality measurements to be taken.

ANC08915
BZTO104(e)008915

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No 686-5 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 4 (8 /14/04 MB/GJ

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
1	23.1								Each beaker fed 1.0 ml
5	23.2								YTC suspension
7	23.0								Initials: GJ
22	23.0								
28	23.0								
29	23.1								
39	23.1								
44	23.1								
52	23.1								Water changed in all
68	23.1								beakers.
80	23.3								Time: 0700
91	23.1								Initials: MB
93	23.0								
102	23.0								
107	23.0								
145	23.2								
151	23.0								Water changed in all
156	23.1								beakers.
157	23.1								Time: 1830
159	23.0								Initials: BBP
164	23.1								

*Water quality measurements to be taken.

Day 5 (8 /15/04 MB/GJ

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
1	23.2								Each beaker fed 1.0 ml
5	23.2								YTC suspension
7	23.1								Initials: GJ
22	23.1								
28	23.1								
29	23.2								
39	23.2								
44	23.2								
52	23.1								Water changed in all
68	23.1								beakers.
80	23.3								Time: 0745
91	23.1								Initials: MB
93	23.1								
102	23.1								
107	23.1								
145	23.2								
151	23.0								Water changed in all
156	23.1								beakers.
157	23.1								Time: 1800
159	23.0								Initials: BBP
164	23.1								

*Water quality measurements to be taken.

ANC08916
BZTO104(e)008916

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No 686-5 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 6 (8/16 04) AB/GJL

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. umhos/cm	pH*	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
1	23.1	5.7		7.2					Each beaker fed 1.0 ml
5	23.1	5.7		7.1					YTC suspension
7	23.0	5.9		7.1					Initials: GJL
22	23.0	5.4		7.2					
28	23.0	5.6		7.1					
29	23.0	5.7		7.1					
39	23.0	5.6		7.1					
44	23.1	6.0		7.0					
52	23.0	5.4		7.0					Water changed in all
68	23.0	5.8		7.1					beakers.
80	23.2	5.7		7.0					Time: 0705
91	23.0	5.8		7.1					Initials: AB
93	23.0	5.4		7.1					
102	22.9	5.5		7.0					
107	22.9	6.1		7.1					
145	23.0	5.8		7.0					
151	22.9	5.7		7.0					Water changed in all
156	22.9	6.0		7.0					beakers.
157	22.9	5.3		7.0					Time: 1735
159	22.9	6.6		7.1					Initials: AB/GJL
164	22.9	6.0		7.1					

*Water quality measurements to be taken.

Day 7 (8/17 04) AB/GJL

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. umhos/cm	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
1	23.2								Each beaker fed 1.0 ml
5	23.2								YTC suspension
7	23.1								Initials: AB
22	23.1								
28	23.1								
29	23.1								
39	23.1								
44	23.1								
52	23.1								Water changed in all
68	23.1								beakers.
80	23.1								Time: 0710
91	23.2								Initials: GJL
93	23.1								
102	23.1								
107	23.1								
145	23.1								
151	23.1								Water changed in all
156	23.1								beakers.
157	23.1								Time: 1730
159	23.0								Initials: AB
164	23.0								

*Water quality measurements to be taken.

ANC08917
BZTO104(e)008917

Test No 686-5 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 8 (8/18/04) [illegible]/[illegible]/[illegible]

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond.* (mhos/cm)	pH*	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
1	22.4	5.3	170	6.7					Each beaker fed 1.0 ml
5	22.6	5.6	165	6.6					YTC suspension
7	22.4	5.8	165	6.7					Initials: [illegible]
22	22.3	5.8	165	6.7					
28	22.3	5.8	160	6.6					
29	22.4	5.9	160	6.6					
39	22.4	5.8	165	6.6					
44	22.4	6.1	165	6.6					
52	22.4	5.9	165	6.6					Water changed in all
68	22.4	5.8	170	6.7					beakers.
80	22.6	6.1	160	6.6					Time: 0700
91	22.5	6.0	170	6.8					Initials: [illegible]
93	22.4	6.1	165	6.7					
102	22.4	5.8	165	6.6					
107	22.4	6.1	165	6.6					
145	22.4	6.0	160	6.7					
151	22.4	5.7	165	6.5					Water changed in all
156	22.4	6.2	165	6.7					beakers.
157	22.4	5.5	165	6.7					Time: 1710
159	22.4	6.7	160	6.7					Initials: [illegible]
164	22.5	6.0	160	6.5					

*Water quality measurements to be taken.

Day 9 (8/19/04) [illegible]

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. (mhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
1	22.6								Each beaker fed 1.0 ml
5	22.7								YTC suspension
7	22.5								Initials: [illegible]
22	22.6								
28	22.6								
29	22.6								
39	22.7								
44	22.7								
52	22.6								Water changed in all
68	22.7								beakers.
80	22.9								Time: 0700
91	22.7								Initials: [illegible]
93	22.7								
102	22.6								
107	22.6								
145	22.7								
151	22.6								Water changed in all
156	22.6								beakers.
157	22.6								Time: 1730
159	22.6								Initials: [illegible]
164	22.7								

*Water quality measurements to be taken.

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No 686-5 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 10 (8 / 20 /04) VB/AF

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. umhos/cm	pH*	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
1	23.0	5.7		6.9					Each beaker fed 1.0 ml
5	23.1	6.1		6.9					YTC suspension
7	22.9	6.2		6.9					Initials: VB
22	22.9	6.3		6.9					
28	23.9	6.7		7.0					
29	23.0	6.2		6.9					
39	23.0	6.2		6.8					
44	23.0	6.6		6.9					
52	23.0	6.2		6.9					Water changed in all
68	23.0	6.2		6.9					beakers.
80	23.2	6.5		6.8					Time: 0715
91	23.0	6.7		7.0					Initials: EJJ
93	23.0	6.1		6.8					
102	23.0	6.2		6.9					
107	23.0	6.7		7.0					
145	23.0	6.4		6.9					
151	23.1	6.5		6.8					Water changed in all
156	23.0	6.6		6.9					beakers.
157	23.0	5.9		6.9					Time: 1720
159	23.0	7.2		7.0					Initials: [illegible]
164	23.1	6.2		6.8					

*Water quality measurements to be taken.

Day 11 (8 / 21 /04) VB/EJJ

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. umhos/cm	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
1	22.9								Each beaker fed 1.0 ml
5	23.0								YTC suspension
7	22.8								Initials: EJJ
22	22.8								
28	22.8								
29	22.9								
39	22.9								
44	22.9								
52	22.8								Water changed in all
68	22.9								beakers.
80	23.0								Time: 0750
91	22.9								Initials: VB
93	22.9								
102	22.8								
107	22.9								
145	23.0								
151	22.8								Water changed in all
156	22.9								beakers.
157	22.9								Time: 1800
159	22.9								Initials: JSC
164	23.0								

*Water quality measurements to be taken.

ANC08919
BZTO104(e)008919

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No 686-5 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 12 (8/22/04) AJ

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. µmhos/cm	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
1	23.0								Each beaker fed 1.0 ml
5	22.9								YTC suspension
7	23.0								Initials: AJ
22	23.0								
28	23.0								
29	23.0								
39	23.0								
44	23.0								
52	23.0								Water changed in all
68	23.0								beakers.
80	23.0								Time: 0745
91	23.0								Initials: AJM
93	23.0								
102	23.0								
107	23.0								
145	22.9								
151	22.9								Water changed in all
156	22.9								beakers.
157	22.9								Time: 1730
159	22.9								Initials: BBP
164	22.9								

*Water quality measurements to be taken.

Day 13 (8/23/04) BBP/AJ

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. µmhos/cm	pH*	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
1	25.0	4.5		6.6					Each beaker fed 1.0 ml
5	23.0	4.6		6.5					YTC suspension
7	22.9	4.9		6.5					Initials: AJM
22	22.9	5.6		6.5					
28	22.9	5.4		6.5					
29	22.9	5.5		6.4					
39	22.9	5.8		6.4					
44	22.9	6.0		6.4					
52	22.9	6.2		6.5					Water changed in all
68	22.9	5.8		6.6					beakers.
80	23.1	5.8		6.5					Time: 0715
91	22.9	6.2		6.5					Initials: BBP
93	22.9	5.8		6.5					
102	22.9	5.8		6.5					
107	22.9	6.1		6.5					
145	22.9	5.8		6.5					
151	22.8	5.7		6.4					Water changed in all
156	22.8	6.0		6.5					beakers.
157	22.8	5.5		6.5					Time: 1715
159	22.8	6.6		6.6					Initials: BBP
164	22.8	5.8		6.5					

*Water quality measurements to be taken.

ANC08920
BZTO104(e)008920

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-5 Client Windward Environmental Investigator _____

DAILY RECORD SHEET

Day 14 (8/24/04) AJ/mm

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. µmhos/cm	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
1	23.1								Each beaker fed 1.0 ml
5	23.1								YTC suspension
7	23.1								Initials: mm
22	23.1								
28	23.1								
29	23.1								
39	23.1								
44	23.1								
52	23.1								Water changed in all
68	23.1								beakers.
80	23.2								Time: 0705
91	23.1								Initials: GJ
93	23.1								
102	23.1								
107	23.1								
145	23.2								
151	23.0								Water changed in all
156	23.1								beakers.
157	23.1								Time: 1710
159	23.1								Initials: AJ
164	23.1								

*Water quality measurements to be taken.

Day 15 (8/25/04) mm

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond.* µmhos/cm	pH*	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
1	23.0	5.1	165	6.9					Each beaker fed 1.0 ml
5	23.1	5.8	160	6.8					YTC suspension
7	23.0	5.8	165	6.8					Initials: mm
22	23.0	5.6	165	6.8					
28	23.0	5.7	160	6.7					
29	23.0	5.9	160	6.7					
39	23.0	5.9	160	6.7					
44	23.1	6.1	160	6.7					
52	23.1	5.5	165	6.7					Water changed in all
68	23.1	5.5	165	6.7					beakers.
80	23.2	6.0	160	6.7					Time: 0720
91	23.1	6.4	160	6.8					Initials: GJ
93	23.1	6.1	160	6.7					
102	23.0	5.7	165	6.7					
107	23.0	6.2	160	6.7					
145	23.1	6.1	160	6.6					
151	23.0	6.0	160	6.6					Water changed in all
156	23.1	6.3	160	6.7					beakers.
157	23.0	5.8	160	6.7					Time: 1715
159	23.0	6.8	160	6.7					Initials: AJ
164	23.1	6.0	155	6.6					

*Water quality measurements to be taken.

ANC08921
BZTO104(e)008921

Test No 686-5 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 16 (8/26/04) BJ

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. (mhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
1	22.9								Each beaker fed 1.0 ml
5	23.1								YTC suspension
7	22.7								Initials: WTM
22	22.7								
28	22.7								
29	22.8								
39	22.8								
44	22.7								
52	22.7								Water changed in all
68	22.7								beakers.
80	23.0								Time: 0730
91	22.8								Initials: GJJ
93	22.8								
102	22.8								
107	22.7								
145	22.9								
151	22.7								Water changed in all
156	22.9								beakers.
157	22.8								Time: 1715
159	22.8								Initials: BBP
164	22.9								

*Water quality measurements to be taken.

Day 17 (8/27/04) BJ

Beaker No.	Temp.* (deg.C)	~~DO~~ DO BJ (ppm)	Cond. (mhos/cm)	~~pH~~ pH* BJ	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
1	23.1	6.5		4.4					Each beaker fed 1.0 ml
5	23.1	6.4		5.1					YTC suspension
7	23.0	6.5		4.6					Initials: GJJ
22	23.0	6.5		4.5					
28	23.0	6.5		5.1					
29	23.0	6.4		4.4					
39	23.0	6.4		4.1					
44	23.1	6.4		5.0					
52	23.0	6.4		4.9					Water changed in all
68	23.0	6.5		4.6					beakers.
80	23.1	6.5		5.1					Time: 0655
91	23.0	6.5		5.0					Initials: GJJ
93	23.0	6.4		4.8					
102	23.0	6.4		4.7					
107	23.0	6.5		5.2					
145	23.0	6.4		5.1					
151	22.9	6.4		5.1					Water changed in all
156	22.9	6.5		5.4					beakers.
157	22.9	6.5		5.0					Time: 1700
159	22.9	6.5		5.8					Initials: BBP
164	22.9	6.4		5.2					

*Water quality measurements to be taken.

ANC08922
BZTO104(e)008922

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No 686-5 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 18 (8/28/04) WTM

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. umhos/cm	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
1	23.4								Each beaker fed 1.0 ml
5	23.3								YTC suspension
7	23.2								Initials: GSJ
22	23.1								
28	23.1								
29	23.1								
39	23.1								
44	23.1								
52	23.1								Water changed in all
68	23.1								beakers.
80	23.2								Time: 0730
91	23.1								Initials: GSJ
93	23.1								
102	23.1								
107	23.0								
145	23.1								
151	23.0								Water changed in all
156	23.0								beakers.
157	23.0								Time: 1930
159	23.0								Initials: RSC
164	23.1								

*Water quality measurements to be taken.

Day 19 (8/29/04) WTM

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. umhos/cm	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
1	23.3								Each beaker fed 1.0 ml
5	23.3								YTC suspension
7	23.2								Initials: WTM
22	23.2								
28	23.2								
29	23.2								
39	23.3								
44	23.3								
52	23.3								Water changed in all
68	23.2								beakers.
80	23.4								Time: 0749
91	23.3								Initials: WTM
93	23.2								
102	23.2								
107	23.2								
145	23.2								
151	23.2								Water changed in all
156	23.2								beakers.
157	23.2								Time: 1730
159	23.2								Initials: GSJ
164	23.2								

*Water quality measurements to be taken.

ANC08923
BZTO104(e)008923

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-5 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 20 (8/30/04) mm/DF

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. µmhos/cm	pH*	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
1	23.2	4.6		6.8					Each beaker fed 1.0 ml
5	23.3	4.7		6.6					YTC suspension
7	23.1	4.9		6.8					Initials: WTM.
22	23.1	4.6		6.7					
28	23.1	4.8		6.6					
29	23.1	5.0		6.5					
39	23.1	4.6		6.4					
44	23.2	5.2		6.5					
52	23.1	4.6		6.5					Water changed in all
68	23.1	4.4		6.5					beakers.
80	23.3	4.8		6.5					Time: 0710
91	23.1	5.1		6.7					Initials: MM
93	23.1	4.9		6.6					
102	23.1	4.5		6.5					
107	23.1	4.9		6.5					
145	23.1	5.1		6.5					
151	23.0	5.1		6.5					Water changed in all
156	23.0	5.6		6.5					beakers.
157	23.0	5.0		6.5					Time: 1715
159	23.0	5.6		6.5					Initials:
164	23.0	4.8		6.5					

*Water quality measurements to be taken.

Day 21 (9/1st/04) mm/DF

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. µmhos/cm	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
1	23.0								Each beaker fed 1.0 ml
5	23.0								YTC suspension
7	22.9								Initials: mm
22	22.9								
28	22.9								
29	22.9								
39	22.9								
44	23.0								
52	23.0								Water changed in all
68	22.9								beakers.
80	23.1								Time: 0645
91	22.9								Initials: MM
93	22.9								
102	22.9								
107	22.9								
145	22.9								
151	22.8								Water changed in all
156	22.8								beakers.
157	22.8								Time: 1710
159	22.8								Initials:
164	22.8								

*Water quality measurements to be taken.

ANC08924
BZTO104(e)008924

Test No 686-5 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 22 (9/1/04) VB/AJ

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond.* µmhos/cm)	pH*	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
1	23.2	5.0	170	6.7					Each beaker fed 1.0 ml
5	23.2	5.8	170	6.5					YTC suspension
7	23.0	5.2	160	6.6					Initials: [illegible]
22	23.0	5.0	170	6.6					
28	23.0	5.2	170	6.5					
29	23.0	5.4	165	6.5					
39	23.1	5.1	165	6.5					
44	23.1	5.9	165	6.5					
52	23.0	4.9	170	6.6					Water changed in all
68	23.1	4.9	170	6.6					beakers.
80	23.3	5.2	165	6.5					Time: 0715
91	23.1	5.0	175	6.7					Initials: VB
93	23.0	5.1	170	6.7					
102	23.0	4.8	165	6.6					
107	23.0	5.4	170	6.6					
145	23.1	5.4	165	6.5					
151	23.0	5.2	165	6.5					Water changed in all
156	23.0	5.8	170	6.6					beakers.
157	23.0	5.2	165	6.6					Time: 1710
159	23.0	5.8	165	6.5					Initials: [illegible]
164	23.1	4.9	165	6.5					

*Water quality measurements to be taken.

Day 23 (9/2/04)

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. µmhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
1	23.1								Each beaker fed 1.0 ml
5	23.2								YTC suspension
7	22.9								Initials: GJL
22	22.9								
28	22.9								
29	23.0								
39	23.0								
44	23.0								
52	22.9								Water changed in all
68	23.0								beakers.
80	23.0								Time: 0645
91	23.0								Initials: GJL
93	23.0								
102	22.9								
107	22.9								
145	23.0								
151	23.0								Water changed in all
156	22.9								beakers.
157	22.9								Time: 1720
159	22.9								Initials: [illegible]
164	22.9								

*Water quality measurements to be taken.

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No 686-5 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 24 (9 13 104) BBP

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. (umhos/cm)	pH*	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
1	23.0	4.4		6.4					Each beaker fed 1.0 ml
5	23.0	6.0		6.3					YTC suspension
7	22.9	5.2		6.4					Initials: LAB
22	22.9	4.7		6.4					
28	22.9	5.4		6.4					
29	22.9	5.0		6.3					
39	22.9	5.2		6.2					
44	22.9	5.4		6.2					
52	22.9	4.9		6.4					Water changed in all
68	22.9	5.3		6.4					beakers.
80	23.0	5.2		6.3					Time: 0635
91	23.0	5.2		6.5					Initials: GJ1
93	23.0	5.0		6.4					
102	23.0	5.2		6.3					
107	22.9	5.1		6.4					
145	23.0	5.5		6.3					
151	22.9	5.4		6.4					Water changed in all
156	22.9	6.0		6.3					beakers.
157	22.9	5.6		6.3					Time: 1730
159	22.9	5.3		6.3					Initials: BBP
164	22.9	6.0		6.3					

*Water quality measurements to be taken.

Day 25 (9 14 104) LAB/GJ1

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
1	23.0								Each beaker fed 1.0 ml
5	23.0								YTC suspension
7	22.9								Initials: GJ1
22	22.9								
28	22.9								
29	22.9								
39	22.9								
44	23.0								
52	22.9								Water changed in all
68	22.9								beakers.
80	23.2								Time: 0740
91	23.0								Initials: GJ1
93	23.0								
102	22.9								
107	22.9								
145	23.0								
151	22.9								Water changed in all
156	22.9								beakers.
157	22.9								Time: 1730
159	22.9								Initials: BBP
164	22.9								

*Water quality measurements to be taken.

ANC08926
BZTO104(e)008926

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No 686-5 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 26 (9/5/04) CJL

Beaker No.	Temp.* (deg.C)	DO (ppm)	Cond. umhos/cm	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
1	23.1								Each beaker fed 1.0 ml
5	23.1								YTC suspension
7	23.0								Initials: CJL
22	23.0								
28	23.0								
29	23.0								
39	23.0								
44	23.1								
52	23.0								Water changed in all
68	23.1								beakers.
80	23.3								Time: 0740
91	23.1								Initials: CJL
93	23.1								
102	23.0								
107	23.0								
145	23.1								
151	23.1								Water changed in all
156	23.0								beakers.
157	23.0								Time: 1815
159	23.0								Initials: CJL
164	23.1								

*Water quality measurements to be taken.

Day 27 (9/6/04) CJL

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. umhos/cm	pH*	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
1	22.9	5.3		6.7					Each beaker fed 1.0 ml
5	22.9	5.4		6.7					YTC suspension
7	22.9	5.8		6.6					Initials: CJL
22	22.9	5.1		6.6					
28	22.9	5.3		6.8					
29	22.9	5.4		6.7					
39	22.9	5.4		6.6					
44	22.9	5.3		6.6					
52	22.8	5.2		6.8					Water changed in all
68	22.9	5.4		6.7					beakers.
80	22.8	5.2		6.7					Time: 0650
91	22.8	5.1		6.7					Initials: CJL
93	22.9	5.5		6.8					
102	22.9	5.4		6.8					
107	22.9	5.5		6.7					
145	22.9	5.6		6.7					
151	22.9	5.2		6.7					Water changed in all
156	22.9	5.3		6.7					beakers.
157	22.8	5.5		6.7					Time: 1800
159	22.8	5.1		6.7					Initials: CJL
164	22.8	5.0		6.6					

*Water quality measurements to be taken.

ANC08927
BZTO104(e)008927

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No 686-5 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 28 (9/7/04 MB/KOW/BBP

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond.* umhos/cm	pH*	Hardness* (mg/L)	Alkalinity* (mg/L)	S (ppm)	NH3* (ppm)	Comments
1	23.4	6.4	160	6.7	51	50			Each beaker fed 1.0 ml
5	23.4	7.8	155	6.7	43	40			YTC suspension
7	23.3	6.9	160	6.7	43	40			Initials: KOW (1) MB
22	23.3	6.6	160	6.7	43	40			
28	23.2	7.2	160	6.7	43	40			
29	23.2	7.3	155	6.7	43	40			
39	23.2	6.8	155	6.6	43	40			
44	23.1	7.5	155	6.6	43	40			
52	23.0	6.3	160	6.6	43	40			Water changed in all
68	23.0	6.6	160	6.6	43	40			beakers.
80	23.2	7.0	155	6.6	43	40			Time: 0655
91	23.1	6.8	165	6.6	43	40			Initials: KOW
93	23.0	6.7	160	6.7	43	40			
102	23.0	6.6	155	6.7	43	40			
107	23.0	7.3	155	6.7	43	40			
145	23.1	7.1	155	6.6	43	40			
151	23.0	6.8	160	6.6	43	40			Water changed in all
156	23.0	7.4	155	6.6	34	40			beakers.
157	23.0	6.5	155	6.6	34	40			Time:
159	23.0	7.5	155	6.6	43	40			Initials:
164	23.0	7.0	155	6.6	43	40			

*Water quality measurements to be taken.

Day (/ /)

Beaker No.	Temp. (deg.C)	DO (ppm)	Cond. umhos/cm	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
1									Each beaker fed 1.0 ml
5									YTC suspension
7									Initials:
22									
28									
29									
39									
44									
52									Water changed in all
68									beakers.
80									Time:
91									Initials:
93									
102									
107									
145									
151									Water changed in all
156									beakers.
157									Time:
159									Initials:
164									

*Water quality measurements to be taken.

ANC08928
BZTO104(e)008928

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-5 Client Windward Environmental Investigator

DAY 28 TEST TERMINATION SHEET

Beaker No.	Number of survivors	Initials
1	10	UB
2	9	UB
3	10	UB
4	10	GJL
5	8	GJL
6	10	UB
7	9	UB
8	10	GJL
9	10	UB
10	10	UB
11	10	UB
12	10	UB
13	10	GJL
14	10	UB
15	7	GJL
16	9	UB
17	9	UB
18	10	GJL
19	8	GJL
20	9	UB
21	10	GJL
22	10	MTM
23	10	UB
24	9	GJL
25	9	GJL
26	10	UB
27	10	UB
28	10	UB
29	10	GJL
30	10	GJL
31	10	GJL
32	9	UB
33	9	GJL
34	10	UB
35	8	UB
36	10	GJL
37	10	GJL
38	9	UB
39	10	MTM
40	10	GJL
41	10	UB
42	10	GJL
43	10	UB
44	7	UB
45	10	GJL

Beaker No.	Number of survivors	Initials
46	9	GJL
47	10	GJL
48	10	GJL
49	10	GJL
50	9	GJL
51	9/10	UB
52	10	GJL
53	9 GJL	GJL
54	10	UB
55	10	GJL
56	10	UB
57	9	GJL
58	10	UB
59	10	UB
60	10	UB
61	10	GJL
62	9	UB
63	10	GJL
64	9	MTM
65	10	UB
66	9	UB
67	10	MTM
68	8	GJL
69	10	UB
70	10	GJL
71	8	MTM
72	10	UB
73	10	GJL
74	10	UB
75	9	MTM
76	10	GJL
77	10	UB
78	10	UB
79	8	GJL
80	7	GJL
81	10	MTM
82	10	UB
83	8	MTM
84	9	GJL
85	10	UB
86	10	UB
87	10	GJL
88	9	UB
89	10 11 GJL	GJL
90	9	MTM

ANC08929
BZTO104(e)008929

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-5 Client Windward Environmental. Investigator _____

DAY 28 TEST TERMINATION SHEET

Beaker No.	Number of survivors	Initials
91	10	GJL
92	9	GJL
93	7	CAB
94	10	GJL
95	8	MPM
96	10	CAB
97	10	GJL
98	10	CAB
99	10	GJL
100	10	MPM
101	10	MPM
102	10	MPM
103	10	GJL
104	10	CAB
105	10	MPM
106	10	CAB
107	10	GJL
108	10	CAB
109	9	MPM
110	10	CAB
111	10	MPM
112	10	MPM
113	10	MPM
114	9	CAB
115	10	MPM
116	9	CAB
117	10	MPM
118	11	CAB
119	10	MPM
120	10	CAB
121	10	GJL
122	7	CAB
123	8	MPM
124	9	GJL
125	10	CAB
126	10	GJL
127	13	MPM
128	9	CAB
129	10	GJL
130	8	GJL
131	10	MPM
132	10	CAB
133	10	GJL
134	8	CAB
135	9	MPM

Beaker No.	Number of survivors	Initials
136	10	GJL
137	10	CAB
138	10	CAB
139	10	MPM
140	7	GJL
141	10	CAB
142	10	GJL
143	8	MPM
144	10	CAB
145	10	GJL
146	9	CAB
147	10	GJL
148	10	GJL
149	10	GJL
150	9	CAB
151	10	MPM
152	9	GJL
153	10	CAB
154	10	CAB
155	9	GJL
156	10	MPM
157	10	CAB
158	9	MPM
159	10	GJL
160	10	CAB
161	10	GJL
162	9	MPM
163	10	CAB
164	10	GJL
165	8	GJL
166	9	MPM
167	10	GJL
168	8	GJL
169		
170		
171		
172		
173		
174		
175		
176		
177		
178		
179		
180		

ANC08930
BZTO104(e)008930

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-5 Client Windward Environmental Investigator

WEIGHING DATA SHEET

Tare:	Date 9-5-04	Oven temp (C.) 66	Drying time (hr.) 24	Initials GSL
	Standard Weights:	10 mg: 10.006	100mg: 100.018	
Final #1:	Date 9-8-04	Oven temp (C.) 60	Drying time (hr.) 24	Initials JRF
	Standard Weights:	10 mg: 10.008	100mg: 100.021	
Final #2:	Date 9-9-04	Oven temp (C.) 63	Drying time (hr.) 24	Initials JRF
	Standard Weights:	10 mg: 10.006	100mg: 100.022	

Equip. used: Oven BLUE M #1 Balance SARTORIUS M3P

(Dry overnight at 60-90 degrees C)

Bkr. #	Pan #	Tare wt. (mg)	Total wt. (mg) 1	Total wt. (mg) 2	no. weighed	put into pans-initials	Comments
1	1	30.767	32.668	32.666	10		
2	2	27.459	29.212	29.210	9		
3	3	29.641	31.494	31.505	10		
4	4	27.922	29.966	29.964	10		
5	5	29.871	30.854	30.856	8		
6	6	28.704	33.201	33.203	10		
7	7	27.767	30.789	30.787	9		
8	8	28.958	32.363	32.367	10		
9	9	28.218	31.702	31.707	10		
10	10	28.403	31.707	31.718	10		
11	11	28.317	31.159	31.159	10		
12	12	29.043	32.317	32.311	10		
13	13	29.750	32.151	32.151	10		
14	14	28.427	31.546	31.543	10		
15	15	26.601	28.173	28.168	7		
16	16	28.388	30.159	30.158	9		
17	17	27.918	31.385	31.384	9		
18	18	34.988	38.394	38.393	10		
19	19	28.912	31.696496	31.475	8		
20	20	29.400	32.042	31.821	9		
21	21	28.345	32.431	32.422	10		
22	22	30.140	32.862	32.853	10		
23	23	28.988	31.062	30.773	10		
24	24	29.486	31.959	31.943	9		
25	25	29.727	32.584	32.567	9		
26	26	30.277	33.972	33.974	10		
27	27	28.257	31.189	31.178	10		
28	28	28.466	31.638	31.636	10		
29	29	28.876	31.900	31.905	10		
30	30	30.289	33.069	33.056	10		
31	31	29.756	32.919	32.905	10		
32	32	28.682	30.921	30.914	9		
33	33	28.794	31.556	31.545	9		

ANC08931
BZTO104(e)008931

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-5 Client Windward Environmental Investigator

WEIGHING DATA SHEET

See page _____ for information on drying times and temperatures, standard weights,etc.

Bkr. #	Pan #	Tare wt. (mg)	Total wt. (mg) 1	Total wt. (mg) 2	no. weighed	put into pans-initials	Comments
34	34	31,153	34.852	34.834	10		
35	35	30.443	31.446	31.436	8		
36	36	28.996	32.322	32.335	10		
37	37	30.053	33.657	33.673	10		
38	38	33.521	36.327	36.333	9		
39	39	29.005	32.383	32.396	10		
40	40	29.150	31.776	31.780	10		
41	41	28.643	32.567	32.571	10		
42	42	30.704	33.243	33.248	10		
43	43	28.592	31.886	31.892	10		
44	44	29.225	31.546	31.548	7		
45	45	28.068	31.378	31.382	10		
46	46	31.620	35.276	35.268	9	BBP	
47	47	28.223	31.397	31.385	10	BBP	
48	48	27.439	29.854	29.645	9	BBP	
49	49	30.262	32.639	32.628	10	BBP	
50	50	29.415	31.711	31.701	9	BBP	
51	51	28.383	31.485	31.449	10	BBP	
52	52	30.037	32.457	32.425	10	BBP	
53	53	29.474	31.151	31.116	9	BBP	
54	54	29.073	30.331	30.300	10	BBP	
55	55	28.624	31.706	31.680	10	BBP	
56	56	29.182	33.592	33.558	10	BBP	
57	57	32,388	35.360	35.323	9	BBP	
58	58	30.332	33.403	33.368	10	BBP	
59	59	29.545	32.714	32.680	10	BBP	
60	60	28.692	31.027	31.006	10	BBP	
61	61	30.045	33.621	33.584	10	GCH	
62	62	28.469	31.443	31.434	9	GCH	
63	63	30.638	33.002	32.968	10	GCH	
64	64	29.037	31.723	31.686	9	GCH	
65	65	29.366	32.355	32.182	10	GCH	
66	66	28.264	31.120	31.099	9	GCH	
67	67	28.734	30.903	30.861	10	GCH	
68	68	30.397	32.668	32.641	8	GCH	
69	69	30.085	32.438	32.394	10	GCH	
70	70	29.951	32.550	32.536	10	GCH	
71	71	28.679	31.660	31.622	8	GCH	
72	72	28.196	30.977	30.937	10	GCH	
73	73	31.323	34.698	34.657	10	GCH	
74	74	27.444	30.700	30.661	10	GCH	
75	75	28.926	30.916	30.888	9	GCH	
76	76	29.850	30.678	30.641	10	GCH	

ANC08932
BZTO104(e)008932

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-5 Client Windward Environmental Investigator

WEIGHING DATA SHEET

See page _____ for information on drying times and temperatures, standard weights,etc.

Bkr. #	Pan #	Tare wt. (mg)	Total wt. (mg) 1	Total wt. (mg) 2	no. weighed	put into pans-initials	Comments
77	77	29.642	31.936	31.911	9	GDA	
78	78	28.777	31.269	31.246	10	GDA	
79	79	29.727	32.814	32.783	8	GDA	
80	80	29.026	31.239	31.215	7	GDA	
81	81	26.712	26.773	26.758	10	BBP	
82	82	28.240	30.171	30.156	10	BBP	
83	83	29.513	31.948	31.936	8	BBP	
84	84	28.252	30.871	30.856	9	BBP	
85	85	29.358	32.209	32.196	10	BBP	
86	86	29.170	32.214	32.207	10	BBP	
87	87	31.292	33.389	33.375	10	BBP	
88	88	27.663	30.367	30.351	9	BBP	
89	89	29.351	31.555	31.530	11	BBP	
90	90	30.613	32.303	32.283	9	BBP	
91	91	29.688	31.974	31.959	10	GDA	
92	92	29.769	32.293	32.283	9	GDA	
93	93	33.172	35.580	35.570	7	GDA	
94	94	27.560	29.712	29.700	10	GDA	
95	95	28.675	30.911	30.894	8	GDA	
96	96	31.738	34.428	34.426	10	GDA	
97	97	28.531	31.127	31.090	10	GDA	
98	98	29.950	32.680	32.643	10	GDA	
99	99	29.117	30.998	30.962	10	GDA	
100	100	30.996	34.451	34.415	10	GDA	
101	101	28.264	31.473	31.204	10	DA	
102	102	28.944	31.510	31.475	10	DA	
103	103	30.309	33.444	33.413	10	DA	
104	104	29.893	33.289	33.254	10	DA	
105	105	29.574	32.669	32.637	10	DA	
106	106	28.081	30.824	30.553	10	DA	
107	107	28.925	32.475	32.212	10	DA	
108	108	27.112	28.396	28.381	10	DA	
109	109	29.035	32.296	32.287	9	DA	
110	110	29.188	32.150	32.126	10	DA	
111	111	28.566	32.174	32.147	10	BBP	
112	112	28.932	32.709	32.675	10	BBP	
113	113	28.601	32.066	32.027	10	BBP	
114	114	27.340	29.990	29.958	9	BBP	
115	115	29.542	32.634	32.593	10	BBP	
116	116	29.783	33.036	33.023	9	BBP	
117	117	30.465	33.863	33.834	10	BBP	
118	118	29.817	33.265	33.231	11	BBP	
119	119	28.710	32.037	32.000	10	BBP	

ANC08933
BZTO104(e)008933

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-5 Client Windward Environmental Investigator

WEIGHING DATA SHEET

See page _____ for information on drying times and temperatures, standard weights,etc.

Bkr. #	Pan #	Tare wt. (mg)	Total wt. (mg) 1	Total wt. (mg) 2	no. weighed	put into pans-initials	Comments
120	120	27.504	30.729	30.696	10	BBP	
121	121	29.863	33.453	33.430	10	BBP	
122	122	27.307	29.849	29.813	7	BBP	
123	123	29.090	31.925	31.885	8	BBP	
124	124	28.632	31.399	31.371	9	BBP	
125	125	28.239	30.556	30.523	10	BBP	
126	126	27.416	29.899	29.865	10	BBP	
127	127	29.487	32.361	32.329	13	BBP	
128	128	30.354	32.894	32.868	9	BBP	
129	129	28.975	30.809	30.781	10	BBP	
130	130	29.286	31.884	31.858	8	BBP	
131	131	29.751	33.731	33.704	10	AM	
132	132	28.901	32.066	32.039	10	AM	
133	133	28.502	31.166	31.115	10	AM	
134	134	27.129	30.100	30.028	8	AM	
135	135	30.218	33.738	33.671	9	AM	
136	136	28.367	31.511	31.446	10	AM	
137	137	29.720	32.930	32.866	10	AM	
138	138	30.083	32.808	32.744	10	AM	
139	139	27.101	30.058	30.007	10	AM	
140	140	29.615	32.128	32.074	7	AM	
141	141	28.640	31.137	31.092	10	AM	
142	142	27.646	30.517	30.453	10	AM	
143	143	28.844	31.535	31.479	8	AM	
144	144	32.157	34.886	34.829	10	AM	
145	145	28.531	30.889	30.827	9	AM	
146	146	29.351	31.546	31.513	9	AM	
147	147	29.869	32.482	32.427	10	AM	
148	148	29.369	31.701	31.636	10	AM	
149	149	28.818	31.520	31.459	10	AM	
150	150	28.731	31.544	31.475	9	AM	
151	151	31.339	34.108	34.034	10	BBP	
152	152	29.699	32.197	32.124	9	BBP	
153	153	30.922	33.281	33.216	10	BBP	
154	154	30.804	33.322	33.258	10	BBP	
155	155	28.148	30.722	30.655	9	BBP	
156	156	30.505	33.581	33.520	10	BBP	
157	157	28.555	30.641	30.587	10	BBP	
158	158	28.540	31.166	31.109	9	BBP	
159	159	28.984	31.952	31.907	~~10~~ 9	BBP	
160	160	29.384	30.542	30.492	10	BBP	
161	161	27.983	30.668	30.610	10	AM	
162	162	30.809	33.384	33.308	9	AM	

ANC08934
BZTO104(e)008934

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c

HYALELLA AZTECA 28-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-5 Client Windward Environmental Investigator

WEIGHING DATA SHEET

See page _____ for information on drying times and temperatures, standard weights,etc.

Bkr. #	Pan #	Tare wt. (mg)	Total wt. (mg) 1	Total wt. (mg) 2	no. weighed	put into pans-initials	Comments
163	163	29.205	32.176	32.115	10	BBP	
164	164	31.522	35.036	34.969	10	BBP	
165	165	29.216	32.1874	32.097	8	BBP	
166	166	28.324	30.955	30.880	9	BBP	
167	167	29.228	31.384	31.311	10	BBP	
168	168	27.776	30.051	29.974	8	BBP	
169	169						
170	170						
171	171						
172	172						
173	173						
174	174						
175	175						
176	176						
177	177						
178	178						
179	179						
180	180						
181	181						
182	182						
183	183						
184	184						
185	185						
186	186						
187	187						
188	188						
189	189						
190	190						
191	191						
192	192						
193	193						
194	194						
195	195						
196	196						
197	197						
198	198						
199	199						
200	200						
201	201						
202	202						
203	203						
204	204						
205	205						

ANC08935
BZTO104(e)008935

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4c
HYALELLA AZTECA 14-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-5 Client Windward Environmental Investigator

ZERO-TIME WEIGHING DATA SHEET

Tare: Date 8-9-04 Oven temp (C.) 67 Drying time (hr.) 24 Initials GJ
Standard Weights: 10 mg: 10.005 100mg: 100.016

Final: Date 8-11-04 Oven temp (C.) 64 Drying time (hr.) 24 Initials GJ
Standard Weights: 10 mg: 10.003 100mg: 100.012

Equip. used: Oven: BLUE M #1 Balance: SARTORIUS M3P

(Dry overnight at 60-90 degrees C)

Pan #	Tare wt. (mg)	Total wt. (mg)	#weighed	Comments
1	28.401	28.898	20	
2	28.448	28.873	20	
3	28.402	28.997	20	
4	29.140	29.732	20	
5	29.695	30.148	20	

ANC08936
BZTO104(e)008936

Chesapeake Cultures

P.O. Box 507 Hayes, VA 23072 (804) 693-4046 (804)694-4704 fax
www.c-cultures.com
e-mail growfish@c-cultures.com

NAS

Shipment Information

Species Hyalella azteca Date 8/5/04

Age 2-3 days ~ 1.0-1.2mm P.O. No. verbal

Quanitity 2,500 Invoice No. 4795

Temperature 24°C Salinity — pH 7.95

8-6-04 @ GJ

Notes RECEIVED 8-6-04 GJ

P686-5

Biologist SC Mau

Please inspect shipment and report any problem immediately

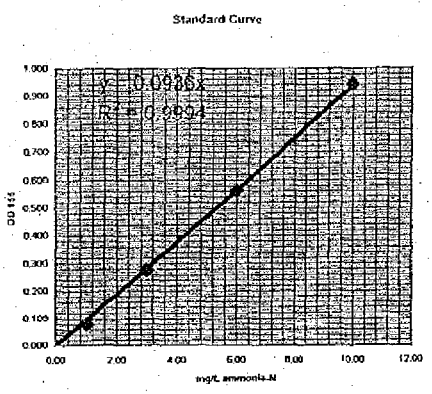
ANC08937
BZTO104(e)008937

AMMONIA EXPOSURE BENCHSHEETS AND ANALYSIS

Total Ammonia-N in Sediment Pore Water: Computation Worksheet
Salicylate Method (SOP #5492)

Result

	Sample description	Dilution factor	OD_{655}	NH_3-N (mg/L)	pH	Salinity (ppt)
	Blank	----	----	----		
	1.0 mg/L NH_3-N Std.	-----	0.079	1.00		
	3.0 mg/L NH_3-N Std.	-----	0.277	3.00		
	6.0 mg/L NH_3-N Std.	-----	0.560	6.00		
	10.0 mg/L NH_3-N Std.	-----	0.940	10.00		
	3.0 mg/L spike	-----	0.282	3.01		
	3.0 mg/L spike dupl.	-----	0.284	3.03		
1.	9323F	5	0.070	3.74		
2.	9325F	5	0.020	1.07		
3.	9326F	5	0.174	9.29		
4.	9327F	5	0.169	9.02		
5.	9328F	5	0.182	9.72		
6.	9329F	5	0.198	10.57		
7.	9330F	5	0.038	2.03		
8.	9331F	5	0.122	6.51		
9.	9332F	5	0.086	4.59		
10.	9333F	5	0.090	4.81		
11.	9334F	5	0.112	5.98		
12.	9335F	5	0.105	5.61		
13.	9336F	5	0.118	6.30		
14.	9337F	5	0.063	3.36		
15.	9338F	5	0.173	9.24		
16.	9339F	5	0.147	7.85		
17.	9341F	5	0.178	9.50		
18.	9342F	5	—	—		
19.	9343F	5	0.002	ND		
20.	9344F	5	0.046	2.46		
21.	9345F	5	0.081	4.32		
22.		5				
23.		5				
24.		5				
25.		5				
26.		5				
27.		5				
28.		5				
29.		5				
30.		5				
31.		5				
32.		5				
33.		5				
34.		5				
35.		5				
36.		5				



Reporting limit (mg/L) = 0.5

Recovery (%) = 100.7
Precision (RPD) = -0.71

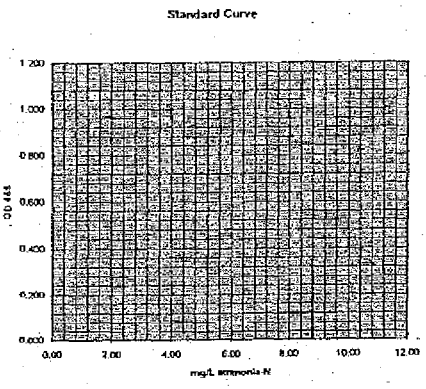
Sample volume (ml): 0.10
Dilution factor 5

Sample Set Description:
Proj. No.: 686
Bulk sediment porewaters
Batch 3

Analyst: RSC
Date analysed: 8/9/2004

Total Ammonia-N in Sediment Pore Water: Computation Worksheet
Salicylate Method (SOP #5492)

Result	Sample description	Dilution factor	OD_{655}	NH_3-N (mg/L)	pH	Salinity (ppt)
	Blank	-----	----	----		
	1.0 mg/L NH_3-N Std.	-----	.079	1.00		
	3.0 mg/L NH_3-N Std.	-----	.277	3.00		
	6.0 mg/L NH_3-N Std.	-----	.560	6.00		
	10.0 mg/L NH_3-N Std.	-----	.940	10.00		
	3.0 mg/L spike	-----	.282			
	3.0 mg/L spike dupl.	-----	.284			
1.	9323F	5	.070		7.0	
2.	9325F	5	.020		7.0	
3.	9326F	5	.174		6.5	
4.	9327F	5	.169		6.6	
5.	9328F	5	.182		6.6	
6.	9329F	5	.198		6.6	
7.	9330F	5	.038		6.7	
8.	9331F	5	.122		6.5	
9.	9332F	5	.085		6.5	
10.	9333F	5	.090		6.5	
11.	9334F	5	.112		6.6	
12.	9335F	5	.105		6.6	
13.	9336F	5	.118		6.5	
14.	9337F	5	.063		6.5	
15.	9338F	5	.173		6.5	
16.	9339F	5	.147		6.6	
17.	9341F	5	.170		6.6	
18.	9342F	5	—		6.8	
19.	9343F	5	.002		6.7	
20.	9344F	5	.045		6.7	
21.	9345F	5	.081		6.8	
22.		5				
23.		5				
24.		5				
25.		5				
26.		5				
27.		5				
28.		5				
29.		5				
30.		5				
31.		5				
32.		5				
33.		5				
34.		5				
35.		5				
36.		5				



Reporting limit (mg/L) = 0.5

Recovery (%) = #VALUE!
Precision (RPD) = #VALUE!

Sample volume (ml): 0.10
Dilution factor 5

Sample Set Description:
Proj. No.: 686
Bulk sediment porewaters
Batch 3

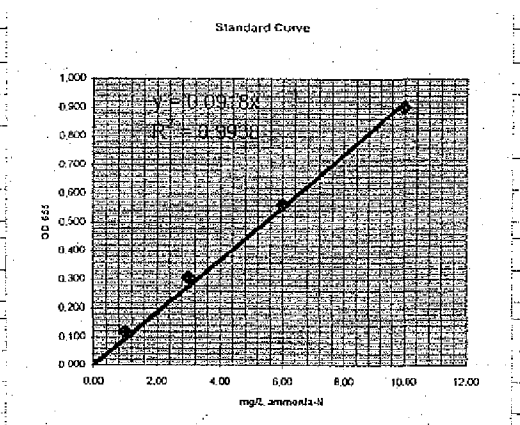
Analyst: RSC
Date analysed: 8/9/2004

30 of 60

Total Ammonia-N in Water: Computation Worksheet
Salicylate Method (SOP #5492)

Result

	Sample description	Dilution factor	OD_{655}	NH_3-N (mg/L)
	Blank	----	----	----
	1.0 mg/L NH_3-N Std.	-----	0.117	1.00
	3.0 mg/L NH_3-N Std.	-----	0.308	3.00
	6.0 mg/L NH_3-N Std.	-----	0.561	6.00
	10.0 mg/L NH_3-N Std.	-----	0.900	10.00
	3.0 mg/L spike	-----	0.307	3.34
	3.0 mg/L spike dupl.	-----	0.301	3.27
1.	1	1	0.125	1.36
2.	5	1	0.051	0.55
3.	7	1	0.063	0.68
4.	22	1	0.083	0.90
5.	28	1	0.038	0.41
6.	29	1	0.025	0.27
7.	39	1	0.069	0.75
8.	44	1	0.014	0.15
9.	52	1	0.058	0.63
10.	68	1	0.070	0.76
11.	80	1	0.070	0.76
12.	91	1	0.024	0.26
13.	93	1	0.082	0.89
14.	102	1	0.080	0.87
15.	107	1	0.017	0.18
16.	145	1	0.045	0.49
17.	151	1	0.056	0.61
18.	156	1	0.016	0.17
19.	157	1	0.071	0.77
20.	159	1	0.005	ND
21.	164	1	0.038	0.41
22.		1		
23.		1		
24.		1		
25.		1		
26.		1		
27.		1		
28.		1		
29.		1		
30.		1		
31.		1		
32.		1		
33.		1		
34.		1		
35.		1		
36.		1		



Reporting limit (mg/L) =	0.1
Recovery (%) =	110.2
Precision (RPD) =	1.97
Sample volume (ml):	0.50
Dilution factor	1

Sample Set Description:

Test No.:	686-5
Test Day:	0 (8-10-04)
Species:	*Hyalella*

Overlying water

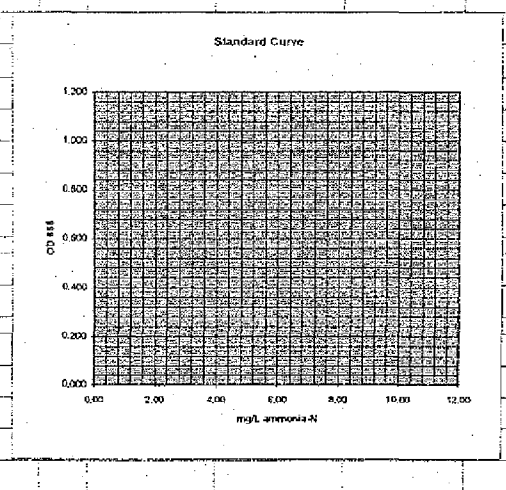
Analyst:	RSC
Date analysed:	8/31/2004

Total Ammonia-N in Water: Computation Worksheet

Salicylate Method (SOP #5492)

Result

	Sample description	Dilution factor	OD655	NH3-N (mg/L)
	Blank	-----	-----	----
	1.0 mg/L NH3-N Std.	-----	.117	1.00
	3.0 mg/L NH3-N Std.	-----	.305	3.00
	6.0 mg/L NH3-N Std.	-----	.561	6.00
	10.0 mg/L NH3-N Std.	-----	.900	10.00
	3.0 mg/L spike	-----	.307	
	3.0 mg/L spike dupl.	-----	.301	
1.	1	1	.125	
2.	5	1	.051	
3.	7	1	.063	
4.	22	1	.083	
5.	28	1	.038	
6.	29	1	.025	
7.	39	1	.069	
8.	44	1	.014	
9.	52	1	.058	
10.	68	1	.070	
11.	80	1	.070	
12.	91	1	.024	
13.	93	1	.092	
14.	102	1	.050	
15.	107	1	.017	
16.	145	1	.045	
17.	151	1	.056	
18.	156	1	.016	
19.	157	1	.071	
20.	159	1	.005	
21.	164	1	.038	
22.		1		
23.		1		
24.		1		
25.		1		
26.		1		
27.		1		
28.		1		
29.		1		
30.		1		
31.		1		
32.		1		
33.		1		
34.		1		
35.		1		
36.		1		



Reporting limit (mg/L) =	0.1
Recovery (%) =	#VALUE!
Precision (RPD) =	#VALUE!
Sample volume (ml):	0.50
Dilution factor	1

Sample Set Description:

Test No.:	686-5
Test Day:	0 (8-10-04)
Species:	*Hyalella*
Overlying water	
Analyst:	RSC
Date analysed:	8/31/2004

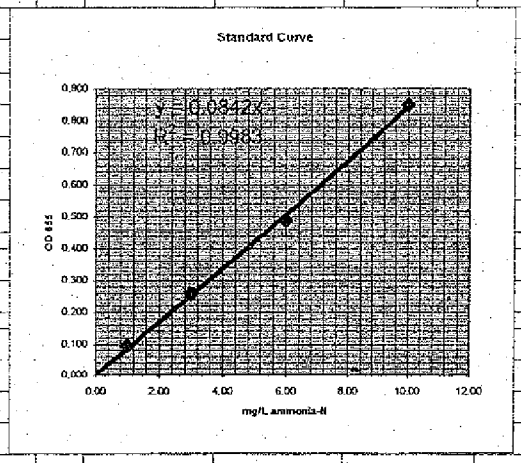
ANC08942
BZTO104(e)008942

Total Ammonia-N in Water: Computation Worksheet

Salicylate Method (SOP #5492)

Result

	Sample description	Dilution factor	OD655	NH3-N (mg/L)
	Blank	----	----	----
	1.0 mg/L NH3-N Std.	-----	0.095	1.00
	3.0 mg/L NH3-N Std.	-----	0.258	3.00
	6.0 mg/L NH3-N Std.	-----	0.487	6.00
	10.0 mg/L NH3-N Std.	-----	0.850	10.00
	3.0 mg/L spike	-----	0.273	3.24
	3.0 mg/L spike dupl.	-----	0.270	3.21
1.	1	1	0.001	ND
2.	5	1	0.000	ND
3.	7	1	0.007	ND
4.	22	1	0.027	0.32
5.	28	1	0.004	ND
6.	29	1	0.009	0.11
7.	39	1	0.002	ND
8.	44	1	0.000	ND
9.	52	1	0.000	ND
10.	68	1	0.010	0.12
11.	80	1	0.002	ND
12.	91	1	0.009	0.11
13.	93	1	0.000	ND
14.	102	1	0.000	ND
15.	107	1	0.000	ND
16.	145	1	0.000	ND
17.	151	1	0.002	ND
18.	156	1	0.004	ND
19.	157	1	0.000	ND
20.	159	1	0.002	ND
21.	164	1	0.000	ND
22.		1		
23.		1		
24.		1		
25.		1		
26.		1		
27.		1		
28.		1		
29.		1		
30.		1		
31.		1		
32.		1		
33.		1		
34.		1		
35.		1		
36.		1		



Reporting limit (mg/L) =	0.1
Recovery (%) =	107.4
Precision (RPD) =	1.10
Sample volume (ml):	0.50
Dilution factor	1

Sample Set Description:

Test No.:	686-5
Test Day:	28 (9-7-04)
Species:	*Hyalella*

Overlying water

Analyst:	RSC
Date analysed:	9/13/2004

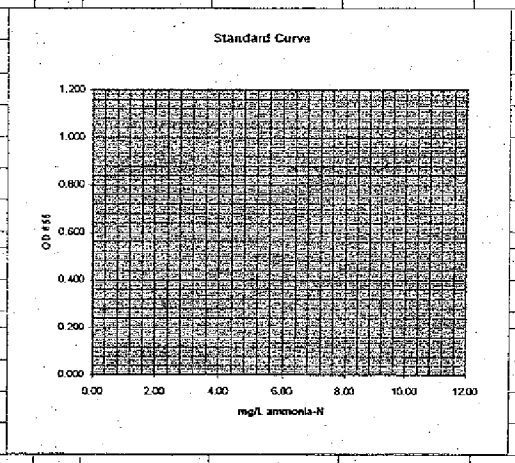
ANC08943
BZTO104(e)008943

Total Ammonia-N in Water: Computation Worksheet

Salicylate Method (SOP #5492)

Result

	Sample description	Dilution factor	OD655	NH_3-N (mg/L)
	Blank	----	----	----
	1.0 mg/L NH_3-N Std.	-----	.095	1.00
	3.0 mg/L NH_3-N Std.	-----	.258	3.00
	6.0 mg/L NH_3-N Std.	-----	.487	6.00
	10.0 mg/L NH_3-N Std.	-----	.850	10.00
	3.0 mg/L spike	-----	.273	
	3.0 mg/L spike dupl.	-----	.270	
1.	1	1	.001	
2.	5	1	.000	
3.	7	1	.007	
4.	22	1	.027	
5.	28	1	.004	
6.	29	1	.001	
7.	39	1	.002	
8.	44	1	.000	
9.	52	1	.000	
10.	68	1	.010	
11.	80	1	.002	
12.	91	1	.009	
13.	93	1	.000	
14.	102	1	.000	
15.	107	1	.000	
16.	145	1	.000	
17.	151	1	.002	
18.	156	1	.004	
19.	157	1	.000	
20.	159	1	.002	
21.	164	1	.010	
22.		1		
23.		1		
24.		1		
25.		1		
26.		1		
27.		1		
28.		1		
29.		1		
30.		1		
31.		1		
32.		1		
33.		1		
34.		1		
35.		1		
36.		1		



Reporting limit (mg/L) =	0.1
Recovery (%) =	#VALUE!
Precision (RPD) =	#VALUE!
Sample volume (ml):	0.50
Dilution factor	1

Sample Set Description:

Test No.:	686-5
Test Day:	28 (9-7-04)
Species:	*Hyalella*
Overlying water	
Analyst:	RSC
Date analysed:	9/13/2004

TEST DATA ANALYSIS RECORDS

Test Number: P686-5

Freshwater Sediment Test
28-day Hyalella azteca

Randomization Key

BKR	NAS SMPL	CLIENT DESCRIP	REPL	
76	9323F	Control	1	
36	9323F	Control	2	
25	9323F	Control	3	
135	9323F	Control	4	
106	9323F	Control	5	
165	9323F	Control	6	
149	9323F	Control	7	
91	9323F	Control	8	wq replicate
83	9325F	LW2-G082	1	
152	9325F	LW2-G082	2	
10	9325F	LW2-G082	3	
109	9325F	LW2-G082	4	
128	9325F	LW2-G082	5	
55	9325F	LW2-G082	6	
104	9325F	LW2-G082	7	
107	9325F	LW2-G082	8	wq replicate
75	9326F	LW2-G088	1	
58	9326F	LW2-G088	2	
92	9326F	LW2-G088	3	
82	9326F	LW2-G088	4	
77	9326F	LW2-G088	5	
16	9326F	LW2-G088	6	
125	9326F	LW2-G088	7	
7	9326F	LW2-G088	8	wq replicate
123	9327F	LW2-G086	1	
86	9327F	LW2-G086	2	
13	9327F	LW2-G086	3	
73	9327F	LW2-G086	4	
38	9327F	LW2-G086	5	
45	9327F	LW2-G086	6	
34	9327F	LW2-G086	7	
1	9327F	LW2-G086	8	wq replicate
131	9328F	LW2-G090	1	
142	9328F	LW2-G090	2	
126	9328F	LW2-G090	3	
30	9328F	LW2-G090	4	
95	9328F	LW2-G090	5	
147	9328F	LW2-G090	6	
120	9328F	LW2-G090	7	
68	9328F	LW2-G090	8	wq replicate
9	9329F	LW2-G091	1	
138	9329F	LW2-G091	2	
31	9329F	LW2-G091	3	
100	9329F	LW2-G091	4	
79	9329F	LW2-G091	5	
85	9329F	LW2-G091	6	
74	9329F	LW2-G091	7	
93	9329F	LW2-G091	8	wq replicate
167	9330F	LW2-G096	1	
166	9330F	LW2-G096	2	
116	9330F	LW2-G096	3	
97	9330F	LW2-G096	4	
163	9330F	LW2-G096	5	
119	9330F	LW2-G096	6	
143	9330F	LW2-G096	7	
29	9330F	LW2-G096	8	wq replicate

ANC08946
BZTO104(e)008946

Test Number: P686-5

Freshwater Sediment Test
28-day Hyalella azteca

BKR	NAS SMPL	CLIENT DESCRIP	REPL	
59	9331F	LW2-G099	1	
40	9331F	LW2-G099	2	
160	9331F	LW2-G099	3	
63	9331F	LW2-G099	4	
26	9331F	LW2-G099	5	
33	9331F	LW2-G099	6	
98	9331F	LW2-G099	7	
39	9331F	LW2-G099	8	wq replicate
81	9332F	LW2-G103	1	
158	9332F	LW2-G103	2	
61	9332F	LW2-G103	3	
70	9332F	LW2-G103	4	
3	9332F	LW2-G103	5	
32	9332F	LW2-G103	6	
66	9332F	LW2-G103	7	
145	9332F	LW2-G103	8	wq replicate
162	9333F	LW2-G106	1	
136	9333F	LW2-G106	2	
115	9333F	LW2-G106	3	
18	9333F	LW2-G106	4	
127	9333F	LW2-G106	5	
46	9333F	LW2-G106	6	
130	9333F	LW2-G106	7	
5	9333F	LW2-G106	8	wq replicate
105	9334F	LW2-G109	1	
14	9334F	LW2-G109	2	
42	9334F	LW2-G109	3	
89	9334F	LW2-G109	4	
2	9334F	LW2-G109	5	
48	9334F	LW2-G109	6	
114	9334F	LW2-G109	7	
151	9334F	LW2-G109	8	wq replicate
72	9335F	LW2-G112	1	
60	9335F	LW2-G112	2	
121	9335F	LW2-G112	3	
134	9335F	LW2-G112	4	
140	9335F	LW2-G112	5	
148	9335F	LW2-G112	6	
49	9335F	LW2-G112	7	
102	9335F	LW2-G112	8	wq replicate
57	9336F	LW2-G077	1	
53	9336F	LW2-G077	2	
21	9336F	LW2-G077	3	
101	9336F	LW2-G077	4	
90	9336F	LW2-G077	5	
69	9336F	LW2-G077	6	
129	9336F	LW2-G077	7	
52	9336F	LW2-G077	8	wq replicate
6	9337F	LW2-G105	1	
56	9337F	LW2-G105	2	
11	9337F	LW2-G105	3	
50	9337F	LW2-G105	4	
17	9337F	LW2-G105	5	
161	9337F	LW2-G105	6	
8	9337F	LW2-G105	7	
164	9337F	LW2-G105	8	wq replicate

ANC08947
BZTO104(e)008947

Test Number: P686-5

Freshwater Sediment Test
28-day Hyalella azteca

BKR	NAS SMPL	CLIENT DESCRIP	REPL	
64	9338F	LW2-G117	1	
154	9338F	LW2-G117	2	
124	9338F	LW2-G117	3	
71	9338F	LW2-G117	4	
168	9338F	LW2-G117	5	
19	9338F	LW2-G117	6	
122	9338F	LW2-G117	7	
80	9338F	LW2-G117	8	wq replicate
35	9339F	LW2-G121	1	
84	9339F	LW2-G121	2	
112	9339F	LW2-G121	3	
144	9339F	LW2-G121	4	
139	9339F	LW2-G121	5	
37	9339F	LW2-G121	6	
24	9339F	LW2-G121	7	
22	9339F	LW2-G121	8	wq replicate
87	9341F	LW2-G122	1	
96	9341F	LW2-G122	2	
141	9341F	LW2-G122	3	
108	9341F	LW2-G122	4	
23	9341F	LW2-G122	5	
153	9341F	LW2-G122	6	
27	9341F	LW2-G122	7	
157	9341F	LW2-G122	8	wq replicate
137	9342F	LW2-G235	1	
67	9342F	LW2-G235	2	
99	9342F	LW2-G235	3	
15	9342F	LW2-G235	4	
133	9342F	LW2-G235	5	
20	9342F	LW2-G235	6	
111	9342F	LW2-G235	7	
159	9342F	LW2-G235	8	wq replicate
118	9343F	LW2-G164	1	
78	9343F	LW2-G164	2	
110	9343F	LW2-G164	3	
12	9343F	LW2-G164	4	
65	9343F	LW2-G164	5	
150	9343F	LW2-G164	6	
88	9343F	LW2-G164	7	
156	9343F	LW2-G164	8	wq replicate
132	9344F	LW2-G178	1	
4	9344F	LW2-G178	2	
41	9344F	LW2-G178	3	
155	9344F	LW2-G178	4	
51	9344F	LW2-G178	5	
62	9344F	LW2-G178	6	
146	9344F	LW2-G178	7	
28	9344F	LW2-G178	8	wq replicate
54	9345F	LW2-G180	1	
117	9345F	LW2-G180	2	
103	9345F	LW2-G180	3	
113	9345F	LW2-G180	4	
43	9345F	LW2-G180	5	
94	9345F	LW2-G180	6	
47	9345F	LW2-G180	7	
44	9345F	LW2-G180	8	wq replicate

ANC08948
BZTO104(e)008948

Test Number: P686-5

Freshwater Sediment Test
28-day Hyalella azteca

Endpoints Data Entry and Calculations File

BKR=beaker number
INIT=initial number
SURV=number survivors
MORT=number dead=INIT-SURV
PSURV=%survival=100(SURV/INIT)
PMORT=%mortality=100(MORT/INIT)

TARE WT= ashed weight of pan used for that replicate at test termination (mg), or
dry weight of pan if ash-free dry weight is not an endpoint
WT COUNT= number of test organisms weighed at test end
DRY WT= TARE WT + dry weight of test organisms recovered at test termination (mg)
TWT=total biomass=DRY WT-TARE WT
WT=average individual biomass=TWT/WT COUNT

INITIAL WEIGHT

pan #	tare wt (mg)	final wt (mg)	wt count	avg. wt/ organism
1	28.401	28.898	20	0.025
2	28.448	28.873	20	0.021
3	28.402	28.947	20	0.027
4	29.140	29.732	20	0.030
5	29.695	30.148	20	0.023

Data Entry Verified
PSE 9/07/04

INDEX	BKR	NAS SMPL	CLIENT DESCRIP	REPL		INIT	SURV	MORT	PSURV	PMORT	TARE WT (mg)	WT COUNT	DRY WT (mg)	TWT (mg)	WT (mg)
1	76	9323F	Control	1		10	10	0	100.0	0.0	27.850	10	30.641	2.79	0.28
2	36	9323F	Control	2		10	10	0	100.0	0.0	28.996	10	32.335	3.34	0.33
3	25	9323F	Control	3		10	9	1	90.0	10.0	29.727	9	32.567	2.84	0.32
4	135	9323F	Control	4		10	9	1	90.0	10.0	30.218	9	33.671	3.45	0.38
5	106	9323F	Control	5		10	10	0	100.0	0.0	28.081	10	30.553	2.47	0.25
6	165	9323F	Control	6		10	8	2	80.0	20.0	29.216	8	32.097	2.88	0.36
7	149	9323F	Control	7		10	10	0	100.0	0.0	28.818	10	31.459	2.64	0.26
8	91	9323F	Control	8	wq replicate	10	10	0	100.0	0.0	29.688	10	31.959	2.27	0.23
9	83	9325F	LW2-G082	1		10	8	2	80.0	20.0	29.513	8	31.936	2.42	0.30
10	152	9325F	LW2-G082	2		10	9	1	90.0	10.0	29.699	9	32.124	2.43	0.27
11	10	9325F	LW2-G082	3		10	10	0	100.0	0.0	28.403	10	31.718	3.32	0.33
12	109	9325F	LW2-G082	4		10	9	1	90.0	10.0	29.035	9	32.287	3.25	0.36
13	128	9325F	LW2-G082	5		10	9	1	90.0	10.0	30.354	9	32.868	2.51	0.28
14	55	9325F	LW2-G082	6		10	10	0	100.0	0.0	28.624	10	31.680	3.06	0.31
15	104	9325F	LW2-G082	7		10	10	0	100.0	0.0	29.893	10	33.254	3.36	0.34
16	107	9325F	LW2-G082	8	wq replicate	10	10	0	100.0	0.0	28.925	10	32.212	3.29	0.33
17	75	9326F	LW2-G088	1		10	9	1	90.0	10.0	28.926	9	30.888	1.96	0.22
18	58	9326F	LW2-G088	2		10	10	0	100.0	0.0	30.332	10	33.368	3.04	0.30
19	92	9326F	LW2-G088	3		10	9	1	90.0	10.0	29.769	9	32.283	2.51	0.28
20	82	9326F	LW2-G088	4		10	10	0	100.0	0.0	28.240	10	30.156	1.92	0.19
21	77	9326F	LW2-G088	5		10	10	0	100.0	0.0	29.042	9	31.911	2.87	0.32
22	16	9326F	LW2-G088	6		10	9	1	90.0	10.0	28.388	9	30.158	1.77	0.20
23	125	9326F	LW2-G088	7		10	10	0	100.0	0.0	28.239	10	30.523	2.28	0.23
24	7	9326F	LW2-G088	8	wq replicate	10	9	1	90.0	10.0	27.787	9	30.787	3.02	0.34
25	123	9327F	LW2-G086	1		10	8	2	80.0	20.0	29.090	8	31.885	2.80	0.35
26	86	9327F	LW2-G086	2		10	10	0	100.0	0.0	29.170	10	32.207	3.04	0.30
27	13	9327F	LW2-G086	3		10	10	0	100.0	0.0	29.750	10	32.151	2.40	0.24
28	73	9327F	LW2-G086	4		10	10	0	100.0	0.0	31.323	10	34.657	3.33	0.33
29	38	9327F	LW2-G086	5		10	9	1	90.0	10.0	33.521	9	36.333	2.81	0.31
30	45	9327F	LW2-G086	6		10	10	0	100.0	0.0	28.068	10	31.382	3.31	0.33
31	34	9327F	LW2-G086	7		10	10	0	100.0	0.0	31.153	10	34.834	3.68	0.37
32	1	9327F	LW2-G086	8	wq replicate	10	10	0	100.0	0.0	30.767	10	32.666	1.90	0.19

	SURV	MORT	PSURV	PMORT	WT
Mean	9.5	0.5	95.0	5.0	0.30
SD	0.8	0.8	7.6	7.6	0.06
n	8	8	8	8	8
Mean	9.4	0.6	93.8	6.3	0.31
SD	0.7	0.7	7.4	7.4	0.03
n	8	8	8	8	8
Mean	9.5	0.5	95.0	5.0	0.26
SD	0.5	0.5	5.3	5.3	0.06
n	8	8	8	8	8
Mean	9.6	0.4	96.3	3.8	0.30
SD	0.7	0.7	7.4	7.4	0.06
n	8	8	8	8	8

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ANC08949
BZTO104(e)008949

Test Number: P686-5

Freshwater Sediment Test
28-day Hyalella azteca

INDEX	BKR	NAS SMPL	CLIENT DESCRIP	REPL		INIT	SURV	MORT	PSURV	PMORT	TARE WT (mg)	WT COUNT	DRY WT (mg)	TWT (mg)	WT (mg)		SURV	MORT	PSURV	PMORT	WT
33	131	9328F	LW2-G090	1		10	10	0	100.0	0.0	29.751	10	33.704	3.95	0.40						
34	142	9328F	LW2-G090	2		10	10	0	100.0	0.0	27.646	10	30.453	2.81	0.28						
35	126	9328F	LW2-G090	3		10	10	0	100.0	0.0	27.416	10	29.865	2.45	0.24						
36	30	9328F	LW2-G090	4		10	10	0	100.0	0.0	30.289	10	33.056	2.77	0.28						
37	95	9328F	LW2-G090	5		10	8	2	80.0	20.0	28.675	8	30.894	2.22	0.28	Mean	9.5	0.5	95.0	5.0	0.29
38	147	9328F	LW2-G090	6		10	10	0	100.0	0.0	29.869	10	32.427	2.56	0.26	SD	0.9	0.9	9.3	9.3	0.05
39	120	9328F	LW2-G090	7		10	10	0	100.0	0.0	27.504	10	30.696	3.19	0.32	n	8	8	8	8	8
40	68	9328F	LW2-G090	8	wq replicate	10	8	2	80.0	20.0	30.397	8	32.641	2.24	0.28						
41	9	9329F	LW2-G091	1		10	10	0	100.0	0.0	28.218	10	31.707	3.49	0.35						
42	138	9329F	LW2-G091	2		10	10	0	100.0	0.0	30.083	10	32.744	2.66	0.27						
43	31	9329F	LW2-G091	3		10	10	0	100.0	0.0	29.756	10	32.905	3.15	0.31						
44	100	9329F	LW2-G091	4		10	10	0	100.0	0.0	30.996	10	34.415	3.42	0.34						
45	79	9329F	LW2-G091	5		10	8	2	80.0	20.0	29.727	8	32.783	3.06	0.38	Mean	9.4	0.6	93.8	6.3	0.33
46	85	9329F	LW2-G091	6		10	10	0	100.0	0.0	29.358	10	32.196	2.84	0.28	SD	1.2	1.2	11.9	11.9	0.04
47	74	9329F	LW2-G091	7		10	10	0	100.0	0.0	27.444	10	30.661	3.22	0.32	n	8	8	8	8	8
48	93	9329F	LW2-G091	8	wq replicate	10	7	3	70.0	30.0	33.172	7	35.570	2.40	0.34						
49	167	9330F	LW2-G096	1		10	10	0	100.0	0.0	29.228	10	31.311	2.08	0.21						
50	166	9330F	LW2-G096	2		10	9	1	90.0	10.0	28.324	9	30.880	2.56	0.28						
51	116	9330F	LW2-G096	3		10	9	1	90.0	10.0	29.783	9	33.023	3.24	0.36						
52	97	9330F	LW2-G096	4		10	10	0	100.0	0.0	28.531	10	31.090	2.56	0.26						
53	163	9330F	LW2-G096	5		10	10	0	100.0	0.0	29.205	10	32.115	2.91	0.29	Mean	9.5	0.5	95.0	5.0	0.30
54	119	9330F	LW2-G096	6		10	10	0	100.0	0.0	28.710	10	32.000	3.29	0.33	SD	0.8	0.8	7.6	7.6	0.05
55	143	9330F	LW2-G096	7		10	8	2	80.0	20.0	28.844	8	31.479	2.64	0.33	n	8	8	8	8	8
56	29	9330F	LW2-G096	8	wq replicate	10	10	0	100.0	0.0	28.876	10	31.905	3.03	0.30						
57	59	9331F	LW2-G099	1		10	10	0	100.0	0.0	29.545	10	32.680	3.14	0.31						
58	40	9331F	LW2-G099	2		10	10	0	100.0	0.0	29.150	10	31.780	2.63	0.26						
59	160	9331F	LW2-G099	3		10	10	0	100.0	0.0	29.384	10	30.492	1.11	0.11						
60	63	9331F	LW2-G099	4		10	10	0	100.0	0.0	30.638	10	32.968	2.33	0.23						
61	26	9331F	LW2-G099	5		10	10	0	100.0	0.0	30.277	10	33.974	3.70	0.37	Mean	9.9	0.1	98.8	1.3	0.28
62	33	9331F	LW2-G099	6		10	9	1	90.0	10.0	28.794	9	31.545	2.75	0.31	SD	0.4	0.4	3.5	3.5	0.08
63	98	9331F	LW2-G099	7		10	10	0	100.0	0.0	29.950	10	32.643	2.69	0.27	n	8	8	8	8	8
64	39	9331F	LW2-G099	8	wq replicate	10	10	0	100.0	0.0	29.005	10	32.396	3.39	0.34						
65	81	9332F	LW2-G103	1		10	10	0	100.0	0.0	26.712	10	28.758	2.05	0.20						
66	158	9332F	LW2-G103	2		10	9	1	90.0	10.0	28.540	9	31.109	2.57	0.29						
67	61	9332F	LW2-G103	3		10	10	0	100.0	0.0	30.045	10	33.584	3.54	0.35						
68	70	9332F	LW2-G103	4		10	10	0	100.0	0.0	29.951	10	32.536	2.59	0.26						
69	3	9332F	LW2-G103	5		10	10	0	100.0	0.0	29.641	10	31.505	1.86	0.19	Mean	9.6	0.4	96.3	3.8	0.26
70	32	9332F	LW2-G103	6		10	9	1	90.0	10.0	28.682	9	30.914	2.23	0.25	SD	0.5	0.5	5.2	5.2	0.05
71	66	9332F	LW2-G103	7		10	9	1	90.0	10.0	28.264	9	31.099	2.84	0.32	n	8	8	8	8	8
72	145	9332F	LW2-G103	8	wq replicate	10	10	0	100.0	0.0	28.531	9	30.827	2.30	0.26						

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ANC08950
BZTO104(e)008950

Test Number: P686-5

Freshwater Sediment Test
28-day Hyalella azteca

INDEX	BKR	NAS SMPL	CLIENT DESCRIP	REPL		INIT	SURV	MORT	PSURV	PMORT	TARE WT (mg)	WT COUNT	DRY WT (mg)	TWT (mg)	WT (mg)			SURV	MORT	PSURV	PMORT	WT
73	162	9333F	LW2-G106	1		10	9	1	90.0	10.0	30.609	9	33.308	2.50	0.28							
74	136	9333F	LW2-G106	2		10	10	0	100.0	0.0	28.367	10	31.446	3.08	0.31							
75	115	9333F	LW2-G106	3		10	10	0	100.0	0.0	29.542	10	32.593	3.05	0.31							
76	18	9333F	LW2-G106	4		10	10	0	100.0	0.0	34.988	10	38.393	3.41	0.34							
77	127	9333F	LW2-G106	5		13	13	0	100.0	0.0	29.487	13	32.329	2.84	0.22		Mean	9.6	0.8	92.5	7.5	0.29
78	46	9333F	LW2-G106	6		10	9	1	90.0	10.0	31.620	9	35.268	3.65	0.41		SD	1.6	0.9	8.9	8.9	0.08
79	130	9333F	LW2-G106	7		10	8	2	80.0	20.0	29.286	8	31.858	2.57	0.32		n	8	8	8	8	8
80	5	9333F	LW2-G106	8	wq replicate	10	8	2	80.0	20.0	29.871	8	30.856	0.99	0.12							
81	105	9334F	LW2-G109	1		10	10	0	100.0	0.0	29.574	10	32.637	3.06	0.31							
82	14	9334F	LW2-G109	2		10	10	0	100.0	0.0	28.427	10	31.543	3.12	0.31							
83	42	9334F	LW2-G109	3		10	10	0	100.0	0.0	30.704	10	33.248	2.54	0.25							
84	89	9334F	LW2-G109	4		11	11	0	100.0	0.0	29.351	11	31.530	2.18	0.20							
85	2	9334F	LW2-G109	5		10	9	1	90.0	10.0	27.459	9	29.210	1.75	0.19		Mean	9.9	0.3	97.5	2.5	0.26
86	48	9334F	LW2-G109	6		10	10	0	100.0	0.0	27.439	9	29.845	2.41	0.27		SD	0.6	0.5	4.6	4.6	0.04
87	114	9334F	LW2-G109	7		10	9	1	90.0	10.0	27.340	9	29.958	2.62	0.29		n	8	8	8	8	8
88	151	9334F	LW2-G109	8	wq replicate	10	10	0	100.0	0.0	31.339	10	34.034	2.70	0.27							
89	72	9335F	LW2-G112	1		10	10	0	100.0	0.0	28.196	10	30.937	2.74	0.27							
90	60	9335F	LW2-G112	2		10	10	0	100.0	0.0	28.692	10	31.006	2.31	0.23							
91	121	9335F	LW2-G112	3		10	10	0	100.0	0.0	29.863	10	33.430	3.57	0.36							
92	134	9335F	LW2-G112	4		10	8	2	80.0	20.0	27.129	8	30.028	2.90	0.36							
93	140	9335F	LW2-G112	5		10	7	3	70.0	30.0	29.615	7	32.074	2.46	0.35		Mean	9.4	0.6	93.8	6.3	0.29
94	148	9335F	LW2-G112	6		10	10	0	100.0	0.0	29.369	10	31.636	2.27	0.23		SD	1.2	1.2	11.9	11.9	0.06
95	49	9335F	LW2-G112	7		10	10	0	100.0	0.0	30.262	10	32.628	2.37	0.24		n	8	8	8	8	8
96	102	9335F	LW2-G112	8	wq replicate	10	10	0	100.0	0.0	28.844	10	31.475	2.63	0.26							
97	57	9336F	LW2-G077	1		10	9	1	90.0	10.0	32.368	9	35.323	2.94	0.33							
98	53	9336F	LW2-G077	2		10	9	1	90.0	10.0	29.474	9	31.116	1.64	0.18							
99	21	9336F	LW2-G077	3		10	10	0	100.0	0.0	28.345	10	32.422	4.08	0.41							
100	101	9336F	LW2-G077	4		10	10	0	100.0	0.0	28.264	10	31.204	2.94	0.29							
101	90	9336F	LW2-G077	5		10	9	1	90.0	10.0	30.613	9	32.283	1.67	0.19		Mean	9.6	0.4	96.3	3.8	0.26
102	69	9336F	LW2-G077	6		10	10	0	100.0	0.0	30.085	10	32.394	2.31	0.23		SD	0.5	0.5	5.2	5.2	0.08
103	129	9336F	LW2-G077	7		10	10	0	100.0	0.0	28.975	10	30.781	1.81	0.18		n	8	8	8	8	8
104	52	9336F	LW2-G077	8	wq replicate	10	10	0	100.0	0.0	30.037	10	32.425	2.39	0.24							
105	6	9337F	LW2-G105	1		10	10	0	100.0	0.0	28.704	10	33.203	4.50	0.45							
106	56	9337F	LW2-G105	2		10	10	0	100.0	0.0	29.182	10	33.558	4.38	0.44							
107	11	9337F	LW2-G105	3		10	10	0	100.0	0.0	28.317	10	31.159	2.84	0.28							
108	50	9337F	LW2-G105	4		10	9	1	90.0	10.0	29.415	9	31.701	2.29	0.25							
109	17	9337F	LW2-G105	5		10	9	1	90.0	10.0	27.918	9	31.384	3.47	0.39		Mean	9.8	0.3	97.5	2.5	0.34
110	161	9337F	LW2-G105	6		10	10	0	100.0	0.0	27.983	10	30.610	2.63	0.26		SD	0.5	0.5	4.6	4.6	0.08
111	8	9337F	LW2-G105	7		10	10	0	100.0	0.0	28.958	10	32.367	3.41	0.34		n	8	8	8	8	8
112	164	9337F	LW2-G105	8	wq replicate	10	10	0	100.0	0.0	31.522	10	34.969	3.45	0.34							

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ANC08951
BZTO104(e)008951

Test Number: P686-5

Freshwater Sediment Test
28-day Hyalella azteca

INDEX	BKR	NAS SMPL	CLIENT DESCRIP	REPL		INIT	SURV	MORT	PSURV	PMORT	TARE WT (mg)	WT COUNT	DRY WT (mg)	TWT (mg)	WT (mg)		SURV	MORT	PSURV	PMORT	WT
113	64	9338F	LW2-G117	1		10	9	1	90.0	10.0	29.037	9	31.686	2.65	0.29						
114	154	9338F	LW2-G117	2		10	10	0	100.0	0.0	30.804	10	33.258	2.45	0.25						
115	124	9338F	LW2-G117	3		10	9	1	90.0	10.0	28.632	9	31.371	2.74	0.30						
116	71	9338F	LW2-G117	4		10	8	2	80.0	20.0	28.679	8	31.622	2.94	0.37						
117	168	9338F	LW2-G117	5		10	8	2	80.0	20.0	27.776	8	29.974	2.20	0.27	Mean	8.3	1.8	82.5	17.5	0.31
118	19	9338F	LW2-G117	6		10	8	2	80.0	20.0	28.912	8	31.475	2.56	0.32	SD	1.0	1.0	10.4	10.4	0.04
119	122	9338F	LW2-G117	7		10	7	3	70.0	30.0	27.307	7	29.813	2.51	0.36	n	8	8	8	8	8
120	80	9338F	LW2-G117	8	wq replicate	10	7	3	70.0	30.0	29.026	7	31.215	2.19	0.31						
121	35	9339F	LW2-G121	1		10	8	2	80.0	20.0	30.443	8	31.438	0.99	0.12						
122	84	9339F	LW2-G121	2		10	9	1	90.0	10.0	28.252	9	30.858	2.61	0.29						
123	112	9339F	LW2-G121	3		10	10	0	100.0	0.0	28.932	10	32.675	3.74	0.37						
124	144	9339F	LW2-G121	4		10	10	0	100.0	0.0	32.157	10	34.829	2.67	0.27						
125	139	9339F	LW2-G121	5		10	10	0	100.0	0.0	27.101	10	30.007	2.91	0.29	Mean	9.5	0.5	95.0	5.0	0.28
126	37	9339F	LW2-G121	6		10	10	0	100.0	0.0	30.053	10	33.673	3.62	0.36	SD	0.8	0.8	7.6	7.6	0.08
127	24	9339F	LW2-G121	7		10	9	1	90.0	10.0	29.486	9	31.943	2.46	0.27	n	8	8	8	8	8
128	22	9339F	LW2-G121	8	wq replicate	10	10	0	100.0	0.0	30.140	10	32.853	2.71	0.27						
129	87	9341F	LW2-G122	1		10	10	0	100.0	0.0	31.292	10	33.375	2.08	0.21						
130	96	9341F	LW2-G122	2		10	10	0	100.0	0.0	31.738	10	34.426	2.69	0.27						
131	141	9341F	LW2-G122	3		10	10	0	100.0	0.0	28.640	10	31.092	2.45	0.25						
132	108	9341F	LW2-G122	4		10	10	0	100.0	0.0	27.112	10	28.381	1.27	0.13						
133	23	9341F	LW2-G122	5		10	10	0	100.0	0.0	28.988	10	30.773	1.79	0.18	Mean	10.0	0.0	100.0	0.0	0.22
134	153	9341F	LW2-G122	6		10	10	0	100.0	0.0	30.922	10	33.216	2.29	0.23	SD	0.0	0.0	0.0	0.0	0.05
135	27	9341F	LW2-G122	7		10	10	0	100.0	0.0	28.257	10	31.178	2.92	0.29	n	8	8	8	8	8
136	157	9341F	LW2-G122	8	wq replicate	10	10	0	100.0	0.0	28.555	10	30.587	2.03	0.20						
137	137	9342F	LW2-G235	1		10	10	0	100.0	0.0	29.720	10	32.866	3.15	0.31						
138	67	9342F	LW2-G235	2		10	10	0	100.0	0.0	28.734	10	30.861	2.13	0.21						
139	99	9342F	LW2-G235	3		10	10	0	100.0	0.0	29.117	10	30.962	1.85	0.18						
140	15	9342F	LW2-G235	4		10	7	3	70.0	30.0	26.601	7	28.168	1.57	0.22						
141	133	9342F	LW2-G235	5		10	10	0	100.0	0.0	28.502	10	31.115	2.61	0.26	Mean	9.5	0.5	95.0	5.0	0.27
142	20	9342F	LW2-G235	6		10	9	1	90.0	10.0	29.400	9	31.821	2.42	0.27	SD	1.1	1.1	10.7	10.7	0.06
143	111	9342F	LW2-G235	7		10	10	0	100.0	0.0	28.566	10	32.147	3.58	0.36	n	8	8	8	8	8
144	159	9342F	LW2-G235	8	wq replicate	10	10	0	100.0	0.0	28.984	9	31.907	2.92	0.32						
145	118	9343F	LW2-G164	1		11	11	0	100.0	0.0	29.817	11	33.231	3.41	0.31						
146	78	9343F	LW2-G164	2		10	10	0	100.0	0.0	28.777	10	31.246	2.47	0.25						
147	110	9343F	LW2-G164	3		10	10	0	100.0	0.0	29.188	10	32.126	2.94	0.29						
148	12	9343F	LW2-G164	4		10	10	0	100.0	0.0	29.043	10	32.311	3.27	0.33						
149	65	9343F	LW2-G164	5		10	10	0	100.0	0.0	29.366	10	32.182	2.82	0.28	Mean	9.9	0.3	97.5	2.5	0.30
150	150	9343F	LW2-G164	6		10	9	1	90.0	10.0	28.731	9	31.475	2.74	0.30	SD	0.6	0.5	4.6	4.6	0.02
151	88	9343F	LW2-G164	7		10	9	1	90.0	10.0	27.663	9	30.351	2.69	0.30	n	8	8	8	8	8
152	156	9343F	LW2-G164	8	wq replicate	10	10	0	100.0	0.0	30.505	10	33.520	3.02	0.30						

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BZTO104(e)008952

Test Number: P686-5

Freshwater Sediment Test
28-day Hyalella azteca

INDEX	BKR	NAS SMPL	CLIENT DESCRIP	REPL		INIT	SURV	MORT	PSURV	PMORT	TARE WT (mg)	WT COUNT	DRY WT (mg)	TWT (mg)	WT (mg)		SURV	MORT	PSURV	PMORT	WT
153	132	9344F	LW2-G178	1		10	10	0	100.0	0.0	28.901	10	32.039	3.14	0.31						
154	4	9344F	LW2-G178	2		10	10	0	100.0	0.0	27.922	10	29.964	2.04	0.20						
155	41	9344F	LW2-G178	3		10	10	0	100.0	0.0	28.643	10	32.571	3.93	0.39						
156	155	9344F	LW2-G178	4		10	9	1	90.0	10.0	28.148	9	30.655	2.51	0.28						
157	51	9344F	LW2-G178	5		10	10	0	100.0	0.0	28.383	10	31.449	3.07	0.31	Mean	9.6	0.4	96.3	3.8	0.30
158	62	9344F	LW2-G178	6		10	9	1	90.0	10.0	28.469	9	31.434	2.97	0.33	SD	0.5	0.5	5.2	5.2	0.06
159	146	9344F	LW2-G178	7		10	9	1	90.0	10.0	29.351	9	31.513	2.16	0.24	n	8	8	8	8	8
160	28	9344F	LW2-G178	8	wq replicate	10	10	0	100.0	0.0	28.466	10	31.636	3.17	0.32						
161	54	9345F	LW2-G180	1		10	10	0	100.0	0.0	27.073	10	30.300	3.23	0.32						
162	117	9345F	LW2-G180	2		10	10	0	100.0	0.0	30.465	10	33.834	3.37	0.34						
163	103	9345F	LW2-G180	3		10	10	0	100.0	0.0	30.309	10	33.413	3.10	0.31						
164	113	9345F	LW2-G180	4		10	10	0	100.0	0.0	28.601	10	32.027	3.43	0.34						
165	43	9345F	LW2-G180	5		10	10	0	100.0	0.0	28.592	10	31.892	3.30	0.33	Mean	9.6	0.4	96.3	3.8	0.31
166	94	9345F	LW2-G180	6		10	10	0	100.0	0.0	27.560	10	29.700	2.14	0.21	SD	1.1	1.1	10.6	10.6	0.04
167	47	9345F	LW2-G180	7		10	10	0	100.0	0.0	28.223	10	31.385	3.16	0.32	n	8	8	8	8	8
168	44	9345F	LW2-G180	8	wq replicate	10	7	3	70.0	30.0	29.225	7	31.548	2.32	0.33						

Note: Test containers # 48, 77, 145, and 159 each lost one animal in transfer to weighing pans.

4h 96 0

ANC08953
BZTO104(e)008953

Water Quality Data

	NAS	CLIENT			Overlying water							Interstitial water	
BKR	SMPL	DESCRIP	REPL	DAY	TEMP	DO	COND	pH	HARD	ALK	NH3	NH3	pH
BULK SEDIMENT POREWATER													
	9323F	Control										3.7	7.0
	9325F	LW2-G082										1.1	7.0
	9326F	LW2-G088										9.3	6.5
	9327F	LW2-G086										9.0	6.6
	9328F	LW2-G090										9.7	6.6
	9329F	LW2-G091										10.6	6.6
	9330F	LW2-G096										2.0	6.7
	9331F	LW2-G099										6.5	6.5
	9332F	LW2-G103										4.6	6.5
	9333F	LW2-G106										4.8	6.5
	9334F	LW2-G109										6.0	6.6
	9335F	LW2-G112										5.6	6.6
	9336F	LW2-G077										6.3	6.5
	9337F	LW2-G105										3.4	6.5
	9338F	LW2-G117										9.2	6.5
	9339F	LW2-G121										7.9	6.6
	9341F	LW2-G122										9.5	6.6
	9342F	LW2-G235										---	---
	9343F	LW2-G164										<0.5	6.8
	9344F	LW2-G178										2.5	6.7
	9345F	LW2-G180										4.3	6.8

ANC08954
BZTO104(e)008954

	NAS	CLIENT			Overlying water							Interstitial water	
BKR	SMPL	DESCRIP	REPL	DAY	TEMP	DO	COND	pH	HARD	ALK	NH3	NH3	pH
TEST OVERLYING WATER													
1	9327F	LW2-G086	8	0	22.8	6.2	210	6.9	60	60	1.4		
5	9333F	LW2-G106	8	0	23.0	6.9	165	7.0	51	60	0.6		
7	9326F	LW2-G088	8	0	22.8	6.9	180	7.0	43	50	0.7		
22	9339F	LW2-G121	8	0	22.8	7.0	170	7.0	51	40	0.9		
28	9344F	LW2-G178	8	0	22.8	7.2	160	7.0	26	50	0.4		
29	9330F	LW2-G096	8	0	22.9	7.0	160	7.0	43	40	0.3		
39	9331F	LW2-G099	8	0	22.9	7.1	175	7.0	43	50	0.8		
44	9345F	LW2-G180	8	0	22.9	7.5	160	7.0	43	40	0.2		
52	9336F	LW2-G077	8	0	22.8	6.8	165	6.9	51	40	0.6		
68	9328F	LW2-G090	8	0	22.8	6.8	190	7.0	51	40	0.8		
80	9338F	LW2-G117	8	0	23.0	7.1	170	6.9	51	40	0.8		
91	9323F	Control	8	0	22.9	6.2	215	7.2	43	40	0.3		
93	9329F	LW2-G091	8	0	22.9	7.0	195	7.0	60	40	0.9		
102	9335F	LW2-G112	8	0	22.8	7.0	170	7.0	51	40	0.9		
107	9325F	LW2-G082	8	0	22.8	7.2	170	7.2	43	40	0.2		
145	9332F	LW2-G103	8	0	22.9	7.2	160	7.1	51	40	0.5		
151	9334F	LW2-G109	8	0	22.8	7.2	170	7.0	43	40	0.6		
156	9343F	LW2-G164	8	0	22.8	7.4	160	7.0	43	40	0.2		
157	9341F	LW2-G122	8	0	22.8	7.2	170	7.0	60	40	0.8		
159	9342F	LW2-G235	8	0	22.8	8.4	160	7.1	43	40	<0.1		
164	9337F	LW2-G105	8	0	22.9	7.0	160	6.9	43	40	0.4		
1	9327F	LW2-G086	8	1	23.2	5.2	190	7.1					
5	9333F	LW2-G106	8	1	23.2	5.2	170	7.0					
7	9326F	LW2-G088	8	1	23.1	5.6	185	7.0					
22	9339F	LW2-G121	8	1	23.1	5.4	170	7.0					
28	9344F	LW2-G178	8	1	23.1	5.4	165	7.0					
29	9330F	LW2-G096	8	1	23.2	5.2	175	7.0					
39	9331F	LW2-G099	8	1	23.2	5.0	175	6.9					
44	9345F	LW2-G180	8	1	23.2	5.2	165	7.0					
52	9336F	LW2-G077	8	1	23.1	5.2	170	6.9					
68	9328F	LW2-G090	8	1	23.1	5.2	190	7.1					
80	9338F	LW2-G117	8	1	23.3	5.4	170	6.9					
91	9323F	Control	8	1	23.1	6.0	205	7.2					
93	9329F	LW2-G091	8	1	23.1	5.4	195	7.0					
102	9335F	LW2-G112	8	1	23.1	5.4	170	7.0					
107	9325F	LW2-G082	8	1	23.1	5.8	170	7.0					
145	9332F	LW2-G103	8	1	23.2	5.6	165	6.9					
151	9334F	LW2-G109	8	1	23.1	6.0	170	6.9					
156	9343F	LW2-G164	8	1	23.1	6.2	165	7.0					
157	9341F	LW2-G122	8	1	23.1	4.6	170	6.9					
159	9342F	LW2-G235	8	1	23.1	6.6	165	7.0					
164	9337F	LW2-G105	8	1	23.2	5.6	160	6.7					

ANC08955
BZTO104(e)008955

	NAS	CLIENT			Overlying water								Interstitial water	
BKR	SMPL	DESCRIP	REPL	DAY	TEMP	DO	COND	pH	HARD	ALK	NH3		NH3	pH
1	9327F	LW2-G086	8	2	23.0									
5	9333F	LW2-G106	8	2	23.0									
7	9326F	LW2-G088	8	2	22.9									
22	9339F	LW2-G121	8	2	22.9									
28	9344F	LW2-G178	8	2	22.9									
29	9330F	LW2-G096	8	2	23.0									
39	9331F	LW2-G099	8	2	23.0									
44	9345F	LW2-G180	8	2	23.0									
52	9336F	LW2-G077	8	2	23.0									
68	9328F	LW2-G090	8	2	23.0									
80	9338F	LW2-G117	8	2	23.1									
91	9323F	Control	8	2	23.0									
93	9329F	LW2-G091	8	2	23.0									
102	9335F	LW2-G112	8	2	23.0									
107	9325F	LW2-G082	8	2	23.0									
145	9332F	LW2-G103	8	2	23.0									
151	9334F	LW2-G109	8	2	23.0									
156	9343F	LW2-G164	8	2	22.9									
157	9341F	LW2-G122	8	2	22.9									
159	9342F	LW2-G235	8	2	22.9									
164	9337F	LW2-G105	8	2	22.9									
1	9327F	LW2-G086	8	3	22.8	6.0		7.2						
5	9333F	LW2-G106	8	3	22.8	6.3		7.1						
7	9326F	LW2-G088	8	3	22.8	6.4		7.1						
22	9339F	LW2-G121	8	3	22.8	6.4		7.0						
28	9344F	LW2-G178	8	3	22.8	6.4		7.1						
29	9330F	LW2-G096	8	3	22.8	6.4		7.0						
39	9331F	LW2-G099	8	3	22.8	6.4		6.9						
44	9345F	LW2-G180	8	3	22.8	6.5		7.1						
52	9336F	LW2-G077	8	3	22.8	6.3		7.0						
68	9328F	LW2-G090	8	3	22.8	6.4		7.2						
80	9338F	LW2-G117	8	3	22.9	6.5		7.0						
91	9323F	Control	8	3	22.8	6.4		7.2						
93	9329F	LW2-G091	8	3	22.8	6.0		7.0						
102	9335F	LW2-G112	8	3	22.8	6.0		7.0						
107	9325F	LW2-G082	8	3	22.6	6.2		7.2						
145	9332F	LW2-G103	8	3	22.6	6.4		7.2						
151	9334F	LW2-G109	8	3	22.6	6.4		7.0						
156	9343F	LW2-G164	8	3	22.6	6.4		7.1						
157	9341F	LW2-G122	8	3	22.6	6.5		7.0						
159	9342F	LW2-G235	8	3	22.6	6.9		7.2						
164	9337F	LW2-G105	8	3	22.7	6.5		7.0						

ANC08956
BZTO104(e)008956

	NAS	CLIENT			Overlying water								Interstitial water	
BKR	SMPL	DESCRIP	REPL	DAY	TEMP	DO	COND	pH	HARD	ALK	NH3		NH3	pH
1	9327F	LW2-G086	8	4	23.1									
5	9333F	LW2-G106	8	4	23.2									
7	9326F	LW2-G088	8	4	23.0									
22	9339F	LW2-G121	8	4	23.0									
28	9344F	LW2-G178	8	4	23.0									
29	9330F	LW2-G096	8	4	23.1									
39	9331F	LW2-G099	8	4	23.1									
44	9345F	LW2-G180	8	4	23.1									
52	9336F	LW2-G077	8	4	23.1									
68	9328F	LW2-G090	8	4	23.1									
80	9338F	LW2-G117	8	4	23.3									
91	9323F	Control	8	4	23.1									
93	9329F	LW2-G091	8	4	23.0									
102	9335F	LW2-G112	8	4	23.0									
107	9325F	LW2-G082	8	4	23.0									
145	9332F	LW2-G103	8	4	23.2									
151	9334F	LW2-G109	8	4	23.0									
156	9343F	LW2-G164	8	4	23.1									
157	9341F	LW2-G122	8	4	23.1									
159	9342F	LW2-G235	8	4	23.0									
164	9337F	LW2-G105	8	4	23.1									
1	9327F	LW2-G086	8	5	23.2									
5	9333F	LW2-G106	8	5	23.2									
7	9326F	LW2-G088	8	5	23.1									
22	9339F	LW2-G121	8	5	23.1									
28	9344F	LW2-G178	8	5	23.1									
29	9330F	LW2-G096	8	5	23.2									
39	9331F	LW2-G099	8	5	23.2									
44	9345F	LW2-G180	8	5	23.2									
52	9336F	LW2-G077	8	5	23.1									
68	9328F	LW2-G090	8	5	23.1									
80	9338F	LW2-G117	8	5	23.3									
91	9323F	Control	8	5	23.1									
93	9329F	LW2-G091	8	5	23.1									
102	9335F	LW2-G112	8	5	23.1									
107	9325F	LW2-G082	8	5	23.1									
145	9332F	LW2-G103	8	5	23.2									
151	9334F	LW2-G109	8	5	23.0									
156	9343F	LW2-G164	8	5	23.1									
157	9341F	LW2-G122	8	5	23.1									
159	9342F	LW2-G235	8	5	23.0									
164	9337F	LW2-G105	8	5	23.1									

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	NAS	CLIENT			Overlying water							Interstitial water	
BKR	SMPL	DESCRIP	REPL	DAY	TEMP	DO	COND	pH	HARD	ALK	NH3	NH3	pH
1	9327F	LW2-G086	8	6	23.1	5.7		7.2					
5	9333F	LW2-G106	8	6	23.1	5.7		7.1					
7	9326F	LW2-G088	8	6	23.0	5.9		7.1					
22	9339F	LW2-G121	8	6	23.0	5.4		7.2					
28	9344F	LW2-G178	8	6	23.0	5.6		7.1					
29	9330F	LW2-G096	8	6	23.0	5.7		7.1					
39	9331F	LW2-G099	8	6	23.0	5.6		7.1					
44	9345F	LW2-G180	8	6	23.1	6.0		7.0					
52	9336F	LW2-G077	8	6	23.0	5.4		7.0					
68	9328F	LW2-G090	8	6	23.0	5.8		7.1					
80	9338F	LW2-G117	8	6	23.2	5.7		7.0					
91	9323F	Control	8	6	23.0	5.8		7.1					
93	9329F	LW2-G091	8	6	23.0	5.4		7.1					
102	9335F	LW2-G112	8	6	22.9	5.5		7.0					
107	9325F	LW2-G082	8	6	22.9	6.1		7.1					
145	9332F	LW2-G103	8	6	23.0	5.8		7.0					
151	9334F	LW2-G109	8	6	22.9	5.7		7.0					
156	9343F	LW2-G164	8	6	22.9	6.0		7.0					
157	9341F	LW2-G122	8	6	22.9	5.3		7.0					
159	9342F	LW2-G235	8	6	22.9	6.6		7.1					
164	9337F	LW2-G105	8	6	22.9	6.0		7.1					
1	9327F	LW2-G086	8	7	23.2								
5	9333F	LW2-G106	8	7	23.2								
7	9326F	LW2-G088	8	7	23.1								
22	9339F	LW2-G121	8	7	23.1								
28	9344F	LW2-G178	8	7	23.1								
29	9330F	LW2-G096	8	7	23.1								
39	9331F	LW2-G099	8	7	23.1								
44	9345F	LW2-G180	8	7	23.1								
52	9336F	LW2-G077	8	7	23.1								
68	9328F	LW2-G090	8	7	23.1								
80	9338F	LW2-G117	8	7	23.1								
91	9323F	Control	8	7	23.2								
93	9329F	LW2-G091	8	7	23.1								
102	9335F	LW2-G112	8	7	23.1								
107	9325F	LW2-G082	8	7	23.1								
145	9332F	LW2-G103	8	7	23.1								
151	9334F	LW2-G109	8	7	23.1								
156	9343F	LW2-G164	8	7	23.1								
157	9341F	LW2-G122	8	7	23.1								
159	9342F	LW2-G235	8	7	23.0								
164	9337F	LW2-G105	8	7	23.0								

ANC08958
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	NAS	CLIENT			Overlying water							Interstitial water	
BKR	SMPL	DESCRIP	REPL	DAY	TEMP	DO	COND	pH	HARD	ALK	NH3	NH3	pH
1	9327F	LW2-G086	8	8	22.4	5.3	170	6.7					
5	9333F	LW2-G106	8	8	22.6	5.6	165	6.6					
7	9326F	LW2-G088	8	8	22.4	5.8	165	6.7					
22	9339F	LW2-G121	8	8	22.3	5.8	165	6.7					
28	9344F	LW2-G178	8	8	22.3	5.8	160	6.6					
29	9330F	LW2-G096	8	8	22.4	5.9	160	6.6					
39	9331F	LW2-G099	8	8	22.4	5.8	165	6.6					
44	9345F	LW2-G180	8	8	22.4	6.1	165	6.6					
52	9336F	LW2-G077	8	8	22.4	5.9	165	6.6					
68	9328F	LW2-G090	8	8	22.4	5.8	170	6.7					
80	9338F	LW2-G117	8	8	22.6	6.1	160	6.6					
91	9323F	Control	8	8	22.5	6.0	170	6.8					
93	9329F	LW2-G091	8	8	22.4	6.1	165	6.7					
102	9335F	LW2-G112	8	8	22.4	5.8	165	6.6					
107	9325F	LW2-G082	8	8	22.4	6.1	165	6.6					
145	9332F	LW2-G103	8	8	22.4	6.0	160	6.7					
151	9334F	LW2-G109	8	8	22.4	5.7	165	6.5					
156	9343F	LW2-G164	8	8	22.4	6.2	165	6.7					
157	9341F	LW2-G122	8	8	22.4	5.5	165	6.7					
159	9342F	LW2-G235	8	8	22.4	6.7	160	6.7					
164	9337F	LW2-G105	8	8	22.5	6.0	160	6.5					
1	9327F	LW2-G086	8	9	22.6								
5	9333F	LW2-G106	8	9	22.7								
7	9326F	LW2-G088	8	9	22.5								
22	9339F	LW2-G121	8	9	22.6								
28	9344F	LW2-G178	8	9	22.6								
29	9330F	LW2-G096	8	9	22.6								
39	9331F	LW2-G099	8	9	22.7								
44	9345F	LW2-G180	8	9	22.7								
52	9336F	LW2-G077	8	9	22.6								
68	9328F	LW2-G090	8	9	22.7								
80	9338F	LW2-G117	8	9	22.9								
91	9323F	Control	8	9	22.7								
93	9329F	LW2-G091	8	9	22.7								
102	9335F	LW2-G112	8	9	22.6								
107	9325F	LW2-G082	8	9	22.6								
145	9332F	LW2-G103	8	9	22.7								
151	9334F	LW2-G109	8	9	22.6								
156	9343F	LW2-G164	8	9	22.6								
157	9341F	LW2-G122	8	9	22.6								
159	9342F	LW2-G235	8	9	22.6								
164	9337F	LW2-G105	8	9	22.7								

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	NAS	CLIENT			Overlying water							Interstitial water	
BKR	SMPL	DESCRIP	REPL	DAY	TEMP	DO	COND	pH	HARD	ALK	NH3	NH3	pH
1	9327F	LW2-G086	8	10	23.0	5.7		6.9					
5	9333F	LW2-G106	8	10	23.1	6.1		6.9					
7	9326F	LW2-G088	8	10	22.9	6.2		6.9					
22	9339F	LW2-G121	8	10	22.9	6.3		6.9					
28	9344F	LW2-G178	8	10	22.9	6.4		7.0					
29	9330F	LW2-G096	8	10	23.0	6.2		6.9					
39	9331F	LW2-G099	8	10	23.0	6.2		6.8					
44	9345F	LW2-G180	8	10	23.0	6.6		6.9					
52	9336F	LW2-G077	8	10	23.0	6.2		6.9					
68	9328F	LW2-G090	8	10	23.0	6.2		6.9					
80	9338F	LW2-G117	8	10	23.2	6.3		6.8					
91	9323F	Control	8	10	23.0	6.7		7.0					
93	9329F	LW2-G091	8	10	23.0	6.1		6.8					
102	9335F	LW2-G112	8	10	23.0	6.2		6.9					
107	9325F	LW2-G082	8	10	23.0	6.7		7.0					
145	9332F	LW2-G103	8	10	23.0	6.4		6.9					
151	9334F	LW2-G109	8	10	23.1	6.5		6.8					
156	9343F	LW2-G164	8	10	23.0	6.6		6.9					
157	9341F	LW2-G122	8	10	23.0	5.9		6.9					
159	9342F	LW2-G235	8	10	23.0	7.2		7.0					
164	9337F	LW2-G105	8	10	23.1	6.2		6.8					
1	9327F	LW2-G086	8	11	22.9								
5	9333F	LW2-G106	8	11	23.0								
7	9326F	LW2-G088	8	11	22.8								
22	9339F	LW2-G121	8	11	22.8								
28	9344F	LW2-G178	8	11	22.8								
29	9330F	LW2-G096	8	11	22.9								
39	9331F	LW2-G099	8	11	22.9								
44	9345F	LW2-G180	8	11	22.9								
52	9336F	LW2-G077	8	11	22.8								
68	9328F	LW2-G090	8	11	22.9								
80	9338F	LW2-G117	8	11	23.0								
91	9323F	Control	8	11	22.9								
93	9329F	LW2-G091	8	11	22.9								
102	9335F	LW2-G112	8	11	22.8								
107	9325F	LW2-G082	8	11	22.9								
145	9332F	LW2-G103	8	11	23.0								
151	9334F	LW2-G109	8	11	22.8								
156	9343F	LW2-G164	8	11	22.9								
157	9341F	LW2-G122	8	11	22.9								
159	9342F	LW2-G235	8	11	22.9								
164	9337F	LW2-G105	8	11	23.0								

ANC08960
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	NAS	CLIENT			Overlying water							Interstitial water	
BKR	SMPL	DESCRIP	REPL	DAY	TEMP	DO	COND	pH	HARD	ALK	NH3	NH3	pH
1	9327F	LW2-G086	8	12	23.0								
5	9333F	LW2-G106	8	12	22.9								
7	9326F	LW2-G088	8	12	23.0								
22	9339F	LW2-G121	8	12	23.0								
28	9344F	LW2-G178	8	12	23.0								
29	9330F	LW2-G096	8	12	23.0								
39	9331F	LW2-G099	8	12	23.0								
44	9345F	LW2-G180	8	12	23.0								
52	9336F	LW2-G077	8	12	23.0								
68	9328F	LW2-G090	8	12	23.0								
80	9338F	LW2-G117	8	12	23.0								
91	9323F	Control	8	12	23.0								
93	9329F	LW2-G091	8	12	23.0								
102	9335F	LW2-G112	8	12	23.0								
107	9325F	LW2-G082	8	12	23.0								
145	9332F	LW2-G103	8	12	22.9								
151	9334F	LW2-G109	8	12	22.9								
156	9343F	LW2-G164	8	12	22.9								
157	9341F	LW2-G122	8	12	22.9								
159	9342F	LW2-G235	8	12	22.9								
164	9337F	LW2-G105	8	12	22.9								
1	9327F	LW2-G086	8	13	23.0	4.5		6.6					
5	9333F	LW2-G106	8	13	23.0	4.6		6.5					
7	9326F	LW2-G088	8	13	22.9	4.9		6.5					
22	9339F	LW2-G121	8	13	22.9	5.6		6.5					
28	9344F	LW2-G178	8	13	22.9	5.4		6.5					
29	9330F	LW2-G096	8	13	22.9	5.5		6.4					
39	9331F	LW2-G099	8	13	22.9	5.8		6.4					
44	9345F	LW2-G180	8	13	22.9	6.0		6.4					
52	9336F	LW2-G077	8	13	22.9	6.2		6.5					
68	9328F	LW2-G090	8	13	22.9	5.8		6.6					
80	9338F	LW2-G117	8	13	23.1	5.8		6.5					
91	9323F	Control	8	13	22.9	6.2		6.5					
93	9329F	LW2-G091	8	13	22.9	5.8		6.5					
102	9335F	LW2-G112	8	13	22.9	5.8		6.5					
107	9325F	LW2-G082	8	13	22.9	6.1		6.5					
145	9332F	LW2-G103	8	13	22.9	5.8		6.5					
151	9334F	LW2-G109	8	13	22.8	5.7		6.4					
156	9343F	LW2-G164	8	13	22.8	6.0		6.5					
157	9341F	LW2-G122	8	13	22.8	5.5		6.5					
159	9342F	LW2-G235	8	13	22.8	6.6		6.6					
164	9337F	LW2-G105	8	13	22.8	5.8		6.5					

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	NAS	CLIENT			Overlying water								Interstitial water	
BKR	SMPL	DESCRIP	REPL	DAY	TEMP	DO	COND	pH	HARD	ALK	NH3		NH3	pH
1	9327F	LW2-G086	8	14	23.1									
5	9333F	LW2-G106	8	14	23.1									
7	9326F	LW2-G088	8	14	23.1									
22	9339F	LW2-G121	8	14	23.1									
28	9344F	LW2-G178	8	14	23.1									
29	9330F	LW2-G096	8	14	23.1									
39	9331F	LW2-G099	8	14	23.1									
44	9345F	LW2-G180	8	14	23.1									
52	9336F	LW2-G077	8	14	23.1									
68	9328F	LW2-G090	8	14	23.1									
80	9338F	LW2-G117	8	14	23.2									
91	9323F	Control	8	14	23.1									
93	9329F	LW2-G091	8	14	23.1									
102	9335F	LW2-G112	8	14	23.1									
107	9325F	LW2-G082	8	14	23.1									
145	9332F	LW2-G103	8	14	23.2									
151	9334F	LW2-G109	8	14	23.0									
156	9343F	LW2-G164	8	14	23.1									
157	9341F	LW2-G122	8	14	23.1									
159	9342F	LW2-G235	8	14	23.1									
164	9337F	LW2-G105	8	14	23.1									
1	9327F	LW2-G086	8	15	23.0	5.1	165	6.9						
5	9333F	LW2-G106	8	15	23.1	5.8	160	6.8						
7	9326F	LW2-G088	8	15	23.0	5.8	165	6.8						
22	9339F	LW2-G121	8	15	23.0	5.6	165	6.8						
28	9344F	LW2-G178	8	15	23.0	5.7	160	6.7						
29	9330F	LW2-G096	8	15	23.0	5.9	160	6.7						
39	9331F	LW2-G099	8	15	23.0	5.9	160	6.7						
44	9345F	LW2-G180	8	15	23.1	6.1	160	6.7						
52	9336F	LW2-G077	8	15	23.1	5.5	165	6.7						
68	9328F	LW2-G090	8	15	23.1	5.5	165	6.7						
80	9338F	LW2-G117	8	15	23.2	6.0	160	6.7						
91	9323F	Control	8	15	23.1	6.4	160	6.8						
93	9329F	LW2-G091	8	15	23.1	6.1	160	6.7						
102	9335F	LW2-G112	8	15	23.0	5.7	165	6.7						
107	9325F	LW2-G082	8	15	23.0	6.2	160	6.7						
145	9332F	LW2-G103	8	15	23.1	6.1	160	6.6						
151	9334F	LW2-G109	8	15	23.0	6.0	160	6.6						
156	9343F	LW2-G164	8	15	23.1	6.3	160	6.7						
157	9341F	LW2-G122	8	15	23.0	5.8	160	6.7						
159	9342F	LW2-G235	8	15	23.0	6.8	160	6.7						
164	9337F	LW2-G105	8	15	23.1	6.0	155	6.6						

	NAS	CLIENT			Overlying water							Interstitial water	
BKR	SMPL	DESCRIP	REPL	DAY	TEMP	DO	COND	pH	HARD	ALK	NH3	NH3	pH
1	9327F	LW2-G086	8	16	22.9								
5	9333F	LW2-G106	8	16	23.1								
7	9326F	LW2-G088	8	16	22.7								
22	9339F	LW2-G121	8	16	22.7								
28	9344F	LW2-G178	8	16	22.7								
29	9330F	LW2-G096	8	16	22.8								
39	9331F	LW2-G099	8	16	22.8								
44	9345F	LW2-G180	8	16	22.7								
52	9336F	LW2-G077	8	16	22.7								
68	9328F	LW2-G090	8	16	22.7								
80	9338F	LW2-G117	8	16	23.0								
91	9323F	Control	8	16	22.8								
93	9329F	LW2-G091	8	16	22.8								
102	9335F	LW2-G112	8	16	22.8								
107	9325F	LW2-G082	8	16	22.7								
145	9332F	LW2-G103	8	16	22.9								
151	9334F	LW2-G109	8	16	22.7								
156	9343F	LW2-G164	8	16	22.9								
157	9341F	LW2-G122	8	16	22.8								
159	9342F	LW2-G235	8	16	22.8								
164	9337F	LW2-G105	8	16	22.9								
1	9327F	LW2-G086	8	17	23.1	6.5		4.4					
5	9333F	LW2-G106	8	17	23.1	6.4		5.1					
7	9326F	LW2-G088	8	17	23.0	6.5		4.6					
22	9339F	LW2-G121	8	17	23.0	6.5		4.5					
28	9344F	LW2-G178	8	17	23.0	6.5		5.1					
29	9330F	LW2-G096	8	17	23.0	6.4		4.4					
39	9331F	LW2-G099	8	17	23.0	6.4		4.1					
44	9345F	LW2-G180	8	17	23.1	6.4		5.0					
52	9336F	LW2-G077	8	17	23.0	6.4		4.9					
68	9328F	LW2-G090	8	17	23.0	6.5		4.6					
80	9338F	LW2-G117	8	17	23.1	6.5		5.1					
91	9323F	Control	8	17	23.0	6.5		5.0					
93	9329F	LW2-G091	8	17	23.0	6.4		4.8					
102	9335F	LW2-G112	8	17	23.0	6.4		4.7					
107	9325F	LW2-G082	8	17	23.0	6.5		5.2					
145	9332F	LW2-G103	8	17	23.0	6.4		5.1					
151	9334F	LW2-G109	8	17	22.9	6.4		5.1					
156	9343F	LW2-G164	8	17	22.9	6.5		5.4					
157	9341F	LW2-G122	8	17	22.9	6.5		5.0					
159	9342F	LW2-G235	8	17	22.9	6.5		5.8					
164	9337F	LW2-G105	8	17	22.9	6.4		5.2					

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	NAS	CLIENT			Overlying water								Interstitial water	
BKR	SMPL	DESCRIP	REPL	DAY	TEMP	DO	COND	pH	HARD	ALK	NH3		NH3	pH
1	9327F	LW2-G086	8	18	23.4									
5	9333F	LW2-G106	8	18	23.3									
7	9326F	LW2-G088	8	18	23.2									
22	9339F	LW2-G121	8	18	23.1									
28	9344F	LW2-G178	8	18	23.1									
29	9330F	LW2-G096	8	18	23.1									
39	9331F	LW2-G099	8	18	23.1									
44	9345F	LW2-G180	8	18	23.1									
52	9336F	LW2-G077	8	18	23.1									
68	9328F	LW2-G090	8	18	23.1									
80	9338F	LW2-G117	8	18	23.2									
91	9323F	Control	8	18	23.1									
93	9329F	LW2-G091	8	18	23.1									
102	9335F	LW2-G112	8	18	23.1									
107	9325F	LW2-G082	8	18	23.0									
145	9332F	LW2-G103	8	18	23.1									
151	9334F	LW2-G109	8	18	23.0									
156	9343F	LW2-G164	8	18	23.0									
157	9341F	LW2-G122	8	18	23.0									
159	9342F	LW2-G235	8	18	23.0									
164	9337F	LW2-G105	8	18	23.1									
1	9327F	LW2-G086	8	19	23.3									
5	9333F	LW2-G106	8	19	23.3									
7	9326F	LW2-G088	8	19	23.2									
22	9339F	LW2-G121	8	19	23.2									
28	9344F	LW2-G178	8	19	23.2									
29	9330F	LW2-G096	8	19	23.2									
39	9331F	LW2-G099	8	19	23.3									
44	9345F	LW2-G180	8	19	23.3									
52	9336F	LW2-G077	8	19	23.3									
68	9328F	LW2-G090	8	19	23.2									
80	9338F	LW2-G117	8	19	23.4									
91	9323F	Control	8	19	23.3									
93	9329F	LW2-G091	8	19	23.2									
102	9335F	LW2-G112	8	19	23.2									
107	9325F	LW2-G082	8	19	23.2									
145	9332F	LW2-G103	8	19	23.2									
151	9334F	LW2-G109	8	19	23.2									
156	9343F	LW2-G164	8	19	23.2									
157	9341F	LW2-G122	8	19	23.2									
159	9342F	LW2-G235	8	19	23.2									
164	9337F	LW2-G105	8	19	23.2									

ANC08964
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	NAS	CLIENT			Overlying water							Interstitial water	
BKR	SMPL	DESCRIP	REPL	DAY	TEMP	DO	COND	pH	HARD	ALK	NH3	NH3	pH
1	9327F	LW2-G086	8	20	23.2	4.6		6.8					
5	9333F	LW2-G106	8	20	23.3	4.7		6.6					
7	9326F	LW2-G088	8	20	23.1	4.9		6.8					
22	9339F	LW2-G121	8	20	23.1	4.6		6.7					
28	9344F	LW2-G178	8	20	23.1	4.8		6.6					
29	9330F	LW2-G096	8	20	23.1	5.0		6.5					
39	9331F	LW2-G099	8	20	23.1	4.6		6.4					
44	9345F	LW2-G180	8	20	23.2	5.2		6.5					
52	9336F	LW2-G077	8	20	23.1	4.6		6.5					
68	9328F	LW2-G090	8	20	23.1	4.4		6.5					
80	9338F	LW2-G117	8	20	23.3	4.8		6.5					
91	9323F	Control	8	20	23.1	5.1		6.7					
93	9329F	LW2-G091	8	20	23.1	4.9		6.6					
102	9335F	LW2-G112	8	20	23.1	4.5		6.5					
107	9325F	LW2-G082	8	20	23.1	4.9		6.5					
145	9332F	LW2-G103	8	20	23.1	5.1		6.5					
151	9334F	LW2-G109	8	20	23.0	5.1		6.5					
156	9343F	LW2-G164	8	20	23.0	5.6		6.5					
157	9341F	LW2-G122	8	20	23.0	5.0		6.5					
159	9342F	LW2-G235	8	20	23.0	5.6		6.5					
164	9337F	LW2-G105	8	20	23.0	4.8		6.5					
1	9327F	LW2-G086	8	21	23.0								
5	9333F	LW2-G106	8	21	23.0								
7	9326F	LW2-G088	8	21	22.9								
22	9339F	LW2-G121	8	21	22.9								
28	9344F	LW2-G178	8	21	22.9								
29	9330F	LW2-G096	8	21	22.9								
39	9331F	LW2-G099	8	21	22.9								
44	9345F	LW2-G180	8	21	23.0								
52	9336F	LW2-G077	8	21	23.0								
68	9328F	LW2-G090	8	21	22.9								
80	9338F	LW2-G117	8	21	23.1								
91	9323F	Control	8	21	22.9								
93	9329F	LW2-G091	8	21	22.9								
102	9335F	LW2-G112	8	21	22.9								
107	9325F	LW2-G082	8	21	22.9								
145	9332F	LW2-G103	8	21	22.9								
151	9334F	LW2-G109	8	21	22.8								
156	9343F	LW2-G164	8	21	22.8								
157	9341F	LW2-G122	8	21	22.8								
159	9342F	LW2-G235	8	21	22.8								
164	9337F	LW2-G105	8	21	22.8								

	NAS	CLIENT			Overlying water								Interstitial water	
BKR	SMPL	DESCRIP	REPL	DAY	TEMP	DO	COND	pH	HARD	ALK	NH3		NH3	pH
1	9327F	LW2-G086	8	22	23.2	5.0	170	6.7						
5	9333F	LW2-G106	8	22	23.2	5.8	170	6.5						
7	9326F	LW2-G088	8	22	23.0	5.2	160	6.6						
22	9339F	LW2-G121	8	22	23.0	5.0	170	6.6						
28	9344F	LW2-G178	8	22	23.0	5.2	170	6.5						
29	9330F	LW2-G096	8	22	23.0	5.4	165	6.5						
39	9331F	LW2-G099	8	22	23.1	5.1	165	6.5						
44	9345F	LW2-G180	8	22	23.1	5.9	165	6.5						
52	9336F	LW2-G077	8	22	23.0	4.9	170	6.6						
68	9328F	LW2-G090	8	22	23.1	4.9	170	6.6						
80	9338F	LW2-G117	8	22	23.3	5.2	165	6.5						
91	9323F	Control	8	22	23.1	5.0	175	6.7						
93	9329F	LW2-G091	8	22	23.0	5.1	170	6.7						
102	9335F	LW2-G112	8	22	23.0	4.8	165	6.6						
107	9325F	LW2-G082	8	22	23.0	5.4	170	6.6						
145	9332F	LW2-G103	8	22	23.1	5.4	165	6.5						
151	9334F	LW2-G109	8	22	23.0	5.2	165	6.5						
156	9343F	LW2-G164	8	22	23.0	5.8	170	6.6						
157	9341F	LW2-G122	8	22	23.0	5.2	165	6.6						
159	9342F	LW2-G235	8	22	23.0	5.8	165	6.5						
164	9337F	LW2-G105	8	22	23.1	4.9	165	6.5						
1	9327F	LW2-G086	8	23	23.1									
5	9333F	LW2-G106	8	23	23.2									
7	9326F	LW2-G088	8	23	22.9									
22	9339F	LW2-G121	8	23	22.9									
28	9344F	LW2-G178	8	23	22.9									
29	9330F	LW2-G096	8	23	23.0									
39	9331F	LW2-G099	8	23	23.0									
44	9345F	LW2-G180	8	23	23.0									
52	9336F	LW2-G077	8	23	22.9									
68	9328F	LW2-G090	8	23	23.0									
80	9338F	LW2-G117	8	23	23.0									
91	9323F	Control	8	23	23.0									
93	9329F	LW2-G091	8	23	23.0									
102	9335F	LW2-G112	8	23	22.9									
107	9325F	LW2-G082	8	23	22.9									
145	9332F	LW2-G103	8	23	23.0									
151	9334F	LW2-G109	8	23	23.0									
156	9343F	LW2-G164	8	23	22.9									
157	9341F	LW2-G122	8	23	22.9									
159	9342F	LW2-G235	8	23	22.9									
164	9337F	LW2-G105	8	23	22.9									

ANC08966
BZTO104(e)008966

	NAS	CLIENT			Overlying water							Interstitial water	
BKR	SMPL	DESCRIP	REPL	DAY	TEMP	DO	COND	pH	HARD	ALK	NH3	NH3	pH
1	9327F	LW2-G086	8	24	23.0	4.4		6.4					
5	9333F	LW2-G106	8	24	23.0	6.0		6.3					
7	9326F	LW2-G088	8	24	22.9	5.2		6.4					
22	9339F	LW2-G121	8	24	22.9	4.7		6.4					
28	9344F	LW2-G178	8	24	22.9	5.1		6.4					
29	9330F	LW2-G096	8	24	22.9	5.0		6.3					
39	9331F	LW2-G099	8	24	22.9	5.2		6.2					
44	9345F	LW2-G180	8	24	22.9	5.4		6.2					
52	9336F	LW2-G077	8	24	22.9	4.9		6.4					
68	9328F	LW2-G090	8	24	22.9	5.3		6.4					
80	9338F	LW2-G117	8	24	23.0	5.2		6.3					
91	9323F	Control	8	24	23.0	5.2		6.5					
93	9329F	LW2-G091	8	24	23.0	5.0		6.4					
102	9335F	LW2-G112	8	24	23.0	5.2		6.3					
107	9325F	LW2-G082	8	24	22.9	5.1		6.4					
145	9332F	LW2-G103	8	24	23.0	5.5		6.3					
151	9334F	LW2-G109	8	24	22.9	5.4		6.4					
156	9343F	LW2-G164	8	24	22.9	6.0		6.3					
157	9341F	LW2-G122	8	24	22.9	5.6		6.3					
159	9342F	LW2-G235	8	24	22.9	5.3		6.3					
164	9337F	LW2-G105	8	24	22.9	6.0		6.3					
1	9327F	LW2-G086	8	25	23.0								
5	9333F	LW2-G106	8	25	23.0								
7	9326F	LW2-G088	8	25	22.9								
22	9339F	LW2-G121	8	25	22.9								
28	9344F	LW2-G178	8	25	22.9								
29	9330F	LW2-G096	8	25	22.9								
39	9331F	LW2-G099	8	25	22.9								
44	9345F	LW2-G180	8	25	23.0								
52	9336F	LW2-G077	8	25	22.9								
68	9328F	LW2-G090	8	25	22.9								
80	9338F	LW2-G117	8	25	23.2								
91	9323F	Control	8	25	23.0								
93	9329F	LW2-G091	8	25	23.0								
102	9335F	LW2-G112	8	25	22.9								
107	9325F	LW2-G082	8	25	22.9								
145	9332F	LW2-G103	8	25	23.0								
151	9334F	LW2-G109	8	25	22.9								
156	9343F	LW2-G164	8	25	22.9								
157	9341F	LW2-G122	8	25	22.9								
159	9342F	LW2-G235	8	25	22.9								
164	9337F	LW2-G105	8	25	22.9								

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	NAS	CLIENT			Overlying water							Interstitial water	
BKR	SMPL	DESCRIP	REPL	DAY	TEMP	DO	COND	pH	HARD	ALK	NH3	NH3	pH
1	9327F	LW2-G086	8	26	23.1								
5	9333F	LW2-G106	8	26	23.1								
7	9326F	LW2-G088	8	26	23.0								
22	9339F	LW2-G121	8	26	23.0								
28	9344F	LW2-G178	8	26	23.0								
29	9330F	LW2-G096	8	26	23.0								
39	9331F	LW2-G099	8	26	23.0								
44	9345F	LW2-G180	8	26	23.1								
52	9336F	LW2-G077	8	26	23.0								
68	9328F	LW2-G090	8	26	23.1								
80	9338F	LW2-G117	8	26	23.3								
91	9323F	Control	8	26	23.1								
93	9329F	LW2-G091	8	26	23.1								
102	9335F	LW2-G112	8	26	23.0								
107	9325F	LW2-G082	8	26	23.0								
145	9332F	LW2-G103	8	26	23.1								
151	9334F	LW2-G109	8	26	23.1								
156	9343F	LW2-G164	8	26	23.0								
157	9341F	LW2-G122	8	26	23.0								
159	9342F	LW2-G235	8	26	23.0								
164	9337F	LW2-G105	8	26	23.1								
1	9327F	LW2-G086	8	27	22.9	5.3		6.7					
5	9333F	LW2-G106	8	27	22.9	5.4		6.7					
7	9326F	LW2-G088	8	27	22.9	5.8		6.6					
22	9339F	LW2-G121	8	27	22.9	5.1		6.6					
28	9344F	LW2-G178	8	27	22.9	5.3		6.8					
29	9330F	LW2-G096	8	27	22.9	5.4		6.7					
39	9331F	LW2-G099	8	27	22.9	5.4		6.6					
44	9345F	LW2-G180	8	27	22.9	5.3		6.6					
52	9336F	LW2-G077	8	27	22.8	5.2		6.8					
68	9328F	LW2-G090	8	27	22.9	5.4		6.7					
80	9338F	LW2-G117	8	27	22.8	5.2		6.7					
91	9323F	Control	8	27	22.8	5.1		6.9					
93	9329F	LW2-G091	8	27	22.9	5.5		6.8					
102	9335F	LW2-G112	8	27	22.9	5.4		6.8					
107	9325F	LW2-G082	8	27	22.9	5.5		6.7					
145	9332F	LW2-G103	8	27	22.9	5.6		6.7					
151	9334F	LW2-G109	8	27	22.9	5.2		6.7					
156	9343F	LW2-G164	8	27	22.9	5.3		6.7					
157	9341F	LW2-G122	8	27	22.8	5.5		6.7					
159	9342F	LW2-G235	8	27	22.8	5.1		6.7					
164	9337F	LW2-G105	8	27	22.8	5.0		6.6					

ANC08968
BZTO104(e)008968

	NAS	CLIENT			Overlying water							Interstitial water	
BKR	SMPL	DESCRIP	REPL	DAY	TEMP	DO	COND	pH	HARD	ALK	NH3	NH3	pH
1	9327F	LW2-G086	8	28	23.4	6.4	160	6.7	51	50	<0.1		
5	9333F	LW2-G106	8	28	23.4	7.8	155	6.7	43	40	<0.1		
7	9326F	LW2-G088	8	28	23.3	6.9	160	6.7	43	40	<0.1		
22	9339F	LW2-G121	8	28	23.3	6.8	160	6.7	43	40	0.3		
28	9344F	LW2-G178	8	28	23.2	7.2	160	6.7	43	40	<0.1		
29	9330F	LW2-G096	8	28	23.2	7.3	155	6.7	43	40	0.1		
39	9331F	LW2-G099	8	28	23.2	6.8	155	6.6	43	40	<0.1		
44	9345F	LW2-G180	8	28	23.1	7.5	155	6.6	43	40	<0.1		
52	9336F	LW2-G077	8	28	23.0	6.3	160	6.6	43	40	<0.1		
68	9328F	LW2-G090	8	28	23.0	6.6	160	6.6	43	40	0.1		
80	9338F	LW2-G117	8	28	23.2	7.0	155	6.6	43	40	<0.1		
91	9323F	Control	8	28	23.1	6.8	165	6.6	43	40	0.1		
93	9329F	LW2-G091	8	28	23.0	6.7	160	6.7	43	40	<0.1		
102	9335F	LW2-G112	8	28	23.0	6.6	155	6.7	43	40	<0.1		
107	9325F	LW2-G082	8	28	23.0	7.3	155	6.7	43	40	<0.1		
145	9332F	LW2-G103	8	28	23.1	7.1	155	6.6	43	40	<0.1		
151	9334F	LW2-G109	8	28	23.0	6.8	160	6.6	43	40	<0.1		
156	9343F	LW2-G164	8	28	23.0	7.4	155	6.6	34	40	<0.1		
157	9341F	LW2-G122	8	28	23.0	6.5	155	6.6	34	40	<0.1		
159	9342F	LW2-G235	8	28	23.0	7.5	155	6.6	43	40	<0.1		
164	9337F	LW2-G105	8	28	23.0	7.0	155	6.6	43	40	<0.1		
				Mean	23.0	5.9	166	6.6	45	42	---	6.1	6.6
				SD	0.2	0.7	10	0.5	6	5	---	2.9	0.2
				n	609	294	126	294	42	42	42	21	21
				Min	22.3	4.4	155	4.1	26	40	<0.1	<0.5	6.5
				Max	23.4	8.4	215	7.2	60	60	1.4	10.6	7.0

Validated
RSE 9/28/04

ANC08969
BZTO104(e)008969

CHAIN-OF-CUSTODY RECORDS

Windward Environmental

CHAIN-OF-CUSTODY/TEST REQUEST FORM

1322

Project/Client Name: PORTLAND HARBOR RI/FS R2
Windward Project No: 03.28-04-28
Contact Name: HELLE ANDERSEN (206.577.1289)
Sampled By: THAI DO (206.577.1282)

Ship to: NORTHWESTERN AQUATIC SCIENCES
Attn: GERALD IRISSARRI
Shipping address: HAND DELIVERED TO NEWPORT, OREGON

Shipping Date: 08.05.04
Airbill Number: —

Sample Collection Date (m/d/y)	Time	Sample Identification	Volume of Sample / # of Containers	Matrix	Test(s) Requested (check test(s) required)							Comments / Instructions [Jar tag number(s)]
					10 day (Chironomus)	28 day (Hyalella)						
08.02.04	10:17	LWZ-6082	1L/4	SEDIMENT	✓	✓		NAS#	9325	F		INTERNAL TEMP
08.02.04	10:41	LWZ-6088	1L/4	SEDIMENT	✓	✓			9326	F		OF ICE CHESTS
08.02.04	11:02	LWZ-6086	1L/4	SEDIMENT	✓	✓			9327	F		UPON LAB RECEIPT:
08.02.04	11:53	LWZ-6090	1L/4	SEDIMENT	✓	✓			9328	F		#1 0.5°C
08.02.04	12:42	LWZ-6091	1L/4	SEDIMENT	✓	✓			9329	F		#2 2.0°C
08.03.04	09:03	LWZ-6096	1L/4	SEDIMENT	✓	✓			9330	F		#3 1.0°C
08.03.04	09:32	LWZ-6099	1L/4	SEDIMENT	✓	✓			9331	F		#4 2.0°C
08.03.04	10:03	LWZ-6103	1L/4	SEDIMENT	✓	✓			9332	F		#5 1.0°C
08.03.04	10:21	LWZ-6106	1L/4	SEDIMENT	✓	✓			9333	F		#6 0.5°C
08.03.04	10:39	LWZ-6109	1L/4	SEDIMENT	✓	✓			9334	F		#7 2.0°C
08.03.04	11:49	LWZ-6112	1L/4	SEDIMENT	✓	✓			9335	F		
08.03.04	13:04	LWZ-6077	1L/4	SEDIMENT	✓	✓			9336	F		
08.03.04	13:26	LWZ-6105	1L/4	SEDIMENT	✓	✓			9337	F		
Total Number of Containers			52	Purchase Order / Statement of Work #								

1) Released by:	1) Rec'd by:	2) Released by:	1) Rec'd by:
Print name: THAI DO	Print name: GERALD IRISSARRI	Print name:	Print name:
Signature:	Signature:	Signature:	Signature:
Company: WINDWARD ENVIRONMENTAL	Company: NORTHWESTERN AQUATIC SCIENCES	Company:	Company:
Date/Time: 08.05.04/10:21	Date/Time: 8/5/04 10:21 AM	Date/Time:	Date/Time:

* Distribution: White and yellow copies accompany shipment; pink-consignor's copy; white-consignee return with results; yellow-consignee's copy.
* Instructions for completion of Chain-of-Custody/Test Request Form on back.

Windward environmental LLC
200 West Mercer Street
Suite 401
Seattle, WA 98119
Tel: 206.378.1364
Fax: 206.217.0089

To be completed by Laboratory upon sample receipt:

Date of receipt:	Laboratory W.O. #:
Condition upon receipt:	Time of receipt:
Cooler temperature:	Received by:

ANC08971
BZTO104(e)008971

2 of 2

Windward Environmental

CHAIN-OF-CUSTODY/TEST REQUEST FORM

1323

Project/Client Name: PORTLAND HARBOR RI/FS
Windward Projec: No: 03-2E-04-2E
Contact Name: HELLE ANDERSEN (206.577.1287)
Sampled By: THAI DO (206.577.1282)

Ship to: NORTHWESTERN AQUATIC SCIENCES
Attn: GERALD IRISSARRI
Shipping address: HAND DELIVERED TO NEWPORT, OREGON

Shipping Date: 08.05.04
Airbill Number: —

Sample Collection Date (m/d/y)	Time	Sample Identification	Volume of Sample / # of Containers	Matrix	Test(s) Requested (check test(s) required)							Comments / Instructions [Jar tag number(s)]
					10-day (Amphipods)	28-day Hyalella						
08.03.04	13:54	LWZ-G117	1L/4	SEDIMENT	✓	✓			NAS# 9338	F		
08.03.04	14:19	LWZ-G121	1L/4	SEDIMENT	✓	✓			9339	F		
08.03.04	14:52	LWZ-G123	1L/4	SEDIMENT	✓	✓			9340	F		DO NOT TEST / AWAIT INSTRUCTIONS
08.03.04	15:22	LWZ-G122	1L/4	SEDIMENT	✓	✓			9341	F		
08.04.04	08:41	LWZ-G235	1L/4	SEDIMENT	✓	✓			9342	F		
08.04.04	09:24	LWZ-G164	1L/4	SEDIMENT	✓	✓			9343	F		
08.04.04	09:49	LWZ-G178	1L/4	SEDIMENT	✓	✓			9344	F		
08.04.04	10:09	LWZ-G180	1L/4	SEDIMENT	✓	✓			9345	F		
		Total Number of Containers	32	Purchase Order / Statement of Work #								

09.10.09

1) Released by:	1) Rec'd by:	2) Released by:	1) Rec'd by:
Print name: THAI DO	Print name: GERALD IRISSARRI	Print name:	
Signature:	Signature:	Signature:	
Company: WINDWARD ENVIRONMENTAL	Company: NORTHWESTERN AQUATIC SCIENCES	Company:	Company:
Date/Time: 08.05.04 / 10:21	Date/Time: 8/5/04 10:21 AM	Date/Time:	Date/Time:

* Distribution: White and yellow copies accompany shipment; pink-consignor's copy; white-consignee return with results; yellow-consignee's copy.
* Instructions for completion of Chain-of-Custody/Test Request Form on back.

Ward environmental LLC
• 200 West Mercer Street
Suite 401
Seattle, WA 98119
Tel: 206.378.1364
Fax: 206.217.0089

To be completed by Laboratory upon sample receipt:

Date of receipt:	Laboratory W.O. #:
Condition upon receipt:	Time of receipt:
Cooler temperature:	Received by:

ANC08972
BZTO104(e)008972

APPENDIX II

RAW DATA – REFERENCE TOXICANT TEST

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS- _____

ACUTE TOXICITY TEST (ALL SPECIES)

Test No. 999-1821 Client: QC Test Investigator _____

Test Type (rangefinding/definitive) _____ Test Length (hr) 96

Species *Hyalella azteca*

STUDY MANAGEMENT

Client: QC test

Client's Study Monitor: QC test

Testing Laboratory: Northwestern Aquatic Sciences

Test Location: Newport Laboratory

Laboratory's Study Personnel:

Proj. Man./Study Dir. G.J. Irissarri

QA Officer L. K. Nemeth

1. GAB 8-6-04 2. M.S. Redmond 8/6/04

3. BB, Anderson BBP 4. G.C. Hayes GCH S. William T. Montgomery 8/6/04

Test Beginning: 8-10-04 1210 Test Ending: 8-14-04 1155

TEST MATERIAL Lot No.: MALLINCKRODT TNZ

Description: Cadmium as $CdCl_2 \cdot 2.5H_2O$ (1.0 mg/ml) Prepared: 4-2-03

NAS Sample No.				
Date of Collection:				
Date of Receipt:				
Temperature (deg C):				
Dissolved oxygen (mg/L):				
pH:				
Conductivity (umhos/cm):				
Hardness (mg/L):				
Alkalinity (mg/L):				
Salinity (ppt):				
Total chlorine (mg/L):				
Total ammonia-N (mg/L):				
_____:				

DILUTION WATER

Description: Moderately hard synthetic water

Date of Preparation/Collection: 8-5-04

Water Quality: Cond. (umhos/cm): 295 Salinity (ppt) _____ pH 7.6

Hardness (mg/L as $CaCO_3$): 94 Alkalinity (mg/L as $CaCO_3$): 90

Treatments: Aerated ≥ 24 hrs

TEST LOCATION

Test conducted in (circle one): room 1 (room 2) trailer water bath other: _____

Randomization chart:

REP A	3.75	15	60	30	ϕ	7.5				
REP B	60	ϕ	7.5	15	3.75	30				

Error codes: 1) Correction of handwriting error
2) Written in wrong location; entry deleted
3) Wrong date deleted; replaced with correct date
4) Error found in measurement; measurement repeated

Revised 12-5-01

ANC08974
BZTO104(e)008974

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-_____

ACUTE TOXICITY TEST (ALL SPECIES)

Test No. 999-1821 Client QC Test Investigator _____

TEST ORGANISMS

Species: *Hyalella azteca* Age: 7-8 DAYS Size: _____

Source: Chesapeake Cultures, Hayes, VA Date received: 8-6-04

Acclimation Data:

Date	Temp. (deg.C)	DO (mg/l)	pH	Cond. umhos/cm	Hardness (mg/L)	Alkalinity (mg/L)	Feeding Amount	Feeding description	Water changes
8-6-04	22.8	>15.0	7.1	185	26	30	10 mL	YTC	yes
8-7-04	22.1	8.7	7.5	175	43	40	"	"	"
8-8-04	22.7	8.5	7.3	185	34	40	"	"	"
8-9-04	22.1	8.6	7.5	175	43	50	"	"	"
8-10-04	22.5	8.4	7.4	170	34	40	"	"	—
Mean	22.4	9.8	7.4	178	36	40			
S.D.	0.3	2.9	0.2	7	7	7			
(N)	5	5	5	5	5	5			

Photoperiod during acclimation: _____

TEST PROCEDURES AND CONDITIONS

Test concentrations (50% series recommended): 60, 30, 15, 7.5, 3.75, 0 ug/L

Test chamber: 250 ml glass beakers Test volume: 100 ml

Replicates/treatment: 10 Organisms/treatment: 20 (10/rep)

Test water changes: None Aeration during test: None

Feeding: 0.5 ml YTC suspension per beaker on days 0 and 2

Duration: 24-hr, 48-hr, 96-hr Test temperature (deg.C): 23 ± 1 or 20 ± 1

Beaker placement: Stratified randomization Photoperiod: 16:8, L:D

MISCELLANEOUS NOTES

Test solution preparation:

1st working stock made by 1:99 (1ml ↑ 100 ml) dilution of concentrated 1.0 mg/ml Cd stock.
Final conc.: 10 ug/L.

2nd working stock made by 10:90 (10ml ↑ 100 ml) dilution of concentrated 1st working stock.
Final conc.: 1ug/L.

Test concentration (ug/L)	ml of 2nd working stock per 200 ml	Dilution water
60	12	Brought up to final volume of 200 ml with dilution water and distributed evenly between two replicates
30	6	
15	3	
7.5	1.5	
3.75	0.75	
0	0	

GJ 8-10-04

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BZTO104(e)008975

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-_____

ACUTE TOXICITY TEST (ALL SPECIES)

Test No. 999-1821 Client QC Test

DAILY RECORD SHEET

Day 0 (8 /10 /04) am / GS

Conc. (ug/L)	Temp. (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	Survivors A	Survivors B
1. 60	23.4	8.7	285	7.9	85	70	10	10
2. 30	23.4	8.6	295	7.9			10	10
3. 15	23.4	8.6	300	7.9			10	10
4. 7.5	23.4	8.6	300	7.9			10	10
5. 3.75	23.4	8.5	300	7.9			10	10
6. 0	23.3	8.6	300	7.8	85	80	10	10

All animals fed 0.5 ml YTC suspension. Initials: GS

Day 1 (8 /11 /04) am / BBP

Conc. (ug/L)	Temp. (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	Survivors A	Survivors B
1. 60	23.4	8.0	285	7.7			8 (2D)	10
2. 30	23.2	8.0	295	7.7			10	7 (3D)
3. 15	23.3	8.0	300	7.6			10	10
4. 7.5	23.2	8.0	300	7.6			10	10
5. 3.75	23.4	7.8	300	7.7			10	10
6. 0	23.3	8.0	285	7.7			10	10

Day 2 (8 /12 /04) GS

Conc. (ug/L)	Temp. (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	Survivors A	Survivors B
1. 60	23.3	6.4	290	7.4			Ø (8D)	Ø (10D)
2. 30	23.3	6.8	295	7.5			2 (8D)	1 (6D)
3. 15	23.3	7.4	300	7.6			4 (6D)	5 (5D)
4. 7.5	23.4	7.2	300	7.6			5 (5D)	7 (3D)
5. 3.75	23.4	7.3	300	7.6			10	10
6. 0	23.3	7.4	290	7.7			10	10

All animals fed 0.5 ml YTC suspension. Initials: GS

Day 3 (8 /13 /04) ~~GS~~ / GS

Conc. (ug/L)	Temp. (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	Survivors A	Survivors B
1. 60	23.2	7.8	290	7.9			Ø	Ø
2. 30	23.2	7.7	~~290~~ 300	7.9			Ø (2D)	Ø (1D)
3. 15	23.0	7.7	300	7.9			2 (2D)	Ø (5D)
4. 7.5	23.2	7.6	305	7.9			5	6 (1D)
5. 3.75	23.2	7.5	305	7.9			9 (1D)	10
6. 0	23.0	7.7	310	7.9			10	9 (1D)

Day 4 (8 /14 AM) GS

Conc. (ug/L)	Temp. (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	Survivors A	Survivors B
1. 60	—	—	295	—	—	—	Ø	Ø
2. 30	—	—	300	—			Ø	Ø
3. 15	23.4	8.0	310	7.5			Ø (2D)	Ø
4. 7.5	23.4	7.9	310	7.5			4 (1D)	4 (2D)
5. 3.75	23.4	7.9	310	7.5			8 (1D)	10
6. 0	23.3	7.9	310	7.5	85	90	10	9
Mean	23.3	7.8	299	7.7	85	77		
SD	0.1	0.5	7	0.2	0	6		
n	28	28	30	28	3	3		

Revised 12-5-01

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Acute 96-hr Toxicity Test-96 Hr Survival

Start Date:	8/10/04 12:10	Test ID:	999-1821	Sample ID:	REF-Ref Toxicant
End Date:	8/14/04 11:55	Lab ID:	ORNAS-Northwestern Aquati	Sample Type:	CDCL-Cadmium chloride
Sample Date:		Protocol:	EPAA 91-EPA Acute	Test Species:	HA-Hyalella azteca
Comments:					

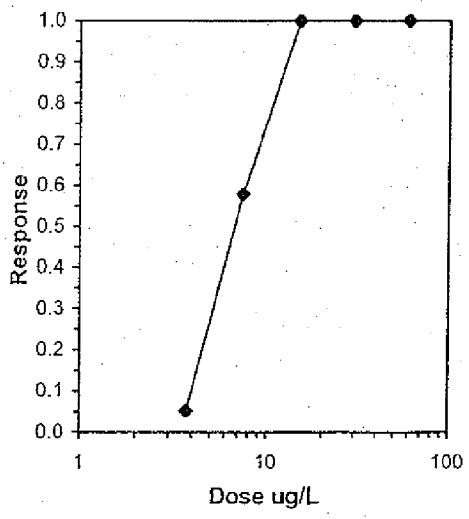
Conc-ug/L	1	2
D-Control	1.0000	0.9000
3.75	0.8000	1.0000
7.5	0.4000	0.4000
15	0.0000	0.0000
30	0.0000	0.0000
60	0.0000	0.0000

			Transform: Arcsin Square Root					Number	Total
Conc-ug/L	Mean	N-Mean	Mean	Min	Max	CV%	N	Resp	Number
D-Control	0.9500	1.0000	1.3305	1.2490	1.4120	8.661	2	1	20
3.75	0.9000	0.9474	1.2596	1.1071	1.4120	17.115	2	2	20
7.5	0.4000	0.4211	0.6847	0.6847	0.6847	0.000	2	12	20
15	0.0000	0.0000	0.1588	0.1588	0.1588	0.000	2	20	20
30	0.0000	0.0000	0.1588	0.1588	0.1588	0.000	2	20	20
60	0.0000	0.0000	0.1588	0.1588	0.1588	0.000	2	20	20

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Normality of the data set cannot be confirmed				
Equality of variance cannot be confirmed				

Trimmed Spearman-Karber

Trim Level	EC50	95% CL	
0.0%			
5.0%			
10.0%	6.9043	5.7090	8.3498
20.0%	6.8506	5.3987	8.6931
Auto-5.3%	6.9303	5.8231	8.2480



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BZTO104(e)008977

Test: AT-Acute 96-hr Toxicity Test							Test ID: 999-1821		
Species: HA-Hyalella azteca							Protocol: EPAA 91-EPA Acute		
Sample ID: REF-Ref Toxicant							Sample Type: CDCL-Cadmium chloride		
Start Date: 8/10/04 12:10			End Date: 8/14/04 11:55				Lab ID: ORNAS-Northwestern Aquatic Sciences		
Pos	ID	Rep	Group	Start	24 Hr	48 Hr	72 Hr	96 Hr	Notes
	1	1	D-Control	10				10	
	2	2	D-Control	10				9	
	3	1	3.750	10				8	
	4	2	3.750	10				10	
	5	1	7.500	10				4	
	6	2	7.500	10				4	
	7	1	15.000	10				0	
	8	2	15.000	10				0	
	9	1	30.000	10				0	
	10	2	30.000	10				0	
	11	1	60.000	10				0	
	12	2	60.000	10				0	

Comments: Data entry verified against laboratory bench sheets
MSK 8-19-04

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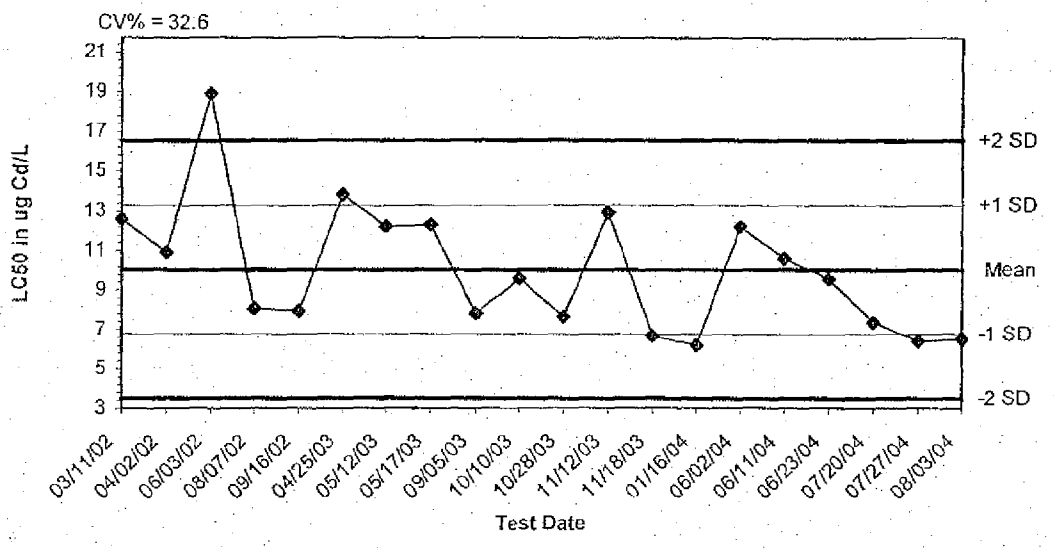
BZTO104(e)008978

Hyalella azteca 96-hr reference toxicant test - last 20 points



Dates	Values	Mean	-1 SD	-2 SD	+1 SD	+2 SD
03/11/02	12.6000	10.0020	6.7445	3.4869	13.2595	16.5171
04/02/02	10.9000	10.0020	6.7445	3.4869	13.2595	16.5171
06/03/02	18.9000	10.0020	6.7445	3.4869	13.2595	16.5171
08/07/02	8.0400	10.0020	6.7445	3.4869	13.2595	16.5171
09/16/02	7.9200	10.0020	6.7445	3.4869	13.2595	16.5171
04/25/03	13.8000	10.0020	6.7445	3.4869	13.2595	16.5171
05/12/03	12.2000	10.0020	6.7445	3.4869	13.2595	16.5171
05/17/03	12.3000	10.0020	6.7445	3.4869	13.2595	16.5171
09/05/03	7.7900	10.0020	6.7445	3.4869	13.2595	16.5171
10/10/03	9.5600	10.0020	6.7445	3.4869	13.2595	16.5171
10/28/03	7.6200	10.0020	6.7445	3.4869	13.2595	16.5171
11/12/03	12.9000	10.0020	6.7445	3.4869	13.2595	16.5171
11/18/03	6.6700	10.0020	6.7445	3.4869	13.2595	16.5171
01/16/04	6.1900	10.0020	6.7445	3.4869	13.2595	16.5171
06/02/04	12.2000	10.0020	6.7445	3.4869	13.2595	16.5171
06/11/04	10.6000	10.0020	6.7445	3.4869	13.2595	16.5171
06/23/04	9.5600	10.0020	6.7445	3.4869	13.2595	16.5171
07/20/04	7.3500	10.0020	6.7445	3.4869	13.2595	16.5171
07/27/04	6.4100	10.0020	6.7445	3.4869	13.2595	16.5171
08/03/04	6.5300	10.0020	6.7445	3.4869	13.2595	16.5171

MSR
8-20-04

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BZTO104(e)008979

Report

of

Test No. 686-6

Toxicity of Portland Harbor RI/FS Freshwater Test Sediments (Batch 3) using a 10-day Midge, *Chironomus tentans*, Sediment Bioassay

Submitted to

Windward Environmental, Inc.
200 West Mercer Street, Suite 401
Seattle, WA 98119

Submitted by

Northwestern Aquatic Sciences
3814 Yaquina Bay Road
P.O. Box 1437
Newport, OR 97365

January 18, 2005

ANC08980
BZTO104(e)008980

TOXICITY TEST REPORT

TEST IDENTIFICATION

Test No.: 686-6

Title: Toxicity of Portland Harbor RI/FS freshwater test sediments (batch 3) using a 10-day midge, *Chironomus tentans*, sediment bioassay.

Protocol No.: NAS-686-CT4b, June 24, 2004. Based on ASTM 2003, Standard Method No. E 1706-00 and U.S. EPA Method 100.2 (EPA/600/R-99/064, 2000) This protocol can be found in Appendix B of the Portland Harbor RI/FS Round 2 Quality Assurance Project Plan, June 24, 2004.

STUDY MANAGEMENT

Study Sponsor: Windward Environmental, Inc., 200 West Mercer Street, Suite 401, Seattle, WA 98119.

Sponsor's Study Monitor: Ms. Helle Anderson

Testing Laboratory: Northwestern Aquatic Sciences, P.O. Box 1437, Newport, OR 97365

Test Location: Newport laboratory

Laboratory's Study Personnel: G.J. Irissarri, B.S., Proj. Man./Study Dir.; L.K. Nemeth, M.B.A., QA Officer; R.S. Caldwell, PhD, Sr. Toxicol.; M.S. Redmond, M.S., Aq. Toxicol.; G.A. Buhler, B.S., Aq. Toxicol.; W.T. Montgomery, A.A., Sr. Tech.; G. Hayes, B.S., Tech.; S.J. Gage, B.A., Tech.; B.B. Pridgeon, Lab Asst.

Study Schedule:

Test Beginning: 8-10-04, 1430 hrs.

Test Ending: 8-20-04, 1500 hrs.

Disposition of Study Records: All specimens, raw data, reports and other study records are stored according to Good Laboratory Practice regulations at Northwestern Aquatic Sciences, 3814 Yaquina Bay Rd., Newport, OR 97365.

Good Laboratory Practices: The test was conducted following the principles of Good Laboratory Practices (GLP) as defined in the EPA/TSCA Good Laboratory Practice regulations revised August 17, 1989 (40 CFR Part 792).

Statement of Quality Assurance: The test data were reviewed by the Quality Assurance Unit to assure that the study was performed in accordance with the protocol and standard operating procedures. This report is an accurate reflection of the raw data.

TEST MATERIAL

Test Sediments: Portland Harbor RI/FS freshwater test sediments (Batch 3). Details are as follows:

NAS Sample No.	9325F	9326F	9327F	9328F	9329F
Description	LW2-G082	LW2-G088	LW2-G086	LW2-G090	LW2-G091
Collection Date	8/2/04	8/2/04	8/2/04	8/2/04	8/2/04
Receipt Date	8/5/04	8/5/04	8/5/04	8/5/04	8/5/04
NAS Sample No.	9330F	9331F	9332F	9333F	9334F
Description	LW2-G096	LW2-G099	LW2-G103	LW2-G106	LW2-G109
Collection Date	8/3/04	8/3/04	8/3/04	8/3/04	8/3/04
Receipt Date	8/5/04	8/5/04	8/5/04	8/5/04	8/5/04
NAS Sample No.	9335F	9336F	9337F	9338F	9339F
Description	LW2-G112	LW2-G077	LW2-G105	LW2-G117	LW2-G121
Collection Date	8/3/04	8/3/04	8/3/04	8/3/04	8/3/04
Receipt Date	8/5/04	8/5/04	8/5/04	8/5/04	8/5/04
NAS Sample No.	9341F	9342F	9343F	9344F	9345F
Description	LW2-G122	LW2-G235	LW2-G164	LW2-G178	LW2-G180
Collection Date	8/3/04	8/4/04	8/4/04	8/4/04	8/4/04
Receipt Date	8/5/04	8/5/04	8/5/04	8/5/04	8/5/04

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Control Sediment: The negative control sediment (NAS#9323F) was collected on 8-4-04 from an area approximately one mile east of the Hwy. 101 bridge at Beaver Creek, approx. 8 miles south of Newport, OR.
Treatments: Homogenized at test set up by mixing using stainless steel implements.
Storage: All test and control sediments were stored locked at 4°C in the dark in capped containers until used.

TEST WATER

Source: Dechlorinated Newport, OR tap water.
Dates of Collection: Nine batches of test water were collected between 8/7/04 and 8/18/04
Water Quality (mean ± SD):
pH: 7.1 ± 0.1(n=9)
conductivity: 156 ± 7 µmhos/cm (n=9)
hardness: 34 ± 0 mg/L as $CaCO_3$ (n=9)
alkalinity: 36 ± 7 mg/L as $CaCO_3$. (n=9)
chlorine: All batches were below 0.02 mg/L.
Pretreatment: Dechlorinated and aerated ≥24 hr.

TEST ORGANISMS

Species: *Chironomus tentans*, midge.
Size: 3rd instar, mean initial wt: 0.18 ± 0.02 mg
Source: NAS cultures, originally obtained from EPA, Duluth, MN.
Acclimation: Holding conditions prior to testing averaged: temperature, 23.9 ± 0.7°C; dissolved oxygen, 7.6 ± 0.3 mg/L; pH, 7.4 ± 0.2; conductivity, 260 ± 22 µmhos/cm; hardness, 82 ± 18 mg/L as $CaCO_3$; and alkalinity, 73 ± 15 mg/L as $CaCO_3$.

TEST PROCEDURES AND CONDITIONS

The following is an abbreviated statement of the test procedures and a statement of the test conditions actually employed. See the test protocol for a more detailed description of the test procedures used in this study.

Test Chambers: 300 ml high-form glass beakers
Test Volumes: 100 ml sediment layer; 175 ml test water.
Replicates/Treatment: 8
Organisms/Treatment: 80
Water Volume Changes: 2 water volumes per day
Aeration: None.
Feeding: Animals were fed 1.5 ml of Prime Tropical Flakes suspension (1.5 ml contains 6 mg dry solids) per beaker daily.
Effects Criteria: 1) survival after 10 days, and 2) average individual biomass (based on ash-free dry weight) after 10 days. Death is defined as no visible movement or response to tactile stimulation. Missing organisms were considered to be dead.
Water Quality and Other Test Conditions: The temperature, dissolved oxygen, conductivity, pH, hardness, alkalinity and ammonia-nitrogen were measured in the overlying water of one replicate test container per treatment on days 0 and 10 of the test. Temperature and dissolved oxygen were measured daily in the overlying water of one replicate test container per treatment. Interstitial ammonia was measured in the bulk sediment. Hardness and alkalinity were measured with titrimetric methods. Interstitial water samples were obtained by centrifugation, or by settling in the case of very sandy sediments. Total total ammonia-N was measured using Hach reagents based on the salicylate (Clin. Chim. Acta 14:403, 1996) colorimetric method; samples were not distilled prior to analysis. The photoperiod was 16:8, L:D.

DATA ANALYSIS METHODS

Survival and individual biomass were calculated for each replicate as follows:

percent survival = 100 x (number surviving/initial number tested)
average individual ash-free dry wt. = (final wt. – ashed dry wt.)/number weighed,
where:

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ash-free dry wt. = dry weight of organisms recovered on day 10 -- ashed dry weight, in mg

Means and standard deviations for the biological endpoints described above, and for water quality data, were computed using Microsoft Excel 2000.

PROTOCOL DEVIATIONS

None

REFERENCE TOXICANT TEST

The reference toxicant test is a multi-concentration toxicity test using potassium chloride, to evaluate the performance of the test organisms used in the sediment toxicity test. The performance is evaluated by comparing the results of this test with historical results obtained at the laboratory. A summary of the reference toxicant test result is given below. The reference toxicant test raw data are found in Appendix II.

Test No.: 999-1822
Reference Toxicant and Source: Potassium chloride (Fisher, Lot No. 006829).
Test Date: 8-10-04
Dilution Water Used: Moderately hard synthetic water prepared from Milli-Q® deionized water.
Result: 96-hr LC50, 5.61 g/L. This result is within the laboratory's control chart warning limits (2.59 to 7.41 g/L).

TEST RESULTS

Observations of water quality in the overlying water throughout the test are summarized in Table 1. A detailed tabulation of the water quality results by sample and test day can be found in Appendix I. Interstitial ammonia and pH measurements are listed in Table 2. The means and standard deviations of percent mortality and growth (ash-free dry weight) of midges exposed for 10 days to sediments are summarized in Table 3. Detailed data organized by sample and replicate, and summary statistics for these observations, are given in Appendix I.

All water quality observations of overlying water temperature and dissolved oxygen were within the protocol specified ranges. Ammonia-N in the overlying water ranged from <0.1 to 0.9 mg/L in all day 0 and day 10 observations. Interstitial bulk sediment values for ammonia-N ranged from <0.5 to 10.6 mg/L.
The test met the survival and weight acceptability criteria specified in the test protocol with 90.0% mean control survival (≥70% required) and a control individual mean ash-free dry weight of 0.95 mg per larvae (0.48 mg required). The reference toxicant (positive control) result was within the laboratory's control chart limits (5.61 g/L; control chart mean ± 2 S.D. = 5.00 ± 2.41). It is concluded, therefore, that the test has developed fully acceptable data for use in making management decisions.

REFERENCES

ASTM. 2003. Standard Test Methods for Measuring the Toxicity of Sediment-Associated Contaminants with Fresh Water Invertebrates. ASTM Standard Method No. E 1706-00. Am. Soc. Test. Mat., West Conshohocken, PA.

U.S. EPA. 2000. Section 12, Test Method 100.2, *Chironomus tentans* 10-d Survival and Growth Test for Sediments, pp 55-62 In: Methods for Measuring the Toxicity and Bioaccumulation of Sediment-associated Contaminants with Freshwater Invertebrates (Second Edition). EPA/600/R-99/064.

ANC08983
BZTO104(e)008983

STUDY APPROVAL

Gerald Crissairi 1-20-05
Project Manager/Study Director Date

Linda K. Nemetz 1/14/05
Quality Assurance Unit Date

Richard A. Caldwell 1/20/05
Laboratory Director Date

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BZTO104(e)008984

Table 1. Summary of water quality conditions during tests of the midge, *Chironomus tentans*, exposed to freshwater sediments.

Water Quality Parameter	Mean ± S.D.	Minimum	Maximum	N
Temperature (°C)	22.9 ± 0.3	22.3	23.3	231
Dissolved oxygen (mg/L)	5.2 ± 1.0	2.9	8.2	231
Conductivity (µmhos/cm)	167 ± 12	155	205	42
pH	6.9 ± 0.1	6.7	7.1	42
Hardness (mg/L as $CaCO_3$)	46 ± 8	26	68	42
Alkalinity (mg/L as $CaCO_3$)	45 ± 7	30	60	42
Total ammonia (mg/L)	---	<0.1	0.9	42

Table 2. Pore water ammonia-N and pH in bulk test sediments at the time of test setup.

NAS Sample No.	Sample Description	Ammonia (mg/L)	pH
9323F	Control	3.7	7.0
9325F	LW2-G082	1.1	7.0
9326F	LW2-G088	9.3	6.5
9327F	LW2-G086	9.0	6.6
9328F	LW2-G090	9.7	6.6
9329F	LW2-G091	10.6	6.6
9330F	LW2-G096	2.0	6.7
9331F	LW2-G099	6.5	6.5
9332F	LW2-G103	4.6	6.5
9333F	LW2-G106	4.8	6.5
9334F	LW2-G109	6.0	6.6
9335F	LW2-G112	5.6	6.6
9336F	LW2-G077	6.3	6.5
9337F	LW2-G105	3.4	6.5
9338F	LW2-G117	9.2	6.5
9339F	LW2-G121	7.9	6.6
9341F	LW2-G122	9.5	6.6
9342F	LW2-G235	---	---
9343F	LW2-G164	<0.5	6.8
9344F	LW2-G178	2.5	6.7
9345F	LW2-G180	4.3	6.8

ANC08985
BZTO104(e)008985

Table 3. Mortality and growth[1] results of *Chironomus tentans* 10-day sediment toxicity test

Sample description		Average Percent mortality (Mean ± SD)	Average ash-free dry wt/midge (mg)[1] (Mean ± SD)
9323F	Control	10.0 ± 9.3	0.95 ± 0.12
9325F	LW2-G082	15.0 ± 16.0	1.10 ± 0.14
9326F	LW2-G088	41.3 ± 34.8	0.89 ± 0.25
9327F	LW2-G086	26.3 ± 23.9	0.91 ± 0.14
9328F	LW2-G090	25.0 ± 17.7	0.73 ± 0.27
9329F	LW2-G091	28.8 ± 29.5	0.90 ± 0.26
9330F	LW2-G096	21.3 ± 12.5	1.00 ± 0.11
9331F	LW2-G099	30.0 ± 27.8	0.88 ± 0.17
9332F	LW2-G103	27.5 ± 14.9	0.97 ± 0.22
9333F	LW2-G106	13.8 ± 11.9	0.91 ± 0.09
9334F	LW2-G109	21.3 ± 18.1	0.84 ± 0.23
9335F	LW2-G112	16.3 ± 15.1	0.84 ± 0.22
9336F	LW2-G077	20.0 ± 12.0	0.94 ± 0.16
9337F	LW2-G105	38.8 ± 18.1	0.83 ± 0.21
9338F	LW2-G117	63.8 ± 28.8	0.43 ± 0.26
9339F	LW2-G121	25.0 ± 22.0	0.93 ± 0.18
9341F	LW2-G122	28.8 ± 23.6	0.86 ± 0.28
9342F	LW2-G235	16.3 ± 23.3	0.84 ± 0.17
9343F	LW2-G164	12.5 ± 14.9	1.02 ± 0.18
9344F	LW2-G178	18.8 ± 8.3	1.01 ± 0.19
9345F	LW2-G180	17.5 ± 10.4	0.87 ± 0.23

[1] Pupae were not included in the sample to estimate ash-free dry weight (as per EPA/600/R-99/064, p. 59, section 12.3.8.2)

ANC08986
BZTO104(e)008986

APPENDIX I

RAW DATA

TEST DESCRIPTION, MONITORING, AND RESULTS BENCHSHEETS

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

RENUMBERED PAGES 1-36 -6X1

Test No. 686-6 Client Windward Environmental Investigator

STUDY MANAGEMENT

Client: Windward Enviromental, 200 West Mercer Street, Suite 401, Seattle, WA 98119

Client's Study Monitor: Ms. Helle Anderson

Testing Laboratory: Northwestern Aquatic Sciences

Test Location: Newport Laboratory

Laboratory's Study Personnel: 6x2

Proj. Man./Study Dir. G.J. Irissarri

QA Officer L.K. Nemeth

1. [illegible] 2. B.C. Hayes

3. Susan Caye 4. M.S. Redmond

5. B.B. Pidgeon BBP T.S. Caldwell

Study Schedule:

Test Beginning: 8-10-04 1430 Test Ending: 8-20-04 1500

TEST MATERIAL

General description (see sample logbook/chain-of-custody for details):

NAS Sample No.:	9323F	9325F	9326F	9327F	9328F
Description:	Control	LW2-G082	LW2-G088	LW2-G086	LW2-G090
Collection Date:	8/4/04	8/2/04	8/2/04	8/2/04	8/2/04
Receipt Date:	8/4/04	8/5/04	8/5/04	8/5/04	8/5/04
:					

NAS Sample No.:	9329F	9330F	9331F	9332F	9333F
Description:	LW2-G091	LW2-G096	LW2-G099	LW2-G103	LW2-G106
Collection Date:	8/2/04	8/3/04	8/3/04	8/3/04	8/3/04
Receipt Date:	8/5/04	8/5/04	8/5/04	8/5/04	8/5/04
:					

NAS Sample No.:	9334F	9335F	9336F	9337F	9338F
Description:	LW2-G109	LW2-G112	LW2-G077	LW2-G105	LW2-G117
Collection Date:	8/3/04	8/3/04	8/3/04	8/3/04	8/3/04
Receipt Date:	8/5/04	8/5/04	8/5/04	8/5/04	8/5/04
:					

NAS Sample No.:	9339F	9341F	9342F	9343F	9344F
Description:	LW2-G121	LW2-G122	LW2-G235	LW2-G164	LW2-G178
Collection Date:	8/3/04	8/3/04	8/4/04	8/4/04	8/4/04
Receipt Date:	8/5/04	8/5/04	8/5/04	8/5/04	8/5/04
:					

NAS Sample No.:	9345F				
Description:	LW2-G180				
Collection Date:	8/4/04				
Receipt Date:	8/5/04				
:					

NAS Sample No.:					
Description:					
Collection Date:					
Receipt Date:					
:					

Error codes: 1) correction of handwriting error
2) written in wrong location; entry deleted
3) wrong date deleted, replaced with corrrect date
4) error found in measurement; measurement repeated

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Test No. 686-6 Client Windward Environmental Investigator

SEDIMENT DESCRIPTIONS -- SUPPLEMENTAL NOTES

Sample No.	Description
9323F	BLACK FINE MUD
9325F	Gray brown muddy sand
9326F	FINE DARK GRAY/BROWN MUD W/ FINE SAND
9327F	Gray brown fine mud, one large chironomid found
9328F	Brown mud
9329F	Gray-brown muddy fine sand
9330F	GRAY/BROWN MUDDY SAND
9331F	Dark gray brown sandy mud
9332F	Gray brown Mud W/ROCKS
9333F	Brown Muddy Sand
9334F	Dark brown fine grain mud
9335F	DARK GRAY/BROWN FINE MUD
9336F	Grey-Brown Mudd
9337F	Brown Mud W/ lots of wood debris
9338F	Dark brown fine grain mud w/ some wood chunks.
9339F	Brown Creamy Mud
9341F	DARK GRAY/BROWN FINE MUD
9342F	Brown coarse dry sand
9343F	Dark brown muddy sand w/ some small rocks
9344F	Dark Gray brown Sandy Mud
9345F	GRAY/BROWN MUDDY SAND

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-6 Client Windward Environmental Investigator

TEST WATER

Source: Dechlorinated Newport, OR tap water

Date of Collection: 8-7-04, 8-9-04, 8-10-04, 8-12-04, 8-14-04, 8-14-04 (2ND BATCH), 8-16-04, 8-17-04, 8-18-04

pH 7.1, 7.0, 7.1, 7.2, 7.2, 7.2, 7.0, 7.0, 7.2 ($\bar{x}$ = 7.1 ± 0.1)

Cond (umhos/cm^2) 155, 160, 155, 160, 150, 160, 160, 160, 140 ($\bar{x}$ = 156 ± 7)

Hardness (mg/L) 34, 34, 34, 34, 34, 34, 34, 34, 34 ($\bar{x}$ = 34 ± 0)

Alkalinity (mg/L) 30, 30, 30, 30, 30, 40, 50, 40, 40 ($\bar{x}$ = 36 ± 7)

Treatments: Aerated ≥ 24 hrs

TEST ORGANISMS

Species: *Chironomus tentans* Age: 3rd instar Date received: –

Source: NAS cultures

Acclimation Data:

Date	Temp. (deg.C)	DO (mg/L)	pH	Cond umhos/cm	Feeding amount (ml)	Feeding description*	Water changes	Hardness (mg/L)	Alkalinity (mg/L)
8-2-04	23.6	7.6	7.6	260	4 + 3	S + T	YES	~~77~~	~~60~~ 62 ② 8-10-04
8-3-04	24.2	8.0	7.4	260	–	–		77	60
8-4-04	23.0	7.0	7.1	240	–	–		102	90
8-6-04	23.5	7.4	7.5	260	–	–	YES ON 8-7-04	–	–
8-9-04	24.9	7.8	7.3	300	4 + 3	S + T	YES	–	–
8-10-04	24.1	7.6	7.7	240	–	–		68	70
Mean	23.9	7.6	7.4	260				82	73
S.D.	0.7	0.3	0.2	22				18	15
(N)	6	6	6	6				3	3

Photoperiod during acclimation: 16:8, L:D *S=Selenastrum, T=Tetra Fin suspension

TEST PROCEDURES AND CONDITIONS

Test chambers: 300 ml glass beakers

Test volumes: 100 ml of test sediment; 275 ml total volume

Replicates/treatment: (8) 8 Organisms/treatment: (80) 80 (10/REP)

Test water changes: Twice daily

Aeration: only if DO falls below 2.5 mg/L

Feeding: everyday beginning with day zero

Test temperature (deg.C): 23

Beaker placement: Total randomization

Photoperiod: 16:8, L:D

Control Sediment:

Source: From an area approximately one mile east of the Hwy. 101 bridge at Beaver Creek, approx. 8 miles south of Newport, OR.

Date collected: 8/4/04

Sieved through 0.5 -mm screen NAS# 9323F

Storage: 4°C in the dark in closed containers.

MISCELLANEOUS NOTES

LIGHT INTENSITY MEASUREMENTS:

8-15-04 45, 76 FT-CANDLES

-682

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NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-6 Client Windward Environmental Investigator _____

Test conducted in (circle one): room 1 (room 2) trailer water bath other:_____

Randomization chart:

5								165	
4								164	
3								163	168
2								162	167
1								161	166

FRONT

Randomization chart:

								165	
								164	
								163	168
								162	167
								161	166

(2)

Randomization chart:

Randomization chart:

ANC08992
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Test No 686-6 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 0 (8/10/04) BBP

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond.* (umhos/cm)	pH*	Hardness* (mg/L)	Alkalinity* (mg/L)	S (ppm)	NH3* (ppm)	Comments
9	23.0	7.0	205	7.1	60	60			Each beaker fed 1.5 ml
11	22.9	7.2	165	7.1	43	40			Prime Tropical Flakes
17	22.9	7.2	190	7.0	60	60			suspension.
20	23.0	7.5	170	7.1	43	40			Initials: GJI
27	22.8	7.3	165	6.9	26	40			
36	22.9	7.4	180	7.0	60	50			
48	22.9	7.3	205	7.1	51	40			
56	22.9	7.5	160	7.0	51	40			
66	22.9	7.3	165	6.9	51	40			Water changed in all
68	22.9	8.2	155	7.0	51	50			beakers.
72	22.9	7.6	155	6.9	43	40			Time: 0705
78	22.9	7.1	155	6.7	34	40			Initials: GJI
105	23.0	7.2	165	6.9	43	50			
111	23.0	7.0	160	6.9	51	40			
123	22.9	7.1	170	6.8	43	50			
126	23.0	7.4	155	6.9	43	30			
132	23.0	6.9	170	6.7	51	40			Water changed in all
148	22.9	6.7	190	6.9	68	60			beakers.
153	22.9	6.8	185	6.8	60	60			Time: 1750
158	22.9	6.8	170	6.9	51	40			Initials: GJI
160	22.9	7.0	170	6.9	51	60			

*Water quality measurements to be taken.

Day 1 (8/11/04) GJI

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
9	23.1	4.8							Each beaker fed 1.5 ml
11	23.1	4.4							Prime Tropical Flakes
17	23.0	4.6							suspension.
20	23.1	4.8							Initials: GJI
27	23.0	5.0							
36	23.1	4.6							
48	23.0	5.0							
56	23.0	4.8							
66	23.1	4.6							Water changed in all
68	23.0	5.2							beakers.
72	23.0	4.8							Time: 0655
78	23.0	4.9							Initials: GJI
105	23.2	5.2							
111	23.2	4.4							
123	23.2	4.7							
126	23.2	5.1							
132	23.1	5.2							Water changed in all
148	23.1	5.6							beakers.
153	23.1	5.2							Time: 1730
158	23.0	4.8							Initials: WPM
160	23.1	5.3							

*Water quality measurements to be taken.

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No 686-6 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 2 (8/12/04) GJ

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. umhos/cm	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
9	23.1	5.6							Each beaker fed 1.5 ml
11	23.1	5.7							Prime Tropical Flakes
(2) 8-12-04 17 GJ	23.2	5.5							suspension.
20	23.2	5.8							Initials: GJ
27	23.1	5.9							
36	23.2	5.9							
48	23.0	6.2							
56	23.1	6.0							
66	23.1	5.9							Water changed in all
68	23.0	5.8							beakers.
72	23.0	5.9							Time: 0715
78	23.0	5.7							Initials: GJL
105	23.2	5.6							
111	23.1	5.7							
123	23.1	5.6							
126	23.2	5.5							
132	23.1	5.6							Water changed in all
148	23.0	5.8							beakers.
153	23.0	5.6							Time: 1715
158	23.0	5.6							Initials: BTO1/EDL
160	23.1	5.7							

*Water quality measurements to be taken.

Day 3 (8/13/04) BD/EDL

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. umhos/cm	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
9	22.6	5.0							Each beaker fed 1.5 ml
11	22.5	5.2							Prime Tropical Flakes
17	22.5	5.0							suspension.
20	22.5	5.2							Initials: GJ
27	22.6	4.8							
36	22.5	5.4							
48	22.5	5.4							
56	22.5	5.0							
66	22.6	5.0							Water changed in all
68	22.6	4.8							beakers.
72	22.6	5.0							Time: 0710
78	22.6	4.6							Initials: BD
105	22.3	5.0							
111	22.8	4.8							
123	22.7	4.8							
126	22.8	4.6							
132	22.7	4.6							Water changed in all
148	22.7	5.0							beakers.
153	22.7	4.6							Time: 1720
158	22.6	4.8							Initials: BBP/EDL
160	22.5	5.2							

*Water quality measurements to be taken.

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Test No 686-6 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 4 (8/14/00 MB/GJL/TMR

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. umhos/cm	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
9	23.2	5.3							Each beaker fed 1.5 ml
11	23.2	5.6							Prime Tropical Flakes
17	23.0	5.8							suspension.
20	23.1	5.7							Initials: GJL
27	23.0	5.6							
36	23.1	5.9							
48	22.9	5.9							
56	23.1	6.0							
66	23.1	6.4							Water changed in all
68	22.9	6.1							beakers.
72	22.9	5.9							Time: 0740
78	22.9	5.3							Initials: MB
105	23.1	5.5							
111	23.1	5.6							
123	23.0	5.6							
126	23.1	5.4							
132	23.0	5.0							Water changed in all
148	22.9	5.6							beakers.
153	23.0	4.8							Time: 18:10
158	22.9	4.4							Initials: TMR
160	23.0	5.0							

*Water quality measurements to be taken.

Day 5 (8/15/00 MB/GJL

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. umhos/cm	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
9	23.2	5.6							Each beaker fed 1.5 ml
11	23.2	5.3							Prime Tropical Flakes
17	23.0	5.4							suspension.
20	23.2	5.4							Initials: GJL
27	23.0	5.7							
36	23.1	5.6							
48	23.0	5.5							
56	23.1	5.3							
66	23.1	5.0							Water changed in all
68	23.0	5.6							beakers.
72	23.0	5.5							Time: 0745
78	22.9	5.7							Initials: MB
105	23.1	5.2							
111	23.1	5.6							
123	23.1	5.4							
126	23.2	4.4							
132	23.1	4.9							Water changed in all
148	23.0	5.2							beakers. 0845 GBC
153	23.0	4.8							Time: ~~1530~~ 1755
158	23.1	3.9							Initials: GJL
160	23.1	4.1							

*Water quality measurements to be taken.

ANC08995
BZTO104(e)008995

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No 686-6 Client Windward Environmental Investigator

DAILY RECORD SHEET

Day 6 (8 Nov 04) VB/631

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. umhos/cm	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
9	23.3	4.4							Each beaker fed 1.5 ml
11	23.2	4.3							Prime Tropical Flakes
17	23.2	3.8							suspension.
20	23.2	4.0							Initials: 631
27	23.2	4.2							
36	23.0	4.4							
48	23.1	4.2							
56	23.1	3.7							
66	23.1	3.9							Water changed in all
68	23.0	4.0							beakers.
72	23.1	3.9							Time: 0705
78	23.0	4.5							Initials: VB
105	23.2	3.8							
111	23.2	4.2							
123	23.2	3.4							
126	23.2	3.1							
132	23.2	3.3							Water changed in all
148	23.1	3.4							beakers.
153	23.0	3.5							Time: 1735
158	23.1	4.0							Initials: [illegible]
160	23.2	3.8							

*Water quality measurements to be taken.

Day 7 (8 Nov 04) VB/631

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. umhos/cm	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
9	23.2	5.6							Each beaker fed 1.5 ml
11	23.2	5.8							Prime Tropical Flakes
17	23.2	5.8							suspension.
20	23.2	5.6							Initials: [illegible]
27	23.2	5.6							
36	23.2	6.2							
48	23.3	5.4							
56	23.2	5.8							
66	23.2	5.9							Water changed in all
68	23.2	6.2							beakers.
72	23.3	6.3							Time: 0710
78	23.1	6.2							Initials: 631
105	23.2	5.2							
111	23.2	6.0							
123	23.2	5.2							
126	23.2	5.4							
132	23.2	4.7							Water changed in all
148	23.2	4.8							beakers.
153	23.1	5.0							Time: 1730
158	23.1	5.0							Initials: [illegible]
160	23.2	4.6							

*Water quality measurements to be taken.

ANC08996
BZTO104(e)008996

Test No 686-6 Client Windward Environmental Investigator _____

DAILY RECORD SHEET

Day 8 (8/18/04) [illegible] [illegible]

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
9	22.6	3.9							Each beaker fed 1.5 ml
11	22.6	4.2							Prime Tropical Flakes
17	22.6	3.9							suspension.
20	22.5	4.2							Initials: [illegible]
27	22.5	4.2							
36	22.6	4.6							
48	22.6	4.1							
56	22.6	4.2							
66	22.6	3.9							Water changed in all
68	22.6	4.7							beakers.
72	22.5	3.9							Time: 0700
78	22.4	4.0							Initials: GJL
105	22.6	4.1							
111	22.6	4.5							
123	22.6	2.9							
126	22.6	3.0							
132	22.6	3.3							Water changed in all
148	22.6	3.2							beakers.
153	22.5	3.3							Time: 1730
158	22.5	3.6							Initials: [illegible]
160	22.5	3.6							

*Water quality measurements to be taken.

Day 9 (8/19/04) [illegible] [illegible]

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
9	22.4	4.8							Each beaker fed 1.5 ml
11	22.4	5.6							Prime Tropical Flakes
17	22.4	5.2							suspension.
20	22.4	5.1							Initials: GJL.
27	22.6	5.2							
36	22.4	6.0							
48	22.3	5.2							
56	22.4	5.5							
66	22.4	6.0							Water changed in all
68	22.4	6.0							beakers.
72	22.3	5.6							Time: 0700
78	22.3	5.4							Initials: [illegible]
105	22.6	5.4							
111	22.5	5.7							
123	22.5	5.0							
126	22.4	4.6							
132	22.5	5.0							Water changed in all
148	22.5	5.0							beakers.
153	22.4	4.6							Time: 1730
158	22.4	4.8							Initials: [illegible]
160	22.4	4.7							

*Water quality measurements to be taken.

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No 686-6 Client Windward Environmental Investigator _____

DAILY RECORD SHEET

Day 10 (8/20 D4) OAS lot / warm / BBD

Beaker No.	Temp.* (deg.C)	DO* (ppm)	Cond.* umhos/cm	pH*	Hardness* (mg/L)	Alkalinity* (mg/L)	S (ppm)	NH3* (ppm)	Comments
9	~~22.9~~ 23.1	5.4	175	6.9	43	50			Each beaker fed 1.5 ml
11	23.1	6.0	165	6.8	43	50			Prime Tropical Flakes
17	23.1	5.4	165	6.8	43	50			suspension.
20	23.2	5.5	165	6.8	43	40			Initials: —
27	23.0	5.5	160	6.8	43	50			
36	23.1	6.3	165	6.9	43	40			
48	23.0	4.9	170	6.9	34	50			
56	23.1	5.3	160	6.8	43	40			
66	23.1	5.8	165	6.8	43	50			Water changed in all
68	23.0	5.9	160	6.8	43	40			beakers.
72	23.0	5.4	160	6.8	43	40			Time: 0715
78	23.0	5.9	160	6.8	43	40			Initials: GSL
105	23.1	5.6	165	6.8	43	50			
111	23.2	6.3	160	6.8	43	40			
123	23.1	5.5	160	6.8	43	40			
126	23.2	5.8	160	6.8	51	40			
132	23.2	5.5	160	6.8	43	50			Water changed in all
148	23.1	5.5	165	6.8	51	50			beakers.
153	23.1	5.3	165	6.8	51	40			Time:
158	23.1	5.5	160	6.8	43	40			Initials:
160	23.1	5.4	160	6.8	43	50			

*Water quality measurements to be taken.

Day _____(/ /)

Beaker No.	Temp. (deg.C)	DO (ppm)	Cond. umhos/cm	pH	Hardness (mg/L)	Alkalinity (mg/L)	S (ppm)	NH3 (ppm)	Comments
9									Each beaker fed 1.5 ml
11									Prime Tropical Flakes
17									suspension.
20									Initials:
27									
36									
48									
56									
66									Water changed in all
68									beakers.
72									Time:
78									Initials:
105									
111									
123									
126									
132									Water changed in all
148									beakers.
153									Time:
158									Initials:
160									

*Water quality measurements to be taken.

ANC08998
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NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-6 Client Windward Environmental Investigator

DAY 20 TEST TERMINATION SHEET

Beaker No.	Number of survivors	Initials
1	9	GJ1
2	9	GJ1
3	8	GJ1
4	8	CB
5	8	CB
6	10	GJ1
7	8	GJ1
8	8	CB
9	8	GJ1
10	9	CB
11	9	CB
12	6	CB
13	6	GJ1
14	9	CB
15	9	GJ1
16	8	GDR
17	6	GJ1
18	8	CB
19	10	GJ1
20	9	CB
21	4	CB
22	8	GJ1
23	8	CB
24	10	GJ1
25	7	GDR
26	9	CB
27	9	GJ1
28	8	GJ1
29	7	CB
30	9	GJ1
31	6	GDR
32	8	CB
33	8	GJ1
34	7	GJ1
35	8	GDR
36	2	CB
37	2	GJ1
38	3	GDR
39	3	GDR
40	8	GJ1
41	8	CB
42	10	GDR
43	9	CB
44	8	GJ1
45	7	GJ1

Beaker No.	Number of survivors	Initials
46	8	GDR
47	8	GJ1
48	10	GJ1
49	9	GJ1
50	9	GDR
51	10	GJ1
52	4	GJ1
53	7	GDR
54	6	GJ1
55	5	CB
56	8	GDR
57	6	GJ1
58	9	CB
59	10	GDR
60	9	GJ1
61	9	GJ1
62	10	CB
63	7	GJ1
64	9	CB
65	3	GJ1
66	8	CB
67	7	GDR
68	9	CB
69	6	GJ1
70	4	GDR
71	6	GDR
72	8	GJ1
73	6	GJ1
74	7	GDR
75	9	CB
76	10	GDR
77	7	CB
78	5	CB
79	10	GJ1
80	7	GDR
81	7	GJ1
82	9	GDR
83	9	GJ1
84	3	GJ1
85	8	GJ1
86	6	GJ1
87	7	GDR
88	2	GJ1
89	6	GJ1
90	8	GDR

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NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-6 Client Windward Environmental Investigator

DAY 20 TEST TERMINATION SHEET

Beaker No.	Number of survivors	Initials
91	8	CAB
92	8	GJL
93	7	GJL
94	5	GJL
95	1	CAB
96	9	CAB
97	10	GJL
98	8	CAB
99	9/10	WTM
100	10	GSH
101	9	GJL
102	10	CAB
103	9	WTM
104	6	GSH
105	8	CAB
106	10	GJL
107	9	CAB
108	7	WTM
109	10	CAB
110	10	WTM
111	10	GSH
112	10	CAB
113	9	GJL
114	9	WTM
115	7	CAB
116	6	GSH
117	8	CAB
118	7	GJL
119	7	WTM
120	8	GJL
121	10	GSH
122	9	CAB
123	7	GJL
124	10	WTM
125	10	CAB
126	8	GJL
127	6	CAB
128	6	GSH
129	6	WTM
130	10	GJL
131	9	GSH
132	6	CAB
133	8	GJL
134	9	WTM
135	9 GJL	CAB

Beaker No.	Number of survivors	Initials
136	5	CAB
137	0	WTM
138	8	GSH
139	8	CAB
140	3	CAB
141	10	WTM
142	5	CAB
143	9	GJL
144	10	WTM
145	9	CAB
146	10	GSH
147	8	WTM
148	5	CAB
149	0	GJL
150	8	GSH
151	4	CAB
152	7	GJL
153	4	WTM
154	9	GJL
155	8	GSH
156	10	WTM
157	8	GJL
158	8	WTM
159	9	GSH
160	9	GJL
161	8	WTM
162	9	WTM
163	8	CAB
164	10	GJL
165	8	CAB
166	10	WTM
167	8	CAB
168	1	CAB
169		
170		
171		
172		
173		
174		
175		
176		
177		
178		
179		
180		

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-6 Client Windward Environmental Investigator

Tare: Date 8-9-04 Oven temp (C.) 67 Drying time (hr.) 24 Initials GJL
Standard Weights: 10 mg: 10.005 100mg: 100.016

Final #1 Date 8-11-04 Oven temp (C.) 64 Drying time (hr.) 24 Initials GJL
Standard Weights: 10 mg: 10.008 100mg: 100.012

Final #2 Date 8-12-04 Oven temp (C.) 63 Drying time (hr.) 24 Initials GJL
Standard Weights: 10 mg: 10.005 100mg: 100.016

Equip. used: Oven: BLUE M Balance: SARTORIUS M3P

(Dry overnight at 60-90 degrees C)

Pan #	Tare wt. (mg)	Total wt. (mg) 1	Total wt. (mg) 2	#weighed	Comments
1	93.59	97.28	97.22	20	
2	94.81	98.95	98.90	20	
3	93.23	96.64	96.59	20	

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-6 Client Windward Environmental Investigator

WEIGHING DATA SHEET

Tare: Date 8.19.04 Oven temp (C.) 64 Drying time (hr.) 24 Initials JRF
Standard Weights: 10 mg: 10.007 100mg: 100.022

Final #1: Date 8-23-04 Oven temp (C.) 64 Drying time (hr.) 24 Initials JRF
Standard Weights: 10 mg: 10.009 100mg: 100.016

Final #2: Date 8.25.04 Oven temp (C.) 5 Drying time (hr.) Initials JRF
Standard Weights: 10 mg: 10.007 100mg: 100.022

Final #3: Date 8.26.04 Oven temp (C.) 550 Drying time (hr.) 2 Initials JRF
Standard Weights: 10 mg: 10.007 100mg: 100.019

Equip. used: Oven Blue M Balance Sartorius M3P
Furnace

(Dry overnight at 60-90 degrees C) (Final ashing is at 550 degrees C for 2 hours)

Bkr. #	Pan #	Tare wt. (mg)	Total wt. (mg) 1	Total wt. (mg) 2	no. weighed	put into pans-initials	Ashed weight (mg)
1	1	105.18	117.70	117.72	9	BBP	108.98
2	2	103.61	116.96	116.97	9	BBP	107.10
3	3	104.51	118.27	118.28	8	BBP	108.51
4	4	109.84	122.83	122.83	8	BBP	113.42
5	5	102.43	114.26	114.25	8	BBP	106.03
6	6	105.08	115.89	115.89	10	BBP	107.13
7	7	107.16	115.68	115.69	8	BBP	108.00
8	8	104.49	114.20	114.21	8	BBP	107.04
9	9	107.23	114.12	114.14	8	BBP	108.62
10	10	101.13	111.65	111.66	9	BBP	103.17
11	11	105.43	117.24	117.23	9	BBP	108.45
12	12	104.60	110.83	110.83	6	BBP	105.56
13	13	97.72	106.50	106.52	6	BBP	99.43
14	14	98.63	110.18	110.20	9	BBP	101.05
15	15	104.05	115.84	115.85	9	BBP	106.52
16	16	99.87	113.01	113.02	8	BBP	103.01
17	17	105.70	113.66	113.66	6	BBP	107.11
18	18	107.78	120.28	120.27	8	BBP	110.90
19	19	111.90	123.71	123.73	10	BBP	114.09
20	20	105.61	119.19	119.19	9	BBP	108.87
21	21	103.59	105.61	105.62	4	BBP	104.26
22	22	105.59	117.74	117.72	8	BBP	108.67
23	23	96.58	107.96	107.95	8	BBP	98.84
24	24	104.26	116.57	116.55	10	BBP	106.87
25	25	99.88	112.44	112.36	7	AF	102.82
26	26	101.17	109.06	109.02	9	AF	102.94
27	27	105.75	115.89	115.83	9	AF	108.27
28	28	103.13	112.09	112.04	8	AF	105.30
29	29	104.99	113.79	113.74	7	AF	107.36
30	30	105.40	116.60	116.54	9	AF	108.40
31	31	99.38	105.08	105.05	6	AF	100.53
32	32	107.16	119.69	119.62	8	AF	110.09
33	33	107.34	118.49	118.43	8	AF	109.20

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NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-6 Client Windward Environmental Investigator

WEIGHING DATA SHEET

See page _____ for information on drying times and temperatures, standard weights,etc.

Bkr. #	Pan #	Tare wt. (mg)	Total wt. (mg) 1	Total wt. (mg) 2	no. weighed	put into pans-initials	Ash weight (mg)
34	34	101.50	102.68	102.69	7	AF	101.65
35	35	104.02	115.63	115.56	8	AF	106.79
36	36	103.22	104.89	104.89	2	AF	103.50
37	37	101.88	103.70	103.71	2	AF	102.32
38	38	105.10	109.39	109.38	3	AF	105.82
39	39	105.79	111.02	111.01	3	AF	106.74
40	40	101.06	104.73	104.72	3	AF	101.29
41	41	106.34	116.86	116.81	8	AF	108.93
42	42	103.32	114.96	114.90	10	AF	105.00
43	43	107.31	118.79	118.73	9	AF	110.22
44	44	108.98	118.52	118.47	8	AF	111.49
45	45	106.15	113.88	113.85	7	AF	108.14
46	46	99.84	109.26	109.24	8	AF	101.80
47	47	99.06	108.62	108.58	8	AF	101.43
48	48	102.51	112.32	112.40	10	BBP	104.56
49	49	106.54	117.52	117.58	9	BBP	109.63
50	50	104.12	116.28	116.35	9	BBP	107.49
51	51	107.94	119.56	119.61	10	BBP	110.28
52	52	102.79	107.04	107.08	4	BBP	103.81
53	53	97.82	108.46	108.51	7	BBP	100.96
54	54	111.47	118.14	118.18	6	BBP	112.82
55	55	96.79	98.00	98.02	5	BBP	97.04
56	56	107.04	118.97	119.02	8	BBP	110.00
57	57	100.51	108.01	108.05	6	BBP	102.27
58	58	106.82	117.21	117.23	9	BBP	109.35
59	59	96.21	106.89	106.92	10	BBP	98.21
60	60	103.81	112.91	112.91	9	BBP	105.41
61	61	106.80	116.83	116.80	9	BBP	108.29
62	62	105.75	117.86	117.84	10	BBP	108.81
63	63	104.69	112.61	112.60	7	BBP	106.37
64	64	101.72	111.65	111.64	9	BBP	103.95
65	65	101.61	104.34	104.35	3	AF	102.12
66	66	101.58	113.84	113.84	8	AF	105.01
67	67	101.10	112.47	112.47	7	AF	103.82
68	68	113.53	122.35	122.45	9	AF	115.98
69	69	107.75	113.60	113.66	6	AF	108.89
70	70	106.59	113.59 73	113.79	4	AF	108.41
71	71	107.15	113.59	113.64	6	AF	108.99
72	72	99.48	109.89	109.97	8	AF	102.07
73	73	113.94	120.81	120.87	6	AF	116.16
74	74	108.32	117.03	117.11	7	AF	111.05
75	75	107.01	118.77	118.80	9	AF	111.03
76	76	104.74	115.35	115.42	10	AF	108.03

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-6 Client Windward Environmental Investigator

WEIGHING DATA SHEET

See page _____ for information on drying times and temperatures, standard weights,etc.

Bkr. #	Pan #	Tare wt. (mg)	Total wt. (mg) 1	Total wt. (mg) 2	no. weighed	put into pans-initials	Ash weight (mg)
77	77	104.02	112.99	113.06	7	DK	106.71
78	78	104.43	107.76	107.80	5	DK	105.14
79	79	100.15	110.20	110.26	10	DK	102.90
80	80	92.82	102.81	102.87	7	DK	95.59
81	81	104.43	115.35	115.42	7	BBP	107.27
82	82	107.04	114.95	115.01	9	BBP	108.34
83	83	99.21	109.25	109.30	9	BBP	102.22
84	84	92.46	97.17	97.21	3	BBP	93.49
85	85	95.29	107.12	107.17	8	BBP	98.34
86	86	105.82	109.08	109.12	6	BBP	106.60
87	87	93.04	100.67	100.68	7	BBP	95.11
88	88	98.43	100.34	100.37	2	BBP	98.94
89	89	109.84	112.90	112.93	6	BBP	110.37
90	90	103.86	113.72	113.73	8	BBP	106.19
91	91	94.60	103.37	103.38	8	DK	97.24
92	92	88.62	97.48	97.48	8	DK	91.08
93	93	91.09	96.98	97.00	7	DK	92.69
94	94	91.71	100.28	100.29	5	DK	93.93
95	95	97.86	98.53	98.55	1	DK	98.07
96	96	98.05	113.77	113.78	9	DK	103.25
97	97	103.99	120.73	120.72	10	DK	109.00
98	98	100.30	111.56	111.56	8	DK	102.93
99	99	107.77	123.50	123.50	10	BBP	113.31
100	100	90.59	107.44	100.45	10	BBP	95.34
101	101	99.44	108.35	108.38	9	DK	102.11
102	102	86.44	98.50	98.51	10	DK	89.38
103	103	97.69	108.94	108.96	9	DK	100.59
104	104	100.17	106.31	106.33	6	DK	101.68
105	105	100.34	112.74	112.76	8	DK	104.20
106	106	102.60	110.43	110.36	10	BBP	103.63
107	107	87.10	91.09	91.12	6	BBP	88.36
108	108	107.12	115.26	115.30	7	BBP	109.85
109	109	104.98	118.32	118.35	10	BBP	110.07
110	110	102.04	115.10	115.12	10	BBP	106.49
111	111	107.89	120.31	120.33	10	BBP	111.63
112	112	103.69	114.08	114.11	10	BBP	107.11
113	113	104.19	112.20	112.24	9	BBP	106.10
114	114	94.87	105.29	105.33	9	BBP	97.95
115	115	107.92	117.74	117.76	7	BBP	110.80
116	116	105.44	112.42	112.45	6	BBP	107.34
117	117	91.33	100.70	100.74	8	BBP	93.71
118	118	95.69	104.56	104.59	7	BBP	98.29
119	119	89.53	99.36	99.40	7	BBP	91.92

ANC09004
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NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-6 Client Windward Environmental Investigator _____

WEIGHING DATA SHEET

See page _____ for information on drying times and temperatures, standard weights, etc.

Bkr. #	Pan #	Tare wt. (mg)	Total wt. (mg)		no. weighed	put into pans-initials	Ash weight (mg)
			1	2			
120	120	103.54	114.18	114.22	8	BBP	105.92
121	121	90.91	103.80	103.82	10	BBP	95.45
122	122	96.55	105.96	105.98	9	BBP	98.75
123	123	100.09	108.51	108.54	7	BBP	102.45
124	124	90.22	102.28	102.31	10	BBP	94.43
125	125	90.33	101.12	101.04	10	BBP	93.98
126	126	107.03	120.65	120.67	8	BBP	110.07
127	127	92.29	104.23	104.25	6	BBP	95.64
128	128	97.56	101.59	101.61	6	BBP	98.33
129	129	95.22	102.73	102.74	6	BBP	97.04
130	130	101.68	117.83	117.82	10	BBP	105.87
131	131	102.54	116.63	116.63	9	BBP	107.21
132	132	96.65	103.39	103.39	6	BBP	98.30
133	133	110.41	122.72	122.72	8	BBP	113.09
134	134	97.78	110.73	110.72	9	BBP	100.67
135	135	91.20	105.93	105.91	9	BBP	94.96
136	136	88.40	93.59	93.60	5	BBP	89.52
137	137	92.04	—	—	0	BBP	—
138	138	100.07	111.61	111.60	8	BBP	102.57
139	139	98.42	109.12	109.11	8	BBP	100.85
140	140	94.82	97.50	97.52	3	BBP	95.44
141	141	98.74	110.14	110.14	10	BBP	102.48
142	142	102.36	109.17	109.17	5	BBP	104.26
143	143	101.47	112.66	112.65	9	BBP	104.05
144	144	102.02	113.43	113.41	10	BBP	105.08
145	145	99.49	108.84	108.82	9	BBP	101.72
146	146	97.71	108.98	108.93	10	BBP	100.40
147	147	86.72	95.23	95.21	8	BBP	88.62
148	148	93.11	103.08	103.09	5	BBP	98.89
149	149	102.48	—	—	0	BBP	—
150	150	99.37	109.08	109.05	8	BBP	101.81
151	151	90.73	96.07	96.07	4	BBP	92.11
152	152	95.29	103.12	103.10	7	BBP	96.37
153	153	98.39	102.40	102.41	4	BBP	99.24
154	154	95.93	106.22	106.17	9	BBP	98.32
155	155	102.83	112.55	112.52	8	BBP	104.85
156	156	105.31	116.10	116.05	10	BBP	107.78
157	157	103.81	111.54	111.53	8	BBP	105.76
158	158	99.02	105.54	105.53	8	BBP	101.00
159	159	89.68	93.37	93.38	8 BBP 8-30-04 9	BBP	90.51
160	160	105.56	114.44	114.42	9	BBP	107.92
161	161	96.69	106.47	106.42	8	BBP	99.53
162	162	103.53	108.98	108.96	9	BBP	104.63

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NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 686-6 Client Windward Environmental Investigator _____

WEIGHING DATA SHEET

See page _____ for information on drying times and temperatures, standard weights,etc.

Bkr. #	Pan #	Tare wt. (mg)	Total wt. (mg)		no. weighed	put into pans-initials	Ash weight (mg)
			1	2			
163	163	95.23	102.82	102.78	8	BBP	97.43
164	164	100.69	113.16	~~113~~ 113.10	10	BBP	104.07
165	165	97.39	104.04	104.01	8	BBP	98.45
166	166	96.42	105.18	105.14	10	BBP	97.54
167	167	98.29	105.90	105.88	8	BBP	100.64
168	168	97.08	97.62	97.66	1	BBP	97.16
169	169						
170	170						
171	171						
172	172						
173	173						
174	174						
175	175						
176	176						
177	177						
178	178						
179	179						
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191	191						
192	192						
193	193						
194	194						
195	195						
196	196						
197	197						
198	198						
199	199						
200	200						
201	201						
202	202						
203	203						
204	204						
205	205						

ANC09006
BZTO104(e)009006

Test Number: 686-6

Freshwater Sediment Test
10-Day Chironomus tentans

BKR	NAS SMPL	CLIENT DESCRIP	REPL	
120	9323F	Control	1	
6	9323F	Control	2	
61	9323F	Control	3	
60	9323F	Control	4	
51	9323F	Control	5	
33	9323F	Control	6	
139	9323F	Control	7	
48	9323F	Control	8	wq replicate
59	9325F	LW2-G082	1	
94	9325F	LW2-G082	2	
102	9325F	LW2-G082	3	
32	9325F	LW2-G082	4	
15	9325F	LW2-G082	5	
134	9325F	LW2-G082	6	
135	9325F	LW2-G082	7	
20	9325F	LW2-G082	8	wq replicate
81	9326F	LW2-G088	1	
96	9326F	LW2-G088	2	
31	9326F	LW2-G088	3	
144	9326F	LW2-G088	4	
38	9326F	LW2-G088	5	
168	9326F	LW2-G088	6	
64	9326F	LW2-G088	7	
36	9326F	LW2-G088	8	wq replicate
91	9327F	LW2-G086	1	
88	9327F	LW2-G086	2	
5	9327F	LW2-G086	3	
103	9327F	LW2-G086	4	
14	9327F	LW2-G086	5	
10	9327F	LW2-G086	6	
92	9327F	LW2-G086	7	
17	9327F	LW2-G086	8	wq replicate
44	9328F	LW2-G090	1	
93	9328F	LW2-G090	2	
107	9328F	LW2-G090	3	
26	9328F	LW2-G090	4	
116	9328F	LW2-G090	5	
159	9328F	LW2-G090	6	
97	9328F	LW2-G090	7	
148	9328F	LW2-G090	8	wq replicate
150	9329F	LW2-G091	1	
23	9329F	LW2-G091	2	
37	9329F	LW2-G091	3	
162	9329F	LW2-G091	4	
131	9329F	LW2-G091	5	
24	9329F	LW2-G091	6	
84	9329F	LW2-G091	7	
9	9329F	LW2-G091	8	wq replicate
155	9330F	LW2-G096	1	
57	9330F	LW2-G096	2	
154	9330F	LW2-G096	3	
80	9330F	LW2-G096	4	
53	9330F	LW2-G096	5	
133	9330F	LW2-G096	6	
110	9330F	LW2-G096	7	
72	9330F	LW2-G096	8	wq replicate

ANC09007
BZTO104(e)009007

Test Number: 686-6

Freshwater Sediment Test
10-Day Chironomus tentans

BKR	NAS SMPL	CLIENT DESCRIP	REPL	
79	9331F	LW2-G099	1	
13	9331F	LW2-G099	2	
12	9331F	LW2-G099	3	
99	9331F	LW2-G099	4	
140	9331F	LW2-G099	5	
125	9331F	LW2-G099	6	
151	9331F	LW2-G099	7	
123	9331F	LW2-G099	8	wq replicate
117	9332F	LW2-G103	1	
127	9332F	LW2-G103	2	
45	9332F	LW2-G103	3	
85	9332F	LW2-G103	4	
145	9332F	LW2-G103	5	
73	9332F	LW2-G103	6	
142	9332F	LW2-G103	7	
11	9332F	LW2-G103	8	wq replicate
115	9333F	LW2-G106	1	
43	9333F	LW2-G106	2	
47	9333F	LW2-G106	3	
2	9333F	LW2-G106	4	
146	9333F	LW2-G106	5	
74	9333F	LW2-G106	6	
109	9333F	LW2-G106	7	
27	9333F	LW2-G106	8	wq replicate
108	9334F	LW2-G109	1	
70	9334F	LW2-G109	2	
167	9334F	LW2-G109	3	
114	9334F	LW2-G109	4	
141	9334F	LW2-G109	5	
147	9334F	LW2-G109	6	
30	9334F	LW2-G109	7	
158	9334F	LW2-G109	8	wq replicate
28	9335F	LW2-G112	1	
118	9335F	LW2-G112	2	
89	9335F	LW2-G112	3	
124	9335F	LW2-G112	4	
112	9335F	LW2-G112	5	
22	9335F	LW2-G112	6	
121	9335F	LW2-G112	7	
66	9335F	LW2-G112	8	wq replicate
19	9336F	LW2-G077	1	
41	9336F	LW2-G077	2	
77	9336F	LW2-G077	3	
163	9336F	LW2-G077	4	
50	9336F	LW2-G077	5	
4	9336F	LW2-G077	6	
71	9336F	LW2-G077	7	
105	9336F	LW2-G077	8	wq replicate
16	9337F	LW2-G105	1	
101	9337F	LW2-G105	2	
65	9337F	LW2-G105	3	
69	9337F	LW2-G105	4	
104	9337F	LW2-G105	5	
54	9337F	LW2-G105	6	
129	9337F	LW2-G105	7	
78	9337F	LW2-G105	8	wq replicate

ANC09008
BZTO104(e)009008

Test Number: 686-6

Freshwater Sediment Test
10-Day Chironomus tentans

BKR	NAS SMPL	CLIENT DESCRIP	REPL	
137	9338F	LW2-G117	1	
95	9338F	LW2-G117	2	
55	9338F	LW2-G117	3	
21	9338F	LW2-G117	4	
128	9338F	LW2-G117	5	
149	9338F	LW2-G117	6	
34	9338F	LW2-G117	7	
132	9338F	LW2-G117	8	wq replicate
122	9339F	LW2-G121	1	
3	9339F	LW2-G121	2	
1	9339F	LW2-G121	3	
75	9339F	LW2-G121	4	
83	9339F	LW2-G121	5	
52	9339F	LW2-G121	6	
18	9339F	LW2-G121	7	
153	9339F	LW2-G121	8	wq replicate
86	9341F	LW2-G122	1	
63	9341F	LW2-G122	2	
161	9341F	LW2-G122	3	
49	9341F	LW2-G122	4	
62	9341F	LW2-G122	5	
136	9341F	LW2-G122	6	
39	9341F	LW2-G122	7	
160	9341F	LW2-G122	8	wq replicate
7	9342F	LW2-G235	1	
165	9342F	LW2-G235	2	
166	9342F	LW2-G235	3	
82	9342F	LW2-G235	4	
40	9342F	LW2-G235	5	
42	9342F	LW2-G235	6	
106	9342F	LW2-G235	7	
68	9342F	LW2-G235	8	wq replicate
119	9343F	LW2-G164	1	
143	9343F	LW2-G164	2	
152	9343F	LW2-G164	3	
164	9343F	LW2-G164	4	
130	9343F	LW2-G164	5	
156	9343F	LW2-G164	6	
25	9343F	LW2-G164	7	
111	9343F	LW2-G164	8	wq replicate
98	9344F	LW2-G178	1	
35	9344F	LW2-G178	2	
90	9344F	LW2-G178	3	
157	9344F	LW2-G178	4	
67	9344F	LW2-G178	5	
138	9344F	LW2-G178	6	
76	9344F	LW2-G178	7	
56	9344F	LW2-G178	8	wq replicate
29	9345F	LW2-G180	1	
58	9345F	LW2-G180	2	
100	9345F	LW2-G180	3	
46	9345F	LW2-G180	4	
8	9345F	LW2-G180	5	
87	9345F	LW2-G180	6	
113	9345F	LW2-G180	7	
126	9345F	LW2-G180	8	wq replicate

ANC09009
BZTO104(e)009009

TEST DATA ANALYSIS RECORDS

Endpoints Data Entry and Calculations File

BKR=beaker number
INIT=initial number
SURV=number survivors
MORT=number dead=INIT-SURV
PSURV=%survival=100(SURV/INIT)
PMORT=%mortality=100(MORT/INIT)

TARE WT= ashed weight of pan used for that replicate at test termination (mg), or dry weight of pan if ash-free dry weight is not an endpoint
WT COUNT= number of test organisms weighed at test end
DRY WT= TARE WT + dry weight of test organisms recovered at test termination (mg)
TWT=total biomass=DRY WT-TARE WT
WT=average individual biomass=TWT/WT COUNT

ASHED DRY WT= weight of ashed pan + weight of ashed test organisms recovered at test termination
TAFDW=DRY WT - ASHED DRY WT= total ash-free organism weight for given replicate
AFDW=average individual ash-free biomass=TAFDW/WT COUNT

INITIAL WEIGHT

pan #	tare wt (mg)	final wt (mg)	wt count	avg. wt/ organism
1	93.59	97.22	20	0.18
2	94.81	98.9	20	0.20
3	93.23	96.59	20	0.17

INDEX	BKR	NAS SMPL	CLIENT DESCRIP	REPL		INIT	SURV	MORT	PSURV	PMORT	TARE WT (mg)	WT COUNT	DRY WT (mg)	ASHED DRY WT (mg)	TWT (mg)	WT (mg)	TAFDW (mg)	AFDW (mg)		SURV	MORT	PSURV	PMORT	WT	AFDW
1	120	9323F	Control	1		10	8	2	80.0	20.0	103.54	8	114.22	105.92	10.68	1.34	8.30	1.04							
2	6	9323F	Control	2		10	10	0	100.0	0.0	105.08	10	115.69	107.13	10.61	1.06	8.76	0.88							
3	61	9323F	Control	3		10	9	1	90.0	10.0	106.80	9	116.80	108.29	10.00	1.11	8.51	0.95							
4	60	9323F	Control	4		10	9	1	90.0	10.0	103.81	9	112.91	105.41	9.10	1.01	7.50	0.83							
5	51	9323F	Control	5		10	10	0	100.0	0.0	107.94	10	119.61	110.28	11.67	1.17	9.83	0.93	Mean	9.0	1.0	90.0	10.0	1.18	0.95
6	33	9323F	Control	6		10	8	2	80.0	20.0	107.34	8	118.43	109.20	11.09	1.39	9.23	1.15	SD	0.9	0.9	9.3	9.3	0.16	0.12
7	139	9323F	Control	7		10	8	2	80.0	20.0	98.42	8	109.11	100.85	10.69	1.34	8.26	1.03	n	8	8	8	8	8	8
8	48	9323F	Control	8	wq replicate	10	10	0	100.0	0.0	102.51	10	112.40	104.56	9.89	0.99	7.84	0.78							
17	59	9325F	LW2-G082	1		10	10	0	100.0	0.0	96.21	10	106.92	98.21	10.71	1.07	8.71	0.87							
18	64	9325F	LW2-G082	2		10	5	5	50.0	50.0	91.71	5	100.29	93.93	8.58	1.72	6.36	1.27							
19	102	9325F	LW2-G082	3		10	10	0	100.0	0.0	86.44	10	98.51	89.38	12.07	1.21	9.13	0.91							
20	32	9325F	LW2-G082	4		10	8	2	80.0	20.0	107.16	8	119.62	110.09	12.46	1.56	9.53	1.19							
21	15	9325F	LW2-G082	5		10	9	1	90.0	10.0	104.05	9	115.85	106.52	11.80	1.31	9.33	1.04	Mean	8.8	1.4	86.3	13.8	1.43	1.10
22	134	9325F	LW2-G082	6		10	9	1	90.0	10.0	97.78	9	110.72	100.67	12.94	1.44	10.05	1.12	SD	1.6	1.6	16.0	16.0	0.22	0.14
23	135	9325F	LW2-G082	7		10	9	1	90.0	10.0	91.20	9	105.91	94.96	14.71	1.63	10.95	1.22	n	8	8	8	8	8	8
24	20	9325F	LW2-G082	8	wq replicate	10	9	1	90.0	10.0	105.61	9	119.19	108.87	13.58	1.51	10.32	1.15							
33	81	9326F	LW2-G088	1		10	7	3	70.0	30.0	104.43	7	115.42	107.27	10.99	1.57	8.15	1.16							
34	98	9326F	LW2-G088	2		10	9	1	90.0	10.0	98.05	9	113.78	103.25	15.73	1.75	10.53	1.17							
35	31	9326F	LW2-G088	3		10	6	4	60.0	40.0	95.38	6	106.05	100.55	5.67	0.95	4.52	0.75							
36	144	9326F	LW2-G088	4		10	10	0	100.0	0.0	102.02	10	113.41	105.08	11.39	1.14	8.33	0.83							
37	38	9326F	LW2-G088	5		10	3	7	30.0	70.0	105.10	3	109.38	105.82	4.28	1.43	3.56	1.19	Mean	5.9	4.1	58.8	41.3	1.17	0.89
38	168	9326F	LW2-G088	6		10	1	9	10.0	90.0	97.08	1	97.66	97.16	0.58	0.58	0.50	0.50	SD	3.5	3.5	34.8	34.8	0.39	0.25
39	64	9326F	LW2-G088	7		10	9	1	90.0	10.0	101.72	9	111.64	103.95	9.92	1.10	7.69	0.85	n	8	8	8	8	8	8
40	36	9326F	LW2-G088	8	wq replicate	10	2	8	20.0	80.0	103.22	2	104.89	103.50	1.67	0.84	1.39	0.70							
25	91	9327F	LW2-G086	1		10	8	2	80.0	20.0	94.60	8	103.38	97.24	8.78	1.10	6.14	0.77							
26	88	9327F	LW2-G086	2		10	2	8	20.0	80.0	98.43	2	100.37	98.94	1.94	0.97	1.43	0.72							
27	5	9327F	LW2-G086	3		10	8	2	80.0	20.0	102.43	8	114.25	106.03	11.82	1.48	8.22	1.03							
28	103	9327F	LW2-G086	4		10	9	1	90.0	10.0	97.89	9	108.66	100.59	11.27	1.25	8.37	0.93							
29	14	9327F	LW2-G086	5		10	9	1	90.0	10.0	98.63	9	110.20	101.05	11.57	1.29	9.15	1.02	Mean	7.4	2.6	73.8	26.3	1.21	0.91
30	10	9327F	LW2-G086	6		10	9	1	90.0	10.0	101.13	9	111.66	103.17	10.53	1.17	8.49	0.94	SD	2.4	2.4	23.9	23.9	0.16	0.14
31	92	9327F	LW2-G086	7		10	8	2	80.0	20.0	88.82	8	97.48	91.08	8.66	1.08	6.40	0.80	n	8	8	8	8	8	8
32	17	9327F	LW2-G086	8	wq replicate	10	6	4	60.0	40.0	105.70	6	113.66	107.11	7.96	1.33	6.55	1.09							
41	44	9328F	LW2-G090	1		10	8	2	80.0	20.0	108.98	8	118.47	111.49	9.49	1.19	6.98	0.87							
42	93	9328F	LW2-G090	2		10	7	3	70.0	30.0	91.09	7	97.00	92.69	5.91	0.84	4.31	0.62							
43	107	9328F	LW2-G090	3		10	6	4	60.0	40.0	87.10	6	91.12	88.38	4.02	0.67	2.76	0.46							
44	26	9328F	LW2-G090	4		10	9	1	90.0	10.0	101.17	9	109.02	102.94	7.85	0.87	6.06	0.68							
45	116	9328F	LW2-G090	5		10	6	4	60.0	40.0	105.44	6	112.45	107.34	7.01	1.17	5.11	0.85	Mean	7.5	2.5	75.0	25.0	0.98	0.73
46	159	9328F	LW2-G090	6		10	9	1	90.0	10.0	89.68	9	93.38	90.51	3.70	0.41	2.87	0.32	SD	1.8	1.8	17.7	17.7	0.36	0.27
47	97	9328F	LW2-G090	7		10	10	0	100.0	0.0	103.99	10	120.72	109.00	16.73	1.67	11.72	1.17	n	8	8	8	8	8	8
48	148	9328F	LW2-G090	8	wq replicate	10	5	5	50.0	50.0	98.11	5	103.09	98.89	4.98	1.00	4.20	0.94							
49	150	9329F	LW2-G091	1		10	8	2	80.0	20.0	99.37	8	109.05	101.81	9.68	1.21	7.24	0.90							
50	23	9329F	LW2-G091	2		10	8	2	80.0	20.0	96.59	8	107.95	98.84	11.37	1.42	9.11	1.14							
51	37	9329F	LW2-G091	3		10	2	8	20.0	80.0	101.88	2	103.71	102.32	1.83	0.91	1.39	0.70							
52	162	9329F	LW2-G091	4		10	9	1	90.0	10.0	103.53	9	108.96	104.83	5.43	0.60	4.33	0.48							
53	131	9329F	LW2-G091	5		10	9	1	90.0	10.0	102.54	9	116.63	107.21	14.09	1.57	9.42	1.05	Mean	7.1	2.9	71.3	28.8	1.17	0.90
54	24	9329F	LW2-G091	6		10	10	0	100.0	0.0	104.28	10	116.55	106.87	12.29	1.23	9.68	0.97	SD	2.9	2.9	29.5	29.5	0.35	0.26
55	84	9329F	LW2-G091	7		10	3	7	30.0	70.0	92.46	3	97.21	93.49	4.75	1.58	3.72	1.24	n	8	8	8	8	8	8
56	9	9329F	LW2-G091	8	wq replicate	10	8	2	80.0	20.0	107.23	8	114.14	108.62	6.91	0.86	5.52	0.69							

ANC09011
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Test Number: 688-8

Freshwater Sediment Test
10-Day Chironomus tentans

INDEX	BKR	NAS SMPL	CLIENT DESCRIP	REPL		INIT	SURV	MORT	PSURV	PMORT	TARE WT (mg)	WT COUNT	DRY WT (mg)	ASHED DRY WT (mg)	TWT (mg)	WT (mg)	TAFDW (mg)	AFDW (mg)		SURV	MORT	PSURV	PMORT	WT	AFDW
57	155	9330F	LW2-G096	1		10	8	2	80.0	20.0	102.83	8	112.52	104.65	9.69	1.21	7.67	0.96							
58	57	9330F	LW2-G096	2		10	6	4	60.0	40.0	100.51	6	108.05	102.27	7.54	1.26	5.78	0.96							
59	154	9330F	LW2-G096	3		10	9	1	90.0	10.0	95.93	9	106.17	98.32	10.24	1.14	7.85	0.87							
60	80	9330F	LW2-G096	4		10	7	3	70.0	30.0	92.82	7	102.87	95.59	10.05	1.44	7.28	1.04							
61	53	9330F	LW2-G096	5		10	7	3	70.0	30.0	97.82	7	108.51	100.98	10.69	1.53	7.55	1.08	Mean	7.9	2.1	78.8	21.3	1.34	1.00
62	133	9330F	LW2-G096	6		10	8	2	80.0	20.0	110.41	8	122.72	113.09	12.31	1.54	9.63	1.20	SD	1.2	1.2	12.5	12.5	0.15	0.11
63	110	9330F	LW2-G096	7		10	10	0	100.0	0.0	102.04	10	115.12	106.49	13.08	1.31	8.63	0.86	n	8	8	8	8	8	8
64	72	9330F	LW2-G096	8	wq replicate	10	8	2	80.0	20.0	99.48	8	109.97	102.07	10.49	1.31	7.90	0.99							
65	79	9331F	LW2-G099	1		10	10	0	100.0	0.0	100.15	10	110.26	102.90	10.11	1.01	7.36	0.74							
66	13	9331F	LW2-G099	2		10	6	4	60.0	40.0	97.72	6	106.52	99.43	8.80	1.47	7.09	1.18							
67	12	9331F	LW2-G099	3		10	6	4	60.0	40.0	104.60	6	110.83	105.56	6.23	1.04	5.27	0.88							
68	99	9331F	LW2-G099	4		10	10	0	100.0	0.0	107.77	10	123.50	113.31	15.73	1.57	10.19	1.02							
69	140	9331F	LW2-G099	5		10	3	7	30.0	70.0	94.82	3	97.52	95.44	2.70	0.90	2.08	0.69	Mean	7.0	3.0	70.0	30.0	1.20	0.88
70	125	9331F	LW2-G099	6		10	10	0	100.0	0.0	90.33	10	101.04	93.98	10.71	1.07	7.06	0.71	SD	2.8	2.8	27.8	27.8	0.24	0.17
71	151	9331F	LW2-G099	7		10	4	6	40.0	60.0	90.73	4	96.07	92.11	5.34	1.34	3.96	0.99	n	8	8	8	8	8	8
72	123	9331F	LW2-G099	8	wq replicate	10	7	3	70.0	30.0	100.09	7	108.54	102.45	8.45	1.21	6.09	0.87							
73	117	9332F	LW2-G103	1		10	8	2	80.0	20.0	91.33	8	100.74	93.71	9.41	1.18	7.03	0.88							
74	127	9332F	LW2-G103	2		10	6	4	60.0	40.0	92.29	6	104.25	95.64	11.96	1.99	8.61	1.44							
75	45	9332F	LW2-G103	3		10	7	3	70.0	30.0	106.15	7	113.85	108.14	7.70	1.10	5.71	0.82							
76	85	9332F	LW2-G103	4		10	8	2	80.0	20.0	95.29	8	107.17	98.34	11.88	1.48	8.83	1.10							
77	145	9332F	LW2-G103	5		10	9	1	90.0	10.0	99.49	9	108.82	101.72	9.33	1.04	7.10	0.79	Mean	7.3	2.0	72.5	27.5	1.33	0.97
78	73	9332F	LW2-G103	6		10	6	4	60.0	40.0	113.94	6	120.87	116.16	6.93	1.18	4.71	0.79	SD	1.5	1.5	14.9	14.9	0.31	0.22
79	142	9332F	LW2-G103	7		10	5	5	50.0	50.0	102.36	5	109.17	104.26	6.81	1.36	4.91	0.98	n	8	8	8	8	8	8
80	11	9332F	LW2-G103	8	wq replicate	10	9	1	90.0	10.0	105.43	9	117.23	108.45	11.80	1.31	8.78	0.98							
89	115	9333F	LW2-G106	1		10	7	3	70.0	30.0	107.92	7	117.76	110.80	9.84	1.41	6.96	0.99							
90	43	9333F	LW2-G106	2		10	9	1	90.0	10.0	107.31	9	118.73	110.22	11.42	1.27	8.51	0.95							
91	47	9333F	LW2-G106	3		10	6	2	80.0	20.0	99.06	8	108.58	101.43	9.52	1.19	7.15	0.89							
92	2	9333F	LW2-G106	4		10	9	1	90.0	10.0	103.61	9	116.97	107.10	13.36	1.48	9.87	1.10							
93	146	9333F	LW2-G106	5		10	10	0	100.0	0.0	97.71	10	108.93	100.40	11.22	1.12	8.53	0.85	Mean	8.6	1.4	86.3	13.8	1.27	0.91
94	74	9333F	LW2-G106	6		10	7	3	70.0	30.0	108.32	7	117.11	111.05	8.79	1.26	6.06	0.87	SD	1.2	1.2	11.9	11.9	0.13	0.09
95	109	9333F	LW2-G106	7		10	10	0	100.0	0.0	104.98	10	118.35	110.07	13.37	1.34	8.28	0.83	n	8	8	8	8	8	8
96	27	9333F	LW2-G106	8	wq replicate	10	9	1	90.0	10.0	105.75	9	115.83	108.27	10.08	1.12	7.56	0.84							
97	108	9334F	LW2-G109	1		10	7	3	70.0	30.0	107.12	7	115.30	109.85	8.18	1.17	5.45	0.78							
98	70	9334F	LW2-G109	2		10	4	6	40.0	60.0	106.59	4	113.79	108.41	7.20	1.80	5.38	1.35							
99	167	9334F	LW2-G109	3		10	8	2	80.0	20.0	98.29	8	105.88	100.64	7.59	0.95	5.24	0.65							
100	114	9334F	LW2-G109	4		10	9	1	90.0	10.0	94.87	9	105.33	97.95	10.46	1.16	7.36	0.82							
101	141	9334F	LW2-G109	5		10	10	0	100.0	0.0	98.74	10	110.14	102.18	11.40	1.14	7.96	0.80	Mean	7.9	2.1	78.8	21.3	1.17	0.84
102	147	9334F	LW2-G109	6		10	8	2	80.0	20.0	86.72	8	95.21	88.62	8.49	1.06	6.59	0.82	SD	1.8	1.8	18.1	18.1	0.29	0.23
103	30	9334F	LW2-G109	7		10	9	1	90.0	10.0	105.40	9	116.54	106.40	11.14	1.24	8.14	0.90	n	8	8	8	8	8	8
104	158	9334F	LW2-G109	8	wq replicate	10	8	2	80.0	20.0	99.02	8	105.53	101.00	6.51	0.81	4.53	0.57							
105	28	9335F	LW2-G112	1		10	8	2	80.0	20.0	103.13	8	112.04	105.30	8.91	1.11	6.74	0.84							
106	116	9335F	LW2-G112	2		10	7	3	70.0	30.0	95.69	7	104.59	98.29	8.90	1.27	6.30	0.90							
107	69	9335F	LW2-G112	3		10	6	4	60.0	40.0	109.84	6	112.93	110.37	3.09	0.52	2.56	0.43							
108	124	9335F	LW2-G112	4		10	10	0	100.0	0.0	90.22	10	102.31	94.43	12.09	1.21	7.86	0.79							
109	112	9335F	LW2-G112	5		10	10	0	100.0	0.0	103.69	10	114.11	107.11	10.42	1.04	7.00	0.70	Mean	8.4	1.6	83.8	16.3	1.19	0.84
110	22	9335F	LW2-G112	6		10	8	2	80.0	20.0	105.59	8	117.72	108.67	12.13	1.52	9.05	1.13	SD	1.5	1.5	15.1	15.1	0.32	0.22
111	121	9335F	LW2-G112	7		10	10	0	100.0	0.0	90.91	10	103.82	95.45	12.91	1.29	8.37	0.84	n	8	8	8	8	8	8
112	66	9335F	LW2-G112	8	wq replicate	10	8	2	80.0	20.0	101.58	8	113.84	105.01	12.26	1.53	8.83	1.10							
9	19	9336F	LW2-G077	1		10	10	0	100.0	0.0	111.90	10	123.73	114.09	11.83	1.18	9.54	0.96							
10	41	9336F	LW2-G077	2		10	8	2	80.0	20.0	106.34	8	116.81	108.93	10.47	1.31	7.86	0.99							
11	77	9336F	LW2-G077	3		10	7	3	70.0	30.0	104.02	7	113.06	106.71	9.04	1.29	6.35	0.91							
12	163	9336F	LW2-G077	4		10	8	2	80.0	20.0	95.23	8	102.78	97.43	7.55	0.94	5.35	0.67							
13	50	9336F	LW2-G077	5		10	9	1	90.0	10.0	104.12	9	116.35	107.49	12.23	1.36	8.86	0.98	Mean	8.0	2.0	80.0	20.0	1.29	0.94
14	4	9336F	LW2-G077	6		10	8	2	80.0	20.0	109.84	8	122.83	113.42	12.99	1.62	9.41	1.16	SD	1.2	1.2	12.0	12.0	0.23	0.16
15	71	9336F	LW2-G077	7		10	6	4	60.0	40.0	107.15	6	113.64	108.99	6.49	1.08	4.65	0.78	n	8	8	8	8	8	8
16	105	9336F	LW2-G077	8	wq replicate	10	8	2	80.0	20.0	100.34	8	112.76	104.20	12.42	1.55	8.56	1.07							
81	16	9337F	LW2-G105	1		10	8	2	80.0	20.0	99.67	8	113.02	103.01	13.15	1.64	10.01	1.25							
82	101	9337F	LW2-G105	2		10	9	1	90.0	10.0	98.44	9	108.38	102.11	8.94	0.99	6.27	0.70							
83	65	9337F	LW2-G105	3		10	3	7	30.0	70.0	101.61	3	104.35	102.12	2.74	0.91	2.23	0.74							
84	69	9337F	LW2-G105	4		10	6	4	60.0	40.0	107.75	6	113.66	108.89	5.91	0.96	4.77	0.79							
85	104	9337F	LW2-G105	5		10	6	4	60.0	40.0	100.17	6	106.33	101.68	6.16	1.03	4.65	0.77	Mean	6.1	3.9	61.3	38.8	1.08	0.83
86	54	9337F	LW2-G105	6		10	6	4	60.0	40.0	111.47	6	118.18	112.82	6.71	1.12	5.36	0.99	SD	1.8	1.8	18.1	18.1	0.26	0.21
87	129	9337F	LW2-G105	7		10	6	4	60.0	40.0	95.22	6	102.74	97.04	7.52	1.25	5.70	0.95	n	8	8	8	8	8	8
88	78	9337F	LW2-G105	8	wq replicate	10	5	5	50.0	50.0	104.43	5	107.80	105.14	3.37	0.87	2.66	0.53							

ANC09012
BZTO104(e)009012

Test Number: 886-6

Freshwater Sediment Test
10-Day Chironomus tentans

INDEX	BKR	NAS SMPL	CLIENT DESCRIP	REPL		INIT	SURV	MORT	PSURV	PMORT	TARE WT (mg)	WT COUNT	DRY WT (mg)	ASHED DRY WT (mg)	TWT (mg)	WT (mg)	TAFDW (mg)	AFDW (mg)		SURV	MORT	PSURV	PMORT	WT	AFDW
113	137	9338F	LW2-G117	1		10	0	10	0.0	100.0	92.04	0					0.00								
114	95	9338F	LW2-G117	2		10	1	9	10.0	90.0	97.66	1	98.55	98.07	0.69	0.69	0.48	0.48							
115	55	9338F	LW2-G117	3		10	5	5	50.0	50.0	98.79	5	99.02	97.04	1.23	0.25	0.98	0.20							
116	21	9338F	LW2-G117	4		10	4	6	40.0	60.0	103.89	4	105.62	104.28	1.73	0.43	1.36	0.34							
117	128	9338F	LW2-G117	5		10	6	4	60.0	40.0	97.56	6	101.61	98.33	4.05	0.67	3.28	0.55	Mean	3.8	6.4	36.3	63.8	0.56	0.43
118	149	9338F	LW2-G117	6		10	0	10	0.0	100.0	102.48	0					0.00		SD	2.9	2.9	28.8	28.8	0.35	0.26
119	34	9338F	LW2-G117	7		10	7	3	70.0	30.0	101.50	7	102.69	101.66	1.19	0.17	1.01	0.14	n	6	6	6	6	6	6
120	132	9338F	LW2-G117	8	wq replicate	10	6	4	60.0	40.0	96.65	6	103.39	98.30	6.74	1.12	5.09	0.65							
121	122	9339F	LW2-G121	1		10	9	1	90.0	10.0	96.55	9	105.99	98.75	9.43	1.05	7.23	0.80							
122	3	9339F	LW2-G121	2		10	8	2	80.0	20.0	104.51	8	118.28	108.51	13.77	1.72	9.77	1.22							
123	1	9339F	LW2-G121	3		10	9	1	90.0	10.0	105.18	9	117.72	108.98	12.54	1.39	8.74	0.97							
124	75	9339F	LW2-G121	4		10	9	1	90.0	10.0	107.01	9	116.80	111.03	11.79	1.31	7.77	0.86							
125	83	9339F	LW2-G121	5		10	9	1	90.0	10.0	99.21	9	109.30	102.22	10.09	1.12	7.08	0.79	Mean	7.5	2.5	75.0	25.0	1.28	0.93
126	52	9339F	LW2-G121	6		10	4	6	40.0	60.0	102.79	4	107.08	103.81	4.29	1.07	3.27	0.82	SD	2.2	2.2	22.0	22.0	0.26	0.18
127	18	9339F	LW2-G121	7		10	8	2	80.0	20.0	107.78	8	120.27	110.90	12.49	1.56	9.37	1.17	n	8	8	8	8	8	8
128	153	9339F	LW2-G121	8	wq replicate	10	4	6	40.0	60.0	98.39	4	102.41	99.24	4.02	1.01	3.17	0.79							
129	66	9341F	LW2-G122	1		10	6	4	60.0	40.0	105.82	6	109.12	106.60	3.30	0.55	2.52	0.42							
130	63	9341F	LW2-G122	2		10	7	3	70.0	30.0	104.69	7	112.60	106.37	7.91	1.13	6.23	0.89							
131	161	9341F	LW2-G122	3		10	8	2	80.0	20.0	96.69	8	106.42	99.53	9.73	1.22	8.89	0.86							
132	49	9341F	LW2-G122	4		10	9	1	90.0	10.0	106.54	9	117.58	109.63	11.04	1.23	7.95	0.88							
133	62	9341F	LW2-G122	5		10	10	0	100.0	0.0	105.75	10	117.84	108.81	12.09	1.21	9.03	0.90	Mean	7.1	2.9	71.3	28.8	1.14	0.88
134	136	9341F	LW2-G122	6		10	5	5	50.0	50.0	88.40	5	93.60	89.52	5.20	1.04	4.08	0.82	SD	2.4	2.4	23.6	23.6	0.33	0.28
135	39	9341F	LW2-G122	7		10	3	7	30.0	70.0	105.78	3	111.01	106.74	5.22	1.74	4.27	1.42	n	8	8	8	8	8	8
136	160	9341F	LW2-G122	8	wq replicate	10	9	1	90.0	10.0	105.56	9	114.42	107.92	8.86	0.98	6.50	0.72							
151	7	9342F	LW2-G235	1		10	8	2	80.0	20.0	107.16	8	115.69	108.00	8.53	1.07	7.69	0.96							
152	165	9342F	LW2-G235	2		10	8	2	80.0	20.0	97.39	8	104.01	98.45	6.62	0.83	5.56	0.70							
153	168	9342F	LW2-G235	3		10	10	0	100.0	0.0	96.42	10	105.14	97.54	8.72	0.87	7.60	0.76							
154	82	9342F	LW2-G235	4		10	9	1	90.0	10.0	107.04	9	115.01	108.34	7.97	0.89	6.67	0.74							
155	40	9342F	LW2-G235	5		10	3	7	30.0	70.0	101.06	3	104.72	101.29	3.66	1.22	3.43	1.14	Mean	8.4	1.6	83.8	16.3	0.97	0.84
156	42	9342F	LW2-G235	6		10	10	0	100.0	0.0	103.32	10	114.90	105.00	11.58	1.16	9.90	0.99	SD	2.3	2.3	23.3	23.3	0.16	0.17
157	106	9342F	LW2-G235	7		10	10	0	100.0	0.0	102.60	10	110.36	103.63	7.76	0.78	6.73	0.67	n	6	6	6	6	6	6
158	68	9342F	LW2-G235	8	wq replicate	10	9	1	90.0	10.0	113.55	9	122.46	115.96	8.90	0.98	6.47	0.72							
137	119	9343F	LW2-G164	1		10	7	3	70.0	30.0	89.53	7	99.40	91.92	9.87	1.41	7.48	1.07							
138	143	9343F	LW2-G164	2		10	9	1	90.0	10.0	101.47	9	112.65	104.05	11.18	1.24	8.60	0.96							
139	152	9343F	LW2-G164	3		10	7	3	70.0	30.0	95.29	7	103.10	96.37	7.81	1.12	6.73	0.96							
140	164	9343F	LW2-G164	4		10	10	0	100.0	0.0	100.69	10	113.10	104.07	12.41	1.24	9.03	0.90							
141	130	9343F	LW2-G164	5		10	10	0	100.0	0.0	101.68	10	117.82	105.67	16.14	1.81	11.95	1.20	Mean	8.8	1.3	87.5	12.5	1.34	1.02
142	156	9343F	LW2-G164	6		10	10	0	100.0	0.0	105.31	10	116.05	107.78	10.74	1.07	8.27	0.83	SD	1.5	1.5	14.9	14.9	0.25	0.18
143	25	9343F	LW2-G164	7		10	7	3	70.0	30.0	99.68	7	112.36	102.52	12.48	1.76	9.54	1.36	n	6	6	6	6	6	6
144	111	9343F	LW2-G164	8	wq replicate	10	10	0	100.0	0.0	107.69	10	120.33	111.63	12.44	1.24	8.70	0.87							
145	99	9344F	LW2-G178	1		10	8	2	80.0	20.0	100.30	8	111.56	102.93	11.26	1.41	8.63	1.08							
146	35	9344F	LW2-G178	2		10	8	2	80.0	20.0	104.02	8	115.58	106.79	11.54	1.44	8.77	1.10							
147	90	9344F	LW2-G178	3		10	8	2	80.0	20.0	103.86	8	113.73	106.19	9.87	1.23	7.54	0.94							
148	157	9344F	LW2-G178	4		10	8	2	80.0	20.0	103.61	8	111.53	105.76	7.72	0.97	5.77	0.72							
149	67	9344F	LW2-G178	5		10	7	3	70.0	30.0	101.10	7	112.47	103.82	11.37	1.62	8.65	1.24	Mean	8.1	1.9	81.3	18.8	1.33	1.01
150	138	9344F	LW2-G178	6		10	8	2	80.0	20.0	100.07	8	111.60	102.57	11.53	1.44	9.03	1.13	SD	0.8	0.8	8.3	8.3	0.23	0.19
151	76	9344F	LW2-G178	7		10	10	0	100.0	0.0	104.74	10	115.42	108.03	10.68	1.07	7.39	0.74	n	8	8	8	8	8	8
152	56	9344F	LW2-G178	8	wq replicate	10	8	2	80.0	20.0	107.04	8	119.02	110.00	11.98	1.50	9.02	1.13							
153	29	9345F	LW2-G180	1		10	7	3	70.0	30.0	104.99	7	113.74	107.36	8.75	1.25	6.38	0.91							
154	58	9345F	LW2-G180	2		10	9	1	90.0	10.0	106.62	9	117.23	109.35	10.41	1.16	7.68	0.88							
155	100	9345F	LW2-G180	3		10	10	0	100.0	0.0	90.59	10	100.45	95.34	9.86	0.99	5.11	0.51							
156	46	9345F	LW2-G180	4		10	8	2	80.0	20.0	99.64	8	109.24	101.80	9.40	1.16	7.44	0.93							
157	8	9345F	LW2-G180	5		10	8	2	80.0	20.0	104.49	8	114.21	107.04	9.72	1.22	7.17	0.90	Mean	8.3	1.6	82.5	17.5	1.18	0.87
158	97	9345F	LW2-G180	6		10	7	3	70.0	30.0	93.04	7	100.68	95.11	7.64	1.09	5.57	0.80	SD	1.0	1.0	10.4	10.4	0.24	0.23
159	113	9345F	LW2-G180	7		10	9	1	90.0	10.0	104.19	9	112.24	106.10	8.05	0.89	6.14	0.68	n	8	8	8	8	8	8
160	126	9345F	LW2-G180	8	wq replicate	10	8	2	80.0	20.0	107.03	8	120.67	110.07	13.64	1.71	10.60	1.33							

ANC09013
BZTO104(e)009013

Water Quality Data

NAS SMPL	CLIENT DESCRIP	Bulk Sediment Interstitial water NH3	pH
9323F	Control	3.7	7.0
9325F	LW2-G082	1.1	7.0
9326F	LW2-G088	9.3	6.5
9327F	LW2-G086	9.0	6.6
9328F	LW2-G090	9.7	6.6
9329F	LW2-G091	10.6	6.6
9330F	LW2-G096	2.0	6.7
9331F	LW2-G099	6.5	6.5
9332F	LW2-G103	4.6	6.5
9333F	LW2-G106	4.8	6.5
9334F	LW2-G109	6.0	6.6
9335F	LW2-G112	5.6	6.6
9336F	LW2-G077	5.3	6.5
9337F	LW2-G105	3.4	6.5
9338F	LW2-G117	9.2	6.5
9339F	LW2-G121	7.9	6.6
9341F	LW2-G122	9.5	6.6
9342F	LW2-G235	---	---
9343F	LW2-G164	<0.5	6.8
9344F	LW2-G178	2.5	6.7
9345F	LW2-G180	4.3	6.6

	NAS	CLIENT			Overlying water						
9KR	SMPL	DESCRIP	REPL	DAY	TEMP	DO	COND	pH	NH3	HARD	ALK
9	9329F	LW2-G091	8	0	23.0	7.0	205	7.1	0.8	60	60
11	9332F	LW2-G103	8	0	22.9	7.2	165	7.1	0.6	43	40
17	9327F	LW2-G086	8	0	22.9	7.2	190	7.0	0.7	60	60
20	9325F	LW2-G082	8	0	23.0	7.5	170	7.1	0.2	43	40
27	9333F	LW2-G106	8	0	22.8	7.3	165	6.9	0.7	26	40
36	9326F	LW2-G088	8	0	22.9	7.4	180	7.0	0.6	60	50
48	9323F	Control	8	0	22.9	7.3	205	7.1	0.3	51	40
56	9344F	LW2-G178	8	0	22.9	7.5	160	7.0	0.3	51	40
66	9335F	LW2-G112	8	0	22.9	7.3	165	6.9	0.6	51	40
68	9342F	LW2-G235	8	0	22.9	8.2	155	7.0	0.1	51	50
72	9330F	LW2-G096	8	0	22.9	7.6	155	6.9	0.3	43	40
78	9337F	LW2-G105	8	0	22.9	7.1	155	6.7	0.4	34	40
105	9336F	LW2-G077	8	0	23.0	7.2	165	6.9	0.7	43	50
111	9343F	LW2-G164	8	0	23.0	7.0	160	6.9	0.2	51	40
123	9331F	LW2-G099	8	0	22.9	7.1	170	6.8	0.7	43	50
126	9345F	LW2-G180	8	0	23.0	7.4	155	6.9	0.1	43	30
132	9338F	LW2-G117	8	0	23.0	6.9	170	6.7	0.8	51	40
148	9328F	LW2-G090	8	0	22.9	6.7	190	6.9	0.8	68	60
153	9339F	LW2-G121	8	0	22.9	6.8	185	6.8	0.8	60	60
158	9334F	LW2-G109	8	0	22.9	6.8	170	6.9	0.6	51	40
160	9341F	LW2-G122	8	0	22.9	7.0	170	6.9	0.9	51	60
9	9329F	LW2-G091	8	1	23.1	4.8					
11	9332F	LW2-G103	8	1	23.1	4.4					
17	9327F	LW2-G086	8	1	23.0	4.6					
20	9325F	LW2-G082	8	1	23.1	4.8					
27	9333F	LW2-G106	8	1	23.0	5.0					
36	9326F	LW2-G088	8	1	23.1	4.6					
48	9323F	Control	8	1	23.0	5.0					
56	9344F	LW2-G178	8	1	23.0	4.8					
66	9335F	LW2-G112	8	1	23.1	4.6					
68	9342F	LW2-G235	8	1	23.0	5.2					
72	9330F	LW2-G096	8	1	23.0	4.8					
78	9337F	LW2-G105	8	1	23.0	4.9					
105	9336F	LW2-G077	8	1	23.2	5.2					
111	9343F	LW2-G164	8	1	23.2	4.4					
123	9331F	LW2-G099	8	1	23.2	4.7					
126	9345F	LW2-G180	8	1	23.2	5.1					
132	9338F	LW2-G117	8	1	23.1	5.2					
148	9328F	LW2-G090	8	1	23.1	5.6					
153	9339F	LW2-G121	8	1	23.1	5.2					
158	9334F	LW2-G109	8	1	23.0	4.8					
160	9341F	LW2-G122	8	1	23.1	5.3					
9	9329F	LW2-G091	8	2	23.1	5.6					
11	9332F	LW2-G103	8	2	23.1	5.7					
17	9327F	LW2-G086	8	2	23.0	5.5					
20	9325F	LW2-G082	8	2	23.2	5.8					
27	9333F	LW2-G106	8	2	23.1	5.9					
36	9326F	LW2-G088	8	2	23.2	5.9					
48	9323F	Control	8	2	23.0	6.2					
56	9344F	LW2-G178	8	2	23.1	6.0					

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66	9335F	LW2-G112	8	2	23.1	5.9								
68	9342F	LW2-G235	8	2	23.0	5.8								
72	9330F	LW2-G096	8	2	23.0	5.9								
78	9337F	LW2-G105	8	2	23.0	5.7								
105	9336F	LW2-G077	8	2	23.2	5.6								
111	9343F	LW2-G164	8	2	23.1	5.7								
123	9331F	LW2-G099	8	2	23.1	5.6								
126	9345F	LW2-G180	8	2	23.2	5.5								
132	9338F	LW2-G117	8	2	23.1	5.6								
148	9328F	LW2-G090	8	2	23.0	5.8								
153	9339F	LW2-G121	8	2	23.0	5.6								
158	9334F	LW2-G109	8	2	23.0	5.6								
160	9341F	LW2-G122	8	2	23.1	5.7								
9	9329F	LW2-G091	8	3	22.6	5.0								
11	9332F	LW2-G103	8	3	22.5	5.2								
17	9327F	LW2-G086	8	3	22.5	5.0								
20	9325F	LW2-G082	8	3	22.5	5.2								
27	9333F	LW2-G106	8	3	22.6	4.8								
36	9326F	LW2-G088	8	3	22.5	5.4								
48	9323F	Control	8	3	22.5	5.4								
56	9344F	LW2-G178	8	3	22.5	5.0								
66	9335F	LW2-G112	8	3	22.6	5.0								
68	9342F	LW2-G235	8	3	22.6	4.8								
72	9330F	LW2-G096	8	3	22.6	5.0								
78	9337F	LW2-G105	8	3	22.6	4.6								
105	9336F	LW2-G077	8	3	22.3	5.0								
111	9343F	LW2-G164	8	3	22.8	4.8								
123	9331F	LW2-G099	8	3	22.7	4.8								
126	9345F	LW2-G180	8	3	22.8	4.6								
132	9338F	LW2-G117	8	3	22.7	4.6								
148	9328F	LW2-G090	8	3	22.7	5.0								
153	9339F	LW2-G121	8	3	22.7	4.6								
158	9334F	LW2-G109	8	3	22.6	4.8								
160	9341F	LW2-G122	8	3	22.5	5.2								
9	9329F	LW2-G091	8	4	23.2	5.3								
11	9332F	LW2-G103	8	4	23.2	5.6								
17	9327F	LW2-G086	8	4	23.0	5.8								
20	9325F	LW2-G082	8	4	23.1	5.7								
27	9333F	LW2-G106	8	4	23.0	5.6								
36	9326F	LW2-G088	8	4	23.1	5.9								
48	9323F	Control	8	4	22.9	5.9								
56	9344F	LW2-G178	8	4	23.1	6.0								
66	9335F	LW2-G112	8	4	23.1	6.4								
68	9342F	LW2-G235	8	4	22.9	6.1								
72	9330F	LW2-G096	8	4	22.9	5.9								
78	9337F	LW2-G105	8	4	22.9	5.3								
105	9336F	LW2-G077	8	4	23.1	5.5								
111	9343F	LW2-G164	8	4	23.1	5.6								
123	9331F	LW2-G099	8	4	23.0	5.6								
126	9345F	LW2-G180	8	4	23.1	5.4								
132	9338F	LW2-G117	8	4	23.0	5.0								
148	9328F	LW2-G090	8	4	22.9	5.6								
153	9339F	LW2-G121	8	4	23.0	4.8								
158	9334F	LW2-G109	8	4	22.9	4.4								
160	9341F	LW2-G122	8	4	23.0	5.0								
9	9329F	LW2-G091	8	5	23.2	5.6								
11	9332F	LW2-G103	8	5	23.2	5.3								
17	9327F	LW2-G086	8	5	23.0	5.4								
20	9325F	LW2-G082	8	5	23.2	5.4								
27	9333F	LW2-G106	8	5	23.0	5.7								
36	9326F	LW2-G088	8	5	23.1	5.6								
48	9323F	Control	8	5	23.0	5.5								
56	9344F	LW2-G178	8	5	23.1	5.3								
66	9335F	LW2-G112	8	5	23.1	5.0								
68	9342F	LW2-G235	8	5	23.0	5.6								
72	9330F	LW2-G096	8	5	23.0	5.5								
78	9337F	LW2-G105	8	5	22.9	5.7								
105	9336F	LW2-G077	8	5	23.1	5.2								
111	9343F	LW2-G164	8	5	23.1	5.6								
123	9331F	LW2-G099	8	5	23.1	5.4								
126	9345F	LW2-G180	8	5	23.2	4.4								
132	9338F	LW2-G117	8	5	23.1	4.9								
148	9328F	LW2-G090	8	5	23.0	5.2								
153	9339F	LW2-G121	8	5	23.0	4.8								
158	9334F	LW2-G109	8	5	23.1	3.9								
160	9341F	LW2-G122	8	5	23.1	4.1								
9	9329F	LW2-G091	8	6	23.3	4.4								
11	9332F	LW2-G103	8	6	23.2	4.3								
17	9327F	LW2-G086	8	6	23.2	3.8								
20	9325F	LW2-G082	8	6	23.2	4.0								

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27	9333F	LW2-G106	8	6	23.2	4.2								
36	9326F	LW2-G088	8	6	23.0	4.4								
48	9323F	Control	8	6	23.1	4.2								
56	9344F	LW2-G178	8	6	23.1	3.7								
66	9335F	LW2-G112	8	6	23.1	3.9								
68	9342F	LW2-G235	8	6	23.0	4.0								
72	9330F	LW2-G096	8	6	23.1	3.9								
78	9337F	LW2-G105	8	6	23.0	4.5								
105	9336F	LW2-G077	8	6	23.2	3.8								
111	9343F	LW2-G164	8	6	23.2	4.2								
123	9331F	LW2-G099	8	6	23.2	3.4								
126	9345F	LW2-G180	8	6	23.2	3.1								
132	9338F	LW2-G117	8	6	23.2	3.3								
148	9328F	LW2-G090	8	6	23.1	3.4								
153	9339F	LW2-G121	8	6	23.0	3.5								
158	9334F	LW2-G109	8	6	23.1	4.0								
160	9341F	LW2-G122	8	6	23.2	3.8								
9	9329F	LW2-G091	8	7	23.2	5.6								
11	9332F	LW2-G103	8	7	23.2	5.8								
17	9327F	LW2-G086	8	7	23.2	5.8								
20	9325F	LW2-G082	8	7	23.2	5.6								
27	9333F	LW2-G106	8	7	23.2	5.6								
36	9326F	LW2-G088	8	7	23.2	6.2								
48	9323F	Control	8	7	23.3	5.4								
56	9344F	LW2-G178	8	7	23.2	5.8								
66	9335F	LW2-G112	8	7	23.2	5.9								
68	9342F	LW2-G235	8	7	23.2	6.2								
72	9330F	LW2-G096	8	7	23.3	6.3								
78	9337F	LW2-G105	8	7	23.1	6.2								
105	9336F	LW2-G077	8	7	23.2	5.2								
111	9343F	LW2-G164	8	7	23.2	6.0								
123	9331F	LW2-G099	8	7	23.2	5.2								
126	9345F	LW2-G180	8	7	23.2	5.4								
132	9338F	LW2-G117	8	7	23.2	4.7								
148	9328F	LW2-G090	8	7	23.2	4.8								
153	9339F	LW2-G121	8	7	23.1	5.0								
158	9334F	LW2-G109	8	7	23.1	5.0								
160	9341F	LW2-G122	8	7	23.2	4.6								
9	9329F	LW2-G091	8	8	22.6	3.9								
11	9332F	LW2-G103	8	8	22.6	4.2								
17	9327F	LW2-G086	8	8	22.6	3.9								
20	9325F	LW2-G082	8	8	22.5	4.2								
27	9333F	LW2-G106	8	8	22.5	4.2								
36	9326F	LW2-G088	8	8	22.6	4.6								
48	9323F	Control	8	8	22.6	4.1								
56	9344F	LW2-G178	8	8	22.6	4.2								
66	9335F	LW2-G112	8	8	22.6	3.9								
68	9342F	LW2-G235	8	8	22.6	4.7								
72	9330F	LW2-G096	8	8	22.5	3.9								
78	9337F	LW2-G105	8	8	22.4	4.0								
105	9336F	LW2-G077	8	8	22.6	4.1								
111	9343F	LW2-G164	8	8	22.6	4.5								
123	9331F	LW2-G099	8	8	22.6	2.9								
126	9345F	LW2-G180	8	8	22.6	3.0								
132	9338F	LW2-G117	8	8	22.6	3.3								
148	9328F	LW2-G090	8	8	22.6	3.2								
153	9339F	LW2-G121	8	8	22.5	3.3								
158	9334F	LW2-G109	8	8	22.5	3.6								
160	9341F	LW2-G122	8	8	22.5	3.6								
9	9329F	LW2-G091	8	9	22.4	4.8								
11	9332F	LW2-G103	8	9	22.4	5.6								
17	9327F	LW2-G086	8	9	22.4	5.2								
20	9325F	LW2-G082	8	9	22.4	5.1								
27	9333F	LW2-G106	8	9	22.6	5.2								
36	9326F	LW2-G088	8	9	22.4	6.0								
48	9323F	Control	8	9	22.3	5.2								
56	9344F	LW2-G178	8	9	22.4	5.5								
66	9335F	LW2-G112	8	9	22.4	6.0								
68	9342F	LW2-G235	8	9	22.4	6.0								
72	9330F	LW2-G096	8	9	22.3	5.6								
78	9337F	LW2-G105	8	9	22.3	5.4								
105	9336F	LW2-G077	8	9	22.6	5.4								
111	9343F	LW2-G164	8	9	22.5	5.7								
123	9331F	LW2-G099	8	9	22.5	5.0								
126	9345F	LW2-G180	8	9	22.4	4.6								
132	9338F	LW2-G117	8	9	22.5	5.0								
148	9328F	LW2-G090	8	9	22.5	5.0								
153	9339F	LW2-G121	8	9	22.4	4.6								
158	9334F	LW2-G109	8	9	22.4	4.8								
160	9341F	LW2-G122	8	9	22.4	4.7								

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9	9329F	LW2-G091	8	10	22.9	5.4	175	6.9	0.7	43	50			
11	9332F	LW2-G103	8	10	23.1	6.0	165	6.8	0.5	43	50			
17	9327F	LW2-G086	8	10	23.1	5.4	165	6.8	0.5	43	50			
20	9325F	LW2-G082	8	10	23.2	5.5	165	6.8	0.3	43	40			
27	9333F	LW2-G106	8	10	23.0	5.5	160	6.8	0.5	43	50			
36	9326F	LW2-G088	8	10	23.1	6.3	165	6.9	0.5	43	40			
48	9323F	Control	8	10	23.0	4.9	170	6.9	0.4	34	50			
56	9344F	LW2-G178	8	10	23.1	5.3	160	6.8	0.4	43	40			
66	9335F	LW2-G112	8	10	23.1	5.8	165	6.8	0.6	43	50			
68	9342F	LW2-G235	8	10	23.0	5.9	160	6.8	0.3	43	40			
72	9330F	LW2-G096	8	10	23.0	5.4	160	6.8	0.5	43	40			
78	9337F	LW2-G105	8	10	23.0	5.9	160	6.8	0.4	43	40			
105	9336F	LW2-G077	8	10	23.1	5.6	165	6.8	0.6	43	50			
111	9343F	LW2-G164	8	10	23.2	6.3	160	6.8	0.2	43	40			
123	9331F	LW2-G099	8	10	23.1	5.5	160	6.8	0.4	43	40			
126	9345F	LW2-G180	8	10	23.2	5.8	160	6.8	0.3	51	40			
132	9338F	LW2-G117	8	10	23.2	5.5	160	6.8	0.6	43	50			
148	9328F	LW2-G090	8	10	23.1	5.5	165	6.8	0.4	51	50			
153	9339F	LW2-G121	8	10	23.1	5.3	165	6.8	0.5	51	40			
158	9334F	LW2-G109	8	10	23.1	5.5	160	6.8	0.4	43	40			
160	9341F	LW2-G122	8	10	23.1	5.4	160	6.8	0.5	43	50			
				Mean	22.9	5.2	167	6.9	---	46	45		---	6.6
				SD	0.3	1.0	12	0.1	---	8	7		---	0.2
				n	231	231	42	42	42	42	42		21	21
				Min	22.3	2.9	155	6.7	<0.1	26	30		<0.5	6.5
				Max	23.3	8.2	205	7.1	0.9	68	60		10.6	7.0

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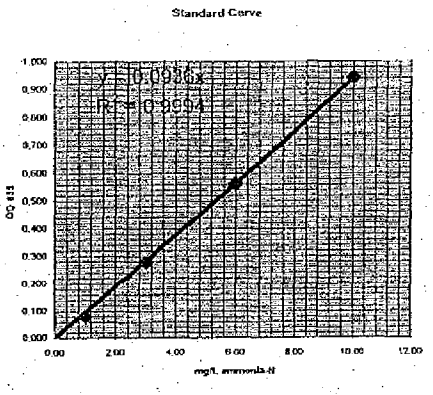
AMMONIA EXPOSURE BENCHSHEETS AND ANALYSIS

Total Ammonia-N in Sediment Pore Water: Computation Worksheet
Salicylate Method (SOP #5492)

Result	Sample description	Dilution factor	OD_{655}	NH_3-N (mg/L)	pH	Salinity (ppt)
	Blank	-----	----	----		
	1.0 mg/L NH_3-N Std.	-----	0.079	1.00		
	3.0 mg/L NH_3-N Std.	-----	0.277	3.00		
	6.0 mg/L NH_3-N Std.	-----	0.560	6.00		
	10.0 mg/L NH_3-N Std.	-----	0.940	10.00		
	3.0 mg/L spike	-----	0.282	3.01		
	3.0 mg/L spike dupl.	-----	0.284	3.03		
1.	9323F	5	0.070	3.74		
2.	9325F	5	0.020	1.07		
3.	9326F	5	0.174	9.29		
4.	9327F	5	0.169	9.02		
5.	9328F	5	0.182	9.72		
6.	9329F	5	0.198	10.57		
7.	9330F	5	0.038	2.03		
8.	9331F	5	0.122	6.51		
9.	9332F	5	0.086	4.59		
10.	9333F	5	0.090	4.81		
11.	9334F	5	0.112	5.98		
12.	9335F	5	0.105	5.61		
13.	9336F	5	0.118	6.30		
14.	9337F	5	0.063	3.36		
15.	9338F	5	0.173	9.24		
16.	9339F	5	0.147	7.85		
17.	9341F	5	0.178	9.50		
18.	9342F	5	— *	— *		
19.	9343F	5	0.002	ND		
20.	9344F	5	0.046	2.46		
21.	9345F	5	0.081	4.32		
22.		5				
23.		5				
24.		5				
25.		5				
26.		5				
27.		5				
28.		5				
29.		5				
30.		5				
31.		5				
32.		5				
33.		5				
34.		5				
35.		5				
36.		5				

* insufficient sample for analysis RSC 9/25/04



Reporting limit (mg/L) = 0.5

Recovery (%) = 100.7
Precision (RPD) = -0.71

Sample volume (ml): 0.10
Dilution factor 5

Sample Set Description:
Proj. No.: 686
Bulk sediment porewaters
Batch 3

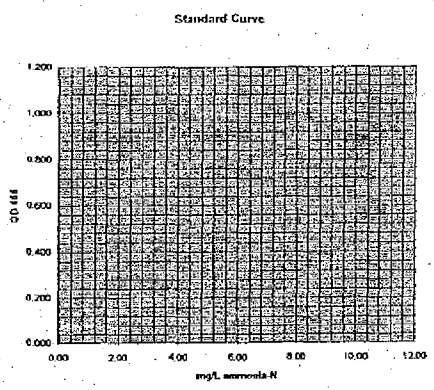
Analyst: RSC
Date analysed: 8/9/2004

Total Ammonia-N in Sediment Pore Water: Computation Worksheet
Salicylate Method (SOP #5492)

Result

	Sample description	Dilution factor	OD_{655}	NH_3-N (mg/L)	pH	Salinity (ppt)
	Blank	-----	-----	-----		
	1.0 mg/L NH_3-N Std.	-----	.079	1.00		
	3.0 mg/L NH_3-N Std.	-----	.277	3.00		
	6.0 mg/L NH_3-N Std.	-----	.560	6.00		
	10.0 mg/L NH_3-N Std.	-----	.940	10.00		
	3.0 mg/L spike	-----	.282			
	3.0 mg/L spike dupl.	-----	.284			
1.	9323F	5	.070		7.0	
2.	9325F	5	.020		7.0	
3.	9326F	5	.174		6.5	
4.	9327F	5	.161		6.6	
5.	9328F	5	.182		6.6	
6.	9329F	5	.198		6.6	
7.	9330F	5	.037		6.7	
8.	9331F	5	.122		6.5	
9.	9332F	5	.085		6.5	
10.	9333F	5	.090		6.5	
11.	9334F	5	.112		6.6	
12.	9335F	5	.105		6.6	
13.	9336F	5	.118		6.5	
14.	9337F	5	.063		6.5	
15.	9338F	5	.173		6.5	
16.	9339F	5	.147		6.6	
17.	9341F	5	.178		6.6	
18.	9342F	5	—		6.8	
19.	9343F	5	.002		6.7	
20.	9344F	5	.046		6.7	
21.	9345F	5	.081		6.5	
22.		5				
23.		5				
24.		5				
25.		5				
26.		5				
27.		5				
28.		5				
29.		5				
30.		5				
31.		5				
32.		5				
33.		5				
34.		5				
35.		5				
36.		5				

Salicylate Method - Calmanza



Reporting limit (mg/L) = 0.5

Recovery (%) = #VALUE!
Precision (RPD) = #VALUE!

Sample volume (ml): 0.10
Dilution factor 5

Sample Set Description:
Proj. No.: 686
Bulk sediment porewaters
Batch 3

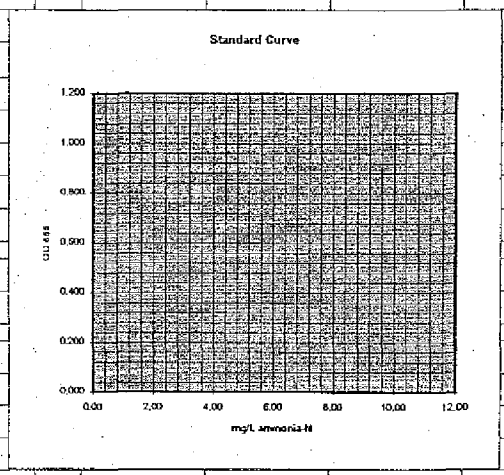
Analyst: RSC
Date analysed: 8/9/2004

Total Ammonia-N in Water: Computation Worksheet

Salicylate Method (SOP #5492)

Result

	Sample description	Dilution factor	OD655	NH3-N (mg/L)
	Blank	----	----	----
	1.0 mg/L NH3-N Std.	----	0.1	1.00
	3.0 mg/L NH3-N Std.	----	0.3	3.00
	6.0 mg/L NH3-N Std.	----	0.58	6.00
	10.0 mg/L NH3-N Std.	----	0.98	10.00
	3.0 mg/L spike	----	0.3	
	3.0 mg/L spike dupl.	----	0.3	
1.	9	1	0.08	
2.	11	1	0.06	
3.	17	1	0.07	
4.	20	1	0.02	
5.	27	1	0.07	
6.	36	1	0.06	
7.	48	1	0.03	
8.	56	1	0.03	
9.	66	1	0.06	
10.	68	1	0.01	
11.	72	1	0.03	
12.	78	1	0.035	
13.	105	1	0.065	
14.	111	1	0.02	
15.	123	1	0.065	
16.	126	1	0.01	
17.	132	1	0.08	
18.	148	1	0.09	
19.	153	1	0.08	
20.	158	1	0.06	
21.	160	1	0.09	
22.				
23.				
24.				
25.				
26.				
27.				
28.				
29.				
30.				
31.				
32.				
33.				
34.				
35.				
36.				



Reporting limit (mg/L) =	0.1
Recovery (%) =	#VALUE!
Precision (RPD) =	#VALUE!
Sample volume (ml):	0.50
Dilution factor	1

Sample Set Description:

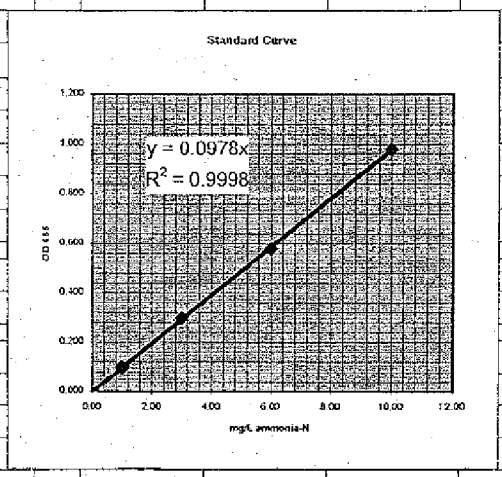
Test No.:	686-6
Test Day:	0 (8-10-04)
Species:	*Chironomus*
Overlying water	
Analyst:	WTM
Date analysed:	8/23/04

Total Ammonia-N in Water: Computation Worksheet

Salicylate Method (SOP #5492)

Result

	Sample description	Dilution factor	OD_{655}	NH_3-N (mg/L)
	Blank	-----	-----	-----
	1.0 mg/L NH_3-N Std.	-----	0.100	1.00
	3.0 mg/L NH_3-N Std.	-----	0.300	3.00
	6.0 mg/L NH_3-N Std.	-----	0.580	6.00
	10.0 mg/L NH_3-N Std.	-----	0.980	10.00
	3.0 mg/L spike	-----	0.300	3.07
	3.0 mg/L spike dupl.	-----	0.300	3.07
1.	9	1	0.080	0.82
2.	11	1	0.060	0.61
3.	17	1	0.070	0.72
4.	20	1	0.020	0.20
5.	27	1	0.070	0.72
6.	36	1	0.060	0.61
7.	48	1	0.030	0.31
8.	56	1	0.030	0.31
9.	66	1	0.060	0.61
10.	68	1	0.010	0.10
11.	72	1	0.030	0.31
12.	78	1	0.035	0.36
13.	105	1	0.065	0.66
14.	111	1	0.020	0.20
15.	123	1	0.065	0.66
16.	126	1	0.010	0.10
17.	132	1	0.080	0.82
18.	148	1	0.080	0.82
19.	153	1	0.080	0.82
20.	158	1	0.060	0.61
21.	160	1	0.090	0.92
22.				
23.				
24.				
25.				
26.				
27.				
28.				
29.				
30.				
31.				
32.				
33.				
34.				
35.				
36.				



Reporting limit (mg/L) =	0.1
Recovery (%) =	102.2
Precision (RPD) =	0.00
Sample volume (ml):	0.50
Dilution factor	1

Sample Set Description:

Test No.:	686-6
Test Day:	0 (8-10-04)
Species:	*Chironomus*
Overlying water	
Analyst:	WTM
Date analysed:	8/23/04

Total Ammonia-N in Water: Computation Worksheet

Salicylate Method (SOP #5492)

Result

	Sample description	Dilution factor	OD655	NH_3-N (mg/L)
	Blank	-----	----	----
	1.0 mg/L NH_3-N Std.	-----	0.100	1.00
	3.0 mg/L NH_3-N Std.	-----	0.300	3.00
	6.0 mg/L NH_3-N Std.	-----	0.580	6.00
	10.0 mg/L NH_3-N Std.	-----	0.980	10.00
	3.0 mg/L spike	-----	0.300	3.07
	3.0 mg/L spike dupl.	-----	0.300	3.07
1.	9	1	0.065	0.66
2.	11	1	0.050	0.51
3.	17	1	0.050	0.51
4.	20	1	0.030	0.31
5.	27	1	0.045	0.46
6.	36	1	0.050	0.51
7.	48	1	0.040	0.41
8.	56	1	0.040	0.41
9.	66	1	0.055	0.56
10.	68	1	0.030	0.31
11.	72	1	0.050	0.51
12.	78	1	0.035	0.36
13.	105	1	0.060	0.61
14.	111	1	0.020	0.20
15.	123	1	0.040	0.41
16.	126	1	0.025	0.26
17.	132	1	0.055	0.56
18.	148	1	0.040	0.41
19.	153	1	0.050	0.51
20.	158	1	0.035	0.36
21.	160	1	0.050	0.51
22.				
23.				
24.				
25.				
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29.				
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31.				
32.				
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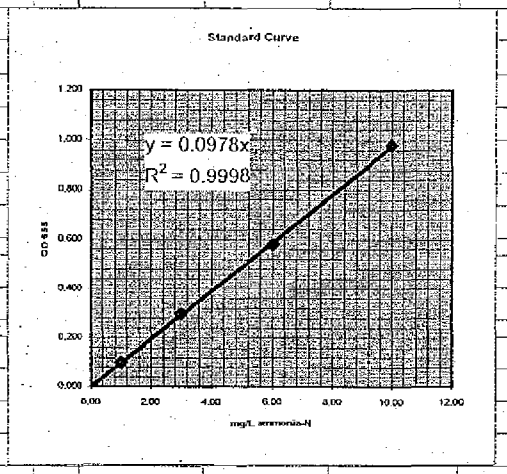
34.				
35.				
36.				



Reporting limit (mg/L) =	0.1
Recovery (%) =	102.2
Precision (RPD) =	0.00
Sample volume (ml):	0.50
Dilution factor	1

Sample Set Description:

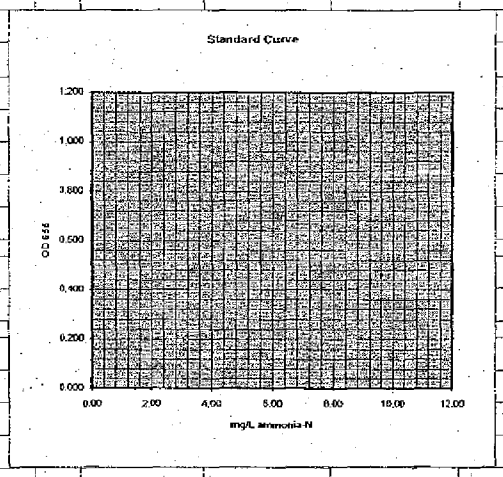
Test No.:	686-6
Test Day:	10 (8-20-04)
Species:	*Chironomus*
Overlying water	
Analyst:	WTM
Date analysed:	8/23/04

Total Ammonia-N in Water: Computation Worksheet

Salicylate Method (SOP #5492)

Result

	Sample description	Dilution factor	OD655	NH_3-N (mg/L)
	Blank	-----	----	----
	1.0 mg/L NH_3-N Std.	-----	0.1	1.00
	3.0 mg/L NH_3-N Std.	-----	0.3	3.00
	6.0 mg/L NH_3-N Std.	-----	0.58	6.00
	10.0 mg/L NH_3-N Std.	-----	0.98	10.00
	3.0 mg/L spike	-----	0.3	
	3.0 mg/L spike dupl.	-----	0.3	
1.	9	1	0.065	
2.	11	1	0.05	
3.	17	1	0.05	
4.	20	1	0.03	
5.	27	1	0.045	
6.	36	1	0.05	
7.	48	1	0.04	
8.	56	1	0.04	
9.	66	1	0.055	
10.	68	1	0.03	
11.	72	1	0.05	
12.	78	1	0.035	
13.	105	1	0.06	
14.	111	1	0.02	
15.	123	1	0.04	
16.	126	1	0.025	
17.	132	1	0.085	
18.	148	1	0.04	
19.	153	1	0.05	
20.	158	1	0.035	
21.	160	1	0.05	
22.				
23.				
24.				
25.				
26.				
27.				
28.				
29.				
30.				
31.				
32.				
33.				
34.				
35.				
36.				



Reporting limit (mg/L) =	0.1
Recovery (%) =	#VALUE!
Precision (RPD) =	#VALUE!
Sample volume (ml):	0.50
Dilution factor	1

Sample Set Description:

Test No.:	686-6
Test Day:	10 (8-20-04)
Species:	*Chornomus*
Overlying water	
Analyst:	WTM
Date analysed:	8/23/04

ANC09024
BZTO104(e)009024

CHAIN-OF-CUSTODY RECORDS

Windward Environmental

CHAIN-OF-CUSTODY/TEST REQUEST FORM

1322

Project/Client Name: PORTLAND HARBOR RI/FS R2
Windward Project No: 03.28.04-28
Contact Name: HELLE ANDERSEN (206.577.1287)
Sampled By: THAI DO (206.577.1282)

Ship to: NORTHWESTERN AQUATIC SCIENCES
Attn: GERALD IRISSARRI
Shipping address: HAND DELIVERED TO NEWPORT, OREGON

Shipping Date: 08.05.04
Airbill Number: —

Sample Collection Date (m/d/y)	Time	Sample Identification	Volume of Sample / # of Containers	Matrix	Test(s) Requested (check test(s) required)							Comments / Instructions [Jar tag number(s)]
					10 day (Chironomus)	28 day (Hyalella)						
08.02.04	10:17	LWZ-6082	1L/4	SEDIMENT	✓	✓		NAS#	9325F			INTERNAL TEMP
08.02.04	10:41	LWZ-6088	1L/4	SEDIMENT	✓	✓			9326F			OF ICE CHESTS
08.02.04	11:02	LWZ-6086	1L/4	SEDIMENT	✓	✓			9327F			UPON LAB RECEIPT:
08.02.04	11:53	LWZ-6090	1L/4	SEDIMENT	✓	✓			9328F			#1 0.5°C
08.02.04	12:42	LWZ-6091	1L/4	SEDIMENT	✓	✓			9329F			#2 2.0°C
08.03.04	09:03	LWZ-6096	1L/4	SEDIMENT	✓	✓			9330F			#3 1.0°C
08.03.04	09:32	LWZ-6099	1L/4	SEDIMENT	✓	✓			9331F			#4 2.0°C
08.03.04	10:03	LWZ-6103	1L/4	SEDIMENT	✓	✓			9332F			#5 1.0°C
08.03.04	10:21	LWZ-6106	1L/4	SEDIMENT	✓	✓			9333F			#6 0.5°C
08.03.04	10:39	LWZ-6109	1L/4	SEDIMENT	✓	✓			9334F			#7 2.0°C
08.03.04	11:49	LWZ-6112	1L/4	SEDIMENT	✓	✓			9335F			
08.03.04	13:04	LWZ-6077	1L/4	SEDIMENT	✓	✓			9336F			
08.03.04	13:26	LWZ-6105	1L/4	SEDIMENT	✓	✓			9337F			
Total Number of Containers			52	Purchase Order / Statement of Work #								

1) Released by:	1) Rec'd by:	2) Released by:	1) Rec'd by:
Print name: THAI DO	Print name: GERALD IRISSARRI	Print name:	
Signature:	Signature:	Signature:	
Company: WINDWARD ENVIRONMENTAL	Company: NORTHWESTERN AQUATIC SCIENCES	Company:	Company:
Date/Time: 08.05.04/10.21	Date/Time: 8/5/04 10:21 AM	Date/Time:	Date/Time:

PAGE 35 OF 36

* Distribution: White and yellow copies accompany shipment; pink-consignor's copy; white-consignee return with results; yellow-consignee's copy.
* Instructions for completion of Chain-of-Custody/Test Request Form on back.

Windward environmental LLC
200 West Mercer Street
Suite 401
Seattle, WA 98119
Tel: 206.378.1364
Fax: 206.217.0089

To be completed by Laboratory upon sample receipt:

Date of receipt:	Laboratory W.O. #:
Condition upon receipt:	Time of receipt:
Cooler temperature:	Received by:

ANC09026
BZTO104(e)009026

Windward Environmental

CHAIN-OF-CUSTODY/TEST REQUEST FORM

1323

Project/Client Name: PORTLAND HARBOR RI/FS
Windward Project No: C3-2F C4-26
Contact Name: HELLE ANDERSEN (206.577.1287)
Sampled By: THAI DO (206.577.1282)

Ship to: NORTHWESTERN AQUATIC SCIENCES
Attn: GERALD IRISSARRI
Shipping address: HAND DELIVERED TO NEWPORT, OREGON

Shipping Date: 08.05.04
Airbill Number: —

Sample Collection Date (m/d/y)	Time	Sample Identification	Volume of Sample / # of Containers	Matrix	Test(s) Requested (check test(s) required)							Comments / Instructions [Jar tag number(s)]
					10-day Chronomus	28-day Hyalella						
08.03.04	13:54	LW2-G117	1L/4	SEDIMENT	✓	✓			NAS# 9338		F	
08.03.04	14:19	LW2-G121	1L/4	SEDIMENT	✓	✓			9339		F	
08.03.04	14:52	LW2-G123	1L/4	SEDIMENT	✓	✓			9340		F	DO NOT TEST/ADJUST PER INSTRUCTIONS
08.03.04	15:22	LW2-G122	1L/4	SEDIMENT	✓	✓			9341		F	
08.04.04	08:41	LW2-G235	1L/4	SEDIMENT	✓	✓			9342		F	
08.04.04	09:21	LW2-G164	1L/4	SEDIMENT	✓	✓			9343		F	
08.04.04	09:49	LW2-G178	1L/4	SEDIMENT	✓	✓			9344		F	
08.04.04	10:09	LW2-G180	1L/4	SEDIMENT	✓	✓			9345		F	

Total Number of Containers: 32
Purchase Order / Statement of Work #:

1) Released by:	1) Rec'd by:	2) Released by:	1) Rec'd by:
Print name: THAI DO	Print name: GERALD IRISSARRI	Print name:	Print name:
Signature:	Signature:	Signature:	Signature:
Company: WINDWARD ENVIRONMENTAL	Company: NORTHWESTERN AQUATIC SCIENCES	Company:	Company:
Date/Time: 08.05.04 / 10:21	Date/Time: 8/5/04 10:21 AM	Date/Time:	Date/Time:

* Distribution: White and yellow copies accompany shipment; pink-consignor's copy; white-consignee return with results; yellow-consignee's copy.
* Instructions for completion of Chain-of-Custody/Test Request Form on back.

Ward environmental
200 West Mercer Street
Suite 401
Seattle, WA 98119
Tel: 206.378.1364
Fax: 206.217.0089

To be completed by Laboratory upon sample receipt:

Date of receipt:	Laboratory W.O. #:
Condition upon receipt:	Time of receipt:
Cooler temperature:	Received by:

ANC09027
BZTO104(e)009027

APPENDIX II

RAW DATA – REFERENCE TOXICANT TEST

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS- _____

ACUTE TOXICITY TEST (ALL SPECIES)

REVIEWED PAGES 1-7 631

Test No. 999-1822 Client: QC Test Investigator _____

Test Type (rangefinding/definitive) _____ Test Length (hr) 96

Species Chironomus tentans

STUDY MANAGEMENT

Client: QC test

Client's Study Monitor: QC test

Testing Laboratory: Northwestern Aquatic Sciences

Test Location: Newport Laboratory

Laboratory's Study Personnel:

Proj. Man./Study Dir. G.J. Irissarri 631

QA Officer L. K. Nemeth

1. GAB 8-10-04 2. G.C. Hayes GCH

3. M.S. Redmond MSR 4. _____

Study Schedule:

Test Beginning: 8-10-04 1230 Test Ending: 8-14-04 1140

TEST MATERIAL

Description: Potassium Chloride Crystals - Lot No.: FISHER 006829

NAS Sample No.				
Date of Collection:				
Date of Receipt:				
Temperature (deg C):				
Dissolved oxygen (mg/L):				
pH:				
Conductivity (umhos/cm):				
Hardness (mg/L):				
Alkalinity (mg/L):				
Salinity (ppt):				
Total chlorine (mg/L):				
Total ammonia-N (mg/L):				
_____:				

DILUTION WATER

Description: Moderately hard synthetic water

Date of Preparation/Collection: 8-5-04

Water Quality: Cond. (umhos/cm): 295 Salinity (ppt) — pH 7.6

Hardness (mg/L as $CaCO_3$): 94 Alkalinity (mg/L as $CaCO_3$): 90

Treatments: Aerated ≥ 24 hrs

TEST LOCATION

Test conducted in (circle one): room 1 (room 2) trailer water bath other: _____

Randomization chart:

10	5 631	1.25	2.5	20	2.5	1.25	10	ϕ	20
1.25	1.25	2.5	5	5	ϕ	10	ϕ	10	2.5
ϕ	ϕ	5	20	2.5	10	20	2.5	1.25	ϕ
5	2.5	ϕ	10	1.25	20	5	20	5	1.25
2.5	10	20	ϕ	10	1.25	ϕ	5	2.5	10
20	20	10	1.25	ϕ	5	2.5	1.25	20	2.5

Error codes: 1) Correction of handwriting error
2) Written in wrong location; entry deleted
3) Wrong date deleted; replaced with correct date
4) Error found in measurement; measurement repeated

Revised 12-5-01

ANC09029
BZTO104(e)009029

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-_____

ACUTE TOXICITY TEST (ALL SPECIES)

Test No. 999-1822 Client QC Test Investigator _____

TEST ORGANISMS

Species: *Chironomus tentans* Age: _____ Size: 3rd instar

Source: NAS cultures Date received: _____

Acclimation Data:

Date	Temp. (deg.C)	DO (mg/L)	pH	Cond. umhos/cm	Hardness (mg/L)	Alkalinity (mg/L)	Feeding Amount	Feeding description*	Water changes
8-2-04	23.6	7.6	7.6	260	-	-	4+3 mL	S+T	YES
8-3-04	24.2	8.0	7.4	260	77	60	-	-	
8-4-04	23.0	7.0	7.1	240	102	90	-	-	
8-6-04	23.5	7.4	7.5	260	-	-	-	-	YES on 8-7-04
8-9-04	24.9	7.8	7.3	300	-	-	4+3 mL	S+T	YES
8-10-04	24.1	7.6	7.7	240	68	70	-	-	
Mean	23.9	7.6	7.4	260	82	73			
S.D.	0.7	0.3	0.2	22	18	15			
(N)	6	6	6	6	3	3			

Photoperiod during acclimation: _____ *S=Selenastrum, T=Tetra Fin suspension

TEST PROCEDURES AND CONDITIONS

Test concentrations (50% series recommended): 20, 10, 5, 2.5, 1.25, 0 g/L

Test chamber: 30 ml plastic cups Test volume: 20 ml

Replicates/treatment: 10 Organisms/treatment: 10 (1/rep)

Test water changes: None Aeration during test: None

Feeding: 0.25 ml Prime Tropical Flakes (4g/L) suspension per cup on days 0 and 2

Duration: 24-hr, 48-hr, (96-hr) Test temperature (deg.C): 23 ± 1

Beaker placement: Stratified randomization Photoperiod: 16:8, L:D

MISCELLANEOUS NOTES

Test solution preparation:

Working stock: Dissolve 10g KCl crystals in dilution water and dilute to 500 mL.
Final conc.: 20 g/L.

Test concentration (g/L)	KCl working stock (ml/200ml)	ml of dilution water per 200 ml
20	200	0
10	100	100
5	50	150
2.5	25	175
1.25	12.5	187.5
0	0	0

GJ 8-10-04

ANC09030
BZTO104(e)009030

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-_____

ACUTE TOXICITY TEST (ALL SPECIES)

Test No. 999-1822 Client QC Test

DAILY RECORD SHEET

Day 0 (8/10/04) Temp Beaker (°C):

Conc. (g/L)	Temp. (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	Comments
1. 20	23.5	8.6	>20,000	7.9	85	70	
2. 10	23.5	8.5	13,820	7.9			
3. 5	23.6	8.6	7,680	7.9			
4. 2.5	23.6	8.6	4,230	7.9			
5. 1.25	23.6	8.6	2,330	7.9			
6. 0	23.5	8.6	290	7.9	85	70	
All animals fed 0.25 ml Prime Tropical Flakes suspension. Initials: GJ							

Day 1 (8/11/04) Temp Beaker (°C): 23.5

Conc. (g/L)	Temp. (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	Comments
1. 20							
2. 10							
3. 5							
4. 2.5							
5. 1.25							
6. 0							

Day 2 (8/12/04) GJ Temp Beaker (°C): 23.4

Conc. (g/L)	Temp. (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	Comments
1. 20							
2. 10							
3. 5							
4. 2.5							
5. 1.25							
6. 0							
All animals fed 0.25 ml Prime Tropical Flakes suspension. Initials: GJ							

Day 3 (8/13/04) GJ Temp Beaker (°C): 23.2

Conc. (g/L)	Temp. (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	Comments
1. 20							
2. 10							
3. 5							
4. 2.5							
5. 1.25							
6. 0							

Day 4 (8/14/04) GJ Temp Beaker (°C): 23.4

Conc. (g/L)	Temp. (deg.C)	DO (ppm)	Cond. (umhos/cm)	pH	Hardness (mg/L)	Alkalinity (mg/L)	Comments
1. 20	—	—	—	—	—	—	
2. 10	—	—	—	—			
3. 5	23.7	7.6	8110	7.8			
4. 2.5	23.7	7.7	4070	7.8			
5. 1.25	23.7	6.9	2710	7.6			
6. 0	23.6	7.1	315	7.6	85	80	
Mean	23.6	8.1	303 (CONTROL)	7.8	85	73	
SD	0.1	0.7	—	0.1	0.0	6	
n	10	10	2	10	3	3	

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ANC09031

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NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-_____

ACUTE TOXICITY TEST (ALL SPECIES)

Test No. 999-1822 Client QC Test Investigator _____

DAILY RECORD SHEET - Survivors

Day 0 (8 /10 /04) 632

Conc. (g/L)	Survivors in Replicate: 1	2	3	4	5	6	7	8	9	10	Total
1. 20	1	1	1	1	1	1	1	1	1	1	10
2. 10	1	1	1	1	1	1	1	1	1	1	10
3. 5	1	1	1	1	1	1	1	1	1	1	10
4. 2.5	1	1	1	1	1	1	1	1	1	1	10
5. 1.25	1	1	1	1	1	1	1	1	1	1	10
6. 0	1	1	1	1	1	1	1	1	1	1	10

Day 1 (8 /11 /04) 633

Conc. (g/L)	Survivors in Replicate: 1	2	3	4	5	6	7	8	9	10	Total
1. 20	X	X	X	X	X	X	X	X	X	X	Ø (10D)
2. 10	X	X	X	X	X	X	X	X	X	X	Ø (10D)
3. 5	1	1	1	1	1	1	1	1	1	1	10
4. 2.5	1	1	1	1	1	1	1	1	1	1	10
5. 1.25	1	1	1	1	1	1	1	1	1	1	10
6. 0	1	1	1	1	1	1	1	1	1	1	10

Day 2 (8 /12 /04) 631

Conc. (g/L)	Survivors in Replicate: 1	2	3	4	5	6	7	8	9	10	Total
1. 20	X	X	X	X	X	X	X	X	X	X	Ø
2. 10	X	X	X	X	X	X	X	X	X	X	Ø
3. 5	1	1	1	1	1	1	1	1	1	1	10
4. 2.5	1	1	1	1	1	1	1	1	X	1	9 (1D)
5. 1.25	1	1	1	1	1	1	1	1	1	1	10
6. 0	1	1	1	1	1	1	1	1	1	1	10

Day 3 (8 / 13/04) 632

Conc. (g/L)	Survivors in Replicate: 1	2	3	4	5	6	7	8	9	10	Total
1. 20	X	X	X	X	X	X	X	X	X	X	Ø
2. 10	X	X	X	X	X	X	X	X	X	X	Ø
3. 5	1	1	1	1	1	X	1	X	X	1	7 (3D)
4. 2.5	1	1	1	1	1	1	1	1	X	1	9
5. 1.25	1	1	1	1	1	1	1	1	1	1	10
6. 0	1	1	1	1	X	1	1	1	1	1	9 (1D)

Day 4 (8 /14 /04) 631

Conc. (g/L)	Survivors in Replicate: 1	2	3	4	5	6	7	8	9	10	Total
1. 20	X	X	X	X	X	X	X	X	X	X	Ø
2. 10	X	X	X	X	X	X	X	X	X	X	Ø
3. 5	1	1	1	1	1	X	1	X	X	1	7
4. 2.5	1	1	1	1	1	1	1	X	X	1	8 (1D)
5. 1.25	1	1	1	1	1	1	X	1	1	1	9 (1D)
6. 0	1	1	1	1	X	1	1	1	1	1	9

ANC09032
BZTO104(e)009032

Acute 96-hr Toxicity Test-96 Hr Survival

Start Date:	8/10/04 12:30	Test ID:	999-1822	Sample ID:	REF-Ref Toxicant
End Date:	8/14/04 11:40	Lab ID:	ORNAS-Northwestern Aquati	Sample Type:	KCL-Potassium chloride
Sample Date:		Protocol:	EPAF 91-EPA Freshwater	Test Species:	CT-Chironomus tentans
Comments:					

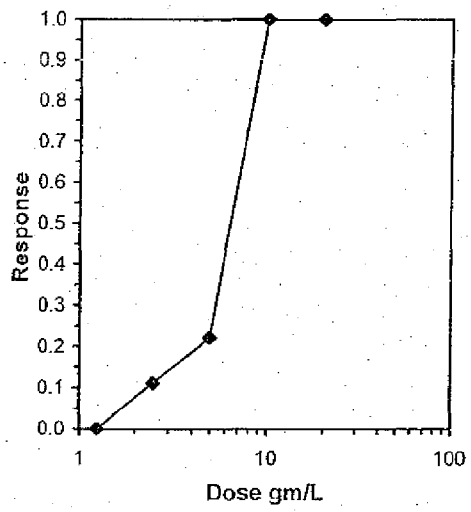
Conc-gm/L	1
D-Control	0.9000
1.25	0.9000
2.5	0.8000
5	0.7000
10	0.0000
20	0.0000

Conc-gm/L	Mean	N-Mean	Resp	Not Resp	Total	N	Fisher's Exact P	1-Tailed Critical	Number Resp	Total Number
D-Control	0.9000	1.0000	1	9	10	1			1	10
1.25	0.9000	1.0000	1	9	10	1	0.7632	0.0500	1	10
2.5	0.8000	0.8889	2	8	10	1	0.5000	0.0500	2	10
5	0.7000	0.7778	3	7	10	1	0.2910	0.0500	3	10
10	0.0000	0.0000	10	0	10	1			10	10
20	0.0000	0.0000	10	0	10	1			10	10

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU
Fisher's Exact Test	5	10	7.07107	

Trimmed Spearman-Karber

Trim Level	EC50	95% CL	
0.0%	5.6123	4.4660	7.0528
5.0%	5.8643	4.5924	7.4884
10.0%	6.0926	4.7540	7.8080
20.0%	6.3904	4.3226	9.4473
Auto-0.0%	5.6123	4.4660	7.0528



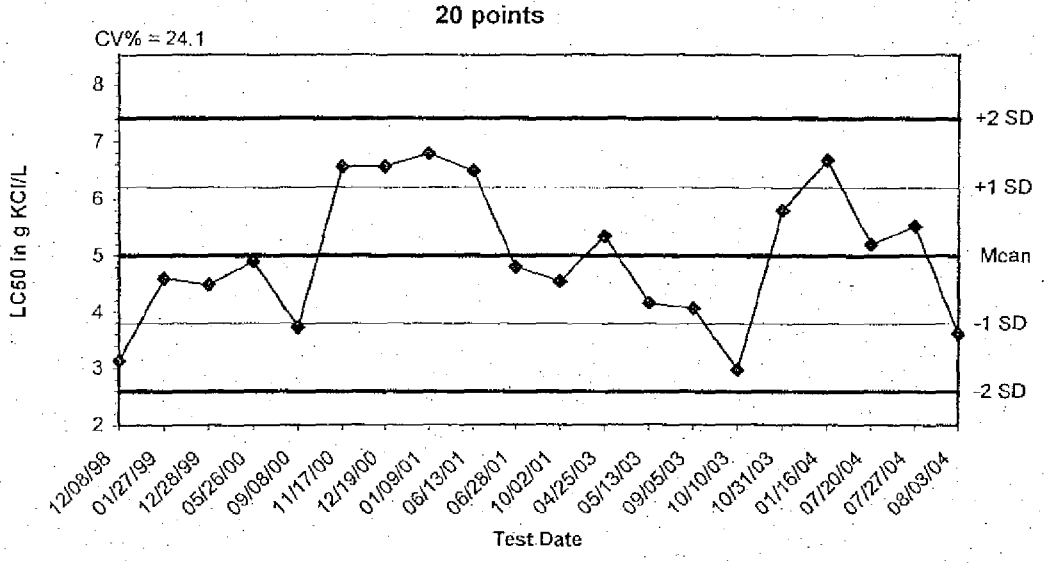
ANC09033
BZTO104(e)009033

Test: AT-Acute 96-hr Toxicity Test							Test ID: 999-1822		
Species: CT-Chironomus tentans							Protocol: EPAF 91-EPA Freshwater		
Sample ID: REF-Ref Toxicant							Sample Type: KCL-Potassium chloride		
Start Date: 8/10/04 12:30			End Date: 8/14/04 11:40				Lab ID: ORNAS-Northwestern Aquatic Sciences		
Pos	ID	Rep	Group	Start	24 Hr	48 Hr	72 Hr	96 Hr	Notes
	1	1	D-Control	10				9	
	2	1	1.250	10				9	
	3	1	2.500	10				8	
	4	1	5.000	10				7	
	5	1	10.000	10				0	
	6	1	20.000	10				0	

Comments: Data entry verified against laboratory bench sheets. MSR 8-20-04

ANC09034
BZTO104(e)009034

Chironomus tentans (3RD INSTAR) 96-hr reference toxicant test - last 20 points



Dates	Values	Mean	-1 SD	-2 SD	+1 SD	+2 SD
12/08/98	3.1400	4.9995	3.7955	2.5916	6.2035	7.4074
01/27/99	4.6000	4.9995	3.7955	2.5916	6.2035	7.4074
12/28/99	4.4900	4.9995	3.7955	2.5916	6.2035	7.4074
05/26/00	4.9000	4.9995	3.7955	2.5916	6.2035	7.4074
09/08/00	3.7300	4.9995	3.7955	2.5916	6.2035	7.4074
11/17/00	6.5600	4.9995	3.7955	2.5916	6.2035	7.4074
12/19/00	6.5700	4.9995	3.7955	2.5916	6.2035	7.4074
01/09/01	6.7900	4.9995	3.7955	2.5916	6.2035	7.4074
06/13/01	6.4900	4.9995	3.7955	2.5916	6.2035	7.4074
06/28/01	4.8000	4.9995	3.7955	2.5916	6.2035	7.4074
10/02/01	4.5500	4.9995	3.7955	2.5916	6.2035	7.4074
04/25/03	5.3400	4.9995	3.7955	2.5916	6.2035	7.4074
05/13/03	4.1600	4.9995	3.7955	2.5916	6.2035	7.4074
09/05/03	4.0600	4.9995	3.7955	2.5916	6.2035	7.4074
10/10/03	2.9800	4.9995	3.7955	2.5916	6.2035	7.4074
10/31/03	5.8000	4.9995	3.7955	2.5916	6.2035	7.4074
01/16/04	6.6800	4.9995	3.7955	2.5916	6.2035	7.4074
07/20/04	5.2000	4.9995	3.7955	2.5916	6.2035	7.4074
07/27/04	5.5300	4.9995	3.7955	2.5916	6.2035	7.4074
08/03/04	3.6200	4.9995	3.7955	2.5916	6.2035	7.4074

MSR
8-20-04

ANC09035
BZTO104(e)009035