APPENDICES

Contents

APPENDIX A.1 *Americamysis bahia* Water-Column Test

Shipyard Creek
Test Results for the 96-Hour Water-Column Test with *Americamysis bahia*

Treatment	Concentration	Replicate	Number Initiated	Number Surviving	Number Missing or Dead	Percentage Survival	Mean Percentage Survival	SD
Control	0%	1	10	10	0	100		
		2	10	8	2	80		
		3	10	10	0	100		
		4	10	10	0	100		
		5	10	10	0	100	96	9
Site Water	0%	1	10	9	1	90		
		2	10	10	0	100		
		3	10	10	0	100		
		4	10	9	1	90		
		5	10	9	1	90	94	5
SYC14-TB1	10%	1	10	10	0	100		
		2	10	9	1	90		
		3	10	10	0	100		
		4	10	9	1	90		
		5	10	9	1	90	94	5
SYC14-TB1	50%	1	10	5	5	50		
		2	10	8	2	80		
		3	10	6	4	60		
		4	10	7	3	70		
		5	10	9	1	90	70	16
SYC14-TB1	100%	1	10	0	10	0		
		2	10	0	10	0		
		3	10	0	10	0		
		4	10	0	10	0		
		5	10	0	10	0	0	0
SYC14-TB2	10%	1	10	10	0	100		
		2	10	10	0	100		
		3	10	10	0	100		
		4	10	6	4	60		
		5	10	9	1	90	90	17
SYC14-TB2	50%	1	10	6	4	60		
		2	10	5	5	50		
		3	10	8	2	80		
		4	10	9	1	90		
		5	10	5	5	50	66	18
SYC14-TB2	100%	1	10	0	10	0		
		2	10	0	10	0		
		3	10	0	10	0		
		4	10	0	10	0		
		5	10	0	10	0	0	0

Shipyard Creek
Test Results for the 96-Hour Water-Column Test with *Americamysis bahia*

Treatment	Concentration	Replicate	Number Initiated	Number Surviving	Number Missing or Dead	Percentage Survival	Mean Percentage Survival	SD
SYC14-AC	10%	1	10	9	1	90		
		2	10	10	0	100		
		3	10	10	0	100		
		4	10	9	1	90		
		5	10	9	1	90	94	5
SYC14-AC	50%	1	10	9	1	90		
		2	10	8	2	80		
		3	10	8	2	80		
		4	10	10	0	100		
		5	10	7	3	70	84	11
SYC14-AC	100%	1	10	0	10	0		
		2	10	0	10	0		
		3	10	1	9	10		
		4	10	0	10	0		
		5	10	0	10	0	2	4
SYC14-TB1-AR	10%	1	10	7	3	70		
		2	10	10	0	100		
		3	10	10	0	100		
		4	10	9	1	90		
		5	10	10	0	100	92	13
SYC14-TB1-AR	50%	1	10	9	1	90		
		2	10	10	0	100		
		3	10	10	0	100		
		4	10	8	2	80		
		5	10	9	1	90	92	8
SYC14-TB1-AR	100%	1	10	9	1	90		
		2	10	9	1	90		
		3	10	8	2	80		
		4	10	10	0	100		
		5	10	8	2	80	88	8

Shipyard Creek
Test Results for the 96-Hour Water-Column Test with *Americamysis bahia*

Treatment	Concentration	Replicate	Number Initiated	Number Surviving	Number Missing or Dead	Percentage Survival	Mean Percentage Survival	SD
SYC14-TB2-AR	10%	1	10	10	0	100		
		2	10	9	1	90		
		3	10	9	1	90		
		4	10	8	2	80		
		5	10	10	0	100	92	8
SYC14-TB2-AR	50%	1	10	10	0	100		
		2	10	10	0	100		
		3	10	9	1	90		
		4	10	10	0	100		
		5	10	10	0	100	98	4
SYC14-TB2-AR	100%	1	10	10	0	100		
		2	10	10	0	100		
		3	10	10	0	100		
		4	10	9	1	90		
		5	10	10	0	100	98	4
SYC14-AC-AR	10%	1	10	10	0	100		
		2	10	9	1	90		
		3	10	10	0	100		
		4	10	9	1	90		
		5	10	10	0	100	96	5
SYC14-AC-AR	50%	1	10	10	0	100		
		2	10	10	0	100		
		3	10	9	1	90		
		4	10	10	0	100		
		5	10	8	2	80	94	9
SYC14-AC-AR	100%	1	10	8	2	80		
		2	10	10	0	100		
		3	10	10	0	100		
		4	10	10	0	100		
		5	10	9	1	90	94	9

AR = Ammonia Reduced Elutriate

ENVIRON

96 HOUR WATER-COLUMN TEST

SPECIES	
Americamysis bahia	

CLIENT	PROJECT	JOB N0.	PROJECT MANAGER	LABORATORY	PROTOCOL
ANAMAR	Shipyard Creek		B. Hester	Port Gamble / Bath 8	USEPA/USCOE 1991

SURVIVAL & BEHAVIOR DATA

OBSERVATION KEY
N = normal
LOE= loss of equilibrium
Q = quiescent
DC = discoloration
NB = no body
F= Floating on Surface

INITIAL # OF ORGANISMS: 10

CLIENT/ ID	CONC. value	CONC. units	REP	INITIAL NUMBER	Day 1 DATE: 7/03/14 TECHNICIAN: JL			Day 2 DATE: 7/4 TECHNICIAN: MMB			Day 3 DATE: 7/05 TECHNICIAN: JL			Day 4 DATE: 7/06 TECHNICIAN: JL		
					#ALIVE	#DEAD	OBS	#ALIVE	#DEAD	OBS	#ALIVE	#DEAD	OBS	#ALIVE	#DEAD	OBS
Control /	0	%	1	10	10	0	N	10	0	N	10	0	N	10	0	N
			2		10	0		10	0		10	0		8	0	2NB
			3		10	0		10	0		10	0		10	0	N
			4		10	0		10	0		10	0		10	0	
			5		10	0		10	0		10	0		10	0	
Sitewater /	0	%	1		10	0	N	9	INB	N	9	0	N	9	0	N
			2		10	0		10	0		10	0		10	0	
			3		10	0		10	0		10	0		10	0	
			4		10	0		10	0		10	0		9	0	INB
			5		10	0		~~10~~ 9	~~0~~ INB		10	0		9	0	INB

① FB, #Alive = 10 MMB 7/4/14

ENVIRON

96 HOUR WATER-COLUMN TEST

CLIENT	PROJECT	JOB N0.	PROJECT MANAGER	SPECIES / LABORATORY	PROTOCOL
ANAMAR	Shipyard Creek		B. Hester	*Americamysis bahia* / Port Gamble / Bath 8	USEPA/USCOE 1991

SURVIVAL & BEHAVIOR DATA

OBSERVATION KEY
N = normal
LOE= loss of equilibrium
Q = quiescent
DC = discoloration
NB = no body
F= Floating on Surface

INITIAL # OF ORGANISMS: 10

CLIENT/ ID	CONC. value	CONC. units	REP	INITIAL NUMBER	Day 1 DATE: 7/03/14 TECHNICIAN: JL			Day 2 DATE: 7/4 TECHNICIAN: MMB			Day 3 DATE: 7/05 TECHNICIAN: JL			Day 4 DATE: 7/06 TECHNICIAN: JL		
					#ALIVE	#DEAD	OBS	#ALIVE	#DEAD	OBS	#ALIVE	#DEAD	OBS	#ALIVE	#DEAD	OBS
SYC14-AC /	10	%	1	10	10	0	2	9	1	N	9	0	2	9	0	2
			2		10	0		10	0		10	0		10	0	
			3		10	0		10	0		10	0		10	0	
			4		10	0		10	0		10	0		9	0	INB
			5		10	0		9	INB		9	0		9	0	2
SYC14-AC /	50	%	1		10	0	2	10	0	N	10	0	2	9	0	INB
			2		10	0		8	2NB		8	0		8	0	2
			3		10	0		10	0		10	0		8	0	2NB
			4		10	0		10	0		10	0		10	0	2
			5		10	0		10	0		10	0		7	1	2NB
SYC14-AC /	100	%	1		10	0	2	7	1,2NB	N	0	7	—	—	—	
			2		9	2	0	4	2,2NB	N	1	3	0	0	1	—
			3		10	0	2	3	4,3NB	Q	2	1		1	1	0
			4		4	5	0,INB	6	1	N	6	0		0	5	INB
			5		10	0	2	6	3,INB	N	1	5		0	1	—

ENVIRON

96 HOUR WATER-COLUMN TEST

SPECIES					
				Americamysis bahia	
CLIENT	PROJECT	JOB N0.	PROJECT MANAGER	LABORATORY	PROTOCOL
ANAMAR	Shipyard Creek		B. Hester	Port Gamble / Bath 8	USEPA/USCOE 1991

SURVIVAL & BEHAVIOR DATA

OBSERVATION KEY
N = normal
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INITIAL # OF ORGANISMS: 10

CLIENT/ ID	CONC. value	CONC. units	REP	INITIAL NUMBER	Day 1 DATE: 7/03/14 TECHNICIAN: JL			Day 2 DATE: 7/4 TECHNICIAN: MMB			Day 3 DATE: 7/05 TECHNICIAN: JL			Day 4 DATE: 7/06 TECHNICIAN: JL		
					#ALIVE	#DEAD	OBS	#ALIVE	#DEAD	OBS	#ALIVE	#DEAD	OBS	#ALIVE	#DEAD	OBS
SYC14-TB1 /	10	%	1	10	10	0	N	10	0	N	10	0	N	10	0	N
			2		10	0		10	0		10	0		9	0	1NB
			3		10	0		10	0		10	0		10	0	N
			4		10	0		9	1NB		9	0		9	0	
			5		10	0		9	1NB		9	0		9	0	
SYC14-TB1 /	50	%	1		10	0	N	9	1NB	N	9	0	N	5	2	2NB
			2		10	0		9	1NB		9	0		8	0	1NB
			3		10	0		9	1NB		9	0		6	2	1NB
			4		10	0		10	0		9	1		7	1	1NB
			5		10	0		10	0		9	1		9	0	N
SYC14-TB1 /	100	%	1		3	4	0 3NB	0	3	N						
			2		2	8	0	0	2							
			3		3	7	0	0	3							
			4		3	1	0 1 6NB	0	3							
			5		6	4	0	0	6							

ENVIRON

96 HOUR WATER-COLUMN TEST

CLIENT	PROJECT	JOB N0.	PROJECT MANAGER	SPECIES / LABORATORY	PROTOCOL
ANAMAR	Shipyard Creek		B. Hester	*Americamysis bahia* / Port Gamble / Bath 8	USEPA/USCOE 1991

SURVIVAL & BEHAVIOR DATA

OBSERVATION KEY
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DC = discoloration
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INITIAL # OF ORGANISMS: 10

CLIENT/ ID	CONC. value	CONC. units	REP	INITIAL NUMBER	Day 1 DATE: 7/03/14 TECHNICIAN: JL			Day 2 DATE: 7/4 TECHNICIAN: MMB			Day 3 DATE: 7/05 TECHNICIAN: JL			Day 4 DATE: 7/06 TECHNICIAN: JL		
					#ALIVE	#DEAD	OBS	#ALIVE	#DEAD	OBS	#ALIVE	#DEAD	OBS	#ALIVE	#DEAD	OBS
SYC14-TB2 /	10	%	1	10	10	0	N	10	0	N	10	0	N	10	0	N
			2		10	0		10	0		10	0		10	0	
			3		10	0		10	0		10	0		10	0	
			4		10	0		8	2NB		8	0		6	2	
			5		10	0		9	1NB		9	0		9	0	
SYC14-TB2 /	50	%	1		10	0	N	8	2NB	N	8	0	N	6	2	N
			2		10	0		10	0		10	0		5	3	2NB
			3		10	0		10	0		10	0		8	0	2NB
			4		10	0		10	0		10	0		9	0	1NB
			5		10	0		9	1NB		9	0		5	3	1NB
SYC14-TB2 /	100	%	1		5	4	0 1NB	0	5	N						
			2		5	5	0	0	5							
			3		5	5		0	5							
			4		6	3	0, 1NB	0	6							
			5		7	2	0, 1NB	0	7							

ENVIRON

96 HOUR WATER-COLUMN TEST

CLIENT	PROJECT	JOB NO.	PROJECT MANAGER	SPECIES	
				Americamysis bahia	
				LABORATORY	PROTOCOL
ANAMAR	Shipyard Creek		B. Hester	Port Gamble / Bath 8	USEPA/USCOE 1991

SURVIVAL & BEHAVIOR DATA

OBSERVATION KEY
N = normal
LOE= loss of equilibrium
Q = quiescent
DC = discoloration
NB = no body
F= Floating on Surface

INITIAL # OF ORGANISMS: 10

CLIENT/ ID	CONC. value	CONC. units	REP	INITIAL NUMBER	Day 1 DATE: 7/03/14 TECHNICIAN: JL			Day 2 DATE: 7/4 TECHNICIAN: MMB			Day 3 DATE: 7/05 TECHNICIAN: JL			Day 4 DATE: 7/06 TECHNICIAN: JL		
					#ALIVE	#DEAD	OBS	#ALIVE	#DEAD	OBS	#ALIVE	#DEAD	OBS	#ALIVE	#DEAD	OBS
SYC14-AC-AR /	10	%	1	10	10	0	N	10	0	N	10	0	N	10	0	N
			2		10	0		10	0		9	0	INB	9	0	
			3		10	0		10	0		10	0	N	10	0	
			4		9	1		9	0		9	0		9	0	
			5		10	0		10	0		10	0		10	0	
SYC14-AC-AR /	50	%	1		10	0	N	10	0	N	10	0		10	0	N
			2		10	0		10	0		10	0		10	0	
			3		10	0		10	0		10	0		9	0	INB
			4		10	0		10	0		10	0		10	0	N
			5		10	0		9	INB		9	0		8	0	INB
SYC14-AC-AR /	100	%	1		10	0	N	10	0	N	10	0		8	0	2NB
			2		10	0		10	0		10	0		10	0	N
			3		10	0		10	0		10	0		10	0	
			4		10	0		10	0		10	0		10	0	
			5		10	0		10	0		10	0		9	0	INB

(1) WC. JL 7/06/14

ENVIRON

96 HOUR WATER-COLUMN TEST

CLIENT	PROJECT	JOB N0.	PROJECT MANAGER	SPECIES	
				Americamysis bahia	
ANAMAR	Shipyard Creek		B. Hester	LABORATORY: Port Gamble / Bath 8	PROTOCOL: USEPA/USCOE 1991

SURVIVAL & BEHAVIOR DATA

OBSERVATION KEY
N = normal
LOE= loss of equilibrium
Q = quiescent
DC = discoloration
NB = no body
F= Floating on Surface

INITIAL # OF ORGANISMS: 10

CLIENT/ ID	CONC. value	CONC. units	REP	INITIAL NUMBER	Day 1 DATE: 7/03/14 TECHNICIAN: JL			Day 2 DATE: 7/4 TECHNICIAN: MMB			Day 3 DATE: 7/05 TECHNICIAN: JL			Day 4 DATE: 7/06 TECHNICIAN: JL		
					#ALIVE	#DEAD	OBS	#ALIVE	#DEAD	OBS	#ALIVE	#DEAD	OBS	#ALIVE	#DEAD	OBS
SYC14-TB1-AR /.	10 %		1	10	10	0	N	10	0	N	9	1	N	7	0	2NB
			2		10	0		10	0		10	0		10	0	N
			3		10	0		10	0		10	0		10	0	↓
			4		10	0		10	0		10	0		9	0	INB
			5		10	0	↓	10	0	↓	10	0		10	0	N
SYC14-TB1-AR /.	50 %		1		10	0	N	10	0	N	10	0		9	0	INB
			2		10	0		10	0		10	0		10	0	N
			3		10	0		10	0		10	0		10	0	↓
			4		9	1		9	0		9	0		8	0	INB
			5		10	0	↓	10	0	↓	10	0		9	0	INB
SYC14-TB1-AR /.	100 %		1		10	0	N	9	INB	N	9	0		9	0	N
			2		10	0		10	0		10	0		9	1	↓
			3		10	0		9	1		9	0		8	0	INB
			4		10	0		10	0		10	0		10	0	N
			5	↓	10	0	↓	10	0	↓	10	0	↓	8	0	2NB

ENVIRON

96 HOUR WATER-COLUMN TEST

SPECIES					
Americamysis bahia					
CLIENT	**PROJECT**	**JOB N0.**	**PROJECT MANAGER**	**LABORATORY**	**PROTOCOL**
ANAMAR	Shipyard Creek		B. Hester	Port Gamble / Bath 8	USEPA/USCOE 1991

SURVIVAL & BEHAVIOR DATA

OBSERVATION KEY
N = normal
LOE= loss of equilibrium
Q = quiescent
DC = discoloration
NB = no body
F= Floating on Surface

INITIAL # OF ORGANISMS: 10

				Day 1			Day 2			Day 3			Day 4		
				DATE: 7/03/14			DATE: 7/04			DATE: 7/05			DATE: 7/06		
				TECHNICIAN: JL			TECHNICIAN: MMB			TECHNICIAN: JL			TECHNICIAN: JL		
CLIENT/ ID	CONC. value	CONC. units	REP	INITIAL NUMBER	#ALIVE	#DEAD	OBS	#ALIVE	#DEAD	OBS	#ALIVE	#DEAD	OBS	#ALIVE	#DEAD	OBS
SYC14-TB2-AR /.	10	%	1	10	10	0	N	10	0	N	10	0	N	10	0	N
			2		10	0		10	0		10	0		9	0	1NB
			3		10	0		10	0		10	0		9	0	1NB
			4		10	0		10	0		10	0		8	0	2NB
			5		10	0		10	0		10	0		10	0	N
SYC14-TB2-AR /.	50	%	1		10	0	N	10	0	N	10	0		10	0	N
			2		10	0		10	0		10	0		10	0	
			3		9	1		9	0		9	0		9	0	
			4		10	0		10	0		10	0		10	0	
			5		10	0		10	0		10	0		10	0	
SYC14-TB2-AR /.	100	%	1		10	0	N	10	0	N	10	0		10	0	N
			2		10	0		10	0		10	0		10	0	
			3		10	0		10	0		10	0		10	0	
			4		10	0		9	1NB		9	0		9	0	
			5		10	0		10	0		10	0		10	0	

ENVIRON

96 HOUR WATER-COLUMN TEST
WATER QUALITY DATASHEET

CLIENT	PROJECT	SPECIES	DILUTION WATER BATCH	TEST START DATE	TIME
ANAMAR	Shipyard Creek	*Americamysis bahia*	FSW070214.01	02Jul14	1550
ENVIRON JOB NUMBER	**PROJECT MANAGER**	**ENVIRON LABORATORY**	**PROTOCOL**	**TEST END DATE**	**TIME**
0	B. Hester	Port Gamble Bath 1	SERIM / ENVIRON SED064	06Jul14	1640

WATER QUALITY DATA

CLIENT/ NEWFIELDS ID	CONCENTRATION value	CONCENTRATION units	DAY	REP	DO (mg/L) >4.6 D.O. meter	DO (mg/L) >4.6 D.O. mg/L	TEMP (C) 20 ± 1 TEMP. meter	TEMP (C) 20 ± 1 TEMP. °C	SALINITY (ppt) 28 ± 2 SALINITY meter	SALINITY (ppt) 28 ± 2 SALINITY ppt	pH 7.8 ± 0.5 pH meter	pH 7.8 ± 0.5 pH unit	Total Ammonia (mg/L)	Date	Tech	FEEDING AM	FEEDING PM
Control /	0	%	0	Stock	6	8.6	2	20.9	2	30	6	7.8	0.00	7/2	MMB		JL
Control /	0	%	1	1	6	6.9	6	21.1	2	30	6	7.8		7/3/14	KMB	JL	HE
Control /	0	%	2	2	8	7.2	8	20.4	8	30	5	7.9		7/4	HE		
Control /	0	%	2	Renewal Stock	5	7.5	5	20.0	5	30	5	8.0	0.00	7/4	HE		
Control /	0	%	3	3	8	7.1	8	21.8	8	30	8	8.0		7/05	JL		
Control /	0	%	4	4	8	6.5	8	22.6	8	30	8	7.8	0.0038	7/06	JL		
Site Water / .	0	%	0	Stock	6	8.1	2	20.9	2	29	6	7.9	0.00	7/2	MMB		JL
Site Water / .	0	%	1	1	6	7.0	6	21.0	2	28	6	7.9		7/3/14	KMB	JL	HE
Site Water / .	0	%	2	2	5	7.2	5	20.6	5	27250①	5	7.9		7/4	HE		
Site Water / .	0	%	2	Renewal Stock	8	7.6	8	20.9	8	27	8	8.0	0.00	7/4	HE		
Site Water / .	0	%	3	3	8	7.2	8	21.5	8	27	8	8.0		7/05	JL		
Site Water / .	0	%	4	4	8	6.8	8	22.4	8	27	8	7.9	0.0043	7/06	JL		

① IE HE 7/4

ENVIRON

96 HOUR WATER-COLUMN TEST
WATER QUALITY DATASHEET

CLIENT	PROJECT	SPECIES	DILUTION WATER BATCH	TEST START DATE	TIME
ANAMAR	Shipyard Creek	*Americamysis bahia*	FSW070214.01	02Jul14	1550
ENVIRON JOB NUMBER	**PROJECT MANAGER**	**ENVIRON LABORATORY**	**PROTOCOL**	**TEST END DATE**	**TIME**
0	B. Hester	Port Gamble Bath 1	SERIM / ENVIRON SED064	06Jul14	1640

WATER QUALITY DATA

TEST CONDITIONS					DO (mg/L) >4.6		TEMP (C) 20 ± 1		SALINITY (ppt) 28 ± 2		pH 7.8 ± 0.5					FEEDING	
CLIENT/ NEWFIELDS ID	CONCENTRATION value	CONCENTRATION units	DAY	REP	D.O. meter	D.O. mg/L	TEMP. meter	TEMP. °C	SALINITY meter	SALINITY ppt	pH meter	pH unit	Total Ammonia (mg/L)	Date	Tech	AM	PM
SYC14-AC / .	10	%	0	Stock	6	8.2	2	19.5	2	30	6	7.7	0.446	7/2	MMB		JL
SYC14-AC / .	10	%	1	1	6	7.1	6	21.0	2	30	6	7.8		7/3/14	KB	JL	HE
SYC14-AC / .	10	%	2	2	8	6.8	8	20.7	8	~~30~~ 29	8	8.0		7/4	HE	HE	→
SYC14-AC / .	10	%	2	Renewal Stock	8	7.5	8	20.1	8	29	8	8.0	1.43	7/4	HE		
SYC14-AC / .	10	%	3	3	8	7.0	8	21.5	8	29	8	8.0		7/05	JL	→	
SYC14-AC / .	10	%	4	4	8	6.8	8	22.3	8	30	8	8.0	1.25	7/06	JL	→	
SYC14-AC / .	50	%	0	Stock	6	8.6	2	20.8	2	28	6	7.8	3.42	7/2	MMB		JL
SYC14-AC / .	50	%	1	1	6	7.0	6	21.0	2	29	6	8.0		7/3/14	KB	JL	HE
SYC14-AC / .	50	%	2	2	8	6.9	8	20.6	8	29	8	7.9		7/4	HE	→	
SYC14-AC / .	50	%	2	Renewal Stock	8	7.7	8	19.3	8	28	8	8.0	6.88	7/4	HE		
SYC14-AC / .	50	%	3	3	8	7.0	8	21.5	8	28	8	8.1		7/05	JL	→	
SYC14-AC / .	50	%	4	4	8	6.9	8	22.5	8	29	8	8.2	5.27	7/06	JL	→	
SYC14-AC / .	100	%	0	Stock	6	7.7	2	20.1	2	27	6	8.0	8.03	7/2	MMB		JL
SYC14-AC / .	100	%	1	1	6	7.0	6	20.9	2	27	6	8.1		7/3/14	KMB	JL	HE
SYC14-AC / .	100	%	2	2	8	6.7	8	20.4	8	27	8	8.2		7/4	HE	→	
SYC14-AC / .	100	%	2	Renewal Stock	8	8.1	8	20.3	8	26	8	8.0	16.3	7/4	HE		
SYC14-AC / .	100	%	3	3	8	7.0	8	21.7	8	27	8	8.2		7/05	JL	→	
SYC14-AC / .	100	%	4	4	8	6.8	8	22.6	8	27	8	8.3	12.1	7/06	JL	→	

(1) Effective

ENVIRON

96 HOUR WATER-COLUMN TEST
WATER QUALITY DATASHEET

CLIENT	PROJECT	SPECIES	DILUTION WATER BATCH	TEST START DATE	TIME
ANAMAR	Shipyard Creek	*Americamysis bahia*	FSW070214.01	02Jul14	1550
ENVIRON JOB NUMBER	**PROJECT MANAGER**	**ENVIRON LABORATORY**	**PROTOCOL**	**TEST END DATE**	**TIME**
0	B. Hester	Port Gamble Bath 1	SERIM / ENVIRON SED064	06Jul14	1640

WATER QUALITY DATA

TEST CONDITIONS					DO (mg/L) >4.6		TEMP (C) 20 ± 1		SALINITY (ppt) 28 ± 2		pH 7.8 ± 0.5					FEEDING	
CLIENT/ NEWFIELDS ID	CONCENTRATION value	CONCENTRATION units	DAY	REP	D.O. meter	D.O. mg/L	TEMP. meter	TEMP. °C	SALINITY meter	SALINITY ppt	pH meter	pH unit	Total Ammonia (mg/L)	Date	Tech	AM	PM
SYC14-TB1 / .	10	%	0	Stock	6	8.5	2	19.1	2	30	6	7.8	0.361	7/2	MMB		JL
SYC14-TB1 / .	10	%	1	1	6	7.2	6	20.9	2	30	6	7.9		7/3/14	KB	JL	TE
SYC14-TB1 / .	10	%	2	2	8	6.9	8	20.6	8	30	8	8.1		7/4	TE	→	→
SYC14-TB1 / .	10	%	2	Renewal Stock	8	7.6	8	19.9	8	29	8	8.0	1.72	7/4	TE		
SYC14-TB1 / .	10	%	3	3	8	6.7	8	21.4	8	29	8	8.1		7/05	JL	→	→
SYC14-TB1 / .	10	%	4	4	8	6.7	8	22.6	8	30	8	8.1	2.10	7/06	JL	→	
SYC14-TB1 / .	50	%	0	Stock	6	8.6	2	20.4	2	29	6	7.7	4.23	7/2	MMB		JL
SYC14-TB1 / .	50	%	1	1	6	7.0	6	21.0	2	29	6	8.1		7/3/14	KB	JL	TE
SYC14-TB1 / .	50	%	2	2	8	6.9	8	20.4	8	29	8	8.2		7/4	TE	→	→
SYC14-TB1 / .	50	%	2	Renewal Stock	8	7.7	8	19.5	8	28	8	8.0	7.62	7/4	TE		
SYC14-TB1 / .	50	%	3	3	8	6.9	8	21.6	8	28	8	8.2		7/05	JL	→	→
SYC14-TB1 / .	50	%	4	4	8	6.8	8	22.8	8	29	8	8.2	8.68	7/06	JL	→	
SYC14-TB1 / .	100	%	0	Stock	6	8.3	2	20.4	2	27	6	8.0	13.3	7/2	MMB		JL
SYC14-TB1 / .	100	%	1	1	6	6.9	6	21.0	2	27	6	8.1		7/3/14	KB	JL	TE
SYC14-TB1 / .	100	%	2	2	8	7.0	8	20.4	8	27	8	8.3		7/4	TE	→	→
SYC14-TB1 / .	100	%	2	Renewal Stock	8	8.0	8	21.0	8	27	8	8.0	19.2	7/4	TE		
SYC14-TB1 / .	100	%	3	3													
SYC14-TB1 / .	100	%	4	4													

ENVIRON

96 HOUR WATER-COLUMN TEST
WATER QUALITY DATASHEET

CLIENT	PROJECT	SPECIES	DILUTION WATER BATCH	TEST START DATE	TIME
ANAMAR	Shipyard Creek	*Americamysis bahia*	FSW070214.01	02Jul14	1550
ENVIRON JOB NUMBER	**PROJECT MANAGER**	**ENVIRON LABORATORY**	**PROTOCOL**	**TEST END DATE**	**TIME**
0	B. Hester	Port Gamble Bath 1	SERIM / ENVIRON SED064	06Jul14	1640

WATER QUALITY DATA

TEST CONDITIONS			DAY	REP	DO (mg/L) >4.6		TEMP (C) 20 ± 1		SALINITY (ppt) 28 ± 2		pH 7.8 ± 0.5		Total Ammonia (mg/L)	Date	Tech	FEEDING	
CLIENT/ NEWFIELDS ID	CONCENTRATION value	CONCENTRATION units			D.O. meter	D.O. mg/L	TEMP. meter	TEMP. °C	SALINITY meter	SALINITY ppt	pH meter	pH unit				AM	PM
SYC14-TB2 / .	10 %		0	Stock	6	8.3	2	19.1	2	30	6	7.8	0.878	7/2	MMB		JL
SYC14-TB2 / .	10 %		1	1	6	7.1	6	20.9	2	30	6	7.9		7/3/14	KB	HE	JL
SYC14-TB2 / .	10 %		2	2	5	7.0	8	20.6	8	30	8	8.0		7/4	HE		→
SYC14-TB2 / .	10 %		2	Renewal Stock	8	7.7	8	20.0	8	29	8	8.0	2.49	7/4	HE		
SYC14-TB2 / .	10 %		3	3	8	6.7	8	21.6	8	30	8	8.1		7/05	JL		→
SYC14-TB2 / .	10 %		4	4	8	6.6	8	22.5	8	30	8	8.1	1.92	7/06	JL	→	
SYC14-TB2 / .	50 %		0	Stock	6	8.7	2	19.3	2	28	6	7.9	4.74	7/2	MMB		JL
SYC14-TB2 / .	50 %		1	1	6	7.2	6	20.7	2	29	6	8.1		7/3/14	KMB	HE	JL
SYC14-TB2 / .	50 %		2	2	8	6.9	8	20.6	8	29	8	7.9		7/4	HE		→
SYC14-TB2 / .	50 %		2	Renewal Stock	8	7.8	8	19.5	8	28	8	7.9	~~11.30~~ ①	7/4	HE		
SYC14-TB2 / .	50 %		3	3	8	6.9	8	21.7	8	29	8	8.2		7/05	JL		→
SYC14-TB2 / .	50 %		4	4	8	② —	8	② —	8	② —	8	②	7.08	7/06	JL	→	
SYC14-TB2 / .	100 %		0	Stock	6	8.1	2	21.0	2	27	6	8.0	11.3	7/2	MMB		
SYC14-TB2 / .	100 %		1	1	6	6.9	6	20.9	2	27	6	8.1		7/3/14	KMB		
SYC14-TB2 / .	100 %		2	2	8	6.7	8	20.4	8	27	8	8.2		7/4	HE		
SYC14-TB2 / .	100 %		2	Renewal Stock	8	8.1	8	20.9	8	27	8	8.0	24.2	7/4	HE		
SYC14-TB2 / .	100 %		3	3													
SYC14-TB2 / .	100 %		4	4													

① real value: ~~2.49~~ 9.88 HE 7/7

② WQ not recorded. JL 7/06/14.

ENVIRON

96 HOUR WATER-COLUMN TEST
WATER QUALITY DATASHEET

CLIENT	PROJECT	SPECIES	DILUTION WATER BATCH	TEST START DATE	TIME
ANAMAR	Shipyard Creek	*Americamysis bahia*	FSW070214.01	02Jul14	1550
ENVIRON JOB NUMBER	**PROJECT MANAGER**	**ENVIRON LABORATORY**	**PROTOCOL**	**TEST END DATE**	**TIME**
0	B. Hester	Port Gamble Bath 1	SERIM / ENVIRON SED064	06Jul14	1640

WATER QUALITY DATA

TEST CONDITIONS			DAY	REP	DO (mg/L) >4.6		TEMP (C) 20 ± 1		SALINITY (ppt) 28 ± 2		pH 7.8 ± 0.5		Total Ammonia (mg/L)	Date	Tech	FEEDING	
CLIENT/ NEWFIELDS ID	CONCENTRATION				D.O.		TEMP.		SALINITY		pH						
	value	units			meter	mg/L	meter	°C	meter	ppt	meter	unit				AM	PM
SYC14-AC-AR / .	10	%	0	Stock	6	8.3	2	20.8	2	30	6	7.7	0.0138	7/2	MMB		JL
SYC14-AC-AR / .	10	%	1	1	6	7.1	6	21.0	2	30	6	7.8		7/3/14	KMB	JL	HE
SYC14-AC-AR / .	10	%	2	2	8	7.0	8	20.1	8	30	8	7.9		7/4	HE	→	
SYC14-AC-AR / .	10	%	2	Renewal Stock	8	7.7	8	20.0	8	29	8	8.0	0.00	7/4	HE		
SYC14-AC-AR / .	10	%	3	3	8	6.9	8	21.7	8	30	8	8.1		7/05	JL	→	
SYC14-AC-AR / .	10	%	4	4	8	6.6	8	22.6	8	30	8	8.0	0.0971	7/06	JL	→	
SYC14-AC-AR / .	50	%	0	Stock	6	7.8	2	21.0	2	29	6	7.8	0.00	7/2	MMB		JL
SYC14-AC-AR / .	50	%	1	1	6	7.0	6	20.9	2	29	6	7.8		7/3/14	KMB	JL	HE
SYC14-AC-AR / .	50	%	2	2	8	7.0	8	20.2	8	29	8	7.9		7/4	HE	→	
SYC14-AC-AR / .	50	%	2	Renewal Stock	8	7.8	8	19.4	8	28	8	8.0	0.00	7/4	HE		
SYC14-AC-AR / .	50	%	3	3	8	7.1	8	21.6	8	29	8	8.0		7/05	JL	→	
SYC14-AC-AR / .	50	%	4	4	8	6.8	8	22.8	8	29	8	8.0	0.0612	7/06	JL	→	
SYC14-AC-AR / .	100	%	0	Stock	6	5.4	2	20.5	2	27	6	7.8	0.00	7/2	MMB		JL
SYC14-AC-AR / .	100	%	1	1	6	6.8	6	21.0	2	28	6	7.8		7/3/14	KMB	JL	HE
SYC14-AC-AR / .	100	%	2	2	8	6.8	8	20.3	8	28	8	7.9		7/4	HE	→	
SYC14-AC-AR / .	100	%	2	Renewal Stock	8	8.2	8	19.7	8	27	8	7.9	0.00	7/4	HE		
SYC14-AC-AR / .	100	%	3	3	8	6.8	8	21.4	8	28	8	8.0		7/05	JL	→	
SYC14-AC-AR / .	100	%	4	4	8	6.7	8	23.1	8	28	8	7.9	0.198	7/06	JL	→	

ENVIRON

96 HOUR WATER-COLUMN TEST
WATER QUALITY DATASHEET

CLIENT	PROJECT	SPECIES	DILUTION WATER BATCH	TEST START DATE	TIME
ANAMAR	Shipyard Creek	*Americamysis bahia*	FSW070214.01	02Jul14	1550
ENVIRON JOB NUMBER	**PROJECT MANAGER**	**ENVIRON LABORATORY**	**PROTOCOL**	**TEST END DATE**	**TIME**
0	B. Hester	Port Gamble Bath 1	SERIM / ENVIRON SED064	06Jul14	1640

WATER QUALITY DATA

TEST CONDITIONS				DO (mg/L) >4.6		TEMP (C) 20 ± 1		SALINITY (ppt) 28 ± 2		pH 7.8 ± 0.5		Total Ammonia (mg/L)	Date	Tech	FEEDING	
				D.O.		TEMP.		SALINITY		pH						
CLIENT/ NEWFIELDS ID	CONCENTRATION value	CONCENTRATION units	DAY	REP	meter	mg/L	meter	°C	meter	ppt	meter	unit				AM	PM
SYC14-TB1-AR / .	10 %		0	Stock	6	8.4	2	20.5	2	30	6	7.7	0.00	7/2	MMB		JL
SYC14-TB1-AR / .	10 %		1	1	6	7.2	6	20.9	2	30	6	7.8		7/3/14	KMB	JL	HE
SYC14-TB1-AR / .	10 %		2	2	8	7.0	8	20.1	8	30	8	7.9		7/4	HE		→
SYC14-TB1-AR / .	10 %		2	Renewal Stock	8	7.7	8	19.7	8	29	8	8.0	0.00	7/4	HE		
SYC14-TB1-AR / .	10 %		3	3	8	6.6	8	21.5	8	30	8	8.0		7/05	JL		→
SYC14-TB1-AR / .	10 %		4	4	8	6.5	8	22.7	8	30	8	7.9	0.0153	7/06	JL	→	
SYC14-TB1-AR / .	50 %		0	Stock	6	8.0	2	21.0	2	29	6	7.8	0.00	7/2	MMB		JL
SYC14-TB1-AR / .	50 %		1	1	6	7.0	6	21.0	2	29	6	7.8		7/3/14	KMB	JL	HE
SYC14-TB1-AR / .	50 %		2	2	8	6.8	8	20.4	8	29	8	7.9		7/4	HE		→
SYC14-TB1-AR / .	50 %		2	Renewal Stock	8	7.9	8	19.1	8	28	8	8.0	0.0424	7/4	HE		
SYC14-TB1-AR / .	50 %		3	3	8	6.9	8	21.7	8	29	8	8.0		7/05	JL		→
SYC14-TB1-AR / .	50 %		4	4	8	6.6	8	22.8	8	29	8	7.9	0.225	7/06	JL	→	
SYC14-TB1-AR / .	100 %		0	Stock	6	5.7	2	20.7	2	28	6	7.8	0.00	7/2	MMB		JL
SYC14-TB1-AR / .	100 %		1	1	6	7.0	6	20.8	2	28	6	7.8		7/3/14	KMB	JL	HE
SYC14-TB1-AR / .	100 %		2	2	8	6.9	8	20.4	8	28	8	7.9		7/4	HE		→
SYC14-TB1-AR / .	100 %		2	Renewal Stock	8	8.0	8	20.0	8	27	8	7.9	0.314	7/4	HE		
SYC14-TB1-AR / .	100 %		3	3	8	6.8	8	21.6	8	28	8	8.0		7/05	JL		→
SYC14-TB1-AR / .	100 %		4	4	8	6.6	8	23.0	8	28	8	7.9	0.393	7/06	JL	→	

ENVIRON

96 HOUR WATER-COLUMN TEST
WATER QUALITY DATASHEET

CLIENT	PROJECT	SPECIES	DILUTION WATER BATCH	TEST START DATE	TIME
ANAMAR	Shipyard Creek	*Americamysis bahia*	FSW070214.01	02Jul14	1550
ENVIRON JOB NUMBER	**PROJECT MANAGER**	**ENVIRON LABORATORY**	**PROTOCOL**	**TEST END DATE**	**TIME**
0	B. Hester	Port Gamble Bath 1	SERIM / ENVIRON SED064	06Jul14	1640

WATER QUALITY DATA

TEST CONDITIONS				DO (mg/L) >4.6		TEMP (C) 20 ± 1		SALINITY (ppt) 28 ± 2		pH 7.8 ± 0.5					FEEDING	
CLIENT/ NEWFIELDS ID	CONCENTRATION value	CONCENTRATION units	DAY	REP	D.O. meter	D.O. mg/L	TEMP. meter	TEMP. °C	SALINITY meter	SALINITY ppt	pH meter	pH unit	Total Ammonia (mg/L)	Date	Tech	AM	PM
SYC14-TB2-AR /.	10 %		0	Stock	6	8.3	2	19.8	2	30	6	7.8	0.00	7/2	MMB		JL
SYC14-TB2-AR /.	10 %		1	1	6	7.2	6	20.9	2	30	6	7.8		7/3/14	KMB	JL	TE
SYC14-TB2-AR /.	10 %		2	2	8	6.9	8	20.2	8	30	8	7.9		7/4	TE		→
SYC14-TB2-AR /.	10 %		2	Renewal Stock	8	7.7	8	19.9	8	29	8	8.0	0.00	7/4	TE		
SYC14-TB2-AR /.	10 %		3	3	8	6.8	8	21.7	8	30	8	8.0		7/05	JL		→
SYC14-TB2-AR /.	10 %		4	4	8	6.7	8	22.7	8	30	8	7.9	0.0526	7/06	JL	→	
SYC14-TB2-AR /.	50 %		0	Stock	6	8.0	2	20.8	2	29	6	7.8	0.00	7/2	MMB		JL
SYC14-TB2-AR /.	50 %		1	1	6	7.0	6	20.9	2	①7.29	6	7.8		7/3/14	KMB	JL	TE
SYC14-TB2-AR /.	50 %		2	2	8	7.0	8	20.3	8	29	8	7.9		7/4	TE		→
SYC14-TB2-AR /.	50 %		2	Renewal Stock	8	7.9	8	19.1	8	28	8	8.0	②0.273	7/4	TE		
SYC14-TB2-AR /.	50 %		3	3	8	6.9	8	21.5	8	29	8	8.0		7/05	JL		→
SYC14-TB2-AR /.	50 %		4	4	8	6.7	8	22.7	8	29	8	7.9	0.377	7/06	JL	→	
SYC14-TB2-AR /.	100 %		0	Stock	6	5.6	2	20.3	2	28	6	7.7	0.0329	7/2	MMB		JL
SYC14-TB2-AR /.	100 %		1	1	6	6.9	6	21.0	2	28	8	7.8		7/3/14	KMB	JL	TE
SYC14-TB2-AR /.	100 %		2	2	8	6.7	8	20.4	8	28	8	7.9		7/4	TE		→
SYC14-TB2-AR /.	100 %		2	Renewal Stock	8	8.2	8	20.1	8	27	8	7.9	0.736	7/4	TE		
SYC14-TB2-AR /.	100 %		3	3	8	6.9	8	21.3	8	28	8	8.0		7/05	JL		→
SYC14-TB2-AR /.	100 %		4	4	8	6.7	8	22.8	8	28	9	7.9	0.706	7/06	JL	→	

① WC. KMB. 07102114
② Illegible 0.273 TE 717

ENVIRON

ELUTRIATE PREPARTION WORKSHEET

DATE:	CLIENT:	PROJECT:
7/2/14	ANAMAR	Shipyard Creek

ELUTRIATE PREPARED FOR: (CIRCLE OR DESCRIBE)

(MYSID ACUTE) (FISH ACUTE) LARVAL DEVELOPMENT OTHER_____

DILUENT SOURCE: (Y/N)

PROJECT SITE WATER y LABORATORY WATER_____

CLIENT ID:	LAB ID:
SYC14.SW	P140610.01

STANDARD ELUTRIATE IS PREPARED AT 1 PART SEDIMENT TO 4 PARTS WATER

ELUTRIATE RATIO SELECTED:	1:4
TOTAL VOLUME OF ELUTRIATE PREPARATION VESSEL:	1000 mL
VOLUME OF SEDIMENT PER SAMPLE:	180 mL
VOLUME OF DILUENT:	720 mL
TOTAL NUMBER OF PREPARTION VESSELS PER SAMPLE:	5

# Cont's	SAMPLE:	TIME SPIN START:	TIME SETTLE START:	TIME OF ELUTRIATE COLLECTION:	VOLUME RECOVERED:	CENTRIFUGED (Y/N)
5	TS·1	0835	0905	0930	~5 L	y
↓	TS·2	↓	↓	↓	↓	↓
↓	AC	↓	↓	↓	↓	↓
↓	TS·1 AR	0905	0935	1000	↓	↓
↓	TS·2AR	↓	↓	↓	↓	↓
↓	AC AR	↓	↓	↓	↓	↓

ENVIRON

ORGANISM RECEIPT LOG

Date:	Time:	Batch No.
7/1/14	1230	ABS 7201

Organism / Project:	Source:
A. bahia	Aquatic Bio Systems

Address:	Invoice Attached
on file	Yes (No)

Phone:	Contact:
on file	on file

No. Ordered:	No. Received:	Source Batch:
1700	1870	6/29/14

Condition of Organisms:	Approximate Size or Age:
Good	2 days

Shipper:	B of L (Tracking No.)
Fedex UPS	1Z F473R01 9577 7201

Condition of Container:	Received By:
Good	

Container	D.O. (mg/L)	Temp. (°C)	Conductivity or Salinity (Include Units)	pH (Units)	Technician (Initials)
1	11.6	24.0	32 ppt	6.9	
2	11.6	23.8	32 ppt	6.8	↓

Notes:

1300 Blue Spruce Drive, Suite C
Fort Collins, Colorado 80524

Toll Free: 800/331-5916
Tel: 970/484-5091 Fax:970/484-2514

ORGANISM HISTORY

DATE: 6/30/2014

SPECIES: *Americamysis bahia* (formerly Mysidopsis)

AGE: 1 day

LIFE STAGE: Juvenile

HATCH DATE: 6/29/2014

BEGAN FEEDING: Immediately

FOOD: *Artemia* sp.

Water Chemistry Record:	**Mean**	**Range**
TEMPERATURE:	25°C	23-26 °C
SALINITY/CONDUCTIVITY:	25 ppt	21-30 ppt
TOTAL HARDNESS (as $CaCO_3$):	--	--
TOTAL ALKALINITY (as $CaCO_3$):	145 mg/l	130-170 mg/l
pH:	7.75	7.62-8.23

Comments:

Facility Supervisor

ENVIRON

MAINTENANCE LOG FOR CULTURES

ORGANISM: Mysid
LOCATION: Bath 6

Batch Number: ABS 7201 | Date Received: 7/1/14

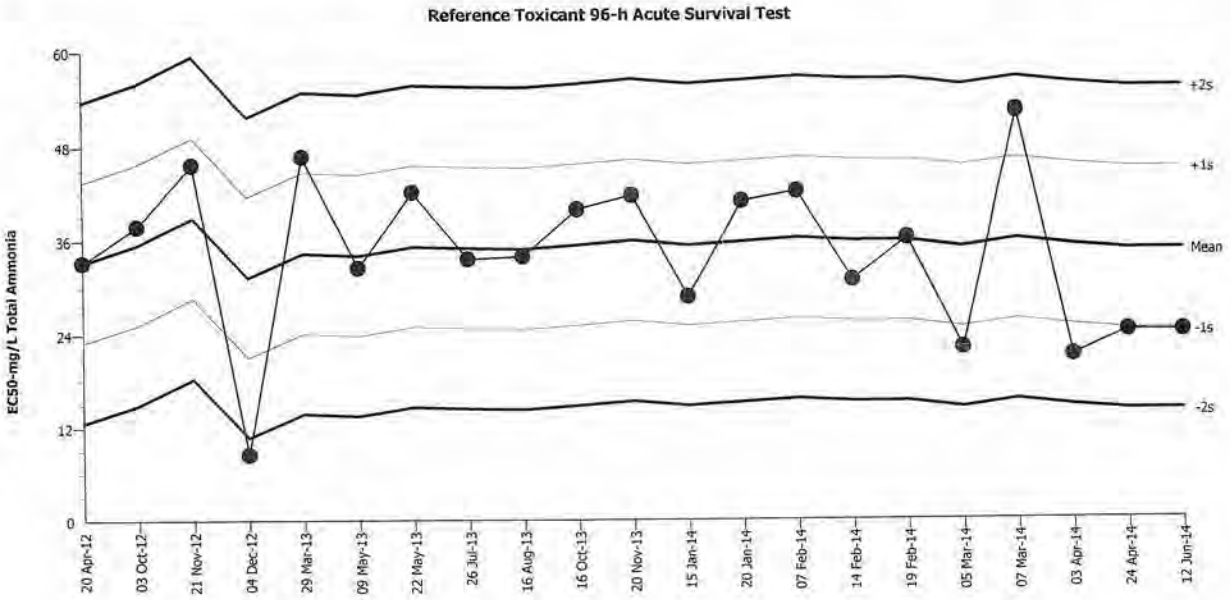
Date	Feed AM	Feed PM	Tub No.	D.O.	Temp (°C)	Cond/ Sal	pH	H_2O Change	No. Dead	NH_3	Init.
7/1/14		X	1	6.4	21.4	30	7.5	+ 25ppt	—	—	↓
↓		X	2	6.5	21.5	30	7.4	+25ppt	—	—	↓
7/2/14	X		1	8.0	20.7	30	7.8	N	—	—	BH
↓	X		2	7.8	20.8	31	7.6	N	—	—	↓

CETIS QC Plot

Report Date: 10 Jul-14 10:58 (1 of 1)

Reference Toxicant 96-h Acute Survival Test — All Matching Labs

Test Type:	Survival	**Organism:**	Americamysis bahia (Atlantic Mysid)	**Material:**	Total Ammonia
Protocol:	EPA/821/R-02-012 (2002)	**Endpoint:**	Proportion Survived	**Source:**	Reference Toxicant-REF



Mean:	34.7	**Count:**	20	**-1s Warning Limit:**	24.43	**-2s Action Limit:**	14.16
Sigma:	10.27	**CV:**	29.60%	**+1s Warning Limit:**	44.97	**+2s Action Limit:**	55.24

Quality Control Data

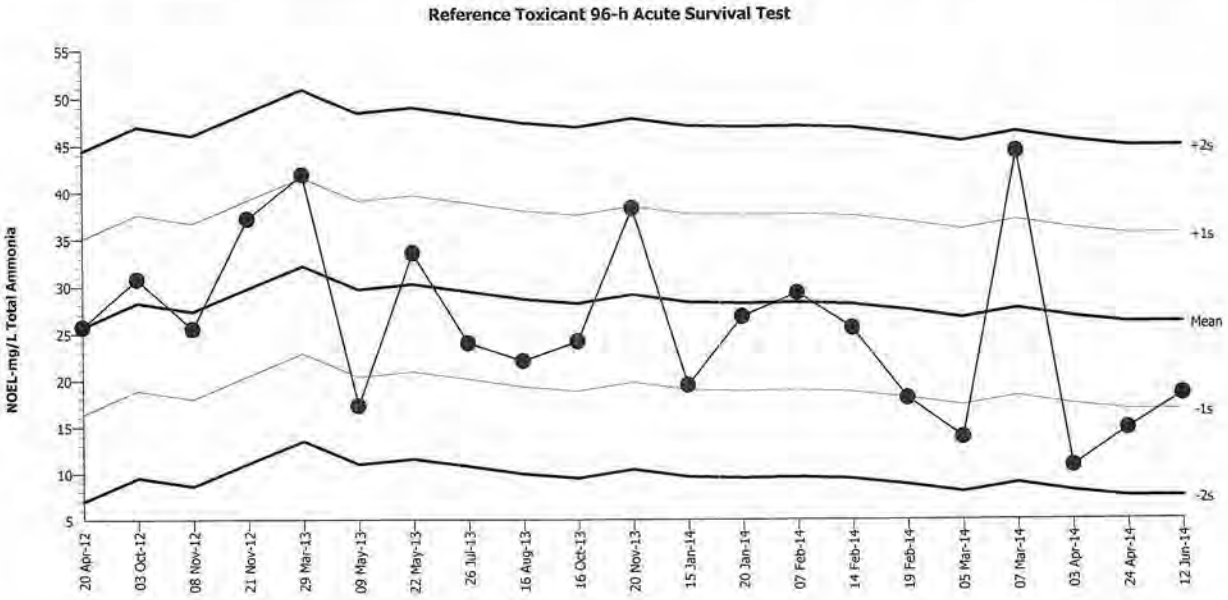
Point	Year	Month	Day	Time	QC Data	Delta	Sigma	Warning	Action	Test ID	Analysis ID	Laboratory
1	2012	Apr	20	16:15	33.19	-1.51	-0.147			01-4991-3815	15-9267-8227	NewFields
2		Oct	3	17:30	37.78	3.082	0.3001			17-4181-6907	12-8416-1482	NewFields
3		Nov	21	16:15	45.67	10.97	1.068	(+)		13-7797-8750	15-5284-2792	NewFields
4		Dec	4	15:00	8.506	-26.19	-2.551	(-)	(-)	09-2916-0329	09-1278-2633	NewFields
5	2013	Mar	29	16:00	46.69	11.99	1.167	(+)		09-5280-7777	15-4155-1511	NewFields
6		May	9	16:30	32.5	-2.198	-0.214			00-6559-1335	13-1442-8916	NewFields
7			22	11:50	42.09	7.394	0.7199			16-8626-7737	15-9199-1613	NewFields
8		Jul	26	18:10	33.63	-1.072	-0.1043			00-6289-6815	19-7660-3839	NewFields
9		Aug	16	16:00	33.96	-0.7389	-0.07195			11-6472-8917	02-9301-5891	NewFields
10		Oct	16	18:00	39.88	5.183	0.5047			13-7694-6121	13-1634-3118	NewFields
11		Nov	20	15:50	41.61	6.906	0.6724			18-3235-9369	18-9059-0151	NewFields
12	2014	Jan	15	19:25	28.75	-5.953	-0.5797			13-0307-4674	16-4052-1808	NewFields
13			20	16:45	40.82	6.124	0.5963			06-6902-5900	08-9895-6951	NewFields
14		Feb	7	16:40	42.02	7.317	0.7125			00-6517-4037	09-5248-5452	NewFields
15			14	15:00	30.87	-3.829	-0.3728			01-2256-4126	16-7076-6406	NewFields
16			19	17:45	36.23	1.533	0.1493			10-3491-7656	13-8215-9008	NewFields
17		Mar	5	18:05	22.11	-12.59	-1.226	(-)		06-0811-4275	13-6817-0658	NewFields
18			7	15:45	52.34	17.64	1.718	(+)		08-9612-3433	11-8446-6591	NewFields
19		Apr	3	18:25	21.11	-13.59	-1.324	(-)		15-6202-6343	06-5272-0912	NewFields
20			24	16:10	24.25	-10.45	-1.018	(-)		03-1824-4795	06-7906-5636	NewFields
21		Jun	12	15:55	24.18	-10.52	-1.024	(-)		13-1309-3316	05-6450-0852	ENVIRON

CETIS QC Plot

Report Date: 10 Jul-14 10:58 (1 of 1)

Reference Toxicant 96-h Acute Survival Test — **All Matching Labs**

Test Type:	Survival	**Organism:**	Americamysis bahia (Atlantic Mysid)	**Material:**	Total Ammonia
Protocol:	EPA/821/R-02-012 (2002)	**Endpoint:**	Proportion Survived	**Source:**	Reference Toxicant-REF



Mean:	26.18	**Count:**	20	**-1s Warning Limit:**	16.83	**-2s Action Limit:**	7.479
Sigma:	9.353	**CV:**	35.70%	**+1s Warning Limit:**	35.54	**+2s Action Limit:**	44.89

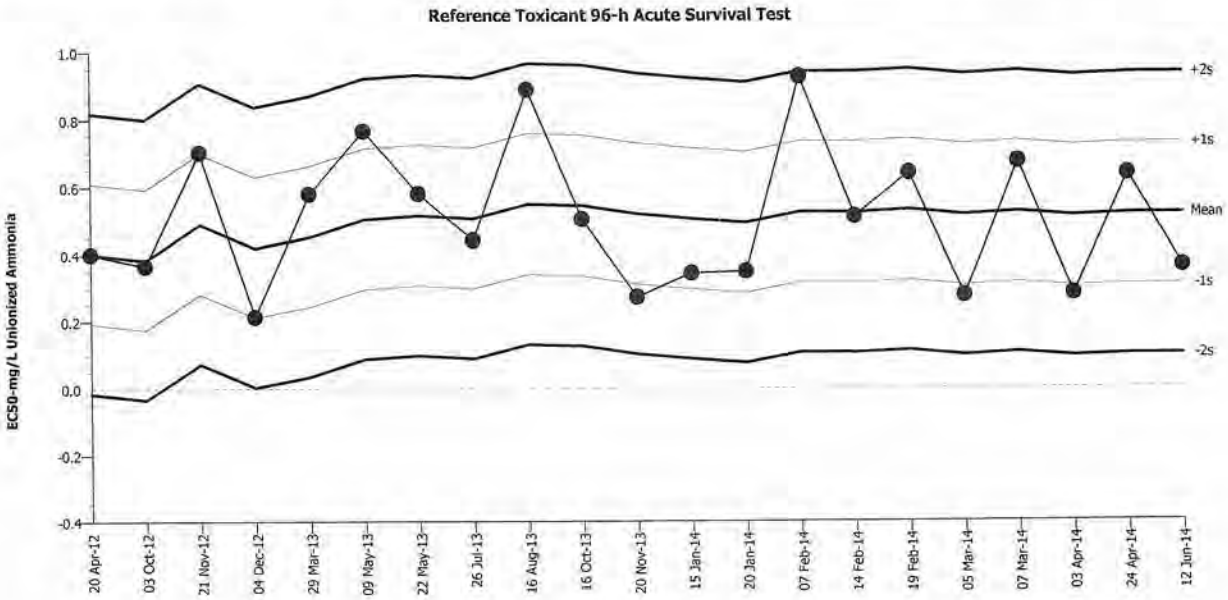
Quality Control Data

Point	Year	Month	Day	Time	QC Data	Delta	Sigma	Warning	Action	Test ID	Analysis ID	Laboratory
1	2012	Apr	20	16:15	25.7	-0.48	-0.05132			01-4991-3815	04-6855-5414	NewFields
2		Oct	3	17:30	30.8	4.62	0.494			17-4181-6907	11-2468-3245	NewFields
3		Nov	8	16:30	25.5	-0.68	-0.0727			00-7233-3435	12-1979-9484	NewFields
4			21	16:15	37.2	11.02	1.178	(+)		13-7797-8750	20-4087-6937	NewFields
5	2013	Mar	29	16:00	41.9	15.72	1.681	(+)		09-5280-7777	01-6350-1611	NewFields
6		May	9	16:30	17.3	-8.88	-0.9494			00-6559-1335	18-8726-8367	NewFields
7			22	11:50	33.6	7.42	0.7933			16-8626-7737	02-0537-4965	NewFields
8		Jul	26	18:10	24	-2.18	-0.2331			00-6289-6815	07-9062-3428	NewFields
9		Aug	16	16:00	22.1	-4.08	-0.4362			11-6472-8917	19-2692-9685	NewFields
10		Oct	16	18:00	24.2	-1.98	-0.2117			13-7694-6121	18-9823-4811	NewFields
11		Nov	20	15:50	38.3	12.12	1.296	(+)		18-3235-9369	18-1202-5897	NewFields
12	2014	Jan	15	19:25	19.5	-6.68	-0.7142			13-0307-4674	16-5529-9454	NewFields
13			20	16:45	26.8	0.62	0.06629			06-6902-5900	14-0402-3582	NewFields
14		Feb	7	16:40	29.3	3.12	0.3336			00-6517-4037	10-4607-7007	NewFields
15			14	15:00	25.6	-0.58	-0.06201			01-2256-4126	11-1785-1663	NewFields
16			19	17:45	18.1	-8.08	-0.8639			10-3491-7656	03-8558-2127	NewFields
17		Mar	5	18:05	13.9	-12.28	-1.313	(-)		06-0811-4275	15-5506-2963	NewFields
18			7	15:45	44.3	18.12	1.937	(+)		08-9612-3433	09-1259-2863	NewFields
19		Apr	3	18:25	10.8	-15.38	-1.644	(-)		15-6202-6343	15-6650-9676	NewFields
20			24	16:10	14.8	-11.38	-1.217	(-)		03-1824-4795	18-5519-6082	NewFields
21		Jun	12	15:55	18.5	-7.68	-0.8211			13-1309-3316	11-3938-3675	ENVIRON

CETIS QC Plot

Reference Toxicant 96-h Acute Survival Test — **All Matching Labs**

Test Type:	Survival	**Organism:**	Americamysis bahia (Atlantic Mysid)	**Material:**	Unionized Ammonia
Protocol:	EPA/821/R-02-012 (2002)	**Endpoint:**	Proportion Survived	**Source:**	Reference Toxicant-REF



Mean:	0.5175	**Count:**	20	**-1s Warning Limit:**	0.3091	**-2s Action Limit:**	0.1007
Sigma:	0.2084	**CV:**	40.30%	**+1s Warning Limit:**	0.7259	**+2s Action Limit:**	0.9343

Quality Control Data

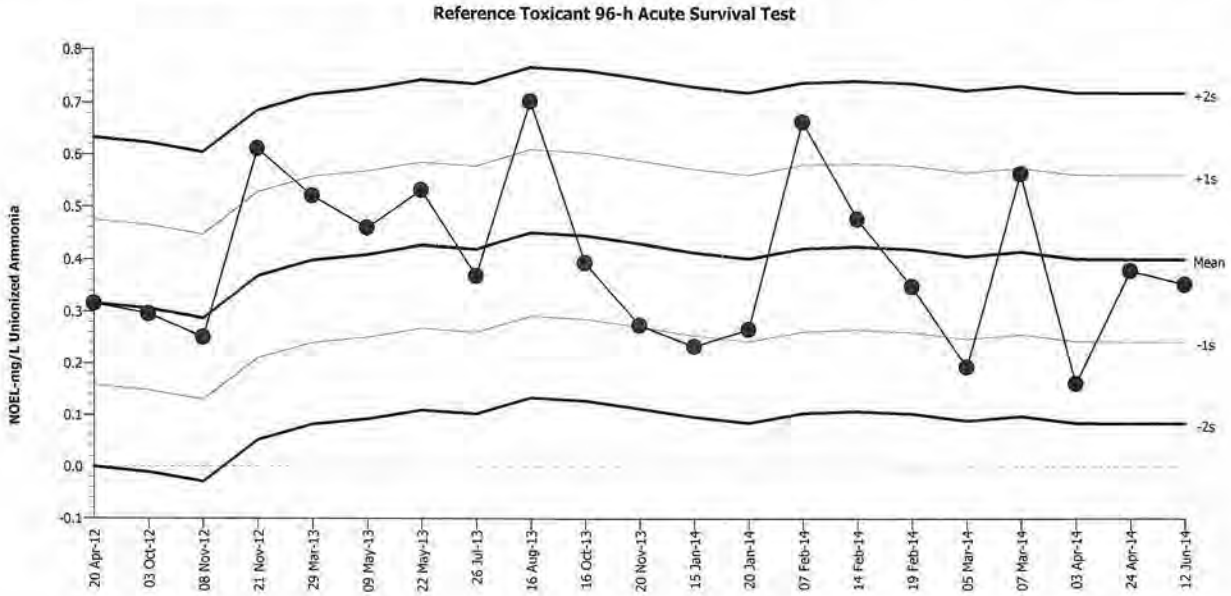
Point	Year	Month	Day	Time	QC Data	Delta	Sigma	Warning	Action	Test ID	Analysis ID	Laboratory
1	2012	Apr	20	16:15	0.4015	-0.116	-0.5565			04-8512-6186	19-3818-5020	NewFields
2		Oct	3	17:30	0.3662	-0.1513	-0.7262			16-7035-7588	16-9881-1319	NewFields
3		Nov	21	16:15	0.7017	0.1842	0.8841			03-3789-1371	01-2436-4560	NewFields
4		Dec	4	15:00	0.2134	-0.3041	-1.459	(-)		05-7872-2266	13-0902-8811	NewFields
5	2013	Mar	29	16:00	0.5794	0.06195	0.2973			18-2277-6297	16-9599-8914	NewFields
6		May	9	16:30	0.7654	0.2479	1.189	(+)		18-2970-9952	16-2259-8392	NewFields
7			22	11:50	0.5801	0.06255	0.3001			14-6493-3472	05-6360-6461	NewFields
8		Jul	26	18:10	0.4427	-0.0748	-0.3589			19-7248-3361	04-0785-8543	NewFields
9		Aug	16	16:00	0.8884	0.3709	1.78	(+)		01-3117-4348	16-1737-6048	NewFields
10		Oct	16	18:00	0.5047	-0.01285	-0.06165			08-0727-6779	17-3460-2468	NewFields
11		Nov	20	15:50	0.2731	-0.2444	-1.173	(-)		04-5029-3711	15-6559-6723	NewFields
12	2014	Jan	15	19:25	0.3446	-0.1729	-0.8297			03-1509-9195	01-4918-0037	NewFields
13			20	16:45	0.3496	-0.1679	-0.8058			14-1556-9198	05-1071-2882	NewFields
14		Feb	7	16:40	0.9254	0.4079	1.957	(+)		02-7518-2916	02-7923-5475	NewFields
15			14	15:00	0.5109	-0.00659	-0.03161			04-3795-6902	03-5710-9614	NewFields
16			19	17:45	0.6384	0.1209	0.5803			03-6922-1085	21-3491-2200	NewFields
17		Mar	5	18:05	0.2773	-0.2402	-1.153	(-)		19-2814-6370	19-1123-6959	NewFields
18			7	15:45	0.672	0.1545	0.7414			14-4314-4064	12-3571-7864	NewFields
19		Apr	3	18:25	0.2816	-0.2359	-1.132	(-)		03-3486-5708	18-6758-9525	NewFields
20			24	16:10	0.6343	0.1168	0.5604			01-9832-6489	11-5036-9768	NewFields
21		Jun	12	15:55	0.3637	-0.1538	-0.7382			10-4549-4385	15-3904-7423	ENVIRON

CETIS QC Plot

Report Date: 10 Jul-14 11:02 (1 of 1)

Reference Toxicant 96-h Acute Survival Test — **All Matching Labs**

Test Type:	Survival	**Organism:**	Americamysis bahia (Atlantic Mysid)	**Material:**	Unionized Ammonia
Protocol:	EPA/821/R-02-012 (2002)	**Endpoint:**	Proportion Survived	**Source:**	Reference Toxicant-REF



Mean:	0.4005	**Count:**	20	**-1s Warning Limit:**	0.2422	**-2s Action Limit:**	0.08405
Sigma:	0.1582	**CV:**	39.50%	**+1s Warning Limit:**	0.5587	**+2s Action Limit:**	0.7168

Quality Control Data

Point	Year	Month	Day	Time	QC Data	Delta	Sigma	Warning	Action	Test ID	Analysis ID	Laboratory
1	2012	Apr	20	16:15	0.316	-0.0845	-0.5341			04-8512-6186	15-4008-8416	NewFields
2		Oct	3	17:30	0.296	-0.1045	-0.6606			16-7035-7588	05-8857-2012	NewFields
3		Nov	8	16:30	0.251	-0.1495	-0.945			13-9124-2660	10-7731-9871	NewFields
4			21	16:15	0.611	0.2105	1.331	(+)		03-3789-1371	20-2596-1098	NewFields
5	2013	Mar	29	16:00	0.52	0.1195	0.7554			18-2277-6297	01-5767-6666	NewFields
6		May	9	16:30	0.459	0.0585	0.3698			18-2970-9952	10-3024-7327	NewFields
7			22	11:50	0.531	0.1305	0.8249			14-6493-3472	14-9177-1776	NewFields
8		Jul	26	18:10	0.369	-0.0315	-0.1991			19-7248-3361	20-6060-1515	NewFields
9		Aug	16	16:00	0.702	0.3015	1.906	(+)		01-3117-4348	00-7230-4827	NewFields
10		Oct	16	18:00	0.394	-0.0065	-0.04109			08-0727-6779	01-7961-5305	NewFields
11		Nov	20	15:50	0.275	-0.1255	-0.7933			04-5029-3711	12-0847-6137	NewFields
12	2014	Jan	15	19:25	0.234	-0.1665	-1.052	(-)		03-1509-9195	14-5177-7859	NewFields
13			20	16:45	0.267	-0.1335	-0.8439			14-1556-9198	13-9131-5531	NewFields
14		Feb	7	16:40	0.662	0.2615	1.653	(+)		02-7518-2916	15-1888-1587	NewFields
15			14	15:00	0.476	0.0755	0.4772			04-3795-6902	08-0606-7457	NewFields
16			19	17:45	0.349	-0.0515	-0.3255			03-6922-1085	00-0373-4704	NewFields
17		Mar	5	18:05	0.194	-0.2065	-1.305	(-)		19-2814-6370	11-9578-8435	NewFields
18			7	15:45	0.562	0.1615	1.021	(+)		14-4314-4064	10-6381-5799	NewFields
19		Apr	3	18:25	0.162	-0.2385	-1.508	(-)		03-3486-5708	11-7117-8030	NewFields
20			24	16:10	0.379	-0.0215	-0.1359			01-9832-6489	16-9093-3166	NewFields
21		Jun	12	15:55	0.353	-0.0475	-0.3003			10-4549-4385	07-2736-3202	ENVIRON

CETIS Summary Report

Reference Toxicant 96-h Acute Survival Test **ENVIRON**

Batch ID:	20-8731-0427	**Test Type:**	Survival	**Analyst:**	
Start Date:	12 Jun-14 15:55	**Protocol:**	EPA/821/R-02-012 (2002)	**Diluent:**	Laboratory Seawater
Ending Date:	16 Jun-14 17:09	**Species:**	Americamysis bahia	**Brine:**	Not Applicable
Duration:	4d 1h	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	02-6471-8995	**Code:**	FC74A93	**Client:**	Internal Lab
Sample Date:	05 May-14	**Material:**	Total Ammonia	**Project:**	Reference Toxicant
Receive Date:	05 May-14	**Source:**	Reference Toxicant		
Sample Age:	38d 16h	**Station:**	p140505.06		

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
11-3938-3675	Proportion Survived	18.5	23.2	20.72	27.7%		Dunnett Multiple Comparison Test

Point Estimate Summary

Analysis ID	Endpoint	Level	mg/L	95% LCL	95% UCL	TU	Method
05-6450-0852	Proportion Survived	EC50	24.18	22.69	25.77		Trimmed Spearman-Kärber

Proportion Survived Summary

C-mg/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Dilution Water	4	0.95	0.7909	1	0.8	1	0.05	0.1	10.53%	0.0%
18.5		4	0.8	0.5402	1	0.6	1	0.08165	0.1633	20.41%	15.79%
23.2		4	0.575	0.1368	1	0.3	0.9	0.1377	0.2754	47.89%	39.47%
32.4		4	0	0	0	0	0	0	0		100.0%
42.7		4	0	0	0	0	0	0	0		100.0%
62		4	0	0	0	0	0	0	0		100.0%

Proportion Survived Detail

C-mg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Water	1	0.8	1	1
18.5		0.6	0.8	1	0.8
23.2		0.9	0.3	0.7	0.4
32.4		0	0	0	0
42.7		0	0	0	0
62		0	0	0	0

Proportion Survived Binomials

C-mg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Water	10/10	8/10	10/10	10/10
18.5		6/10	8/10	10/10	8/10
23.2		9/10	3/10	7/10	4/10
32.4		0/10	0/10	0/10	0/10
42.7		0/10	0/10	0/10	0/10
62		0/10	0/10	0/10	0/10

CETIS Test Data Worksheet

Reference Toxicant 96-h Acute Survival Test **ENVIRON**

Start Date:	12 Jun-14 15:55	**Species:** Americamysis bahia	**Sample Code:** FC74A93
End Date:	16 Jun-14 17:09	**Protocol:** EPA/821/R-02-012 (2002)	**Sample Source:** Reference Toxicant
Sample Date:	05 May-14	**Material:** Total Ammonia	**Sample Station:** p140505.06

C-mg/L	Code	Rep	Pos	# Exposed	# Survived	Notes
0	D	1	12	10	10	
0	D	2	5	10	8	
0	D	3	21	10	10	
0	D	4	15	10	10	
18.5		1	20	10	6	
18.5		2	24	10	8	
18.5		3	2	10	10	
18.5		4	14	10	8	
23.2		1	22	10	9	
23.2		2	18	10	3	
23.2		3	6	10	7	
23.2		4	8	10	4	
32.4		1	11	10	0	
32.4		2	3	10	0	
32.4		3	23	10	0	
32.4		4	17	10	0	
42.7		1	19	10	0	
42.7		2	4	10	0	
42.7		3	7	10	0	
42.7		4	10	10	0	
62		1	16	10	0	
62		2	13	10	0	
62		3	9	10	0	
62		4	1	10	0	

CETIS Summary Report

Reference Toxicant 96-h Acute Survival Test **ENVIRON**

Batch ID:	20-8731-0427	**Test Type:**	Survival	**Analyst:**	
Start Date:	12 Jun-14 15:55	**Protocol:**	EPA/821/R-02-012 (2002)	**Diluent:**	Laboratory Seawater
Ending Date:	16 Jun-14 17:09	**Species:**	Americamysis bahia	**Brine:**	Not Applicable
Duration:	4d 1h	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	11-9934-1239	**Code:**	477C7EB7	**Client:**	Internal Lab
Sample Date:	05 May-14	**Material:**	Unionized Ammonia	**Project:**	Reference Toxicant
Receive Date:	05 May-14	**Source:**	Reference Toxicant		
Sample Age:	38d 16h	**Station:**	p140505.06		

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
07-2736-3202	Proportion Survived	0.353	0.3531	0.353	27.7%		Dunnett Multiple Comparison Test

Point Estimate Summary

Analysis ID	Endpoint	Level	mg/L	95% LCL	95% UCL	TU	Method
15-3904-7423	Proportion Survived	EC50	0.3637	0.359	0.3684		Trimmed Spearman-Kärber

Proportion Survived Summary

C-mg/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Dilution Water	4	0.95	0.7909	1	0.8	1	0.05	0.1	10.53%	0.0%
0.353		4	0.8	0.5402	1	0.6	1	0.08165	0.1633	20.41%	15.79%
0.3531		4	0.575	0.1368	1	0.3	0.9	0.1377	0.2754	47.89%	39.47%
0.399		4	0	0	0	0	0	0	0		100.0%
0.631		4	0	0	0	0	0	0	0		100.0%
0.66		4	0	0	0	0	0	0	0		100.0%

Proportion Survived Detail

C-mg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Water	1	0.8	1	1
0.353		0.6	0.8	1	0.8
0.3531		0.9	0.3	0.7	0.4
0.399		0	0	0	0
0.631		0	0	0	0
0.66		0	0	0	0

Proportion Survived Binomials

C-mg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Water	10/10	8/10	10/10	10/10
0.353		6/10	8/10	10/10	8/10
0.3531		9/10	3/10	7/10	4/10
0.399		0/10	0/10	0/10	0/10
0.631		0/10	0/10	0/10	0/10
0.66		0/10	0/10	0/10	0/10

CETIS Test Data Worksheet

Reference Toxicant 96-h Acute Survival Test — **ENVIRON**

Start Date:	12 Jun-14 15:55	**Species:**	Americamysis bahia
End Date:	16 Jun-14 17:09	**Protocol:**	EPA/821/R-02-012 (2002)
Sample Date:	05 May-14	**Material:**	Unionized Ammonia
Sample Code:	477C7EB7		
Sample Source:	Reference Toxicant		
Sample Station:	p140505.06		

C-mg/L	Code	Rep	Pos	# Exposed	# Survived	Notes
0	D	1	8	10	10	
0	D	2	9	10	8	
0	D	3	6	10	10	
0	D	4	7	10	10	
0.353		1	11	10	6	
0.353		2	1	10	8	
0.353		3	16	10	10	
0.353		4	13	10	8	
0.3531		1	5	10	9	
0.3531		2	22	10	3	
0.3531		3	4	10	7	
0.3531		4	23	10	4	
0.399		1	20	10	0	
0.399		2	12	10	0	
0.399		3	3	10	0	
0.399		4	14	10	0	
0.631		1	21	10	0	
0.631		2	19	10	0	
0.631		3	18	10	0	
0.631		4	2	10	0	
0.66		1	24	10	0	
0.66		2	10	10	0	
0.66		3	15	10	0	
0.66		4	17	10	0	

Analyst: _____ QA: _____

ENVIRON

96-Hour *Americamysis bahia* Reference Toxicant Test

Test ID: P140505.06	Replicates: 3	Study Director: B. Hesley	Location: Bath 3
Dilution Water Batch: PSW00612/19.01	Organism Batch: 3247C535	Associated Test(s): POAK	No. of Organisms: 10
Toxicant: Ammonium chloride	Lot Number: ~~ABSBAT 799~~ 1E	Date Dilutions Prepared: 6/12/14	Initials: JL
Target Concentrations: 65, 45.5, 31.85, 22.3, 15.6 ppm	Quantity of Stock: Target: See Spiking Worksheet / Actual:	Quantity of Diluent: Target: 1000 ~~750~~ mL / Actual:	

0 Hours	Date: 6/12/14	WQ Time: 1345	Initials: MK	Start Time: 1555	Initials: MMB

STOCK

	Control	15.6	22.3	31.85	45.5	65
D.O. (mg/L)	6.8	7.0	7.3	7.3	7.3	7.3
Temperature	19.0	19.0	19.0	19.2	19.2	19.7
Salinity	29	29	29	29	29	29
pH	7.8	7.8	7.7	7.6	7.7	7.5

24 Hours	Date: 6/13/14	WQ Time: 0930	Replicate: 1	Initials: JL

STOCK

	Control	15.6	22.3	31.85	45.5	65
D.O. (mg/L)	6.9	7.5	7.3	7.4	7.3	7.5
Temperature	19.9	19.8	19.9	19.8	19.8	20.0
Salinity	29	29	29	29	29	29
pH	7.8	7.8	7.8	7.7	7.7	7.7

24 Hours	Date: 6/13/14	Time: 1000	Initials: MK

	Control	15.6	22.3	31.85	45.5	65
No. Alive Rep 1	10	9(1)	10	10	6(4)	4(6)
No. Alive Rep 2	10	10	10	10	9(1)	2(8)
No. Alive Rep 3	10	10	10	7(3)	10	1(9)
No. Alive Rep 4	10	10	10	7(3)	9(1)	6(4)

96-Hour *Americamysis bahia*
Reference Toxicant Test

48 Hours	Date: 6/14/14	WQ Time: 1330	Replicate: 2	Initials: JL

STOCK

	Control	15.6	22.3	31.85	45.5	65
D.O. (mg/L)	5.2	6.2	6.5	6.3	6.4	6.9
Temperature	20.0	20.0	20.0	20.0	19.9	19.9
Salinity	29	29	29	29	29	30
pH	7.7	7.8	7.8	7.8	7.8	7.7

48 Hours	Date: 6/14	Time: 1505	Initials: JL

	Control	15.6	22.3	31.85	45.5	65
No. Alive Rep 1	10	7(2)	10	3(6,1NB)	0(6)	0(4)
No. Alive Rep 3-2	8(2)	8(2)	10	2(8)	1(8)	0(2)
No. Alive Rep 3	9(1NB)	10	10	0(9)	3(7)	0(1)
No. Alive Rep 4	10	9(1)	7(3)	1(6)	2(9)	0(6)

72 Hours	Date: 6/15	WQ Time: 1225	Replicate: 3	Initials: JL

STOCK

	Control	15.6	22.3	(D) 31.85	45.5	65
D.O. (mg/L)	5.8	6.5	6.8	7.2	7.6	
Temperature	20.3	20.3	20.3	20.4	20.4	
Salinity	30	29	29	29	29	
pH	7.6	7.7	7.7	7.8	7.8	

72 Hours	Date:	Time:	Initials:

	Control	15.6	22.3	31.85	45.5	65
No. Alive Rep 1	10	6(1)	10	0(3)	—	
No. Alive Rep 2	8	8	3(3,2NB)	0(2)	0(1)	
No. Alive Rep 3	10(FB)	10	10	—	0(3)	
No. Alive Rep 4	10	8(1NB)	6(1NB)	0(1)	0(2)	

(D) Rep 1 JL 6/15

96-Hour *Americamysis bahia*
Reference Toxicant Test

96 Hours	Date: 6/16	WQ Time: 1000	Replicate: 4	Initials:

STOCK

	Control	15.6	22.3	31.85	45.5	65
D.O. (mg/L)	6.3	6.2	6.5			
Temperature	19.9	19.9	20.0			
Salinity	31	30	30			
pH	7.7	7.7	7.8			

96 Hour Survival Data	End Time: 1709		Initials: CR/Hu

	Control	15.6	22.3	31.85	45.5	65
No. Alive Rep 1	10	6	9(1)			
No. Alive Rep 2	8	8	3			
No. Alive Rep 3	10	10	7(3NB)			
No. Alive Rep 4	10	8	4(1, 1NB)			

☒ Pass ☐ Fail

ENVIRON **Ammonia Reference Toxicant Spiking Worksheet**

Mysid NH_3 RT

Assumptions in Model
Stock ammonia concentration is 9,000 mg/L = 9 mg/mL

Actual Reading
10277

Test Solutions			Volume of stock to reach desired concentration	
Measured Concentration	**Desired Concentration**	**Volume**		
mg/L	mg/L	mL	mL stock to increase	
0.0764	**0**	1000	[redacted]	SALT WATER
18.5	**15.6**	1000		**2.277**
~~18.5~~ 23.2 ①	**22.3**	1000		**3.255**
32.4	**31.85**	1000		**4.649**
42.7	**45.5**	1000		**6.641**
62.0	**65**	1000		**9.487**

① WC. MK 6/12

APPENDIX A.2 *Menidia beryllina* Water-Column Test

Shipyard Creek
Test Results for the 96-Hour Water-Column Test with *Menidia beryllina*

Treatment	Concentration	Replicate	Number Initiated	Number Surviving	Number Missing or Dead	Percentage Survival	Mean Percentage Survival	SD
Control	0%	1	10	9	1	90		
		2	10	10	0	100		
		3	10	10	0	100		
		4	10	7	3	70		
		5	10	9	1	90	90	12
Site Water	0%	1	10	7	3	70		
		2	10	10	0	100		
		3	10	9	1	90		
		4	10	10	0	100		
		5	10	10	0	100	92	13
SYC14-TB1	10%	1	10	9	1	90		
		2	10	10	0	100		
		3	10	10	0	100		
		4	10	9	1	90		
		5	10	9	1	90	94	5
SYC14-TB1	50%	1	10	0	10	0		
		2	10	0	10	0		
		3	10	0	10	0		
		4	10	0	10	0		
		5	10	0	10	0	0	0
SYC14-TB1	100%	1	10	0	10	0		
		2	10	0	10	0		
		3	10	0	10	0		
		4	10	0	10	0		
		5	10	0	10	0	0	0
SYC14-TB2	10%	1	10	7	3	70		
		2	10	10	0	100		
		3	10	8	2	80		
		4	10	10	0	100		
		5	10	7	3	70	84	15
SYC14-TB2	50%	1	10	0	10	0		
		2	10	0	10	0		
		3	10	0	10	0		
		4	10	0	10	0		
		5	10	0	10	0	0	0
SYC14-TB2	100%	1	10	0	10	0		
		2	10	0	10	0		
		3	10	0	10	0		
		4	10	0	10	0		
		5	10	0	10	0	0	0

Shipyard Creek
Test Results for the 96-Hour Water-Column Test with *Menidia beryllina*

Treatment	Concentration	Replicate	Number Initiated	Number Surviving	Number Missing or Dead	Percentage Survival	Mean Percentage Survival	SD
SYC14-AC	10%	1	10	7	3	70		
		2	10	10	0	100		
		3	10	9	1	90		
		4	10	9	1	90		
		5	10	10	0	100	90	12
SYC14-AC	50%	1	10	3	7	30		
		2	10	0	10	0		
		3	10	2	8	20		
		4	10	4	6	40		
		5	10	0	10	0	18	18
SYC14-AC	100%	1	10	0	10	0		
		2	10	0	10	0		
		3	10	0	10	0		
		4	10	0	10	0		
		5	10	0	10	0	0	0
SYC14-TB1-AR	10%	1	10	10	0	100		
		2	10	10	0	100		
		3	10	9	1	90		
		4	10	9	1	90		
		5	10	7	3	70	90	12
SYC14-TB1-AR	50%	1	10	10	0	100		
		2	10	10	0	100		
		3	10	9	1	90		
		4	10	10	0	100		
		5	10	10	0	100	98	4
SYC14-TB1-AR	100%	1	10	10	0	100		
		2	10	10	0	100		
		3	10	8	2	80		
		4	10	10	0	100		
		5	10	7	3	70	90	14

Shipyard Creek
Test Results for the 96-Hour Water-Column Test with *Menidia beryllina*

Treatment	Concentration	Replicate	Number Initiated	Number Surviving	Number Missing or Dead	Percentage Survival	Mean Percentage Survival	SD
SYC14-TB2-AR	10%	1	10	10	0	100		
		2	10	8	2	80		
		3	10	10	0	100		
		4	10	9	1	90		
		5	10	10	0	100	94	9
SYC14-TB2-AR	50%	1	10	7	3	70		
		2	10	9	1	90		
		3	10	9	1	90		
		4	10	10	0	100		
		5	10	9	1	90	88	11
SYC14-TB2-AR	100%	1	10	10	0	100		
		2	10	10	0	100		
		3	10	9	1	90		
		4	10	9	1	90		
		5	10	10	0	100	96	5
SYC14-AC-AR	10%	1	10	10	0	100		
		2	10	9	1	90		
		3	10	10	0	100		
		4	10	10	0	100		
		5	10	10	0	100	98	4
SYC14-AC-AR	50%	1	10	10	0	100		
		2	10	10	0	100		
		3	10	10	0	100		
		4	10	10	0	100		
		5	10	7	3	70	94	13
SYC14-AC-AR	100%	1	10	10	0	100		
		2	10	10	0	100		
		3	10	10	0	100		
		4	10	7	3	70		
		5	10	10	0	100	94	13

AR = Ammonia Reduced Elutriate

ENVIRON

96 HOUR WATER-COLUMN TEST

CLIENT	PROJECT	JOB N0.	PROJECT MANAGER	SPECIES	
				Menidia beryllina	
				LABORATORY	PROTOCOL
ANAMAR	Shipyard Creek		B. Hester	Port Gamble / Bath 8	USEPA/USCOE 1991

SURVIVAL & BEHAVIOR DATA

OBSERVATION KEY
N = normal
LOE= loss of equilibrium
Q = quiescent
DC = discoloration
NB = no body
F= Floating on Surface

INITIAL # OF ORGANISMS 10

CLIENT/ ID	CONC. value	CONC. units	REP	INITIAL NUMBER	Day 1 DATE 7/03/14 TECHNICIAN JL			Day 2 DATE 7/4 TECHNICIAN JMB			Day 3 DATE 7/05 TECHNICIAN JL			Day 4 DATE 7/06 TECHNICIAN JL		
					#ALIVE	#DEAD	OBS	#ALIVE	#DEAD	OBS	#ALIVE	#DEAD	OBS	#ALIVE	#DEAD	OBS
Control /	0	%	1		10	0	N	9	1	N	9	0	N	9	0	N
			2		10	0		10	0		10	0		10	0	
			3		10	0		10	0		10	0		10	0	
			4		9	1		8	1		7	1		7	0	
			5		10	0		9	1		9	0		9	0	
Sitewater /	0	%	1		10	0	N	8	2	N	8	0	N	7	1	N
			2		10	0		10	0		10	0		10	0	
			3		10	0		9	1		9	0		9	0	
			4		10	0		10	0		10	0		10	0	
			5		10	0		10	0		10	0		10	0	

ENVIRON

96 HOUR WATER-COLUMN TEST

CLIENT	PROJECT	JOB N0.	PROJECT MANAGER	SPECIES	
				Menidia beryllina	
ANAMAR	Shipyard Creek		B. Hester	LABORATORY: Port Gamble / Bath 8	PROTOCOL: USEPA/USCOE 1991

SURVIVAL & BEHAVIOR DATA

OBSERVATION KEY
N = normal
LOE= loss of equilibrium
Q = quiescent
DC = discoloration
NB = no body
F= Floating on Surface

INITIAL # OF ORGANISMS: 10

CLIENT/ ID	CONC. value	CONC. units	REP	INITIAL NUMBER	Day 1 DATE: 7/03/14 TECHNICIAN: JL			Day 2 DATE: 7/14 TECHNICIAN: mmb			Day 3 DATE: 7/05 TECHNICIAN: JL			Day 4 DATE: 7/06 TECHNICIAN: JL		
					#ALIVE	#DEAD	OBS	#ALIVE	#DEAD	OBS	#ALIVE	#DEAD	OBS	#ALIVE	#DEAD	OBS
SYC14-AC /	10	%	1		10	0	N	7	3	N	7	0	N	7	0	N
			2		10	0		10	0		10	0		10	0	
			3		10	0		10	0		10	0		9	1	
			4		10	0		10	0		9	1		9	0	
			5		10	0		10	0		10	0		10	0	
SYC14-AC /	50	%	1		10	0	N	8	2	N	3	5	N	3	0	N
			2		8	2		2	6		0	2	—			
			3		10	0		7	3		4	3	LOE	2	2	LOE
			4		8	2		6	2		5	1	N	4	1	N
			5		9	1	LOE	4	5		0	4	—			
SYC14-AC /	100	%	1		0	10		—						0		
			2		0	10		—								
			3		0	10		—								
			4		0	10		—								
			5		3	7	LOE	0	3	—						

ENVIRON

96 HOUR WATER-COLUMN TEST

CLIENT	PROJECT	JOB N0.	PROJECT MANAGER	SPECIES	
				Menidia beryllina	
				LABORATORY	PROTOCOL
ANAMAR	Shipyard Creek		B. Hester	Port Gamble / Bath 8	USEPA/USCOE 1991

SURVIVAL & BEHAVIOR DATA

OBSERVATION KEY
N = normal
LOE= loss of equilibrium
Q = quiescent
DC = discoloration
NB = no body
F= Floating on Surface

INITIAL # OF ORGANISMS 10

CLIENT/ ID	CONC. value	CONC. units	REP	INITIAL NUMBER	Day 1 DATE 7/03/19 TECHNICIAN JL #ALIVE	Day 1 #DEAD	Day 1 OBS	Day 2 DATE 7/4 TECHNICIAN mmb #ALIVE	Day 2 #DEAD	Day 2 OBS	Day 3 DATE 7/05 TECHNICIAN JL #ALIVE	Day 3 #DEAD	Day 3 OBS	Day 4 DATE 7/06 TECHNICIAN JL #ALIVE	Day 4 #DEAD	Day 4 OBS
SYC14-TB1 /	10	%	1		10	0	N	9	1	N	9	0	N	9	0	N
			2		10	0		10	0		10	0		10	0	
			3		10	0		10	0		10	0		10	0	
			4		10	0		9	1		9	0		9	0	
			5		9	1		9	0		9	0		9	0	
SYC14-TB1 /	50	%	1		4	6	LOE	0	4							
			2		8	2		0	8							
			3		5	5		0	5							
			4		7	3		0	7							
			5		8	2		0	8							
SYC14-TB1 /	100	%	1		0	10										
			2		0	10										
			3		0	10										
			4		0	10										
			5		0	10										

ENVIRON

96 HOUR WATER-COLUMN TEST

CLIENT	PROJECT	JOB N0.	PROJECT MANAGER	SPECIES	
				Menidia beryllina	
ANAMAR	Shipyard Creek		B. Hester	LABORATORY: Port Gamble / Bath 8	PROTOCOL: USEPA/USCOE 1991

SURVIVAL & BEHAVIOR DATA

OBSERVATION KEY
N = normal
LOE= loss of equilibrium
Q = quiescent
DC = discoloration
NB = no body
F= Floating on Surface

INITIAL # OF ORGANISMS: 10

CLIENT/ ID	CONC. value	CONC. units	REP	INITIAL NUMBER	Day 1 DATE: 7/03/14 TECHNICIAN: JL			Day 2 DATE: 7/4 TECHNICIAN: MMS			Day 3 DATE: 7/05 TECHNICIAN: JL			Day 4 DATE: 7/06 TECHNICIAN: JL		
					#ALIVE	#DEAD	OBS	#ALIVE	#DEAD	OBS	#ALIVE	#DEAD	OBS	#ALIVE	#DEAD	OBS
SYC14-TB2 /	10	%	1		10	0	N	8	2	N	8	0	N	7	1	N
			2		10	0	"	10	0	"	10	0	"	10	0	"
			3		9	1	"	8	1	"	8	0	"	8	0	"
			4		10	0	"	10	0	"	10	0	"	10	0	"
			5		10	0	↓	10	0	↓	8	2	↓	7	1	↓
SYC14-TB2 /	50	%	1		9	1	LOE	0	9							
			2		7	3	"	0	7							
			3		6	4	"	0	6							
			4		7	3	"	0	7							
			5		6	4	↓	0	6							
SYC14-TB2 /	100	%	1		0	10										
			2		0	10										
			3		0	10										
			4		0	10										
			5		0 (1)	10										

(1) Stray mark 7.3.14 BM

ENVIRON

96 HOUR WATER-COLUMN TEST

SPECIES					
Menidia beryllina					
CLIENT	**PROJECT**	**JOB N0.**	**PROJECT MANAGER**	**LABORATORY**	**PROTOCOL**
ANAMAR	Shipyard Creek		B. Hester	Port Gamble / Bath 8	USEPA/USCOE 1991

SURVIVAL & BEHAVIOR DATA

OBSERVATION KEY
N = normal
LOE= loss of equilibrium
Q = quiescent
DC = discoloration
NB = no body
F= Floating on Surface

INITIAL # OF ORGANISMS: 10

					Day 1			Day 2			Day 3			Day 4		
					DATE: 7/03/14			DATE: 7/4			DATE: 7/05			DATE: 7/06		
					TECHNICIAN: JL			TECHNICIAN: mmk			TECHNICIAN: JL			TECHNICIAN: JL		
CLIENT/ ID	CONC. value	CONC. units	REP	INITIAL NUMBER	#ALIVE	#DEAD	OBS	#ALIVE	#DEAD	OBS	#ALIVE	#DEAD	OBS	#ALIVE	#DEAD	OBS
SYC14-AC-AR /	10 %		1		10	0	N	10	0	N	10	0	N	10	0	N
			2		10	0	↓	9	1	↓	9	0	↓	9	0	↓
			3		10	0	↓	10	0	↓	10	0	↓	10	0	↓
			4		10	0	↓	10	0	↓	10	0	↓	10	0	↓
			5		10	0	↓	10	0	↓	10	0	↓	10	0	↓
SYC14-AC-AR /	50 %		1		10	0	N	10	0	N	10	0	N	10	0	N
			2		10	0	↓	10	0	↓	10	0	↓	10	0	↓
			3		10	0	↓	10	0	↓	10	0	↓	10	0	↓
			4		10	0	↓	10	0	↓	10	0	↓	10	0	↓
			5		10	0	↓	8	2	↓	8	0	↓	7	1	↓
SYC14-AC-AR /	100 %		1		10	0	N	10	0	N	10	0	N	10	0	N
			2		10	0	↓	10	0	↓	10	0	↓	10	0	↓
			3		10	0	↓	10	0	↓	10	0	↓	10	0	↓
			4		9	1	↓	7	2	↓	7	0	↓	7	0	↓
			5		10	0	↓	10	0	↓	10	0	↓	10	0	↓

ENVIRON

96 HOUR WATER-COLUMN TEST

CLIENT	PROJECT	JOB N0.	PROJECT MANAGER	SPECIES	
				Menidia beryllina	
ANAMAR	Shipyard Creek		B. Hester	LABORATORY: Port Gamble / Bath 8	PROTOCOL: USEPA/USCOE 1991

SURVIVAL & BEHAVIOR DATA

OBSERVATION KEY
N = normal
LOE= loss of equilibrium
Q = quiescent
DC = discoloration
NB = no body
F= Floating on Surface

INITIAL # OF ORGANISMS: 10

CLIENT/ ID	CONC. value	CONC. units	REP	INITIAL NUMBER	Day 1 DATE: 7/03/14 TECHNICIAN: JL			Day 2 DATE: 7/4 TECHNICIAN: JL			Day 3 DATE: 7/05 TECHNICIAN: JL			Day 4 DATE: 7/06 TECHNICIAN: JL		
					#ALIVE	#DEAD	OBS	#ALIVE	#DEAD	OBS	#ALIVE	#DEAD	OBS	#ALIVE	#DEAD	OBS
SYC14-TB1-AR /.	10 %		1		10	0	N	10	0	N	10	0	N	10	0	N
			2		10	0		10	0		10	0		10	0	
			3		10	0		10	0		9	1		9	0	
			4		9	1		9	0		9	0		9	0	
			5		9	1		7	2		7	0		7	0	
SYC14-TB1-AR /.	50 %		1		10	0		10	0		10	0		10	0	
			2		10	0		10	0		10	0		10	0	
			3		10	0		9	1		9	0		9	0	
			4		10	0		10	0		10	0		10	0	
			5		10	0		10	0		10	0		10	0	
SYC14-TB1-AR /.	100 %		1		10	0		10	0		10	0		10	0	
			2		10	0		10	0		10	0		10	0	
			3		8	2		8	0		8	0		8	0	
			4		10	0		10	0		10	0		10	0	
			5		10	0		9	1		8	1		7	1	

ENVIRON

96 HOUR WATER-COLUMN TEST

SPECIES					
Menidia beryllina					
CLIENT	PROJECT	JOB N0.	PROJECT MANAGER	LABORATORY	PROTOCOL
ANAMAR	Shipyard Creek		B. Hester	Port Gamble / Bath 8	USEPA/USCOE 1991

SURVIVAL & BEHAVIOR DATA

OBSERVATION KEY
N = normal
LOE= loss of equilibrium
Q = quiescent
DC = discoloration
NB = no body
F= Floating on Surface

INITIAL # OF ORGANISMS 10

CLIENT/ ID	CONC. value	CONC. units	REP	INITIAL NUMBER	Day 1 DATE 7/03/14 TECHNICIAN JL			Day 2 DATE 7/4 TECHNICIAN mmb			Day 3 DATE 7/05 TECHNICIAN JL			Day 4 DATE 7/06 TECHNICIAN JL		
					#ALIVE	#DEAD	OBS	#ALIVE	#DEAD	OBS	#ALIVE	#DEAD	OBS	#ALIVE	#DEAD	OBS
SYC14-TB2-AR /.	10	%	1		10	0	N	10	0	N	10	0	N	10	0	N
			2		9	1		8	1		8	0		8	0	
			3		10	0		10	0		10	0		10	0	
			4		10	0		9	1		9	0		9	0	
			5		10	0		10	0		10	0		10	0	
SYC14-TB2-AR /.	50	%	1		10	0		8	2		8	0		7	1	
			2		10	0		9	1		9	0		9	0	
			3		10	0		10	0		9	1		9	0	
			4		10	0		10	0		10	0		10	0	
			5		10	0		9	1		9	0		9	0	
SYC14-TB2-AR /.	100	%	1		10	0		10	0		10	0		10	0	
			2		10	0		10	0		10	0		10	0	
			3		10	0		9	1		9	0		9	0	
			4		10	0		10	0		10	0		9	1	
			5		10	0		10	0		10	0		10	0	

ENVIRON

96 HOUR WATER-COLUMN TEST
WATER QUALITY DATASHEET

CLIENT	PROJECT	SPECIES	DILUTION WATER BATCH	TEST START DATE	TIME
ANAMAR	Shipyard Creek	*Menidia beryllina*	FSW070214.01	02Jul14	1600
JOB NUMBER	**PROJECT MANAGER**	**LABORATORY**	**PROTOCOL**	**TEST END DATE**	**TIME**
	B. Hester	Port Gamble Bath 8	USEPA/USCOE 1991 / ENVIRON SED02.02	06Jul14	1745

WATER QUALITY DATA

TEST CONDITIONS			DAY	REP	DO (mg/L) >4.6		TEMP (C) 20 ± 1		SALINITY (ppt) 28 ± 2		pH 7.8 ± 0.5		Total Ammonia (mg/L)	Date	Tech	FEEDING	
CLIENT ID	CONCENTRATION value	CONCENTRATION units			D.O. meter	D.O. mg/L	TEMP. meter	TEMP. °C	SALINITY meter	SALINITY ppt	pH meter	pH unit				AM	PM
Control	0 %		0	Stock	6	8.6	2	20.9	2	30.0	6	7.8	0	712	MMB		
	0 %		1	1	6	6.5	6	20.9	2	30	6	7.7		713	KMB		
	0 %		2	2	8	7.3	8	20.5	8	30	8	①~~7.3~~		714	TE →		
	0 %		3	3	8	7.0	8	21.0	8	30	8	8.1		7/05	JL		
	0 %		4	4	8	6.9	8	22.6	8	30	8	7.8	0.215	7/06	JL		
Sitewater /	0 %		0	Stock	6	8.1	2	20.9	2	27.0	6	7.9	0	712	MMB		
	0 %		1	1	6	6.8	6	21.0	2	28	6	7.8		713	KMB		
	0 %		2	2	8	7.2	8	20.7	8	27	8	8.0		714	TE →		
	0 %		3	3	8	7.1	8	21.4	8	27	8	8.0		7/05	JL		
	0 %		4	4	8	7.1	8	22.5	8	27	8	7.9	0.213	7/06	JL		

① TE 7/4 714 real value: 8.0

ENVIRON

96 HOUR WATER-COLUMN TEST
WATER QUALITY DATASHEET

CLIENT	PROJECT	SPECIES	DILUTION WATER BATCH	TEST START DATE	TIME
ANAMAR	Shipyard Creek	*Menidia beryllina*	FSW070214.01	02Jul14	1600
JOB NUMBER	**PROJECT MANAGER**	**LABORATORY**	**PROTOCOL**	**TEST END DATE**	**TIME**
	B. Hester	Port Gamble Bath 8	USEPA/USCOE 1991 / ENVIRON SED02.02	06Jul14	1745

WATER QUALITY DATA

TEST CONDITIONS			DAY	REP	DO (mg/L) >4.6		TEMP (C) 20 ± 1		SALINITY (ppt) 28 ± 2		pH 7.8 ± 0.5		Total Ammonia (mg/L)	Date	Tech	FEEDING	
CLIENT ID	CONCENTRATION value	CONCENTRATION units			D.O. meter	D.O. mg/L	TEMP. meter	TEMP. °C	SALINITY meter	SALINITY ppt	pH meter	pH unit				AM	PM
SYC14-AC /	10 %		0	Stock	6	8.2	2	19.5	2	30.0	2	7.7	0.446	7/2	MMB		
	10 %		1	1	6	6.9	6	20.9	2	30	6	7.8		7/3	KMB		
	10 %		2	2	8	7.1	8	20.6	8	29	8	8.0		7/4	[illegible] →		
	10 %		3	3	8	6.7	8	21.2	8	29	8	8.0		7/4 (1) 7/05	JL		
	10 %		4	4	8	7.0	8	22.6	8	29	8	8.0	1.85	7/06	JL		
SYC14-AC /	50 %		0	Stock	6	8.6	2	20.8	2	28.0	2	7.8	3.42	7/2	MMB		
	50 %		1	1	6	6.7	6	21.2	2	28	6	8.0		7/3	KMB		
	50 %		2	2	8	7.1	8	20.5	8	28	8	8.2		7/4	[illegible] →		
	50 %		3	3	8	7.2	8	21.3	8	28	8	8.2		7/05	JL		
	50 %		4	~~4~~	8	7.0	8	22.6	8	28	8	8.2	8.57	7/06	JL		
SYC14-AC /	100 %		0	Stock	6	7.7	2	20.1	2	27.0	2	8.0	8.03	7/2	MMB		
	100 %		1	~~5~~ 4	6	6.7	6	20.8	2	27	6	8.1		7/3	KMB		
	100 %		2	~~25~~	8	7.1	8	20.5	8	26	8	8.3		7/4	[illegible] →		
	100 %		3	3													
	100 %		4	4													

(1) WL. 7/04/14.

ENVIRON

96 HOUR WATER-COLUMN TEST
WATER QUALITY DATASHEET

CLIENT	PROJECT	SPECIES	DILUTION WATER BATCH	TEST START DATE	TIME
ANAMAR	Shipyard Creek	*Menidia beryllina*	FSW070214.01	02Jul14	1600
JOB NUMBER	**PROJECT MANAGER**	**LABORATORY**	**PROTOCOL**	**TEST END DATE**	**TIME**
	B. Hester	Port Gamble Bath 8	USEPA/USCOE 1991 / ENVIRON SED02.02	06Jul14	1745

WATER QUALITY DATA

TEST CONDITIONS			DAY	REP	DO (mg/L) >4.6		TEMP (C) 20 ± 1		SALINITY (ppt) 28 ± 2		pH 7.8 ± 0.5		Total Ammonia (mg/L)	Date	Tech	FEEDING	
CLIENT ID	CONCENTRATION value	CONCENTRATION units			D.O. meter	D.O. mg/L	TEMP. meter	TEMP. °C	SALINITY meter	SALINITY ppt	pH meter	pH unit				AM	PM
SYC14-TB1 /	10 %		0	Stock	6	8.5	2	19.1	2	30.0	6	7.8	0.361	7/2	MMB		
	10 %		1	1	6	②	6	②	2	②	6	②		7/3	KMB		
	10 %		2	2	8	7.1	8	20.6	8	29	8	8.1		7/4	HE →		
	10 %		3	3	8	7.1	8	21.1	8	29	8	8.1		7/05	JL		
	10 %		4	4	8	6.9	8	22.7	8	30	8	8.1	1.60	7/06	JL		
SYC14-TB1 /	50 %		0	Stock	6	8.6	2	20.4	2	29.0	6	7.7	4.23	7/2	MMB		
	50 %		1	1	6	6.9	6	21.0	2	29	6	8.0		7/3	KMB		
	50 %		2	2	8	6.8	8	20.3	8	28	8	8.2		7/4	HE →		
	50 %		3	3													
	50 %		4	4													
SYC14-TB1 /	100 %		0	Stock	6	8.3	2	20.4	2	27.0	6	8.0	13.3	7/2	MMB		
	100 %		1	1	6	①	6	①	2	①	6	①		7/3	KMB		
	100 %		2	2													
	100 %		3	3													
	100 %		4	4													

① All animals dead. Jar disposed of prior to water quality. KB. 07/03/14

② Water quality not taken. KB. 7/3/14

ENVIRON

96 HOUR WATER-COLUMN TEST
WATER QUALITY DATASHEET

CLIENT	PROJECT	SPECIES	DILUTION WATER BATCH	TEST START DATE	TIME
ANAMAR	Shipyard Creek	*Menidia beryllina*	FSW070214.01	02Jul14	1600
JOB NUMBER	**PROJECT MANAGER**	**LABORATORY**	**PROTOCOL**	**TEST END DATE**	**TIME**
	B. Hester	Port Gamble Bath 8	USEPA/USCOE 1991 / ENVIRON SED02.02	06Jul14	1745

WATER QUALITY DATA

TEST CONDITIONS			DAY	REP	DO (mg/L) >4.6		TEMP (C) 20 ± 1		SALINITY (ppt) 28 ± 2		pH 7.8 ± 0.5		Total Ammonia (mg/L)	Date	Tech	FEEDING	
CLIENT ID	CONCENTRATION value	CONCENTRATION units			D.O. meter	D.O. mg/L	TEMP. meter	TEMP. °C	SALINITY meter	SALINITY ppt	pH meter	pH unit				AM	PM
SYC14-TB2 /	10 %		**0**	Stock	6	8.3	2	19.1	2	30.0	6	7.8	0.878	7/2	MMB		
	10 %		**1**	1	6	7.0	6	21.0	2	30	6	7.9		7/3	KMB		
	10 %		**2**	2	8	7.2	8	20.4	8	29	8	8.1		7/4	~~HK~~ →		
	10 %		**3**	3	8	7.1	8	21.2	8	30	8	8.1		7/05	JL		
	10 %		**4**	4	8	7.0	8	22.5	8	30	8	8.1	2.88	7/06	JL		
SYC14-TB2 /	50 %		**0**	Stock	6	8.7	2	19.3	2	28.0	6	7.9	4.74	7/2	MMB		
	50 %		**1**	1	6	6.9	6	20.8	2	29	6	8.0		7/3	KMB		
	50 %		**2**	2	8	7.0	8	20.6	8	28	8	②		7/4	~~HK~~ →		
	50 %		**3**	3													
	50 %		**4**	4													
SYC14-TB2 /	100 %		**0**	Stock	6	8.1	2	21.0	2	27.0	6	8.0	11.3	7/2	MMB		
	100 %		**1**	1	6	①	6	①	2	①	6	①		7/3	KMB		
	100 %		**2**	2													
	100 %		**3**	3													
	100 %		**4**	4													

① All animals dead. Jars disposed of prior to water quality. KMB. 07/03/14.
② data not entered. ~~HK~~

ENVIRON

96 HOUR WATER-COLUMN TEST
WATER QUALITY DATASHEET

CLIENT	PROJECT	SPECIES	DILUTION WATER BATCH	TEST START DATE	TIME
ANAMAR	Shipyard Creek	*Menidia beryllina*	FSW070214.01	02Jul14	1600
JOB NUMBER	**PROJECT MANAGER**	**LABORATORY**	**PROTOCOL**	**TEST END DATE**	**TIME**
	B. Hester	Port Gamble Bath 8	USEPA/USCOE 1991 / ENVIRON SED02.02	06Jul14	1745

WATER QUALITY DATA

TEST CONDITIONS			DAY	REP	DO (mg/L) >4.6		TEMP (C) 20 ± 1		SALINITY (ppt) 28 ± 2		pH 7.8 ± 0.5		Total Ammonia (mg/L)	Date	Tech	FEEDING	
CLIENT ID	CONCENTRATION value	CONCENTRATION units			D.O. meter	D.O. mg/L	TEMP. meter	TEMP. °C	SALINITY meter	SALINITY ppt	pH meter	pH unit				AM	PM
SYC14-AC-AR /	10 %		**0**	Stock	6	8.3	2	20.8	1	30.0	6	7.7	0.0138	7/2	MMB		
	10 %		**1**	1	6	6.9	6	21.0	2	30	6	7.7		7/3	KMB		
	10 %		**2**	2	8	7.3	8	20.2	8	30	8	8.0		7/4	~~TH~~ →		
	10 %		**3**	3	8	7.1	8	21.5	8	30	8	8.0		7/05	JL		
	10 %		**4**	4	8	6.8	8	22.6	8	30	8	8.0	0.257	7/06	JL		
SYC14-AC-AR /	50 %		**0**	Stock	6	7.8	2	21.0	2	29.0	6	7.8	0	7/2	MMB		
	50 %		**1**	1	6	6.8	6	20.8	2	29	6	7.8		7/3	KMB		
	50 %		**2**	2	8	7.2	8	20.4	8	29	8	8.0		7/4	~~TH~~ →		
	50 %		**3**	3	8	7.2	8	21.2	8	29	8	8.0		7/05	JL		
	50 %		**4**	4	8	6.9	8	22.7	8	29	8	8.0	0.343	7/06	JL		
SYC14-AC-AR /	100 %		**0**	Stock	6	5.4	2	20.5	2	27.0	6	7.8	0	7/2	MMB		
	100 %		**1**	1	6	6.9	6	20.7	2	27	6	7.8		7/3	KMB		
	100 %		**2**	2	8	7.4	8	20.3	8	28	8	8.0		7/4	~~TH~~ →		
	100 %		**3**	3	8	6.8	8	21.1	8	28	8	8.0		7/05	JL		
	100 %		**4**	4	8	7.0	8	22.7	8	28	8	8.0	0.653	7/06	JL		

(1) wrong meter no. ~~TH~~ #712

ENVIRON

96 HOUR WATER-COLUMN TEST
WATER QUALITY DATASHEET

CLIENT	PROJECT	SPECIES	DILUTION WATER BATCH	TEST START DATE	TIME
ANAMAR	Shipyard Creek	*Menidia beryllina*	FSW070214.01	02Jul14	1600
JOB NUMBER	**PROJECT MANAGER**	**LABORATORY**	**PROTOCOL**	**TEST END DATE**	**TIME**
	B. Hester	Port Gamble Bath 8	USEPA/USCOE 1991 / ENVIRON SED02.02	06Jul14	1745

WATER QUALITY DATA

TEST CONDITIONS			DAY	REP	DO (mg/L) >4.6		TEMP (C) 20 ± 1		SALINITY (ppt) 28 ± 2		pH 7.8 ± 0.5		Total Ammonia (mg/L)	Date	Tech	FEEDING	
CLIENT ID	CONCENTRATION value	CONCENTRATION units			D.O. meter	D.O. mg/L	TEMP. meter	TEMP. °C	SALINITY meter	SALINITY ppt	pH meter	pH unit				AM	PM
SYC14-TB1-AR / .	10 %		**0**	Stock	6	8.4	2	20.5	③62	30.0	6	7.7	0	7/2	MMB		
	10 %		**1**	1	6	7.0	6	21.0	2	30	6	7.9		7/3	KMB		
	10 %		**2**	2	8	7.3	8	20.3	8	30	8	8.0		7/4	TK→		
	10 %		**3**	3	8	7.0	8	21.4	8	29	8	8.0		7/05	JL		
	10 %		**4**	4	8	7.0	8	22.6	8	②~~28~~30	8	8.0	0.290	7/06	JL		
SYC14-TB1-AR / .	50 %		**0**	Stock	6	8.0	2	21.0	2	29.0	6	7.8	0	7/2	MMB		
	50 %		**1**	1	6	6.9	6	20.8	2	29	6	7.8		7/3	KMB		
	50 %		**2**	2	8	7.1	8	20.6	8	29	8	8.0		7/4	TK→		
	50 %		**3**	3	8	7.2	8	21.3	8	29	8	8.0		7/05	JL		
	50 %		**4**	4	8	7.0	8	22.8	8	29	8	8.0	0.643	7/06	JL		
SYC14-TB1-AR / .	100 %		**0**	Stock	6	5.7	2	20.7	2	28.0	6	7.8	0	7/2	MMB		
	100 %		**1**	1	6	6.9	6	20.8	2	28	6	7.8		7/3	KMB		
	100 %		**2**	2	8	7.2	8	20.6	8	27	8	8.0		7/4	TK→		
	100 %		**3**	3	8	7.4	8	21.3	8	27	8	8.1		7/05	JL		
	100 %		**4**	4	8	7.0	8	22.9	8	28	8	8.0	0.806	7/06	JL		

① wrong number TK 7/2

② WP. JL 7/06/14.

ENVIRON

96 HOUR WATER-COLUMN TEST
WATER QUALITY DATASHEET

CLIENT	PROJECT	SPECIES	DILUTION WATER BATCH	TEST START DATE	TIME
ANAMAR	Shipyard Creek	*Menidia beryllina*	FSW070214.01	02Jul14	1600
JOB NUMBER	**PROJECT MANAGER**	**LABORATORY**	**PROTOCOL**	**TEST END DATE**	**TIME**
	B. Hester	Port Gamble Bath 8	USEPA/USCOE 1991 / ENVIRON SED02.02	06Jul14	1745

WATER QUALITY DATA

TEST CONDITIONS			DAY	REP	DO (mg/L) >4.6		TEMP (C) 20 ± 1		SALINITY (ppt) 28 ± 2		pH 7.8 ± 0.5		Total Ammonia (mg/L)	Date	Tech	FEEDING	
CLIENT ID	CONCENTRATION value	CONCENTRATION units			D.O. meter	D.O. mg/L	TEMP. meter	TEMP. °C	SALINITY meter	SALINITY ppt	pH meter	pH unit				AM	PM
SYC14-TB2-AR / .	10 %		**0**	Stock	6	8.3	2	19.8	2	30.0	6	7.8	0	7/2	MMB		
	10 %		**1**	1	6	6.9	6	20.9	2	30	6	7.8		7/3	KMB		
	10 %		**2**	2	8	7.2	8	20.3	8	① 25 30	8	8.0		7/4	HE →		
	10 %		**3**	3	8	7.0	8	21.4	8	30	8	8.0		7/05	JL		
	10 %		**4**	4	8	6.9	8	22.6	8	30	8	8.0	0.292	7/06	JL		
SYC14-TB2-AR / .	50 %		**0**	Stock	6	8.0	2	20.8	2	29.0	6	7.8	0	7/2	MMB		
	50 %		**1**	1	6	6.7	6	20.9	2	29	6	7.8		7/3	KMB		
	50 %		**2**	2	8	7.1	8	20.5	8	29	8	8.0		7/4	HE →		
	50 %		**3**	3	8	7.2	8	21.3	8	29	8	8.0		7/05	JL		
	50 %		**4**	4	8	6.9	8	22.6	8	29	8	8.0	0.456	7/06	JL		
SYC14-TB2-AR / .	100 %		**0**	Stock	6	5.6	2	20.3	2	28.0	6	7.7	0.0329	7/2	MMB		
	100 %		**1**	1	6	6.9	6	21.0	2	28	6	7.8		7/3	KMB		
	100 %		**2**	2	8	7.2	8	20.5	8	27	8	8.0		7/4	HE →		
	100 %		**3**	3	8	7.0	8	21.1	8	28	8	8.0		7/05	JL		
	100 %		**4**	4	8	7.0	8	22.6	8	28	8	8.0	1.31	7/06	JL		

① IE HE

ENVIRON

ELUTRIATE PREPARTION WORKSHEET

DATE:	CLIENT:	PROJECT:
7/2/14	ANAMAR	Shipyard Creek

ELUTRIATE PREPARED FOR: (CIRCLE OR DESCRIBE)

(MYSID ACUTE) (FISH ACUTE) LARVAL DEVELOPMENT OTHER_____

DILUENT SOURCE: (Y/N)

PROJECT SITE WATER y LABORATORY WATER_____

CLIENT ID:	LAB ID:
SYC14.SW	P140610.01

STANDARD ELUTRIATE IS PREPARED AT 1 PART SEDIMENT TO 4 PARTS WATER

ELUTRIATE RATIO SELECTED:	1:4
TOTAL VOLUME OF ELUTRIATE PREPARATION VESSEL:	1000 mL
VOLUME OF SEDIMENT PER SAMPLE:	180 mL
VOLUME OF DILUENT:	720 mL
TOTAL NUMBER OF PREPARTION VESSELS PER SAMPLE:	5

# Cont's	SAMPLE:	TIME SPIN START:	TIME SETTLE START:	TIME OF ELUTRIATE COLLECTION:	VOLUME RECOVERED:	CENTRIFUGED (Y/N)
5	TS·1	0835	0905	0930	~5 L	y
↓	TS·2	↓	↓	↓	↓	↓
	AC	↓	↓	↓	↓	↓
	TS·1 AR	0905	0935	1000	↓	↓
	TS·2AR	↓	↓	↓	↓	↓
	AC AR	↓	↓	↓	↓	↓

ENVIRON

ORGANISM RECEIPT LOG

Date:	Time:	Batch No.
7/1/14	1230	ABS 5417

Organism / Project:	Source:
M. beryllina	Aquatic Bio Systems

Address:	Invoice Attached
on file	(Yes) No

Phone:	Contact:
on file	on file

No. Ordered:	No. Received:	Source Batch:
1350	1485	Hatch 6/21/14

Condition of Organisms:	Approximate Size or Age:
OK	10 days

Shipper:	B of L (Tracking No.)
UPS	1Z F46 73R 01 9605 5417

Condition of Container:	Received By:
Good	

Container	D.O. (mg/L)	Temp. (°C)	Conductivity or Salinity (Include Units)	pH (Units)	Technician (Initials)
1	13.4	22.2	25 ppt	7.4	
2	12.8	23.4	24 ppt	7.5	
3	12.3	24.1	24 ppt	7.4	
4	11.8	23.8	24 ppt	7.3	

Notes:

ENVIRON

MAINTENANCE LOG FOR CULTURES

ORGANISM: Menidia
LOCATION: Bath 6

Batch Number: ABS 5417	Date Received: 7/1/14

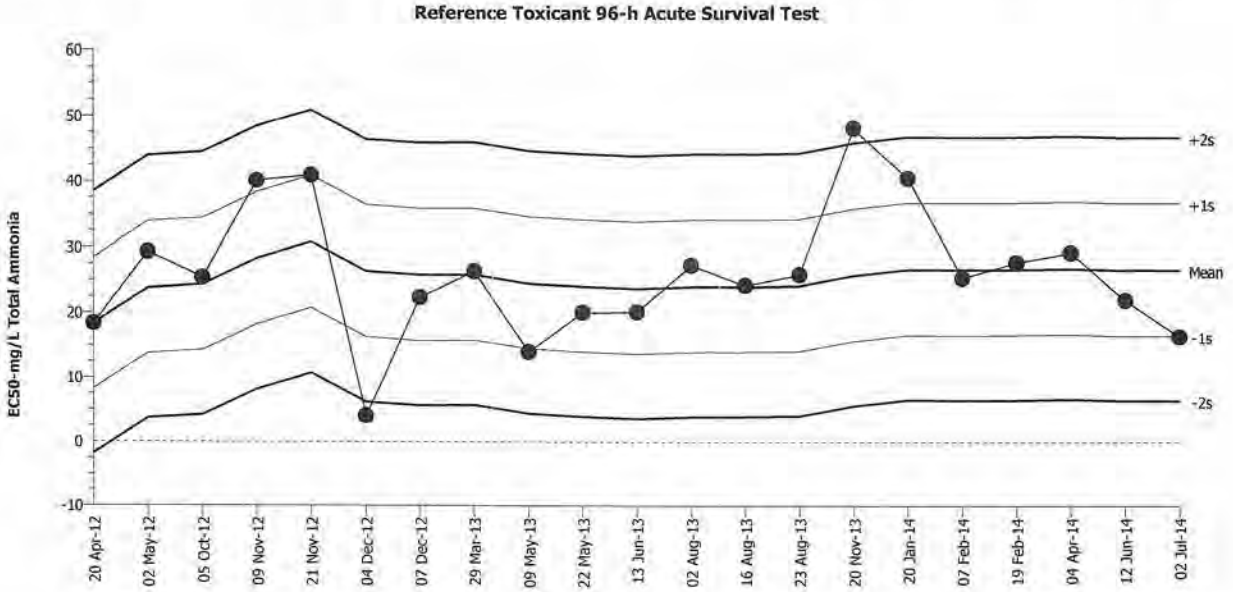
Date	Feed AM/PM		Tub No.	D.O.	Temp (°C)	Cond/ Sal	pH	H_2O Change	No. Dead	NH_3	Init.
7/1/14		X	1	6.8	21.4	25	7.7	+ 25 ppt	—	—	↓
↓		↓	2	6.8	21.3	25	7.8	↓	—	—	↓
			3	6.8	21.3	24	7.7		—	—	
↓			4	6.7	21.2	24	7.8		—	—	
7/2/14	X		1	7.6	20.9	25	7.8	N	—	2	BH
↓	↓		2	7.8	20.9	25	7.9	↓	—	1	↓
			3	7.7	20.8	25	7.9		—	7	
↓	↓		4	7.7	20.8	24	7.9	↓	—	28	↓

CETIS QC Plot

Report Date: 30 Jul-14 09:03 (1 of 1)

Reference Toxicant 96-h Acute Survival Test — **All Matching Labs**

Test Type: Survival | **Organism:** Menidia beryllina (Inland Silverside) | **Material:** Total Ammonia
Protocol: EPA/821/R-02-012 (2002) | **Endpoint:** Proportion Survived | **Source:** Reference Toxicant-REF



Mean:	26.6	**Count:**	20	**-1s Warning Limit:**	16.54	**-2s Action Limit:**	6.479
Sigma:	10.06	**CV:**	37.80%	**+1s Warning Limit:**	36.66	**+2s Action Limit:**	46.72

Quality Control Data

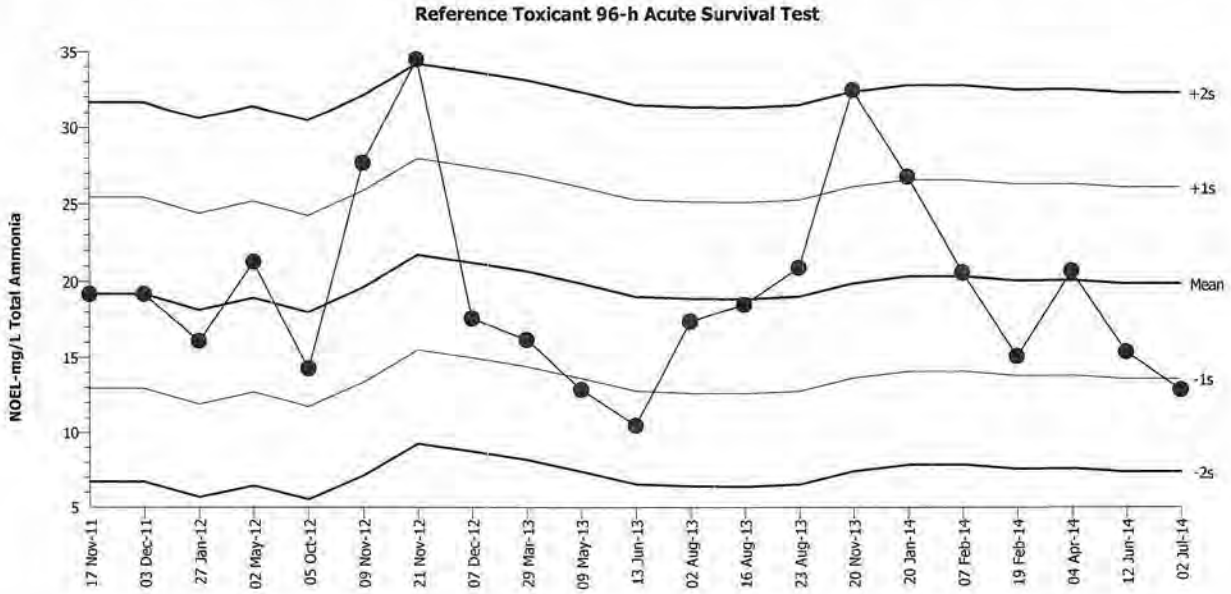
Point	Year	Month	Day	Time	QC Data	Delta	Sigma	Warning	Action	Test ID	Analysis ID	Laboratory
1	2012	Apr	20	16:30	18.37	-8.226	-0.8177			07-0896-3675	14-0864-3722	NewFields
2		May	2	14:45	29.33	2.727	0.2711			15-3413-2419	18-5527-0837	NewFields
3		Oct	5	17:30	25.42	-1.176	-0.1169			11-8705-5892	18-1236-3180	NewFields
4		Nov	9	16:50	40.12	13.52	1.343	(+)		10-9947-7092	06-9379-9250	NewFields
5			21	17:40	40.93	14.33	1.424	(+)		09-5241-8709	16-1639-2237	NewFields
6		Dec	4	16:40	4.077	-22.52	-2.239	(-)	(-)	04-2938-2554	02-3843-4687	NewFields
7			7	18:00	22.43	-4.172	-0.4147			07-1944-1107	08-0578-9892	NewFields
8	2013	Mar	29	17:30	26.41	-0.1868	-0.01857			15-6629-7016	01-6143-5562	NewFields
9		May	9	17:15	14.03	-12.57	-1.25	(-)		05-2515-0422	09-7554-7266	NewFields
10			22	13:00	20.13	-6.474	-0.6435			02-1650-1674	15-0431-6258	NewFields
11		Jun	13	14:35	20.21	-6.393	-0.6354			20-5493-9860	05-5535-3084	NewFields
12		Aug	2	16:55	27.31	0.7114	0.07072			02-5761-9711	15-6695-8541	NewFields
13			16	17:05	24.28	-2.321	-0.2307			03-1026-2061	15-7497-8436	NewFields
14			23	15:30	25.91	-0.6934	-0.06893			03-7016-3962	03-7864-2310	NewFields
15		Nov	20	16:40	48.15	21.55	2.142	(+)	(+)	16-5818-2880	13-3967-3265	NewFields
16	2014	Jan	20	16:30	40.49	13.89	1.38	(+)		03-8316-8468	13-8558-6238	NewFields
17		Feb	7	16:45	25.46	-1.143	-0.1136			01-5915-8877	03-7844-7324	NewFields
18			19	17:40	27.72	1.119	0.1112			20-2231-9789	21-1367-6896	NewFields
19		Apr	4	16:50	29.24	2.635	0.262			20-1389-1099	14-0689-6392	ENVIRON
20		Jun	12	15:19	22	-4.6	-0.4573			04-7381-4293	03-5750-6017	ENVIRON
21		Jul	2	15:45	16.45	-10.15	-1.009	(-)		03-8084-5709	04-8237-1022	ENVIRON

CETIS QC Plot

Report Date: 10 Sep-14 11:05 (1 of 1)

Reference Toxicant 96-h Acute Survival Test — **All Matching Labs**

Test Type: Survival | **Organism:** Menidia beryllina (Inland Silverside) | **Material:** Total Ammonia
Protocol: EPA/821/R-02-012 (2002) | **Endpoint:** Proportion Survived | **Source:** Reference Toxicant-REF



Mean:	19.87	**Count:**	20	**-1s Warning Limit:**	13.63	**-2s Action Limit:**	7.396
Sigma:	6.237	**CV:**	31.40%	**+1s Warning Limit:**	26.11	**+2s Action Limit:**	32.34

Quality Control Data

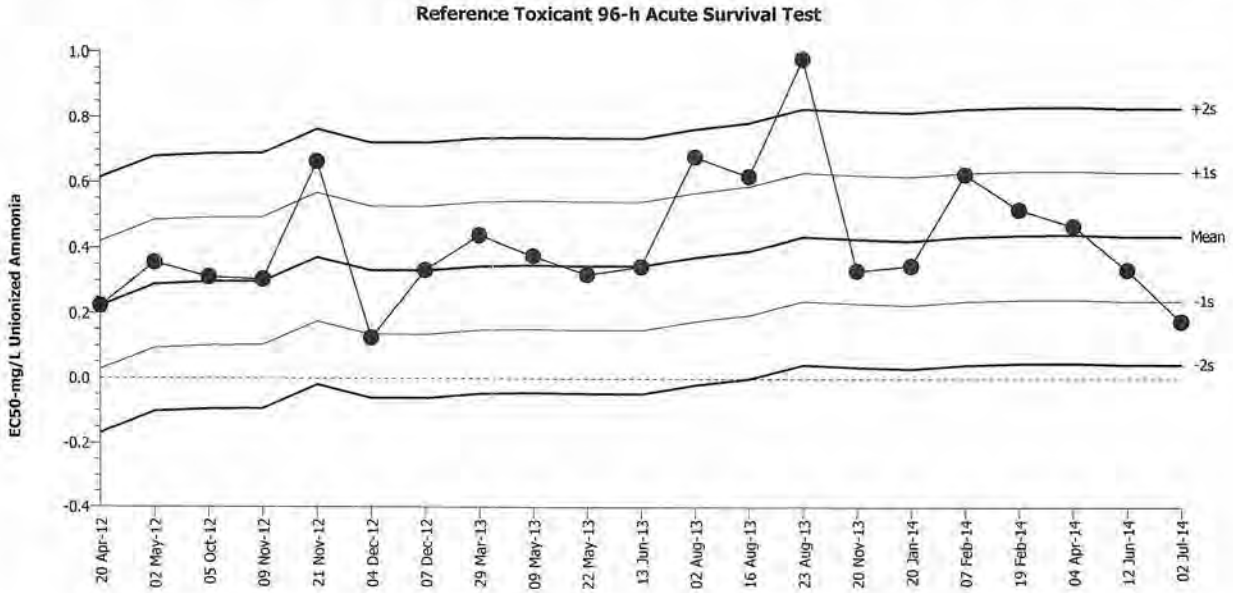
Point	Year	Month	Day	Time	QC Data	Delta	Sigma	Warning	Action	Test ID	Analysis ID	Laboratory
1	2011	Nov	17	15:00	19.2	-0.67	-0.1074			02-5818-9266	11-0569-2532	NewFields
2		Dec	3	13:00	19.2	-0.67	-0.1074			07-1663-2602	04-1116-2487	NewFields
3	2012	Jan	27	15:35	16.1	-3.77	-0.6045			06-7921-9387	00-8363-6930	NewFields
4		May	2	14:45	21.3	1.43	0.2293			15-3413-2419	20-0749-4984	NewFields
5		Oct	5	17:30	14.3	-5.57	-0.8931			11-8705-5892	02-1881-7753	NewFields
6		Nov	9	16:50	27.7	7.83	1.255	(+)		10-9947-7092	19-0937-6517	NewFields
7			21	17:40	34.5	14.63	2.346	(+)	(+)	09-5241-8709	06-2623-5934	NewFields
8		Dec	7	18:00	17.6	-2.27	-0.364			07-1944-1107	09-2382-2727	NewFields
9	2013	Mar	29	17:30	16.2	-3.67	-0.5884			15-6629-7016	08-5086-4918	NewFields
10		May	9	17:15	12.9	-6.97	-1.118	(-)		05-2515-0422	04-5846-5135	NewFields
11		Jun	13	14:35	10.5	-9.37	-1.502	(-)		20-5493-9860	10-1570-8714	NewFields
12		Aug	2	16:55	17.4	-2.47	-0.396			02-5761-9711	13-4375-7151	NewFields
13			16	17:05	18.5	-1.37	-0.2197			03-1026-2061	12-6474-8877	NewFields
14			23	15:30	20.9	1.03	0.1651			03-7016-3962	14-4501-9544	NewFields
15		Nov	20	16:40	32.5	12.63	2.025	(+)	(+)	16-5818-2880	00-8858-9367	NewFields
16	2014	Jan	20	16:30	26.8	6.93	1.111	(+)		03-8316-8468	09-5333-7337	NewFields
17		Feb	7	16:45	20.6	0.73	0.117			01-5915-8877	03-5403-0899	NewFields
18			19	17:40	15.1	-4.77	-0.7648			20-2231-9789	00-8190-7911	NewFields
19		Apr	4	16:50	20.7	0.83	0.1331			20-1389-1099	16-6973-6554	ENVIRON
20		Jun	12	15:19	15.4	-4.47	-0.7167			04-7381-4293	18-4981-0150	ENVIRON
21		Jul	2	15:45	12.9	-6.97	-1.118	(-)		16-0856-1779	03-2378-2904	ENVIRON

CETIS QC Plot

Report Date: 30 Jul-14 10:26 (1 of 1)

Reference Toxicant 96-h Acute Survival Test — **All Matching Labs**

Test Type: Survival | **Organism:** Menidia beryllina (Inland Silverside) | **Material:** Unionized Ammonia
Protocol: EPA/821/R-02-012 (2002) | **Endpoint:** Proportion Survived | **Source:** Reference Toxicant-REF



Mean:	0.4347	**Count:**	20	**-1s Warning Limit:**	0.239	**-2s Action Limit:**	0.04331
Sigma:	0.1957	**CV:**	45.00%	**+1s Warning Limit:**	0.6304	**+2s Action Limit:**	0.8261

Quality Control Data

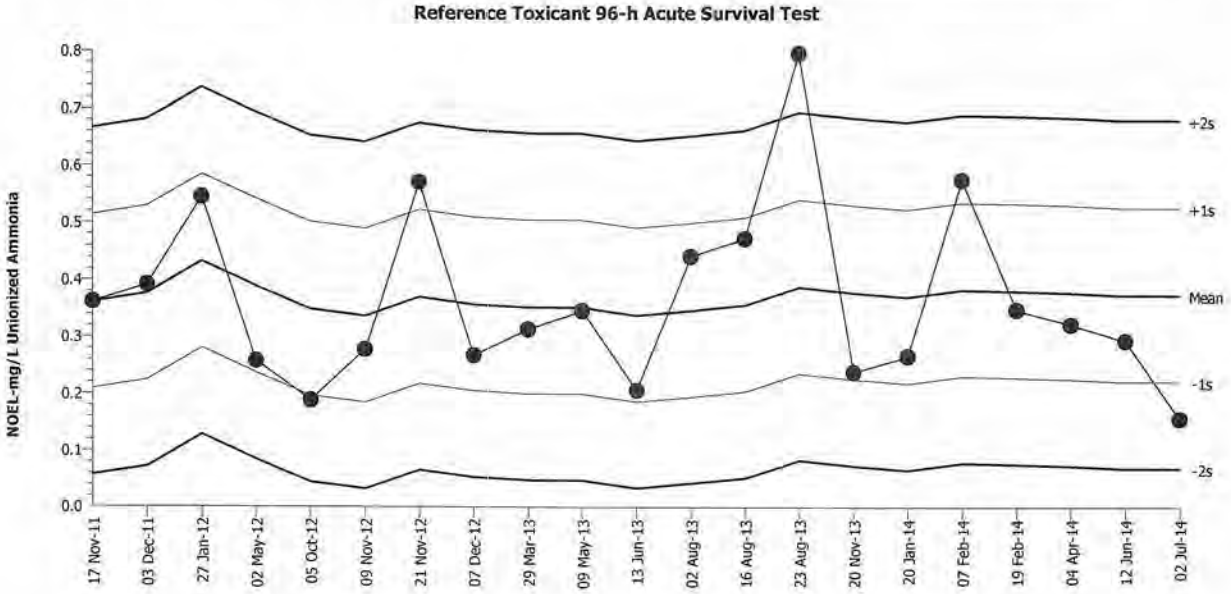
Point	Year	Month	Day	Time	QC Data	Delta	Sigma	Warning	Action	Test ID	Analysis ID	Laboratory
1	2012	Apr	20	16:30	0.2238	-0.2109	-1.078	(-)		14-8766-1512	11-4737-1713	NewFields
2		May	2	14:45	0.3561	-0.07861	-0.4017			14-7614-0254	02-4860-9083	NewFields
3		Oct	5	17:30	0.3118	-0.1229	-0.628			20-0252-0929	11-4480-5563	NewFields
4		Nov	9	16:50	0.3047	-0.13	-0.6642			06-8912-5820	01-4372-5731	NewFields
5			21	17:40	0.664	0.2293	1.172	(+)		13-3564-1765	19-0701-8478	NewFields
6		Dec	4	16:40	0.1255	-0.3092	-1.58	(-)		09-7399-9766	06-6988-4971	NewFields
7			7	18:00	0.3328	-0.1019	-0.5207			08-3888-7269	05-7696-0069	NewFields
8	2013	Mar	29	17:30	0.4391	0.004406	0.02251			20-7362-7128	15-1784-9888	NewFields
9		May	9	17:15	0.3759	-0.05881	-0.3005			17-2216-3359	13-3747-6067	NewFields
10			22	13:00	0.3196	-0.1151	-0.5883			20-3854-2322	05-4600-3511	NewFields
11		Jun	13	14:35	0.3442	-0.0905	-0.4624			06-7935-4299	19-7954-2799	NewFields
12		Aug	2	16:55	0.6794	0.2447	1.25	(+)		07-4827-6187	16-5847-1989	NewFields
13			16	17:05	0.6189	0.1842	0.9414			02-7670-7538	12-6858-1224	NewFields
14			23	15:30	0.9776	0.5429	2.774	(+)	(+)	02-7931-2327	08-6196-8679	NewFields
15		Nov	20	16:40	0.331	-0.1037	-0.5301			00-5670-8889	03-4956-3533	NewFields
16	2014	Jan	20	16:30	0.3468	-0.08793	-0.4493			10-4601-7006	03-8347-2013	NewFields
17		Feb	7	16:45	0.6246	0.1899	0.9706			06-3386-1201	18-4306-3796	NewFields
18			19	17:40	0.5178	0.08312	0.4247			15-4176-2850	17-3589-9306	NewFields
19		Apr	4	16:50	0.4667	0.03197	0.1634			10-3853-0984	12-8741-3238	ENVIRON
20		Jun	12	15:19	0.334	-0.1007	-0.5147			06-0659-9100	16-2602-7223	ENVIRON
21		Jul	2	15:45	0.1769	-0.2578	-1.317	(-)		01-9725-8507	06-3470-5790	ENVIRON

CETIS QC Plot

Report Date: 30 Jul-14 10:26 (1 of 1)

Reference Toxicant 96-h Acute Survival Test — **All Matching Labs**

Test Type: Survival | **Organism:** Menidia beryllina (Inland Silverside) | **Material:** Unionized Ammonia
Protocol: EPA/821/R-02-012 (2002) | **Endpoint:** Proportion Survived | **Source:** Reference Toxicant-REF



Mean:	0.3744	**Count:**	20	**-1s Warning Limit:**	0.2222	**-2s Action Limit:**	0.07
Sigma:	0.1522	**CV:**	40.70%	**+1s Warning Limit:**	0.5266	**+2s Action Limit:**	0.6788

Quality Control Data

Point	Year	Month	Day	Time	QC Data	Delta	Sigma	Warning	Action	Test ID	Analysis ID	Laboratory
1	2011	Nov	17	15:00	0.362	-0.0124	-0.08147			17-3808-7563	18-1085-6875	NewFields
2		Dec	3	13:00	0.392	0.0176	0.1156			03-4597-8397	14-2469-1316	NewFields
3	2012	Jan	27	15:35	0.545	0.1706	1.121	(+)		16-8421-0766	20-3901-9455	NewFields
4		May	2	14:45	0.258	-0.1164	-0.7648			14-7614-0254	04-4063-9462	NewFields
5		Oct	5	17:30	0.189	-0.1854	-1.218	(-)		20-0252-0929	02-8082-6967	NewFields
6		Nov	9	16:50	0.278	-0.0964	-0.6334			06-8912-5820	10-0353-5749	NewFields
7			21	17:40	0.571	0.1966	1.292	(+)		13-3564-1765	21-3816-3119	NewFields
8		Dec	7	18:00	0.268	-0.1064	-0.6991			08-3888-7269	18-3798-1139	NewFields
9	2013	Mar	29	17:30	0.314	-0.0604	-0.3968			20-7362-7128	00-7877-4581	NewFields
10		May	9	17:15	0.347	-0.0274	-0.18			17-2216-3359	18-1799-7373	NewFields
11		Jun	13	14:35	0.207	-0.1674	-1.1	(-)		06-7935-4299	16-2815-3647	NewFields
12		Aug	2	16:55	0.442	0.0676	0.4442			07-4827-6187	17-9598-2969	NewFields
13			16	17:05	0.473	0.0986	0.6478			02-7670-7538	06-1736-3232	NewFields
14			23	15:30	0.795	0.4206	2.763	(+)	(+)	02-7931-2327	13-4467-3069	NewFields
15		Nov	20	16:40	0.239	-0.1354	-0.8896			00-5670-8889	10-6934-5345	NewFields
16	2014	Jan	20	16:30	0.267	-0.1074	-0.7057			10-4601-7006	14-5438-2451	NewFields
17		Feb	7	16:45	0.575	0.2006	1.318	(+)		06-3386-1201	08-9520-2984	NewFields
18			19	17:40	0.349	-0.0254	-0.1669			15-4176-2850	15-8957-5109	NewFields
19		Apr	4	16:50	0.323	-0.0514	-0.3377			10-3853-0984	21-2079-5003	ENVIRON
20		Jun	12	15:19	0.294	-0.0804	-0.5283			06-0659-9100	11-9023-9776	ENVIRON
21		Jul	2	15:45	0.157	-0.2174	-1.428	(-)		01-9725-8507	07-4951-4035	ENVIRON

CETIS Summary Report

Reference Toxicant 96-h Acute Survival Test **ENVIRON**

Batch ID:	00-4668-2822	**Test Type:**	Survival	**Analyst:**	
Start Date:	02 Jul-14 15:45	**Protocol:**	EPA/821/R-02-012 (2002)	**Diluent:**	Laboratory Seawater
Ending Date:	06 Jul-14 15:50	**Species:**	Menidia beryllina	**Brine:**	Not Applicable
Duration:	4d 0h	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	06-8042-9631	**Code:**	288E883F	**Client:**	Internal Lab
Sample Date:	05 May-13	**Material:**	Total Ammonia	**Project:**	Reference Toxicant
Receive Date:	05 May-13	**Source:**	Reference Toxicant		
Sample Age:	423d 16h	**Station:**	P140505.13		

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
03-6772-6991	Proportion Survived	12.9	19.7	15.94	29.4%		Dunnett Multiple Comparison Test

Point Estimate Summary

Analysis ID	Endpoint	Level	mg/L	95% LCL	95% UCL	TU	Method
04-8237-1022	Proportion Survived	EC50	16.45	15.01	18.04		Trimmed Spearman-Kärber

Proportion Survived Summary

C-mg/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Dilution Water	3	0.9	0.6516	1	0.8	1	0.05774	0.1	11.11%	0.0%
12.9		3	0.7333	0.3539	1	0.6	0.9	0.08819	0.1528	20.83%	18.52%
19.7		3	0.2333	0	0.6128	0.1	0.4	0.08819	0.1528	65.47%	74.07%
29.4		3	0	0	0	0	0	0	0		100.0%
38.6		3	0	0	0	0	0	0	0		100.0%
47.7		3	0	0	0	0	0	0	0		100.0%

Proportion Survived Detail

C-mg/L	Control Type	Rep 1	Rep 2	Rep 3
0	Dilution Water	1	0.8	0.9
12.9		0.7	0.9	0.6
19.7		0.2	0.4	0.1
29.4		0	0	0
38.6		0	0	0
47.7		0	0	0

Proportion Survived Binomials

C-mg/L	Control Type	Rep 1	Rep 2	Rep 3
0	Dilution Water	10/10	8/10	9/10
12.9		7/10	9/10	6/10
19.7		2/10	4/10	1/10
29.4		0/10	0/10	0/10
38.6		0/10	0/10	0/10
47.7		0/10	0/10	0/10

CETIS Test Data Worksheet

Reference Toxicant 96-h Acute Survival Test **ENVIRON**

Start Date:	02 Jul-14 15:45	**Species:**	Menidia beryllina	**Sample Code:**	288E883F
End Date:	06 Jul-14 15:50	**Protocol:**	EPA/821/R-02-012 (2002)	**Sample Source:**	Reference Toxicant
Sample Date:	05 May-13	**Material:**	Total Ammonia	**Sample Station:**	P140505.13

C-mg/L	Code	Rep	Pos	# Exposed	# Survived	Notes
0	D	1	1	10	10	
0	D	2	17	10	8	
0	D	3	5	10	9	
12.9		1	15	10	7	
12.9		2	12	10	9	
12.9		3	10	10	6	
19.7		1	13	10	2	
19.7		2	14	10	4	
19.7		3	7	10	1	
29.4		1	6	10	0	
29.4		2	9	10	0	
29.4		3	16	10	0	
38.6		1	8	10	0	
38.6		2	3	10	0	
38.6		3	2	10	0	
47.7		1	11	10	0	
47.7		2	4	10	0	
47.7		3	18	10	0	

CETIS Summary Report

Reference Toxicant 96-h Acute Survival Test **ENVIRON**

Batch ID:	00-4668-2822	**Test Type:**	Survival	**Analyst:**	
Start Date:	02 Jul-14 15:45	**Protocol:**	EPA/821/R-02-012 (2002)	**Diluent:**	Laboratory Seawater
Ending Date:	06 Jul-14 15:50	**Species:**	Menidia beryllina	**Brine:**	Not Applicable
Duration:	4d 0h	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	14-6172-7729	**Code:**	572031F1	**Client:**	Internal Lab
Sample Date:	05 May-14	**Material:**	Unionized Ammonia	**Project:**	Reference Toxicant
Receive Date:	05 May-14	**Source:**	Reference Toxicant		
Sample Age:	58d 16h	**Station:**	P140505.13		

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
07-4951-4035	Proportion Survived	0.157	0.192	0.1736	29.4%		Dunnett Multiple Comparison Test

Point Estimate Summary

Analysis ID	Endpoint	Level	mg/L	95% LCL	95% UCL	TU	Method
06-3470-5790	Proportion Survived	EC50	0.1769	0.1672	0.1872		Trimmed Spearman-Kärber

Proportion Survived Summary

C-mg/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Dilution Water	3	0.9	0.6516	1	0.8	1	0.05774	0.1	11.11%	0.0%
0.157		3	0.7333	0.3539	1	0.6	0.9	0.08819	0.1528	20.83%	18.52%
0.192		3	0.2333	0	0.6128	0.1	0.4	0.08819	0.1528	65.47%	74.07%
0.291		3	0	0	0	0	0	0	0		100.0%
0.308		3	0	0	0	0	0	0	0		100.0%
0.387		3	0	0	0	0	0	0	0		100.0%

Proportion Survived Detail

C-mg/L	Control Type	Rep 1	Rep 2	Rep 3
0	Dilution Water	1	0.8	0.9
0.157		0.7	0.9	0.6
0.192		0.2	0.4	0.1
0.291		0	0	0
0.308		0	0	0
0.387		0	0	0

Proportion Survived Binomials

C-mg/L	Control Type	Rep 1	Rep 2	Rep 3
0	Dilution Water	10/10	8/10	9/10
0.157		7/10	9/10	6/10
0.192		2/10	4/10	1/10
0.291		0/10	0/10	0/10
0.308		0/10	0/10	0/10
0.387		0/10	0/10	0/10

CETIS Test Data Worksheet

Reference Toxicant 96-h Acute Survival Test **ENVIRON**

Start Date:	02 Jul-14 15:45	**Species:**	Menidia beryllina
End Date:	06 Jul-14 15:50	**Protocol:**	EPA/821/R-02-012 (2002)
Sample Date:	05 May-14	**Material:**	Unionized Ammonia
Sample Code:	572031F1		
Sample Source:	Reference Toxicant		
Sample Station:	P140505.13		

C-mg/L	Code	Rep	Pos	# Exposed	# Survived	Notes
0	D	1	13	10	10	
0	D	2	16	10	8	
0	D	3	8	10	9	
0.157		1	1	10	7	
0.157		2	9	10	9	
0.157		3	6	10	6	
0.192		1	18	10	2	
0.192		2	15	10	4	
0.192		3	5	10	1	
0.291		1	2	10	0	
0.291		2	3	10	0	
0.291		3	11	10	0	
0.308		1	10	10	0	
0.308		2	12	10	0	
0.308		3	17	10	0	
0.387		1	14	10	0	
0.387		2	4	10	0	
0.387		3	7	10	0	

ENVIRON

96-Hour *Menidia beryllina* Reference Toxicant Test

Test ID: P140505.13	Replicates: 3	Study Director: BH	Location: Bath 7
Dilution Water Batch: FSW070214.01	Organism Batch: ARB 5417	Associated Test(s): POAIC	No. of Organisms: 10
Toxicant: Ammonium chloride	Lot Number: 3244 C535	Date Dilutions Prepared: 7/2/14	Initials: JL
Target Concentrations: **0, 17, 25, 35, 50, 65 ppm**	Quantity of Stock: Target: See Spiking Worksheet	Quantity of Diluent: Target: 1200 mL	
65 ppm	Actual: JL	Actual: JL	

Reference toxicant concentrations are 50, 35, 25, and 17 ppm.

0 Hours	Date: 7/02/14	WQ Time: 1500	Initials: JL	Start Time: 1545	Initials: JL

STOCK

	Control	17	25	35	50	65
D.O. (mg/L)	8.8	8.8	8.8	8.8	8.8	8.8
Temperature	19.1	19.1	19.2	19.4	19.6	19.8
Salinity	30	30	30	30	30	30
pH	7.8	7.6	7.5	7.5	7.4	7.4

24 Hours	Date: 7/03/14	WQ Time: 0935	Replicate: 1	Initials: KMS

STOCK

	Control	17	25	35	50	65
D.O. (mg/L)	6.8	7.2	6.9	6.9	6.8	7.2
Temperature	20.5	20.5	21.0	20.8	20.8	20.8
Salinity	30	30	30	30	30	30
pH	7.7	7.7	7.6	7.5	7.5	7.6

24 Hours	Date:	Time:	Initials:

	Control	17	25	35	50	65
No. Alive Rep 1	10	9(1)	7(3)	0(10)	0(10)	0(10)
No. Alive Rep 2	10	10	5(5)	0(10)	0(10)	0(10)
No. Alive Rep 3	10	10	8(3)	0(10)	0(10)	0(10)

ENVIRON

96-Hour *Menidia beryllina* Reference Toxicant Test

48 Hours	Date: 7/4	WQ Time: 1245	Replicate: 2	Initials: YE

STOCK

	Control	17	25	35	50	65
D.O. (mg/L)	7.2	6.7	6.9			
Temperature	20.7	20.7	20.7			
Salinity	30	30	30			
pH	7.8	7.8	7.8			

48 Hours	Date: 7/4	Time: 1110	Initials: MMB

	Control	17	25	35	50	65
No. Alive Rep 1	10	8 (1)	3 (4)			
No. Alive Rep 3	8 (2)	9 (1)	5			
No. Alive Rep 3	9 (1)	8 (2)	4 (4)			

72 Hours	Date: 7/05/19	WQ Time: 1420	Replicate: 3	Initials: JL

STOCK

	Control	17	25	35	50	65
D.O. (mg/L)	6.6	6.8	7.0			
Temperature	21.1	20.9	20.9			
Salinity	30	30	30			
pH	7.9	7.8	7.8			

72 Hours	Date: 7/05/19	Time: 1420	Initials: JL

	Control	17	25	35	50	65
No. Alive Rep 1	10	7 (1)	3			
No. Alive Rep 2	8	9	4 (1)			
No. Alive Rep 3	9	7 (1)	2 (2)			

ENVIRON

96-Hour *Menidia beryllina* Reference Toxicant Test

96 Hours	Date: 7.6.14	WQ Time: 1550	Replicate: 1	Initials: JL

STOCK

	Control	17	25	35	50	65
D.O. (mg/L)	8.9	8.7	8.5			
Temperature	22.4	21.9	21.8			
Salinity	30	30	30			
pH	7.9	7.8	7.8			

96 Hour Survival Data	End Time: 1550		Initials: JL

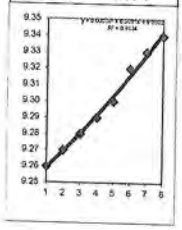
	Control	17	25	35	50	65
No. Alive Rep 1	10	7	2(1)			
No. Alive Rep 2	8	9	4			
No. Alive Rep 3	9	6(1)	1(2)			

☑ Pass ☐ Fail

CLIENT:	Internal	Date of Test:	02-Jul-14
PROJECT:		Test Type:	Menidia
COMMENTS:			

To convert Total Ammonia (mg/L) to Free (un-ionized) Ammonia (mg/L) enter the corresponding total ammonia, salinity, temperature, and pH.

Integer: I-factor	
1	9.26
2	9.27
3	9.28
4	9.29
5	9.30
6	9.32
7	9.33
8	9.34



	Sample	Mod	NH3T (mg/L)	salinity (ppt)	pH	temp (C)	temp (K)	i-factor	Mod	NH3U (mg/L)
	Target / Sample Name		Actual	22.9	8.0	24.1	297.26	9.3053		#VALUE!
	Example 3.5		2.000	10.0	7.5	5.0	278.16	9.2750		0.008
1										
2										
3	17		12.9	30	7.6	19.1	292.26	9.3242		0.157
4	25		19.7	30	7.5	19.2	292.36	9.3242		0.192
5	35		29.4	30	7.5	19.4	292.56	9.3242		0.291
6	50		38.6	30	7.4	19.6	292.76	9.3242		0.308
7	65		47.7	30	7.4	19.8	292.96	9.3242		0.387
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
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ENVIRON **Ammonia Reference Toxicant Spiking Worksheet**

Menidia NH_3 RT

Assumptions in Model
Stock ammonia concentration is 9,000 mg/L = 9 mg/mL

Actual Reading
3910

Test Solutions			Volume of stock to reach desired concentration	
Measured Concentration	**Desired Concentration**	**Volume**		
mg/L	mg/L	mL	mL stock to increase	
0.00	0	1200	[redacted]	SALT WATER
12.9	**17**	1200		**7.826**
19.7	**25**	1200		**11.509**
29.4	**35**	1200		**16.113**
38.6	**50**	1200		**23.018**
47.7	**65**	1200		**29.923**

APPENDIX A.3 *Mytilus* sp. Water-Column Test

Shipyard Creek
Test Results for the SPP Larval Test with Mytilus sp.

Treatment	SPP (%)	Rep	Normal	Abnormal	Total	Percent Normal (Col. E/Col. G)	Percent Survival (Col. H/Stk Den)	Normal Survivorship (Col. E/Stk Den)	Mean Percentage Normal	SD	Mean Percentage Survival	SD	Mean Normal Survivorship	SD
Control	0	1	235	5	240	97.9	90.2	88.3						
		2	218	10	228	95.6	85.7	82.0						
		3	217	6	223	97.3	83.8	81.6						
		4	199	10	209	95.2	78.6	74.8						
		5	228	15	243	93.8	91.4	85.7	96.0	1.6	85.9	5.2	82.5	5.1
Site Water	0	1	211	7	218	96.8	82.0	79.3						
		2	198	10	208	95.2	78.2	74.4						
		3	225	5	230	97.8	86.5	84.6						
		4	215	7	222	96.8	83.5	80.8						
		5	232	14	246	94.3	92.5	87.2	96.2	1.4	84.5	5.4	81.3	4.9
SYC14-TB1	1	1	196	3	199	98.5	74.8	73.7						
		2	461	25	486	94.9	91.4	86.7						
		3	259	8	267	97.0	100.0	97.4						
		4	229	13	242	94.6	91.0	86.1						
		5	223	7	230	97.0	86.5	83.8	96.4	1.6	88.7	9.2	85.5	8.4
SYC14-TB1	10	1	230	17	247	93.1	92.9	86.5						
		2	223	15	238	93.7	89.5	83.8						
		3	215	18	233	92.3	87.6	80.8						
		4	205	16	221	92.8	83.1	77.1						
		5	199	20	219	90.9	82.3	74.8	92.5	1.1	87.1	4.4	80.6	4.8
SYC14-TB1	25	1	0	194	194	0.0	72.9	0.0						
		2	0	202	202	0.0	75.9	0.0						
		3	0	214	214	0.0	80.5	0.0						
		4	0	189	189	0.0	71.1	0.0						
		5	0	191	191	0.0	71.8	0.0	0.0	0.0	74.4	3.8	0.0	0.0
SYC14-TB1	50	1	0	133	133	0.0	50.0	0.0						
		2	0	214	214	0.0	80.5	0.0						
		3	0	171	171	0.0	64.3	0.0						
		4	0	171	171	0.0	64.3	0.0						
		5	0	195	195	0.0	73.3	0.0	0.0	0.0	66.5	11.4	0.0	0.0
SYC14-TB1	100	1	0	6	6	0.0	2.3	0.0						
		2	0	0	0	0.0	0.0	0.0						
		3	0	6	6	0.0	2.3	0.0						
		4	0	3	3	0.0	1.1	0.0						
		5	0	6	6	0.0	2.3	0.0	0.0	0.0	1.6	1.0	0.0	0.0

Shipyard Creek
Test Results for the SPP Larval Test with Mytilus sp.

Treatment	SPP (%)	Rep	Normal	Abnormal	Total	Percent Normal (Col. E/Col. G)	Percent Survival (Col. H/Stk Den)	Normal Survivorship (Col. E/Stk Den)	Mean Percentage Normal	SD	Mean Percentage Survival	SD	Mean Normal Survivorship	SD
		1	226	11	237	95.4	89.1	85.0						
		2	245	9	254	96.5	95.5	92.1						
SYC14-TB2	1	3	244	13	257	94.9	96.6	91.7						
		4	212	13	225	94.2	84.6	79.7						
		5	209	9	218	95.9	82.0	78.6	95.4	0.9	89.5	6.5	85.4	6.4
		1	226	31	257	87.9	96.6	85.0						
		2	211	17	228	92.5	85.7	79.3						
SYC14-TB2	10	3	196	39	235	83.4	88.3	73.7						
		4	206	27	233	88.4	87.6	77.4						
		5	191	17	208	91.8	78.2	71.8	88.8	3.6	87.3	6.6	77.4	5.1
		1	0	167	167	0.0	62.8	0.0						
		2	0	183	183	0.0	68.8	0.0						
SYC14-TB2	25	3	0	207	207	0.0	77.8	0.0						
		4	0	182	182	0.0	68.4	0.0						
		5	0	211	211	0.0	79.3	0.0	0.0	0.0	71.4	7.0	0.0	0.0
		1	0	181	181	0.0	68.0	0.0						
		2	0	191	191	0.0	71.8	0.0						
SYC14-TB2	50	3	0	174	174	0.0	65.4	0.0						
		4	0	179	179	0.0	67.3	0.0						
		5	0	175	175	0.0	65.8	0.0	0.0	0.0	67.7	2.5	0.0	0.0
		1	0	4	4	0.0	1.5	0.0						
		2	0	4	4	0.0	1.5	0.0						
SYC14-TB2	100	3	0	5	5	0.0	1.9	0.0						
		4	0	24	24	0.0	9.0	0.0						
		5	0	11	11	0.0	4.1	0.0	0.0	0.0	3.6	3.2	0.0	0.0

Shipyard Creek
Test Results for the SPP Larval Test with Mytilus sp.

Treatment	SPP (%)	Rep	Normal	Abnormal	Total	Percent Normal (Col. E/Col. G)	Percent Survival (Col. H/Stk Den)	Normal Survivorship (Col. E/Stk Den)	Mean Percentage Normal	SD	Mean Percentage Survival	SD	Mean Normal Survivorship	SD
		1	233	9	242	96.3	91.0	87.6						
		2	212	7	219	96.8	82.3	79.7						
SYC14-AC	1	3	187	6	193	96.9	72.6	70.3						
		4	226	14	240	94.2	90.2	85.0						
		5	186	6	192	96.9	72.2	69.9	96.2	1.2	81.7	9.1	78.5	8.2
		1	179	9	188	95.2	70.7	67.3						
		2	218	11	229	95.2	86.1	82.0						
SYC14-AC	10	3	218	5	223	97.8	83.8	82.0						
		4	210	8	218	96.3	82.0	78.9						
		5	232	10	242	95.9	91.0	87.2	96.1	1.1	82.7	7.5	79.5	7.4
		1	0	214	214	0.0	80.5	0.0						
		2	0	219	219	0.0	82.3	0.0						
SYC14-AC	25	3	0	190	190	0.0	71.4	0.0						
		4	0	187	187	0.0	70.3	0.0						
		5	0	197	197	0.0	74.1	0.0	0.0	0.0	75.7	5.4	0.0	0.0
		1	0	204	204	0.0	76.7	0.0						
		2	0	198	198	0.0	74.4	0.0						
SYC14-AC	50	3	0	185	185	0.0	69.5	0.0						
		4	0	182	182	0.0	68.4	0.0						
		5	0	203	203	0.0	76.3	0.0	0.0	0.0	73.1	3.9	0.0	0.0
		1	0	104	104	0.0	39.1	0.0						
		2	0	131	131	0.0	49.2	0.0						
SYC14-AC	100	3	0	53	53	0.0	19.9	0.0						
		4	0	55	55	0.0	20.7	0.0						
		5	0	118	118	0.0	44.4	0.0	0.0	0.0	34.7	13.6	0.0	0.0

Shipyard Creek
Test Results for the SPP Larval Test with Mytilus sp.

Treatment	SPP (%)	Rep	Normal	Abnormal	Total	Percent Normal (Col. E/Col. G)	Percent Survival (Col. H/Stk Den)	Normal Survivorship (Col. E/Stk Den)	Mean Percentage Normal	SD	Mean Percentage Survival	SD	Mean Normal Survivorship	SD
SYC14-TB1-AR	1	1	204	7	211	96.7	79.3	76.7						
		2	206	13	219	94.1	82.3	77.4						
		3	216	10	226	95.6	85.0	81.2						
		4	224	10	234	95.7	88.0	84.2						
		5	241	11	252	95.6	94.7	90.6	95.5	0.9	85.9	5.9	82.0	5.7
SYC14-TB1-AR	10	1	247	9	256	96.5	96.2	92.9						
		2	224	4	228	98.2	85.7	84.2						
		3	232	14	246	94.3	92.5	87.2						
		4	241	12	253	95.3	95.1	90.6						
		5	212	7	219	96.8	82.3	79.7	96.2	1.5	90.4	6.1	86.9	5.2
SYC14-TB1-AR	25	1	208	8	216	96.3	81.2	78.2						
		2	209	8	217	96.3	81.6	78.6						
		3	241	10	251	96.0	94.4	90.6						
		4	214	5	219	97.7	82.3	80.5						
		5	230	5	235	97.9	88.3	86.5	96.8	0.9	85.6	5.7	82.9	5.5
SYC14-TB1-AR	50	1	242	8	250	96.8	94.0	91.0						
		2	223	7	230	97.0	86.5	83.8						
		3	252	12	264	95.5	99.2	94.7						
		4	251	7	258	97.3	97.0	94.4						
		5	217	6	223	97.3	83.8	81.6	96.8	0.8	92.1	6.7	89.1	6.1
SYC14-TB1-AR	100	1	233	3	236	98.7	88.7	87.6						
		2	208	9	217	95.9	81.6	78.2						
		3	190	9	199	95.5	74.8	71.4						
		4	180	5	185	97.3	69.5	67.7						
		5	201	12	213	94.4	80.1	75.6	96.3	1.7	78.9	7.2	76.1	7.6

Shipyard Creek
Test Results for the SPP Larval Test with Mytilus sp.

Treatment	SPP (%)	Rep	Normal	Abnormal	Total	Percent Normal (Col. E/Col. G)	Percent Survival (Col. H/Stk Den)	Normal Survivorship (Col. E/Stk Den)	Mean Percentage Normal	SD	Mean Percentage Survival	SD	Mean Normal Survivorship	SD
SYC14-TB2-AR	1	1	210	10	220	95.5	82.7	78.9						
		2	218	7	225	96.9	84.6	82.0						
		3	260	16	276	94.2	100.0	97.7						
		4	241	11	252	95.6	94.7	90.6						
		5	240	5	245	98.0	92.1	90.2	96.0	1.4	90.8	7.2	87.9	7.5
SYC14-TB2-AR	10	1	217	7	224	96.9	84.2	81.6						
		2	217	6	223	97.3	83.8	81.6						
		3	227	11	238	95.4	89.5	85.3						
		4	265	13	278	95.3	100.0	99.6						
		5	195	7	202	96.5	75.9	73.3	96.3	0.9	86.7	8.9	84.3	9.6
SYC14-TB2-AR	25	1	184	6	190	96.8	71.4	69.2						
		2	220	8	228	96.5	85.7	82.7						
		3	220	9	229	96.1	86.1	82.7						
		4	232	10	242	95.9	91.0	87.2						
		5	188	12	200	94.0	75.2	70.7	95.9	1.1	81.9	8.2	78.5	8.1
SYC14-TB2-AR	50	1	202	5	207	97.6	77.8	75.9						
		2	235	5	240	97.9	90.2	88.3						
		3	194	8	202	96.0	75.9	72.9						
		4	219	17	236	92.8	88.7	82.3						
		5	185	17	202	91.6	75.9	69.5	95.2	2.9	81.7	7.1	77.8	7.5
SYC14-TB2-AR	100	1	205	11	216	94.9	81.2	77.1						
		2	214	9	223	96.0	83.8	80.5						
		3	202	7	209	96.7	78.6	75.9						
		4	214	12	226	94.7	85.0	80.5						
		5	197	10	207	95.2	77.8	74.1	95.5	0.8	81.3	3.1	77.6	2.8

Shipyard Creek
Test Results for the SPP Larval Test with Mytilus sp.

Treatment	SPP (%)	Rep	Normal	Abnormal	Total	Percent Normal (Col. E/Col. G)	Percent Survival (Col. H/Stk Den)	Normal Survivorship (Col. E/Stk Den)	Mean Percentage Normal	SD	Mean Percentage Survival	SD	Mean Normal Survivorship	SD
SYC14-AC-AR	1	1	235	16	251	93.6	94.4	88.3						
		2	219	12	231	94.8	86.8	82.3						
		3	213	10	223	95.5	83.8	80.1						
		4	206	11	217	94.9	81.6	77.4						
		5	194	5	199	97.5	74.8	72.9	95.3	1.4	84.3	7.2	80.2	5.7
SYC14-AC-AR	10	1	196	14	210	93.3	78.9	73.7						
		2	192	12	204	94.1	76.7	72.2						
		3	194	10	204	95.1	76.7	72.9						
		4	206	15	221	93.2	83.1	77.4						
		5	221	8	229	96.5	86.1	83.1	94.5	1.4	80.3	4.2	75.9	4.5
SYC14-AC-AR	25	1	219	9	228	96.1	85.7	82.3						
		2	197	11	208	94.7	78.2	74.1						
		3	190	7	197	96.4	74.1	71.4						
		4	209	8	217	96.3	81.6	78.6						
		5	217	4	221	98.2	83.1	81.6	96.3	1.2	80.5	4.5	77.6	4.7
SYC14-AC-AR	50	1	216	11	227	95.2	85.3	81.2						
		2	192	13	205	93.7	77.1	72.2						
		3	219	6	225	97.3	84.6	82.3						
		4	225	12	237	94.9	89.1	84.6						
		5	213	7	220	96.8	82.7	80.1	95.6	1.5	83.8	4.4	80.1	4.7
SYC14-AC-AR	100	1	212	7	219	96.8	82.3	79.7						
		2	189	13	202	93.6	75.9	71.1						
		3	181	10	191	94.8	71.8	68.0						
		4	246	5	251	98.0	94.4	92.5						
		5	211	8	219	96.3	82.3	79.3	95.9	1.7	81.4	8.5	78.1	9.5
Socking Density		1	267											
		2	262											
		3	250											
		4	280											
		5	271											
		Mean	**266**											

ENVIRON

LARVAL DEVELOPMENT
SUSPENDED PARTICULATE PHASE
ENDPOINT DATA SHEET

SPECIES					
Mytilus edulis					
CLIENT	PROJECT	JOB NUMBER	PROJECT MANAGER	LABORATORY	PROTOCOL
ANAMAR	Shipyard Creek	0	B. Hester	Port Gamble Incubator	SERIM

LARVAL OBSERVATION DATA

CLIENT/ NEWFIELDS ID	CONCENTRATION value	CONCENTRATION units	VIAL NUMBER	REP	NUMBER NORMAL	NUMBER ABNORMAL	DATE	TECHNICIAN	COMMENTS
ZERO-TIME (PRE)	0	%		1	267				
				2	262				
				3	250				
				4	280				
				5	271				
Control /	0	%		1	235	5			
				2	218	10			
				3	217	6			
				4	199	10			
				5	228	15			
SYC14-SW /	0	%		1	211	7			
				2	198	10			
				3	225	5			
				4	215	78 (x)			
				5	232	14			

① 12 7/29/14

ENVIRON

LARVAL DEVELOPMENT
SUSPENDED PARTICULATE PHASE
ENDPOINT DATA SHEET

CLIENT	PROJECT	JOB NUMBER	SPECIES	PROJECT MANAGER	LABORATORY	PROTOCOL
ANAMAR	Shipyard Creek	0	Mytilus edulis	B. Hester	Port Gamble Incubator	SERIM

LARVAL OBSERVATION DATA

CLIENT/ NEWFIELDS ID	CONCENTRATION value	CONCENTRATION units	VIAL NUMBER	REP	NUMBER NORMAL	NUMBER ABNORMAL	DATE	TECHNICIAN	COMMENTS
SYC14-TB1/.	1	%		1	196	3			
				2	461	25			
				3	259	8			
				4	229	13			
				5	223	7			
SYC14-TB1/.	10	%		1	230	17			
				2	223	15			
				3	215	18			
				4	205	16			
				5	199	20			
SYC14-TB1/.	25	%		1	0	194			
				2	0	202			
				3	0	214			
				4	0	189			
				5	0	191			
SYC14-TB1/.	50	%		1	0	133			
				2	0	214			
				3	0	171			
				4	0	171			
				5	0	195			
SYC14-TB1/.	100	%		1	0	6			
				2	0	0			
				3	0	6			
				4	0	3			
				5	0	6			

ENVIRON

LARVAL DEVELOPMENT
SUSPENDED PARTICULATE PHASE
ENDPOINT DATA SHEET

SPECIES					
Mytilus edulis					
CLIENT	PROJECT	JOB NUMBER	PROJECT MANAGER	LABORATORY	PROTOCOL
ANAMAR	Shipyard Creek	0	B. Hester	Port Gamble Incubator	SERIM

LARVAL OBSERVATION DATA

CLIENT/ NEWFIELDS ID	CONCENTRATION value	CONCENTRATION units	VIAL NUMBER	REP	NUMBER NORMAL	NUMBER ABNORMAL	DATE	TECHNICIAN	COMMENTS
SYC14-TB2/.	1	%		1	226	11			
				2	245	9			
				3	244	13			
				4	212	13			
				5	209	9			
SYC14-TB2/.	10	%		1	226	31			
				2	211	17			
				3	196	39			
				4	206	27			
				5	191	17			
SYC14-TB2/.	25	%		1	0	167			
				2	0	183			
				3	0	207			
				4	0	182			
				5	0	211			
SYC14-TB2/.	50	%		1	0	181			
				2	0	191			
				3	0	174			
				4	0	179			
				5	0	175			
SYC14-TB2/.	100	%		1	0	4			
				2	0	4			
				3	0	5			
				4	0	24			
				5	0	11			

ENVIRON

LARVAL DEVELOPMENT
SUSPENDED PARTICULATE PHASE
ENDPOINT DATA SHEET

CLIENT	PROJECT	JOB NUMBER	SPECIES		
			Mytilus edulis		
CLIENT	PROJECT	JOB NUMBER	PROJECT MANAGER	LABORATORY	PROTOCOL
ANAMAR	Shipyard Creek	0	B. Hester	Port Gamble Incubator	SERIM

LARVAL OBSERVATION DATA

CLIENT/ NEWFIELDS ID	CONCENTRATION value	CONCENTRATION units	VIAL NUMBER	REP	NUMBER NORMAL	NUMBER ABNORMAL	DATE	TECHNICIAN	COMMENTS
SYC14-AC /.	1 %			1	233	9			
				2	212	7			
				3	187	6			
				4	226	14			
				5	186	6			
SYC14-AC /.	10 %			1	179	9			
				2	218	11			
				3	218	5			
				4	210	8			
				5	232	10			
SYC14-AC /.	25 %			1	0	214			
				2	0	219			
				3	0	190			
				4	0	187			
				5	0	197			
SYC14-AC /.	50 %			1	0	204			
				2	0	198			
				3	0	185			
				4	0	182			
				5	0	203			
SYC14-AC /.	100 %			1	0	104			
				2	0	131			
				3	0	53			
				4	0	55			
				5	0	118			

ENVIRON

LARVAL DEVELOPMENT
SUSPENDED PARTICULATE PHASE
ENDPOINT DATA SHEET

CLIENT	PROJECT	JOB NUMBER	SPECIES	PROJECT MANAGER	LABORATORY	PROTOCOL
ANAMAR	Shipyard Creek	0	Mytilus edulis	B. Hester	Port Gamble Incubator	SERIM

LARVAL OBSERVATION DATA

CLIENT/ NEWFIELDS ID	CONCENTRATION value	CONCENTRATION units	VIAL NUMBER	REP	NUMBER NORMAL	NUMBER ABNORMAL	DATE	TECHNICIAN	COMMENTS
SYC14-TB1 AR/.	1	%		1	204	7			
				2	706	13			
				3	216	10			
				4	224	10			
				5	241	11			
SYC14-TB1 AR/.	10	%		1	247	9			
				2	224	4			
				3	232	14			
				4	241	12			
				5	212	7			
SYC14-TB1 AR/.	25	%		1	208	8			
				2	209	8			
				3	241	10			
				4	214	5			
				5	230	5			
SYC14-TB1 AR/.	50	%		1	242	8			
				2	223	7			
				3	252	12			
				4	251	7			
				5	217	6			
SYC14-TB1 AR/.	100	%		1	233	3			
				2	208	9			
				3	190	9			
				4	180	5			
				5	201	12			

ENVIRON

LARVAL DEVELOPMENT
SUSPENDED PARTICULATE PHASE
ENDPOINT DATA SHEET

CLIENT	PROJECT	JOB NUMBER	SPECIES	PROJECT MANAGER	LABORATORY	PROTOCOL
ANAMAR	Shipyard Creek	0	Mytilus edulis	B. Hester	Port Gamble Incubator	SERIM

LARVAL OBSERVATION DATA

CLIENT/ NEWFIELDS ID	CONCENTRATION value	CONCENTRATION units	VIAL NUMBER	REP	NUMBER NORMAL	NUMBER ABNORMAL	DATE	TECHNICIAN	COMMENTS
SYC14-TB2 AR/.	1	%		1	210	10			
				2	218	7			
				3	260	16			
				4	241	11			
				5	240	5			
SYC14-TB2 AR/.	10	%		1	217	7			
				2	217	4			
				3	227	11			
				4	265	13			
				5	195	7			
SYC14-TB2 AR/.	25	%		1	184	6			
				2	220	8			
				3	220	9			
				4	232	10			
				5	188	12			
SYC14-TB2 AR/.	50	%		1	202	5			
				2	235	5			
				3	194	8			
				4	219	17			
				5	185	17			
SYC14-TB2 AR/.	100	%		1	205	11			
				2	214	9			
				3	202	7			
				4	214	12			
				5	197	10			

ENVIRON

LARVAL DEVELOPMENT
SUSPENDED PARTICULATE PHASE
ENDPOINT DATA SHEET

CLIENT	PROJECT	JOB NUMBER	SPECIES	PROJECT MANAGER	LABORATORY	PROTOCOL
ANAMAR	Shipyard Creek	0	Mytilus edulis	B. Hester	Port Gamble Incubator	SERIM

LARVAL OBSERVATION DATA

CLIENT/ NEWFIELDS ID	CONCENTRATION value	CONCENTRATION units	VIAL NUMBER	REP	NUMBER NORMAL	NUMBER ABNORMAL	DATE	TECHNICIAN	COMMENTS
SYC14-AC AR /	1	%		1	235	16			
				2	219	12			
				3	213	10			
				4	206	11			
				5	194	5			
SYC14-AC AR /	10	%		1	196	14			
				2	192	12			
				3	194	10			
				4	206	15			
				5	221	8			
SYC14-AC AR /	25	%		1	219	9			
				2	197	11			
				3	190	7			
				4	209	8			
				5	217	4			
SYC14-AC AR /	50	%		1	216	11			
				2	192	13			
				3	219	6			
				4	225	12			
				5	213	7			
SYC14-AC AR /	100	%		1	212	7			
				2	189	13			
				3	181	10			
				4	246	5			
				5	211	8			

ENVIRON

LARVAL DEVELOPMENTAL WATER-COLUMN TEST
WQ DATA SHEET

CLIENT	PROJECT
ANAMAR	Shipyard Creek
JOB NUMBER	PROJECT MANAGER
0	B. Hester

SPECIES		LABORATORY		PROTOCOL
Mytilus edulis		Port Gamble Incubator		SERIM
TEST START DATE	TIME	TEST END DATE	TIME	
28Jun14	1725	30Jun14	1530	
DILUTION WATER BATCH		TEMP Recorder (HOBO)#		
FSW062714.01		na		

WATER QUALITY DATA

Test contions				DO (mg/L)		TEMPERATURE (°C)		Salinity (ppt)		pH (units)		Ammonia		Sulfides			
				>4.9		16 ± 1		28 ± 2		7.8 ± 0.5							
CLIENT/ ID	CONCENTRATION		DAY	DISS. OXYGEN		TEMPERATURE		SALINITY		pH		AMMONIA		Sulfides		Date	Tech
	value	units		meter	mg/L	meter	°C	meter	ppt	meter	unit	Techn.	mg/L	Techn.	mg/L		
Control	0	%	0	6	7.4	6	16.9	2	28	6	8.0	JL	0.00			6.28.14	BH
			1	6	7.7	6	16.4	2	28	6	8.0					6/29	JL
			2	6	8.0	6	15.7	2	28	6	7.9	① JL	0.00			6/30	JL
			3														
			4														
SYC14-SW	0	%	0	6	8.3	6	16.1	2	27	6	8.0	JL	0.00			6.28	BH
			1	6	8.1	6	16.4	2	27	6	8.0					6/29	JL
			2	6	8.2	6	15.7	2	28	6	8.0	① JL	0.00			6/30	JL
			3														
			4														

① JL 6/30/14.

ENVIRON

LARVAL DEVELOPMENTAL WATER-COLUMN TEST
WQ DATA SHEET

CLIENT	PROJECT
ANAMAR	Shipyard Creek
JOB NUMBER	**PROJECT MANAGER**
0	B. Hester

SPECIES		LABORATORY		PROTOCOL
Mytilus edulis		Port Gamble Incubator		SERIM
TEST START DATE	**TIME**	**TEST END DATE**	**TIME**	
28Jun14	1725	30Jun14	1530	
DILUTION WATER BATCH		**TEMP Recorder (HOBO)#**		
FSW062714.01		na		

WATER QUALITY DATA

Test contions				DO (mg/L)		TEMPERATURE (°C)		Salinity (ppt)		pH (units)		Ammonia		Sulfides			
				>4.9		16 ± 1		28 ± 2		7.8 ± 0.5							
CLIENT/ ID	CONCENTRATION		DAY	DISS. OXYGEN		TEMPERATURE		SALINITY		pH		AMMONIA		Sulfides		Date	Tech
	value	units		meter	mg/L	meter	°C	meter	ppt	meter	unit	Techn.	mg/L	Techn.	mg/L		
SYC14-TB1	1	%	0	6	8.1	6	15.7	2	28	6	8.0	JL	0.00			6.28	BM
			1	6	8.1	6	16.4	2	28	6	8.0					6/29	JL
			2	6	8.3	6	15.7	2	29	6	8.0	JL	0.00			6/30	JL
			3														
			4														
SYC14-TB1	10	%	0	6	8.3	6	15.7	2	28	6	8.0	JL	0.637			6.28	BM
			1	6	8.4	6	16.4	2	28	6	8.1					6/29	JL
			2	6	8.3	6	15.7	2	28	6	8.1	JL	~~0.00~~ ①			6/30	JL
			3										0.232				
			4														
SYC14-TB1	25	%	0	6	8.4	6	15.7	2	28	6	8.1	JL	2.65			6.28	BM
			1	6	8.3	6	16.4	2	28	6	8.2					6/29	JL
			2	6	8.3	6	15.7	2	28	6	8.2	JL	~~0.00~~ ①			6/30	JL
			3										1.76				
			4														
SYC14-TB1	50	%	0	6	8.5	6	15.7	2	28	6	8.1	JL	5.86			6.28	BM
			1	6	8.4	6	16.4	2	28	6	8.2					6/29	JL
			2	6	8.3	6	15.7	2	28	6	8.2	JL	~~0.00~~ ①			6/30	JL
			3										4.52				
			4														
SYC14-TB1	100	%	0	6	8.6	6	15.7	2	27	6	8.1	JL	12.6			6.28	BM
			1	6	8.5	6	16.4	2	27	6	8.3					6/29	JL
			2	6	8.3	6	15.7	2	28	6	8.4	JL	~~0.00~~ ①			6/30	JL
			3										10.4				
			4														

① WP. JL 6/30/14.

ENVIRON

LARVAL DEVELOPMENTAL WATER-COLUM.. TEST
WQ DATA SHEET

CLIENT	PROJECT
ANAMAR	Shipyard Creek
JOB NUMBER	PROJECT MANAGER
0	B. Hester

SPECIES		LABORATORY		PROTOCOL
Mytilus edulis		Port Gamble Incubator		SERIM
TEST START DATE	TIME	TEST END DATE	TIME	
28Jun14	1725	30Jun14	1530	
DILUTION WATER BATCH		TEMP Recorder (HOBO)#		
FSW062714.01		na		

WATER QUALITY DATA

Test contions				DO (mg/L)		TEMPERATURE (°C)		Salinity (ppt)		pH (units)		Ammonia		Sulfides			
				>4.9		16 ± 1		28 ± 2		7.8 ± 0.5							
CLIENT/ ID	CONCENTRATION		DAY	DISS. OXYGEN		TEMPERATURE		SALINITY		pH		AMMONIA		Sulfides		Date	Tech
	value	units		meter	mg/L	meter	°C	meter	ppt	meter	unit	Techn.	mg/L	Techn.	mg/L		
SYC14-TB2	1 %		0	6	7.5	6	15.7	2	28	6	8.0	JL	0.00			6.28	BM
			1	6	8.1	6	16.4	2	28	6	8.1					6/29	JL
			2	6	8.3	6	15.7	2	28	6	8.0	JL	0.00			6/30	JL
			3														
			4														
SYC14-TB2	10 %		0	6	8.1	6	15.7	2	28	6	8.0	JL	0.647			6.28	BM
			1	6	8.3	6	16.4	2	28	6	8.1					6/29	JL
			2	6	8.4	6	15.7	2	28	6	8.1	JL	0.261			6/30	JL
			3														
			4														
SYC14-TB2	25 %		0	6	8.4	6	15.7	2	28	6	8.1	JL	2.11			6.28	BM
			1	6	8.3	6	16.4	2	28	6	8.1		2.13			6/29	JL
			2	6	8.3	6	15.7	2	28	6	8.0	JL	~~0.00~~ (2)			6/30	JL
			3														
			4														
SYC14-TB2	50 %		0	6	8.5	6	15.7	2	28	6	8.1	JL	5.37			6.28	BM
			1	6	8.3	6	16.4	2	28	6	8.2					6/29	JL
			2	6	8.3	6	15.7	2	28	6	8.3	JL	3.71			6/30	JL
			3														
			4														
SYC14-TB2	100 %		0	6	8.6	6	15.7	2	27	6	8.2	JL	12.5			6.28	BM
			1	6	8.4	6	16.4	2	28	6	8.3					6/29	JL
			2	6	8.3	6	15.7	2	29	6	8.4	JL	8.17			6/30	JL
			3														
			4														

(1) IE. JL 6/29/14

(2) WP. JL 6/30/14.

ENVIRON

LARVAL DEVELOPMENTAL WATER-COLUMN TEST
WQ DATA SHEET

CLIENT	PROJECT
ANAMAR	Shipyard Creek
JOB NUMBER	PROJECT MANAGER
0	B. Hester

SPECIES		LABORATORY		PROTOCOL
Mytilus edulis		Port Gamble Incubator		SERIM
TEST START DATE	TIME	TEST END DATE	TIME	
28Jun14	1725	30Jun14	1530	
DILUTION WATER BATCH		TEMP Recorder (HOBO)#		
FSW062714.01		na		

WATER QUALITY DATA

Test contions				DO (mg/L)		TEMPERATURE (°C)		Salinity (ppt)		pH (units)		Ammonia		Sulfides			
				>4.9		16 ± 1		28 ± 2		7.8 ± 0.5							
CLIENT/ ID	CONCENTRATION value	CONCENTRATION units	DAY	DISS. OXYGEN meter	DISS. OXYGEN mg/L	TEMPERATURE meter	TEMPERATURE °C	SALINITY meter	SALINITY ppt	pH meter	pH unit	AMMONIA Techn.	AMMONIA mg/L	Sulfides Techn.	Sulfides mg/L	Date	Tech
SYC14-AC	1 %		0	6	7.8	6	15.7	2	28	6	8.1	JL	0.00			6/28	KM
			1	6	8.0	6	16.4	2	28	6	8.1					6/29	JL
			2	6	8.4	6	15.7	2	28	6	8.0	JL	0.00			6/30	JL
			3														
			4														
SYC14-AC	10 %		0	6	8.3	6	15.7	2	28	6	8.0	JL	0.172			6/28	KM
			1	6	8.3	6	16.4	2	28	6	8.1					6/29	JL
			2	6	8.4	6	15.7	2	28	6	8.0	JL	0.00			6/30	JL
			3														
			4														
SYC14-AC	25 %		0	6	8.3	6	15.7	2	28	6	8.0	JL	~~3.85~~ ①			6/28	KM
			1	6	8.3	6	16.4	2	28	6	8.1		1.27			6/29	JL
			2	6	8.4	6	15.7	2	28	6	8.1	JL	0.482			6/30	JL
			3														
			4														
SYC14-AC	50 %		0	6	8.3	6	15.7	2	27	6	8.0	JL	~~7.92~~ ①			6/28	KM
			1	6	8.4	6	16.4	2	28	6	8.1		3.85			6/29	JL
			2	6	8.5	6	15.7	2	28	6	8.2	JL	1.79			6/30	JL
			3														
			4														
SYC14-AC	100 %		0	6	8.5	6	15.7	2	27	6	8.0	JL	7.92			6.28	KM
			1	6	8.4	6	16.4	2	27	6	8.2					6/29	JL
			2	6	8.4	6	15.7	2	27	6	8.3	JL	5.01			6/30	JL
			3														
			4														

① WC. JL 6/30/14

ENVIRON

LARVAL DEVELOPMENTAL WATER-COLUMN TEST
WQ DATA SHEET

CLIENT	PROJECT
ANAMAR	Shipyard Creek
JOB NUMBER	PROJECT MANAGER
0	B. Hester

SPECIES		LABORATORY		PROTOCOL
Mytilus edulis		Port Gamble Incubator		SERIM
TEST START DATE	TIME	TEST END DATE	TIME	
28Jun14	1725	30Jun14	1530	
DILUTION WATER BATCH		TEMP Recorder (HOBO)#		
FSW062714.01		na		

WATER QUALITY DATA

Test contions				DO (mg/L)		TEMPERATURE (°C)		Salinity (ppt)		pH (units)		Ammonia		Sulfides			
				>4.9		16 ± 1		28 ± 2		7.8 ± 0.5							
CLIENT/ ID	CONCENTRATION		DAY	DISS. OXYGEN		TEMPERATURE		SALINITY		pH		AMMONIA		Sulfides		Date	Tech
	value	units		meter	mg/L	meter	°C	meter	ppt	meter	unit	Techn.	mg/L	Techn.	mg/L		
SYC14-TB1 AR	1	%	0	6	7.9	6	15.7	2	28	6	8.0	JL	0.00			6.28	RM
			1	6	①~~8.0~~ 8.2	6	16.4	2	28	6	8.0					6/29	JL
			2	6	8.3	6	15.7	2	29	6	8.0	JL	0.00			6/30	JL
			3														
			4														
SYC14-TB1 AR	10	%	0	6	8.0	6	15.7	2	28	6	8.0	JL	0.00			628	RM
			1	6	8.3	6	16.4	2	28	6	8.0					6/29	JL
			2	6	8.4	6	15.7	2	29	6	8.0	JL	0.00			6/30	JL
			3														
			4														
SYC14-TB1 AR	25	%	0	6	8.4	6	15.7	2	28	6	8.0	JL	0.00			6.28	RM
			1	6	8.3	6	16.4	2	28	6	8.0					6/29	JL
			2	6	8.3	6	15.7	2	28	6	8.0	JL	0.00			6/30	JL
			3														
			4														
SYC14-TB1 AR	50	%	0	6	8.4	6	15.7	2	28	6	8.0	JL	0.00			6.28	RM
			1	6	8.3	6	16.4	2	28	6	8.0					6/29	JL
			2	6	8.4	6	15.7	2	28	6	8.0	JL	0.00			6/30	JL
			3														
			4														
SYC14-TB1 AR	100	%	0	6	8.0	6	15.7	2	27	6	8.0	JL	0.00			628	RM
			1	6	8.5	6	16.4	2	28	6	8.0					6/29	JL
			2	6	8.4	6	15.7	2	28	6	8.0	JL	0.0724			6/30	JL
			3														
			4														

① WL. JL 6/29/14, 8.2 D.O.

ENVIRON

LARVAL DEVELOPMENTAL WATER-COLUMN TEST
WQ DATA SHEET

CLIENT	PROJECT
ANAMAR	Shipyard Creek
JOB NUMBER	PROJECT MANAGER
0	B. Hester

SPECIES		LABORATORY		PROTOCOL
Mytilus edulis		Port Gamble Incubator		SERIM
TEST START DATE	TIME	TEST END DATE	TIME	
28Jun14	1725	30Jun14	1530	
DILUTION WATER BATCH		TEMP Recorder (HOBO)#		
FSW062714.01		na		

WATER QUALITY DATA

Test contions				DO (mg/L)		TEMPERATURE (°C)		Salinity (ppt)		pH (units)		Ammonia		Sulfides			
				>4.9		16 ± 1		28 ± 2		7.8 ± 0.5							
CLIENT/ ID	CONCENTRATION value	CONCENTRATION units	DAY	DISS. OXYGEN meter	DISS. OXYGEN mg/L	TEMPERATURE meter	TEMPERATURE °C	SALINITY meter	SALINITY ppt	pH meter	pH unit	AMMONIA Techn.	AMMONIA mg/L	Sulfides Techn.	Sulfides mg/L	Date	Tech
SYC14-TB2 AR	1	%	0	6	8.1	6	15.7	2	28	6	8.0	JL	0.00			6.28	BH
			1	6	8.0	6	16.4	2	28	6	8.0					6/29	JL
			2	6	8.3	6	15.7	2	28	6	8.0	JL	0.00			6/30	JL
			3														
			4														
SYC14-TB2 AR	10	%	0	6	8.3	6	15.7	2	28	6	8.0	JL	0.00			6.28	BH
			1	6	8.3	6	16.4	2	28	6	8.1					6/29	JL
			2	6	8.4	6	15.7	2	28	6	8.0	JL	0.00			6/30	JL
			3														
			4														
SYC14-TB2 AR	25	%	0	6	8.4	6	15.7	2	28	6	8.0	JL	0.00			6.28	BH
			1	6	8.3	6	16.4	2	28	6	8.2		0.00			6/29	JL
			2	6	8.3	6	15.7	2	28	6	8.2	JL	~~2.13~~ ②			6/~~29~~ 30 ①	JL
			3														
			4														
SYC14-TB2 AR	50	%	0	6	8.2	6	15.7	2	27	6	8.0	JL	0.00			6.28	BH
			1	6	8.3	6	16.4	2	28	6	8.1					6/29	JL
			2	6	8.4	6	15.7	2	28	6	8.1	JL	0.00			6/30	JL
			3														
			4														
SYC14-TB2 AR	100	%	0	6	8.5	6	15.7	2	27	6	8.0	JL	0.00			6.28	BH
			1	6	8.4	6	16.4	2	28	6	8.1					6/29	JL
			2	6	8.4	6	15.7	2	28	6	8.1	JL	0.0612			6/30	JL
			3														
			4														

① WD. JL 6/30/14.

② WP. JL 6/30/14.

ENVIRON

LARVAL DEVELOPMENTAL WATER-COLUMN TEST
WQ DATA SHEET

CLIENT	PROJECT
ANAMAR	Shipyard Creek
JOB NUMBER	**PROJECT MANAGER**
0	B. Hester

SPECIES		LABORATORY		PROTOCOL
Mytilus edulis		Port Gamble Incubator		SERIM
TEST START DATE	**TIME**	**TEST END DATE**	**TIME**	
28Jun14	1725	30Jun14	1530	
DILUTION WATER BATCH		**TEMP Recorder (HOBO)#**		
FSW062714.01		na		

WATER QUALITY DATA

Test contions				DO (mg/L)		TEMPERATURE (°C)		Salinity (ppt)		pH (units)		Ammonia		Sulfides			
				>4.9		16 ± 1		28 ± 2		7.8 ± 0.5							
CLIENT/ ID	CONCENTRATION value	CONCENTRATION units	DAY	DISS. OXYGEN meter	DISS. OXYGEN mg/L	TEMPERATURE meter	TEMPERATURE °C	SALINITY meter	SALINITY ppt	pH meter	pH unit	AMMONIA Techn.	AMMONIA mg/L	Sulfides Techn.	Sulfides mg/L	Date	Tech
SYC14-AC AR	1	%	0	6	8.2	6	15.7	2	28	6	8.0	JL	0.00			6.28	BH
			1	6	~~7.7~~ 8.1	6	16.4	2	28	6	8.0					6/29	JL
			2	6	8.3	6	15.7	2	28	6	8.0	JL	0.00			6/30	JL
			3														
			4														
SYC14-AC AR	10	%	0	6	8.5	6	15.7	2	28	6	8.0	JL	0.00			6.28	BH
			1	6	8.4	6	16.4	2	28	6	8.1					6/29	JL
			2	6	8.4	6	15.7	2	28	6	8.0	JL	0.00			6/30	JL
			3														
			4														
SYC14-AC AR	25	%	0	6	8.5	6	15.7	2	29	6	8.0	JL	0.00			6.28	BH
			1	6	8.2	6	16.4	2	28	6	8.1					6/29	JL
			2	6	8.4	6	15.7	2	28	6	8.0	JL	0.00			6/30	JL
			3														
			4														
SYC14-AC AR	50	%	0	6	8.4	6	15.7	2	28	6	8.0	JL	0.00			6.28	BH
			1	6	8.3	6	16.4	2	29	6	8.0					6/29	JL
			2	6	8.5	6	15.7	2	29	6	8.0	JL	0.00			6/30	JL
			3														
			4														
SYC14-AC AR	100	%	0	6	8.4	6	15.7	2	27	6	8.0	JL	0.00			6.28	BH
			1	6	8.4	6	16.4	2	28	6	8.1					6/29	JL
			2	6	8.5	6	15.7	2	28	6	8.0	JL	0.00			6/30	JL
			3														
			4														

OWP. JL 6/29/14.

ENVIRON

ORGANISM RECEIPT LOG

Date:	Time:	Batch No.
6.25.14	1521	ARO 3292 Me

Organism / Project:	Source:
M. edulis Shipyard Creek	ARO

Address:	Invoice Attached
On File	Yes (No)

Phone:	Contact:
On File	Stan Sinitski

No. Ordered:	No. Received:	Source Batch:
1 batch	~50	

Condition of Organisms:	Approximate Size or Age:
Good	Adult

Shipper:	B of L (Tracking No.)
Fed Ex	6069 8099 3292

Condition of Container:	Received By:
Good	BH

Container	D.O. (mg/L)	Temp. (°C)	Conductivity or Salinity (Include Units)	pH (Units)	Technician (Initials)
1	—	6.4	—	—	BH

Notes: * transported on moist newspaper

Aquatic Research Organisms

DATA SHEET

I. Organism History

Species MYTILUS EDULIS

Source: Lab reared _____ Hatchery reared _____ Field collected ✓

Hatch date Mixed ages Receipt date 06/23/14

Lot number 0623KPIK Strain WILD

Brood origination NH

II. Water Quality

Temperature 12 °C Salinity 30 ppt D.O. _____ ppm

pH 8.3 su Hardness — ppm Alkalinity — ppm

III. Culture Conditions

Freshwater _____ Saltwater ✓ Other _____

Recirculating _____ Flow through ✓ Static renewal _____

DIET: Flake food _____ Phytoplankton ✓ Trout chow _____

Artemia _____ Rotifers _____ YCT _____ Other _____

Prophylactic treatments: _____

Comments: _____

_____

IV. Shipping Information

Client: ENVIRON PORT GAS # of Organisms 50

Carrier: FED EX Date shipped 6/24/14

Biologist: Stan Decker

PO BOX 1271 HAMPTON NH 03843-1271 (603) 926-1650 AROFISH@AOL.COM

ENVIRON

MAINTENANCE LOG FOR CULTURES

ORGANISM: M. edulis
LOCATION: Bath 4

Batch Number: ARO3292me	Date Received: 6/25/14

Date	Feed AM/PM		Tub No.	D.O.	Temp (°C)	Cond/ Sal	pH	H_2O Change	No. Dead	NH_3	Init.
6/27	—		1	4.4	17.6	30	7.7a	—	—	—	KMB
6/28	—		1	7.4	15.3	30	7.8	FT	—	—	AE
6.28	X		1	7.7	15.2	30	7.7	FT	—	—	BH

ENVIRON

LARVAL DEVELOPMENT TEST INITIATION DATA SHEET

CLIENT	PROJECT	JOB NUMBER	PROJECT MANAGER	LABORATORY	PROTOCOL
ANAMAR	Shipyard Creek	0	B. Hester	Incubator	SERIM

TEST ORGANISM SPAWNING DATA

SPECIES: M. edulis			
SUPPLIER: ARO		ORGANISM BATCH: ARO 3292Me	
DATE RECEIVED: 6.25.14	TIME RECEIVED: 1521	DATE USED: 6.28.14	
SPAWNING METHOD: feed/heatshock	INITIAL SPAWNING TIME: 1420	FINAL SPAWNING TIME: 1513	
MALES: 1 / FEMALES: 2	SPERM VIABILITY: ✓	EGG CONDITION: ✓	
BEGIN FERTILIZATION: 1513	END FERTILIZATION: 1725	CONDITION OF EMBRYOS: >90 d.v	

SAMPLE STORAGE: 4 Degrees Celsius - dark
SEDIMENT TREATMENT: none
TEST CHAMBERS: 25 mL shell vials
EXPOSURE VOLUME: 10 mL elutriate/seawater
TIME OF SHAKE: NA
TIME OF INITIATION: 1725

SPECIAL CONDITIONS

UV LIGHT EXPOSURE (YES/NO)	AERATION FROM TEST INITIATION (YES/NO)
No	No
SCREEN TUBE TEST (YES/NO)	**OTHER (EXPLAIN)**
No	—

EMBRYO DENSITY CALCULATIONS

egg stock

$85 \times 100 = 8500$ eggs/mL

target $\frac{2700}{8500} = 0.3176 \cdot 100\text{mL}$

$\frac{32\text{mL egg stock}}{68\text{mL } c\text{-}H_2O}$

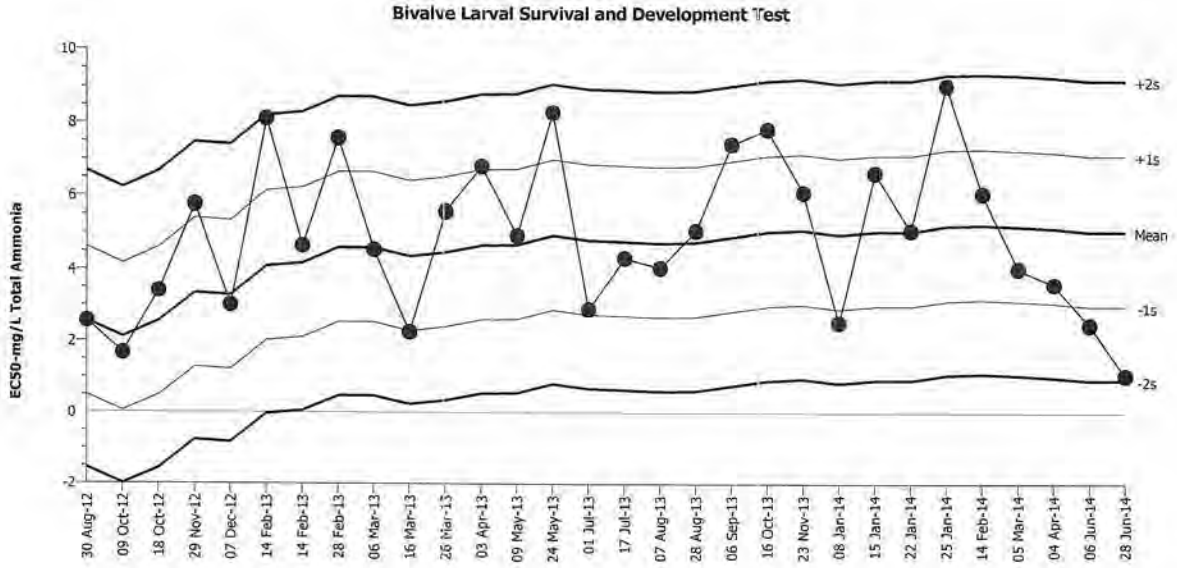
Deliver 0.100 mL/vial

CETIS QC Plot

Report Date: 03 Sep-14 15:19 (1 of 1)

Bivalve Larval Survival and Development Test — **All Matching Labs**

Test Type:	Development-Survival	**Organism:**	All Organisms	**Material:**	Total Ammonia
Protocol:	All Protocols	**Endpoint:**	Combined Proportion Normal	**Source:**	Reference Toxicant-REF



Mean:	5.041	**Count:**	29	**-1s Warning Limit:**	2.983	**-2s Action Limit:**	0.9251
Sigma:	2.058	**CV:**	40.80%	**+1s Warning Limit:**	7.099	**+2s Action Limit:**	9.157

Quality Control Data

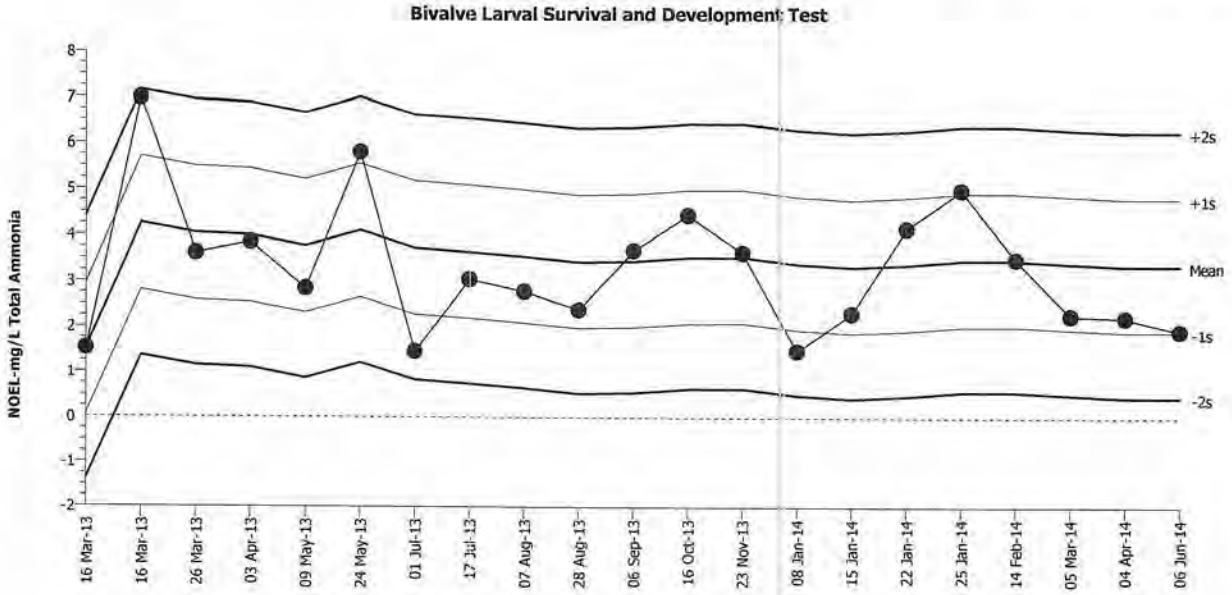
Point	Year	Month	Day	Time	QC Data	Delta	Sigma	Warning	Action	Test ID	Analysis ID	Laboratory
1	2012	Aug	30	18:20	2.565	-2.476	-1.203	(-)		00-6144-2160	01-3840-8224	NewFields
2		Oct	9	18:00	1.678	-3.363	-1.634	(-)		06-6024-3093	07-1414-6248	NewFields
3			18	18:00	3.41	-1.631	-0.7925			07-3550-9263	15-5292-9085	NewFields
4		Nov	29	17:45	5.775	0.7335	0.3564			04-0681-3114	00-7625-5304	NewFields
5		Dec	7	18:50	3.016	-2.025	-0.9839			15-7850-6619	03-0562-1566	NewFields
6	2013	Feb	14	17:40	8.112	3.071	1.492	(+)		02-6193-4857	04-9672-9086	NewFields
7			14	18:00	4.648	-0.3935	-0.1912			09-9207-8599	18-9925-7698	NewFields
8			28	21:20	7.574	2.533	1.231	(+)		06-9403-7957	07-8992-4017	NewFields
9		Mar	6	16:45	4.538	-0.5033	-0.2446			20-1267-3706	09-5346-5604	NewFields
10			16	16:15	2.255	-2.786	-1.354	(-)		13-1382-9523	10-1967-0680	NewFields
11			26	18:15	5.579	0.5381	0.2615			03-8532-3895	00-6308-0782	NewFields
12		Apr	3	0:00	6.805	1.764	0.8573			10-3604-5723	04-8356-0800	NewFields
13		May	9	17:15	4.927	-0.1143	-0.05554			00-6360-9095	16-4147-0802	NewFields
14			24	16:45	8.28	3.239	1.574	(+)		09-2967-0128	19-0159-4289	NewFields
15		Jul	1	19:00	2.895	-2.146	-1.043	(-)		19-5961-2730	13-0986-6895	NewFields
16			17	17:55	4.313	-0.7276	-0.3536			18-2536-1347	00-8750-2223	NewFields
17		Aug	7	19:00	4.051	-0.9902	-0.4811			04-7788-4843	09-8595-7999	NewFields
18			28	16:55	5.063	0.02175	0.01057			19-3611-9162	04-7207-2891	NewFields
19		Sep	6	18:55	7.413	2.372	1.153	(+)		15-9826-4846	08-5407-1877	NewFields
20		Oct	16	20:15	7.813	2.772	1.347	(+)		06-1596-0976	02-5933-8680	NewFields
21		Nov	23	17:25	6.092	1.051	0.5104			16-7309-8662	15-4529-5520	NewFields
22	2014	Jan	8	18:22	2.527	-2.514	-1.221	(-)		17-3058-8048	06-8566-9958	NewFields
23			15	18:45	6.625	1.584	0.7695			13-6807-1804	14-8094-6245	NewFields
24			22	18:47	5.072	0.03106	0.01509			13-2808-9359	13-2338-2483	NewFields
25			25	20:20	9.018	3.977	1.932	(+)		14-2680-8854	01-2301-1257	NewFields
26		Feb	14	15:45	6.063	1.022	0.4966			00-9581-0604	10-3047-2486	NewFields
27		Mar	5	19:35	4.03	-1.011	-0.4913			00-1473-4954	06-0848-4308	NewFields
28		Apr	4	19:30	3.594	-1.447	-0.703			00-0374-9463	01-3815-4471	NewFields
29		Jun	6	18:15	2.465	-2.576	-1.252	(-)		06-9491-1560	12-3152-8677	ENVIRON
30			28	17:25	1.062	-3.979	-1.934	(-)		07-1252-5952	10-8159-0172	ENVIRON

CETIS QC Plot

Report Date: 11 Sep-14 15:39 (1 of 1)

Bivalve Larval Survival and Development Test — **All Matching Labs**

Test Type:	Development-Survival	**Organism:**	All Organisms	**Material:**	Total Ammonia
Protocol:	All Protocols	**Endpoint:**	Combined Proportion Normal	**Source:**	Reference Toxicant-REF



Mean:	3.352	**Count:**	20	**-1s Warning Limit:**	1.905	**-2s Action Limit:**	0.4577
Sigma:	1.447	**CV:**	43.20%	**+1s Warning Limit:**	4.799	**+2s Action Limit:**	6.246

Quality Control Data

Point	Year	Month	Day	Time	QC Data	Delta	Sigma	Warning	Action	Test ID	Analysis ID	Laboratory
1	2013	Mar	16	16:15	1.53	-1.822	-1.259	(-)		13-1382-9523	03-4886-7520	NewFields
2			16	17:45	6.99	3.638	2.514	(+)	(+)	14-2253-0526	09-1011-9616	NewFields
3			26	18:15	3.62	0.268	0.1852			03-8532-3895	01-1639-1779	NewFields
4		Apr	3	0:00	3.85	0.498	0.3442			10-3604-5723	13-5448-8759	NewFields
5		May	9	17:15	2.85	-0.502	-0.3469			00-6360-9095	00-7540-8630	NewFields
6			24	16:45	5.8	2.448	1.692	(+)		09-2967-0128	21-4315-6699	NewFields
7		Jul	1	19:00	1.46	-1.892	-1.308	(-)		19-5961-2730	20-9160-8614	NewFields
8			17	17:55	3.05	-0.302	-0.2087			18-2536-1347	04-3468-0815	NewFields
9		Aug	7	19:00	2.79	-0.562	-0.3884			04-7788-4843	18-8631-2521	NewFields
10			28	16:55	2.39	-0.962	-0.6648			19-6611-9162	06-3129-4473	NewFields
11		Sep	6	18:55	3.68	0.328	0.2267			15-9826-4846	11-1511-0674	NewFields
12		Oct	16	20:15	4.445	1.093	0.7554			06-1596-0976	11-9282-8356	NewFields
13		Nov	23	17:25	3.64	0.288	0.199			16-7309-8662	17-7125-0481	NewFields
14	2014	Jan	8	18:22	1.48	-1.872	-1.294	(-)		17-8058-8048	14-0659-1138	NewFields
15			15	18:45	2.32	-1.032	-0.7132			13-6807-1804	20-8888-7287	NewFields
16			22	18:47	4.16	0.808	0.5584			13-2808-9359	09-9457-8825	NewFields
17			25	20:20	4.99	1.638	1.132	(+)		14-2680-8854	19-4144-0794	NewFields
18		Feb	14	15:45	3.5	0.148	0.1023			00-9581-0604	14-2175-7836	NewFields
19		Mar	5	19:35	2.27	-1.082	-0.7478			00-1473-4954	06-9188-5839	NewFields
20		Apr	4	19:30	2.22	-1.132	-0.7823			00-0374-9463	13-5593-8276	NewFields
21		Jun	6	18:15	1.93	-1.422	-0.9827			06-9491-1560	15-1591-7876	ENVIRON

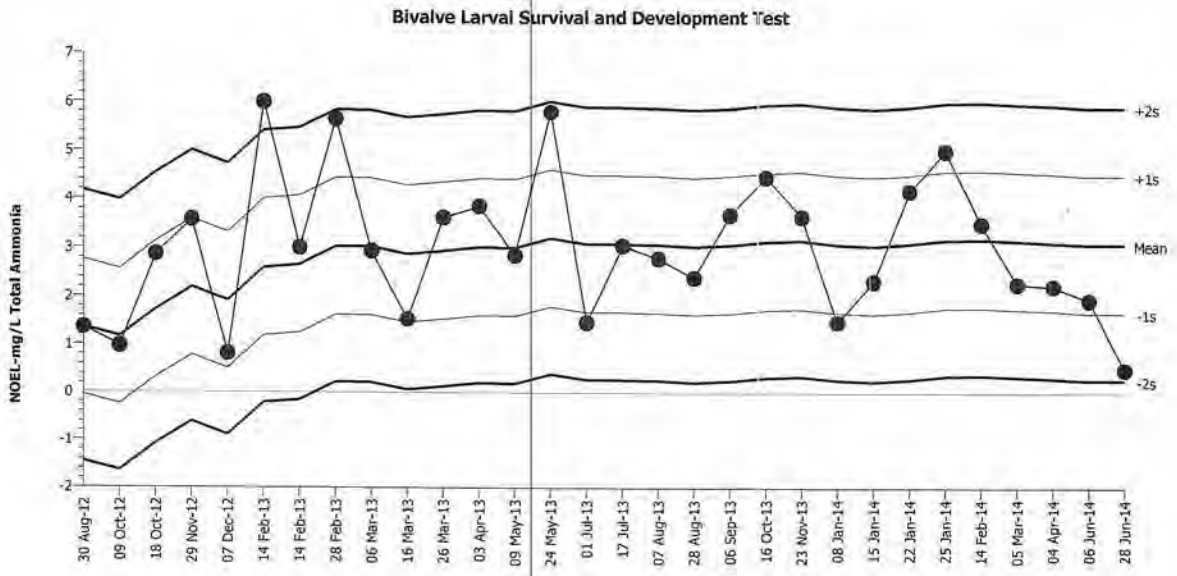
Analyst: BM QA: BM

CETIS QC Plot

Report Date: 03 Sep-14 15:20 (1 of 1)

Bivalve Larval Survival and Development Test — **All Matching Labs**

Test Type:	Development-Survival	**Organism:**	All Organisms	**Material:**	Total Ammonia
Protocol:	All Protocols	**Endpoint:**	Combined Proportion Normal	**Source:**	Reference Toxicant-REF



Mean:	3.074	**Count:**	29	**-1s Warning Limit:**	1.669	**-2s Action Limit:**	0.2643
Sigma:	1.405	**CV:**	45.70%	**+1s Warning Limit:**	4.479	**+2s Action Limit:**	5.884

Quality Control Data

Point	Year	Month	Day	Time	QC Data	Delta	Sigma	Warning	Action	Test ID	Analysis ID	Laboratory
1	2012	Aug	30	18:20	1.36	-1.714	-1.22	(-)		00-6144-2160	13-5439-5450	NewFields
2		Oct	9	18:00	0.973	-2.101	-1.495	(-)		06-6024-3093	07-8913-5319	NewFields
3			18	18:00	2.87	-0.204	-0.1452			07-3550-9263	18-1681-7487	NewFields
4		Nov	29	17:45	3.58	0.506	0.3601			04-0681-3114	19-0538-4174	NewFields
5		Dec	7	18:50	0.817	-2.257	-1.606	(-)		15-7850-6619	13-6604-7958	NewFields
6	2013	Feb	14	17:40	6	2.926	2.083	(+)	(+)	02-6193-4857	07-3889-4891	NewFields
7			14	18:00	3	-0.074	-0.05267			09-9207-8599	14-7571-5330	NewFields
8			28	21:20	5.65	2.576	1.833	(+)		06-9403-7957	16-1498-7518	NewFields
9		Mar	6	16:45	2.93	-0.144	-0.1025			20-1267-3706	13-0769-0097	NewFields
10			16	16:15	1.53	-1.544	-1.099	(-)		13-1382-9523	03-4886-7520	NewFields
11			26	18:15	3.62	0.546	0.3886			03-3532-3895	01-1639-1779	NewFields
12		Apr	3	0:00	3.85	0.776	0.5523			10-3604-5723	13-5448-8759	NewFields
13		May	9	17:15	2.85	-0.224	-0.1594			00-6360-9095	00-7540-8630	NewFields
14			24	16:45	5.8	2.726	1.94	(+)		09-2967-0128	21-4315-6699	NewFields
15		Jul	1	19:00	1.46	-1.614	-1.149	(-)		19-5961-2730	20-9160-8614	NewFields
16			17	17:55	3.05	-0.024	-0.01708			18-2536-1347	04-3468-0815	NewFields
17		Aug	7	19:00	2.79	-0.284	-0.2021			04-7788-4843	18-8631-2521	NewFields
18			28	16:55	2.39	-0.684	-0.4868			19-6611-9162	06-3129-4473	NewFields
19		Sep	6	18:55	3.68	0.606	0.4313			15-9826-4846	11-1511-0674	NewFields
20		Oct	16	20:15	4.445	1.371	0.9758			06-1596-0976	11-9282-8356	NewFields
21		Nov	23	17:25	3.64	0.566	0.4028			16-7309-8662	17-7125-0481	NewFields
22	2014	Jan	8	18:22	1.48	-1.594	-1.135	(-)		17-8058-8048	14-0659-1138	NewFields
23			15	18:45	2.32	-0.754	-0.5367			13-6807-1804	20-8888-7287	NewFields
24			22	18:47	4.16	1.086	0.773			13-2808-9359	09-9457-8825	NewFields
25			25	20:20	4.99	1.916	1.364	(+)		14-2680-8854	19-4144-0794	NewFields
26		Feb	14	15:45	3.5	0.426	0.3032			00-9581-0604	14-2175-7836	NewFields
27		Mar	5	19:35	2.27	-0.804	-0.5722			00-1473-4954	06-9188-5839	NewFields
28		Apr	4	19:30	2.22	-0.854	-0.6078			00-0374-9463	13-5593-8276	NewFields
29		Jun	6	18:15	1.93	-1.144	-0.8142			06-9491-1560	15-1591-7876	ENVIRON
30			28	17:25	0.491	-2.583	-1.838	(-)		07-1252-5952	11-8152-6100	ENVIRON

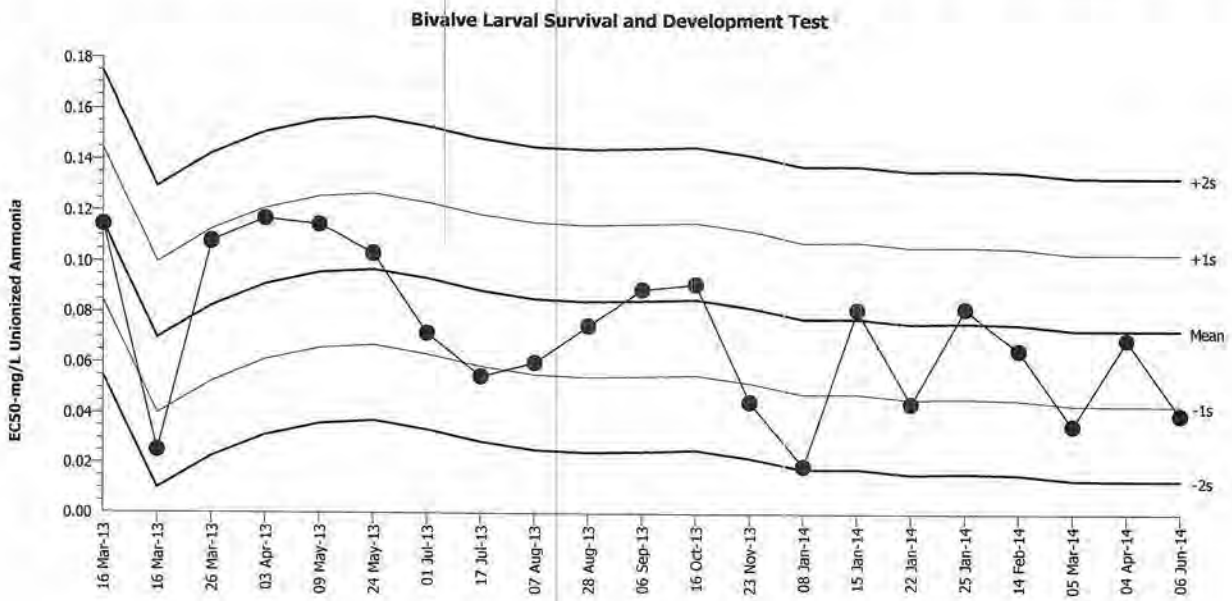
Analyst: BM QA: BM

CETIS QC Plot

Report Date: 11 Sep-14 15:39 (1 of 1)

Bivalve Larval Survival and Development Test — **All Matching Labs**

Test Type:	Development-Survival	**Organism:**	All Organisms	**Material:**	Unionized Ammonia
Protocol:	All Protocols	**Endpoint:**	Combined Proportion Normal	**Source:**	Reference Toxicant-REF



Mean:	0.07334	**Count:**	20	**-1s Warning Limit:**	0.04345	**-2s Action Limit:**	0.01356
Sigma:	0.02989	**CV:**	40.80%	**+1s Warning Limit:**	0.1032	**+2s Action Limit:**	0.1331

Quality Control Data

Point	Year	Month	Day	Time	QC Data	Delta	Sigma	Warning	Action	Test ID	Analysis ID	Laboratory
1	2013	Mar	16	16:10	0.1144	0.04111	1.375	(+)		11-4894-2693	12-9463-9515	NewFields
2			16	16:15	0.02536	-0.04798	-1.605	(-)		09-4781-1705	00-2211-2812	NewFields
3			26	18:15	0.1079	0.03454	1.156	(+)		10-2444-9875	09-9596-0674	NewFields
4		Apr	3	0:00	0.1168	0.04351	1.456	(+)		20-6076-9735	05-3848-1619	NewFields
5		May	9	17:15	0.1144	0.04106	1.374	(+)		14-3450-0734	06-3515-6667	NewFields
6			24	16:45	0.1032	0.02991	1.001	(+)		12-0363-4074	14-7147-2595	NewFields
7		Jul	1	19:00	0.07187	-0.00147	-0.04913			10-8846-7294	05-7595-2849	NewFields
8			17	17:55	0.0548	-0.01854	-0.6203			10-3414-5102	08-1738-2772	NewFields
9		Aug	7	19:00	0.06027	-0.01307	-0.4373			10-7217-0339	06-7338-0554	NewFields
10			28	16:55	0.07491	0.001565	0.05236			19-6745-0030	16-9398-7287	NewFields
11		Sep	6	18:55	0.08923	0.01589	0.5316			20-4996-9287	13-4360-8251	NewFields
12		Oct	16	20:15	0.0914	0.01806	0.6041			08-6327-9927	19-9515-4386	NewFields
13		Nov	23	17:25	0.04496	-0.02838	-0.9495			13-8738-6674	02-5355-5019	NewFields
14	2014	Jan	8	18:22	0.01919	-0.05415	-1.812	(-)		02-3576-5336	17-1917-6754	NewFields
15			15	18:45	0.0814	0.008058	0.2696			06-9099-5939	00-9901-2590	NewFields
16			22	18:47	0.04434	-0.029	-0.9703			15-7285-0453	02-5494-3481	NewFields
17			25	20:20	0.08179	0.008445	0.2825			04-0859-3739	09-7301-2928	NewFields
18		Feb	14	15:45	0.0653	-0.00804	-0.2689			15-0233-5150	16-5673-1462	NewFields
19		Mar	5	19:35	0.03552	-0.03782	-1.265	(-)		02-2074-6026	13-5083-6151	NewFields
20		Apr	4	19:30	0.06967	-0.00367	-0.1227			08-9987-7352	06-2075-5011	NewFields
21		Jun	6	18:15	0.03982	-0.03352	-1.121	(-)		20-1079-3686	12-0135-9289	ENVIRON

CETIS Analytical Report

Bivalve Larval Survival and Development Test **ENVIRON**

Analysis ID: 10-8748-2421 **Endpoint:** Combined Proportion Normal **CETIS Version:** CETISv1.8.7
Analyzed: 14 Aug-14 11:19 **Analysis:** Parametric-Control vs Treatments **Official Results:** Yes

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	NOEL	LOEL	TOEL	TU
Angular (Corrected)	NA	C > T	NA	NA	11.2%	0.015	0.04	0.02449	

Dunnett Multiple Comparison Test

Control	vs	C-mg/L	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
Dilution Water		0.015	1.128	2.466	0.106	4	0.3370	CDF	Non-Significant Effect
		0.04*	16.61	2.466	0.106	4	<0.0001	CDF	Significant Effect
		0.12*	21.88	2.466	0.106	4	<0.0001	CDF	Significant Effect
		0.134*	22.18	2.466	0.106	4	<0.0001	CDF	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	2.677479	0.6693696	4	242.1	<0.0001	Significant Effect
Error	0.02765198	0.002765198	10			
Total	2.705131		14			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance	5.206	13.28	0.2668	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9646	0.8328	0.7719	Normal Distribution

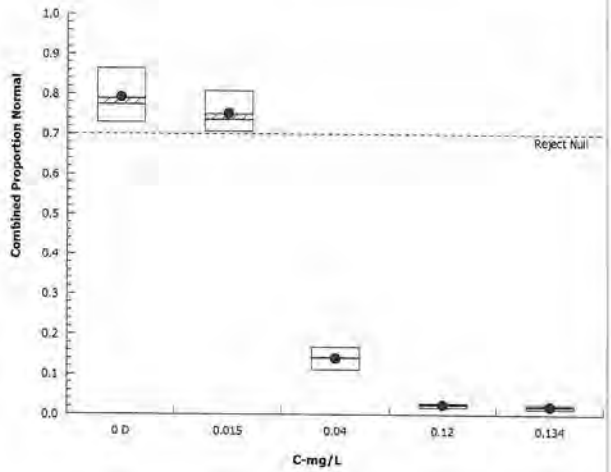
Combined Proportion Normal Summary

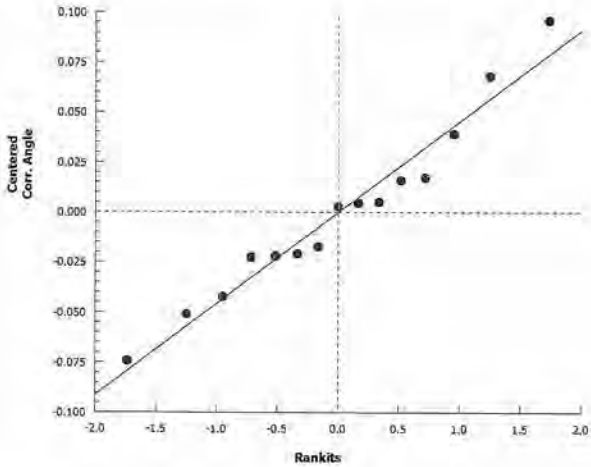
C-mg/L	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Dilution Water	3	0.7895	0.6183	0.9607	0.7744	0.7293	0.8647	0.03979	8.73%	0.0%
0.015		3	0.7506	0.6211	0.8801	0.7368	0.7068	0.8083	0.0301	6.95%	4.92%
0.04		3	0.1416	0.07151	0.2117	0.1429	0.1128	0.1692	0.01629	19.93%	82.06%
0.12		3	0.02506	0.0108	0.03933	0.02632	0.0188	0.03008	0.003315	22.91%	96.83%
0.134		3	0.0213	0.007038	0.03557	0.02256	0.01504	0.02632	0.003315	26.96%	97.3%

Angular (Corrected) Transformed Summary

C-mg/L	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Dilution Water	3	1.098	0.881	1.315	1.076	1.024	1.194	0.05041	7.95%	0.0%
0.015		3	1.049	0.897	1.202	1.032	0.9986	1.118	0.03542	5.85%	4.41%
0.04		3	0.3847	0.2834	0.486	0.3876	0.3425	0.4239	0.02354	10.6%	64.96%
0.12		3	0.1583	0.1115	0.205	0.1629	0.1375	0.1743	0.01087	11.9%	85.58%
0.134		3	0.1455	0.09461	0.1965	0.1508	0.1229	0.1629	0.01184	14.09%	86.74%

Graphics





CETIS Analytical Report

Bivalve Larval Survival and Development Test

ENVIRON

Analysis ID: 00-2157-5643 **Endpoint:** Combined Proportion Normal **CETIS Version:** CETISv1.8.7
Analyzed: 14 Aug-14 11:19 **Analysis:** Linear Interpolation (ICPIN) **Official Results:** Yes

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X+1)	Linear	374707	200	Yes	Two-Point Interpolation

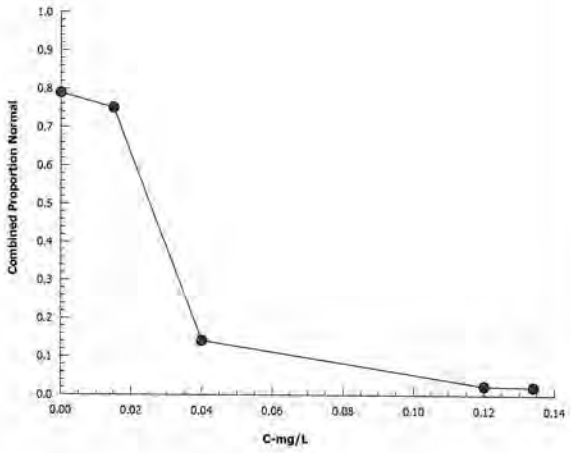
Point Estimates

Level	mg/L	95% LCL	95% UCL
EC5	0.01503	N/A	0.01821
EC10	0.01663	0.002224	0.01969
EC15	0.01823	0.01079	0.02125
EC20	0.01984	0.01327	0.0228
EC25	0.02145	0.01534	0.02432
EC40	0.02629	0.02141	0.0289
EC50	0.02954	0.02532	0.032

Combined Proportion Normal Summary

						Calculated Variate(A/B)					
C-mg/L	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	A	B
0	Dilution Water	3	0.7895	0.7293	0.8647	0.03979	0.06891	8.73%	0.0%	630	798
0.015		3	0.7506	0.7068	0.8083	0.0301	0.05214	6.95%	4.92%	599	798
0.04		3	0.1416	0.1128	0.1692	0.01629	0.02822	19.93%	82.06%	113	798
0.12		3	0.02506	0.0188	0.03008	0.003315	0.005743	22.91%	96.83%	19	798
0.134		3	0.0213	0.01504	0.02632	0.003315	0.005743	26.96%	97.3%	17	798

Graphics



CETIS Test Data Worksheet

Report Date: 11 Sep-14 15:02 (p 1 of 1)
Test Code: 12-5526-8591/4AD1E0EF

Bivalve Larval Survival and Development Test — **ENVIRON**

Start Date: 28 Jun-14 17:25
End Date: 30 Jun-14
Sample Date: 05 May-14
Species: Mytilus edulis
Protocol: SERIM (2008)
Material: Unionized Ammonia
Sample Code: 219DBFBD
Sample Source: Reference Toxicant
Sample Station: P140505.24

C-mg/L	Code	Rep	Pos	Initial Density	Final Density	# Counted	# Normal	Notes
0	D	1	15	266	245	245	230	
0	D	2	11	266	213	213	206	
0	D	3	12	266	204	204	194	
0.015		1	2	266	210	210	188	
0.015		2	3	266	235	235	215	
0.015		3	9	266	209	209	196	
0.04		1	13	266	188	188	45	
0.04		2	7	266	187	187	38	
0.04		3	10	266	170	170	30	
0.12		1	8	266	188	188	8	
0.12		2	14	266	181	181	7	
0.12		3	4	266	209	209	5	
0.134		1	6	266	182	182	7	
0.134		2	1	266	161	161	4	
0.134		3	5	266	205	205	6	

CETIS Analytical Report

Report Date: 11 Sep-14 15:02 (p 1 of 1)
Test Code: 2A784880 | 07-1252-5952

Bivalve Larval Survival and Development Test — **ENVIRON**

Analysis ID: 11-8152-6100 **Endpoint:** Combined Proportion Normal **CETIS Version:** CETISv1.8.7
Analyzed: 14 Aug-14 10:43 **Analysis:** Parametric-Control vs Treatments **Official Results:** Yes

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	NOEL	LOEL	TOEL	TU
Angular (Corrected)	NA	C > T	NA	NA	11.2%	0.491	1.67	0.9055	

Dunnett Multiple Comparison Test

Control	vs	C-mg/L	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
Dilution Water		0.491	1.128	2.466	0.106	4	0.3370	CDF	Non-Significant Effect
		1.67*	16.61	2.466	0.106	4	<0.0001	CDF	Significant Effect
		5.07*	21.88	2.466	0.106	4	<0.0001	CDF	Significant Effect
		5.67*	22.18	2.466	0.106	4	<0.0001	CDF	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	2.677479	0.6693696	4	242.1	<0.0001	Significant Effect
Error	0.02765198	0.002765198	10			
Total	2.705131		14			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance	5.206	13.28	0.2668	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9646	0.8328	0.7719	Normal Distribution

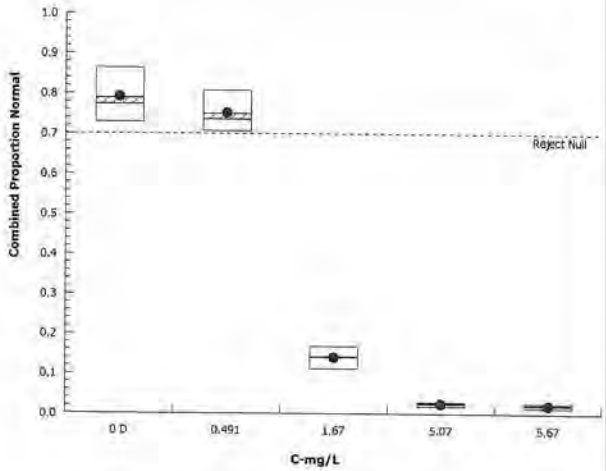
Combined Proportion Normal Summary

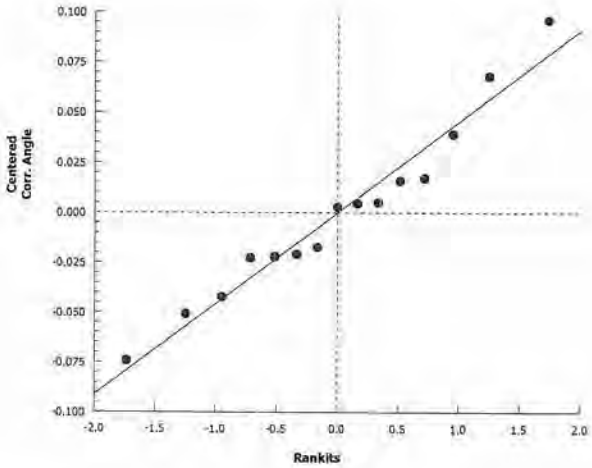
C-mg/L	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Dilution Water	3	0.7895	0.6183	0.9607	0.7744	0.7293	0.8647	0.03979	8.73%	0.0%
0.491		3	0.7506	0.6211	0.8801	0.7368	0.7068	0.8083	0.0301	6.95%	4.92%
1.67		3	0.1416	0.07151	0.2117	0.1429	0.1128	0.1692	0.01629	19.93%	82.06%
5.07		3	0.02506	0.0108	0.03933	0.02632	0.0188	0.03008	0.003315	22.91%	96.83%
5.67		3	0.0213	0.007038	0.03557	0.02256	0.01504	0.02632	0.003315	26.96%	97.3%

Angular (Corrected) Transformed Summary

C-mg/L	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Dilution Water	3	1.098	0.881	1.315	1.076	1.024	1.194	0.05041	7.95%	0.0%
0.491		3	1.049	0.897	1.202	1.032	0.9986	1.118	0.03542	5.85%	4.41%
1.67		3	0.3847	0.2834	0.486	0.3876	0.3425	0.4239	0.02354	10.6%	64.96%
5.07		3	0.1583	0.1115	0.205	0.1629	0.1375	0.1743	0.01087	11.9%	85.58%
5.67		3	0.1455	0.09461	0.1965	0.1508	0.1229	0.1629	0.01184	14.09%	86.74%

Graphics





CETIS Analytical Report

Bivalve Larval Survival and Development Test **ENVIRON**

Analysis ID: 10-8159-0172 **Endpoint:** Combined Proportion Normal **CETIS Version:** CETISv1.8.7
Analyzed: 14 Aug-14 10:43 **Analysis:** Trimmed Spearman-Kärber **Official Results:** Yes

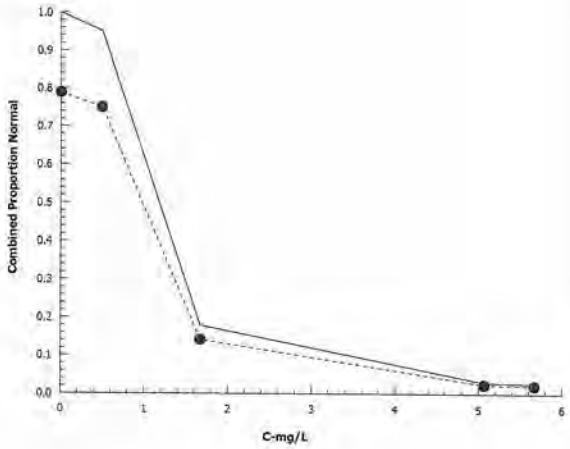
Trimmed Spearman-Kärber Estimates

Threshold Option	Threshold	Trim	Mu	Sigma	EC50	95% LCL	95% UCL
Control Threshold	0.2105	4.92%	0.02597	0.008019	1.062	1.023	1.102

Combined Proportion Normal Summary **Calculated Variate(A/B)**

C-mg/L	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	A	B
0	Dilution Water	3	0.7895	0.7293	0.8647	0.03979	0.06891	8.73%	0.0%	630	798
0.491		3	0.7506	0.7068	0.8083	0.0301	0.05214	6.95%	4.92%	599	798
1.67		3	0.1416	0.1128	0.1692	0.01629	0.02822	19.93%	82.06%	113	798
5.07		3	0.02506	0.0188	0.03008	0.003315	0.005743	22.91%	96.83%	19	798
5.67		3	0.0213	0.01504	0.02632	0.003315	0.005743	26.96%	97.3%	17	798

Graphics



CETIS Test Data Worksheet

Bivalve Larval Survival and Development Test — **ENVIRON**

Start Date:	28 Jun-14 17:25	**Species:**	Mytilus edulis
End Date:	30 Jun-14	**Protocol:**	SERIM (2008)
Sample Date:	05 May-14	**Material:**	Total Ammonia
Sample Code:	42EAAE2D		
Sample Source:	Reference Toxicant		
Sample Station:	P140505.24		

C-mg/L	Code	Rep	Pos	Initial Density	Final Density	# Counted	# Normal	Notes
0	D	1	11	266	245	245	230	
0	D	2	7	266	213	213	206	
0	D	3	12	266	204	204	194	
0.491		1	3	266	210	210	188	
0.491		2	13	266	235	235	215	
0.491		3	2	266	209	209	196	
1.67		1	1	266	188	188	45	
1.67		2	14	266	187	187	38	
1.67		3	5	266	170	170	30	
5.07		1	6	266	188	188	8	
5.07		2	4	266	181	181	7	
5.07		3	9	266	209	209	5	
5.67		1	8	266	182	182	7	
5.67		2	10	266	161	161	4	
5.67		3	15	266	205	205	6	

ENVIRON

LARVAL DEVELOPMENT WATER-COLUMN NH3 REFERENCE TOXICANT TEST

CLIENT	PROJECT	SPECIES	LABORATORY		PROTOCOL
ANAMAR	Shipyard Creek	*Mytilus edulis*	Incubator		SERIM
JOB NUMBER	PROJECT MANAGER	DILUTION WATER BATCH			
0	Port Gamble	FSW062714.01			
Test ID	LOT #:	TEST START DATE:	TIME	TEST END DATE	TIME
P14 0505.24	3244C535	28Jun14	1725	30Jun14	1530

WATER QUALITY DATA

DILTIN.WAT.BATCH	TEMP REC#	REFERENCE TOX. MATERIAL	REFERENCE TOXXICANT
	na	ammonium chloride	ammonia

TEST CONDITIONS					DO (mg/L)		TEMP(C)		SAL (ppt)		pH		TECHNICIAN
					>4.9		16 ± 1		28 ± 2		7.8 ± 0.5		
CLIENT/ ID	CONCENTRATION value	CONCENTRATION units	DAY	REP	D.O. meter	D.O. mg/L	TEMP. meter	TEMP. °C	SALINITY meter	SALINITY ppt	pH meter	pH unit	WQ TECH
250mL Diluent	0	mg/L	0	Stock	6	8.0	6	15.7	2	28	6	8.0	BH
			1	Stock	6	8.0	6	16.4	2	28	6	8.0	JL
			2	Stock	6	8.3	6	15.7	2	28	6	8.0	JL
			3	Stock									
Meas. Total: 0.00 / Calc. UIA 0.00			4	Stock									
Add: 0.028 mL of Stock Soln. to : 250mL Diluent	0.75	mg/L	0	Stock	6	7.9	6	15.7	2	28	6	8.1	BH
			1	Stock	6	8.1	6	16.4	2	28	6	8.0	JL
			2	Stock	6	8.3	6	15.7	2	28	6	8.0	JL
			3	Stock									
Meas. Total: 0.00 / Calc. UIA 0.00			4	Stock									
Add: 0.055 mL of Stock Soln. to : 250mL Diluent	1.5	mg/L	0	Stock	6	8.0	6	15.7	2	28	6	8.1	BH
			1	Stock	6	8.1	6	16.4	2	28	6	8.0	JL
			2	Stock	6	8.3	6	15.7	2	28	6	8.0	JL
			3	Stock									
Meas. Total: 0.00 / Calc. UIA 0.00			4	Stock									
Add: 0.110 mL of Stock Soln. to : 250mL Diluent	3	mg/L	0	Stock	6	8.0	6	15.7	2	28	6	8.1	BH
			1	Stock	6	8.2	6	16.4	2	28	6	8.0	JL
			2	Stock	6	8.3	6	15.7	2	28	6	8.0	JL
			3	Stock									
Meas. Total: 0.491 / Calc. UIA 0.015			4	Stock									
Add: 0.221 mL of Stock Soln. to : 250mL Diluent	6	mg/L	0	Stock	6	8.0	6	15.7	2	28	6	8.0	BH
			1	Stock	6	8.2	6	16.4	2	28	6	8.0	JL
			2	Stock	6	8.3	6	15.7	2	28	6	8.0	JL
			3	Stock									
Meas. Total: 1.67 / Calc. UIA 0.040			4	Stock									
Add: 0.441 mL of Stock Soln. to : 250mL Diluent	12	mg/L	0	Stock	6	8.0	6	15.7	2	28	6	8.0	BH
			1	Stock	6	8.2	6	16.4	2	28	6	8.0	JL
			2	Stock	6	8.4	6	15.7	2	28	6	8.0	JL
			3	Stock									
Meas. Total: 5.07 / Calc. UIA 0.120			4	Stock									
Add: 0.588 mL of Stock Soln. to : 250mL Diluent	16	mg/L	0	Stock	6	7.9	6	15.7	2	28	6	8.0	BH
			1	Stock	6	8.2	6	16.4	2	28	6	8.0	JL
			2	Stock	6	8.4	6	15.7	2	29	6	8.0	JL
			3	Stock									
Meas. Total: 5.67 / Calc. UIA 0.134			4	Stock									

ENVIRON

LARVAL DEVELOPMENT
NH3 REFERENCE TOXICANT
ENDPOINT DATA SHEET

SPECIES					
Mytilus edulis					
CLIENT	**PROJECT**	**JOB #**	**PROJECT MANAGER**	**LABORATORY**	**PROTOCOL**
ANAMAR	Shipyard Creek	0	B. Hester	Port Gamble Incubator	SERIM

LARVAL OBSERVATION DATA

TREATMENT	CONCENTRATION value	CONCENTRATION units	VIAL NUMBER	REP	NUMBER NORMAL	NUMBER ABNORMAL	DATE	TECH	COMMENTS
Ref.Tox. - Ammonia	0	mg/L		1	230	15			
				2	206	7			
				3	194	10			
Ref.Tox. - Ammonia	0.75	mg/L		1	213	17			
				2	206	13			
				3	197	9			
Ref.Tox. - Ammonia	1.5	mg/L		1	181	17			
				2	212	12			
				3	230	24			
Ref.Tox. - Ammonia	3	mg/L		1	188	22			
				2	215	20			
				3	196	13			
Ref.Tox. - Ammonia	6	mg/L		1	45	143			
				2	38	149			
				3	30	140			
Ref.Tox. - Ammonia	12	mg/L		1	8	180			
				2	7	174			
				3	5	204			
Ref.Tox. - Ammonia	16	mg/L		1	7	175			
				2	4	157			
				3	6	199			
Ref.Tox. - Ammonia	Stocking Density			1	267				
				2	262				
				3	250				
				4	280				
				5	271				

APPENDIX A.4 *Ampelisca abdita* Benthic Test

Shipyard Creek
Test Results for the 10-day Benthic Toxicity Test with *A. abdita.*

Treatment	Replicate	Number Initiated	Number Surviving	Number Missing or Dead	Percentage Survival	Mean Percentage Survival	SD
Control	1	20	20	0	100	98	4
	2	20	20	0	100		
	3	20	20	0	100		
	4	20	18	2	90		
	5	20	20	0	100		
SYC14-REF	1	20	20	0	100	97	3
	2	20	19	1	95		
	3	20	19	1	95		
	4	20	19	1	95		
	5	20	20	0	100		
SYC14-TB1	1	20	19	1	95	97	3
	2	20	19	1	95		
	3	20	20	0	100		
	4	20	20	0	100		
	5	20	19	1	95		
SYC14-TB2	1	21	21	0	100	98	3
	2	20	19	1	95		
	3	20	19	1	95		
	4	20	20	0	100		
	5	20	20	0	100		
SYC14-AC	1	20	19	1	95	96	2
	2	20	20	0	100		
	3	20	19	1	95		
	4	20	19	1	95		
	5	20	19	1	95		

ENVIRON

10-DAY SOLID PHASE TEST OBSERVATION DATA

CLIENT	PROJECT	SPECIES	LABORATORY	PROTOCOL
ANAMAR	Shipyard Creek	*Ampelisca abdita*	Port Gamble Bath 6	USACE 1991
	PROJECT MANAGER: B. Hester	TEST START DATE: 28-Jul-14	TEST END DATE: 7-Aug-14	

#E = Emergence
#M = Number of Mortality
#F = Floating on Surface
A = Algal Growth
B = Beggiatoa
D = No Air Flow (DO?)
N = Normal

Client/ ID	Rep	Jar #	Initial # of Organisms	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8	Day 9	Day 10	Number Alive
				ENDPOINT DATA AND OBSERVATIONS										
				Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8	Day 9	Day 10	
			10	Date 7/29/14	Date 7/30	Date 7/31	Date 8/1	Date 8/02	Date 8/03	Date 8/4	Date 8/5	Date 8/6	Date 8/7	
				Technician MK	Technician JL	Technician KB	Technician KMB	Technician JL	Technician JL	Technician [illegible]	Technician KB	Technician [illegible]	Technician [illegible]	
Control	1			N	N	N	N	N	N	N	N	N	N	20
	2			↓	↓	↓	↓	IF	↓	↓	↓	↓	↓	20
	3			↓	↓	↓	↓	N	↓	↓	↓	↓	↓	20
	4			↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	18
	5			↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	20
SYC14-REF	1			N	↓	↓	N	N	↓	↓	A	A	A	20
	2			↓	↓	↓	↓	↓	↓	↓	A	↓	↓	19
	3			↓	↓	↓	↓	↓	↓	↓	A	↓	↓	19
	4			↓	↓	↓	↓	↓	↓	↓	A	↓	↓	19
	5			↓	↓	↓	↓	↓	↓	↓	A	↓	↓	20
SYC14-TB1	1			N	↓	↓	N	N	A	A	A	↓	↓	19
	2			↓	↓	↓	↓	A	A	A	A	↓	↓	19
	3			↓	↓	↓	↓	N	N	A	A	↓	↓	20
	4			↓	↓	A	A	A	A	A	A	↓	↓	20
	5			↓	↓	N	N	N	N	N	N	N	N	19
SYC14-TB2	1			N	↓	N	N	N	N	A	A	A	A	21
	2			↓	↓	↓	↓	A	A	A	A	↓	↓	19
	3			↓	↓	↓	↓	N	A	A	A	↓	↓	19
	4			↓	↓	N	↓	N	N	N	A	↓	↓	20
	5			↓	↓	D BA	A	A	A	A	A	↓	↓	20

D IE.KB.7/31/14

ENVIRON

10-DAY SOLID PHASE TEST OBSERVATION DATA

CLIENT	PROJECT	SPECIES	LABORATORY	PROTOCOL
ANAMAR	Shipyard Creek	*Ampelisca abdita*	Port Gamble Bath 6	USACE 1991
	PROJECT MANAGER: B. Hester	TEST START DATE: 28-Jul-14	TEST END DATE: 7-Aug-14	

#E = Emergence
#M = Number of Mortality
#F = Floating on Surface
A = Algal Growth
B = Beggiatoa
D = No Air Flow (DO?)
N = Normal

Client/ ID	Rep	Jar #	Initial # of Organisms	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8	Day 9	Day 10	Number Alive
				ENDPOINT DATA AND OBSERVATIONS										
			10	Date: 7/29/14	Date: 7/30/14	Date: 7/31	Date: 8/1/14	Date: 8/02	Date: 8/03	Date: 8/4	Date: 8/5	Date: 8/6	Date: 8/7	
				Technician: NK	Technician: JL	Technician: KMB	Technician: KMB	Technician: JL	Technician: JL	Technician: [illegible]	Technician: KB	Technician: [illegible]	Technician: [illegible]	
SYC14-AC	1			IF	N	N	A	A	A	A	A	A	A	19
	2			N	↓	A	A	↓	↓	↓	A	↓	↓	20
	3			↓	↓	N	N	↓	↓	↓	A	↓	↓	19
	4			↓	↓	A	↓	↓	↓	↓	A	↓	↓	19
	5			↓	↓	IF	↓	↓	↓	↓	A	↓	↓	19

ENVIRON

10 DAY SOLID PHASE BIOASSAY
WATER QUALITY DATA SHEET

CLIENT	PROJECT	SPECIES	LABORATORY	PROTOCOL
ANAMAR	Shipyard Creek	*Ampelisca abdita*	Port Gamble Bath 6	USACE 1991

Test Conditions				WATER QUALITY DATA									
				DO (mg/L)		Temperature (°C)		Salinity (ppt)		pH		Tech	Date
				>4.6		20 ± 1		30 ± 2		6 - 9			
Client/ ID	Day	Rep	Jar#	meter	mg/L	meter	deg C	meter	ppt	meter	unit		
Control	0	Surr	28	8	7.8	8	19.5	8	29	8	8.0	JL	7/28/14
Control	1	Surr		8	7.7	8	19.6	8	29	8	8.0	MK	7/29/14
Control	2	Surr		8	7.7	8	19.7	8	29	8	8.0	JL	7/30/14
Control	3	Surr		8	7.5	8	19.7	8	29	8	8.0	MK	7/31/14
Control	4	Surr		8	7.4	8	19.6	8	29	8	7.9	KB	8/1/14
Control	5	Surr		8	7.6	8	19.7	8	29	8	8.0	JL	8/02/14
Control	6	Surr		8	7.4	8	19.9	8	29	8	8.1	JL	8/03/14
Control	7	Surr		8	7.6	8	19.8	8	29	8	8.0	MK	8/4/14
Control	8	Surr		8	7.6	8	19.7	8	29	8	8.0	KB	8/5/14
Control	9	Surr		8	7.6	8	19.5	8	29	8	8.1	MK	8/6/14
Control	10	Surr		8	7.7	8	19.5	8	30	8	8.0	MK	8/7/14
SYC14-REF	0	Surr	17	8	7.9	8	19.4	8	28	8	8.0	JL	7/28/14
SYC14-REF	1	Surr		8	7.7	8	19.6	8	28	8	8.0	MK	7/29/14
SYC14-REF	2	Surr		8	7.7	8	19.7	8	28	8	8.0	JL	7/30/14
SYC14-REF	3	Surr		8	7.7	8	19.7	8	28	8	8.0	MK	7/31/14
SYC14-REF	4	Surr		8	7.7	8	19.6	8	28	8	8.0	KB	8/1/14
SYC14-REF	5	Surr		8	7.7	8	19.7	8	28	8	8.1	JL	8/02/14
SYC14-REF	6	Surr		8	7.6	8	19.9	8	28	8	8.2	JL	8/03/14
SYC14-REF	7	Surr		8	7.7	8	19.8	8	28	8	8.1	MK	8/4/14
SYC14-REF	8	Surr		8	7.6	8	19.7	8	28	8	8.1	KB	8/5/14
SYC14-REF	9	Surr		8	7.7	8	19.6	8	28	8	8.2	MK	8/6/14
SYC14-REF	10	Surr		8	7.8	8	19.5	8	28	8	8.1	MK	8/7/14

ENVIRON

10 DAY SOLID PHASE BIOASSAY
WATER QUALITY DATA SHEET

CLIENT	PROJECT	SPECIES	LABORATORY	PROTOCOL
ANAMAR	Shipyard Creek	*Ampelisca abdita*	Port Gamble Bath 6	USACE 1991

Test Conditions				WATER QUALITY DATA									
				DO (mg/L)		Temperature (°C)		Salinity (ppt)		pH		Tech	Date
				>4.6		20 ± 1		30 ± 2		6 - 9			
Client/ ID	Day	Rep	Jar#	meter	mg/L	meter	deg C	meter	ppt	meter	unit		
SYC14-TB1	0	Surr	12	8	7.7	8	19.4	8	29	8	7.9	JL	7/28/14
SYC14-TB1	1	Surr		8	7.6	8	19.6	8	29	8	7.9	MK	7/29/14
SYC14-TB1	2	Surr		8	7.6	8	19.7	8	30	8	7.9	JL	7/30/14
SYC14-TB1	3	Surr		8	7.4	8	19.7	8	30	8	7.9	MK	7/31/14
SYC14-TB1	4	Surr		8	7.6	8	19.6	8	30	8	① ~~7.6~~ 8.0	KB	8/1/14
SYC14-TB1	5	Surr		8	7.6	8	19.8	8	30	8	8.0	JL	8/02/14
SYC14-TB1	6	Surr		8	7.5	8	20.0	8	30	8	8.1	JL	8/03/14
SYC14-TB1	7	Surr		8	7.6	8	19.8	8	30	8	8.1	[illegible]	8/4/14
SYC14-TB1	8	Surr		8	7.7	8	19.6	8	30	8	8.2	KB	8/5/14
SYC14-TB1	9	Surr		8	~~7.6~~ 7.6 ②	8	19.6	8	30	8	8.2	[illegible]	8/6/14
SYC14-TB1	10	Surr		8	7.7	8	19.5	8	30	8	8.2	[illegible]	8/7/14
SYC14-TB2	0	Surr	23	8	7.7	8	19.4	8	29	8	8.0	JL	7/28/14
SYC14-TB2	1	Surr		8	7.7	8	19.5	8	29	8	7.9	MK	7/29/14
SYC14-TB2	2	Surr		8	7.6	8	19.7	8	30	8	7.9	JL	7/30/14
SYC14-TB2	3	Surr		8	7.3	8	19.7	8	30	8	7.9	MK	7/31/14
SYC14-TB2	4	Surr		8	7.5	8	19.6	8	30	8	7.9	KB	8/1/14
SYC14-TB2	5	Surr		8	7.5	8	19.8	8	30	8	8.0	JL	8/02/14
SYC14-TB2	6	Surr		8	7.3	8	19.9	8	30	8	8.1	JL	8/03/14
SYC14-TB2	7	Surr		8	7.6	8	19.8	8	30	8	8.1	[illegible]	8/4/14
SYC14-TB2	8	Surr		8	7.6	8	19.7	8	30	8	8.1	KB	8/5/14
SYC14-TB2	9	Surr		8	7.7	8	19.6	8	30	8	8.2	[illegible]	8/6/14
SYC14-TB2	10	Surr		8	7.8	8	19.5	8	30	8	8.1	[illegible]	8/07/14

② Illegible 8/6

③ W/C. KMB. 8/1/14

ENVIRON

10 DAY SOLID PHASE BIOASSAY
WATER QUALITY DATA SHEET

CLIENT	PROJECT	SPECIES	LABORATORY	PROTOCOL
ANAMAR	Shipyard Creek	*Ampelisca abdita*	Port Gamble Bath 6	USACE 1991

Test Conditions				WATER QUALITY DATA									
				DO (mg/L)		Temperature (°C)		Salinity (ppt)		pH		Tech	Date
				>4.6		20 ± 1		30 ± 2		6 - 9			
Client/ ID	Day	Rep	Jar#	meter	mg/L	meter	deg C	meter	ppt	meter	unit		
SYC14-AC	0	Surr	6	8	7.7	8	19.4	8	30	8	8.0	JL	7/28/14
SYC14-AC	1	Surr		8	7.7	8	19.6	8	29	8	7.9	MK	7/29/14
SYC14-AC	2	Surr		8	7.6	8	19.6	8	30	8	8.0	JL	7/30/14
SYC14-AC	3	Surr		8	7.5	8	19.7	8	30	8	8.0	MK	7/31/14
SYC14-AC	4	Surr		8	7.7	8	19.6	8	30	8	8.0	KB	8/1/14
SYC14-AC	5	Surr		8	8.0	8	20.1	8	30	8	① ~~8.0~~ 8.1	JL	8/02/14
SYC14-AC	6	Surr		8	7.6	8	20.0	8	30	8	8.2	JL	8/03/14
SYC14-AC	7	Surr		8	7.7	8	19.8	8	30	8	8.2	MK	8/4/14
SYC14-AC	8	Surr		8	~~7.7~~	8	19.7	8	30	8	8.2	KB	8/5/14
SYC14-AC	9	Surr		8	7.7	8	19.5	8	30	8	8.3	MK	8/6/14
SYC14-AC	10	Surr		8	7.8	8	19.5	8	30	8	8.2	MK	8/7/14

①WC JL 8/02/14

10 DAY BENTHIC TEST
INTERACTIVE DATA SETUP

GENERAL	
CLIENT:	ANAMAR
PROJECT:	Shipyard Creek
PROJECT MANAGER:	B. Hester
TEST SPECIES:	*Ampelisca abdita*
TEST PROTOCOL:	USACE 1991
LABORATORY:	Port Gamble
TEST LOCATION:	Bath 6
TEST START DATE:	28Jul14
TEST START TIME:	1410
TEST END DATE:	07Aug14
TEST END TIME:	0900
DILUTION WATER BATCH:	
FEEDING INFORMATION:	NA
WATER RENEWAL INFO:	NA
PHOTOPERIOD	Continuous

TEST PARAMETERS	TARGET	ACCEPTABLE RANGE / COMMENTS
DO: (mg/L)	>4.6	60% Sat @ 20°C, 30 ppt
Temp: (°C)	20 ± 1	20 ± 1
Sal: (ppt)	30 ± 2	30 ± 2
pH:	6 - 9	Optimal

FIELD SAMPLE	
DATE RECEIVED	31May14
SAMPLE STORAGE:	4 Degrees Celsius - dark
SAMPLE TREATMENT:	None
TEST CHAMBER:	1 L mason jars
EXPOSURE VOLUME:	2 cm sediment/ 775 mL water
REFERENCE TOXICANT #2:	Ammonia
REF. TOX. MATERIAL #2:	Ammonium Chloride

NH3 REFTOX CONC (mg/ L)
0
15
30
60
120
240

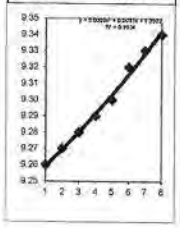
	CLIENT SAMPLE ID	SAMPLE ID
1	SYC14-REF	
2	SYC14-TB1	
3	SYC14-TB2	
4	SYC14-AC	
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		
26		
27		
28		
29		
30		
31		
32		
33		
34		
35		

CONTROL ID	CONTROL ID
Control	

CLIENT:	ANAMAR	Date of Test:	28-Jul-14
PROJECT:	Shipyard Creek	Test Type:	Amps
COMMENTS:			

To convert Total Ammonia (mg/L) to Free (un-ionized) Ammonia (mg/L) enter the corresponding total ammonia, salinity, temperature, and pH.

Integer: I-factor	
1	9.26
2	9.27
3	9.28
4	9.29
5	9.30
6	9.32
7	9.33
8	9.34



	Sample	Mod	NH3T (mg/L)	salinity (ppt)	pH	temp (C)	temp (K)	i-factor	Mod	NH3U (mg/L)
	Target / Sample Name		Actual	22.9	8.0	24.1	297.26	9.3053		#VALUE!
	Example 3.5		2.000	10.0	7.5	5.0	278.16	9.2750		0.008
1										
2	Initial Overlying									
3	Control		0.122	29	8.0	19.5	292.66	9.3214		0.004
4	SYC14-REF		1.09	28	8.0	19.4	292.56	9.3187		0.034
5	SYC14-AC		0.546	30	8.0	19.4	292.56	9.3242		0.017
6	SYC14-TB1		1.11	29	7.9	19.4	292.56	9.3214		0.027
7	SYC14-TB2		1.3	29	8.0	19.4	292.56	9.3214		0.040
8										
9	Initial Porewater									
10	Control		2.750	29	7.1	19.5	292.66	9.3214		0.011
11	SYC14-REF		2.630	28	7.7	19.4	292.56	9.3187		0.041
12	SYC14-AC		4.870	29	7.2	19.4	292.56	9.3214		0.024
13	SYC14-TB1		9.490	29	7.3	19.4	292.56	9.3214		0.060
14	SYC14-TB2		8.500	29	7.3	19.4	292.56	9.3214		0.054
15										
16	Final Overlying									
17	Control		0.000	30	8.0	19.5	292.66	9.3242		
18	SYC14-REF		0.932	28	8.1	19.5	292.66	9.3187		0.036
19	SYC14-AC		0.000	30	8.2	19.5	292.66	9.3242		
20	SYC14-TB1		0.000	30	8.2	19.5	292.66	9.3242		
21	SYC14-TB2		0.000	30	8.1	19.5	292.66	9.3242		
22										
23	Final Porewater									
24	Control		0.000	29	7.1	19.5	292.66	9.3214		
25	SYC14-REF									
26	SYC14-AC		0.581	29	7.4	19.5	292.66	9.3214		0.005
27	SYC14-TB1		0.194	30	7.5	19.5	292.66	9.3242		0.002
28	SYC14-TB2		1.480	29	7.9	19.5	292.66	9.3214		0.037
29										
30										
31										
32										
33										
34										
35										
36										
37										
38										
39										
40										
41										
42										
43										
44										
45										
46										

Ammonia and Sulfide Analysis Record

Client/Project:	Organism:	Test Duration (days):
ANAMAR/Shipyard Creek	Ampelisca	10

PRETEST / (INITIAL) / FINAL / OTHER ~~(circle one)~~ DAY of TEST: 0
(OVERLYING (OV)) / (POREWATER (PW)) (circle one)

Comments: _____

Calibration Standards Temperature		Sample temperature should be within ±1°C of standards temperature at time and date of analysis.
Date:	**Temperature:**	
7/28/14	19.0 °C	

Sample ID or Description	Conc. or Rep	Date of Sampling and Initials	Ammonia Value (mg/L)	Temp °C	Date of Reading and Initials	Sample Preserved (Y/N)	pH	Sal (ppt)	Sulf. mg/L
Control - OV	Surr	7/28/14 CR	0.122	18.9	7/28/14 CR	N			
Reference - OV			1.09						
AC - OV			0.546						
TB1 - OV			1.11						
TB2 - OV	↓	↓	1.30	↓	↓	↓			
Control - PW	Surr	7/28/14 CR	2.75	20.0	7/28/14 CR	N	7.1	29	
Reference - PW			2.63	19.3			7.7	28	
AC - PW			4.87	20.0			7.2	29	
TB1 - PW			9.49	20.0			7.3	29	
TB2 - PW	↓	↓	8.50	20.0	↓	↓	7.3	29	

Ammonia and Sulfide Analysis Record

Client/Project:	Organism:	Test Duration (days):
ANAMAR / Shipyard Creek	Ampelisca abdita	10

PRETEST / INITIAL / FINAL / OTHER (circle one) DAY of TEST: 10

OVERLYING (OV) / POREWATER (PW) (circle one)

Comments: _____

Calibration Standards Temperature		Sample temperature should be within ±1°C of standards temperature at time and date of analysis.
Date: 8/07/14	Temperature: 18.1°C	

Sample ID or Description	Conc. or Rep	Date of Sampling and Initials	Ammonia Value (mg/L)	Temp °C	Date of Reading and Initials	Sample Preserved (Y/N)	pH	Sal (ppt)	Sulf. mg/L
OV. Ø	Surr.	KB 8/7/14	0.00	17.6	HC 8/7/14	N			
Ref.			0.932						
TB1			0.00						
TB2			0.00						
AC			0.00						
PW. Ø			0.00	19.1			7.1	29	
Ref.			(1)						
TB1			0.194	19.1			7.5	30	
TB2			1.48	19.1			7.9	29	
AC			0.581	19.1			7.4	29	

(1) Insufficient porewater HC 8/7/14

ENVIRON

ORGANISM RECEIPT LOG

Date:	Time:	Batch No.
7/25/14	1400	JB 6470

Organism / Project:	Source:
Ampelisca	John Brezina

Address:	Invoice Attached
on file	Yes (No)

Phone:	Contact:
on file	John Brezina

No. Ordered:	No. Received:	Source Batch:
850	1 batch	Field

Condition of Organisms:	Approximate Size or Age:
OK	Adult

Shipper:	B of L (Tracking No.)
Fed ex	8043 2695 6470

Condition of Container:	Received By:
Good	

Container	D.O. (mg/L)	Temp. (°C)	Conductivity or Salinity (Include Units)	pH (Units)	Technician (Initials)
1	25.4	19.4	30 ppt	7.2	

Notes:

ENVIRON

MAINTENANCE LOG FOR CULTURES

ORGANISM: Ampelisca abdita
LOCATION: Bath 9

Batch Number: JB6470	Date Received: 7/25/14

Date	Feed AM/PM	Tub No.	D.O.	Temp (°C)	Cond/ Sal	pH	H_2O Change	No. Dead	NH_3	Init.
7/25	—	1	25.4	19.4	30 ppt	7.2	Y	—	—	JW
7/26	—	1	7.2	① ~~7.2~~ 19.1	30 ppt	7.7	N	—	—	[illegible]
7/27	—	1	7.1	19.8	31 ppt	7.9	Y	—	—	JL
7/28	—	1	7.4	19.0	31 ppt	7.9	Y	—	—	JL
7/29	—	1	7.5	19.1	31 ppt	7.9	N	—	—	MK
7/30	—	1	7.3	19.3	31 ppt	7.9	N	—	—	JL
7/31	—	1	7.1	19.2	32 ppt	7.9	N	—	—	MK
8/1	—	1	6.8	19.2	24 ppt	7.8	N	—	—	KB
8/02	—	1	7.3	19.5	33 ppt	7.9	N	—	—	JL
8/03	—	1	7.0	20.0	34 ppt	8.0	N	—	—	JL

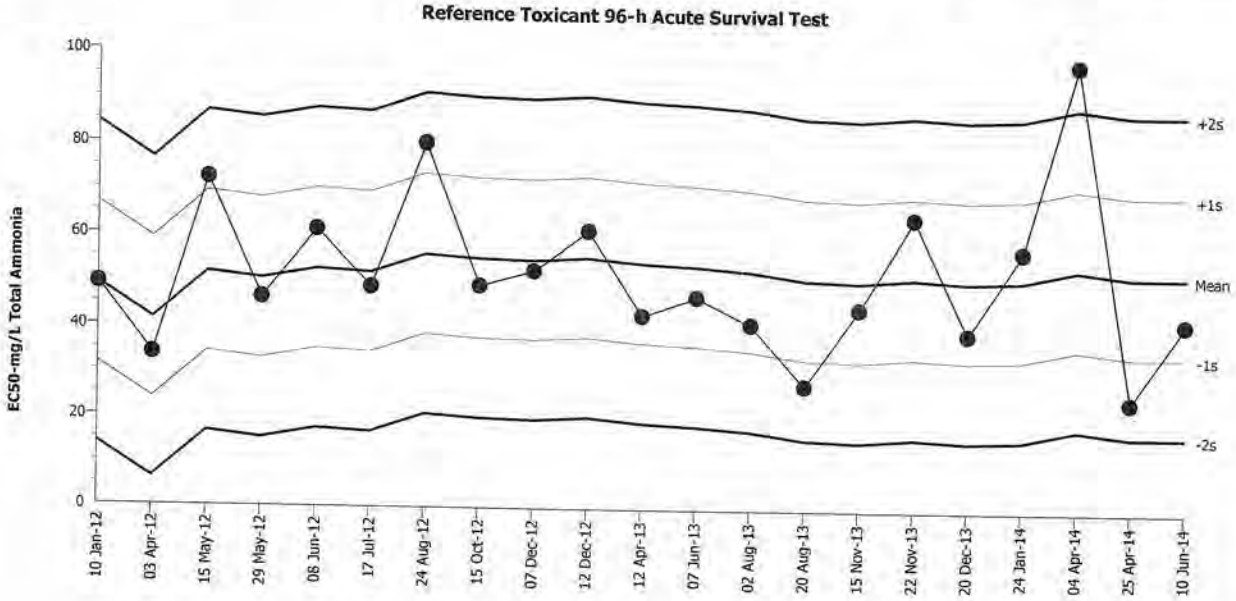
① [illegible] 7/26

CETIS QC Plot

Report Date: 12 Aug-14 10:48 (1 of 1)

Reference Toxicant 96-h Acute Survival Test — All Matching Labs

Test Type:	Survival	**Organism:**	Ampelisca abdita (Amphipod)	**Material:**	Total Ammonia
Protocol:	PSEP (1995)	**Endpoint:**	Proportion Survived	**Source:**	Reference Toxicant-REF



Mean:	52.12	**Count:**	20	**-1s Warning Limit:**	34.54	**-2s Action Limit:**	16.96
Sigma:	17.58	**CV:**	33.70%	**+1s Warning Limit:**	69.7	**+2s Action Limit:**	87.28

Quality Control Data

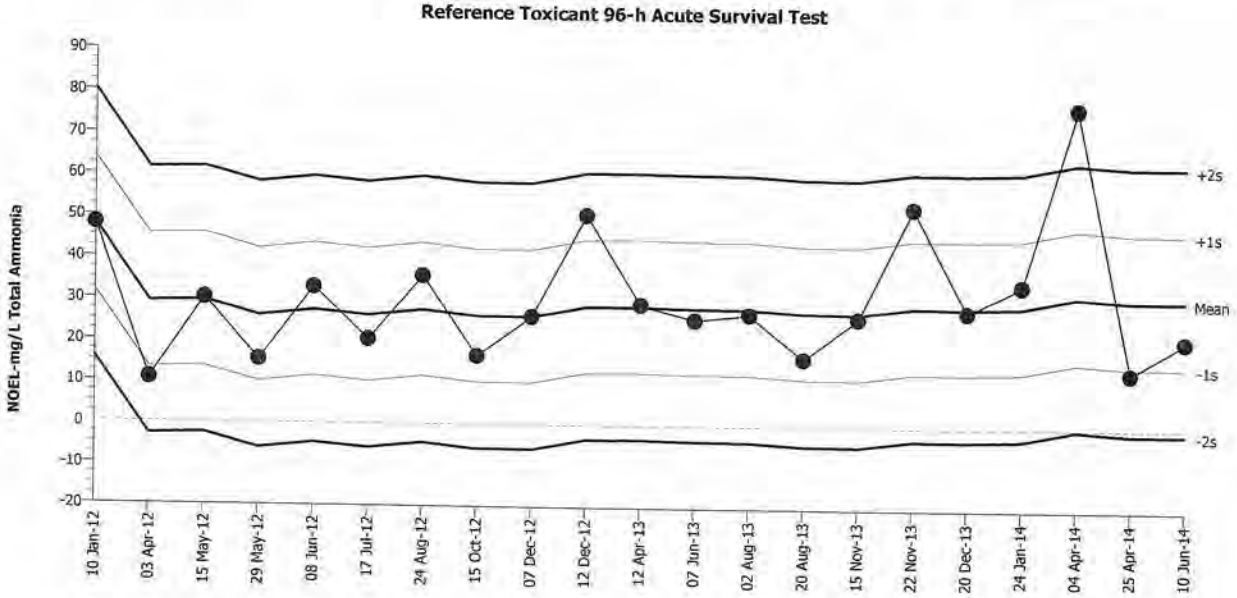
Point	Year	Month	Day	Time	QC Data	Delta	Sigma	Warning	Action	Test ID	Analysis ID	Laboratory
1	2012	Jan	10	13:20	49.25	-2.874	-0.1635			03-9063-0419	13-1863-6806	NewFields
2		Apr	3	15:30	33.8	-18.32	-1.042	(-)		08-8729-6483	12-0478-0020	NewFields
3		May	15	15:35	72.39	20.27	1.153	(+)		19-7667-7405	14-3535-3938	NewFields
4			29	16:30	46.32	-5.804	-0.3302			03-7733-4362	00-5524-0466	NewFields
5		Jun	8	13:20	61.19	9.066	0.5157			13-8637-6080	02-7852-3336	NewFields
6		Jul	17	15:35	48.77	-3.355	-0.1908			13-6908-0253	15-9441-6932	NewFields
7		Aug	24	16:00	80.22	28.1	1.599	(+)		05-1157-3267	06-6926-6880	NewFields
8		Oct	15	14:05	49.17	-2.954	-0.168			20-5208-6497	10-3695-2553	NewFields
9		Dec	7	14:10	52.54	0.4214	0.02397			09-7213-1371	16-2148-8780	NewFields
10			12	14:35	61.3	9.182	0.5223			09-4120-7349	01-5095-3015	NewFields
11	2013	Apr	12	15:10	42.89	-9.23	-0.525			12-7034-8436	01-8907-2059	NewFields
12		Jun	7	14:27	47.05	-5.069	-0.2883			09-6757-3966	14-2869-9159	NewFields
13		Aug	2	14:30	41.11	-11.01	-0.6265			19-9079-9629	15-4478-6705	NewFields
14			20	16:00	27.72	-24.4	-1.388	(-)		13-7509-8421	14-8949-6958	NewFields
15		Nov	15	14:50	44.72	-7.403	-0.4211			18-3292-0330	04-0023-6359	NewFields
16			22	15:50	64.51	12.39	0.7049			02-3495-3785	12-6433-7419	NewFields
17		Dec	20	13:00	39.28	-12.84	-0.7304			02-4678-2263	05-0741-7107	NewFields
18	2014	Jan	24	14:20	57.44	5.317	0.3024			09-0650-4326	20-4403-3655	NewFields
19		Apr	4	19:35	98.17	46.05	2.619	(+)	(+)	03-6871-1212	08-3988-4843	ENVIRON
20			25	13:00	24.6	-27.52	-1.565	(-)		20-1058-8272	14-4182-5616	ENVIRON
21		Jun	10	16:40	41.85	-10.27	-0.5841			11-7635-5332	05-2120-2836	ENVIRON

CETIS QC Plot

Report Date: 12 Aug-14 10:48 (1 of 1)

Reference Toxicant 96-h Acute Survival Test — All Matching Labs

Test Type:	Survival	**Organism:**	Ampelisca abdita (Amphipod)	**Material:**	Total Ammonia
Protocol:	PSEP (1995)	**Endpoint:**	Proportion Survived	**Source:**	Reference Toxicant-REF



Mean:	30.94	**Count:**	20	**-1s Warning Limit:**	14.85	**-2s Action Limit:**	-1.235
Sigma:	16.09	**CV:**	52.00%	**+1s Warning Limit:**	47.03	**+2s Action Limit:**	63.13

Quality Control Data

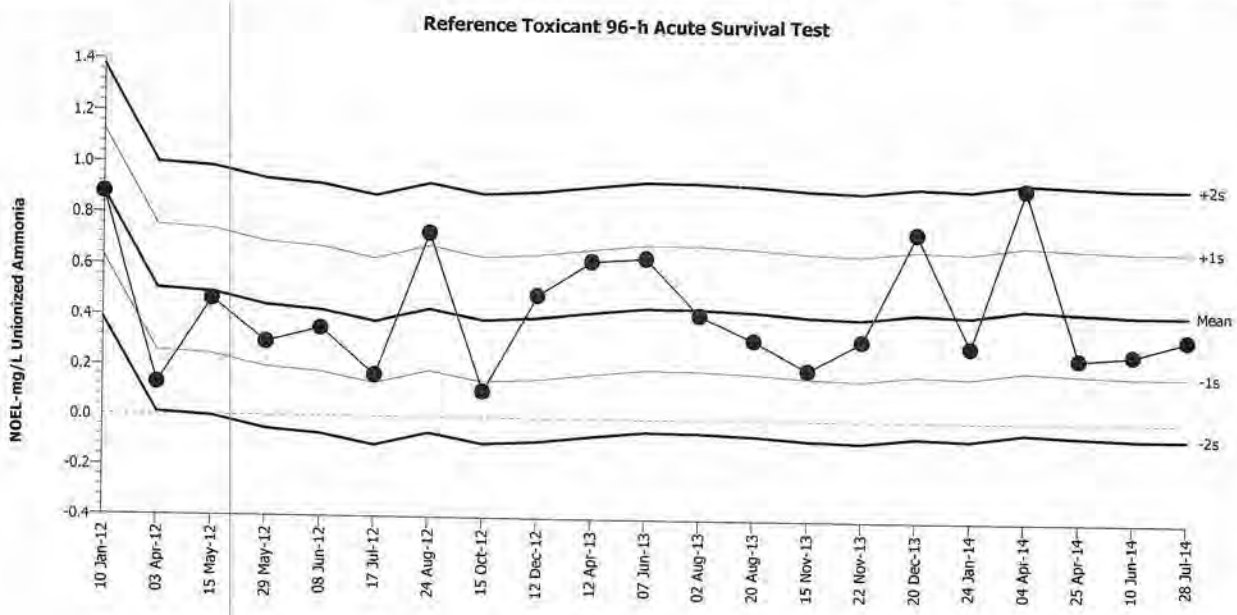
Point	Year	Month	Day	Time	QC Data	Delta	Sigma	Warning	Action	Test ID	Analysis ID	Laboratory
1	2012	Jan	10	13:20	48	17.06	1.06	(+)		03-9063-0419	05-6146-2767	NewFields
2		Apr	3	15:30	10.7	-20.24	-1.258	(-)		08-8729-6483	21-1434-6496	NewFields
3		May	15	15:35	30.3	-0.64	-0.03978			19-7667-7405	08-1012-4639	NewFields
4			29	16:30	15.4	-15.54	-0.9658			03-7733-4362	15-2881-2817	NewFields
5		Jun	8	13:20	33	2.06	0.128			13-8637-6080	11-0166-8393	NewFields
6		Jul	17	15:35	20.5	-10.44	-0.6489			13-6908-0253	01-0052-5043	NewFields
7		Aug	24	16:00	35.9	4.96	0.3083			05-1157-3267	08-5831-5485	NewFields
8		Oct	15	14:05	16.6	-14.34	-0.8912			20-5208-6497	00-9472-6466	NewFields
9		Dec	7	14:10	26.3	-4.64	-0.2884			09-7213-1371	15-3724-7545	NewFields
10			12	14:35	50.8	19.86	1.234	(+)		09-4120-7349	14-7366-3468	NewFields
11	2013	Apr	12	15:10	29.4	-1.54	-0.09571			12-7034-8436	09-1665-9388	NewFields
12		Jun	7	14:27	25.8	-5.14	-0.3195			09-6757-3966	16-0158-1126	NewFields
13		Aug	2	14:30	27.2	-3.74	-0.2324			19-9079-9629	14-0752-3636	NewFields
14			20	16:00	16.5	-14.44	-0.8975			13-7509-8421	21-3120-5219	NewFields
15		Nov	15	14:50	26.4	-4.54	-0.2822			18-3292-0330	03-2680-3996	NewFields
16			22	15:50	53	22.06	1.371	(+)		02-3495-3785	03-4630-5877	NewFields
17		Dec	20	13:00	28.1	-2.84	-0.1765			02-4678-2263	19-1567-9831	NewFields
18	2014	Jan	24	14:20	34.5	3.56	0.2213			09-0650-4326	20-7968-7866	NewFields
19		Apr	4	19:35	77.1	46.16	2.869	(+)	(+)	03-6871-1212	10-6236-8293	ENVIRON
20			25	13:00	13.4	-17.54	-1.09	(-)		20-1058-8272	11-6567-3054	ENVIRON
21		Jun	10	16:40	21.2	-9.74	-0.6053			11-7635-5332	16-5592-8257	ENVIRON

CETIS QC Plot

Report Date: 12 Aug-14 10:49 (1 of 1)

Reference Toxicant 96-h Acute Survival Test — All Matching Labs

Test Type: Survival
Protocol: PSEP (1995)
Organism: Ampelisca abdita (Amphipod)
Endpoint: Proportion Survived
Material: Unionized Ammonia
Source: Reference Toxicant-REF



Mean:	0.4321	**Count:**	20	**-1s Warning Limit:**	0.1849	**-2s Action Limit:**	-0.0623
Sigma:	0.2472	**CV:**	57.20%	**+1s Warning Limit:**	0.6794	**+2s Action Limit:**	0.9265

Quality Control Data

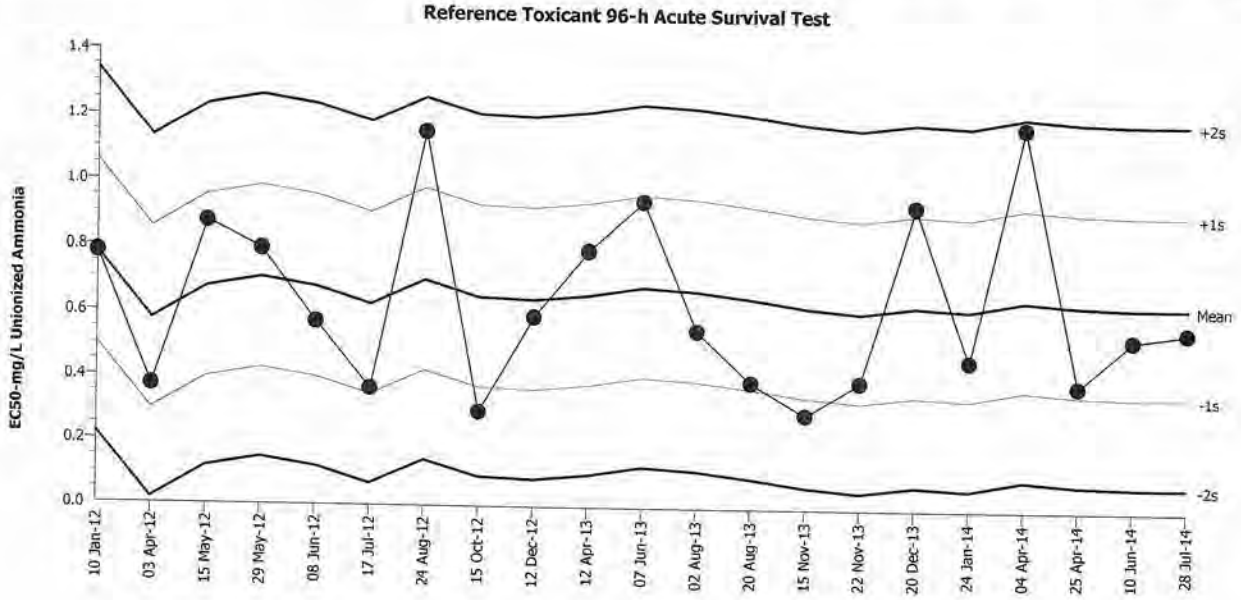
Point	Year	Month	Day	Time	QC Data	Delta	Sigma	Warning	Action	Test ID	Analysis ID	Laboratory
1	2012	Jan	10	13:20	0.88	0.4479	1.812	(+)		14-0134-9355	16-9430-9459	NewFields
2		Apr	3	15:30	0.13	-0.3021	-1.222	(-)		09-4195-0171	03-4555-9841	NewFields
3		May	15	15:35	0.465	0.0329	0.1331			19-0654-4665	02-1023-3166	NewFields
4			29	16:30	0.296	-0.1361	-0.5506			16-2142-7193	05-9105-0121	NewFields
5		Jun	8	13:20	0.353	-0.0791	-0.32			16-9847-8166	07-7881-0150	NewFields
6		Jul	17	15:35	0.167	-0.2651	-1.072	(-)		16-1062-4289	06-2935-3737	NewFields
7		Aug	24	16:00	0.731	0.2989	1.209	(+)		08-8752-6542	06-6737-8668	NewFields
8		Oct	15	14:05	0.106	-0.3261	-1.319	(-)		21-3290-0327	16-3835-9075	NewFields
9		Dec	12	14:35	0.491	0.0589	0.2383			19-9334-0562	05-1325-4403	NewFields
10	2013	Apr	12	15:10	0.627	0.1949	0.7884			18-6740-5427	16-6473-6896	NewFields
11		Jun	7	14:27	0.641	0.2089	0.8451			17-9272-1074	01-9841-1337	NewFields
12		Aug	2	14:30	0.418	-0.0141	-0.05704			05-2050-2330	09-8914-1463	NewFields
13			20	16:00	0.32	-0.1121	-0.4535			00-4509-6567	15-4368-4994	NewFields
14		Nov	15	14:50	0.202	-0.2301	-0.9308			15-3359-5488	19-6913-3405	NewFields
15			22	15:50	0.32	-0.1121	-0.4535			04-9377-1262	07-8500-9484	NewFields
16		Dec	20	13:00	0.746	0.3139	1.27	(+)		08-0807-5446	09-0763-9169	NewFields
17	2014	Jan	24	14:20	0.299	-0.1331	-0.5384			04-5730-2845	21-0869-8694	NewFields
18		Apr	4	19:35	0.923	0.4909	1.986	(+)		12-5203-4937	03-7390-9737	ENVIRON
19			25	13:00	0.255	-0.1771	-0.7164			17-7359-2221	18-2233-7637	ENVIRON
20		Jun	10	16:40	0.273	-0.1591	-0.6436			06-5060-1224	15-0495-7506	ENVIRON
21		Jul	28	16:15	0.334	-0.0981	-0.3968			20-0809-2704	18-5911-9161	ENVIRON

CETIS QC Plot

Report Date: 12 Aug-14 10:48 (1 of 1)

Reference Toxicant 96-h Acute Survival Test — All Matching Labs

Test Type:	Survival	**Organism:**	Ampelisca abdita (Amphipod)	**Material:**	Unionized Ammonia
Protocol:	PSEP (1995)	**Endpoint:**	Proportion Survived	**Source:**	Reference Toxicant-REF



Mean:	0.6339	**Count:**	20	**-1s Warning Limit:**	0.3549	**-2s Action Limit:**	0.07594
Sigma:	0.279	**CV:**	44.00%	**+1s Warning Limit:**	0.9129	**+2s Action Limit:**	1.192

Quality Control Data

Point	Year	Month	Day	Time	QC Data	Delta	Sigma	Warning	Action	Test ID	Analysis ID	Laboratory
1	2012	Jan	10	13:20	0.7803	0.1464	0.5247			14-0134-9355	05-9622-2552	NewFields
2		Apr	3	15:30	0.3727	-0.2612	-0.9363			09-4195-0171	16-7041-3249	NewFields
3		May	15	15:35	0.8746	0.2407	0.8628			19-0654-4665	02-2736-5527	NewFields
4			29	16:30	0.7925	0.1586	0.5684			16-2142-7193	00-6495-6483	NewFields
5		Jun	8	13:20	0.5713	-0.06263	-0.2245			16-9847-8166	14-4844-2376	NewFields
6		Jul	17	15:35	0.3655	-0.2684	-0.962			16-1062-4289	18-5210-8917	NewFields
7		Aug	24	16:00	1.153	0.5188	1.86	(+)		08-8752-6542	18-9827-5067	NewFields
8		Oct	15	14:05	0.2948	-0.3391	-1.215	(-)		21-3290-0327	06-9210-9670	NewFields
9		Dec	12	14:35	0.5915	-0.04244	-0.1521			19-9334-0562	19-2787-5813	NewFields
10	2013	Apr	12	15:10	0.7944	0.1605	0.5752			18-6740-5427	01-0210-3355	NewFields
11		Jun	7	14:27	0.9455	0.3116	1.117	(+)		17-9272-1074	09-3984-5720	NewFields
12		Aug	2	14:30	0.5525	-0.08135	-0.2916			05-2050-2330	19-4439-2397	NewFields
13			20	16:00	0.3944	-0.2395	-0.8584			00-4509-6567	12-4262-0365	NewFields
14		Nov	15	14:50	0.2942	-0.3397	-1.218	(-)		15-3359-5488	14-2144-3552	NewFields
15			22	15:50	0.3974	-0.2365	-0.8475			04-9377-1262	01-8605-2924	NewFields
16		Dec	20	13:00	0.9362	0.3023	1.083	(+)		08-0807-5446	00-7157-7679	NewFields
17	2014	Jan	24	14:20	0.4651	-0.1688	-0.6051			04-5730-2845	16-3665-2448	NewFields
18		Apr	4	19:35	1.179	0.5449	1.953	(+)		12-5203-4937	05-0119-6068	ENVIRON
19			25	13:00	0.3893	-0.2446	-0.8767			17-7359-2221	08-0470-1515	ENVIRON
20		Jun	10	16:40	0.5349	-0.09895	-0.3547			06-5060-1224	07-6052-8696	ENVIRON
21		Jul	28	16:15	0.5594	-0.07454	-0.2672			20-0809-2704	10-4192-6452	ENVIRON

CETIS Summary Report

Reference Toxicant 96-h Acute Survival Test

ENVIRON

Batch ID:	08-9120-0263	**Test Type:**	Survival	**Analyst:**	
Start Date:	28 Jul-14 16:15	**Protocol:**	EPA/600/R-94/025 (1994)	**Diluent:**	Laboratory Seawater
Ending Date:	01 Aug-14 16:15	**Species:**	Ampelisca abdita	**Brine:**	Not Applicable
Duration:	96h	**Source:**	Brezina and Associates	**Age:**	
Sample ID:	06-6533-6988	**Code:**	27A83C9C	**Client:**	Internal Lab
Sample Date:	05 May-14	**Material:**	Total Ammonia	**Project:**	Reference Toxicant
Receive Date:	05 May-14	**Source:**	Reference Toxicant		
Sample Age:	84d 16h	**Station:**	p140505.20		

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
04-5147-3668	Proportion Survived	21.1	42.4	29.91	8.44%		Dunnett Multiple Comparison Test

Point Estimate Summary

Analysis ID	Endpoint	Level	mg/L	95% LCL	95% UCL	TU	Method
00-3978-3185	Proportion Survived	EC50	41.7	36.67	47.43		Trimmed Spearman-Kärber

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits	Overlap	Decision
00-3978-3185	Proportion Survived	Control Resp	1	0.9 - NL	Yes	Passes Acceptability Criteria
04-5147-3668	Proportion Survived	Control Resp	1	0.9 - NL	Yes	Passes Acceptability Criteria

Proportion Survived Summary

C-mg/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Dilution Water	3	1	1	1	1	1	0	0	0.0%	0.0%
10.4		3	0.9667	0.8232	1	0.9	1	0.03333	0.05774	5.97%	3.33%
21.1		3	1	1	1	1	1	0	0	0.0%	0.0%
42.4		3	0.5	0.2516	0.7484	0.4	0.6	0.05774	0.1	20.0%	50.0%
81.5		3	0	0	0	0	0	0	0		100.0%
158		3	0	0	0	0	0	0	0		100.0%

Proportion Survived Detail

C-mg/L	Control Type	Rep 1	Rep 2	Rep 3
0	Dilution Water	1	1	1
10.4		1	1	0.9
21.1		1	1	1
42.4		0.6	0.4	0.5
81.5		0	0	0
158		0	0	0

Proportion Survived Binomials

C-mg/L	Control Type	Rep 1	Rep 2	Rep 3
0	Dilution Water	10/10	10/10	10/10
10.4		10/10	10/10	9/10
21.1		10/10	10/10	10/10
42.4		6/10	4/10	5/10
81.5		0/10	0/10	0/10
158		0/10	0/10	0/10

CETIS Test Data Worksheet

Reference Toxicant 96-h Acute Survival Test — **ENVIRON**

Start Date:	28 Jul-14 16:15	**Species:**	Ampelisca abdita
End Date:	01 Aug-14 16:15	**Protocol:**	EPA/600/R-94/025 (1994)
Sample Date:	05 May-14	**Material:**	Total Ammonia
Sample Code:	27A83C9C		
Sample Source:	Reference Toxicant		
Sample Station:	p140505.20		

C-mg/L	Code	Rep	Pos	# Exposed	# Survived	Notes
0	D	1	2	10	10	
0	D	2	11	10	10	
0	D	3	5	10	10	
10.4		1	4	10	10	
10.4		2	10	10	10	
10.4		3	6	10	9	
21.1		1	14	10	10	
21.1		2	7	10	10	
21.1		3	8	10	10	
42.4		1	18	10	6	
42.4		2	16	10	4	
42.4		3	17	10	5	
81.5		1	3	10	0	
81.5		2	1	10	0	
81.5		3	12	10	0	
158		1	9	10	0	
158		2	15	10	0	
158		3	13	10	0	

CETIS Summary Report

Reference Toxicant 96-h Acute Survival Test

ENVIRON

Batch ID:	07-4676-4243	Test Type:	Survival	Analyst:	
Start Date:	28 Jul-14 16:15	Protocol:	EPA/600/R-94/025 (1994)	Diluent:	Laboratory Seawater
Ending Date:	01 Aug-14 16:15	Species:	Ampelisca abdita	Brine:	Not Applicable
Duration:	96h	Source:	Brezina and Associates	Age:	
Sample ID:	16-2693-9906	Code:	60F92202	Client:	Internal Lab
Sample Date:	05 May-14	Material:	Unionized Ammonia	Project:	Reference Toxicant
Receive Date:	05 May-14	Source:	Reference Toxicant		
Sample Age:	84d 16h	Station:	p140505.20		

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
18-5911-9161	Proportion Survived	0.334	0.538	0.4239	8.44%		Dunnett Multiple Comparison Test

Point Estimate Summary

Analysis ID	Endpoint	Level	mg/L	95% LCL	95% UCL	TU	Method
10-4192-6452	Proportion Survived	EC50	0.5594	0.5024	0.6228		Trimmed Spearman-Kärber

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits	Overlap	Decision
10-4192-6452	Proportion Survived	Control Resp	1	0.9 - NL	Yes	Passes Acceptability Criteria
18-5911-9161	Proportion Survived	Control Resp	1	0.9 - NL	Yes	Passes Acceptability Criteria

Proportion Survived Summary

C-mg/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Dilution Water	3	1	1	1	1	1	0	0	0.0%	0.0%
0.164		3	0.9667	0.8232	1	0.9	1	0.03333	0.05774	5.97%	3.33%
0.334		3	1	1	1	1	1	0	0	0.0%	0.0%
0.538		3	0.5	0.2516	0.7484	0.4	0.6	0.05774	0.1	20.0%	50.0%
1.035		3	0	0	0	0	0	0	0		100.0%
1.263		3	0	0	0	0	0	0	0		100.0%

Proportion Survived Detail

C-mg/L	Control Type	Rep 1	Rep 2	Rep 3
0	Dilution Water	1	1	1
0.164		1	1	0.9
0.334		1	1	1
0.538		0.6	0.4	0.5
1.035		0	0	0
1.263		0	0	0

Proportion Survived Binomials

C-mg/L	Control Type	Rep 1	Rep 2	Rep 3
0	Dilution Water	10/10	10/10	10/10
0.164		10/10	10/10	9/10
0.334		10/10	10/10	10/10
0.538		6/10	4/10	5/10
1.035		0/10	0/10	0/10
1.263		0/10	0/10	0/10

CETIS Test Data Worksheet

Reference Toxicant 96-h Acute Survival Test — **ENVIRON**

Start Date:	28 Jul-14 16:15	**Species:**	Ampelisca abdita
End Date:	01 Aug-14 16:15	**Protocol:**	EPA/600/R-94/025 (1994)
Sample Date:	05 May-14	**Material:**	Unionized Ammonia
Sample Code:	60F92202		
Sample Source:	Reference Toxicant		
Sample Station:	p140505.20		

C-mg/L	Code	Rep	Pos	# Exposed	# Survived	Notes
0	D	1	16	10	10	
0	D	2	14	10	10	
0	D	3	11	10	10	
0.164		1	13	10	10	
0.164		2	18	10	10	
0.164		3	7	10	9	
0.334		1	2	10	10	
0.334		2	1	10	10	
0.334		3	10	10	10	
0.538		1	9	10	6	
0.538		2	4	10	4	
0.538		3	15	10	5	
1.035		1	17	10	0	
1.035		2	6	10	0	
1.035		3	3	10	0	
1.263		1	12	10	0	
1.263		2	8	10	0	
1.263		3	5	10	0	

ENVIRON

Ammonia Reference Toxicant Test Water Quality Data Sheet

CLIENT	PROJECT	SPECIES		LABORATORY	PROTOCOL
ANAMAR		*Ampelisca abdita*		Port Gamble Bath 6	USACE 1991
TEST ID	**LOT #:**	**TEST START DATE**	**TIME**	**TEST END DATE**	**TIME**
P140505.20	3244C535	July 28, 14	1615	August 7, 14	1615

WATER QUALITY DATA

TEST CONDITIONS					DO (mg/L) >4.6		TEMP(C) 20 ± 1		SAL (ppt) 30 ± 2		pH 6 - 9		TECHNICIAN	AMMONIA			SULFIDES		
CLIENT/ ID	CONCENTRATION value	CONCENTRATION units	DAY	REP	D.O. meter	D.O. mg/L	TEMP. meter	TEMP. °C	SALINITY meter	SALINITY ppt	pH meter	pH unit	WQ TECH/ DATE	AMMONIA METER	AMMONIA mg/L	AMMONIA Tech	SULFIDES meter	SULFIDES mg/L	SULFIDES Tech
Ref.Tox.-ammonia	0	mg/L	0	Stock	8	7.5	8	19.7	8	30	8	7.8	JL 7/28	3	0.00	HE			
			4	1	8	7.2	8	19.6	8	30	8	7.9	KB 8/1						
			6	2	8	6.1	8	19.9	8	30	8	7.8	JL 8/03						
			8	3	8	6.1	8	19.7	8	30	8	7.8	KB 8/05						
			10	1	8	7.3	8	19.4	8	30	8	7.9	KB 8/07						
Ref.Tox.-ammonia	15	mg/L	0	Stock	8	7.5	8	19.6	8	30	8	7.7	JL 7/28	3	10.4	HE			
			4	1	8	7.6	8	19.6	8	30	8	7.9	KB 8/1						
			6	2	8	6.2	8	19.8	8	31	8	7.9	JL 8/03						
			8	3	8	6.7	8	19.6	8	30	8	7.9	KB 8/05						
			10	1	8	7.3	8	19.4	8	30	8	7.9	KB 8/07						
Ref.Tox.-ammonia	30	mg/L	0	Stock	8	7.5	8	19.6	8	30	8	7.7	JL 7/28	3	21.1	HE			
			4	1	8	7.5	8	19.6	8	30	8	7.9	KB 8/1						
			6	2	8	6.0	8	19.8	8	30	8	7.9	JL 8/03						
			8	3	8	6.5 6.0 ②	8	19.7	8	30	8	7.8	KB 8/05						
			10	1	8	7.1	8	19.4	8	30	8	7.8	KB 8/07						
Ref.Tox.-ammonia	60	mg/L	0	Stock	8	7.5	8	19.7	8	30	8	7.6	JL 7/28	3	42.4	HE			
			4	1	8	7.5	8	19.6	8	30	8	7.9	KB 8/1						
			6	2	8	6.0	8	19.7	8	31	8	7.9	JL 8/03						
			8	3	8	6.2	8	19.6	8	30	8	7.8	KB 8/05						
			10	1	8 ③		8		8		8		~~KB 8/07~~						
Ref.Tox.-ammonia	120	mg/L	0	Stock	8	7.5	8	19.7	8	30	8	7.6	JL 7/28	3	81.5	HE			
			4	1	8	①	8	①	8	①	8	①	KB 8/1						
			6	2															
			8	3															
			10	1															
Ref.Tox.-ammonia	240	mg/L	0	Stock	8	7.5	8	19.7	8	31	8	7.4	JL 7/28	3	158	HE			
			4	1	8	—	8	—	8	—	8	—	KB 8/1 ③						
			6	2															
			8	3															
			10	1															

① No survival, all reps dumped. MK 8/3 8/1

② MR. KMB. 08/05/14

③ No survival in any rep. KB 08/07/14

ENVIRON

Ammonia Reference Toxicant Test Survival Data Sheet

SPECIES		
Ampelisca abdita		
PROJECT MANAGER	LABORATORY	PROTOCOL
B. Hester	Port Gamble Bath 6	USACE 1991

SURVIVAL & BEHAVIOR DATA

OBSERVATION KEY
N = Normal
LOE = Loss of equilibium
Q = Quinscent
DC = Discoloration
NB = No body
F = Floating on surface

CLIENT/ ID	CONC. value units	REP	INITIAL # OF ORGANISMS / INITIAL NUMBER	DAY 1 #ALIVE	DAY 1 #DEAD	DAY 1 OBS	DAY 2 #ALIVE	DAY 2 #DEAD	DAY 2 OBS	DAY 3 #ALIVE	DAY 3 #DEAD	DAY 3 OBS	DAY 4 #ALIVE	DAY 4 #DEAD	DAY 4 OBS	DAY 5 #ALIVE	DAY 5 #DEAD	DAY 5 OBS
	DATE			7/29/14			7/30			7/31			8/1			8/02		
	TECHNICIAN			MK			JL			KMB			MK			JL		
Ref.Tox.- Ammonia	0 mg/L	1		10	Ø	3F	10	Ø	N	10	Ø	2F	10	Ø	3F	10	0	5F
		2		10	Ø	3F	10	Ø	2F	10	Ø	2F	10	Ø	3F	10	0	3F
		3		10	Ø	4F	10	Ø	3F	10	Ø	1F	10	Ø	5F	10	0	3F
Ref.Tox.- Ammonia	15 mg/L	1		10	Ø	N	10	Ø	1F	10	Ø	2F	10	Ø	N	② 10	Ø	[illegible]
		2		10	Ø	↓	10	Ø	3F	10	Ø	4F	10	Ø	↓	10	Ø	N
		3		10	Ø	3F	10	Ø	2F	10	Ø	3F	9	1	↓	9	Ø	1F
Ref.Tox.- Ammonia	30 mg/L	1		10	Ø	N	10	Ø	1F	10	Ø	1F	10	Ø	N	8	1	1NB
		2		10	Ø ①	~~1F~~ N	10	Ø	N	10	Ø	1F	10	Ø	↓	9	1	N
		3		10	Ø ①	3F	10	Ø	1F	10	Ø	2F	10	Ø	↓	8	2	1F
Ref.Tox.- Ammonia	60 mg/L	1		10	Ø	N	9	1	N	8	1	N	6	2	Q	4	2	Q
		2		10	Ø	1F	10	Ø	1F	7	3	N	4	3	↓	2	2	Q 1F
		3		10	Ø	N	10	Ø	1F	9	1	2F	5	4	↓	3	2	Q
Ref.Tox.- Ammonia	120 mg/L	1		9	1	2F	6	3	Q	5	1	Q	Ø	5	—			
		2		10	Ø	1F	6	4	↓	2	4	↓	Ø	2	—			
		3		10	Ø	N	2	8	↓	Ø	2		—	—	—			
Ref.Tox.- Ammonia	240 mg/L	1		4	6	Q	Ø	4	—									
		2		3	7	Q	Ø	3	—									
		3		2	8	↓	Ø	2	—									

CLIENT/ ID	CONC. value units	REP	DAY 6 #ALIVE	DAY 6 #DEAD	DAY 6 OBS	DAY 7 #ALIVE	DAY 7 #DEAD	DAY 7 OBS	DAY 8 #ALIVE	DAY 8 #DEAD	DAY 8 OBS	DAY 9 #ALIVE	DAY 9 #DEAD	DAY 9 OBS	DAY 10 #ALIVE	DAY 10 #DEAD	DAY 10 OBS
	DATE		8/03			8/4			8/5			8/6			8/07		
	TECHNICIAN		JL			[illegible]			KMB			[illegible]			[illegible]		
Ref.Tox.- Ammonia	0 mg/L	1	10	Ø	2F	10	0	3F	10	Ø	2F	9	1	6F	9	0	3F
		2	10	Ø	N	10	0	2F	9	1NB	2F	9	0	N	8	1	1F
		3	10	Ø	N	10	0	1F	10	Ø	2F	10	0	2F	8	2	1F
Ref.Tox.- Ammonia	15 mg/L	1	10	Ø	1F	10	0	N	10	Ø	4F	10	0	2F	9	1	N
		2	10	Ø	N	10	0	1F	10	Ø	1F	9	1	1F	8	1	2F
		3	9	Ø	↓	9	0	N	9	Ø	2F	8	1	2F	7	1	N
Ref.Tox.- Ammonia	30 mg/L	1	7	1	N	7	0	N	6	1	N	6	0	N	5	1	N
		2	9	Ø	↓	9	0	N	9	Ø	2F	8	1	2F	~~8~~ ③	1	N
		3	6	2	1F	5	1	1F	3	1,NB	1F	1	1,NB	N	0	1	—
Ref.Tox.- Ammonia	60 mg/L	1	1	3	1F,Q	0	1		—	—	—	—	—	—			
		2	1	1	Q	0	1		—	—	—	—	—	—			
		3	2	1	Q	2	0	Q	1	1	1F	0	1	—			
Ref.Tox.- Ammonia	120 mg/L	1															
		2															
		3															
Ref.Tox.- Ammonia	240 mg/L	1															
		2															
		3															

Feed: JL

① WC. MK 7/29.

② wrong conc. JL 8/02/14
15 mg/L Rep 1 10 (Ø)
2 10 (Ø)
3 9 (Ø)

③ IQ 7, 1 [illegible] 8/7/14

ENVIRON **Ammonia Reference Toxicant Spiking Worksheet**

Amp/Eoh NH_3 RT

Assumptions in Model
Stock ammonia concentration is 10,000 mg/L = 10 mg/mL

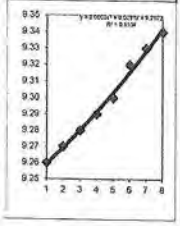
Actual Reading
10800

Test Solutions			Volume of stock to reach desired concentration	
Measured Concentration	**Desired Concentration**	**Volume**		
mg/L	mg/L	mL	mL stock to increase	
			[redacted]	SALT WATER
	240	750		**25.000**
	120	750		**12.500**
	60	750		**6.250**
	30	750		**3.125**
	15	750		**1.563**
	0	750		**0.000**
				0.000
				0.000

CLIENT:	ANAMAR	Date of Test:	28-Jul-14
PROJECT:	Shipyard Creek	Test Type:	Amps
COMMENTS:			

To convert Total Ammonia (mg/L) to Free (un-ionized) Ammonia (mg/L) enter the corresponding total ammonia, salinity, temperature, and pH.

Integer:	I-factor
1	9.26
2	9.27
3	9.28
4	9.29
5	9.30
6	9.32
7	9.33
8	9.34



	Sample	Mod	NH3T (mg/L)	salinity (ppt)	pH	temp (C)	temp (K)	i-factor	Mod	NH3U (mg/L)
	Target / Sample Name		Actual	22.9	8.0	24.1	297.26	9.3053		#VALUE!
	Example 3.5		2.000	10.0	7.5	5.0	278.16	9.2750		0.008
1										
2										
3	15		10.4	30	7.7	19.6	292.76	9.3242		0.164
4	30		21.1	30	7.7	19.6	292.76	9.3242		0.334
5	60		42.4	30	7.6	19.7	292.86	9.3242		0.538
6	120		81.5	30	7.6	19.7	292.86	9.3242		1.035
7	240		158.0	31	7.4	19.7	292.86	9.3270		1.263
8										
9										
10										
11										
12										
13										
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46										

APPENDIX A.5 *Leptocheirus plumulosus* Benthic Test

Shipyard Creek
Test Results for the 10-day Benthic Toxicity Test with *L. plumulosus.*

Treatment	Replicate	Number Initiated	Number Surviving	Number Missing or Dead	Percentage Survival	Mean Percentage Survival	SD
Control	1	20	19	1	95	91	12
	2	20	19	1	95		
	3	20	19	1	95		
	4	20	14	6	70		
	5	20	20	0	100		
SYC14-REF	1	20	20	0	100	97	3
	2	20	20	0	100		
	3	20	19	1	95		
	4	20	19	1	95		
	5	20	19	1	95		
SYC14-TB1	1	20	10	10	50	70	15
	2	20	18	2	90		
	3	20	13	7	65		
	4	20	14	6	70		
	5	20	15	5	75		
SYC14-TB2	1	20	11	9	55	52	21
	2	20	16	4	80		
	3	20	12	8	60		
	4	20	8	12	40		
	5	20	5	15	25		
SYC14-AC	1	20	13	7	65	61	16
	2	20	10	10	50		
	3	20	8	12	40		
	4	20	15	5	75		
	5	20	15	5	75		

ENVIRON

10-DAY SOLID PHASE TEST OBSERVATION DATA

CLIENT	PROJECT	SPECIES	LABORATORY	PROTOCOL
ANAMAR	Shipyard Creek	*Leptocheirus plumulosus*	Port Gamble Bath 7	USACE 1991
	PROJECT MANAGER: B. Hester	TEST START DATE: 27-Jun-14	TEST END DATE: 7-Jul-14	

#E = Emergence
#M = Number of Mortality
#F = Floating on Surface
A = Algal Growth
B = Beggiatoa
D = No Air Flow (DO?)
N = Normal

Client/ ID	Rep	Jar #	Initial # of Organisms	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8	Day 9	Day 10	Number Alive	
				Date	Date	Date	Date	Date	Date	Date	Date	Date	Date		
			~~20~~ ~~10~~	6/28	6/29	6/30	7/1	7/2	7/3	7/4	7/05	7/06	7/7		
				Technician	Technician	Technician	Technician	Technician	Technician	Technician	Technician	Technician	Technician		
				[illegible]	JL	JL	KMB	MK	KMB	[illegible]	JL	JL	MK		
Control	1			N	N	N	N	N	N	N	N	N	N	19	
	2			N	↓	↓	↓	↓	↓	↓	↓	↓	↓	19	
	3			IF	↓	↓	↓	↓	↓	↓	↓	↓	↓	19	
	4			N	↓	↓	↓	↓	↓	↓	↓	↓	↓	14	4m
	5			↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	20	
SYC14-REF	1			↓	B	B	B	B	B	N	↓	↓	↓	20	
	2			↓	N	N	↓	↓	↓	↓	↓	↓	↓	20	
	3			↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	19	
	4			↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	19	
	5			↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	19	
SYC14-TB1	1			↓	↓	↓	N	N	N	N	↓	↓	↓	10	Cm
	2			↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	18	
	3			↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	13	
	4			↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	14	
	5			↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	15	
SYC14-TB2	1			↓	↓	↓	N	N	N	N	↓	↓	↓	11	
	2			↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	16	2m
	3			↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	12	3m
	4			IF	↓	↓	↓	↓	↓	↓	↓	↓	↓	8	2m
	5			N	↓	↓	↓	↓	↓	↓	↓	↓	↓	5	3m

ENVIRON

10-DAY SOLID PHASE TEST OBSERVATION DATA

CLIENT	PROJECT	SPECIES	LABORATORY	PROTOCOL
ANAMAR	Shipyard Creek	*Leptocheirus plumulosus*	Port Gamble Bath 7	USACE 1991
	PROJECT MANAGER B. Hester	TEST START DATE 27-Jun-14	TEST END DATE 7-Jul-14	

#E = Emergence
#M = Number of Mortality
#F = Floating on Surface
A = Algal Growth
B = Beggiatoa
D = No Air Flow (DO?)
N = Normal

Client/ ID	Rep	Jar #	Initial # of Organisms	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8	Day 9	Day 10	Number Alive	
				ENDPOINT DATA AND OBSERVATIONS											
				Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8	Day 9	Day 10		
			20 ~~10~~	Date 6/28	Date 6/29	Date 6/30	Date 7/1	Date 7/2	Date 7/3	Date 7/4	Date 7/05	Date 7/06	Date 7/7		
				Technician [illegible]	Technician JL	Technician JL	Technician KB	Technician MK	Technician KMB	Technician [illegible]	Technician JL	Technician JL	Technician MK		
SYC14-AC	1			N	N	N	N	N	N	N	N	N	N	13	1m
	2			↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	10	
	3			↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	8	1m
	4			↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	15	
	5			↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	15	2m

ENVIRON

10 DAY SOLID PHASE BIOASSAY
WATER QUALITY DATA SHEET

CLIENT	PROJECT	SPECIES	LABORATORY	PROTOCOL
ANAMAR	Shipyard Creek	*Leptocheirus plumulosus*	Port Gamble Bath 7	USACE 1991

Test Conditions				WATER QUALITY DATA									
				DO (mg/L)		Temperature (°C)		Salinity (ppt)		pH		Tech	Date
				>4.4		25 ± 1		20 ± 2		6 - 9			
Client/ ID	Day	Rep	Jar#	meter	mg/L	meter	deg C	meter	ppt	meter	unit		
Control	0	Surr	29	6	7.3	2	24.0	2	20	6	7.7	[illegible]	6/27
Control	1	Surr		6	6.5	2	24.0	2	20	6	7.7	[illegible]	6/28
Control	2	Surr		6	7.1	6	25.2	2	21	6	7.6	JL	6/29
Control	3	Surr		6	7.2	6	24.8	2	21	6	7.5	JL	6/30
Control	4	Surr		6	7.1	6	①~~23.0~~24.0	2	21	6	7.2	KMB	7/01
Control	5	Surr		6	7.6	2	24.6	2	21	6	7.0	MK	7/2
Control	6	Surr		6	6.9	6	23.7	2	21	6	6.7	KMB	7/3
Control	7	Surr		8	7.3	8	24.5	8	③ ~~22~~21	8	6.8	[illegible]	7/4
Control	8	Surr		8	7.2	8	25.9	8	21	8	~~7.4~~7.6 ④7.7	JL	7/05
Control	9	Surr		8	7.2	8	25.7	8	21	8	④~~7.~~ 6.6	JL	7/06
Control	10	Surr		8	7.2	8	25.2	8	22	8	6.8	MK	7/7
SYC14-REF	0	Surr	14	6	7.3	2	24.0	2	20	6	7.9	[illegible]	6/27
SYC14-REF	1	Surr		6	7.2	2	24.1	2	21	6	8.0	[illegible]	6/28
SYC14-REF	2	Surr		6	7.1	6	24.9	2	21	6	8.0	JL	6/29
SYC14-REF	3	Surr		6	7.3	6	24.4	2	21	6	7.9	JL	6/30
SYC14-REF	4	Surr		6	7.1	6	24.8	2	21	6	8.0	KMB	7/01
SYC14-REF	5	Surr		6	7.4	2	25.3	2	21	6	7.9	MK	7/2
SYC14-REF	6	Surr		6	6.9	6	24.5	2	②~~20~~21	6	8.0	KMB	7/3
SYC14-REF	7	Surr		8	7.1	8	25.2	8	21	8	8.0	[illegible]	7/4
SYC14-REF	8	Surr		8	7.3	8	25.8	8	21	8	8.2	JL	7/05
SYC14-REF	9	Surr		8	7.1	8	25.7	8	21	8	8.2	JL	7/06
SYC14-REF	10	Surr		8	7.1	8	25.5	8	21	8	8.1	MK	7/7

① MK KMB. 07/01/14
② WC. KMB. 07/03/14
③ JL [illegible] 7/4
④ MK. JL 7/05/14.

ENVIRON

10 DAY SOLID PHASE BIOASSAY
WATER QUALITY DATA SHEET

CLIENT	PROJECT	SPECIES	LABORATORY	PROTOCOL
ANAMAR	Shipyard Creek	*Leptocheirus plumulosus*	Port Gamble Bath 7	USACE 1991

Test Conditions				WATER QUALITY DATA									
				DO (mg/L)		Temperature (°C)		Salinity (ppt)		pH		Tech	Date
				>4.4		25 ± 1		20 ± 2		6 - 9			
Client/ ID	Day	Rep	Jar#	meter	mg/L	meter	deg C	meter	ppt	meter	unit		
SYC14-TB1	0	Surr	27	6	7.0	2	24.0	2	20	6	7.9	[illegible]	6/27/14
SYC14-TB1	1	Surr		6	7.1	2	24.1	2	20	6	8.1	[illegible]	6/28
SYC14-TB1	2	Surr		6	6.9	6	25.2	2	20	6	8.1	JL	6/29
SYC14-TB1	3	Surr		6	7.0	6	24.8	2	20	6	8.0	JL	6/30
SYC14-TB1	4	Surr		6	7.1	6	24.5	2	20	6	8.1	KMB	7/01
SYC14-TB1	5	Surr		6	7.7	2	24.7	2	20	6	8.0	MK	7/2
SYC14-TB1	6	Surr		6	6.9	6	24.5	2	20	6	8.0	KMB	7/3
SYC14-TB1	7	Surr		8	7.1	8	25.4	8	21	8	8.2	[illegible]	7/4
SYC14-TB1	8	Surr		8	7.2	8	25.8	8	21	8	8.2	JL	7/05
SYC14-TB1	9	Surr		8	7.3	8	25.7	8	21	8	8.3	JL	7/06
SYC14-TB1	10	Surr		8	7.2	8	25.4	8	21	8	8.1	MK	7/7
SYC14-TB2	0	Surr	9	6	7.1	2	24.0	2	20	6	7.9	[illegible]	6/27
SYC14-TB2	1	Surr		6	7.0	2	24.1	2	20	6	7.9	[illegible]	6/28
SYC14-TB2	2	Surr		6	6.5	6	25.2	2	20	6	8.0	JL	6/29
SYC14-TB2	3	Surr		6	6.8	6	24.4	2	20	6	8.0	JL	6/30
SYC14-TB2	4	Surr		6	6.9	6	24.8	2	20	6	8.0	KMB	7/01
SYC14-TB2	5	Surr		6	7.4	2	25.1 ①	2	20	6	7.9	MK	7/2
SYC14-TB2	6	Surr		6	6.8	6	25.2	2	20	6	8.0	KMB	7/3
SYC14-TB2	7	Surr		8	7.1	8	25.3	8	21	8	8.1	[illegible]	7/4
SYC14-TB2	8	Surr		8	7.2	8	25.5	8	21	8	8.1	JL	7/05
SYC14-TB2	9	Surr		8	7.0	8	25.8	8	21	8	8.3	JL	7/06
SYC14-TB2	10	Surr		8	7.0	8	25.2	8	21	8	8.2	MK	7/7

① WC. MK 7/2

ENVIRON

10 DAY SOLID PHASE BIOASSAY
WATER QUALITY DATA SHEET

CLIENT	PROJECT
ANAMAR	Shipyard Creek

SPECIES	LABORATORY	PROTOCOL
Leptocheirus plumulosus	Port Gamble Bath 7	USACE 1991

Test Conditions				WATER QUALITY DATA									
				DO (mg/L)		Temperature (°C)		Salinity (ppt)		pH		Tech	Date
				>4.4		25 ± 1		20 ± 2		6 - 9			
Client/ ID	Day	Rep	Jar#	meter	mg/L	meter	deg C	meter	ppt	meter	unit		
SYC14-AC	0	Surr	15	6	7.2	2	24.0	2	20	6	8.0	[illegible]	6/27
SYC14-AC	1	Surr		6	7.2	2	24.1	2	20	6	8.1	[illegible]	6/28
SYC14-AC	2	Surr		6	7.0	6	25.2	2	20	6	8.1	JL	6/29
SYC14-AC	3	Surr		6	7.0	6	25.1	2	20	6	8.0	JL	6/30
SYC14-AC	4	Surr		6	7.1	6	24.8	2	20	6	8.1	KMB	7/01
SYC14-AC	5	Surr		6	7.8	2	25.2	2	20	6	8.0	MK	7/2
SYC14-AC	6	Surr		6	6.9	6	25.2	2	20	4	8.1	KMB	7/3
SYC14-AC	7	Surr		8	7.1	8	25.7	8	21	8	8.3	[illegible]	7/4
SYC14-AC	8	Surr		8	7.3	8	25.9	8	21	8	8.2	JL	7/05
SYC14-AC	9	Surr		8	7.5	8	25.6	8	21	8	8.2	JL	7/06
SYC14-AC	10	Surr		8	7.2	8	25.3	8	21	8	8.1	MK	7/7

10 DAY BENTHIC TEST
INTERACTIVE DATA SETUP

GENERAL	
CLIENT:	ANAMAR
PROJECT:	Shipyard Creek
PROJECT MANAGER:	B. Hester
TEST SPECIES:	*Leptocheirus plumulosus*
TEST PROTOCOL:	USACE 1991
LABORATORY:	Port Gamble
TEST LOCATION:	Bath 7
TEST START DATE:	27Jun14
TEST START TIME:	1340
TEST END DATE:	07Jul14
TEST END TIME:	0913
DILUTION WATER BATCH:	
FEEDING INFORMATION:	NA
WATER RENEWAL INFO:	NA
PHOTOPERIOD	Continuous

TEST PARAMETERS	TARGET	ACCEPTABLE RANGE / COMMENTS
DO: (mg/L)	>4.4	60% Sat @ 25°C, 20 ppt
Temp: (°C)	25 ± 1	25 ± 1
Sal: (ppt)	20 ± 2	20 ± 2
pH:	6 - 9	Optimal

FIELD SAMPLE	
DATE RECEIVED	31May14
SAMPLE STORAGE:	4 Degrees Celsius - dark
SAMPLE TREATMENT:	None
TEST CHAMBER:	1 L mason jars
EXPOSURE VOLUME:	2 cm sediment/ 775 mL water
REFERENCE TOXICANT #2:	Ammonia
REF. TOX. MATERIAL #2:	Ammonium Chloride

NH3 REFTOX CONC (mg/ L)
0
16
32
64
128
256

	CLIENT SAMPLE ID	SAMPLE ID
1	SYC14-REF	
2	SYC14-TB1	
3	SYC14-TB2	
4	SYC14-AC	
5	.	.
6	.	.
7	.	.
8	.	.
9	.	.
10	.	.
11	.	.
12	.	.
13	.	.
14	.	.
15	.	.
16	.	.
17	.	.
18	.	.
19	.	.
20	.	.
21	.	.
22	.	.
23	.	.
24	.	.
25	.	.
26	.	.
27	.	.
28	.	.
29	.	.
30	.	.
31	.	.
32	.	.
33	.	.
34	.	.
35		.

CONTROL ID	CONTROL ID
Control	

Ammonia and Sulfide Analysis Record

Client/Project:	Organism:	Test Duration (days):
Shipyard Creek	Lepto SP	10

PRETEST / (INITIAL) / FINAL / OTHER (circle one) DAY of TEST: 0

OVERLYING (OV) / POREWATER (PW) (circle one)

Comments: _____

Calibration Standards Temperature		Sample temperature should be within ±1°C of standards temperature at time and date of analysis.
Date:	Temperature:	
6/27/14	22.1	

Sample ID or Description	Conc. or Rep	Date of Sampling and Initials	Ammonia Value (mg/L)	Temp °C	Date of Reading and Initials	Sample Preserved (Y/N)	pH	Sal (ppt)	Sulf. mg/L
SYC Ø-OV		6/27/14 MK	0.00	22.1	6/27/14 MK	N	\	\	NA
↓ -PW		↓	0.00	21.1	↓	↓	6.0	21	↓
SYC AC-OV			0.00	22.0			\	\	
↓ -PW			0.00	21.1			7.6	20	
SYC Ref-OV			0.00	21.9			\	\	
↓ -PW			②	21.1			7.7	20	
SYC TB1-OV			0.00	21.6			\	\	
↓ -PW			0.00	21.1			7.4	02/20	
SYC TB2-OV			0.00	22.1			\	\	
↓ -PW		↓	0.00	21.1	↓	↓	7.3	20	↓

① IE. MK 6/27 ② Not enough PW to run ammonia analysis. MK 6/27

Ammonia and Sulfide Analysis Record

Client/Project:	Organism:	Test Duration (days):
Lep Anacmar Shipyard Crk	Leptos	10

PRETEST / INITIAL / FINAL / OTHER (circle one) **DAY of TEST:** 10

OVERLYING (OV) / POREWATER (PW) (circle one)

Comments: _____

Calibration Standards Temperature		Sample temperature should be within ±1°C of standards temperature at time and date of analysis.
Date:	**Temperature:**	
7/7	22.6	

Sample ID or Description	Conc. or Rep	Date of Sampling and Initials	Ammonia Value (mg/L)	Temp °C	Date of Reading and Initials	Sample Preserved (Y/N)	pH	Sal (ppt)	Sulf. mg/L
Ø OV	surr	KB 7/7	7.84	22.1	TK 7/7	N	~~6.0~~	~~22~~	
ref OV			0.00				②7.4		
TB1 OV			0.00						
TB2 OV			0.00						
AC OV	↓	↓	0.00	↓	↓	↓			
Ø PW	surr	KB 7/7	7.59	23.0	TK 7/7	N	6.0	22	
ref PW			①						
TB1 PW			0.0526	23.0	TK 7/7	N	7.4	②~~21~~ 21	
TB2 PW			0.415	↓	↓	↓	7.0	21	
AC PW	↓	↓	0.806	↓	↓	↓	7.3	19	

① insufficient PW TK 7/7 ② w/ TK 7/7

Ammonia and Sulfide Analysis Record

Client/Project:	Organism:	Test Duration (days):
Shipyard Creek	Lepto SP	10

PRETEST / ~~INITIAL~~ / FINAL / ~~OTHER (circle one)~~ DAY of TEST: ____
OVERLYING (OV) / POREWATER (PW) (circle one)

Comments: _____

Calibration Standards Temperature		Sample temperature should be within ±1°C of standards temperature at time and date of analysis.
Date:	Temperature:	
6/26/14		

Sample ID or Description	Conc. or Rep	Date of Sampling and Initials	Ammonia Value (mg/L)	Temp °C	Date of Reading and Initials	Sample Preserved (Y/N)	pH	Sal (ppt)	Sulf. mg/L
SYC AC-OV		6/26/14 MK	0.00	① ~~20.7~~ 21.0	6/26/14 MK	N	7.7	20	NA
↓ PW		↓	0.514	21.0	↓	↓	7.2	20	↓
SYC TB1-OV		↓	0.00	21.0	↓	↓	7.8	20	↓
↓ PW		↓	0.166	21.4	↓	↓	7.2	20	↓
SYC TB2-OV		↓	0.00	21.3	↓	↓	7.8	20	↓
↓ PW		↓	8.43	21.3	↓	↓	7.2	20	↓

① WC. MK 6/26.

ENVIRON

ORGANISM RECEIPT LOG

Date:	Time:	Batch No.
6.25.14	1529	ABS 3075

Organism / Project:	Source:
Leptocheirus / shipyard cooper	~~Eot~~ Aquatic BioSystems

Address:	Invoice Attached
On File	(Yes) No

Phone:	Contact:
On File	Scott Kellman

No. Ordered:	No. Received:	Source Batch:
1500	1650+	Culture

Condition of Organisms:	Approximate Size or Age:
Good	

Shipper:	B of L (Tracking No.)
FedEx	5803 3387 3075

Condition of Container:	Received By:
Good	BH

Container	D.O. (mg/L)	Temp. (°C)	Conductivity or (Salinity) (Include Units)	pH (Units)	Technician (Initials)
1	11.6	20.5	19	6.8	BH
2	9.7	20.8	19	6.9	↓
3	11.8	20.6	19	6.9	
4	10.9	20.6	19	7.0	

Notes:

1300 Blue Spruce Drive, Suite C
Fort Collins, Colorado 80524

Toll Free: 800/331-5916
Tel: 970/484-5091 Fax:970/484-2514

ORGANISM HISTORY

DATE: 6/24/14

SPECIES: *Leptocheirus plumulosus*

AGE: ~4-5 week

LIFE STAGE: Juvenile

HATCH DATE: Variable

BEGAN FEEDING: Immediately

FOOD: Flake Slurry

Water Chemistry Record:	Current	Range
TEMPERATURE:	23°C	21-25°C
SALINITY/CONDUCTIVITY:	20 ppt	16-22 ppt
TOTAL HARDNESS (as $CaCO_3$):	--	--
TOTAL ALKALINITY (as $CaCO_3$):	130 mg/l	110-175 mg/l
pH:	8.21	7.73-8.36

Comments:

Facility Supervisor

ENVIRON

MAINTENANCE LOG FOR CULTURES

ORGANISM: Leptos
LOCATION: test room

Batch Number: ABS 3075	Date Received: 06.25.14

Date	Feed AM/PM	Tub No.	D.O.	Temp (°C)	Cond/ Sal	pH	H_2O Change	No. Dead	NH_3	Init.
6/27/14	—	1	6.0	24.2	21	7.6	—	—	—	[illegible]
6/28	—	1	6.5	24.0	21	7.7	—	—	—	[illegible]
6/29	—	1	6.6	24.2	21	7.9	—	—	—	JL
6/30	—	1	~~6.6~~ 6.7	24.6	21	7.8	—	—	—	JL

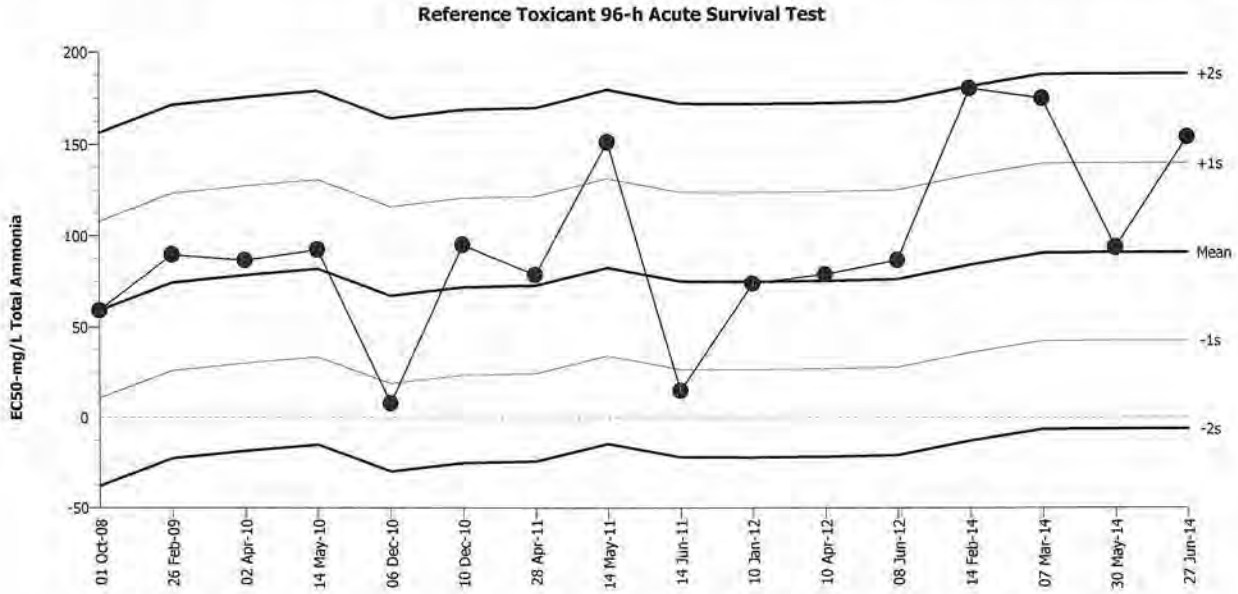
① WP. JL 6/30/14.

CETIS QC Plot

Report Date: 21 Jul-14 16:11 (1 of 1)

Reference Toxicant 96-h Acute Survival Test — **All Matching Labs**

Test Type:	Survival	**Organism:**	Leptocheirus plumulosus (Amphipod	**Material:**	Total Ammonia
Protocol:	EPA-823-B-98-005 (1998)	**Endpoint:**	Proportion Survived	**Source:**	Reference Toxicant-REF



Mean:	91.04	**Count:**	15	**-1s Warning Limit:**	42.5	**-2s Action Limit:**	-6.038
Sigma:	48.54	**CV:**	53.30%	**+1s Warning Limit:**	139.6	**+2s Action Limit:**	188.1

Quality Control Data

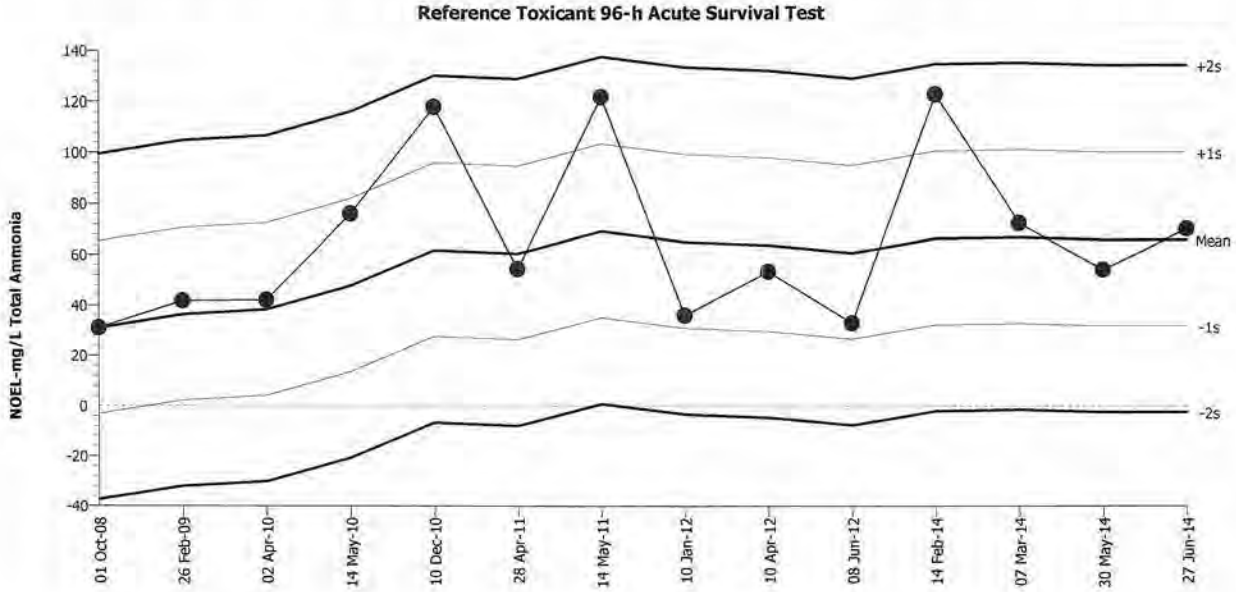
Point	Year	Month	Day	Time	QC Data	Delta	Sigma	Warning	Action	Test ID	Analysis ID	Laboratory
1	2008	Oct	1	18:30	59.23	-31.81	-0.6554			16-5414-7688	04-2995-4341	NewFields
2	2009	Feb	26	14:15	89.85	-1.194	-0.0246			06-6270-0080	19-8044-0787	NewFields
3	2010	Apr	2	16:45	86.84	-4.198	-0.08649			12-1212-5353	07-6074-3633	NewFields
4		May	14	17:20	92.6	1.557	0.03207			06-6519-9906	08-5481-6069	NewFields
5		Dec	6	17:15	7.934	-83.11	-1.712	(-)		10-6504-9810	15-2797-0362	NewFields
6			10	16:45	95.2	4.158	0.08565			18-2201-4199	10-7522-8907	NewFields
7	2011	Apr	28	16:40	78.82	-12.22	-0.2517			12-2733-0284	17-6692-1506	NewFields
8		May	14	17:30	151.2	60.17	1.24	(+)		19-6561-5575	13-7777-4374	NewFields
9		Jun	14	16:50	15	-76.04	-1.567	(-)		13-2014-3364	07-8690-1962	NewFields
10	2012	Jan	10	16:55	73.99	-17.05	-0.3513			06-7673-9935	17-5201-7199	NewFields
11		Apr	10	16:15	79.04	-12	-0.2472			01-0062-8994	11-7696-8139	NewFields
12		Jun	8	15:20	86.94	-4.101	-0.08449			02-2932-6725	16-7846-2646	NewFields
13	2014	Feb	14	16:30	180.4	89.34	1.841	(+)		21-3182-0423	09-4669-5218	NewFields
14		Mar	7	13:10	174.9	83.89	1.728	(+)		12-5705-1095	05-7282-0824	NewFields
15		May	30	17:10	93.69	2.647	0.05454			01-2203-6741	15-8829-1623	ENVIRON
16		Jun	27	14:55	153.8	62.74	1.293	(+)		21-2076-1717	18-7822-5742	ENVIRON

CETIS QC Plot

Report Date: 21 Jul-14 16:11 (1 of 1)

Reference Toxicant 96-h Acute Survival Test — **All Matching Labs**

Test Type:	Survival	**Organism:**	Leptocheirus plumulosus (Amphipod	**Material:**	Total Ammonia
Protocol:	EPA-823-B-98-005 (1998)	**Endpoint:**	Proportion Survived	**Source:**	Reference Toxicant-REF



Mean:	65.97	**Count:**	13	**-1s Warning Limit:**	31.78	**-2s Action Limit:**	-2.411
Sigma:	34.19	**CV:**	51.80%	**+1s Warning Limit:**	100.2	**+2s Action Limit:**	134.3

Quality Control Data

Point	Year	Month	Day	Time	QC Data	Delta	Sigma	Warning	Action	Test ID	Analysis ID	Laboratory
1	2008	Oct	1	18:30	31.1	-34.87	-1.02	(-)		16-5414-7688	04-7287-1040	NewFields
2	2009	Feb	26	14:15	41.8	-24.17	-0.7069			06-6270-0080	02-3984-0207	NewFields
3	2010	Apr	2	16:45	42.1	-23.87	-0.6982			12-1212-5353	10-7485-6386	NewFields
4		May	14	17:20	76.1	10.13	0.2963			06-6519-9906	00-2333-9981	NewFields
5		Dec	10	16:45	118	52.03	1.522	(+)		18-2201-4199	11-5397-8713	NewFields
6	2011	Apr	28	16:40	54.4	-11.57	-0.3384			12-2733-0284	17-6721-5038	NewFields
7		May	14	17:30	122	56.03	1.639	(+)		19-6561-5575	03-5802-3149	NewFields
8	2012	Jan	10	16:55	36.1	-29.87	-0.8736			06-7673-9935	17-5325-0674	NewFields
9		Apr	10	16:15	53.4	-12.57	-0.3677			01-0062-8994	03-6048-8819	NewFields
10		Jun	8	15:20	33	-32.97	-0.9643			02-2932-6725	08-2889-0605	NewFields
11	2014	Feb	14	16:30	123	57.03	1.668	(+)		21-3182-0423	10-5061-7839	NewFields
12		Mar	7	13:10	72.5	6.53	0.191			12-5705-1095	02-1889-9378	NewFields
13		May	30	17:10	54.1	-11.87	-0.3472			01-2203-6741	20-8854-3372	ENVIRON
14		Jun	27	14:55	70.2	4.23	0.1237			21-2076-1717	07-0052-7428	ENVIRON

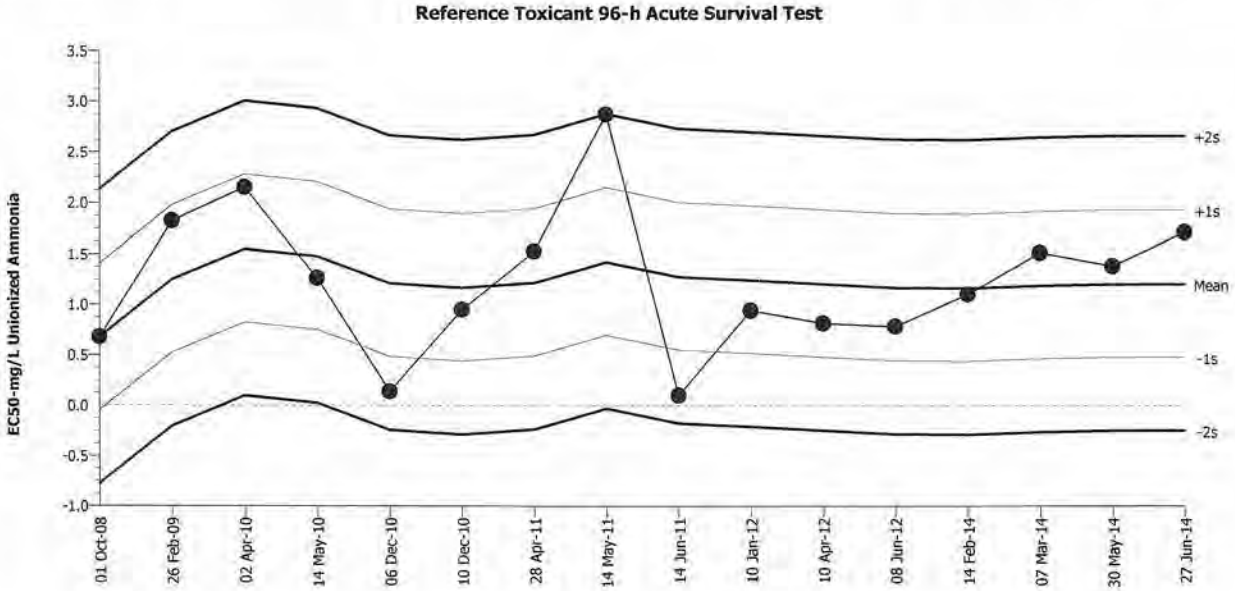
Analyst: JL QA: BM

CETIS QC Plot

Report Date: 21 Jul-14 16:28 (1 of 1)

Reference Toxicant 96-h Acute Survival Test — **All Matching Labs**

Test Type:	Survival	**Organism:**	Leptocheirus plumulosus (Amphipod	**Material:**	Unionized Ammonia
Protocol:	EPA-823-B-98-005 (1998)	**Endpoint:**	Proportion Survived	**Source:**	Reference Toxicant-REF



Mean:	1.207	**Count:**	15	**-1s Warning Limit:**	0.4799	**-2s Action Limit:**	-0.2469
Sigma:	0.7268	**CV:**	60.20%	**+1s Warning Limit:**	1.933	**+2s Action Limit:**	2.66

Quality Control Data

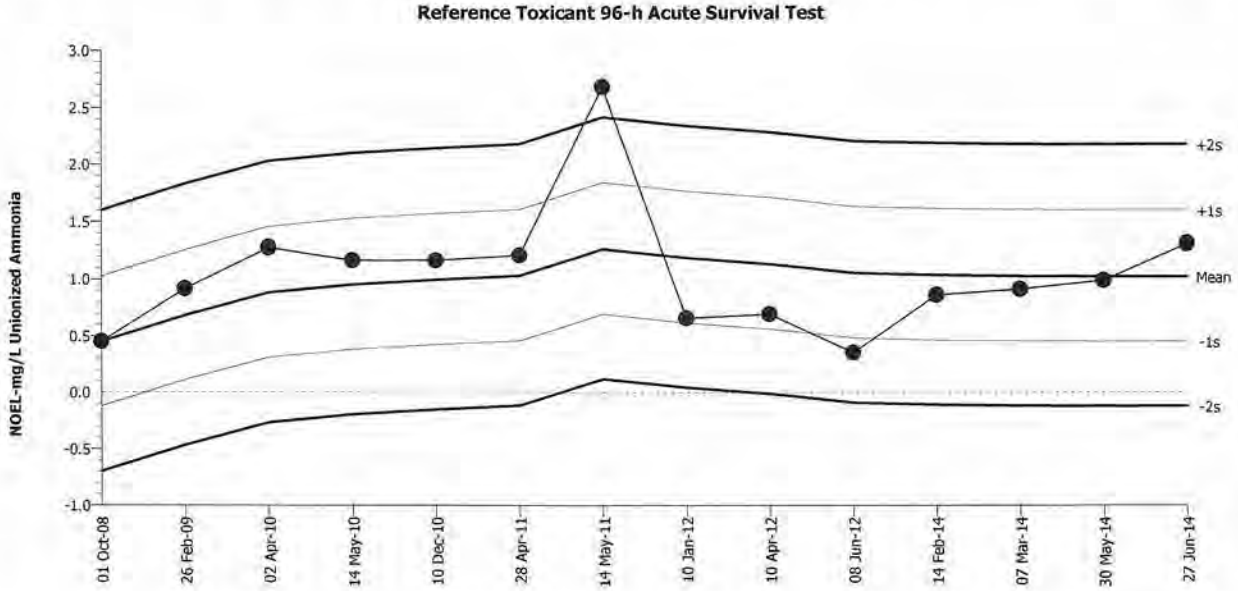
Point	Year	Month	Day	Time	QC Data	Delta	Sigma	Warning	Action	Test ID	Analysis ID	Laboratory
1	2008	Oct	1	18:30	0.6797	-0.5273	-0.7254			18-7673-1099	20-7169-9817	NewFields
2	2009	Feb	26	14:15	1.826	0.6187	0.8513			04-7933-6127	13-8870-6798	NewFields
3	2010	Apr	2	16:45	2.152	0.9449	1.3	(+)		14-9030-3086	13-5532-5826	NewFields
4		May	14	17:20	1.266	0.05884	0.08096			09-0797-2863	19-3603-4619	NewFields
5		Dec	6	17:15	0.14	-1.067	-1.468	(-)		17-2896-6581	06-6538-4797	NewFields
6			10	16:45	0.952	-0.255	-0.3508			00-0356-7508	19-8073-2134	NewFields
7	2011	Apr	28	16:40	1.532	0.3251	0.4474			04-7856-7481	01-5766-1238	NewFields
8		May	14	17:30	2.876	1.669	2.297	(+)	(+)	15-4182-1683	14-5667-6754	NewFields
9		Jun	14	16:50	0.106	-1.101	-1.515	(-)		06-4574-7455	15-3701-4722	NewFields
10	2012	Jan	10	16:55	0.9468	-0.2602	-0.358			08-4867-0860	19-4910-7989	NewFields
11		Apr	10	16:15	0.8202	-0.3868	-0.5321			11-9420-6055	06-9784-5292	NewFields
12		Jun	8	15:20	0.7901	-0.4169	-0.5736			05-3950-8413	09-5106-0924	NewFields
13	2014	Feb	14	16:30	1.107	-0.1003	-0.138			14-6032-6410	21-4667-5703	NewFields
14		Mar	7	13:10	1.519	0.3124	0.4298			17-8850-3758	17-7007-3585	NewFields
15		May	30	17:10	1.388	0.1805	0.2484			16-5810-0965	08-5638-0647	ENVIRON
16		Jun	27	14:55	1.718	0.5107	0.7026			12-7556-6258	12-4178-9028	ENVIRON

CETIS QC Plot

Report Date: 21 Jul-14 16:28 (1 of 1)

Reference Toxicant 96-h Acute Survival Test — **All Matching Labs**

Test Type:	Survival	**Organism:**	Leptocheirus plumulosus (Amphipod	**Material:**	Unionized Ammonia
Protocol:	EPA-823-B-98-005 (1998)	**Endpoint:**	Proportion Survived	**Source:**	Reference Toxicant-REF



Mean:	1.029	**Count:**	13	**-1s Warning Limit:**	0.4547	**-2s Action Limit:**	-0.1192
Sigma:	0.5739	**CV:**	55.80%	**+1s Warning Limit:**	1.603	**+2s Action Limit:**	2.176

Quality Control Data

Point	Year	Month	Day	Time	QC Data	Delta	Sigma	Warning	Action	Test ID	Analysis ID	Laboratory
1	2008	Oct	1	18:30	0.451	-0.578	-1.007	(-)		18-7673-1099	08-3870-3729	NewFields
2	2009	Feb	26	14:15	0.918	-0.111	-0.1934			04-7933-6127	19-1187-6843	NewFields
3	2010	Apr	2	16:45	1.28	0.251	0.4374			14-9030-3086	17-0237-9648	NewFields
4		May	14	17:20	1.167	0.138	0.2405			09-0797-2863	00-4599-3489	NewFields
5		Dec	10	16:45	1.168	0.139	0.2422			00-0356-7508	01-5500-8939	NewFields
6	2011	Apr	28	16:40	1.213	0.184	0.3206			04-7856-7481	10-8529-0027	NewFields
7		May	14	17:30	2.682	1.653	2.88	(+)	(+)	15-4182-1683	18-4625-0503	NewFields
8	2012	Jan	10	16:55	0.662	-0.367	-0.6395			08-4867-0860	16-7002-6613	NewFields
9		Apr	10	16:15	0.697	-0.332	-0.5785			11-9420-6055	19-8779-9821	NewFields
10		Jun	8	15:20	0.356	-0.673	-1.173	(-)		05-3950-8413	13-0453-9544	NewFields
11	2014	Feb	14	16:30	0.867	-0.162	-0.2823			14-6032-6410	21-0328-0865	NewFields
12		Mar	7	13:10	0.917	-0.112	-0.1952			17-8850-3758	12-0209-6930	NewFields
13		May	30	17:10	0.994	-0.035	-0.06099			16-5810-0965	04-4326-6298	ENVIRON
14		Jun	27	14:55	1.316	0.287	0.5001			12-7556-6258	08-6053-2155	ENVIRON

CETIS Summary Report

Reference Toxicant 96-h Acute Survival Test — **ENVIRON**

Batch ID:	01-2158-4611	**Test Type:**	Survival	**Analyst:**	
Start Date:	27 Jun-14 14:55	**Protocol:**	EPA-823-B-98-005 (1998)	**Diluent:**	Laboratory Seawater
Ending Date:	01 Jul-14 11:30	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	93h	**Source:**	Aquatic Research Organisms, NH	**Age:**	
Sample ID:	18-6969-0392	**Code:**	6F713618	**Client:**	Internal Lab
Sample Date:	05 May-14	**Material:**	Total Ammonia	**Project:**	Reference Toxicant
Receive Date:	05 May-14	**Source:**	Reference Toxicant		
Sample Age:	53d 15h	**Station:**	P140505.11		

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
07-0052-7428	Proportion Survived	70.2	138	98.43	14.3%		Dunnett Multiple Comparison Test

Point Estimate Summary

Analysis ID	Endpoint	Level	mg/L	95% LCL	95% UCL	TU	Method
18-7822-5742	Proportion Survived	EC50	153.8	133.1	177.7		Trimmed Spearman-Kärber

Proportion Survived Summary

C-mg/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Dilution Water	3	1	1	1	1	1	0	0	0.0%	0.0%
18		3	0.9667	0.8232	1	0.9	1	0.03333	0.05774	5.97%	3.33%
33.9		3	1	1	1	1	1	0	0	0.0%	0.0%
70.2		3	0.9333	0.6465	1	0.8	1	0.06667	0.1155	12.37%	6.67%
138		3	0.6667	0.2872	1	0.5	0.8	0.08819	0.1528	22.91%	33.33%
278		3	0.03333	0	0.1768	0	0.1	0.03333	0.05774	173.2%	96.67%

Proportion Survived Detail

C-mg/L	Control Type	Rep 1	Rep 2	Rep 3
0	Dilution Water	1	1	1
18		1	1	0.9
33.9		1	1	1
70.2		0.8	1	1
138		0.8	0.7	0.5
278		0.1	0	0

Proportion Survived Binomials

C-mg/L	Control Type	Rep 1	Rep 2	Rep 3
0	Dilution Water	10/10	10/10	10/10
18		10/10	10/10	9/10
33.9		10/10	10/10	10/10
70.2		8/10	10/10	10/10
138		8/10	7/10	5/10
278		1/10	0/10	0/10

Analyst: JL QA: [illegible]

CETIS Summary Report

Reference Toxicant 96-h Acute Survival Test **ENVIRON**

Batch ID:	09-8693-2291	**Test Type:**	Survival	**Analyst:**	
Start Date:	27 Jun-14 14:55	**Protocol:**	EPA-823-B-98-005 (1998)	**Diluent:**	Laboratory Seawater
Ending Date:	01 Jul-14 11:30	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	93h	**Source:**	Aquatic Research Organisms, NH	**Age:**	
Sample ID:	05-1076-5179	**Code:**	1E71A87B	**Client:**	Internal Lab
Sample Date:	05 May-14	**Material:**	Unionized Ammonia	**Project:**	Reference Toxicant
Receive Date:	05 May-14	**Source:**	Reference Toxicant		
Sample Age:	53d 15h	**Station:**	P140505.11		

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
08-6053-2155	Proportion Survived	1.316	1.656	1.476	14.3%		Dunnett Multiple Comparison Test

Point Estimate Summary

Analysis ID	Endpoint	Level	mg/L	95% LCL	95% UCL	TU	Method
12-4178-9028	Proportion Survived	EC50	1.718	1.625	1.816		Trimmed Spearman-Kärber

Proportion Survived Summary

C-mg/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Dilution Water	3	1	1	1	1	1	0	0	0.0%	0.0%
0.525		3	0.9667	0.8232	1	0.9	1	0.03333	0.05774	5.97%	3.33%
0.802		3	1	1	1	1	1	0	0	0.0%	0.0%
1.316		3	0.9333	0.6465	1	0.8	1	0.06667	0.1155	12.37%	6.67%
1.656		3	0.6667	0.2872	1	0.5	0.8	0.08819	0.1528	22.91%	33.33%
2.118		3	0.03333	0	0.1768	0	0.1	0.03333	0.05774	173.2%	96.67%

Proportion Survived Detail

C-mg/L	Control Type	Rep 1	Rep 2	Rep 3
0	Dilution Water	1	1	1
0.525		1	1	0.9
0.802		1	1	1
1.316		0.8	1	1
1.656		0.8	0.7	0.5
2.118		0.1	0	0

Proportion Survived Binomials

C-mg/L	Control Type	Rep 1	Rep 2	Rep 3
0	Dilution Water	10/10	10/10	10/10
0.525		10/10	10/10	9/10
0.802		10/10	10/10	10/10
1.316		8/10	10/10	10/10
1.656		8/10	7/10	5/10
2.118		1/10	0/10	0/10

CETIS Test Data Worksheet

Reference Toxicant 96-h Acute Survival Test — **ENVIRON**

Start Date:	27 Jun-14 14:55	**Species:**	Leptocheirus plumulosus
End Date:	01 Jul-14 11:30	**Protocol:**	EPA-823-B-98-005 (1998)
Sample Date:	05 May-14	**Material:**	Unionized Ammonia
Sample Code:	1E71A87B		
Sample Source:	Reference Toxicant		
Sample Station:	P140505.11		

C-mg/L	Code	Rep	Pos	# Exposed	# Survived	Notes
0	D	1	8	10	10	
0	D	2	7	10	10	
0	D	3	12	10	10	
0.525		1	17	10	10	
0.525		2	10	10	10	
0.525		3	13	10	9	
0.802		1	3	10	10	
0.802		2	6	10	10	
0.802		3	11	10	10	
1.316		1	4	10	8	
1.316		2	9	10	10	
1.316		3	18	10	10	
1.656		1	1	10	8	
1.656		2	14	10	7	
1.656		3	2	10	5	
2.118		1	15	10	1	
2.118		2	16	10	0	
2.118		3	5	10	0	

ENVIRON

Ammonia Reference Toxicant Test Water Quality Data Sheet

CLIENT	PROJECT	SPECIES	LABORATORY	PROTOCOL
ANAMAR	Shipyard Creek	*Leptocheirus plumulosus*	Port Gamble Bath 7	USACE 1991

TEST ID	LOT #:	TEST START DATE	TIME	TEST END DATE	TIME
P140505.11	HH (1) 3244C535	6/27/14	1455	4 DAY End date/time = 10 Day End date/time =	7/1/14 @ 1130 (3) 7/7/14 @ 1455

WATER QUALITY DATA

TEST CONDITIONS					DO (mg/L) >4.4		TEMP(C) 25 ± 1		SAL (ppt) 20 ± 2		pH 6 - 9		TECHNICIAN	AMMONIA			SULFIDES		
CLIENT/ ID	CONCENTRATION value	CONCENTRATION units	DAY	REP	D.O. meter	D.O. mg/L	TEMP. meter	TEMP. °C	SALINITY meter	SALINITY ppt	pH meter	pH unit	WQ TECH/ DATE	AMMONIA METER	AMMONIA mg/L	Tech	SULFIDES meter	SULFIDES mg/L	Tech
Ref.Tox.-ammonia	0	mg/L	0	Stock	6	7.5	2	24.0	2	20	6	7.8	TKE 6/27	3	0.0	JL			
			4	1	6	7.1	6	24.6 (4)	2	21	6	7.9	KB 7/1						
			6	2	6	3.5 (5)	6	24.8 (4)	2	21	6	7.8 (4)	KB 7/3						
			8	3	8	7.2	8	26.1 (6)	8	21	8	8.0	JL 7/05						
			10	1	8	7.6	8	25.1	8	21	8	8.0	MK 7/7						
Ref.Tox.-ammonia	16	mg/L	0	Stock	6	7.7	2	24.1	2	20	6	7.8	TKE 6/27	3	18.0	JL			
			4	1	6	6.9	6	24.0	2	21	6	7.8	KB 7/1						
			6	2	6	5.2 (5)	6	25.1	2	22	6	7.4	KB 7/3						
			8	3	8	7.1	8	26.0	8	20	8	7.9	JL 7/05						
			10	1	8	7.2	8	25.2	8	22	8	7.9	MK 7/7						
Ref.Tox.-ammonia	32	mg/L	0	Stock	6	7.7	2	24.3	2	20	6	7.7	TKE 6/27	3	33.9	JL			
			4	1	6	7.1	6	24.2	2	21	6	7.8	KB 7/1						
			6	2	6	5.0 (5)	6	25.2	2	22	6	7.4	KB 7/3						
			8	3	8	7.0	8	26.0	8	21	8	7.8	JL 7/05						
			10	1	8	7.2	8	25.4	8	22	8	7.8	MK 7/7						
Ref.Tox.-ammonia	64	mg/L	0	Stock	6	7.7	2	24.2	2	20	6	7.6	TKE 6/27	3	70.2	JL			
			4	1	6	6.9	6	24.6	2	21	6	7.8	KB 7/1						
			6	2	6	4.6 (5)	6	25.0	2	21	6	7.3	KB 7/3						
			8	3	8	7.1	8	26.1 (6)	8	21	8	7.8	JL 7/05						
			10	1	8	7.2	8	25.3	8	21	8	7.8	MK 7/7						
Ref.Tox.-ammonia	128	mg/L	0	Stock	6	7.6	2	24.3	2	20	6	7.4	TKE 6/27	3	138	JL			
			4	1	6	7.0	6	24.5	2	25	6	7.6	KB 7/1						
			6	2	6	4.4 (5)	6	25.2	2	21	6	7.3	KB 7/3						
			8	3	8	7.1	8	26.0	8	21	8	7.7	JL 7/05						
			10	1	8	6.9	8	25.5	8	27	8	7.8	MK 7/7						
Ref.Tox.-ammonia	256	mg/L	0	Stock	6	7.6	2	24.4	2	21	6	7.2	TKE 6/27	3	278	JL			
			4	1	6	7.1	6	24.0	2	21	6	7.4	KB 7/1						
			6	2	6	—	6	—	2	—	6	—	KB 7/3						
			8	3															
			10	1															

(1) IC JL 6/27/14.
(2) WC TKE 6/27
(3) WC MK. 6/27
(4) WC. KB 7/1/14 ; correct temp : 24.7°C
(5) Aeration initated to entire test. JL 7/03/14.
(6) Bath temp. decreased 0.5°C. JL 7/05/14.

ENVIRON

Ammonia Reference Toxicant Test Survival Data Sheet

SPECIES		
Leptocheirus plumulosus		
PROJECT MANAGER	LABORATORY	PROTOCOL
B. Hester	Port Gamble Bath 7	USACE 1991

SURVIVAL & BEHAVIOR DATA

OBSERVATION KEY
N = Normal
LOE = Loss of equilibium
Q = Quinscent
DC = Discoloration
NB = No body
F = Floating on surface

INITIAL # OF ORGANISMS: 10

CLIENT/ ID	CONC. value	CONC. units	REP	INITIAL NUMBER	DAY 1 DATE 6/28 TECHNICIAN MK			DAY 2 DATE 6/29 TECHNICIAN JL			DAY 3 DATE 6/30 TECHNICIAN MK			DAY 4 DATE 7/1 TECHNICIAN MK			DAY 5 DATE 7/2 TECHNICIAN MK			DAY 6 DATE 7/03 TECHNICIAN JL			DAY 7 DATE 7/4 TECHNICIAN MK			DAY 8 DATE 7/05 TECHNICIAN JL			DAY 9 DATE 7/06 TECHNICIAN JL			DAY 10 DATE 7/7 TECHNICIAN MK		
					#ALIVE	#DEAD	OBS	#ALIVE	#DEAD	OBS	#ALIVE	#DEAD	OBS	#ALIVE	#DEAD	OBS	#ALIVE	#DEAD	OBS	#ALIVE	#DEAD	OBS	#ALIVE	#DEAD	OBS	#ALIVE	#DEAD	OBS	#ALIVE	#DEAD	OBS	#ALIVE	#DEAD	OBS
Ref.Tox.- Ammonia	0	mg/L	1		10	0	N	10	Ø	N	10	Ø	N	10	Ø	N	9	1	N	9	Ø	N	8	1	N	7	Ø	INB	7	Ø	N	3	3, INB	N
			2		10	0	↓	10	Ø	↓	10	Ø	↓	10	Ø	↓	10	Ø	↓	10	Ø	↓	10	0	↓	10	Ø	↓	9	1	↓	7	2	
			3		10	0	↓	10	Ø	↓	10	Ø	↓	10	Ø	↓	10	Ø	↓	10	Ø	↓	10	0	↓	10	Ø	↓	10	Ø	↓	8	1, INB	↓
Ref.Tox.- Ammonia	16	mg/L	1		10	0	N	10	Ø	N	10	Ø	N	10	Ø	N	10	Ø	N	10	Ø	N	10	0	N	10	Ø	N	7	3	N	4	2, INB	N
			2		10	0	↓	10	Ø	↓	10	Ø	↓	10	Ø	↓	10	Ø	↓	10	Ø	↓	10	0	↓	10	Ø	↓	10	Ø	↓	7	3	N
			3		10	0	↓	9	Ø	INB	9	Ø	↓	9	Ø	↓	9	Ø	↓	9	Ø	↓	9	0	↓	9	Ø	↓	9	Ø	↓	9	Ø	↓
Ref.Tox.- Ammonia	32	mg/L	1		10	0	N	10	Ø	N	10	Ø	N	10	Ø	N	10	Ø	N	10	Ø	N	10	0	N	10	Ø	N	10	Ø	N	3	5, 2NB	② Q
			2		10	0	↓	10	Ø	↓	10	Ø	↓	10	Ø	↓	10	Ø	↓	10	Ø	↓	10	0	↓	8	2	↓	7	1	↓	6	1	N
			3		10	0	↓	10	Ø	↓	10	Ø	↓	10	Ø	↓	10	Ø	↓	10	Ø	↓	10	0	↓	9	1	↓	8	Ø	INB	8	Ø	Q
Ref.Tox.- Ammonia	64	mg/L	1		10	0	N	10	Ø	N	10	Ø	N	8	2NB	N	6	2	N	6	Ø	N	6	0	N	6	Ø	Θ	3	3	Θ	Ø	3	/
			2		10	0	↓	10	Ø	↓	10	Ø	↓	10	Ø	↓	8	2	↓	8	Ø	↓	8	0	↓	8	Ø	↓	6	2	↓	5	1	Q
			3		10	0	↓	10	Ø	↓	10	Ø	↓	10	Ø	↓	10	Ø	↓	10	Ø	↓	10	0	↓	10	Ø	↓	9	1	↓	8	1	↓
Ref.Tox.- Ammonia	128	mg/L	1		10	0	N	10	Ø	N	08	Ø	2NB	8	Ø	N	6	2	N	5	1	Q	5	0	Q	5	Θ	Θ	3	1	INB	2	1	Q
			2		10	0	↓	10	Ø	↓	10	Ø	N	7	1, 2NB	Q	4	3	Q	3	1	↓	3	0	↓	2	1	↓	2	Ø	Θ	1	1	↓
			3		10	0	↓	10	0	↓	10	Ø	↓	5	5	↓	1	4	↓	1	0	↓	1	0	↓	1	Ø	↓	1	Ø	↓	Ø	1	/
Ref.Tox.- Ammonia	256	mg/L	1		10	0	Q	4	6	Q	3	1	Q	1	2	Q	Ø	1	—															
			2		10	0	↓	0	10	NA																								
			3		10	0	↓	1	9	Θ	Ø	1	—																					

END = 1130 Feed: MK

① Jar tipped in bath. JL 6/29/14.
② WC. MK 7/7

ENVIRON **Ammonia Reference Toxicant Spiking Worksheet**

Lepto NH_3 RT

Assumptions in Model
Stock ammonia concentration is 9,000 mg/L = 9 mg/mL

Actual Reading
10200

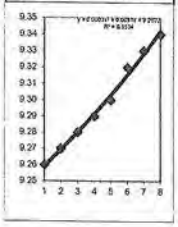
Test Solutions			Volume of stock to reach desired concentration	
Measured Concentration	**Desired Concentration**	**Volume**		
mg/L	mg/L	mL	mL stock to increase	
0.0	0			SALT WATER
18.0	**16**	750		**1.765**
33.9	**32**	750		**3.529**
70.2	**64**	750		**7.059**
138	**128**	750		**14.118**
278	**256**	750		**28.235**

Steps in Process
measure ammonia concentration in test solution
correct for instrument calibratrion
enter corrected value in colum A
read mL of stock solution required for 300 mL test solution
add stock solution to test solution
measure ammonia concentration in spiked test solution
correct for instrument calibratrion
if test solution concentration after calibration is between 180 and 220 mg/L use test solution
if test solution is greater than 220 mg/L dilute test solution to 180-220 range*1
if test solution is less than 180 mg/L, enter value in table above and determine additional stock solution required to attain 180-220 range.
*1 put measured spiked concentration in column E, read column H for approximation (use slightly less based on initial concentration of test solution being added)

CLIENT:	Internal	Date of Test:	27-Jun-14
PROJECT:		Test Type:	Lepto
COMMENTS:			

To convert Total Ammonia (mg/L) to Free (un-ionized) Ammonia (mg/L) enter the corresponding total ammonia, salinity, temperature, and pH.

Integer: I-factor	
1	9.26
2	9.27
3	9.28
4	9.29
5	9.30
6	9.32
7	9.33
8	9.34



	Sample	Mod	NH3T (mg/L)	salinity (ppt)	pH	temp (C)	temp (K)	i-factor	Mod	NH3U (mg/L)
	Target / Sample Name		Actual	22.9	8.0	24.1	297.26	9.3053		#VALUE!
	Example 3.5		2.000	10.0	7.5	5.0	278.16	9.2750		0.008
1										
2										
3	16		18	20	7.8	24.1	297.26	9.2980		0.525
4	32		33.9	20	7.7	24.3	297.46	9.2980		0.802
5	64		70.2	20	7.6	24.2	297.36	9.2980		1.316
6	128		138	20	7.4	24.3	297.46	9.2980		1.656
7	256		278.0	21	7.2	24.4	297.56	9.3005		2.118
8										
9										
10										
11										
12										
13										
14										
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45										
46										

APPENDIX A.6 *Neanthes arenaceodentata* Benthic Test

Shipyard Creek

Test Results for the 10-day Benthic Toxicity Test with *N. arenaceodentata.*

Treatment	Replicate	Number Initiated	Number Surviving	Number Missing or Dead	Percentage Survival	Mean Percentage Survival	SD
Control	1	10	10	0	100	100	0
	2	10	10	0	100		
	3	10	10	0	100		
	4	10	10	0	100		
	5	10	10	0	100		
SYC14-REF	1	10	10	0	100	98	4
	2	10	9	1	90		
	3	10	10	0	100		
	4	10	10	0	100		
	5	10	10	0	100		
SYC14-TB1	1	10	10	0	100	96	9
	2	10	10	0	100		
	3	10	8	2	80		
	4	10	10	0	100		
	5	10	10	0	100		
SYC14-TB2	1	10	10	0	100	94	9
	2	10	8	2	80		
	3	10	10	0	100		
	4	10	10	0	100		
	5	10	9	1	90		
SYC14-AC	1	10	10	0	100	100	0
	2	10	10	0	100		
	3	10	10	0	100		
	4	10	10	0	100		
	5	10	10	0	100		

ENVIRON

10-DAY SOLID PHASE TEST OBSERVATION DATA

CLIENT	PROJECT	SPECIES	LABORATORY	PROTOCOL
ANAMAR	Shipyard Creek	*Neanthes arenaceodentata*	Port Gamble	SERIM
	PROJECT MANAGER: B. Hester	TEST START DATE: 20-Jun-14	TEST END DATE: 30-Jun-14	

#E = Emergence
#M = Number of Mortality
#F = Floating on Surface
A = Algal Growth
B = Beggiatoa
D = No Air Flow (DO?)
N = Normal

Client/ ID	Rep	Jar #	Initial # of Organisms	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8	Day 9	Day 10	6/30 MK
				Date 6/21/14	Date 6/22	Date 6/23/14	Date 6/24/14	Date 6/25/14	Date 6/26	Date 6/27	Date 6/28	Date 6/29	Date 6/30	Number Alive
			10	Technician [illegible]	Technician [illegible]	Technician KMB	Technician KMB	Technician MK	Technician MK	Technician KMB	Technician [illegible]	Technician JL	Technician JL	
Control	1			N	N	N	N	N	N	N	N	N	N	10
	2													10
	3													10
	4													10
	5													10
SYC14-REF	1													10
	2													9
	3													10
	4													10
	5													10
SYC14-TB1	1													10
	2													10
	3													8
	4													10
	5													10
SYC14-TB2	1													10
	2													8
	3													10
	4													10
	5													9

ENVIRON

10-DAY SOLID PHASE TEST OBSERVATION DATA

CLIENT	PROJECT	SPECIES	LABORATORY	PROTOCOL
ANAMAR	Shipyard Creek	*Neanthes arenaceodentata*	Port Gamble	SERIM
	PROJECT MANAGER: B. Hester	TEST START DATE: 20-Jun-14	TEST END DATE: 30-Jun-14	

#E = Emergence
#M = Number of Mortality
#F = Floating on Surface
A = Algal Growth
B = Beggiatoa
D = No Air Flow (DO?)
N = Normal

Client/ ID	Rep	Jar #	Initial # of Organisms	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8	Day 9	Day 10	6/30 MK Number Alive
				ENDPOINT DATA AND OBSERVATIONS										
				Date 6/21	Date 6/22	Date 6/23	Date 6/24	Date 6/25	Date 6/26	Date 6/27	Date 6/28	Date 6/29	Date 6/30	
				Technician [illegible]	Technician [illegible]	Technician KMB	Technician KMB	Technician MK	Technician MK	Technician KMB	Technician [illegible]	Technician	Technician JL	
SYC14-AC	1		10	N	N	N	N	N	N	N	N	N	N	10
	2			↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	10
	3			↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	10
	4			↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	10
	5			↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	10

ENVIRON

10 DAY SOLID PHASE BIOASSAY
WATER QUALITY DATA SHEET

CLIENT	PROJECT	SPECIES	LABORATORY	PROTOCOL
ANAMAR	Shipyard Creek	*Neanthes arenaceodentata*	Port Gamble	SERIM

Test Conditions				WATER QUALITY DATA									
				DO (mg/L) >4.6 mg/L		Temperature (°C) 20 ± 1		Salinity (ppt) 30 ± 2		pH 7.8±0.5		Tech	Date
Client/ ID	Day	Rep	Jar#	meter	mg/L	meter	deg C	meter	ppt	meter	unit		
Control	0	Surr	29	6	8.1	6	19.8	2	30	6	8.0	JL	6/20/14
Control	1	Surr	29	6	7.6	2	20.7	2	30	6	8.1	[illegible]	6/21/14
Control	2	Surr	29	6	8.4	2	20.6	2	31	6	8.1	[illegible]	6/22
Control	3	Surr	29	6	8.0	6	20.4	2	30	6	7.9	KMB	6/23/14
Control	4	Surr	29	6	7.9	6	20.4	2	30	6	7.9	KMB	6/24/14
Control	5	Surr	29	6	7.4	2	20.5	2	30	6	②~~7.9~~ 8.1	MK	6/25
Control	6	Surr	29	6	8.1	2	20.3	2	30	6	8.1	MK	6/26
Control	7	Surr	29	6	7.3	2	20.9	2	30	6	8.1	MK	6/27
Control	8	Surr	29	6	7.6	2	21.1	2	30	6	8.2	[illegible]	6/28
Control	9	Surr	29	6	7.7	6	20.9	2	30	6	8.2	JL	6/29
Control	10	Surr	29	6	7.7	6	20.4	2	30	6	8.2	JL	6/30
SYC14-REF	0	Surr	14	6	8.0	6	20.8	2	31	6	8.0	JL	6/20/14
SYC14-REF	1	Surr	14	6	7.7	2	20.5	2	31	6	①~~7.7~~ 8.2	[illegible]	6/21/14
SYC14-REF	2	Surr	14	6	8.4	2	20.2	2	31	6	8.2	[illegible]	6/22
SYC14-REF	3	Surr	14	6	8.2	6	20.3	2	30	6	8.0	KMB	6/23/14
SYC14-REF	4	Surr	14	6	8.0	6	20.6	2	31	6	8.0	KMB	6/24/14
SYC14-REF	5	Surr	14	6	7.2	2	20.2	2	31	6	8.1	MK	6/25
SYC14-REF	6	Surr	14	6	8.0	2	20.0	2	31	6	8.1	MK	6/26
SYC14-REF	7	Surr	14	6	7.5	2	20.7	2	31	6	8.1	MK	6/27
SYC14-REF	8	Surr	14	6	7.6	2	20.9	2	31	6	8.2	[illegible]	6/28
SYC14-REF	9	Surr	14	6	7.7	6	20.6	2	31	6	8.2	JL	6/29
SYC14-REF	10	Surr	14	6	7.6	6	20.4	2	31	6	8.1	JL	6/30

① WC [illegible] 6/21
② WC MK 6/25

ENVIRON

10 DAY SOLID PHASE BIOASSAY
WATER QUALITY DATA SHEET

CLIENT	PROJECT
ANAMAR	Shipyard Creek

SPECIES	LABORATORY	PROTOCOL
Neanthes arenaceodentata	Port Gamble	SERIM

Test Conditions				WATER QUALITY DATA									
				DO (mg/L) >4.6 mg/L		Temperature (°C) 20 ± 1		Salinity (ppt) 30 ± 2		pH 7.8±0.5		Tech	Date
Client/ ID	Day	Rep	Jar#	meter	mg/L	meter	deg C	meter	ppt	meter	unit		
SYC14-TB1	0	Surr	9	6	7.9	6	20.9	2	31	6	7.9	JL	6/20/14
SYC14-TB1	1	Surr	9	6	7.6	2	20.7	2	31	6	8.1	[illegible]	6/21
SYC14-TB1	2	Surr	9	6	8.4	2	20.4	2	31	6	8.0	[illegible]	6/22
SYC14-TB1	3	Surr	9	6	8.1	6	20.6	2	30	6	7.9	KMB	6/23
SYC14-TB1	4	Surr	9	6	7.9	6	20.6	2	30	6	7.8	KMB	6/24
SYC14-TB1	5	Surr	9	6	6.8	2	20.5	2	30	6	7.9	MK	6/25
SYC14-TB1	6	Surr	9	6	7.9	2	20.2	2	30	6	7.9	MK	6/26
SYC14-TB1	7	Surr	9	6	7.5	2	20.9	2	30	6	7.9	MK	6/27
SYC14-TB1	8	Surr	9	6	7.4	2	21.0	2	30	6	8.0	[illegible]	6/28
SYC14-TB1	9	Surr	9	6	7.6	6	20.9	2	29	6	8.0	JL	6/29
SYC14-TB1	10	Surr	9	6	7.5	6	20.7	2	29	6	8.0	JL	6/30
SYC14-TB2	0	Surr	15	6	7.8	6	20.7	2	31	6	7.9	JL	6/20/14
SYC14-TB2	1	Surr	15	6	7.5	2	20.8	2	31	6	8.1	[illegible]	6/21
SYC14-TB2	2	Surr	15	6	8.4	2	20.5	2	31	6	8.1	[illegible]	6/22
SYC14-TB2	3	Surr	15	6	8.1	6	20.5	2	30	6	8.0	KMB	6/23
SYC14-TB2	4	Surr	15	6	7.9	6	20.6	2	30	6	7.9	KMB	6/24
SYC14-TB2	5	Surr	15	6	① ~~7.9~~ 7.4	2	20.4	2	30	6	① ~~7.4~~ 7.9	MK	6/25
SYC14-TB2	6	Surr	15	6	8.0	2	20.2	2	30	6	7.9	MK	6/26
SYC14-TB2	7	Surr	15	6	7.4	2	20.9	2	30	6	8.0	MK	6/27
SYC14-TB2	8	Surr	15	6	7.4	2	21.1	2	30	6	8.0	[illegible]	6/28
SYC14-TB2	9	Surr	15	6	7.6	6	20.8	2	29	6	8.0	JL	6/29
SYC14-TB2	10	Surr	15	6	7.6	6	20.4	2	29	6	8.0	JL	6/30

① WC. MK 6/25

ENVIRON

10 DAY SOLID PHASE BIOASSAY
WATER QUALITY DATA SHEET

CLIENT	PROJECT
ANAMAR	Shipyard Creek

SPECIES	LABORATORY	PROTOCOL
Neanthes arenaceodentata	Port Gamble	SERIM

Test Conditions				WATER QUALITY DATA									
				DO (mg/L) >4.6 mg/L		Temperature (°C) 20 ± 1		Salinity (ppt) 30 ± 2		pH 7.8±0.5		Tech	Date
Client/ ID	Day	Rep	Jar#	meter	mg/L	meter	deg C	meter	ppt	meter	unit		
SYC14-AC	0	Surr	27	6	8.2	6	20.5	2	31	6	8.0	JL	6/20/14
SYC14-AC	1	Surr	27	6	7.5	2	20.8	2	30	6	8.1		6/21
SYC14-AC	2	Surr	27	6	8.3	2	20.6	2	31	6	8.1		6/22
SYC14-AC	3	Surr	27	6	8.1	6	20.5	2	30	6	7.9	KMB	6/23/14
SYC14-AC	4	Surr	27	6	7.9	6	20.6	2	30	6	7.9	KMB	6/24/14
SYC14-AC	5	Surr	27	6	7.4	2	20.5	2	30	6	7.9	MK	6/25
SYC14-AC	6	Surr	27	6	8.0	2	20.3	2	30	6	7.9	MK	6/26
SYC14-AC	7	Surr	27	6	7.4	2	20.9	2	30	6	8.0	MK	6/27
SYC14-AC	8	Surr	27	6	7.5	2	21.2	2	30	6	8.1		6/28
SYC14-AC	9	Surr	27	6	7.6	6	20.9	2	29	6	8.1	JL	6/29
SYC14-AC	10	Surr	27	6	7.7	6	20.4	2	29	6	8.1	JL	6/30

Ammonia and Sulfide Analysis Record

Client/Project:	Organism:	Test Duration (days):
Ø Anamar Shipyard creek	neanthes	10

PRETEST / (INITIAL) / FINAL / OTHER (circle one) DAY of TEST: 0

~~OVERLYING (OV)~~ / POREWATER (PW) (circle one)

Comments: _____

Calibration Standards Temperature		Sample temperature should be within ±1°C of standards temperature at time and date of analysis.
Date:	Temperature:	
6/20	22.5° C	

Sample ID or Description	Conc. or Rep	Date of Sampling and Initials	Ammonia Value (mg/L)	Temp °C	Date of Reading and Initials	Sample Preserved (Y/N)	pH	Sal (ppt)	Sulf. mg/L
Ø OV	Surr	6/20 TH	0.00	21.6	6/20 TH	N			
ref OV			0.00						
Ac OV			0.00						
TB1 OV			0.00						
TB2 OV			0.00						
Ø PW			(1)						
ref PW			(1)						
Ac PW			0.00	21.6			(2)	(2)	
TB1 PW			4.20	21.6			(2)	(2)	
TB2 PW			2.72	21.6			(2)	(2)	

(1) Insufficient PW TH 6/20

(2) Forgot to record prior to reading TH 6/20

Ammonia and Sulfide Analysis Record

Client/Project:	Organism:	Test Duration (days):
ANAMAR/ Shipyard Creek	Neanthes	10

PRETEST / INITIAL / FINAL / OTHER (circle one) **DAY of TEST:** 10

OVERLYING (OV) / POREWATER (PW) (circle one)

Comments: _____

Calibration Standards Temperature		Sample temperature should be within ±1°C of standards temperature at time and date of analysis.
Date: 6/30/14	**Temperature:** 21.0 °C	

Sample ID or Description	Conc. or Rep	Date of Sampling and Initials	Ammonia Value (mg/L)	Temp °C	Date of Reading and Initials	Sample Preserved (Y/N)	pH	Sal (ppt)	Sulf. mg/L
OV. Ø	Surr.	6/30/14 JL	0.00	21.5	6/30/14 JL	N			
SYC14-Ref			0.0982						
SYC14-AC			0.00						
SYC14-TB1			0.00						
SYC14-TB2			0.00						
PW Ø	Surr.		0.00	22.0			8.1	27	
SYC14-Ref.			0.0475				8.4	28	
SYC14-AC			0.00				7.5	28	
SYC14-TB1			0.00				7.6	29	
SYC14-TB2			0.00				7.5	28	

Ammonia and Sulfide Analysis Record

Client/Project: Shipyard Creek	Organism: Neanthes	Test Duration (days):

~~INITIAL~~ — circled: PRETEST, OVERLYING (OV)

PRETEST / INITIAL / FINAL / OTHER (circle one) DAY of TEST: N/A
OVERLYING (OV) / POREWATER (PW) (circle one)

Comments: ________________________

Calibration Standards Temperature		Sample temperature should be within $\pm 1^{\circ}C$ of standards temperature at time and date of analysis.
Date:	Temperature:	
06/17/14	20.5	

Sample ID or Description	Conc. or Rep	Date of Sampling and Initials	Ammonia Value (mg/L)	Temp °C	Date of Reading and Initials	Sample Preserved (Y/N)	pH	Sal (ppt)	Sulf. mg/L
AC		HE 6/17/14	3.30	21.0	KMB 06/17/14	N			
TB1		↓	8.34	↓	↓	↓			
TB2		↓	5.39	↓	↓	↓			

Ammonia and Sulfide Analysis Record

Client/Project:	Organism:	Test Duration (days):
Shipyard Creek	Neanthes	

PRETEST / ~~INITIAL~~ / FINAL / OTHER (circle one) DAY of TEST: NA

OVERLYING (OV) / POREWATER (PW) (circle one)

Comments: _____

Calibration Standards Temperature		Sample temperature should be within ±1°C of standards temperature at time and date of analysis.
Date:	Temperature:	
06/17/14	20.5	

Sample ID or Description	Conc. or Rep	Date of Sampling and Initials	Ammonia Value (mg/L)	Temp °C	Date of Reading and Initials	Sample Preserved (Y/N)	pH	Sal (ppt)	Sulf. mg/L
AC		HE 6/17/14	18.6	20.5	KMB 6/17/14	N	7.4	27	
TB1		↓	18.7	↓	↓	↓	7.5	29	
TB2		↓	① ~~20~~ 19.8	↓	↓	↓	7.5	28	

① MK. KMB. 06/17/14

NewFields

10 DAY BENTHIC TEST
INTERACTIVE DATA SETUP

GENERAL	
CLIENT:	ANAMAR
PROJECT:	Shipyard Creek
PROJECT MANAGER:	B. Hester
TEST SPECIES:	*Neanthes arenaceodentata*
TEST PROTOCOL:	SERIM
NEWFIELDS LABORATORY:	Port Gamble
TEST LOCATION:	Bath 6
TEST START DATE:	20Jun14
TEST START TIME:	1125
TEST END DATE:	30Jun14
TEST END TIME:	0845
DILUTION WATER BATCH:	FSW061614.02
FEEDING INFORMATION:	NA
WATER RENEWAL INFO:	daily. Samples TB1, TB2, AC
PHOTOPERIOD	16L:8D

TEST PARAMETERS	TARGET	ACCEPTABLE RANGE / COMMENTS
DO: (mg/L)	>4.6	60% Sat @ 20°C, 30ppt
Temp: (°C)	20 ± 1	20 ± 1
Sal: (ppt)	30 ± 2	(28-36) ± 2
pH:	7.8 ± 0.5	Optimal

FIELD SAMPLE	
DATE RECEIVED AT NEWFIELDS	
SAMPLE STORAGE:	4 Degrees Celsius - dark
SAMPLE TREATMENT:	None
TEST CHAMBER:	1 L mason jars
EXPOSURE VOLUME:	2 cm sediment/ 775 mL water
REFERENCE TOXICANT #2:	Ammonia
REF. TOX. MATERIAL #2:	Ammonium Chloride

NH3 REFTOX CONC (mg/ L)
0
15
30
60
120
240

	CLIENT SAMPLE ID	NEWFIELDS SAMPLE ID
1	SYC14-REF	
2	SYC14-TB1	
3	SYC14-TB2	
4	SYC14-AC	
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		
26		
27		
28		
29		
30		
31		
32		
33		
34		
35		

CONTROL ID	NEWFIELDS CONTROL ID
Control	

ENVIRON

ORGANISM RECEIPT LOG

Date:	Time:	Batch No.
6/17/14	1515	ATS 061714

Organism / Project:	Source:
Neanthes	Aquatic Tox Support

Address:	Invoice Attached
on File	(Yes) No

Phone:	Contact:
on file	NA

No. Ordered:	No. Received:	Source Batch:
500	500+	5/26-28 emerge

Condition of Organisms:	Approximate Size or Age:
Good	

Shipper:	B of L (Tracking No.)
FedEx	061714

Condition of Container:	Received By:
Good	MK

Container	D.O. (mg/L)	Temp. (°C)	Conductivity or Salinity (Include Units)	pH (Units)	Technician (Initials)
① ~~DI~~					
1-5	14.4	18.3	30	6.7	MK

Notes:

① WC- MK 6/17

ENVIRON

MAINTENANCE LOG FOR CULTURES

ORGANISM: Nearines
LOCATION: Bath 6

Batch Number: ATS 061714	Date Received: 6/17/14

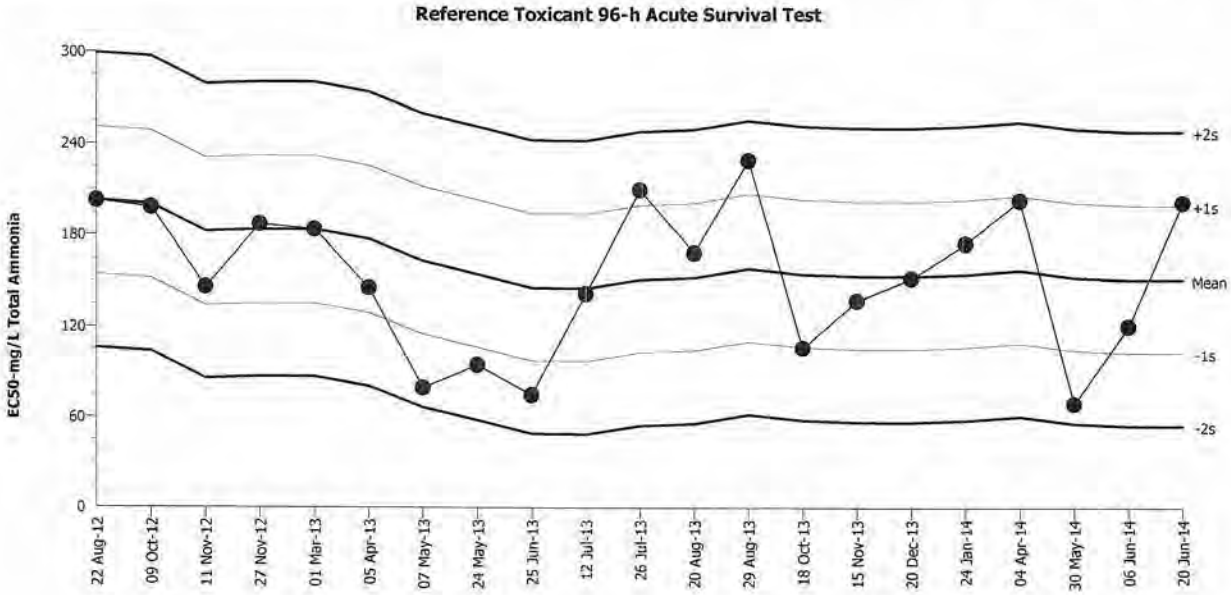
Date	Feed AM/PM		Tub No.	D.O.	Temp (°C)	Cond/ (Sal)	pH	H_2O Change	No. Dead	NH_3	Init.
6/17			1	14.4	18.3	30	6.7	Y	—	—	MF
6/20			1	7.8	20.2	31	7.9	N	—	—	JL

CETIS QC Plot

Report Date: 12 Aug-14 09:06 (1 of 1)

Reference Toxicant 96-h Acute Survival Test — **All Matching Labs**

Test Type:	Survival	**Organism:**	Neanthes arenaceodentata (Polycha	**Material:**	Total Ammonia
Protocol:	PSEP (1995)	**Endpoint:**	Proportion Survived	**Source:**	Reference Toxicant-REF



Mean:	151.3	**Count:**	20	**-1s Warning Limit:**	103	**-2s Action Limit:**	54.77
Sigma:	48.27	**CV:**	31.90%	**+1s Warning Limit:**	199.6	**+2s Action Limit:**	247.8

Quality Control Data

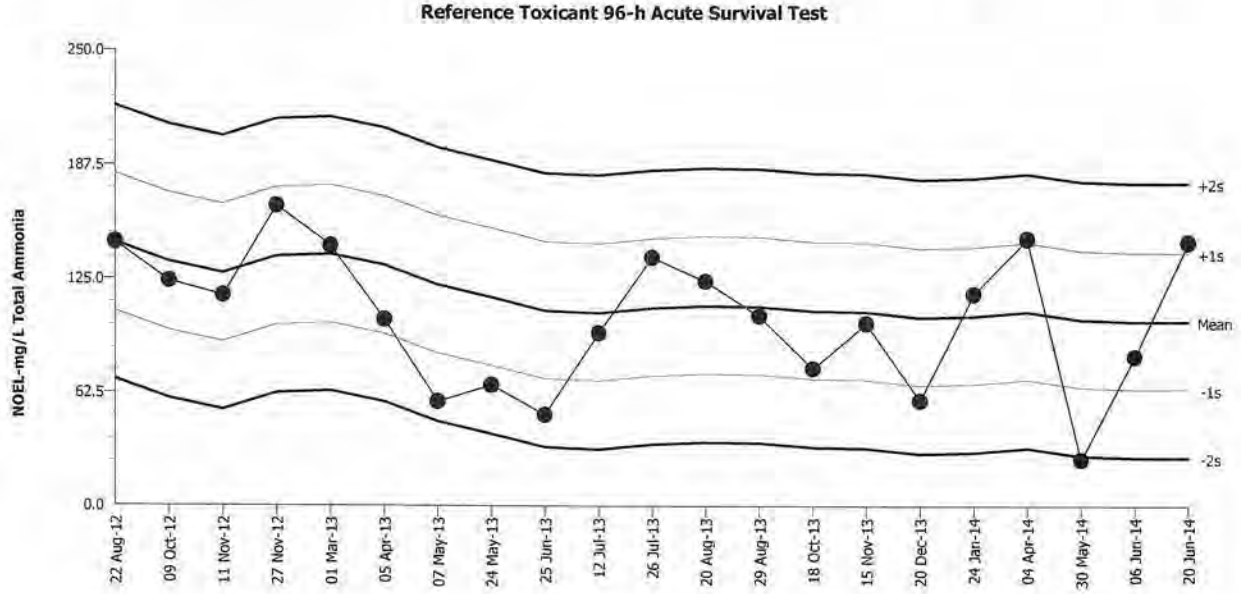
Point	Year	Month	Day	Time	QC Data	Delta	Sigma	Warning	Action	Test ID	Analysis ID	Laboratory
1	2012	Aug	22	11:00	202.7	51.36	1.064	(+)		02-2456-0921	14-8617-5684	NewFields
2		Oct	9	14:00	198.3	46.96	0.9729			09-2476-6828	10-7898-4816	NewFields
3		Nov	11	16:00	146.3	-4.987	-0.1033			05-7907-0031	15-4959-5175	NewFields
4			27	16:05	187.1	35.8	0.7416			11-0295-5053	21-1714-9848	NewFields
5	2013	Mar	1	14:40	183.7	32.41	0.6714			16-0938-7761	05-5518-0938	NewFields
6		Apr	5	10:40	145.7	-5.636	-0.1168			12-4084-6308	11-0088-3368	NewFields
7		May	7	13:00	79.7	-71.6	-1.483	(-)		03-6682-4675	04-2369-0564	NewFields
8			24	11:30	94.89	-56.41	-1.169	(-)		19-1651-0673	18-8601-2491	NewFields
9		Jun	25	14:13	75.13	-76.17	-1.578	(-)		08-9049-5052	01-8172-0753	NewFields
10		Jul	12	13:20	141.9	-9.367	-0.1941			14-1288-0905	06-4191-8012	NewFields
11			26	12:00	209.7	58.41	1.21	(+)		21-1882-7830	07-5315-7472	NewFields
12		Aug	20	15:45	168.6	17.35	0.3594			00-0072-4465	03-0193-2385	NewFields
13			29	13:40	229.1	77.83	1.612	(+)		00-4506-4349	11-1553-1817	NewFields
14		Oct	18	15:35	106.3	-44.99	-0.9322			21-0368-6339	03-0733-6178	NewFields
15		Nov	15	15:30	137.4	-13.87	-0.2873			16-5727-5696	09-2903-6118	NewFields
16		Dec	20	14:00	152.2	0.871	0.01804			08-9922-1254	05-5343-6267	NewFields
17	2014	Jan	24	13:20	174.5	23.22	0.4811			20-9603-7883	05-6245-5381	NewFields
18		Apr	4	15:40	202.9	51.58	1.069	(+)		09-1443-8374	04-8864-2138	ENVIRON
19		May	30	16:25	69.43	-81.87	-1.696	(-)		18-4751-2702	06-4812-5268	ENVIRON
20		Jun	6	14:00	120.6	-30.73	-0.6366			02-4901-6395	02-6665-3375	ENVIRON
21			20	13:20	201.3	50.05	1.037	(+)		04-8899-1061	18-6388-8462	ENVIRON

CETIS QC Plot

Report Date: 12 Aug-14 09:21 (1 of 1)

Reference Toxicant 96-h Acute Survival Test — **All Matching Labs**

Test Type:	Survival	**Organism:**	Neanthes arenaceodentata (Polycha	**Material:**	Total Ammonia
Protocol:	PSEP (1995)	**Endpoint:**	Proportion Survived	**Source:**	Reference Toxicant-REF



Mean:	102	**Count:**	20	**-1s Warning Limit:**	64.4	**-2s Action Limit:**	26.82
Sigma:	37.59	**CV:**	36.90%	**+1s Warning Limit:**	139.6	**+2s Action Limit:**	177.2

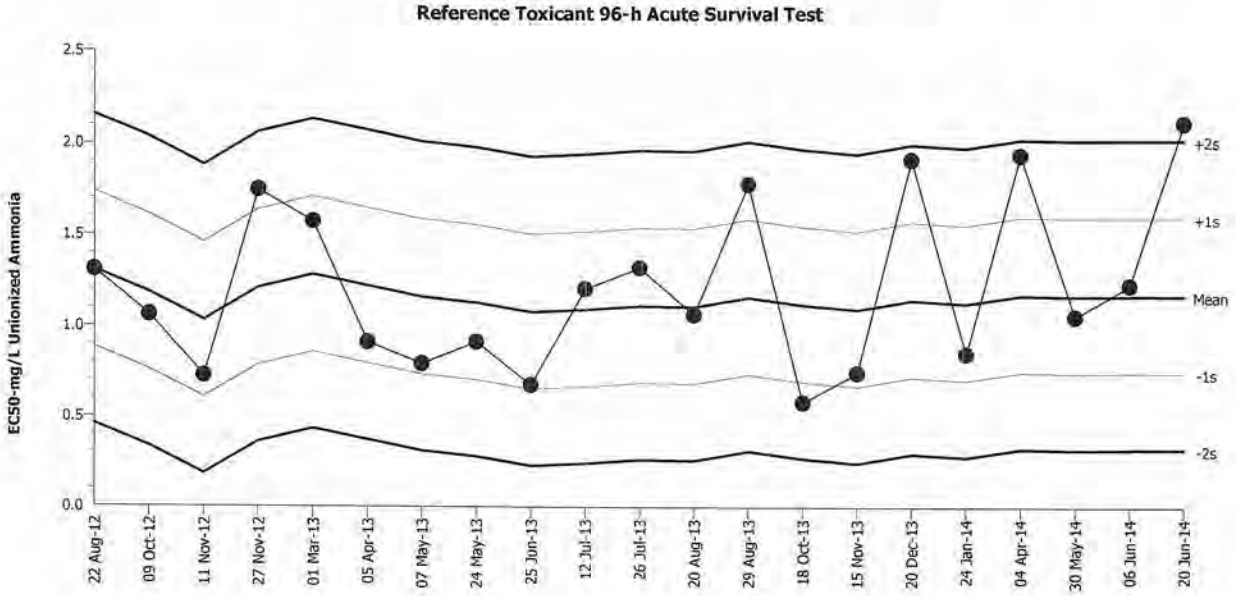
Quality Control Data

Point	Year	Month	Day	Time	QC Data	Delta	Sigma	Warning	Action	Test ID	Analysis ID	Laboratory
1	2012	Aug	22	11:00	145	43	1.144	(+)		02-2456-0921	08-5116-1008	NewFields
2		Oct	9	14:00	124	22	0.5853			09-2476-6828	01-8486-9232	NewFields
3		Nov	11	16:00	116	14	0.3724			05-7907-0031	20-7001-2062	NewFields
4			27	16:05	165	63	1.676	(+)		11-0295-5053	20-4892-3773	NewFields
5	2013	Mar	1	14:40	143	41	1.091	(+)		16-0938-7761	07-7870-4978	NewFields
6		Apr	5	10:40	103	1	0.0266			12-4084-6308	12-0348-0416	NewFields
7		May	7	13:00	57.6	-44.4	-1.181	(-)		03-6682-4675	13-3264-9963	NewFields
8			24	11:30	66.7	-35.3	-0.9391			19-1651-0673	19-7443-7088	NewFields
9		Jun	25	14:13	50.4	-51.6	-1.373	(-)		08-9049-5052	06-0503-5931	NewFields
10		Jul	12	13:20	95.6	-6.4	-0.1703			14-1288-0905	07-0996-7321	NewFields
11			26	12:00	137	35	0.9311			21-1882-7830	14-5107-6466	NewFields
12		Aug	20	15:45	124	22	0.5853			00-0072-4465	04-2226-9652	NewFields
13			29	13:40	105	3	0.07981			00-4506-4349	03-1605-8937	NewFields
14		Oct	18	15:35	76	-26	-0.6917			21-0368-6339	09-9293-9888	NewFields
15		Nov	15	15:30	101	-1	-0.0266			16-5727-5696	19-4124-7251	NewFields
16		Dec	20	14:00	58.3	-43.7	-1.163	(-)		08-9922-1254	11-2068-6689	NewFields
17	2014	Jan	24	13:20	117	15	0.399			20-9603-7883	15-6685-9407	NewFields
18		Apr	4	15:40	147	45	1.197	(+)		09-1443-8374	10-8829-6450	ENVIRON
19		May	30	16:25	25.7	-76.3	-2.03	(-)	(-)	18-4751-2702	12-3702-5556	ENVIRON
20		Jun	6	14:00	82.6	-19.4	-0.5161			02-4901-6395	20-5404-5146	ENVIRON
21			20	13:20	145	43	1.144	(+)		04-8899-1061	10-6019-5810	ENVIRON

CETIS QC Plot

Reference Toxicant 96-h Acute Survival Test — **All Matching Labs**

Test Type:	Survival	**Organism:**	Neanthes arenaceodentata (Polycha	**Material:**	Unionized Ammonia
Protocol:	PSEP (1995)	**Endpoint:**	Proportion Survived	**Source:**	Reference Toxicant-REF



Mean:	1.171	**Count:**	20	**-1s Warning Limit:**	0.7453	**-2s Action Limit:**	0.3201
Sigma:	0.4252	**CV:**	36.30%	**+1s Warning Limit:**	1.596	**+2s Action Limit:**	2.021

Quality Control Data

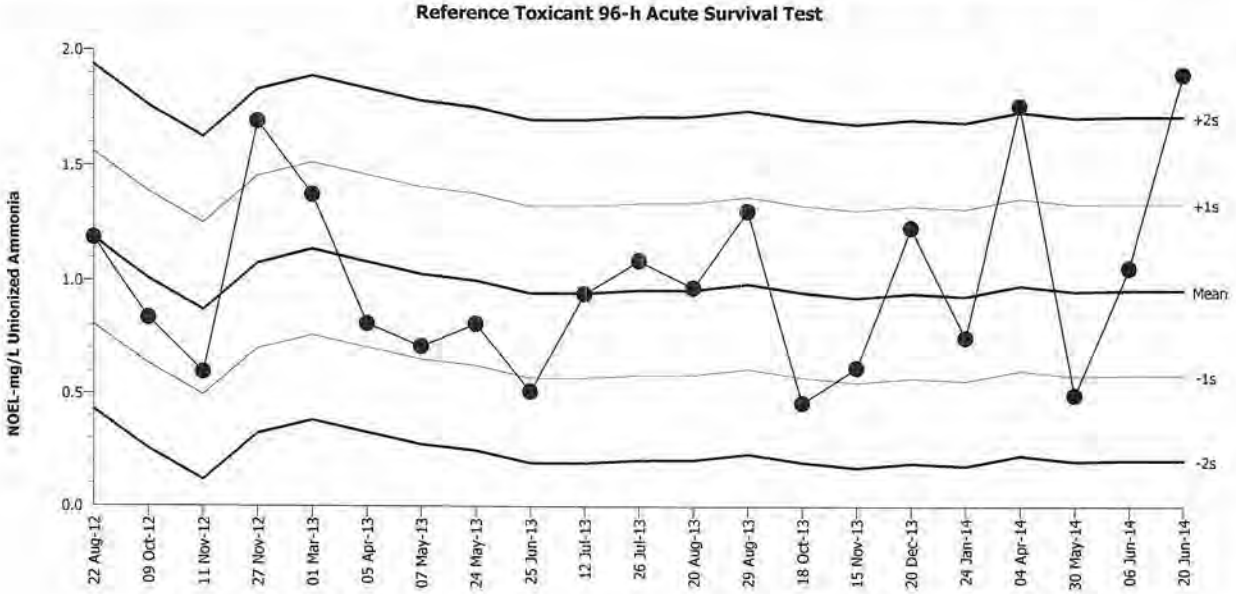
Point	Year	Month	Day	Time	QC Data	Delta	Sigma	Warning	Action	Test ID	Analysis ID	Laboratory
1	2012	Aug	22	11:00	1.31	0.1392	0.3274			12-2636-9338	18-2386-8444	NewFields
2		Oct	9	14:00	1.063	-0.1079	-0.2537			11-5377-0688	17-8993-7878	NewFields
3		Nov	11	16:00	0.7276	-0.4434	-1.043	(-)		14-7469-3886	03-0259-8994	NewFields
4			27	16:05	1.746	0.5746	1.351	(+)		08-6061-4466	00-3182-3735	NewFields
5	2013	Mar	1	14:40	1.573	0.4024	0.9463			18-8051-2966	06-9085-4102	NewFields
6		Apr	5	10:40	0.9122	-0.2588	-0.6087			03-5469-7681	20-0412-7755	NewFields
7		May	7	13:00	0.794	-0.377	-0.8866			11-4883-5754	10-2519-8358	NewFields
8			24	11:30	0.9143	-0.2567	-0.6037			03-1268-0321	17-3627-5339	NewFields
9		Jun	25	14:30	0.6782	-0.4928	-1.159	(-)		07-6412-1006	01-8270-7142	NewFields
10		Jul	12	13:20	1.207	0.03619	0.08511			06-2793-5359	03-5477-0692	NewFields
11			26	12:00	1.324	0.1527	0.3592			08-3568-6719	13-1071-7473	NewFields
12		Aug	20	15:45	1.065	-0.1056	-0.2483			11-8125-8700	06-3963-9074	NewFields
13			29	13:40	1.779	0.6079	1.43	(+)		06-4372-6299	20-5863-7836	NewFields
14		Oct	18	15:35	0.5812	-0.5898	-1.387	(-)		21-1191-9888	03-5569-7261	NewFields
15		Nov	15	15:30	0.746	-0.425	-0.9994			09-2209-5330	09-1007-2814	NewFields
16		Dec	20	14:00	1.916	0.7446	1.751	(+)		01-5055-0133	16-3961-8899	NewFields
17	2014	Jan	24	13:20	0.8517	-0.3193	-0.7509			09-1104-1497	12-8333-6553	NewFields
18		Apr	4	15:40	1.94	0.7687	1.808	(+)		00-6512-2526	06-9520-2408	NewFields
19		May	30	16:25	1.055	-0.1162	-0.2733			04-6747-6619	11-2879-2220	ENVIRON
20		Jun	6	14:00	1.228	0.05656	0.133			19-7971-8908	15-6482-0033	ENVIRON
21			20	13:20	2.113	0.9425	2.217	(+)	(+)	01-9511-3585	14-0146-3778	ENVIRON

CETIS QC Plot

Report Date: 12 Aug-14 09:21 (1 of 1)

Reference Toxicant 96-h Acute Survival Test — **All Matching Labs**

Test Type:	Survival	**Organism:**	Neanthes arenaceodentata (Polycha	**Material:**	Unionized Ammonia
Protocol:	PSEP (1995)	**Endpoint:**	Proportion Survived	**Source:**	Reference Toxicant-REF



Mean:	0.9592	**Count:**	20	**-1s Warning Limit:**	0.5823	**-2s Action Limit:**	0.2054
Sigma:	0.3769	**CV:**	39.30%	**+1s Warning Limit:**	1.336	**+2s Action Limit:**	1.713

Quality Control Data

Point	Year	Month	Day	Time	QC Data	Delta	Sigma	Warning	Action	Test ID	Analysis ID	Laboratory
1	2012	Aug	22	11:00	1.183	0.2238	0.5938			12-2636-9338	02-6993-9000	NewFields
2		Oct	9	14:00	0.836	-0.1232	-0.3269			11-5377-0688	14-5701-8660	NewFields
3		Nov	11	16:00	0.596	-0.3632	-0.9637			14-7469-3886	17-5882-8497	NewFields
4			27	16:05	1.693	0.7338	1.947	(+)		08-6061-4466	05-8355-5463	NewFields
5	2013	Mar	1	14:40	1.373	0.4138	1.098	(+)		18-8051-2966	09-6023-4535	NewFields
6		Apr	5	10:40	0.811	-0.1482	-0.3932			03-5469-7681	20-7653-9268	NewFields
7		May	7	13:00	0.71	-0.2492	-0.6612			11-4883-5754	20-7240-7121	NewFields
8			24	11:30	0.81	-0.1492	-0.3959			03-1268-0321	20-4684-2719	NewFields
9		Jun	25	14:30	0.51	-0.4492	-1.192	(-)		07-6412-1006	18-2969-6397	NewFields
10		Jul	12	13:20	0.943	-0.0162	-0.04298			06-2793-5359	18-9450-4090	NewFields
11			26	12:00	1.087	0.1278	0.3391			08-3568-6719	20-5296-6252	NewFields
12		Aug	20	15:45	0.97	0.0108	0.02865			11-8125-8700	00-8450-2616	NewFields
13			29	13:40	1.301	0.3418	0.9069			06-4372-6299	17-0691-0612	NewFields
14		Oct	18	15:35	0.459	-0.5002	-1.327	(-)		21-1191-9888	08-6606-1702	NewFields
15		Nov	15	15:30	0.615	-0.3442	-0.9132			09-2209-5330	09-5248-1072	NewFields
16		Dec	20	14:00	1.228	0.2688	0.7132			01-5055-0133	05-3710-3857	NewFields
17	2014	Jan	24	13:20	0.75	-0.2092	-0.5551			09-1104-1497	11-9980-1624	NewFields
18		Apr	4	15:40	1.759	0.7998	2.122	(+)	(+)	00-6512-2526	16-4646-7758	NewFields
19		May	30	16:25	0.494	-0.4652	-1.234	(-)		04-6747-6619	20-5692-2184	ENVIRON
20		Jun	6	14:00	1.056	0.0968	0.2568			19-7971-8908	15-9945-9119	ENVIRON
21			20	13:20	1.898	0.9388	2.491	(+)	(+)	01-9511-3585	21-4292-7262	ENVIRON

Reference Toxicant 96-h Acute Survival Test

ENVIRON

Analysis ID:	18-6388-8462	**Endpoint:**	Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	06 Aug-14 13:45	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes
Batch ID:	11-8573-5710	**Test Type:**	Survival	**Analyst:**	
Start Date:	20 Jun-14 13:20	**Protocol:**	PSEP (1995)	**Diluent:**	Laboratory Seawater
Ending Date:	24 Jun-14 11:00	**Species:**	Neanthes arenaceodentata	**Brine:**	Not Applicable
Duration:	94h	**Source:**	Aquatic Toxicology Support	**Age:**	
Sample ID:	03-5480-8644	**Code:**	1525F344	**Client:**	Internal Lab
Sample Date:	20 Jun-14	**Material:**	Total Ammonia	**Project:**	Reference Toxicant
Receive Date:		**Source:**	Reference Toxicant		
Sample Age:	13h	**Station:**	P140505.25		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X+1)	Linear	1728618	200	Yes	Two-Point Interpolation

Point Estimates

Level	mg/L	95% LCL	95% UCL
EC5	149.1	145.7	150.8
EC10	154.2	150.8	155.8
EC15	159.4	156.2	161
EC20	164.8	161.7	166.4
EC25	170.4	167.4	171.9
EC40	188.4	185.7	189.7
EC50	201.3	198.9	202.5

Proportion Survived Summary

			Calculated Variate(A/B)								
C-mg/L	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	A	B
0	Dilution Water	3	1	1	1	0	0	0.0%	0.0%	30	30
15.6		3	0.9667	0.9	1	0.03333	0.05773	5.97%	3.33%	29	30
32.3		3	1	1	1	0	0	0.0%	0.0%	30	30
71.2		3	1	1	1	0	0	0.0%	0.0%	30	30
145		3	1	1	1	0	0	0.0%	0.0%	30	30
281		3	0	0	0	0	0		100.0%	0	30

Proportion Survived Detail

C-mg/L	Control Type	Rep 1	Rep 2	Rep 3
0	Dilution Water	1	1	1
15.6		1	1	0.9
32.3		1	1	1
71.2		1	1	1
145		1	1	1
281		0	0	0

Proportion Survived Binomials

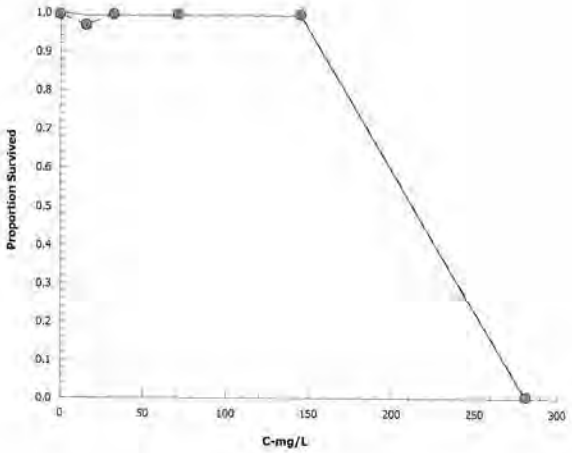
C-mg/L	Control Type	Rep 1	Rep 2	Rep 3
0	Dilution Water	10/10	10/10	10/10
15.6		10/10	10/10	9/10
32.3		10/10	10/10	10/10
71.2		10/10	10/10	10/10
145		10/10	10/10	10/10
281		0/10	0/10	0/10

Reference Toxicant 96-h Acute Survival Test

ENVIRON

Analysis ID:	18-6388-8462	**Endpoint:**	Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	06 Aug-14 13:45	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes

Graphics



CETIS Analytical Report

Reference Toxicant 96-h Acute Survival Test

ENVIRON

Analysis ID:	10-6019-5810	**Endpoint:**	Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	06 Aug-14 13:46	**Analysis:**	Single 2x2 Contingency Table	**Official Results:**	Yes
Batch ID:	11-8573-5710	**Test Type:**	Survival	**Analyst:**	
Start Date:	20 Jun-14 13:20	**Protocol:**	PSEP (1995)	**Diluent:**	Laboratory Seawater
Ending Date:	24 Jun-14 11:00	**Species:**	Neanthes arenaceodentata	**Brine:**	Not Applicable
Duration:	94h	**Source:**	Aquatic Toxicology Support	**Age:**	
Sample ID:	03-5480-8644	**Code:**	1525F344	**Client:**	Internal Lab
Sample Date:	20 Jun-14	**Material:**	Total Ammonia	**Project:**	Reference Toxicant
Receive Date:		**Source:**	Reference Toxicant		
Sample Age:	13h	**Station:**	P140505.25		

Data Transform	Zeta	Alt Hyp	Trials	Seed	NOEL	LOEL	TOEL	TU
Untransformed		C > T	NA	NA	145	281	201.9	

Fisher Exact Test

Control	vs	C-mg/L	Test Stat	P-Value	P-Type	Decision(α:5%)
Dilution Water		15.6	0.5	0.5000	Exact	Non-Significant Effect
		32.3	1	1.0000	Exact	Non-Significant Effect
		71.2	1	1.0000	Exact	Non-Significant Effect
		145	1	1.0000	Exact	Non-Significant Effect

Data Summary

C-mg/L	Control Type	NR	R	NR + R	Prop NR	Prop R	%Effect
0	Dilution Water	30	0	30	1	0	0.0%
15.6		29	1	30	0.9667	0.03333	3.33%
32.3		30	0	30	1	0	0.0%
71.2		30	0	30	1	0	0.0%
145		30	0	30	1	0	0.0%
281		0	30	30	0	1	100.0%

Proportion Survived Detail

C-mg/L	Control Type	Rep 1	Rep 2	Rep 3
0	Dilution Water	1	1	1
15.6		1	1	0.9
32.3		1	1	1
71.2		1	1	1
145		1	1	1
281		0	0	0

Proportion Survived Binomials

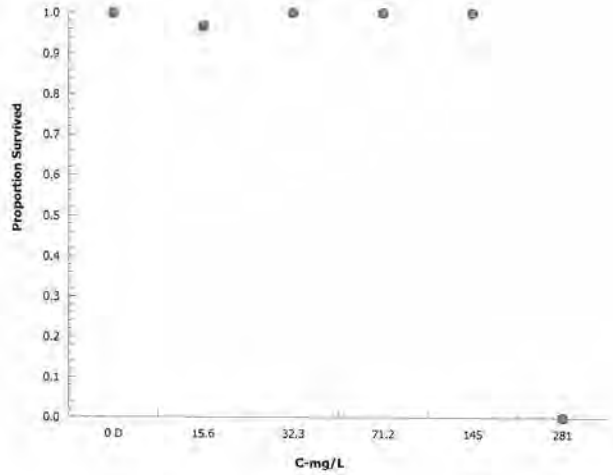
C-mg/L	Control Type	Rep 1	Rep 2	Rep 3
0	Dilution Water	10/10	10/10	10/10
15.6		10/10	10/10	9/10
32.3		10/10	10/10	10/10
71.2		10/10	10/10	10/10
145		10/10	10/10	10/10
281		0/10	0/10	0/10

Reference Toxicant 96-h Acute Survival Test

ENVIRON

Analysis ID:	10-6019-5810	**Endpoint:**	Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	06 Aug-14 13:46	**Analysis:**	Single 2x2 Contingency Table	**Official Results:**	Yes

Graphics



CETIS Test Data Worksheet

Report Date: 06 Aug-14 13:46 (p 1 of 1)
Test Code: 04-8899-1061/1D256955

Reference Toxicant 96-h Acute Survival Test **ENVIRON**

Start Date: 20 Jun-14 13:20
End Date: 24 Jun-14 11:00
Sample Date: 20 Jun-14
Species: Neanthes arenaceodentata
Protocol: PSEP (1995)
Material: Total Ammonia
Sample Code: 1525F344
Sample Source: Reference Toxicant
Sample Station: P140505.25

C-mg/L	Code	Rep	Pos	# Exposed	# Survived	Notes
0	D	1	16	10	10	
0	D	2	12	10	10	
0	D	3	18	10	10	
15.6		1	10	10	10	
15.6		2	5	10	10	
15.6		3	15	10	9	
32.3		1	2	10	10	
32.3		2	1	10	10	
32.3		3	7	10	10	
71.2		1	13	10	10	
71.2		2	4	10	10	
71.2		3	8	10	10	
145		1	6	10	10	
145		2	17	10	10	
145		3	9	10	10	
281		1	3	10	0	
281		2	14	10	0	
281		3	11	10	0	

CETIS Analytical Report

Reference Toxicant 96-h Acute Survival Test

ENVIRON

Analysis ID:	14-0146-3778	**Endpoint:**	Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	06 Aug-14 13:52	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes
Batch ID:	11-8573-5710	**Test Type:**	Survival	**Analyst:**	
Start Date:	20 Jun-14 13:20	**Protocol:**	PSEP (1995)	**Diluent:**	Laboratory Seawater
Ending Date:	24 Jun-14 11:00	**Species:**	Neanthes arenaceodentata	**Brine:**	Not Applicable
Duration:	94h	**Source:**	Aquatic Toxicology Support	**Age:**	
Sample ID:	10-4776-3560	**Code:**	3E739A68	**Client:**	Internal Lab
Sample Date:	20 Jun-14 13:20	**Material:**	Unionized Ammonia	**Project:**	Reference Toxicant
Receive Date:		**Source:**	Reference Toxicant		
Sample Age:	NA	**Station:**	P140505.25		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X+1)	Linear	1593609	200	Yes	Two-Point Interpolation

Point Estimates

Level	mg/L	95% LCL	95% UCL
EC5	1.916	1.908	1.923
EC10	1.937	1.93	1.944
EC15	1.959	1.952	1.965
EC20	1.98	1.974	1.986
EC25	2.002	1.996	2.008
EC40	2.068	2.064	2.073
EC50	2.113	2.109	2.117

Proportion Survived Summary

			Calculated Variate(A/B)								
C-mg/L	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	A	B
0	Dilution Water	3	1	1	1	0	0	0.0%	0.0%	30	30
0.405		3	0.9667	0.9	1	0.03333	0.05773	5.97%	3.33%	29	30
0.669		3	1	1	1	0	0	0.0%	0.0%	30	30
1.177		3	1	1	1	0	0	0.0%	0.0%	30	30
1.898		3	1	1	1	0	0	0.0%	0.0%	30	30
2.349		3	0	0	0	0	0		100.0%	0	30

Proportion Survived Detail

C-mg/L	Control Type	Rep 1	Rep 2	Rep 3
0	Dilution Water	1	1	1
0.405		1	1	0.9
0.669		1	1	1
1.177		1	1	1
1.898		1	1	1
2.349		0	0	0

Proportion Survived Binomials

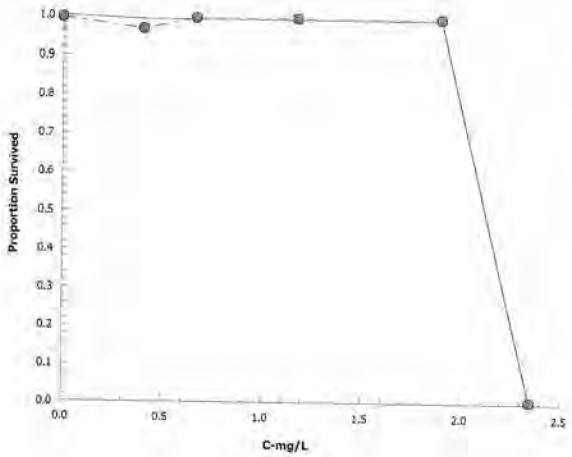
C-mg/L	Control Type	Rep 1	Rep 2	Rep 3
0	Dilution Water	10/10	10/10	10/10
0.405		10/10	10/10	9/10
0.669		10/10	10/10	10/10
1.177		10/10	10/10	10/10
1.898		10/10	10/10	10/10
2.349		0/10	0/10	0/10

Reference Toxicant 96-h Acute Survival Test

ENVIRON

Analysis ID:	14-0146-3778	**Endpoint:**	Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	06 Aug-14 13:52	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes

Graphics



CETIS Analytical Report

Reference Toxicant 96-h Acute Survival Test

ENVIRON

Analysis ID:	21-4292-7262	**Endpoint:**	Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	06 Aug-14 13:52	**Analysis:**	Single 2x2 Contingency Table	**Official Results:**	Yes
Batch ID:	11-8573-5710	**Test Type:**	Survival	**Analyst:**	
Start Date:	20 Jun-14 13:20	**Protocol:**	PSEP (1995)	**Diluent:**	Laboratory Seawater
Ending Date:	24 Jun-14 11:00	**Species:**	Neanthes arenaceodentata	**Brine:**	Not Applicable
Duration:	94h	**Source:**	Aquatic Toxicology Support	**Age:**	
Sample ID:	10-4776-3560	**Code:**	3E739A68	**Client:**	Internal Lab
Sample Date:	20 Jun-14 13:20	**Material:**	Unionized Ammonia	**Project:**	Reference Toxicant
Receive Date:		**Source:**	Reference Toxicant		
Sample Age:	NA	**Station:**	P140505.25		

Data Transform	Zeta	Alt Hyp	Trials	Seed	NOEL	LOEL	TOEL	TU
Untransformed		C > T	NA	NA	1.898	2.349	2.111	

Fisher Exact Test

Control	vs	C-mg/L	Test Stat	P-Value	P-Type	Decision(α:5%)
Dilution Water		0.405	0.5	0.5000	Exact	Non-Significant Effect
		0.669	1	1.0000	Exact	Non-Significant Effect
		1.177	1	1.0000	Exact	Non-Significant Effect
		1.898	1	1.0000	Exact	Non-Significant Effect

Data Summary

C-mg/L	Control Type	NR	R	NR + R	Prop NR	Prop R	%Effect
0	Dilution Water	30	0	30	1	0	0.0%
0.405		29	1	30	0.9667	0.03333	3.33%
0.669		30	0	30	1	0	0.0%
1.177		30	0	30	1	0	0.0%
1.898		30	0	30	1	0	0.0%
2.349		0	30	30	0	1	100.0%

Proportion Survived Detail

C-mg/L	Control Type	Rep 1	Rep 2	Rep 3
0	Dilution Water	1	1	1
0.405		1	1	0.9
0.669		1	1	1
1.177		1	1	1
1.898		1	1	1
2.349		0	0	0

Proportion Survived Binomials

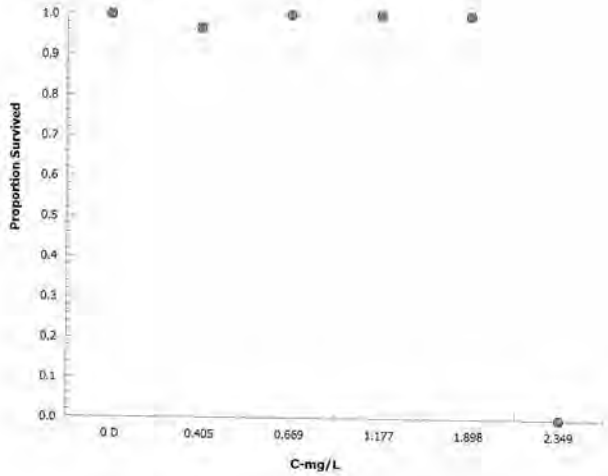
C-mg/L	Control Type	Rep 1	Rep 2	Rep 3
0	Dilution Water	10/10	10/10	10/10
0.405		10/10	10/10	9/10
0.669		10/10	10/10	10/10
1.177		10/10	10/10	10/10
1.898		10/10	10/10	10/10
2.349		0/10	0/10	0/10

Reference Toxicant 96-h Acute Survival Test

ENVIRON

Analysis ID:	21-4292-7262	**Endpoint:**	Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	06 Aug-14 13:52	**Analysis:**	Single 2x2 Contingency Table	**Official Results:**	Yes

Graphics



Analyst: _____ QA: _____

CETIS Test Data Worksheet

Reference Toxicant 96-h Acute Survival Test — **ENVIRON**

Start Date:	20 Jun-14 13:20	**Species:**	Neanthes arenaceodentata	**Sample Code:**	3E739A68
End Date:	24 Jun-14 11:00	**Protocol:**	PSEP (1995)	**Sample Source:**	Reference Toxicant
Sample Date:	20 Jun-14 13:20	**Material:**	Unionized Ammonia	**Sample Station:**	P140505.25

C-mg/L	Code	Rep	Pos	# Exposed	# Survived	Notes
0	D	1	14	10	10	
0	D	2	1	10	10	
0	D	3	12	10	10	
0.405		1	5	10	10	
0.405		2	11	10	10	
0.405		3	18	10	9	
0.669		1	8	10	10	
0.669		2	9	10	10	
0.669		3	16	10	10	
1.177		1	7	10	10	
1.177		2	17	10	10	
1.177		3	10	10	10	
1.898		1	6	10	10	
1.898		2	4	10	10	
1.898		3	3	10	10	
2.349		1	15	10	0	
2.349		2	2	10	0	
2.349		3	13	10	0	

ENVIRON

Ammonia Reference Toxicant Test
Water Quality Data Sheet

CLIENT	PROJECT	SPECIES	LABORATORY	PROTOCOL
ANAMAR	Shipyard Creek	*Neanthes arenaceodentata*	Port Gamble	SERIM
JOB NUMBER	**PROJECT MANAGER**	**QUANTITY OF STOCK:**	**QUANTITY OF DILUENT: 750mL**	**INIT**
#REF!	B. Hester	ACTUAL:	ACTUAL:	DATE PREP
TEST ID	**LOT #:**	**TEST START DATE**	**TIME**	**4d TEST END DATE** / **TIME**
P140505.25	3244C535	6/20	1320	6/24/14 / 1100
				10d TEST END DATE / **TIME**
				6/30/14 / 1455

WATER QUALITY DATA

TEST CONDITIONS					DO (mg/L) > 5.0		TEMP(C) 20 ± 1		SAL (ppt) 30 ± 2		pH 7.8 ± 0.5		TECHNICIAN	AMMONIA			SULFIDES		
CLIENT/ ID	CONCENTRATION value	CONCENTRATION units	DAY	REP	D.O. meter	D.O. mg/L	TEMP. meter	TEMP. °C	SALINITY meter	SALINITY ppt	pH meter	pH unit	WQ TECH/ DATE	AMMONIA METER	AMMONIA mg/L	Tech	SULFIDES meter	SULFIDES mg/L	Tech
Ref.Tox.-ammonia	0	mg/L	0	Stock	6	8.1	6	20.0	2	31	6	7.9	6/20 MK	3	0.00				
			4	1	6	7.2	6	20.0	2	31	6	7.7	6/24 KB						
			6	2	6	3.0①	2	19.5	2	31	6	7.2	6/26 MK						
			8	3	6	7.7	2	21.0	2	31	6	8.1	6/28 MK						
			10	1	6	7.9	6	19.5	2	31	6	8.0	6/30 JL						
Ref.Tox.-ammonia	15	mg/L	0	Stock	6	8.2	6	20.2	2	30	6	7.9	6/20 MK	3	15.6				
			4	1	6	7.2	6	19.9	2	31	6	7.7	6/24 KB						
			6	2	6	1.5①②	2	19.5	2	30	6	7.0③	6/26 MK						
			8	3	6	7.7	2	20.4	2	31	6	8.1	6/28 MK						
			10	1	6	7.8	6	19.6	2	32	6	8.0	6/30 JL						
Ref.Tox.-ammonia	30	mg/L	0	Stock	6	8.3	6	20.2	2	30	6	7.8	6/20 MK	3	32.3				
			4	1	6	7.4	6	19.9	2	30	6	7.7	6/24 KB						
			6	2	6	1.5①	2	19.5	2	31	6	7.0	6/26 MK						
			8	3	6	2.7①	2	20.5	2	31	6	8.0	6/28 MK						
			10	1	6	7.8	6	19.6	2	31	6	8.0	6/30 JL						
Ref.Tox.-ammonia	60	mg/L	0	Stock	6	8.0	6	20.2	2	30	6	7.7	6/20 MK	3	71.2				
			4	1	6	7.2	6	19.8	2	31	6	7.6	6/24 KB						
			6	2	6	5.4	2	19.6	2	30	6	7.5	6/26 MK						
			8	3	6	5.0①	2	20.7	2	30	6	7.7	6/28 MK						
			10	1	6	7.8	6	19.5	2	32	6	7.9	6/30 JL						
Ref.Tox.-ammonia	120	mg/L	0	Stock	6	8.2	6	20.2	2	31	6	7.6	6/20 MK	3	145				
			4	1	6	7.6	6	30	2	30	6	7.6	6/24 KB						
			6	2	6	4.4①②	2	31.4③	2	31	6	7.3	6/26 MK						
			8	3															
			10	1															
Ref.Tox.-ammonia	240	mg/L	0	Stock	6	8.3	6	20.3	2	31	6	7.4	6/20 MK	3	281				
			4	1	6	—	6	—	2	—	6	—	KB 6/24						
			6	2															
			8	3															
			10	1															

① Aeration lines added due to low D.O. MK 6/26

② WC. Actual entry for 15mg/L rep 2 = ~~4.4~~ 4.7 D.O. ; 7.3 pH ③ WC. MK 6/26

④ Aeration initiated for 60 mg/L MK 6/28

ENVIRON

Ammonia Reference Toxicant Test
Survival Data Sheet

CLIENT	PROJECT	JOB NO.	SPECIES		
			Neanthes arenaceodentata		
			PROJECT MANAGER	MEC LABORATORY	PROTOCOL
ANAMAR	Shipyard Creek	#REF!	B. Hester	Port Gamble	SERM

SURVIVAL & BEHAVIOR DATA

OBSERVATION KEY
N = Normal
LOE = Loss of equilibium
Q = Quinscent
DC = Discoloration
NB = No body
F = Floating on surface

INITIAL # OF ORGANISMS: 10

CLIENT ID	CONC. value	CONC. units	REP	INITIAL NUMBER	DAY 1			DAY 2			DAY 3			DAY 4			DAY 5			DAY 6			DAY 7			DAY 8			DAY 9			DAY 10		
					DATE 6/21/14			DATE 6/22			DATE 6/23			DATE 6/24/14			DATE 6/25			DATE 6/26			DATE 6/27/14			DATE 6/28			DATE 6/29			DATE 6/30		
					TECHNICIAN JL			TECHNICIAN JL			TECHNICIAN [illegible]			TECHNICIAN KMB			TECHNICIAN MK			TECHNICIAN MK			TECHNICIAN KMB			TECHNICIAN [illegible]			TECHNICIAN JL			TECHNICIAN JL		
					#ALIVE	#DEAD	OBS	#ALIVE	#DEAD	OBS	#ALIVE	#DEAD	OBS	#ALIVE	#DEAD	OBS	#ALIVE	#DEAD	OBS	#ALIVE	#DEAD	OBS	#ALIVE	#DEAD	OBS	#ALIVE	#DEAD	OBS	#ALIVE	#DEAD	OBS	#ALIVE	#DEAD	OBS
Ref.Tox.- Ammonia	0	mg/L	1	10	10	0	N	10	0	N	10	0	N	10	0	N	10	0	N	10	0	N	10	0	2F	10	0	N	10	0	N	10	0	N
			2		10	0	↓	10	0	↓	10	0	↓	10	0	↓	10	0	↓	10	0	↓	10	0	1F	10	0	↓	10	0	↓	10	0	↓
			3		10	0	↓	10	0	↓	10	0	↓	10	0	↓	10	0	↓	10	0	↓	10	0	3F	10	0	↓	10	0	↓	10	0	↓
Ref.Tox.- Ammonia	15	mg/L	1		10	0	N	10	0	N	10	0	N	10	0	N	10	0	N	10	0	N	10	0	N	10	0	N	10	0	N	10	0	N
			2		10	0	↓	10	0	↓	10	0	↓	10	0	↓	10	0	↓	10	0	↓	10	0	2F	10	0	↓	10	0	↓	10	0	↓
			3		10	0	↓	10	0	↓	10	0	↓	9	1NB	↓	9	0	↓	9	0	↓	9	0	N	9	0	↓	9	0	↓	9	0	1NB
Ref.Tox.- Ammonia	30	mg/L	1		10	0	N	10	0	N	10	0	N	10	0	N	10	0	N	10	0	N	10	0	N	10	0	N	10	0	N	10	0	N
			2		10	0	↓	10	0	↓	10	0	↓	10	0	↓	10	0	↓	10	0	↓	10	0	↓	10	0	↓	10	0	↓	10	0	↓
			3		10	0	↓	10	0	↓	10	0	↓	10	0	↓	10	0	↓	10	0	↓	10	0	↓	10	0	↓	10	0	↓	10	0	↓
Ref.Tox.- Ammonia	60	mg/L	1		10	0	N	10	0	N	10	0	N	10	0	N	10	0	N	10	0	N	10	0	Q	10	0	Q	10	0	Q	10	0	Q
			2		10	0	↓	10	0	↓	10	0	↓	10	0	↓	10	0	↓	10	0	↓	8	2	Q	7	1	Q	7	0	↓	7	0	↓
			3		10	0	↓	10	0	↓	10	0	↓	10	0	↓	10	0	↓	10	0	↓	10	0	Q	10	0	Q	10	0	↓	10	0	↓
Ref.Tox.- Ammonia	120	mg/L	1		10	0	Q	10	0	Q	10	0	Q	10	0	Q	4	6	Q	0	4	—											
			2		10	0	↓	10	0	↓	10	0	Q	10	0	↓	7	3	↓	0	7	—											
			3		10	0	↓	10	0	↓	10	0	Q	10	0	↓	3	7	↓	0	3	—											
Ref.Tox.- Ammonia	240	mg/L	1		10	0	Q	8	2	Q	0	8		—																			
			2		10	0	↓	8	10	NA				—																			
			3	↓	10	0	↓	3	7	Q	0	3		—																			

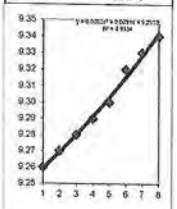
Time: 1100 Feed MK

Time:

CLIENT:	ANAMAR	Date of Test:	20-Jun-14
PROJECT:	Shipyard Creek	Test Type:	Neanthes
COMMENTS:			

To convert Total Ammonia (mg/L) to Free (un-ionized) Ammonia (mg/L) enter the corresponding total ammonia, salinity, temperature, and pH.

Integer:	I-factor
1	9.26
2	9.27
3	9.28
4	9.29
5	9.30
6	9.32
7	9.33
8	9.34



	Sample	Mod	NH3T (mg/L)	salinity (ppt)	pH	temp (C)	temp (K)	i-factor	Mod	NH3U (mg/L)
	Target / Sample Name		Actual	22.9	8.0	24.1	297.26	9.3053		#VALUE!
	Example 3.5		2.000	10.0	7.5	5.0	278.16	9.2750		0.008
1										
2										
3	15		15.6	30	7.9	20.2	293.36	9.3242		0.405
4	30		32.3	30	7.8	20.2	293.36	9.3242		0.669
5	60		71.2	30	7.7	20.2	293.36	9.3242		1.177
6	120		145	31	7.6	20.2	293.36	9.3270		1.898
7	240		281.0	31	7.4	20.3	293.46	9.3270		2.349
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APPENDIX A.7 *Neanthes virens* Bioaccumulation Test

Shipyard Creek
Test Results for the 28-day Bioaccumulation Test with *N. virens.*

Treatment	Replicate	Number Initiated	Number Surviving	Number Missing or Dead	Percentage Survival	Mean Percentage Survival	SD
Control	1	20	20	0	100	100.0	0.0
	2	20	20	0	100		
	3	20	20	0	100		
SYC14-REF	1	20	20	0	100	98.0	2.7
	2	20	20	0	100		
	3	20	20	0	100		
	4	20	19	1	95		
	5	20	19	1	95		
SYC14-AC	1	20	20	0	100	100.0	0.0
	2	20	20	0	100		
	3	20	20	0	100		
	4	20	20	0	100		
	5	20	20	0	100		
SYC14-TB	1	20	18	2	90	98.0	4.5
	2	20	20	0	100		
	3	20	20	0	100		
	4	20	20	0	100		
	5	20	20	0	100		

ENVIRON

28 DAY BIOACCUMULATION WQ DATA SHEET

CLIENT	PROJECT	SPECIES 1	LABORATORY	PROTOCOL
ANAMAR	Shipyard Creek	*Nereis virens*	Port Gamble , .	ITM (USEPA/USACE 1998), OTM (USEPA/USACE 1991), ASTM E 1611, SERIM 2008 , SOP TOX041
JOB NUMBER	**PROJECT MANAGER**	**WATER DESCRIPTION**	**TEST START DATE**	**TEST END DATE**
	B. Hester	North Hood Canal; filtered	26-Jun-2014	24-Jul-2014

WATER QUALITY DATA

TEST CONDITIONS				DO (mg/L) >5.0		TEMP (C) 10 ± 5		SALIN.(ppt) (25-35)± 2		pH 7.8 ± 0.5			
CLIENT ID	DAY	REP	JAR #	D.O.		TEMP		SALINITY		pH		TECHNICIAN / DATE	FLOW
				meter	mg/L	meter	°C	meter	ppt	meter	unit		Flow Through, 47±9 ml/ 30 sec (38-56)
Control / .	0	1	18	6	9.6	6	14.2	2	30	6	7.7	6/26/14 KMB	50
		2	15	↓	9.6	↓	14.2	↓	30	↓	7.9	↓	47
		3	16	↓	9.6	↓	14.3	↓	30	↓	7.9	↓	54
Control / .	1	1	18	6	6.6	2	15.6 ②	①2	30	6	7.4 ,	6/27/14 MK	48
Control / .	2	2	15	6	8.2	2	14.7	2	30	6	7.9	6/28 JL	54
Control / .	3	3	16	6	7.9	6	14.8	2	30	6	7.9	6/29 JL	47
Control / .	4	1	18	6	7.7	6	14.6	2	30	6	7.8	6/30 JL	55
Control / .	5	2	15	6	~~7.8~~ 7.8	6	~~15.6~~ 14.4	2	30	6	~~7.7~~ 7.8	7/1 KMB	53
Control / .	6	3	16	6	7.6	6	~~16.8~~ 15.1	2	30	6	7.6	7/2 KMB	44
Control / .	7	1	18	6	7.6	6	14.6	2	30	6	7.7	7/3 KMB	47
Control / .	8	2	15	8	8.0	8	15.0	8	29	8	7.9	7/4 JL	50
Control / .	9	3	16	8	8.0	8	⑤ 15.5	8	29	8	7.9	JL 7/05	48
Control / .	10	1	18	8	8.6	8	⑥ 16.2	8	30	8	7.8	JL 7/06	56
Control / .	11	2	15	8	7.8	8	16.2 ⑦	8	30	8	7.9	MK 7/7	54
Control / .	12	3	16	8	7.9	8	15.3 ⑧	8	29	8	7.8	MK 7/8	40
Control / .	13	1	18	8	7.4	8	15.6	8	30	8	7.7	MK 7/9	42
Control / .	14	2	15	8	7.4	8	16.0	8	30	8	7.8	KMB 7/10	54

① wrong meter. MK 6/27. ② Decreased by temp by 1°C. MK 6/27. ⑧ bath temp already at lowest setting. MK 7/8

③ WC-KMB. 7/1/14

④ Remeasured. KMB. 7/02/14

⑤ Restored water flow to Chamber. JL 7/05/14.

⑥ Decreased bath temp. JL 7/06/14

⑦ decreased bath temp. MK 7/7.

ENVIRON

28 DAY BIOACCUMULATION WQ DATA SHEET

CLIENT	PROJECT	SPECIES 1	LABORATORY	PROTOCOL
ANAMAR	Shipyard Creek	*Nereis virens*	Port Gamble , .	ITM (USEPA/USACE 1998), OTM (USEPA/USACE 1991), ASTM E 1611, SERIM 2008 , SOP TOX041
JOB NUMBER	**PROJECT MANAGER**	**WATER DESCRIPTION**	**TEST START DATE**	**TEST END DATE**
	B. Hester	North Hood Canal; filtered	26-Jun-2014	24-Jul-2014

WATER QUALITY DATA

TEST CONDITIONS				DO (mg/L) >5.0		TEMP (C) 10 ± 5		SALIN.(ppt) (25-35)± 2		pH 7.8 ± 0.5			
CLIENT ID	DAY	REP	JAR #	D.O.		TEMP		SALINITY		pH		TECHNICIAN / DATE	FLOW
				meter	mg/L	meter	°C	meter	ppt	meter	unit		Flow Through, 47±9 ml/ 30 sec (38-56)
Control / .	15	3	10	8	8.3	8	① 16.0	8	30	8	8.0	KMB 7/11/14	54
Control / .	16	1	18	8	8.1	8	16.1	8	30	8	8.1	JL 7/12/14	42
Control / .	17	2	15	8	8.0	8	16.1	8	30	8	8.0	[illegible] 7/13/14	40
Control / .	18	3	16	8	8.1	8	15.0	8	30	8	8.3	KB 7/14/14	38
Control / .	19	1	18	8	7.9	8	15.0	8	30	8	8.0	KB 7/15	44
Control / .	20	2	15	8	8.6	8	15.4	8	30	8	8.0	KB 7/16	56
Control / .	21	3	16	8	7.5	8	15.7	8	29	8	7.9	MK 7/17	47
Control / .	22	1	18	8	8.2	8	15.6	8	30	8	8.0	MK 7/18	56
Control / .	23	2	15	8	8.1	8	16.0	8	30	8	7.8	[illegible] 7/19	45
Control / .	24	3	16	8	8.0	8	16.3	8	30	8	7.8	JL 7/20	40
Control / .	25	1	18	8	7.1	8	17.3	8	29	8	8.0	KB 7/21	53
Control / .	26	2	15	8	7.8	8	15.9	8	29	8	8.0	MK 7/22	410
Control / .	27	3	16	8	8.1	8	15.6	8	29	8	8.0	MK 7/23	50
Control / .	28	1	18	8	7.8	8	15.4	8	29	8	7.9	KB 7/24	54
		2	15	↓	8.2	↓	15.1	↓	30	↓	7.9		48
		3	16	↓	8.2	↓	15.0	↓	30	↓	7.9	↓	54

① Bath temp. at lowest setting - KB. 07/11/14

ENVIRON

28 DAY BIOACCUMULATION WQ DATA SHEET

CLIENT	PROJECT	SPECIES 1	LABORATORY	PROTOCOL
ANAMAR	Shipyard Creek	*Nereis virens*	Port Gamble , .	ITM (USEPA/USACE 1998), OTM (USEPA/USACE 1991), ASTM E 1611, SERIM 2008 , SOP TOX041
JOB NUMBER	**PROJECT MANAGER**	**WATER DESCRIPTION**	**TEST START DATE**	**TEST END DATE**
.	B. Hester	North Hood Canal; filtered	26-Jun-2014	24-Jul-2014

WATER QUALITY DATA

TEST CONDITIONS				DO (mg/L) >5.0		TEMP (C) 10 ± 5		SALIN.(ppt) (25-35)± 2		pH 7.8 ± 0.5			
CLIENT ID	DAY	REP	JAR #	D.O.		TEMP		SALINITY		pH		TECHNICIAN / DATE	FLOW
				meter	mg/L	meter	°C	meter	ppt	meter	unit		Flow Through, 47±9 ml/ 30 sec (38-56)
SYC14-REF / .	0	1	17	6	9.7	6	30/14.2	2	30	6	7.9	6/26/14 KMB	46
		2	12	↓	9.6	↓	30/14.4	↓	30	↓	7.9	↓	45
		3	10	↓	9.6	↓	30/14.3	↓	30	↓	7.9	↓	54
		4	7	↓	9.8	↓	30/14.3	↓	30	↓	7.9	↓	48
		5	5	↓	9.6	↓	30/14.4	↓	30	↓	7.9	↓	47
SYC14-REF / .	1	1	17	6	7.0	2	15.4 ①	2	30	6	7.6	6/27/14 MK	50
SYC14-REF / .	2	2	12	6	7.8	2	15.0	2	30	6	7.8	6/28 [illegible]	39
SYC14-REF / .	3	3	10	6	7.6	6	14.8	2	30	6	7.8	JL 6/29	55
SYC14-REF / .	4	4	7	6	7.7	6	14.7	2	30	6	7.8	JL 6/30	39
SYC14-REF / .	5	5	5	6	7.1	6	15.1	2	30	6	7.7	KMB 7/1	46
SYC14-REF / .	6	1	17	6	7.9	6	14.8	2	30	6	7.6	KMB 7/2	54
SYC14-REF / .	7	2	12	6	7.4	6	15.2	2	30	6	7.7	KMB 7/3	40
SYC14-REF / .	8	3	10	8	8.1	8	14.7	8	30	8	7.9	[illegible] 7/4	39
SYC14-REF / .	9	4	7	8	7.5	8	15.4 ②	8	30	8	7.8	JL 7/05	52
SYC14-REF / .	10	5	5	8	8.5	8	16.5 ③	8	29	8	8.0	JL 7/06	40
SYC14-REF / .	11	1	17	8	7.3	8	16.6 ④	8	29	8	7.8	MK 7/7	50
SYC14-REF / .	12	2	12	8	7.5	8	15.9 ⑤	8	29	8	7.9	MK 7/8	40
SYC14-REF / .	13	3	10	8	7.1	8	16.0	8	30	8	7.7	MK 7/9	38
SYC14-REF / .	14	4	7	8	7.9	8	15.6	8	30	8	7.8	KB 7/10	54

① Decreased bath temp by 1°C. MK 6/27
② Restored water flow to chamber. JL 7/05/14.
③ Decreased bath temp. JL 7/06/14.
④ decreased bath temp by 1°C. MK 7/7
⑤ Bath temp already at lowest setting. MK 7/8

ENVIRON

28 DAY BIOACCUMULATION WQ DATA SHEET

CLIENT	PROJECT	SPECIES 1	LABORATORY	PROTOCOL
ANAMAR	Shipyard Creek	*Nereis virens*	Port Gamble , .	ITM (USEPA/USACE 1998), OTM (USEPA/USACE 1991), ASTM E 1611, SERIM 2006 , SOP TOX041
JOB NUMBER	**PROJECT MANAGER**	**WATER DESCRIPTION**	**TEST START DATE**	**TEST END DATE**
	B. Hester	North Hood Canal; filtered	26-Jun-2014	24-Jul-2014

WATER QUALITY DATA

TEST CONDITIONS				DO (mg/L) >5.0		TEMP (C) 10 ± 5		SALIN.(ppt) (25-35)± 2		pH 7.8 ± 0.5			
CLIENT ID	DAY	REP	JAR #	D.O.		TEMP		SALINITY		pH		TECHNICIAN / DATE	FLOW
				meter	mg/L	meter	°C	meter	ppt	meter	unit		Flow Through, 47±9 ml/ 30 sec (38-56)
SYC14-REF /.	15	5	5	8	8.7	8	①16.1	8	30	8	8.1	KMB 7/11/14	53
SYC14-REF /.	16	1	17	8	8.3	8	15.7	8	30	8	8.1	JL 7/12/14	56
SYC14-REF /.	17	2	12	8	8.0	8	16.3	8	30	8	8.0	7/13/14	45
SYC14-REF /.	18	3	10	8	8.1	8	15.1	8	30	8	8.2	KB 7/14/14	41
SYC14-REF /.	19	4	7	8	8.4	8	15.0	8	30	8	8.0	KB 7/15	56
SYC14-REF /.	20	5	5 ~~10~~	8	9.0	8	15.1	8	30	8	8.0	KB 7/16	52
SYC14-REF /.	21	1	17	8	8.2	8	15.3	8	30	8	7.9	MK 7/17	50
SYC14-REF /.	22	2	12	8	7.7	8	16.1	8	30	8	7.9	MK 7/18	48
SYC14-REF /.	23	3	10	8	7.9	8	16.2	8	30	8	7.9	✓ 7/19	40
SYC14-REF /.	24	4	7	8	8.3	8	16.3	8	30	8	8.0	JL 7/20	55
SYC14-REF /.	25	5	5	8	8.16	8	16.5	8	29	8	8.1	KB 7/21	53
SYC14-REF /.	26	1	17	8	8.1	8	16.0	8	30	8	8.0	MK 7/22	42
SYC14-REF /.	27	2	12	8	8.1	8	15.9	8	30	8	8.0	MK 7/23	46
SYC14-REF /.	28	1	17	8	8.2	8	15.3	8	30	8	7.9	KB 7/24	55
		2	12	↓	8.2	↓	15.3	↓	30	↓	8.0	↓	41
		3	10		8.4		15.2		30		8.1		49
		4	7		8.3		15.2		30		8.1		54
		5	5		8.7		14.8		30		8.1		45

①Bath temp already at lowest setting. KB. 07/11/14

ENVIRON

28 DAY BIOACCUMULATION WQ DATA SHEET

CLIENT	PROJECT	SPECIES 1	LABORATORY	PROTOCOL
ANAMAR	Shipyard Creek	*Nereis virens*	Port Gamble , .	ITM (USEPA/USACE 1998), OTM (USEPA/USACE 1991), ASTM E 1611, SERIM 2008 , SOP TOX041
JOB NUMBER	**PROJECT MANAGER**	**WATER DESCRIPTION**	**TEST START DATE**	**TEST END DATE**
	B. Hester	North Hood Canal; filtered	26-Jun-2014	24-Jul-2014

WATER QUALITY DATA

TEST CONDITIONS				DO (mg/L) >5.0		TEMP (C) 10 ± 5		SALIN.(ppt) (25-35)± 2		pH 7.8 ± 0.5			
CLIENT ID	DAY	REP	JAR #	D.O.		TEMP		SALINITY		pH		TECHNICIAN / DATE	FLOW
				meter	mg/L	meter	°C	meter	ppt	meter	unit		Flow Through, 47±9 ml/ 30 sec (38-56)
SYC14-AC / .	0	1	8	6	9.5	6	14.3	2	30	6	7.9	6/26/14 KMB	50
		2	13	↓	9.6	↓	14.5	↓	30	↓	7.9	↓	40
		3	11		9.6		14.4		30		7.9		42
		4	6		9.2		14.7		30		7.9		48
		5	14		9.6		14.3		30		7.9		40
SYC14-AC / .	1	1	8	6	6.1	2	15.6 ②	2	30	6	7.6	6/27/14 MK	38
SYC14-AC / .	2	2	13	6	8.0	2	15.0	2	30	6	7.9	6/28 HE	56
SYC14-AC / .	3	3	11	6	7.5	6	15.0	2	29	6	7.7	6/29 JL	48
SYC14-AC / .	4	4	6	6	7.2	6	15.0	2	30	6	7.8	6/30 JL	42
SYC14-AC / .	5	5	14	6	7.0	6	15.6	2	30	6	7.7	7/1 KMB	47
SYC14-AC / .	6	1	8	6	7.8	6	14.7	2	30	6	7.6	7/2 KMB	44
SYC14-AC / .	7	2	13	6	7.6	6	15.0	2	30	6	7.7	7/3 KMB	39
SYC14-AC / .	8	3	11	8 ③	8.1 7.9	8	14.7	8	30	8	7.9	7/4 HE	③ 38 40
SYC14-AC / .	9	4	6	8	7.8	8	15.0	8	30	8	7.9	7/05 JL	39
SYC14-AC / .	10	5	14	8	8.7	8	④ 16.2	8	29	8	7.9	7/06 JL	56
SYC14-AC / .	11	1	8	8	7.5	8	16.0 ⑤	8	29	8	7.9	7/7 MK	55
SYC14-AC / .	12	2	13	8	7.6	8	15.9 ⑥	8	29	8	7.8	7/8 MK	56
SYC14-AC / .	13	3	11	8	7.5	8	15.9	8	30	8	7.8	7/9 MK	52
SYC14-AC / .	14	4	6	8	8.0	8	15.2	8	30	8	7.9	7/10 KMB	46

Illegible. KB. 6/26/14 ② Decreased bath temp by 1°C . MK 6/27

③ WP HE 7/4/

④ Decreased bath temp. JL 7/06/14. ⑤ decreased bath temp by 1°C. MK 7/7

⑥ Bath temp already @ lowest setting. MK 7/8.

ENVIRON

28 DAY BIOACCUMULATION WQ DATA SHEET

CLIENT	PROJECT	SPECIES 1	LABORATORY	PROTOCOL
ANAMAR	Shipyard Creek	*Nereis virens*	Port Gamble , .	ITM (USEPA/USACE 1998), OTM (USEPA/USACE 1991), ASTM E 1611, SERIM 2008 , SOP TOX041
JOB NUMBER	**PROJECT MANAGER**	**WATER DESCRIPTION**	**TEST START DATE**	**TEST END DATE**
.	B. Hester	North Hood Canal; filtered	26-Jun-2014	24-Jul-2014

WATER QUALITY DATA

TEST CONDITIONS				DO (mg/L) >5.0		TEMP (C) 10 ± 5		SALIN.(ppt) (25-35)± 2		pH 7.8 ± 0.5			
CLIENT ID	DAY	REP	JAR #	D.O.		TEMP		SALINITY		pH		TECHNICIAN / DATE	FLOW
				meter	mg/L	meter	°C	meter	ppt	meter	unit		Flow Through, 47±9 ml/ 30 sec (38-56)
SYC14-AC / .	15	5	14	8	7.9	8	①16.5	8	30	8	8.0	KMB 7/11/14	44
SYC14-AC / .	16	1	8	8	8.1	8	15.9	8	30	8	8.1	JL 7/12/14	38
SYC14-AC / .	17	2	13	8	7.9	8	16.4	8	30	8	8.0	AK 7/13/14	39
SYC14-AC / .	18	3	11	8	7.9	8	15.4	8	30	8	8.2	KB 7/14/14	38
SYC14-AC / .	19	4	6	8	8.2	8	14.9	8	30	8	8.0	KB 7/15	39
SYC14-AC / .	20	5	14	8	③~~8.8~~ 8.6	8	15.6	8	~~30~~ 29	8	②~~8.8~~ 8.0	KB 7/16	56
SYC14-AC / .	21	1	8	8	7.3	8	15.5	8	29	8	7.8	MK 7/17	56
SYC14-AC / .	22	2	13	8	8.0	8	15.6	8	29	8	④~~8.0~~ 7.9	MK 7/18	54
SYC14-AC / .	23	3	11	8	7.8	8	16.6	8	30	8	7.9	JL 7/19	52
SYC14-AC / .	24	4	6	8	8.4	8	16.0	8	29	8	8.0	JL 7/20	56
SYC14-AC / .	25	5	14	8	7.6	8	16.9	8	29	8	8.0	KB 7/21	49
SYC14-AC / .	26	1	8	8	8.5	8	15.9	8	29	8	8.1	MK 7/22	44
SYC14-AC / .	27	2	13	8	7.8	8	16.0	8	29	8	8.0	MK 7/23	56
SYC14-AC / .	28	1	14	8	8.6	8	15.0	8	30	8	8.1	KB 7/24	53
		2	13	↓	7.9	↓	15.5	↓	30	↓	8.0	↓	56
		3	11		8.2		15.2		30		8.0		39
		4	6		8.7		14.9		30		8.1		44
		5	14		7.8		15.3		29		8.0		42

① Bath temp. already at lowest temp. KB. 07/11/14
② WC. correct reading: 8.0 KB 7/16/14
③ WC. KB 7/16/14
④ WC. MK 7/18

ENVIRON

28 DAY BIOACCUMULATION WQ DATA SHEET

CLIENT	PROJECT	SPECIES 1	LABORATORY	PROTOCOL
ANAMAR	Shipyard Creek	*Nereis virens*	Port Gamble , .	ITM (USEPA/USACE 1998), OTM (USEPA/USACE 1991), ASTM E 1611, SERIM 2008 , SOP TOX041
JOB NUMBER	**PROJECT MANAGER**	**WATER DESCRIPTION**	**TEST START DATE**	**TEST END DATE**
	B. Hester	North Hood Canal; filtered	26-Jun-2014	24-Jul-2014

WATER QUALITY DATA

TEST CONDITIONS				DO (mg/L) >5.0		TEMP (C) 10 ± 5		SALIN.(ppt) (25-35)± 2		pH 7.8 ± 0.5			
CLIENT ID	DAY	REP	JAR #	D.O.		TEMP		SALINITY		pH		TECHNICIAN / DATE	FLOW
				meter	mg/L	meter	°C	meter	ppt	meter	unit		Flow Through, 47±9 ml/ 30 sec (38-56)
SYC14-TB / .	0	1	9	6	9.2	6	14.3	2	30	6	7.8	6/26/14 KMB	46
		2	4	↓	9.1	↓	14.2	↓	30	↓	7.7	↓	46
		3	3	↓	9.4	↓	14.4	↓	30	↓	7.9	↓	39
		4	2	↓	9.0	↓	14.6	↓	30	↓	7.8	↓	50
		5	1	↓	8.5	↓	15.0	↓	30	↓	7.7	↓	41
SYC14-TB / .	1	1	9	6	5.9 ①	2	15.4 ②	2	30	6	7.5	6/27/14 MK	47
SYC14-TB / .	2	2	4	6	7.0	2	14.3	2	30	6	7.7	6/28 [illegible]	45
SYC14-TB / .	3	3	3	6	7.4	6	14.9	2	29	6	7.8	6/29 JL	49
SYC14-TB / .	4	4	2	6	7.5	6	15.1	2	30	6	7.7	6/30 JL	45
SYC14-TB / .	5	5	1	6	6.7	6	15.2	2	30	6	7.6	7/1 KMB	40
SYC14-TB / .	6	1	9	6	8.2	6	14.6	2	30	6	7.7	7/2 KMB	47
SYC14-TB / .	7	2	4	6	6.8	6	15.7	2	30	6	7.6	7/3 KMB	55
SYC14-TB / .	8	3	3	6	⑦	8	15.1	8	30	8	7.8	7/4 [illegible]	38
SYC14-TB / .	9	4	2	8	7.7	8	15.6 ③	8	30	8	7.8	7/05 JL	56
SYC14-TB / .	10	5	1	8	8.2	8	16.7 ④	8	29	8	7.9	7/06 JL	56
SYC14-TB / .	11	1	9	8	7.7	8	16.1 ⑤	8	29	8	7.9	7/7 MK	54
SYC14-TB / .	12	2	4	8	7.2	8	16.1 ⑥	8	29	8	7.8	7/8 MK	38
SYC14-TB / .	13	3	3	8	6.8	8	15.8	8	30	8	7.7	7/9 MK	43
SYC14-TB / .	14	4	2	8	7.9	8	15.7	8	30	8	7.8	7/10 KMB	54

① Increased flow + air line. MK 6/27. ② Decreased bath temp by 1°C. MK 6/27.
③ Restored water flow to chamber. JL 7/05/14
④ Decreased bath temp. JL 7/06/14. ⑤ decreased bath temp by 1°C. MK 7/7
⑥ Bath temp already at lowest setting. MK 7/8. ⑦ D.O. not recorded. JL 7/30/14.

ENVIRON

28 DAY BIOACCUMULATION WQ DATA SHEET

CLIENT	PROJECT	SPECIES 1	LABORATORY	PROTOCOL
ANAMAR	Shipyard Creek	*Nereis virens*	Port Gamble , .	ITM (USEPA/USACE 1998), OTM (USEPA/USACE 1991), ASTM E 1611, SERIM 2008 , SOP TOX041
JOB NUMBER	**PROJECT MANAGER**	**WATER DESCRIPTION**	**TEST START DATE**	**TEST END DATE**
	B. Hester	North Hood Canal; filtered	26-Jun-2014	24-Jul-2014

WATER QUALITY DATA

TEST CONDITIONS				DO (mg/L) >5.0		TEMP (C) 10 ± 5		SALIN.(ppt) (25-35)± 2		pH 7.8 ± 0.5			
CLIENT ID	DAY	REP	JAR #	D.O.		TEMP		SALINITY		pH		TECHNICIAN / DATE	FLOW
				meter	mg/L	meter	°C	meter	ppt	meter	unit		Flow Through, 47±9 ml/ 30 sec (38-56)
SYC14-TB / .	15	5	1	8	7.6	8	①16.6	8	30	8	8.1	7/11/14 KB	44
SYC14-TB / .	16	1	9	8	8.0	8	16.1	8	30	8	8.1	7/12/14 JL	40
SYC14-TB / .	17	2	4	8	8.0	8	16.1	8	30	8	7.9	7/13/14	56
SYC14-TB / .	18	3	3	8	7.5	8	15.2	8	30	8	8.1	7/14/14 KB	43
SYC14-TB / .	19	4	2	8	8.2	8	14.7	8	30	8	8.0	KB 7/15	54
SYC14-TB / .	20	5	1	8	8.0	8	15.0	8	30	8	8.0	KB 7/16	38
SYC14-TB / .	21	1	9	8	7.8	8	15.8	8	29	8	7.9	MK 7/17	46
SYC14-TB / .	22	2	4	8	7.4	8	16.2	8	30	8	7.9	MK 7/18	49
SYC14-TB / .	23	3	3	8	7.8	8	16.0	8	30	8	7.9	JL 7/19	45
SYC14-TB / .	24	4	2	8	8.1	8	16.4	8	30	8	8.0	JL 7/20	54
SYC14-TB / .	25	5	1	8	7.7	8	17.3	8	30	8	8.0	KB 7/21	45
SYC14-TB / .	26	1	9	8	8.0	8	16.0	8	29	8	8.0	MK 7/22	46
SYC14-TB / .	27	2	4	8	7.9	8	16.0	8	29	8	8.0	MK 7/23	54
SYC14-TB / .	28	1	9	8	8.4	8	15.1	8	30	8	8.1	KB 7/24	46
		2	4	↓	8.2	↓	15.3	↓	30	↓	8.2	↓	50
		3	3		8.5		14.8		30		8.2		51
		4	2		8.4		15.1		30		8.2		42
		5	1	↓	7.8	↓	15.5	↓	30	↓	8.1	↓	46

① Bath temp. already at lowest setting. KB. 07/11/14

CLIENT	PROJECT	SPECIES 1	NEWFIELDS LABORATORY	PROTOCOL
ANAMAR	Shipyard Creek	*Nereis virens*	Port Gamble , .	ITM (USEPA/USACE 1998), OTM (USEPA/USACE 1991), ASTM E 1611, SERIM 2008 , SOP TOX041
NEWFIELDS JOB NUMBER	**PROJECT MANAGER**	**WATER DESCRIPTION**	**TEST START DATE**	**TEST END DATE**
.	B. Hester	North Hood Canal; filtered	26-Jun-2014	24-Jul-2014

WATER QUALITY DATA

TEST CONDITIONS				DO (mg/L) >5.0		TEMP (C) 10 ± 5		SALIN.(ppt) (25-35)± 2		pH 7.8 ± 0.5			
				D.O.		TEMP		SALINITY		pH			
CLIENT/NEWFIELDS ID	DAY	REP	JAR #	meter	mg/L	meter	°C	meter	ppt	meter	unit	TECHNICIAN / DATE	FLOW Flow Through, 47±9 ml/ 30 sec (38-56)
Control / .	29	1		8	8.4	8	14.9	8	30	8	8.0	JL 7/25/14	7.38
		2			8.3		14.9		30		8.0		
		3			8.3		14.8		30		8.0		
		~~4~~											
		~~5~~											
SYC14-REF / .	29	1			8.4		14.7		30		8.0		
		2			8.3		15.1		30		8.0		
		3			8.3		14.9		30		8.0		
		4			7.7		14.8		30		7.9		
		5			8.1		14.7		30		8.0		
SYC14-AC / .	29	1			8.0		14.9		30		8.0		
		2			8.3		15.1		30		8.0		
		3			8.3		15.0		30		8.0		
		4			8.2		14.9		30		8.0		
		5			8.3		15.0		30		8.0		
SYC14-TB / .	29	1			8.3		14.7		30		8.0		
		2			7.8		14.7		30		7.9		
		3			8.0		15.0		①230		①~~7~~.8.0		
		4			8.3		15.1		30		8.0		
		5			8.2		15.0		30		8.0		

① IG JL 7/25/14.

ENVIRON

28-DAY BIOACCUMULATION TEST OBSERVATION DATA SHEET (DAYS 0 -14)

CLIENT	PROJECT	NEWFIELDS JOB NO.	PROJECT MANAGER	NEWFIELDS LABORATORY	PROTOCOL	SPECIES
ANAMAR	Shipyard Creek		B. Hester		ITM (USEPA/USACE 1998), OTM (USEPA/USACE 1991), ASTM E 1611, SERIM 2008	*Nereis virens*

Observation Key

#S= Number on the Surface
#M= Number of Mortality
L=Anoxic Surface
F=Fungal Patches
D=No Air Flow (DO?)
U=Excess food
N=Normal
B=No Burrows

INITIAL # OF ORGANISMS: 20

ENDPOINT DATA & OBSERVATIONS

CLIENT / NEWFIELDS ID	REP	Jar #	INITIAL # IF DIFF	Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14
				DATE / TECHN.	6/27/14 MK	6/28	6/29 JL	6/30 KMB	7/1 KMB	7/2 KMB	7/3	7/4	7/05 JL	7/06 JL	7/7	7/8 MK	7/9 MK	7/10 MK
SYC14-TB	5	1	20		IS	N	N	N	N	N	N	N	N	N	N	N	N	N
SYC14-TB	4	2			N		IS											
SYC14-TB	3	3			N		N											
SYC14-TB	2	4			IS													
SYC14-REF	5	5			IS			IS										
SYC14-AC	4	6			N			N										
SYC14-REF	4	7			IS		IS											
SYC14-AC	1	8			IS		N											
SYC14-TB	1	9			N		IS											
SYC14-REF	3	10			N		N											
SYC14-AC	3	11			IS			IWMS										
SYC14-REF	2	12			IS			N										
SYC14-AC	2	13			N													
SYC14-AC	5	14					IS											

ENVIRON

28-DAY BIOACCUMULATION TEST OBSERVATION DATA SHEET (DAYS 0 -14)

CLIENT	PROJECT	NEWFIELDS JOB NO.	PROJECT MANAGER	NEWFIELDS LABORATORY	PROTOCOL	SPECIES
ANAMAR	Shipyard Creek	-	B. Hester	-	ITM (USEPA/USACE 1998), OTM (USEPA/USACE 1991), ASTM E 1611, SERIM 2008	*Nereis virens*

Observation Key

#S= Number on the Surface
#M= Number of Mortality
L=Anoxic Surface
F=Fungal Patches
D=No Air Flow (DO?)
U=Excess food
N=Normal
B=No Burrows

INITIAL # OF ORGANISMS: 20

ENDPOINT DATA & OBSERVATIONS

CLIENT / NEWFIELDS ID	REP	Jar #	INITIAL # IF DIFF	Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14
				DATE / TECHN.	6/26/14 MK	6/28 JL	6/29 JL	6/30 KMB	7/1 KMB	7/2 KMB	7/3 JL	7/4 JL	7/05 JL	7/06 JL	7/7 JL	7/8 JL	7/9 MK	7/10 MK
Control	2	15	20		1S	N	N	N	N	N	N	N	N	N	N	N	N	N
Control	3	16			N	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓
SYC14-REF	1	17			1S	↓	1S	1 WORMS	↓	1S	↓	↓	↓	↓	↓	↓	↓	↓
Control	1	18	↓		N	1S	N	N	↓	N	↓	↓	↓	↓	↓	↓	↓	↓

ENVIRON

28-DAY BIOACCUMULATION TEST OBSERVATION DATA SHEET (DAYS 15-28)

CLIENT	PROJECT	NEWFIELDS JOB N0.	PROJECT MANAGER	NEWFIELDS LABORATORY	PROTOCOL	SPECIES
ANAMAR	Shipyard Creek		B. Hester		ITM (USEPA/USACE 1998), OTM (USEPA/USACE 1991), ASTM E 1611, SERIM 2008	*Nereis virens*

Observation Key

#S= Number on the Surface
#M= Number of Mortality
L=Anoxic Surface
F=Fungal Patches
D=No Air Flow (DO?)
U=Excess food
N=Normal
B=No Burrows

INITIAL # OF ORGANISMS: 20

ENDPOINT DATA & OBSERVATIONS

CLIENT / NEWFIELDS ID	REP	Jar #	INITIAL # IF DIFF	DATE / TECHN.	7/11 KMB	7/12 JL	7/13	7/14	7/15	7/16 MK	7/17	7/18 MK	7/19 K	7/20 JL	7/21 KMB	7/22	7/23 KMB	7/24 KMB	Number Remaining
				Day	15	16	17	18	19	20	21	22	23	24	25	26	27	28	
SYC14-TB	5	1	20		N	N	N	N	N	N	N	N	N	N	N	N	N	N	20
SYC14-TB	4	2																	20
SYC14-TB	3	3																	20
SYC14-TB	2	4																	20
SYC14-REF	5	5			D X IF														19
SYC14-AC	4	6			D N														20
SYC14-REF	4	7																	19
SYC14-AC	1	8				15													20
SYC14-TB	1	9				N													18
SYC14-REF	3	10																	20
SYC14-AC	3	11																	20
SYC14-REF	2	12																	20
SYC14-AC	2	13																	20
SYC14-AC	5	14																	20
Control	2	15																	20

①IE. KB. 7/11/14

ENVIRON

28-DAY BIOACCUMULATION TEST OBSERVATION DATA SHEET (DAYS 15-28)

CLIENT	PROJECT	NEWFIELDS JOB N0.	PROJECT MANAGER	NEWFIELDS LABORATORY	PROTOCOL	SPECIES	
ANAMAR	Shipyard Creek		B. Hester		ITM (USEPA/USACE 1998), OTM (USEPA/USACE 1991), ASTM E 1611, SERIM 2008	*Nereis virens*	

Observation Key

#S= Number on the Surface
#M= Number of Mortality
L=Anoxic Surface
F=Fungal Patches
D=No Air Flow (DO?)
U=Excess food
N=Normal
B=No Burrows

INITIAL # OF ORGANISMS: 20

ENDPOINT DATA & OBSERVATIONS

CLIENT / NEWFIELDS ID	REP	Jar #	INITIAL # IF DIFF	Day	15	16	17	18	19	20	21	22	23	24	25	26	27	28	Number Remaining
			DATE / TECHN.		KMB 7/11	JL 7/12	7/13	7/14	7/15	MK 7/16	7/17	MK 7/18	7/19	7/20 JL	7/21 KMB	7/22	7/23 KMB	7/24 KMB	
Control	3	16	20		N	N	N	N	N	N	N	N	N	N	N	N	N	N	20
SYC14-REF	1	17			↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	20
Control	1	18			↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	20

CLIENT	PROJECT	SPECIES	
ANAMAR	Shipyard Creek	*Nereis virens*	
		Date Recovered: 7/24/14	Date Preserved 7/25/14

Treatment	Rep	Jar #	Time	Time
SYC14-TB	5	1	0915	0951
SYC14-TB	4	2	0922	0956
SYC14-TB	3	3	0929	1000
SYC14-TB	2	4	0930	1004
SYC14-REF	5	5	0935	1015
SYC14-AC	4	6	0942	1022
SYC14-REF	4	7	0946	1032
SYC14-AC	1	8	1000	1037
SYC14-TB	1	9	1025	1039
SYC14-REF	3	10	1043	1043
SYC14-AC	3	11	1055	1049
SYC14-REF	2	12	1102	1054
SYC14-AC	2	13	1109	1103
SYC14-AC	5	14	1115	1106
Control	2	15	1120	1109
Control	3	16	1122	1111
SYC14-REF	1	17	1123	1114
Control	1	18	1125	1117

ENVIRON

ORGANISM RECEIPT LOG

Date: 6.25.14	Time: 1514	Batch No. ARO 3292 Nv
Organism / Project: N. virens Shipyard Geek	Source: Aquatic Reseach Org.	
Address: On File		Invoice Attached Yes (No)
Phone: On File	Contact: Stan Sinitski	
No. Ordered: 550	No. Received: 550 +	Source Batch: Field
Condition of Organisms: Good	Approximate Size or Age: Adult	
Shipper: Fed Ex	B of L (Tracking No.) 6069 8099 3292	
Condition of Container: Good	Received By: BH	

Container	D.O. (mg/L)	Temp. (°C)	Conductivity or Salinity (Include Units)	pH (Units)	Technician (Initials)
1	—	15.1	—	—	BH
2	—	12.6	—	—	
3	—	8.8	—	—	
4	—	7.6	—	—	
5	—	①~~6.4~~ 8.5	—	—	

Notes: Transported on moist seaweed

① wrong Cell 6.25.14 BH

Aquatic Research Organisms

DATA SHEET

CHAIN OF CUSTODY

I. Organism History

Species: Neries virens

Source: Lab reared_____ Hatchery reared_____ Field collected X

Collection date 06/23/14 Receipt date 06/24/14 NV

Lot number 06/24/14 NV Strain Wild

Brood Origination Damariscotta River, Boothbay Harbor, Maine

II. Water Quality

Temperature 10 °C Salinity 28-32 ppt DO Saturated

pH 7.8-8.2 Hardness N.A. ppm

III. Culture Conditions

System: Held at 4°C on moist seaweed

Diet: Flake Food_____ Phytoplankton_____ Trout Chow_____

Brine Shrimp_____ Rotifers_____ Other Not feed

Prophylactic Treatments:_____

Comments: Shipped on moistened seaweed, gel ice packs to keep cool

IV. Shipping Information

Client: ENVIRON PORT CAMPBELL # of Organisms: 550+

Carrier: FED EX Date Shipped: 6/24/14

Tracking # 6069-8099-3392 # of cartons (1)

RELEASED BY: [signature] DATE: 6/24/14 TIME: 16:30

RECEIVED BY:_____ DATE: TIME:

1 - 800 - 927 - 1650

PO Box 1271 • One Lafayette Road • Hampton, NH 03842 • (603) 926-1650

ENVIRON

MAINTENANCE LOG FOR CULTURES

ORGANISM: Norris
LOCATION: Bath 4

Batch Number: AR03392 NV | Date Received: 6/25/14

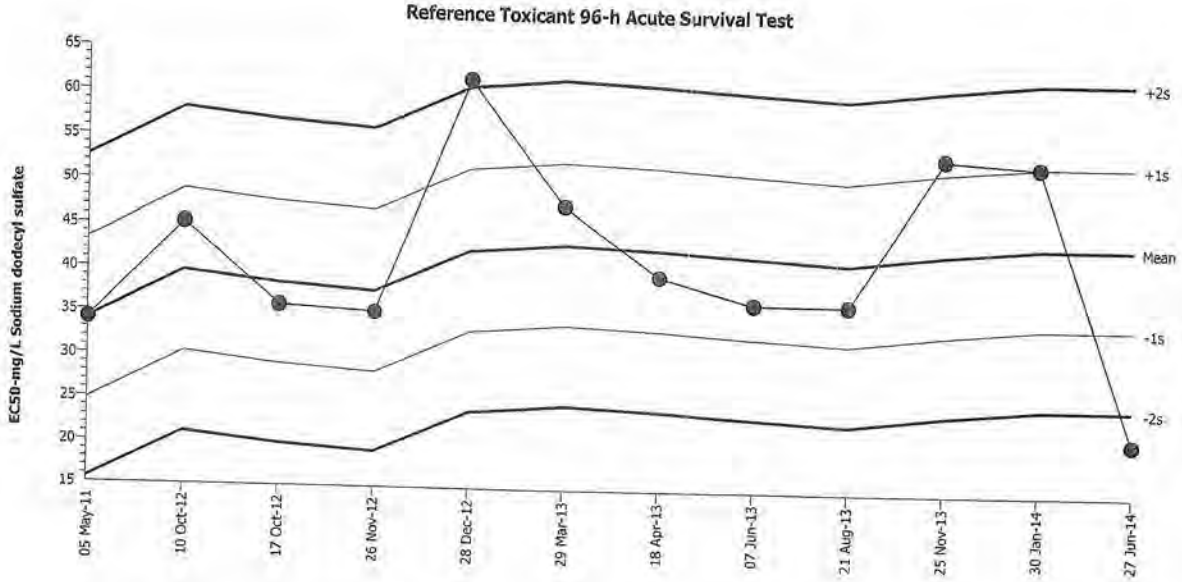
Date	Feed AM/PM		Tub No.	D.O.	Temp (°C)	Cond/ (Sal)	pH	H_2O Change	No. Dead	NH_3	Init.
6/26			1	6.2	15.8	30ppt	7.4	FT		—	MMB
			2	7.3	15.6	30ppt	7.6	↓		—	↓
			3	7.9	15.4	30ppt	7.7			—	
			4	7.4	15.6	30ppt	7.6			—	
6/27			1	6.1	17.0	30	7.4	FT		~	KMB
			2					↓		~	↓
			3	6.5	17.0	30	7.5			~	
			4							~	

CETIS QC Plot

Report Date: 20 Jul-14 22:57 (1 of 1)

Reference Toxicant 96-h Acute Survival Test — All Matching Labs

Test Type:	Survival	**Organism:**	Nereis virens (Polychaete Worm)	**Material:**	Sodium dodecyl sulfate
Protocol:	NYDEQ-1992 RGM	**Endpoint:**	Proportion Survived	**Source:**	Reference Toxicant-REF



Mean:	43.58	**Count:**	11	**-1s Warning Limit:**	34.33	**-2s Action Limit:**	25.09
Sigma:	9.247	**CV:**	21.20%	**+1s Warning Limit:**	52.83	**+2s Action Limit:**	62.07

Quality Control Data

Point	Year	Month	Day	Time	QC Data	Delta	Sigma	Warning	Action	Test ID	Analysis ID	Laboratory
1	2011	May	5	12:30	34.11	-9.472	-1.024	(-)		00-1354-0390	15-4349-4644	NewFields
2	2012	Oct	10	15:20	45.25	1.675	0.1811			01-3205-3729	07-8677-6323	NewFields
3			17	16:25	35.92	-7.656	-0.8279			14-2903-1515	14-7609-2413	NewFields
4		Nov	26	15:50	35.28	-8.298	-0.8973			11-3656-8531	09-6971-7363	NewFields
5		Dec	28	10:30	61.73	18.15	1.963	(+)		16-4578-7134	07-2107-7448	NewFields
6	2013	Mar	29	15:00	47.61	4.026	0.4354			15-1950-0718	20-5695-5120	NewFields
7		Apr	18	11:30	39.8	-3.783	-0.4092			16-4116-2350	13-6553-2304	NewFields
8		Jun	7	11:10	36.74	-6.838	-0.7394			08-3818-2756	18-6864-5656	NewFields
9		Aug	21	14:20	36.74	-6.838	-0.7394			14-5716-9063	21-2287-4976	NewFields
10		Nov	25	13:50	53.48	9.898	1.07	(+)		13-1316-4910	06-6008-7886	NewFields
11	2014	Jan	30	14:45	52.73	9.147	0.9892			17-9400-0946	04-9713-4364	NewFields
12		Jun	27	10:55	21.21	-22.37	-2.419	(-)	(-)	09-5596-3721	19-7845-4889	ENVIRON

CETIS Summary Report

Reference Toxicant 96-h Acute Survival Test — **ENVIRON**

Batch ID:	10-4575-0324	**Test Type:**	Survival	**Analyst:**	
Start Date:	27 Jun-14 10:55	**Protocol:**	NYDEQ-1992 RGM	**Diluent:**	Laboratory Seawater
Ending Date:	01 Jul-14 10:15	**Species:**	Nereis virens	**Brine:**	Not Applicable
Duration:	95h	**Source:**	Aquatic Research Organisms, NH	**Age:**	
Sample ID:	11-9743-4252	**Code:**	475F658C	**Client:**	Internal Lab
Sample Date:	17 Aug-12	**Material:**	Sodium dodecyl sulfate	**Project:**	Reference Toxicant
Receive Date:	17 Aug-12	**Source:**	Reference Toxicant		
Sample Age:	679d 11h	**Station:**	P120817.17		

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
08-2366-8114	Proportion Survived	15	30	21.21	NA		Fisher Exact/Bonferroni-Holm Test

Point Estimate Summary

Analysis ID	Endpoint	Level	mg/L	95% LCL	95% UCL	TU	Method
19-7845-4889	Proportion Survived	EC50	21.21	15.84	28.41		Trimmed Spearman-Kärber

Proportion Survived Summary

C-mg/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Dilution Water	5	1	1	1	1	1	0	0	0.0%	0.0%
15		5	0.8	0.2447	1	0	1	0.2	0.4472	55.9%	20.0%
30		5	0.2	0	0.7553	0	1	0.2	0.4472	223.6%	80.0%
45		5	0	0	0	0	0	0	0		100.0%
60		5	0	0	0	0	0	0	0		100.0%
75		5	0	0	0	0	0	0	0		100.0%

Proportion Survived Detail

C-mg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	1	1	1	1	1
15		1	0	1	1	1
30		0	0	1	0	0
45		0	0	0	0	0
60		0	0	0	0	0
75		0	0	0	0	0

Proportion Survived Binomials

C-mg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	1/1	1/1	1/1	1/1	1/1
15		1/1	0/1	1/1	1/1	1/1
30		0/1	0/1	1/1	0/1	0/1
45		0/1	0/1	0/1	0/1	0/1
60		0/1	0/1	0/1	0/1	0/1
75		0/1	0/1	0/1	0/1	0/1

CETIS Test Data Worksheet

Reference Toxicant 96-h Acute Survival Test — **ENVIRON**

Start Date:	27 Jun-14 10:55	**Species:**	Nereis virens
End Date:	01 Jul-14 10:15	**Protocol:**	NYDEQ-1992 RGM
Sample Date:	17 Aug-12	**Material:**	Sodium dodecyl sulfate
Sample Code:	475F658C		
Sample Source:	Reference Toxicant		
Sample Station:	P120817.17		

C-mg/L	Code	Rep	Pos	# Exposed	# Survived	Notes
0	D	1	1	1	1	
0	D	2	22	1	1	
0	D	3	17	1	1	
0	D	4	15	1	1	
0	D	5	24	1	1	
15		1	7	1	1	
15		2	20	1	0	
15		3	23	1	1	
15		4	27	1	1	
15		5	18	1	1	
30		1	2	1	0	
30		2	6	1	0	
30		3	28	1	1	
30		4	25	1	0	
30		5	29	1	0	
45		1	30	1	0	
45		2	12	1	0	
45		3	16	1	0	
45		4	9	1	0	
45		5	10	1	0	
60		1	4	1	0	
60		2	13	1	0	
60		3	19	1	0	
60		4	5	1	0	
60		5	3	1	0	
75		1	21	1	0	
75		2	26	1	0	
75		3	14	1	0	
75		4	11	1	0	
75		5	8	1	0	

Analyst: JL QA: BM

ENVIRON

96 Hour Nereis
Reference Toxicant Test - SDS

Test ID:	Replicates: 5	Study Director:	Location:
P120817.17		Brian Hesber	Bath 4
Dilution Water Batch:	**Organism Batch:**	**Associated Test(s):**	**Organism:**
	AR03292 NV		Nereis virens

Toxicant:	Lot #:	Date Prepared:	Initials:
SDS, 5 g SDS in 50 mL DI (100,000 mg/L Stock made fresh)	1AF1031	6/27/14	MK

Target Concentrations:	Quantity of Stock: Target: (per rep)	Quantity of Diluent: Target: (per rep)
15 mg/L	0.135 mL	900 mL
30 mg/L	0.270 mL	900 mL
45 mg/L	0.405 mL	900 mL
60 mg/L	0.540 mL	900 mL
75 mg/L	0.675 mL	900 mL

0 Hours	Date: 6/27/14	WQ Time: 1040	Start Time: 1055	Initials: MK

	Control	15	30	45	60	75
D.O. (mg/L)	8.0	8.2	8.2	8.4	8.4	8.4
Temperature (°C)	14.5	14.7	14.7	14.6	14.7	14.9
Salinity (ppt)	30	30	30	30	30	30
pH	7.9	8.0	8.0	8.0	8.0	8.0

24 Hours	Date: 6/28	WQ Time: 1055	Replicate: 2	Initials: JH

	Control	15	30	45	60	75
D.O. (mg/L) 6	8.2	6.9	7.8	8.1	5.0	7.1
Temperature (°C) 2	14.7	14.4	14.3	14.3	14.3	14.3
Salinity (ppt) 2	30	30	30	30	30	30
pH 6	7.6	7.5	7.7	7.7	7.2	7.5

24 Hours - Survival	Date: 6/28	Time: 1330	Initials: JH

No. Alive Rep	Control	15	30	45	60	75
1	1	1	1	0 (1)	1 Q	0 (1)
2	1	1	① ~~0 (1)~~ 1	1	0 (1)	0 (1)
3	1	1	1	0 (1)	0 (1)	0 (1)
4	1	1	1	1	1	0 (1)
5	1	1	1	1	1	0 (1)

① JH JH 6/28 - Q

ENVIRON

96 Hour Nereis
Reference Toxicant Test - SDS

48 Hours	Date: 6/29/14	WQ Time: 1355	Replicate: 3	Initials: JL

	Control	15	30	45	60	75
D.O. (mg/L)	8.3	8.1	7.9	7.6	6.3	
Temperature (°C)	14.6	14.6	14.6	14.7	14.6	
Salinity (ppt)	30	30	30	30	30	
pH	7.9	7.8	7.7	7.2	7.4	

Rep 4

48 Hours - Survival	Date: 6/29/14	Time: 1405	Initials: JL

No. Alive Rep:	Control	15	30	45	60	75
1	1	1	1	—	Ø (1)	
2	1	Ø (1)	1	Ø (1)	—	
3	1	1	1	—	—	
4	1	1	1	Ø (1)	Ø (1)	
5	1	1	1	Ø (1)	Ø (1)	

72Hours	Date: 6/30	WQ Time: 0940	Replicate: 4	Initials: JL

	Control	15	30	45	60	75
D.O. (mg/L)	8.6	7.9	6.3			
Temperature (°C)	14.3	14.2	14.3			
Salinity (ppt)	30	30	30			
pH	8.0	7.7	7.4			

72 Hours - Survival	Date: 6/30/14	Time: 0930	Initials: MMS

No. Alive Rep:	Control	15	30	45	60	75
1	1	1	1			
2	1	—	Ø (1)			
3	1	1	1			
4	1	1	Ø (1)			
5	1	1	~~Ø (1)~~ 1			

① IE, survival = 1 MMS 6/30/14

ENVIRON

96 Hour Nereis
Reference Toxicant Test - SDS

96Hours	Date: 7/01/14	WQ Time: 1000		Replicate: 5		Initials: KMB
	Control	15	30	45	60	75
D.O. (mg/L)	8.0	8.3	4.3			
Temperature (°C)	15.0	14.4	14.2			
Salinity (ppt)	30	30	30			
pH	7.7	7.8	7.2			

96 Hour Survival		End Time: 1015				Initials: MK
No. Alive Rep:	Control	15	30	45	60	75
1	1	1	Ø(1)			
2	1					
3	1	1	1			
4	1	1				
5	1	1	Ø(1)			

☒ Pass ☐ Fail

Notes:

APPENDIX A.8 *Macoma nasuta* Bioaccumulation Test

Shipyard Creek
Test Results for the 28-day Bioaccumulation Test with *M. nasuta.*

Treatment	Replicate	Number Initiated	Number Surviving	Number Missing or Dead	Percentage Survival	Mean Percentage Survival	SD
Control	1	30	30	0	100.0	100.0	0.0
	2	30	30	0	100.0		
	3	30	30	0	100.0		
SYC14-REF	1	30	28	2	93.3	92.7	4.9
	2	30	26	4	86.7		
	3	30	27	3	90.0		
	4	30	30	0	100.0		
	5	30	28	2	93.3		
SYC14-AC	1	30	26	4	86.7	90.7	9.2
	2	30	30	0	100.0		
	3	30	23	7	76.7		
	4	30	29	1	96.7		
	5	30	28	2	93.3		
SYC14-TB	1	30	24	6	80.0	93.3	9.4
	2	30	30	0	100.0		
	3	30	30	0	100.0		
	4	30	30	0	100.0		
	5	30	26	4	86.7		

ENVIRON

28 DAY BIOACCUMULATION WQ DATA SHEET

CLIENT	PROJECT	SPECIES 1	LABORATORY	PROTOCOL
ANAMAR	Shipyard Creek	*Macoma nasuta*	Port Gamble , .	ITM (USEPA/USACE 1998), OTM (USEPA/USACE 1991), ASTM E 1611, SERIM 2008 , SOP TOX041
JOB NUMBER	**PROJECT MANAGER**	**WATER DESCRIPTION**	**TEST START DATE**	**TEST END DATE**
	B. Hester	North Hood Canal; filtered	26-Jun-2014	24-Jul-2014

WATER QUALITY DATA

TEST CONDITIONS				DO (mg/L) >5.0		TEMP (C) (12-16) ± 1		SALIN.(ppt) (25-35)± 2		pH 7.8 ± 0.5			
CLIENT ID	DAY	REP	JAR #	D.O. meter	D.O. mg/L	TEMP meter	TEMP °C	SALINITY meter	SALINITY ppt	pH meter	pH unit	TECHNICIAN / DATE	FLOW Flow Through, 47±9 ml/ 30 sec (38-56)
Control /	0	1	18	6	9.9	6	14.0	2	30	6	7.9	6/26/14 KMB	52
		2	15	↓	9.8	↓	14.0	↓	30	↓	7.9	↓	44
		3	16		10.0		14.0		30		7.9		46
Control /	1	1	18	6	7.3	2	14.2	2	30	6	7.7	6/27/14 MK	50
Control /	2	2	15	6	7.8	2	15.4	2	29	6	7.8	6/28 ~~MK~~	51
Control /	3	3	16	6	8.2	6	14.6	2	29	6	7.9	6/29 JL	41
Control /	4	1	18	6	8.3	6	14.3	2	30	6	7.9	6/30 JL	52
Control /	5	2	15	6	7.8	6	15.7	2	30	6	7.9	~~7~~/1 KB	47
Control /	6	3	16	6	8.5	2	14.7	2	30	6	7.7	7/2 MK	40
Control /	7	1	18	6	8.0	6	14.3	2	30	6	7.7	7/3 KB	44
Control /	8	2	15	8	8.2	8	14.6	8	30	8	8.0	7/4 ~~MK~~	39
Control /	9	3	16	8	8.2	8	15.2	8	29	8	7.9	7/05 JL	51
Control /	10	1	18	8	8.1	8	16.3	8	29	8	8.0	7/06 JL	45
Control /	11	2	15	8	② ~~7.6~~ 7.9	8	① ~~14.8~~	8	29	8	7.9	7/7 MK	48
Control /	12	3	16	8	7.7	8	15.8	8	29	8	7.9	7/8 MK	40
Control /	13	1	18	8	7.8	8	15.2	8	③ ~~29~~ 30	8	7.8	7/9 MK	51
Control /	14	2	15	8	7.9	8	16.6	8	30	8	7.8	7/10 KB	44

① WP. Actual reading = 16.2 MK 7/7. ② WP. MK 7/7 ③ MK. 7/9 MK

ENVIRON

28 DAY BIOACCUMULATION WQ DATA SHEET

CLIENT	PROJECT	SPECIES 1	LABORATORY	PROTOCOL
ANAMAR	Shipyard Creek	*Macoma nasuta*	Port Gamble , .	ITM (USEPA/USACE 1998), OTM (USEPA/USACE 1991), ASTM E 1611, SERIM 2008 , SOP TOX041
JOB NUMBER	**PROJECT MANAGER**	**WATER DESCRIPTION**	**TEST START DATE**	**TEST END DATE**
	B. Hester	North Hood Canal; filtered	26-Jun-2014	24-Jul-2014

WATER QUALITY DATA

TEST CONDITIONS				DO (mg/L) >5.0		TEMP (C) (12-16) ± 1		SALIN.(ppt) (25-35)± 2		pH 7.8 ± 0.5			
CLIENT ID	DAY	REP	JAR #	D.O. meter	D.O. mg/L	TEMP meter	TEMP °C	SALINITY meter	SALINITY ppt	pH meter	pH unit	TECHNICIAN / DATE	FLOW Flow Through, 47±9 ml/ 30 sec (38-56)
Control /	15	1	18	8	7.9	8	17.0	8	30	8	8.3	KMB 7/11/14	56
Control /	16	2	15	8	8.1	8	16.2	8	30	8	8.1	JL 7/12/14	49
Control /	17	3	16	8	7.7	8	16.2	8	30	8	7.8	[illegible] 7/13/14	39
Control /	18	1	18	8	8.4	8	15.4	8	30	8	8.0	KB 7/14/14	56
Control /	19	2	15	8	7.8	8	15.3	8	30	8	8.0	KB 7/15	38
Control /	20	3	16	8	8.0	8	15.2	8	30	8	7.8	KB 7/16	44
Control /	21	1	18	8	7.9	8	15.0	8	29	8	7.9	MK 7/17	54
Control /	22	2	15	8	8.2	8	15.4	8	30	8	8.0	MK 7/18	38
Control /	23	3	16	8	8.4	8	16.0	8	30	8	8.0	JL 7/19	40
Control /	24	1	18	8	8.9	8	16.6	8	29	8	8.0	JL 7/20	49
Control /	25	2	15	8	8.1	8	15.7	8	29	8	7.9	KB 7/21	50
Control /	26	3	16	8	8.5	8	15.9 15.4 ①	8	29	8	8.0 8.1 ①	[illegible] 7/22	45
Control /	27	1	18	8	7.9	8	15.6	8	② 29 30	8	② 7.9 8.0	MK 7/23	45
Control /	28	1	18	8	8.3	8	15.1	8	29	8	8.2	KB 7/24	56
		2	15	↓	8.4	↓	15.0	↓	30	↓	8.2	↓	50
		3	16	↓	8.4	↓	14.9	↓	30	↓	8.2	↓	42

① WP [illegible] 7/22 ② IE. MK 7/23

ENVIRON

28 DAY BIOACCUMULATION WQ DATA SHEET

CLIENT	PROJECT	SPECIES 1	LABORATORY	PROTOCOL
ANAMAR	Shipyard Creek	*Macoma nasuta*	Port Gamble , .	ITM (USEPA/USACE 1998), OTM (USEPA/USACE 1991), ASTM E 1611, SERIM 2008 , SOP TOX041
JOB NUMBER	**PROJECT MANAGER**	**WATER DESCRIPTION**	**TEST START DATE**	**TEST END DATE**
	B. Hester	North Hood Canal; filtered	26-Jun-2014	24-Jul-2014

WATER QUALITY DATA

TEST CONDITIONS				DO (mg/L) >5.0		TEMP (C) (12-16) ± 1		SALIN.(ppt) (25-35)± 2		pH 7.8 ± 0.5			
CLIENT ID	DAY	REP	JAR #	D.O. meter	D.O. mg/L	TEMP meter	TEMP °C	SALINITY meter	SALINITY ppt	pH meter	pH unit	TECHNICIAN / DATE	FLOW Flow Through, 47±9 ml/ 30 sec (38-56)
SYC14-REF /	0	1	17	6	10.2	6	14.0	2	30	6	8.0	6/26/14 KMB	45
		2	12	↓	9.8	↓	14.0	↓	30	↓	7.9	↓	45
		3	10	↓	9.8	↓	13.8	↓	30	↓	7.9	↓	41
		4	7	↓	9.9	↓	13.8	↓	30	↓	7.9	↓	43
		5	5	↓	10.1	↓	13.8	↓	30	↓	7.9	↓	50
SYC14-REF /	1	1	17	6	7.6	2	14.2	2	30	6	7.8	6/27/14 MK	46
SYC14-REF /	2	2	12	6	8.0	2	14.9	2	30	6	7.9	6/28 ~~MK~~	39
SYC14-REF /	3	3	10	6	8.1	6	14.8	2	30	6	7.9	6/29 JL	42
SYC14-REF /	4	4	7	6	8.0	6	14.3	2	30	6	7.9	6/30 JL	41
SYC14-REF /	5	5	5	6	8.0	6	14.0	2	30	6	7.8	7/1 KB	45
SYC14-REF /	6	1	17	6	8.6	2	14.1	2	30	6	7.7	7/2 MK	50
SYC14-REF /	7	2	12	6	7.5	6	14.9	2	30	6	7.7	7/3 KB	39
SYC14-REF /	8	3	10	8	8.1	8	14.5	8	30	8	7.9	7/4 ~~MK~~	45
SYC14-REF /	9	4	7	8	7.9	8	15.1	8	29	8	7.9	7/05 JL	49
SYC14-REF /	10	5	5	8	8.2	8	16.3	8	30	8	8.0	7/06 JL	48
SYC14-REF /	11	1	17	8	① ~~7.6~~ 7.4	8	16.8	8	29	8	7.9	7/7 MK	54
SYC14-REF /	12	2	12	8	7.3	8	16.1	8	30	8	7.8	7/8 MK	38
SYC14-REF /	13	3	10	8	7.4	8	15.4	8	30	8	7.8	7/9 MK	40
SYC14-REF /	14	4	7	8	7.9	8	16.4	8	30	8	7.9	7/10 KMB	49

① WP. MK 7/7

ENVIRON

28 DAY BIOACCUMULATION WQ DATA SHEET

CLIENT	PROJECT	SPECIES 1	LABORATORY	PROTOCOL
ANAMAR	Shipyard Creek	*Macoma nasuta*	Port Gamble , .	ITM (USEPA/USACE 1998), OTM (USEPA/USACE 1991), ASTM E 1611, SERIM 2008 , SOP TOX041
JOB NUMBER	**PROJECT MANAGER**	**WATER DESCRIPTION**	**TEST START DATE**	**TEST END DATE**
	B. Hester	North Hood Canal; filtered	26-Jun-2014	24-Jul-2014

WATER QUALITY DATA

TEST CONDITIONS				DO (mg/L) >5.0		TEMP (C) (12-16) ± 1		SALIN.(ppt) (25-35)± 2		pH 7.8 ± 0.5			
CLIENT ID	DAY	REP	JAR #	D.O.		TEMP		SALINITY		pH		TECHNICIAN / DATE	FLOW
				meter	mg/L	meter	°C	meter	ppt	meter	unit		Flow Through, 47±9 ml/ 30 sec (38-56)
SYC14-REF /	15	5	5	8	8.1	8	16.7	8	30	8	8.0	KMB 7/11/14	48
SYC14-REF /	16	1	17	8	8.3	8	16.0	8	30	8	8.1	JL 7/12/14	39
SYC14-REF /	17	2	12	8	7.4	8	16.5	8	30	8	8.0	[illegible] 7/13/14	38
SYC14-REF /	18	3	10	8	8.1	8	15.3	8	30	8	8.0	KB 7/14/14	41
SYC14-REF /	19	4	7	8	8.2	8	15.2	8	30	8	8.1	KB 7/15	44
SYC14-REF /	20	5	5	8	8.8	8	15.1	8	30	8	8.0	KB 7/16	46
SYC14-REF /	21	1	17	8	8.3	8	15.1	8	30	8	8.0	MK 7/17	40
SYC14-REF /	22	2	12	8	7.5	8	15.7	8	30	8	7.9	MK 7/18	38
SYC14-REF /	23	3	10	8	8.2	8	15.9	8	30	8	8.0	[illegible] 7/19	40
SYC14-REF /	24	4	7	8	8.2	8	15.8	8	29	8	8.0	JL 7/20	45
SYC14-REF /	25	5	5	8	8.9	8	15.7	8	29	8	8.1	KB 7/21	45
SYC14-REF /	26	1	17	8	8.5	8	15.9	8	29	8	8.1	[illegible] 7/22	40
SYC14-REF /	27	2	12	8	7.8	8	15.6	8	29	8	7.9	MK 7/23	47
SYC14-REF /	28	1	17	8	8.7	8	14.8	8	30	8	8.2	KB 7/24	44
		2	12	↓	8.5	↓	14.9	↓	30	↓	8.2	↓	48
		3	10	↓	8.6	↓	14.8	↓	30	↓	8.2	↓	52
		4	7	↓	8.7	↓	14.6	↓	30	↓	8.2	↓	38
		5	5	↓	8.8	↓	14.7	↓	30	↓	8.2	↓	45

ENVIRON

28 DAY BIOACCUMULATION WQ DATA SHEET

CLIENT	PROJECT	SPECIES 1	LABORATORY	PROTOCOL
ANAMAR	Shipyard Creek	*Macoma nasuta*	Port Gamble , .	ITM (USEPA/USACE 1998), OTM (USEPA/USACE 1991), ASTM E 1611, SERIM 2008 , SOP TOX041
JOB NUMBER	**PROJECT MANAGER**	**WATER DESCRIPTION**	**TEST START DATE**	**TEST END DATE**
	B. Hester	North Hood Canal; filtered	26-Jun-2014	24-Jul-2014

WATER QUALITY DATA

TEST CONDITIONS				DO (mg/L) >5.0		TEMP (C) (12-16) ± 1		SALIN.(ppt) (25-35)± 2		pH 7.8 ± 0.5			
CLIENT ID	DAY	REP	JAR #	D.O. meter	D.O. mg/L	TEMP meter	TEMP °C	SALINITY meter	SALINITY ppt	pH meter	pH unit	TECHNICIAN / DATE	FLOW Flow Through, 47±9 ml/ 30 sec (38-56)
SYC14-AC /	0	1	8	6	9.8	6	13.8	2	30	6	7.9	6/24/14 KMB	54
		2	13	↓	9.7	↓	14.0	↓	30	↓	7.9	↓	40
		3	11	↓	10.0	↓	13.8	↓	30	↓	7.9	↓	46
		4	6	↓	9.5	↓	13.8	↓	30	↓	7.9	↓	54
		5	14	↓	9.6	↓	14.0	↓	30	↓	7.9	↓	52
SYC14-AC /	1	1	8	6	8.1	2	14.3	2	30	6	7.8	① ~~6/25/14~~ 6/27/14 MK	52
SYC14-AC /	2	2	13	6	8.1	2	14.8	2	30	6	7.8	HK 6/28	38
SYC14-AC /	3	3	11	6	8.0	6	14.9	2	30	6	7.9	JL 6/29	43
SYC14-AC /	4	4	6	6	8.1	6	14.4	2	30	6	7.9	JL 6/30	40
SYC14-AC /	5	5	14	6	7.6	6	15.5	2	30	6	7.8	KB 7/1	42
SYC14-AC /	6	1	8	6	8.5	2	15.0	2	30	6	7.7	MK 7/2	40
SYC14-AC /	7	2	13	6	7.8	6	14.6	2	30	6	7.7	KB 7/3	38
SYC14-AC /	8	3	11	8	8.3	8	14.5	8	30	8	7.9	~~HK~~ 7/4	39
SYC14-AC /	9	4	6	8	7.9	8	15.2	8	① ~~30~~ 30	8	~~7.9~~ ① 7.9	② ~~HK~~ 7/5 JL	42
SYC14-AC /	10	5	14	8	8.0	8	16.7	8	29	8	7.9	JL 7/6	49
SYC14-AC /	11	1	8	8	③ ~~7.9~~ 7.8	8	③ ~~16.6~~ 16.3	8	③ ~~30~~ 29	8	7.9	MK 7/7	50
SYC14-AC /	12	2	13	8	7.7	8	16.0	8	29	8	7.9	MK 7/8	38
SYC14-AC /	13	3	11	8	7.8	8	15.6	8	30	8	7.8	MK 7/9	45
SYC14-AC /	14	4	6	8	7.8	8	16.6	8	30	8	7.9	KB 7/10	51

① Wrong date. MK 6/27 ② WP HK 7/4 ③ WP. MK 7/7.

ENVIRON

28 DAY BIOACCUMULATION WQ DATA SHEET

CLIENT	PROJECT	SPECIES 1	LABORATORY	PROTOCOL
ANAMAR	Shipyard Creek	*Macoma nasuta*	Port Gamble , .	ITM (USEPA/USACE 1998), OTM (USEPA/USACE 1991), ASTM E 1611, SERIM 2008 , SOP TOX041
JOB NUMBER	**PROJECT MANAGER**	**WATER DESCRIPTION**	**TEST START DATE**	**TEST END DATE**
	B. Hester	North Hood Canal; filtered	26-Jun-2014	24-Jul-2014

WATER QUALITY DATA

TEST CONDITIONS				DO (mg/L) >5.0		TEMP (C) (12-16) ± 1		SALIN.(ppt) (25-35)± 2		pH 7.8 ± 0.5			
CLIENT ID	DAY	REP	JAR #	D.O.		TEMP		SALINITY		pH		TECHNICIAN / DATE	FLOW
				meter	mg/L	meter	°C	meter	ppt	meter	unit		Flow Through, 47±9 ml/ 30 sec (38-56)
SYC14-AC /	15	5	14	8	7.8	8	16.8	8	30	8	8.0	7/11/14 KMB	45
SYC14-AC /	16	1	8	8	8.0	8	16.3	8	30	8	8.0	7/12/14 JL	51
SYC14-AC /	17	2	13	8	8.0	8	16.3	8	30	8	7.9	7/13/14	42
SYC14-AC /	18	3	11	8	8.1	8	15.4	8	30	8	8.0	KB 7/14/14	46
SYC14-AC /	19	4	6	8	8.2	8	15.2	8	30	8	8.1	KB 7/15	47
SYC14-AC /	20	5	14	8	7.5	8	15.8	8	29	8	7.7	KB 7/16	56
SYC14-AC /	21	1	8	8	7.8	8	15.2	8	29	8	7.9	MK 7/17	45
SYC14-AC /	22	2	13	8	7.5	8	15.7	8	30	8	7.9	MK 7/18	56
SYC14-AC /	23	3	11	8	7.8	8	16.0	8	30	8	7.8	7/19	54
SYC14-AC /	24	4	6	8	8.1	8	15.8	8	29	8	8.0	JL 7/20	49
SYC14-AC /	25	5	14	8	8.5	8	15.5	8	29	8	8.0	KB 7/21	54
SYC14-AC /	26	1	8	8	8.5	8	15.6	8	29	8	8.0	7/22	53
SYC14-AC /	27	2	13	8	7.9	8	15.7	8	29	8	7.9	MK 7/23	45
SYC14-AC /	28	1	8	8	8.4	8	14.9	8	30	8	8.2	KB 7/24	44
		2	13	↓	8.4	↓	15.1	↓	30	↓	8.1	↓	50
		3	11	↓	8.5	↓	14.8	↓	30	↓	8.2	↓	51
		4	6	↓	8.7	↓	14.8	↓	30	↓	8.2	↓	47
		5	14	↓	8.1	↓	15.1	↓	30	↓	8.1	↓	51

ENVIRON

28 DAY BIOACCUMULATION WQ DATA SHEET

CLIENT	PROJECT	SPECIES 1	LABORATORY	PROTOCOL
ANAMAR	Shipyard Creek	*Macoma nasuta*	Port Gamble , .	ITM (USEPA/USACE 1998), OTM (USEPA/USACE 1991), ASTM E 1611, SERIM 2008 , SOP TOX041
JOB NUMBER	**PROJECT MANAGER**	**WATER DESCRIPTION**	**TEST START DATE**	**TEST END DATE**
	B. Hester	North Hood Canal; filtered	26-Jun-2014	24-Jul-2014

WATER QUALITY DATA

TEST CONDITIONS				DO (mg/L) >5.0		TEMP (C) (12-16) ± 1		SALIN.(ppt) (25-35)± 2		pH 7.8 ± 0.5			
CLIENT ID	DAY	REP	JAR #	D.O.		TEMP		SALINITY		pH		TECHNICIAN / DATE	FLOW
				meter	mg/L	meter	°C	meter	ppt	meter	unit		Flow Through, 47±9 ml/ 30 sec (38-56)
SYC14-TB /	0	1	9	6	9.8	6	~~30~~ 13.8	2	30	6	7.9	6/26/14 KMB	46
		2	4	↓	9.8	↓	~~30~~ 13.8	↓	30	↓	7.9	↓	50
		3	3	↓	9.5	↓	~~20~~ 14.0	↓	30	↓	7.9	↓	54
		4	2	↓	9.2	↓	~~20~~ 14.0	↓	30	↓	7.8	↓	54
		5	1	↓	9.0	↓	~~20~~ 14.8	↓	30	↓	7.8	↓	47
SYC14-TB /	1	1	9	6	8.0	2	14.4	2	30	6	7.7	6/27/14 MK	40
SYC14-TB /	2	2	4	6	8.1	2	14.6	2	30	6	7.8	6/28 ~~MK~~	38
SYC14-TB /	3	3	3	6	8.2	6	14.4	2	30	6	7.9	6/29 JL	45
SYC14-TB /	4	4	2	6	8.1	6	14.3	2	30	6	7.9	6/30 JL	42
SYC14-TB /	5	5	1	6	7.4	6	14.1	2	30	6	7.7	7/1 KMB	54
SYC14-TB /	6	1	9	6	8.5	2	14.6	2	30	6	7.7	7/2 MK	38
SYC14-TB /	7	2	4	6	7.6	6	15.4	2	30	6	7.7	7/3 ~~KMB~~	40
SYC14-TB /	8	3	3	8	8.1	8	14.4	8	30	8	7.9	7/4 ~~MK~~	38
SYC14-TB /	9	4	2	8	8.0	8	14.9	8	30	8	7.9	7/05 JL	48
SYC14-TB /	10	5	1	8	7.9	8	16.6	8	29	8	7.8	7/06 JL	50
SYC14-TB /	11	1	9	8	① ~~7.8~~ 7.7	8	① ~~16.2~~ 16.1	8	29	8	7.9	7/7 MK	48
SYC14-TB /	12	2	4	8	7.9	8	15.5	8	② ~~29~~ 30	8	7.9	7/8 MK	44
SYC14-TB /	13	3	3	8	7.6	8	15.1	8	30	8	7.8	7/9 MK	45
SYC14-TB /	14	4	2	8	7.5	8	16.4	8	30	8	7.8	7/10 KMB	52

① WP. MK 7/7 ② IE. MK 7/8

ENVIRON

28 DAY BIOACCUMULATION WQ DATA SHEET

CLIENT	PROJECT	SPECIES 1	LABORATORY	PROTOCOL
ANAMAR	Shipyard Creek	*Macoma nasuta*	Port Gamble , .	ITM (USEPA/USACE 1998), OTM (USEPA/USACE 1991), ASTM E 1611, SERIM 2008 , SOP TOX041
JOB NUMBER	**PROJECT MANAGER**	**WATER DESCRIPTION**	**TEST START DATE**	**TEST END DATE**
	B. Hester	North Hood Canal; filtered	26-Jun-2014	24-Jul-2014

WATER QUALITY DATA

TEST CONDITIONS				DO (mg/L) >5.0		TEMP (C) (12-16) ± 1		SALIN.(ppt) (25-35)± 2		pH 7.8 ± 0.5			
CLIENT ID	DAY	REP	JAR #	D.O.		TEMP		SALINITY		pH		TECHNICIAN / DATE	FLOW
				meter	mg/L	meter	°C	meter	ppt	meter	unit		Flow Through, 47±9 ml/ 30 sec (38-56)
SYC14-TB /	15	5	1	8	7.7	8	16.9	8	30	8	8.0	KMB 7/11/14	50
SYC14-TB /	16	1	9	8	7.9	8	16.0	8	30	8	8.0	JL 7/12/14	39
SYC14-TB /	17	2	4	8	7.7	8	16.1	8	30	8	8.0	[illegible] 7/13/14	42
SYC14-TB /	18	3	3	8	7.9	8	16.0	8	30	8	8.0	KB 7/14/14	56
SYC14-TB /	19	4	2	8	8.0	8	15.1	8	30	8	8.0	KB 7/15	39
SYC14-TB /	20	5	1	8	8.1	8	15.2	8	30	8	7.9	KB 7/16	40
SYC14-TB /	21	1	9	8	8.1	8	15.0	8	30	8	8.0	MK 7/17	55
SYC14-TB /	22	2	4	8	7.9	8	15.3	8	29	8	① 8.0	MK 7/18	48
SYC14-TB /	23	3	3	8	8.3	8	15.9	8	29	8	8.0	[illegible] 7/19	47
SYC14-TB /	24	4	2	8	8.1	8	15.9	8	29	8	8.0	JL 7/20	42
SYC14-TB /	25	5	1	8	6.7	8	16.4	8	30	8	7.7	KB 7/21	45
SYC14-TB /	26	1	9	8	8.3	8	16.0	8	29	8	8.0	[illegible] 7/22	56
SYC14-TB /	27	2	4	8	7.9	8	15.5	8	29	8	8.0	MK 7/23	48
SYC14-TB /	28	1	9	8	8.5	8	14.9	8	30	8	8.2	KB 7/24	52
		2	4	↓	8.9	↓	14.7	↓	30	↓	8.2	↓	52
		3	3		8.6		14.7		30		8.2		50
		4	2		8.5		14.7		30		8.2		54
		5	1		7.7		15.3		30		8.0		48

① WC. MK 7/18

CLIENT	PROJECT	SPECIES 1	NEWFIELDS LABORATORY	PROTOCOL
ANAMAR	Shipyard Creek	*Macoma nesuta*	Port Gamble ,	ITM (USEPA/USACE 1998), OTM (USEPA/USACE 1991), ASTM E 1611, SERIM 2008 , SOP TOX041
NEWFIELDS JOB NUMBER	**PROJECT MANAGER**	**WATER DESCRIPTION**	**TEST START DATE**	**TEST END DATE**
	B. Hester	North Hood Canal; filtered	26-Jun-2014	24-Jul-2014

WATER QUALITY DATA

TEST CONDITIONS				DO (mg/L) >5.0		TEMP (C) (12-16) ± 1		SALIN.(ppt) (25-35)± 2		pH 7.8 ± 0.5			
CLIENT/NEWFIELDS ID	DAY	REP	JAR #	D.O.		TEMP		SALINITY		pH		TECHNICIAN / DATE	FLOW
				meter	mg/L	meter	°C	meter	ppt	meter	unit		Flow Through, 47±5 ml/ 30 sec (38-56)
Control /	29	1		8	8.5	8	15.0	8	30	8	8.0	JL 7/25/14	>38
		2			8.5		14.7		30		8.0		
		3			8.5		14.8		30		8.0		
		4											
		5											
SYC14-REF /	29	1			8.5		14.9		30		8.0		
		2			8.5		14.8		30		8.0		
		3			8.5		14.8		30		8.0		
		4			8.5		14.8		30		8.0		
		5			8.5		14.9		30		8.0		
SYC14-AC /	29	1			8.5		14.7		30		8.0		
		2			8.4		15.0		30		8.0		
		3			8.5		14.7		30		8.0		
		4			8.5		14.7		30		8.0		
		5			8.5		14.7		30		8.0		
SYC14-TB /	29	1			8.5		14.6		30		8.0		
		2			8.5		14.8		30		8.0		
		3			8.4		15.0		30		8.0		
		4			8.4		15.0		30		8.0		
		5		↓	8.5	↓	14.8	↓	30	↓	8.0	↓	↓

ENVIRON

28-DAY BIOACCUMULATION TEST OBSERVATION DATA SHEET (DAYS 0 -14)

CLIENT	PROJECT	JOB NO.	PROJECT MANAGER	LABORATORY	PROTOCOL	SPECIES
ANAMAR	Shipyard Creek		B. Hester		ITM (USEPA/USACE 1998), OTM (USEPA/USACE 1991), ASTM E 1611, SERIM 2008	*Macoma nasuta*

Observation Key

#S= Number on the Surface
#M= Number of Mortality
L=Anoxic Surface
F=Fungal Patches
D=No Air Flow (DO?)
U=Excess food
N=Normal
B=No Burrows

INITIAL # OF ORGANISMS: 30

ENDPOINT DATA & OBSERVATIONS

CLIENT ID	REP	Jar #	INITIAL # IF DIFF	Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14
				DATE / TECHN.	6/27/14 KMB	6/28	6/29 JL	6/30 KMB	7/1 KMB	7/2 MK	7/3	7/4	7/05 JL	7/06 JL	7/7	7/8	7/9 MK	7/10 MK
rC14-TB	5	1	30		8S	5S	2S	1S	1S	1S	N	N	N	N	N	N	N	N
SYC14-TB	4	2			14S	10S	2S	2S	2S	2S	1S	1S	↓	1S	1S	1S	↓	1S
SYC14-TB	3	3			14S	12S	8S	6S	4S	4S	4S	3S	4S	4S	4S	3S	3S	3S
SYC14-TB	2	4			7S	6S	4S	3S	4S	3S	1S	N	N	↓	↓	↓	N	N
SYC14-REF	5	5			1S	N	N	N	N	N	N	1S	1M	↓	↓	↓	1S	↓
SYC14-AC	4	6			14S	13S	8S	8S	7S	6S	4S	4S	3S	3S	3S	3S	3S	3S
SYC14-REF	4	7			N	N	N	N	N	1S	1S	N	N	N	N	N	1S	1S
SYC14-AC	1	8			18S	21S	19S	13S	11S	9S	9S	8S,1M	7S	6S	6S	4S,1M	4S	3S
SYC14-TB	1	9			18S	11S,1M	9S	5S	3S	2S,1M	1S	1S	1S	1S	1S	1S	1S	2S
SYC14-REF	3	10			4S	2S	2S	2S	3S	3S	2S	1S	1S	1S	3S	2S	2S	2S
SYC14-AC	3	11			18S	17S	16S,1M	15S	13S	9S,2M	10S	5S,1M	4S	4S	4S	3S	3S	3S
SYC14-REF	2	12			5S	4S	2S	4S	2S,1M	2S,1M	2S	3S	5S	3S	2S	5S	6S	5S
SYC14-AC	2	13			15S	9S	8S	7S	6S	5S	1S	1S	1S	N	N	N	N	N
SYC14-AC	5	14			15S	12S	9S	5S	5S	4S	3S	3S	2S	1S	1S	1S	1S	1S
Control	2	15	↓		N	N	N	N	N	N	N	N	N	N	N	N	1S	1S

ENVIRON

28-DAY BIOACCUMULATION TEST OBSERVATION DATA SHEET (DAYS 0 -14)

CLIENT	PROJECT	JOB NO.	PROJECT MANAGER	LABORATORY	PROTOCOL	SPECIES
ANAMAR	Shipyard Creek		B. Hester		ITM (USEPA/USACE 1998), OTM (USEPA/USACE 1991), ASTM E 1611, SERIM 2008	*Macoma nasuta*

Observation Key

#S= Number on the Surface
#M= Number of Mortality
L=Anoxic Surface
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B=No Burrows

INITIAL # OF ORGANISMS: 30

ENDPOINT DATA & OBSERVATIONS

CLIENT ID	REP	Jar #	INITIAL # IF DIFF	Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14
				DATE / TECHN.	6/27/14 KMB	6/28 AK	6/29 JL	6/30 KMB	7/1 KMB	7/2 MK	7/3 AK	7/4 AK	7/05 JL	7/06 JL	7/7 AK	7/8 AK	7/9 MK	7/10 MK
Control	3	16	30		N	N	N	N	N	1S	1S	1S	1S	1S	1S	N	1S	N
SYC14-REF	1	17			1S	1S	1S	1S	1S	2S	1S	1M	2S	2S	2S	2S	1S	1S
Control	1	18	↓		1S	①AK 1S	N	N	N	N	N	N	N	N	N	N	N	N

① D.O. AK 6/28

ENVIRON

28-DAY BIOACCUMULATION TEST OBSERVATION DATA SHEET (DAYS 15-28)

CLIENT	PROJECT	JOB NO.	PROJECT MANAGER	LABORATORY	PROTOCOL	SPECIES
ANAMAR	Shipyard Creek		B. Hester		ITM (USEPA/USACE 1998), OTM (USEPA/USACE 1991), ASTM E 1611, SERIM 2008	*Macoma nasuta*

Observation Key

#S= Number on the Surface
#M= Number of Mortality
L=Anoxic Surface
F=Fungal Patches
D=No Air Flow (DO
U=Excess food
N=Normal
B=No Burrows

INITIAL # OF ORGANISMS: 30

ENDPOINT DATA & OBSERVATIONS

CLIENT ID	REP	Jar #	INITIAL # IF DIFF	Day	15	16	17	18	19	20	21	22	23	24	25	26	27	28	Number Remaining	
DATE / TECHN.					7/11 KMB	7/12 JL	7/13	7/14	7/15	7/16	7/17	7/18 MK	7/19 JL	7/20 JL	7/21 KB	7/22	7/23 KMB	7/24 KMB		
14-TB	5	1	30		N	N	N	N	N	N	N	N	N	1M	N	N	N	N	26	3M
SYC14-TB	4	2			↓	1S	↓	↓	N	1S	1S	1S, 1M	1S	1S	1S	1S		1S	30	
SYC14-TB	3	3			3S	3S	3S	3S	3S	2S	1S	1S	1S	1S	1S	N		N	30	
SYC14-TB	2	4			N	1S	1S	1S	1S	1S	1S	1S	1S	N	N	N	↓	↓	30	
SYC14-REF	5	5			↓	1S	1S	1S	2S	3S	3S	3S	2S	1S, 1M	2S	2S	2S	3S	28	
SYC14-AC	4	6			1S	1S	1S	1S	1S	1S	1S	1S	1S	1S	1S	N	N	1S, 1M	29	
SYC14-REF	4	7			1S	N	2S	3S	3S	1S	2S	4S	2S	2S	2S	1S	1S	N	30	
SYC14-AC	1	8			1S, 1M	1S	1S	1S	1S	1S	1M	N	1M	N	N	N	N	↓	26	
SYC14-TB	1	9			1S	N	N	N	N	N	1S	2M	N	↓	↓	N	1S	1S, F	24	3M
14-REF	3	10			1S	2S	N	N	N	3S	2S	2S	3S	4S	2S	3S	3S	3S	27①	2M
SYC14-AC	3	11			3S	3S	2S	2S	2S	3S	3S	3S	3S	3S	3S	2S	1S, 1M	1S	23①	2M
SYC14-REF	2	12			5S	8S	6S	6S	2S	5S	7S	9S, 1M	5S	4S	4S	3S	4S	3S	26①	1M
SYC14-AC	2	13			N	N	N	N	N	N	N	N	N	N	N	N	N	N	30	
SYC14-AC	5	14			1S	1S	1S	1S	1S	1S	1S	1S	1S	2S	1S	N	1M		28	1M
Control	2	15			N	N	1S	1S	N	N	1S	1S	1M	N	N	N	N	↓	30	

① Empty clam shell discovered on Day 29. JL 7/25/14.

ENVIRON

28-DAY BIOACCUMULATION TEST OBSERVATION DATA SHEET (DAYS 15-28)

CLIENT	PROJECT	JOB NO.	PROJECT MANAGER	LABORATORY	PROTOCOL	SPECIES	
ANAMAR	Shipyard Creek		B. Hester		ITM (USEPA/USACE 1998), OTM (USEPA/USACE 1991), ASTM E 1611, SERIM 2008	*Macoma nasuta*	

Observation Key

#S= Number on the Surface
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N=Normal
B=No Burrows

INITIAL # OF ORGANISMS: 30

ENDPOINT DATA & OBSERVATIONS

CLIENT ID	REP	Jar #	INITIAL # IF DIFF	DATE / TECHN.	7/11 KMB	7/12 JL	7/13	7/14	7/15	7/16	7/17	7/18 MK	7/19	7/20 JL	7/21 KB	7/22	7/23 KMB	7/24 KMB	Number Remaining
				Day	15	16	17	18	19	20	21	22	23	24	25	26	27	28	
itrol	3	16	30		N	N	15	N	N	N	N	N	N	N	N	15	15	15	30
SYC14-REF	1	17	↓		15	15	15	25	25	25	15	15	N	↓	↓	N	N	15	28
Control	1	18	↓		N	N	N	N	N	N	N	N	N	↓	↓	N	15	15	30

CLIENT	PROJECT	SPECIES	
ANAMAR	Shipyard Creek	*Macoma nasuta*	
		Date Recovered: 7/24/14	Date Preserved 7/25/14

Treatment	Rep	Jar #	Time	Time
SYC14-TB	5	1	1130	1030
SYC14-TB	4	2	1132	1032
SYC14-TB	3	3	1135	1045
SYC14-TB	2	4	1137	1045
SYC14-REF	5	5	1140	1057
SYC14-AC	4	6	1143	1055
SYC14-REF	4	7	1145	1109
SYC14-AC	1	8	1147	1121
SYC14-TB	1	9	1150	1136
SYC14-REF	3	10	1152	1137
SYC14-AC	3	11	1153	1143
SYC14-REF	2	12	1155	1151
SYC14-AC	2	13	1157	1151
SYC14-AC	5	14	1200	1151
Control	2	15	1203	1205
Control	3	16	1207	1205
SYC14-REF	1	17	1211	1203
Control	1	18	1215	1212

ENVIRON **ORGANISM RECEIPT LOG**

Date:	Time:	Batch No.
6/17/14	1200	JG061714

Organism / Project:	Source:
Macoma/Port of Oakland	J+G Gunstone

Address:	Invoice Attached
On File	Yes (No)

Phone:	Contact:
On File	Reed Gunstone

No. Ordered:	No. Received:	Source Batch:
300	330	Field

Condition of Organisms:	Approximate Size or Age:
Good	Adult

Shipper:	B of L (Tracking No.)
ENVIRON Courier	NA

Condition of Container:	Received By:
Good	CR

Container	D.O. (mg/L)	Temp. (°C)	Conductivity or Salinity (Include Units)	pH (Units)	Technician (Initials)
*	→				

Notes: * Received dry on ice

ENVIRON

MAINTENANCE LOG FOR CULTURES

ORGANISM: Macoma
LOCATION: Bath 2

Batch Number: RG 061814	Date Received: 6/18/14

Date	Feed AM/PM		Tub No.	D.O.	Temp (°C)	Cond/ (Sal)	pH	H_2O Change	No. Dead	NH_3	Init.
6/19			1	7.6	15.1	30ppt	7.8	FT	0	—	MMB
			2	8.1	15.0	30ppt	7.8	↓	0	—	MMB
6/20		X	1	8.1	15.8	30ppt	7.8	FT	0	—	KMB
6/20		X	2	8.6	15.4	30ppt	7.8	↓	0	—	KMB
6/23			1	8.1	15.9	30ppt	7.7	FT	0	—	KMB
↓			2	8.6	15.1	30ppt	7.8	↓	↓	—	↓
6/26			1	8.4	15.1	30ppt	7.6	FT	① 2	—	MMB
↓			2	6.9	15.1	30ppt	7.7	↓	1	—	↓
6/27			1	8.1	15.0	30	7.9	FT	0	—	KMB
↓			2								

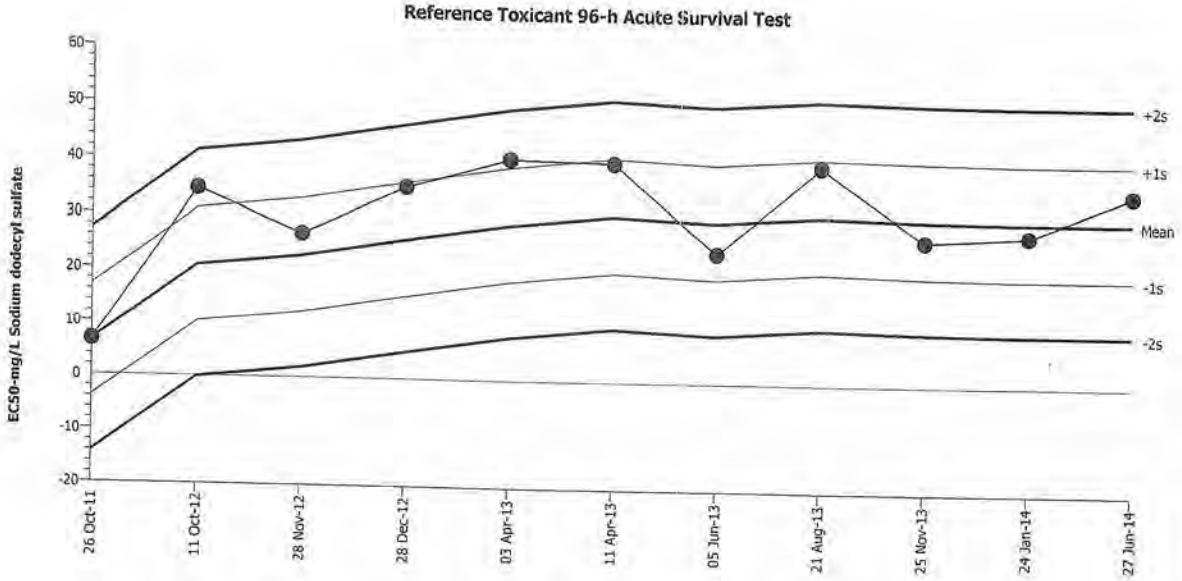
① IE, MMB 6/26/14

CETIS QC Plot

Report Date: 20 Jul-14 22:47 (1 of 1)

Reference Toxicant 96-h Acute Survival Test — All Matching Labs

Test Type:	Survival	**Organism:**	Macoma nasuta (Clam)	**Material:**	Sodium dodecyl sulfate
Protocol:	NYDEQ-1992 RGM	**Endpoint:**	Proportion Survived	**Source:**	Reference Toxicant-REF



Mean:	30.26	**Count:**	10	**-1s Warning Limit:**	19.91	**-2s Action Limit:**	9.556
Sigma:	10.35	**CV:**	34.20%	**+1s Warning Limit:**	40.61	**+2s Action Limit:**	50.96

Quality Control Data

Point	Year	Month	Day	Time	QC Data	Delta	Sigma	Warning	Action	Test ID	Analysis ID	Laboratory
1	2011	Oct	26	15:00	6.662	-23.6	-2.28	(-)	(-)	07-9550-4484	17-3548-4176	NewFields
2	2012		11	15:15	34.57	4.306	0.416			13-2194-6745	18-4431-6246	NewFields
3		Nov	28	15:10	26.61	-3.648	-0.3524			10-1616-2942	19-8077-0734	NewFields
4		Dec	28	10:50	35.27	5.006	0.4837			08-0547-7218	17-0989-9185	NewFields
5	2013	Apr	3	13:45	40.58	10.32	0.9975			13-2147-6691	11-3832-5488	NewFields
6			11	13:40	40.09	9.834	0.9501			09-6634-2856	17-2847-1450	NewFields
7		Jun	5	13:10	24.16	-6.1	-0.5894			12-7026-1671	19-4628-0573	NewFields
8		Aug	21	14:15	39.89	9.626	0.93			21-1189-9084	07-5717-2007	NewFields
9		Nov	25	13:40	26.81	-3.448	-0.3331			12-5210-6761	13-2587-3835	NewFields
10	2014	Jan	24	14:20	27.92	-2.342	-0.2263			10-1914-6727	12-4761-3267	NewFields
11		Jun	27	12:45	35.31	5.046	0.4876			07-1516-9666	05-5687-4919	ENVIRON

CETIS Summary Report

Reference Toxicant 96-h Acute Survival Test **ENVIRON**

Batch ID:	00-5765-4860	**Test Type:**	Survival	**Analyst:**	
Start Date:	27 Jun-14 12:45	**Protocol:**	NYDEQ-1992 RGM	**Diluent:**	Laboratory Seawater
Ending Date:	01 Jul-14 10:45	**Species:**	Macoma nasuta	**Brine:**	Not Applicable
Duration:	94h	**Source:**	Reed Gunstone	**Age:**	
Sample ID:	02-7264-3471	**Code:**	1040358F	**Client:**	Internal Lab
Sample Date:	17 Aug-12	**Material:**	Sodium dodecyl sulfate	**Project:**	Reference Toxicant
Receive Date:	17 Aug-12	**Source:**	Reference Toxicant		
Sample Age:	679d 13h	**Station:**	P120817.18		

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
10-5729-6909	Proportion Survived	30	45	36.74	41.4%		Dunnett Multiple Comparison Test

Point Estimate Summary

Analysis ID	Endpoint	Level	mg/L	95% LCL	95% UCL	TU	Method
05-5687-4919	Proportion Survived	EC50	35.31	29.38	42.43		Trimmed Spearman-Kärber

Proportion Survived Summary

C-mg/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Dilution Water	3	1	1	1	1	1	0	0	0.0%	0.0%
15		3	0.9333	0.6465	1	0.8	1	0.06667	0.1155	12.37%	6.67%
30		3	0.7333	0	1	0.4	1	0.1764	0.3055	41.66%	26.67%
45		3	0.2	0.2	0.2	0.2	0.2	0	0	0.0%	80.0%
60		3	0.2	0	1	0	0.6	0.2	0.3464	173.2%	80.0%
75		3	0	0	0	0	0	0	0		100.0%

Proportion Survived Detail

C-mg/L	Control Type	Rep 1	Rep 2	Rep 3
0	Dilution Water	1	1	1
15		1	0.8	1
30		0.8	1	0.4
45		0.2	0.2	0.2
60		0	0.6	0
75		0	0	0

Proportion Survived Binomials

C-mg/L	Control Type	Rep 1	Rep 2	Rep 3
0	Dilution Water	5/5	5/5	5/5
15		5/5	4/5	5/5
30		4/5	5/5	2/5
45		1/5	1/5	1/5
60		0/5	3/5	0/5
75		0/5	0/5	0/5

CETIS Test Data Worksheet

Report Date: 20 Jul-14 22:44 (p 1 of 1)
Test Code: 07-1516-9666/2AA09F82

Reference Toxicant 96-h Acute Survival Test — **ENVIRON**

Start Date: 27 Jun-14 12:45
End Date: 01 Jul-14 10:45
Sample Date: 17 Aug-12
Species: Macoma nasuta
Protocol: NYDEQ-1992 RGM
Material: Sodium dodecyl sulfate
Sample Code: 1040358F
Sample Source: Reference Toxicant
Sample Station: P120817.18

C-mg/L	Code	Rep	Pos	# Exposed	# Survived	Notes
0	D	1	17	5	5	
0	D	2	5	5	5	
0	D	3	11	5	5	
15		1	7	5	5	
15		2	10	5	4	
15		3	1	5	5	
30		1	16	5	4	
30		2	3	5	5	
30		3	12	5	2	
45		1	8	5	1	
45		2	2	5	1	
45		3	6	5	1	
60		1	4	5	0	
60		2	9	5	3	
60		3	13	5	0	
75		1	14	5	0	
75		2	18	5	0	
75		3	15	5	0	

ENVIRON

REFERENCE TOXICANT TEST
WATER QUALITY DATASHEET

CLIENT	PROJECT	SPECIES	LABORATORY	PROTOCOL
ANAMAR	Shipyard Creek	*Macoma nasuta*	Port Gamble, .	ITM (USEPA/USACE 1998), OTM (USEPA/USACE 1991), ASTM E 1611, SERIM 2008, SOP TOX041

JOB NUMBER	PROJECT MANAGER	TOXICANT: Sodium Dodecal Sulfate	QUANTITY OF DILUENT: 5000mL	INIT: JL/HE
P120817.18	B. Hester	Stock: 100,000 mg/L. Prepare 5 g SDS in 50 mL DI	REPLICATES: 3	DATE PREP: 6/27/14

Target Conc.:	Qty of Stock	Target Conc.:	Qty of Stock	Target Conc.:	Qty of Stock	Target Conc.:	Qty of Stock	Target Conc.:	Qty of Stock
15 mg/L	0.75 mL	30 mg/L	1.5 mL	45 mg/L	2.25 mL	60 mg/L	3 mL	75 mg/L	3.75 mL

TEST ID	LOT #:	TEST START DATE	TIME	TEST END DATE	TIME
7	IAF1031	6/27/14	1245	07/01/14	1045

WATER QUALITY DATA

DILTIN.WAT.BATCH	TEMP REC#	REFERENCE TOX. MATERIAL	REFERENCE TOXXICANT	LOT NO.	96-H LC_{50}

TEST CONDITIONS					DO (mg/L)		TEMP(C)		SAL (ppt)		pH		TECHNICIAN	AMMONIA			SULFIDES		
					>5.0		(12-16) ± 1		(25-35)± 2		7.8 ± 0.5								
CLIENT ID	CONCENTRATION value	CONCENTRATION units	DAY	REP	D.O. meter	D.O. mg/L	TEMP. meter	TEMP. °C	SALINITY meter	SALINITY ppt	pH meter	pH unit	DATE/ TECH	AMMONIA METER	AMMONIA mg/L	Tech	SULFIDES meter	SULFIDES mg/L	Tech
Ref.Tox.-SDS	0	µg/L	0	1	6	7.4	2	16.5	2	30	6	7.9	HE 6/27						
			1	2	6	7.6	2	15.4	2	30	6	7.9	HE 6/28						
			2	3	6	8.0	6	15.6	2	30	6	7.9	JL 6/29						
			3	14	6	8.4	6	14.9	2	30	6	7.9	JL 6/30						
			4	25	6	8.2	6	15.2	2	30	6	7.9	KB 7/1						
Ref.Tox.-SDS	15	µg/L	0	1	6	8.0	2	14.8	2	30	6	7.9	HE 6/27						
			1	2	6	8.1	2	14.8	2	30	6	8.0	HE 6/28						
			2	3	6	7.6	6	15.2	2	30	6	7.7	JL 6/29						
			3	14	6	8.3	6	14.8	2	30	6	7.8	JL 6/30						
			4	25	6	8.0	6	14.9	2	30	6	7.8	KB 7/1						
Ref.Tox.-SDS	30	µg/L	0	1	6	8.2	2	16.1	2	30	6	8.0	HE 6/27						
			1	2	6	8.4	2	14.9	2	30	6	8.0	HE 6/28						
			2	3	6	6.8	6	15.6	2	30	6	7.7	JL 6/29						
			3	14	6	7.1	6	14.9	2	30	6	7.6	JL 6/30						
			4	25	6	5.3	6	14.9	2	30	6	7.3	KB 7/1						
Ref.Tox.-SDS	45	µg/L	0	1	6	8.1	2	15.2	2	30	6	8.0	HE 6/27						
			1	2	6	8.4	2	14.8	2	30	6	8.0	HE 6/28						
			2	3	6	7.0	6	15.2	2	30	6	7.8	JL 6/29						
			3	14	6	②4.2	6	14.9	2	30	6	7.2	JL 6/30						
			4	25	6	7.6	6	14.7	2	30	6	7.8	KB 7/1						
Ref.Tox.-SDS	60	µg/L	0	1	6	8.4	2	14.7	2	30	6	8.0	HE 6/27						
			1	2,3	6	8.5	2	14.9	2	30	6	8.0	HE 6/28						
			2	3	6	6.1	6	15.2	2	30	6	7.5	JL 6/29						
			3	14	6	5.3	6	14.9	2	30	6	7.3	JL 6/30						
			4	25	6	8.1	6	14.6	2	30	6	7.8	KB 7/1						
Ref.Tox.-SDS	75	µg/L	0	1	6	8.1	2	16.0	2	30	6	8.0	HE 6/27						
			1	2	6	8.5	2	14.9	2	30	6	8.0	HE 6/28						
			2	3	6	6.4	6	15.2	2	30	6	7.6	JL 6/29						
			3	14	6	5.4	6	14.8	2	30	6	7.3	JL 6/30						
			4	25	6	6.6	6	14.6	2	30	6	7.5	KB 7/1						

① HE 6/28

② Increased air flow to chamber. JL 6/30/14.

ENVIRON

REFERENCE TOXICANT TEST SURVIVAL DATASHEET

CLIENT	PROJECT	NEWFIELDS JOB #	PROJECT MANAGER	SPECIES	NEWFIELDS LABORATORY	PROTOCOL
ANAMAR	Shipyard Creek	.	B. Hester	*Macoma nasuta*	Port Gamble , .	(USEPA/USACE 1991), ASTM E 1611, SERIM 2008 , SOP

SURVIVAL & BEHAVIOR DATA

OBSERVATION KEY
N = normal
LOE= loss of equilibrium
Q = quiescent
DC = discoloration
NB = no body
F= Floating on Surface

INITIAL # OF ORGANISMS: 5

CLIENT/ NEWFIELDS ID	CONC. value	CONC. units	REP	INITIAL NUMBER	DAY 1 DATE: 6/28 .1015 TECHNICIAN: KK #ALIVE	DAY 1 #DEAD	DAY 1 OBS	DAY 2 DATE: 6/29 TECHNICIAN: JL #ALIVE	DAY 2 #DEAD	DAY 2 OBS	DAY 3 DATE: 6/30 TECHNICIAN: MMB #ALIVE	DAY 3 #DEAD	DAY 3 OBS	DAY 4 DATE: 7/01/14 TECHNICIAN: KMB #ALIVE	DAY 4 #DEAD	DAY 4 OBS
Ref.Tox.-SDS	0	µg/L	1		5	0	N	5	0	N	5	0	N	5	0	N
			2		5	0	↓	5	0	↓	5	0	↓	5	0	↓
			3		5	0	↓	5	0	↓	5	0	↓	5	0	↓
Ref.Tox.-SDS	15	µg/L	1		5	0	N	5	0	N	5	0	N	5	0	N
			2		5	0	↓	5	0	↓	5	0	↓	4	1	↓
			3		5	0	↓	5	0	↓	5	0	↓	5	0	↓
Ref.Tox.-SDS	30	µg/L	1		5	0	N	5	0	N	4	1	N	0 4 0 0 4		N
			2		5	0	↓	5	0	↓	5	0	↓	0 1 0 2 5		↓
			3		5	0	↓	5	0	↓	2	3	↓	2 0 0 2		↓
Ref.Tox.-SDS	45	µg/L	1		5	0	N	5	0	N	1	4	N	1	0	N
			2		5	0	↓	5	0	↓	1	4	↓	0 1 1	0	Q
			3		5	0	↓	4	1	↓	2	2	↓	1	1	N
Ref.Tox.-SDS	60	µg/L	1		4	1	N	3	1	N	1	2	N	0	1	N
			2		5	0	(1)	5	0	↓	3	2	↓	3	0	Q
			3		5	0	N	2	3	↓	1	1	↓	0	1	N
Ref.Tox.-SDS	75	µg/L	1		4	1	N	4	0	N	4	0	N	0	4	—
			2		5	0	↓	3	2	↓	2	1	↓	0	2	—
			3		3	2	N	2	1	↓	0	2	↓	—	—	—

(1) water dripped into chamber. Concentration not 60 ug/L anymore KK 6/28

(2) WC. KMB. 07/01/14: Final survival for 30 mg/L:
Rep 1: 0 alive, 4 dead
Rep 2: 0 alive, 5 dead
Rep 3: 0 alive, 2 dead.

APPENDIX B.1 Statistical Results: *A. bahia* Water-Column Test

CETIS Summary Report

Mysidopsis 96-h Acute Survival Test **ENVIRON**

Batch ID:	04-8721-2696	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	02 Jul-14 15:50	**Protocol:**	SERIM (2008)	**Diluent:**	Natural Seawater
Ending Date:	06 Jul-14 16:40	**Species:**	Americamysis bahia	**Brine:**	Not Applicable
Duration:	4d 1h	**Source:**	Aquatic Biosystems, CO	**Age:**	3 d
Sample ID:	05-9497-1367	**Code:**	23768AE7	**Client:**	ANAMAR
Sample Date:	04 Jun-14 10:29	**Material:**	Sediment Elutriate	**Project:**	Shipyard Creek
Receive Date:	10 Jun-14 13:20	**Source:**	Shipyard Creek		
Sample Age:	28d 5h	**Station:**	SYC14-SW		

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
08-9076-7348	96h Proportion Survived	0	>0		8.44%		Equal Variance t Two-Sample Test

96h Proportion Survived Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Dilution Water	5	0.96	0.8489	1	0.8	1	0.04	0.08944	9.32%	0.0%
0	Site Water	5	0.94	0.872	1	0.9	1	0.02449	0.05477	5.83%	2.08%

96h Proportion Survived Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	1	0.8	1	1	1
0	Site Water	0.9	1	1	0.9	0.9

96h Proportion Survived Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	10/10	8/10	10/10	10/10	10/10
0	Site Water	9/10	10/10	10/10	9/10	9/10

Mysidopsis 96-h Acute Survival Test **ENVIRON**

Analysis ID:	08-9076-7348	**Endpoint:**	96h Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	04 Aug-14 11:07	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes
Batch ID:	04-8721-2696	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	02 Jul-14 15:50	**Protocol:**	SERIM (2008)	**Diluent:**	Natural Seawater
Ending Date:	06 Jul-14 16:40	**Species:**	Americamysis bahia	**Brine:**	Not Applicable
Duration:	4d 1h	**Source:**	Aquatic Biosystems, CO	**Age:**	3 d
Sample ID:	05-9497-1367	**Code:**	23768AE7	**Client:**	ANAMAR
Sample Date:	04 Jun-14 10:29	**Material:**	Sediment Elutriate	**Project:**	Shipyard Creek
Receive Date:	10 Jun-14 13:20	**Source:**	Shipyard Creek		
Sample Age:	28d 5h	**Station:**	SYC14-SW		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Angular (Corrected)	NA	C > T	NA	NA	8.44%	Passes 96h proportion survived

Equal Variance t Two-Sample Test

Control	vs	Control	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
Dilution Water		Site Water	0.5051	1.86	0.136	8	0.3136	CDF	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.003387206	0.003387206	1	0.2551	0.6271	Non-Significant Effect
Error	0.1062265	0.01327831	8			
Total	0.1096137		9			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	2.333	23.15	0.4321	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.8036	0.7411	0.0160	Normal Distribution

96h Proportion Survived Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Dilution Water	5	0.96	0.8489	1	1	0.8	1	0.04	9.32%	0.0%
0	Site Water	5	0.94	0.872	1	0.9	0.9	1	0.02449	5.83%	2.08%

Angular (Corrected) Transformed Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Dilution Water	5	1.351	1.182	1.52	1.412	1.107	1.412	0.06097	10.09%	0.0%
0	Site Water	5	1.314	1.203	1.425	1.249	1.249	1.412	0.03992	6.79%	2.72%

96h Proportion Survived Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	1	0.8	1	1	1
0	Site Water	0.9	1	1	0.9	0.9

Angular (Corrected) Transformed Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	1.412	1.107	1.412	1.412	1.412
0	Site Water	1.249	1.412	1.412	1.249	1.249

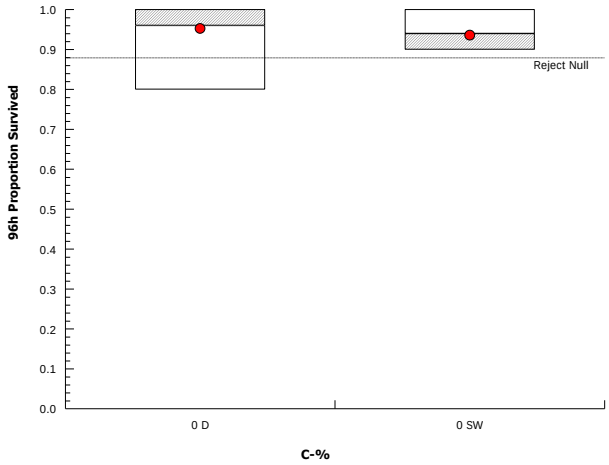
96h Proportion Survived Binomials

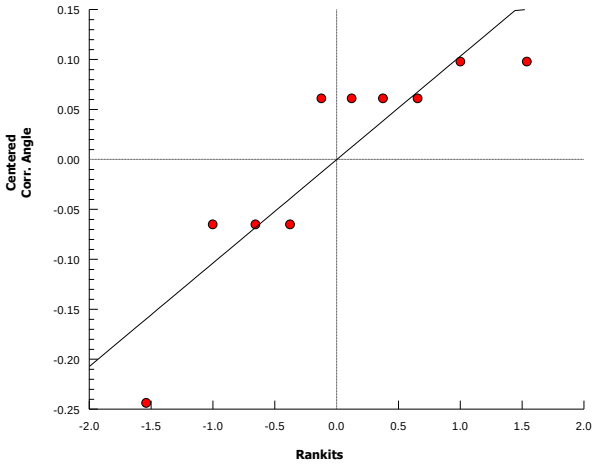
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	10/10	8/10	10/10	10/10	10/10
0	Site Water	9/10	10/10	10/10	9/10	9/10

Mysidopsis 96-h Acute Survival Test **ENVIRON**

Analysis ID:	08-9076-7348	**Endpoint:**	96h Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	04 Aug-14 11:07	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Graphics





CETIS Summary Report

Mysidopsis 96-h Acute Survival Test **ENVIRON**

Batch ID:	04-8721-2696	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	02 Jul-14 15:50	**Protocol:**	SERIM (2008)	**Diluent:**	Natural Seawater
Ending Date:	06 Jul-14 16:40	**Species:**	Americamysis bahia	**Brine:**	Not Applicable
Duration:	4d 1h	**Source:**	Aquatic Biosystems, CO	**Age:**	3 d
Sample ID:	18-5392-8229	**Code:**	6E80B325	**Client:**	ANAMAR
Sample Date:	04 Jun-14 07:11	**Material:**	Sediment Elutriate	**Project:**	Shipyard Creek
Receive Date:	11 Jun-14 13:10	**Source:**	Shipyard Creek		
Sample Age:	28d 9h	**Station:**	SYC14-AC		

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
05-9471-4589	96h Proportion Survived	0	>0		8.44%		Equal Variance t Two-Sample Test
18-4742-1711	96h Proportion Survived	10	50	22.36	10.8%	10	Dunnett Multiple Comparison Test

Point Estimate Summary

Analysis ID	Endpoint	Level	%	95% LCL	95% UCL	TU	Method
17-6446-0785	96h Proportion Survived	EC50	62.39	55.43	70.23	1.603	Trimmed Spearman-Kärber

96h Proportion Survived Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Dilution Water	5	0.96	0.8489	1	0.8	1	0.04	0.08944	9.32%	0.0%
0	Site Water	5	0.94	0.872	1	0.9	1	0.02449	0.05477	5.83%	2.08%
10		5	0.94	0.872	1	0.9	1	0.02449	0.05477	5.83%	2.08%
50		5	0.84	0.6984	0.9816	0.7	1	0.05099	0.114	13.57%	12.5%
100		5	0.02	0	0.07553	0	0.1	0.02	0.04472	223.6%	97.92%

96h Proportion Survived Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	1	0.8	1	1	1
0	Site Water	0.9	1	1	0.9	0.9
10		0.9	1	1	0.9	0.9
50		0.9	0.8	0.8	1	0.7
100		0	0	0.1	0	0

96h Proportion Survived Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	10/10	8/10	10/10	10/10	10/10
0	Site Water	9/10	10/10	10/10	9/10	9/10
10		9/10	10/10	10/10	9/10	9/10
50		9/10	8/10	8/10	10/10	7/10
100		0/10	0/10	1/10	0/10	0/10

CETIS Analytical Report

Mysidopsis 96-h Acute Survival Test **ENVIRON**

Analysis ID:	17-6446-0785	**Endpoint:**	96h Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	04 Aug-14 12:01	**Analysis:**	Trimmed Spearman-Kärber	**Official Results:**	Yes
Batch ID:	04-8721-2696	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	02 Jul-14 15:50	**Protocol:**	SERIM (2008)	**Diluent:**	Natural Seawater
Ending Date:	06 Jul-14 16:40	**Species:**	Americamysis bahia	**Brine:**	Not Applicable
Duration:	4d 1h	**Source:**	Aquatic Biosystems, CO	**Age:**	3 d
Sample ID:	18-5392-8229	**Code:**	6E80B325	**Client:**	ANAMAR
Sample Date:	04 Jun-14 07:11	**Material:**	Sediment Elutriate	**Project:**	Shipyard Creek
Receive Date:	11 Jun-14 13:10	**Source:**	Shipyard Creek		
Sample Age:	28d 9h	**Station:**	SYC14-AC		

Trimmed Spearman-Kärber Estimates

Threshold Option	Threshold	Trim	Mu	Sigma	EC50	95% LCL	95% UCL
Control Threshold	0.04	2.08%	1.795	0.02569	62.39	55.43	70.23

96h Proportion Survived Summary

			Calculated Variate(A/B)								
C-%	**Control Type**	**Count**	**Mean**	**Min**	**Max**	**Std Err**	**Std Dev**	**CV%**	**%Effect**	**A**	**B**
0	Dilution Water	5	0.96	0.8	1	0.04	0.08944	9.32%	0.0%	48	50
10		5	0.94	0.9	1	0.02449	0.05477	5.83%	2.08%	47	50
50		5	0.84	0.7	1	0.05099	0.114	13.57%	12.5%	42	50
100		5	0.02	0	0.1	0.02	0.04472	223.6%	97.92%	1	50

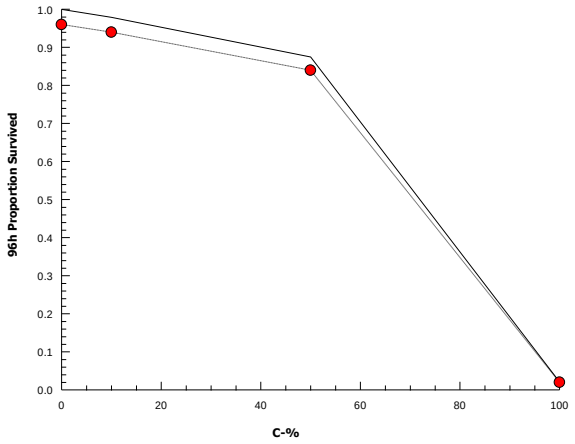
96h Proportion Survived Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	1	0.8	1	1	1
10		0.9	1	1	0.9	0.9
50		0.9	0.8	0.8	1	0.7
100		0	0	0.1	0	0

96h Proportion Survived Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	10/10	8/10	10/10	10/10	10/10
0	Site Water	9/10	10/10	10/10	9/10	9/10
10		9/10	10/10	10/10	9/10	9/10
50		9/10	8/10	8/10	10/10	7/10
100		0/10	0/10	1/10	0/10	0/10

Graphics



Mysidopsis 96-h Acute Survival Test **ENVIRON**

Analysis ID:	18-4742-1711	**Endpoint:**	96h Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	04 Aug-14 12:01	**Analysis:**	Parametric-Control vs Treatments	**Official Results:**	Yes
Batch ID:	04-8721-2696	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	02 Jul-14 15:50	**Protocol:**	SERIM (2008)	**Diluent:**	Natural Seawater
Ending Date:	06 Jul-14 16:40	**Species:**	Americamysis bahia	**Brine:**	Not Applicable
Duration:	4d 1h	**Source:**	Aquatic Biosystems, CO	**Age:**	3 d
Sample ID:	18-5392-8229	**Code:**	6E80B325	**Client:**	ANAMAR
Sample Date:	04 Jun-14 07:11	**Material:**	Sediment Elutriate	**Project:**	Shipyard Creek
Receive Date:	11 Jun-14 13:10	**Source:**	Shipyard Creek		
Sample Age:	28d 9h	**Station:**	SYC14-AC		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	NOEL	LOEL	TOEL	TU
Angular (Corrected)	NA	C > T	NA	NA	10.8%	10	50	22.36	10

Dunnett Multiple Comparison Test

Control	vs	C-%	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
Dilution Water		10	0.4832	2.227	0.17	8	0.5522	CDF	Non-Significant Effect
		50*	2.333	2.227	0.17	8	0.0411	CDF	Significant Effect
		100*	15.22	2.227	0.17	8	<0.0001	CDF	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	4.528296	1.509432	3	104	<0.0001	Significant Effect
Error	0.232125	0.01450781	16			
Total	4.76042		19			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance	2.777	11.34	0.4273	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9481	0.866	0.3387	Normal Distribution

96h Proportion Survived Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Dilution Water	5	0.96	0.8489	1	1	0.8	1	0.04	9.32%	0.0%
10		5	0.94	0.872	1	0.9	0.9	1	0.02449	5.83%	2.08%
50		5	0.84	0.6984	0.9816	0.8	0.7	1	0.05099	13.57%	12.5%
100		5	0.02	0	0.07553	0	0	0.1	0.02	223.6%	97.92%

Angular (Corrected) Transformed Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Dilution Water	5	1.351	1.182	1.52	1.412	1.107	1.412	0.06097	10.09%	0.0%
10		5	1.314	1.203	1.425	1.249	1.249	1.412	0.03992	6.79%	2.72%
50		5	1.173	0.9725	1.374	1.107	0.9912	1.412	0.07234	13.79%	13.16%
100		5	0.1914	0.1009	0.2819	0.1588	0.1588	0.3218	0.03259	38.08%	85.84%

96h Proportion Survived Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	1	0.8	1	1	1
10		0.9	1	1	0.9	0.9
50		0.9	0.8	0.8	1	0.7
100		0	0	0.1	0	0

Mysidopsis 96-h Acute Survival Test **ENVIRON**

Analysis ID:	18-4742-1711	**Endpoint:**	96h Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	04 Aug-14 12:01	**Analysis:**	Parametric-Control vs Treatments	**Official Results:**	Yes

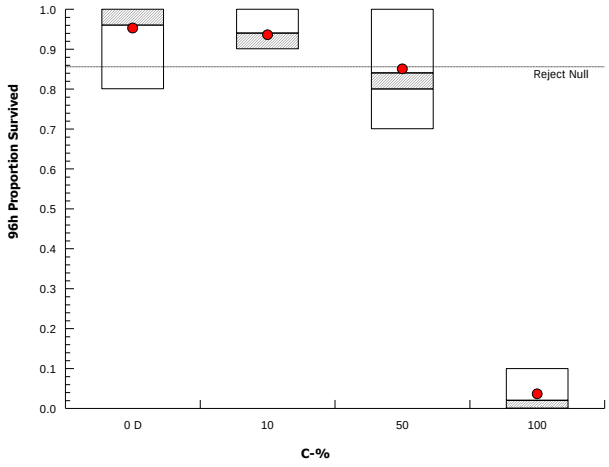
Angular (Corrected) Transformed Detail

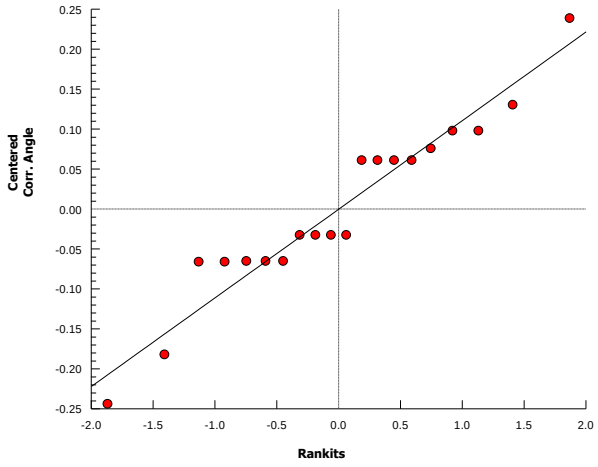
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	1.412	1.107	1.412	1.412	1.412
10		1.249	1.412	1.412	1.249	1.249
50		1.249	1.107	1.107	1.412	0.9912
100		0.1588	0.1588	0.3218	0.1588	0.1588

96h Proportion Survived Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	10/10	8/10	10/10	10/10	10/10
0	Site Water	9/10	10/10	10/10	9/10	9/10
10		9/10	10/10	10/10	9/10	9/10
50		9/10	8/10	8/10	10/10	7/10
100		0/10	0/10	1/10	0/10	0/10

Graphics





Mysidopsis 96-h Acute Survival Test **ENVIRON**

Analysis ID:	05-9471-4589	**Endpoint:**	96h Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	04 Aug-14 12:01	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes
Batch ID:	04-8721-2696	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	02 Jul-14 15:50	**Protocol:**	SERIM (2008)	**Diluent:**	Natural Seawater
Ending Date:	06 Jul-14 16:40	**Species:**	Americamysis bahia	**Brine:**	Not Applicable
Duration:	4d 1h	**Source:**	Aquatic Biosystems, CO	**Age:**	3 d
Sample ID:	18-5392-8229	**Code:**	6E80B325	**Client:**	ANAMAR
Sample Date:	04 Jun-14 07:11	**Material:**	Sediment Elutriate	**Project:**	Shipyard Creek
Receive Date:	11 Jun-14 13:10	**Source:**	Shipyard Creek		
Sample Age:	28d 9h	**Station:**	SYC14-AC		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Angular (Corrected)	NA	C > T	NA	NA	8.44%	Passes 96h proportion survived

Equal Variance t Two-Sample Test

Control	vs	Control	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
Dilution Water		Site Water	0.5051	1.86	0.136	8	0.3136	CDF	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.003387206	0.003387206	1	0.2551	0.6271	Non-Significant Effect
Error	0.1062265	0.01327831	8			
Total	0.1096137		9			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	2.333	23.15	0.4321	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.8036	0.7411	0.0160	Normal Distribution

96h Proportion Survived Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Dilution Water	5	0.96	0.8489	1	1	0.8	1	0.04	9.32%	0.0%
0	Site Water	5	0.94	0.872	1	0.9	0.9	1	0.02449	5.83%	2.08%

Angular (Corrected) Transformed Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Dilution Water	5	1.351	1.182	1.52	1.412	1.107	1.412	0.06097	10.09%	0.0%
0	Site Water	5	1.314	1.203	1.425	1.249	1.249	1.412	0.03992	6.79%	2.72%

96h Proportion Survived Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	1	0.8	1	1	1
0	Site Water	0.9	1	1	0.9	0.9

Angular (Corrected) Transformed Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	1.412	1.107	1.412	1.412	1.412
0	Site Water	1.249	1.412	1.412	1.249	1.249

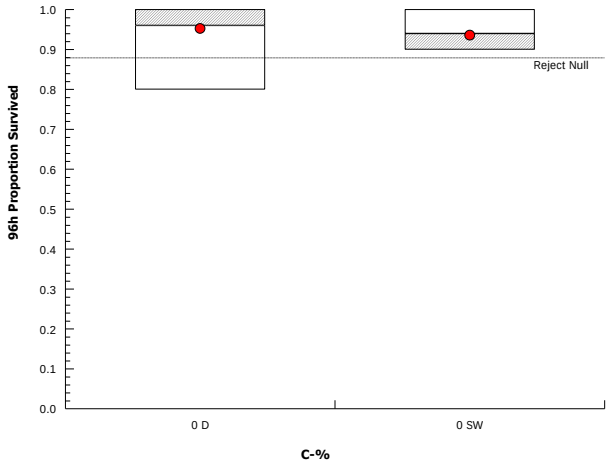
96h Proportion Survived Binomials

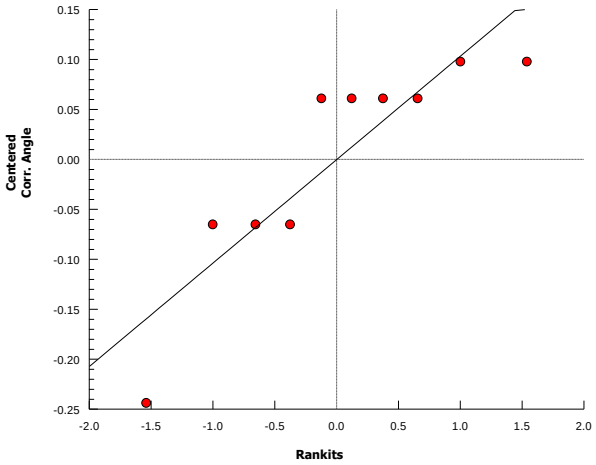
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	10/10	8/10	10/10	10/10	10/10
0	Site Water	9/10	10/10	10/10	9/10	9/10

Mysidopsis 96-h Acute Survival Test **ENVIRON**

Analysis ID:	05-9471-4589	**Endpoint:**	96h Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	04 Aug-14 12:01	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Graphics





CETIS Summary Report

Mysidopsis 96-h Acute Survival Test **ENVIRON**

Batch ID:	04-8721-2696	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	02 Jul-14 15:50	**Protocol:**	SERIM (2008)	**Diluent:**	Natural Seawater
Ending Date:	06 Jul-14 16:40	**Species:**	Americamysis bahia	**Brine:**	Not Applicable
Duration:	4d 1h	**Source:**	Aquatic Biosystems, CO	**Age:**	3 d
Sample ID:	12-0578-7664	**Code:**	47DEDC10	**Client:**	ANAMAR
Sample Date:	04 Jun-14 07:11	**Material:**	Sediment Elutriate	**Project:**	Shipyard Creek
Receive Date:	11 Jun-14 13:10	**Source:**	Shipyard Creek		
Sample Age:	28d 9h	**Station:**	SYC14-AC-AR		

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
01-5697-4336	96h Proportion Survived	0	>0		8.44%		Equal Variance t Two-Sample Test
11-5853-8243	96h Proportion Survived	100	>100	NA	11.5%	1	Steel Many-One Rank Sum Test

Point Estimate Summary

Analysis ID	Endpoint	Level	%	95% LCL	95% UCL	TU	Method
15-3593-0934	96h Proportion Survived	EC5	>100	N/A	N/A	<1	Linear Interpolation (ICPIN)
		EC10	>100	N/A	N/A	<1	
		EC15	>100	N/A	N/A	<1	
		EC20	>100	N/A	N/A	<1	
		EC25	>100	N/A	N/A	<1	
		EC40	>100	N/A	N/A	<1	
		EC50	>100	N/A	N/A	<1	

96h Proportion Survived Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Dilution Water	5	0.96	0.8489	1	0.8	1	0.04	0.08944	9.32%	0.0%
0	Site Water	5	0.94	0.872	1	0.9	1	0.02449	0.05477	5.83%	2.08%
10		5	0.96	0.892	1	0.9	1	0.02449	0.05477	5.71%	0.0%
50		5	0.94	0.8289	1	0.8	1	0.04	0.08944	9.52%	2.08%
100		5	0.94	0.8289	1	0.8	1	0.04	0.08944	9.52%	2.08%

96h Proportion Survived Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	1	0.8	1	1	1
0	Site Water	0.9	1	1	0.9	0.9
10		1	0.9	1	0.9	1
50		1	1	0.9	1	0.8
100		0.8	1	1	1	0.9

96h Proportion Survived Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	10/10	8/10	10/10	10/10	10/10
0	Site Water	9/10	10/10	10/10	9/10	9/10
10		10/10	9/10	10/10	9/10	10/10
50		10/10	10/10	9/10	10/10	8/10
100		8/10	10/10	10/10	10/10	9/10

Mysidopsis 96-h Acute Survival Test **ENVIRON**

Analysis ID:	15-3593-0934	**Endpoint:**	96h Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	04 Aug-14 11:12	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes
Batch ID:	04-8721-2696	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	02 Jul-14 15:50	**Protocol:**	SERIM (2008)	**Diluent:**	Natural Seawater
Ending Date:	06 Jul-14 16:40	**Species:**	Americamysis bahia	**Brine:**	Not Applicable
Duration:	4d 1h	**Source:**	Aquatic Biosystems, CO	**Age:**	3 d
Sample ID:	12-0578-7664	**Code:**	47DEDC10	**Client:**	ANAMAR
Sample Date:	04 Jun-14 07:11	**Material:**	Sediment Elutriate	**Project:**	Shipyard Creek
Receive Date:	11 Jun-14 13:10	**Source:**	Shipyard Creek		
Sample Age:	28d 9h	**Station:**	SYC14-AC-AR		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X+1)	Linear	1098880	200	Yes	Two-Point Interpolation

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
EC5	>100	N/A	N/A	<1	NA	NA
EC10	>100	N/A	N/A	<1	NA	NA
EC15	>100	N/A	N/A	<1	NA	NA
EC20	>100	N/A	N/A	<1	NA	NA
EC25	>100	N/A	N/A	<1	NA	NA
EC40	>100	N/A	N/A	<1	NA	NA
EC50	>100	N/A	N/A	<1	NA	NA

96h Proportion Survived Summary

			Calculated Variate(A/B)								
C-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	A	B
0	Dilution Water	5	0.96	0.8	1	0.04	0.08944	9.32%	0.0%	48	50
10		5	0.96	0.9	1	0.02449	0.05477	5.71%	0.0%	48	50
50		5	0.94	0.8	1	0.04	0.08944	9.52%	2.08%	47	50
100		5	0.94	0.8	1	0.04	0.08944	9.52%	2.08%	47	50

96h Proportion Survived Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	1	0.8	1	1	1
10		1	0.9	1	0.9	1
50		1	1	0.9	1	0.8
100		0.8	1	1	1	0.9

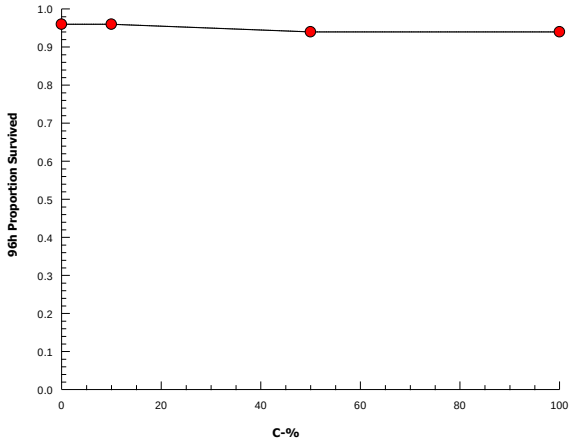
96h Proportion Survived Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	10/10	8/10	10/10	10/10	10/10
0	Site Water	9/10	10/10	10/10	9/10	9/10
10		10/10	9/10	10/10	9/10	10/10
50		10/10	10/10	9/10	10/10	8/10
100		8/10	10/10	10/10	10/10	9/10

Mysidopsis 96-h Acute Survival Test **ENVIRON**

Analysis ID:	15-3593-0934	**Endpoint:**	96h Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	04 Aug-14 11:12	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes

Graphics



Mysidopsis 96-h Acute Survival Test **ENVIRON**

Analysis ID:	11-5853-8243	**Endpoint:**	96h Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	04 Aug-14 11:12	**Analysis:**	Nonparametric-Control vs Treatments	**Official Results:**	Yes
Batch ID:	04-8721-2696	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	02 Jul-14 15:50	**Protocol:**	SERIM (2008)	**Diluent:**	Natural Seawater
Ending Date:	06 Jul-14 16:40	**Species:**	Americamysis bahia	**Brine:**	Not Applicable
Duration:	4d 1h	**Source:**	Aquatic Biosystems, CO	**Age:**	3 d
Sample ID:	12-0578-7664	**Code:**	47DEDC10	**Client:**	ANAMAR
Sample Date:	04 Jun-14 07:11	**Material:**	Sediment Elutriate	**Project:**	Shipyard Creek
Receive Date:	11 Jun-14 13:10	**Source:**	Shipyard Creek		
Sample Age:	28d 9h	**Station:**	SYC14-AC-AR		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	NOEL	LOEL	TOEL	TU
Angular (Corrected)	NA	C > T	NA	NA	11.5%	100	>100	NA	1

Steel Many-One Rank Sum Test

Control	vs	C-%	Test Stat	Critical	Ties	DF	P-Value	P-Type	Decision(α:5%)
Dilution Water		10	26	17	1	8	0.6242	Asymp	Non-Significant Effect
		50	25.5	17	2	8	0.5783	Asymp	Non-Significant Effect
		100	25.5	17	2	8	0.5783	Asymp	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.004691615	0.001563872	3	0.0971	0.9605	Non-Significant Effect
Error	0.2576846	0.01610528	16			
Total	0.2623762		19			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance	0.8582	11.34	0.8355	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.7644	0.866	0.0003	Non-normal Distribution

96h Proportion Survived Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Dilution Water	5	0.96	0.8489	1	1	0.8	1	0.04	9.32%	0.0%
10		5	0.96	0.892	1	1	0.9	1	0.02449	5.71%	0.0%
50		5	0.94	0.8289	1	1	0.8	1	0.04	9.52%	2.08%
100		5	0.94	0.8289	1	1	0.8	1	0.04	9.52%	2.08%

Angular (Corrected) Transformed Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Dilution Water	5	1.351	1.182	1.52	1.412	1.107	1.412	0.06097	10.09%	0.0%
10		5	1.347	1.236	1.458	1.412	1.249	1.412	0.03992	6.63%	0.31%
50		5	1.318	1.148	1.489	1.412	1.107	1.412	0.06153	10.44%	2.41%
100		5	1.318	1.148	1.489	1.412	1.107	1.412	0.06153	10.44%	2.41%

96h Proportion Survived Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	1	0.8	1	1	1
10		1	0.9	1	0.9	1
50		1	1	0.9	1	0.8
100		0.8	1	1	1	0.9

Mysidopsis 96-h Acute Survival Test **ENVIRON**

Analysis ID:	11-5853-8243	**Endpoint:**	96h Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	04 Aug-14 11:12	**Analysis:**	Nonparametric-Control vs Treatments	**Official Results:**	Yes

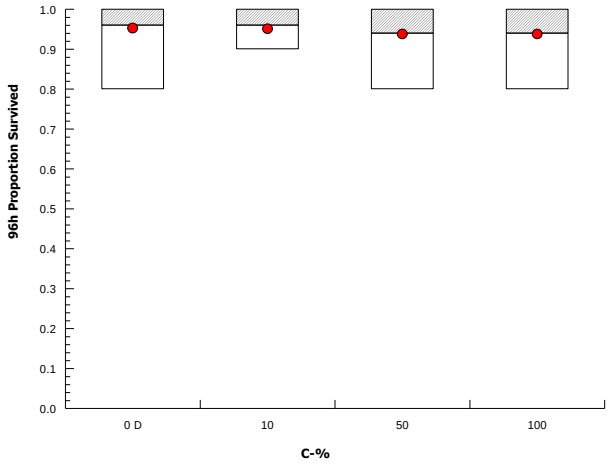
Angular (Corrected) Transformed Detail

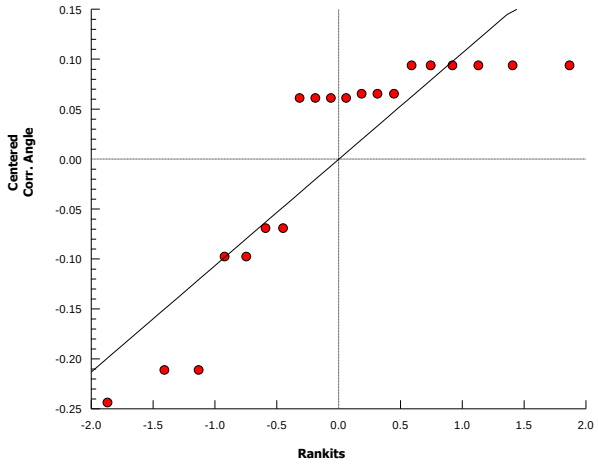
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	1.412	1.107	1.412	1.412	1.412
10		1.412	1.249	1.412	1.249	1.412
50		1.412	1.412	1.249	1.412	1.107
100		1.107	1.412	1.412	1.412	1.249

96h Proportion Survived Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	10/10	8/10	10/10	10/10	10/10
0	Site Water	9/10	10/10	10/10	9/10	9/10
10		10/10	9/10	10/10	9/10	10/10
50		10/10	10/10	9/10	10/10	8/10
100		8/10	10/10	10/10	10/10	9/10

Graphics





Mysidopsis 96-h Acute Survival Test **ENVIRON**

Analysis ID:	01-5697-4336	**Endpoint:**	96h Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	04 Aug-14 11:13	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes
Batch ID:	04-8721-2696	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	02 Jul-14 15:50	**Protocol:**	SERIM (2008)	**Diluent:**	Natural Seawater
Ending Date:	06 Jul-14 16:40	**Species:**	Americamysis bahia	**Brine:**	Not Applicable
Duration:	4d 1h	**Source:**	Aquatic Biosystems, CO	**Age:**	3 d
Sample ID:	12-0578-7664	**Code:**	47DEDC10	**Client:**	ANAMAR
Sample Date:	04 Jun-14 07:11	**Material:**	Sediment Elutriate	**Project:**	Shipyard Creek
Receive Date:	11 Jun-14 13:10	**Source:**	Shipyard Creek		
Sample Age:	28d 9h	**Station:**	SYC14-AC-AR		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Angular (Corrected)	NA	C > T	NA	NA	8.44%	Passes 96h proportion survived

Equal Variance t Two-Sample Test

Control	vs	Control	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
Dilution Water		Site Water	0.5051	1.86	0.136	8	0.3136	CDF	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.003387206	0.003387206	1	0.2551	0.6271	Non-Significant Effect
Error	0.1062265	0.01327831	8			
Total	0.1096137		9			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	2.333	23.15	0.4321	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.8036	0.7411	0.0160	Normal Distribution

96h Proportion Survived Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Dilution Water	5	0.96	0.8489	1	1	0.8	1	0.04	9.32%	0.0%
0	Site Water	5	0.94	0.872	1	0.9	0.9	1	0.02449	5.83%	2.08%

Angular (Corrected) Transformed Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Dilution Water	5	1.351	1.182	1.52	1.412	1.107	1.412	0.06097	10.09%	0.0%
0	Site Water	5	1.314	1.203	1.425	1.249	1.249	1.412	0.03992	6.79%	2.72%

96h Proportion Survived Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	1	0.8	1	1	1
0	Site Water	0.9	1	1	0.9	0.9

Angular (Corrected) Transformed Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	1.412	1.107	1.412	1.412	1.412
0	Site Water	1.249	1.412	1.412	1.249	1.249

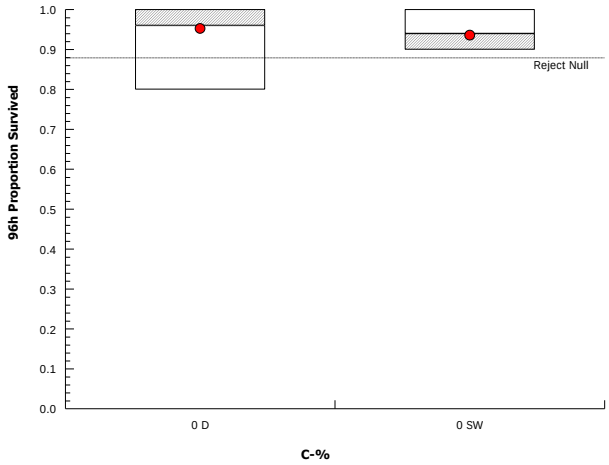
96h Proportion Survived Binomials

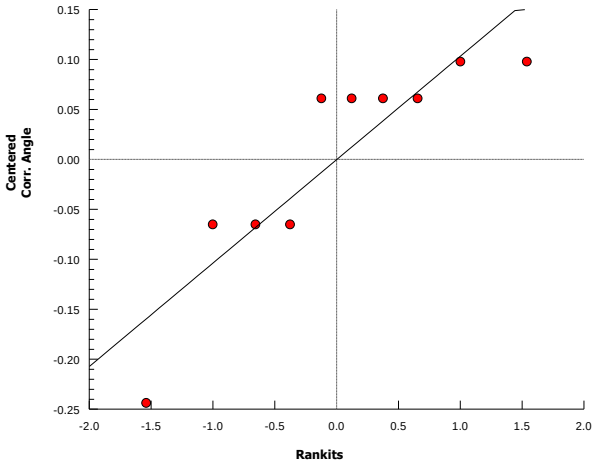
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	10/10	8/10	10/10	10/10	10/10
0	Site Water	9/10	10/10	10/10	9/10	9/10

Mysidopsis 96-h Acute Survival Test **ENVIRON**

Analysis ID:	01-5697-4336	**Endpoint:**	96h Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	04 Aug-14 11:13	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Graphics





CETIS Summary Report

Mysidopsis 96-h Acute Survival Test **ENVIRON**

Batch ID:	04-8721-2696	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	02 Jul-14 15:50	**Protocol:**	SERIM (2008)	**Diluent:**	Natural Seawater
Ending Date:	06 Jul-14 16:40	**Species:**	Americamysis bahia	**Brine:**	Not Applicable
Duration:	4d 1h	**Source:**	Aquatic Biosystems, CO	**Age:**	3 d

Sample ID:	14-6108-5425	**Code:**	571664F1	**Client:**	ANAMAR
Sample Date:	02 Jun-14 08:58	**Material:**	Sediment Elutriate	**Project:**	Shipyard Creek
Receive Date:	11 Jun-14 13:10	**Source:**	Shipyard Creek		
Sample Age:	30d 7h	**Station:**	SYC14-TB1		

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
21-1743-3364	96h Proportion Survived	0	>0		8.44%		Equal Variance t Two-Sample Test
06-4609-9028	96h Proportion Survived	10	50	22.36	12.2%	10	Dunnett Multiple Comparison Test

Point Estimate Summary

Analysis ID	Endpoint	Level	%	95% LCL	95% UCL	TU	Method
00-0199-2713	96h Proportion Survived	EC50	51.98	44.53	60.68	1.924	Trimmed Spearman-Kärber

96h Proportion Survived Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water					
0	Site Water					
10						
50						
100						

96h Proportion Survived Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water					
0	Site Water					
10						
50						
100						

CETIS Analytical Report

Mysidopsis 96-h Acute Survival Test **ENVIRON**

Analysis ID:	00-0199-2713	**Endpoint:**	96h Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	04 Aug-14 12:33	**Analysis:**	Trimmed Spearman-Kärber	**Official Results:**	Yes
Batch ID:	04-8721-2696	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	02 Jul-14 15:50	**Protocol:**	SERIM (2008)	**Diluent:**	Natural Seawater
Ending Date:	06 Jul-14 16:40	**Species:**	Americamysis bahia	**Brine:**	Not Applicable
Duration:	4d 1h	**Source:**	Aquatic Biosystems, CO	**Age:**	3 d
Sample ID:	14-6108-5425	**Code:**	571664F1	**Client:**	ANAMAR
Sample Date:	02 Jun-14 08:58	**Material:**	Sediment Elutriate	**Project:**	Shipyard Creek
Receive Date:	11 Jun-14 13:10	**Source:**	Shipyard Creek		
Sample Age:	30d 7h	**Station:**	SYC14-TB1		

Trimmed Spearman-Kärber Estimates

Threshold Option	Threshold	Trim	Mu	Sigma	EC50	95% LCL	95% UCL
Control Threshold	0.04	2.08%	1.716	0.0336	51.98	44.53	60.68

96h Proportion Survived Summary

			Calculated Variate(A/B)								
C-%	**Control Type**	**Count**	**Mean**	**Min**	**Max**	**Std Err**	**Std Dev**	**CV%**	**%Effect**	**A**	**B**
0	Dilution Water	5	0.96	0.8	1	0.04	0.08944	9.32%	0.0%	48	50
10		5	0.94	0.9	1	0.02449	0.05477	5.83%	2.08%	47	50
50		5	0.7	0.5	0.9	0.07071	0.1581	22.59%	27.08%	35	50
100		5	0	0	0	0	0		100.0%	0	50

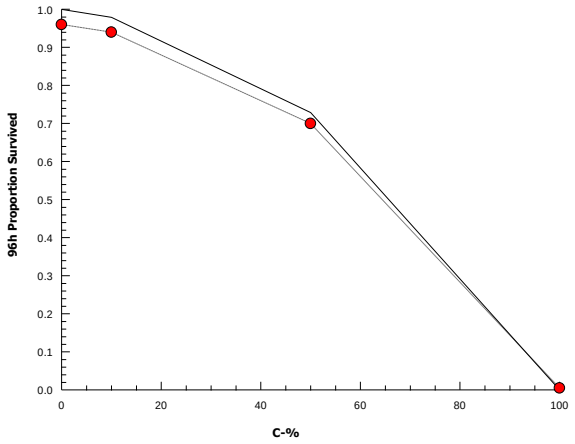
96h Proportion Survived Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	1	0.8	1	1	1
10		1	0.9	1	0.9	0.9
50		0.5	0.8	0.6	0.7	0.9
100		0	0	0	0	0

96h Proportion Survived Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water					
0	Site Water					
10						
50						
100						

Graphics



Mysidopsis 96-h Acute Survival Test **ENVIRON**

Analysis ID:	06-4609-9028	**Endpoint:**	96h Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	04 Aug-14 12:33	**Analysis:**	Parametric-Control vs Treatments	**Official Results:**	Yes
Batch ID:	04-8721-2696	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	02 Jul-14 15:50	**Protocol:**	SERIM (2008)	**Diluent:**	Natural Seawater
Ending Date:	06 Jul-14 16:40	**Species:**	Americamysis bahia	**Brine:**	Not Applicable
Duration:	4d 1h	**Source:**	Aquatic Biosystems, CO	**Age:**	3 d
Sample ID:	14-6108-5425	**Code:**	571664F1	**Client:**	ANAMAR
Sample Date:	02 Jun-14 08:58	**Material:**	Sediment Elutriate	**Project:**	Shipyard Creek
Receive Date:	11 Jun-14 13:10	**Source:**	Shipyard Creek		
Sample Age:	30d 7h	**Station:**	SYC14-TB1		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	NOEL	LOEL	TOEL	TU
Angular (Corrected)	NA	C > T	NA	NA	12.2%	10	50	22.36	10

Dunnett Multiple Comparison Test

Control	vs	C-%	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
Dilution Water		10	0.4126	2.108	0.188	8	0.4954	CDF	Non-Significant Effect
		50*	3.893	2.108	0.188	8	0.0020	CDF	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.363912	0.181956	2	9.145	0.0039	Significant Effect
Error	0.2387708	0.01989757	12			
Total	0.6026829		14			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance	1.704	9.21	0.4267	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9412	0.8328	0.3978	Normal Distribution

96h Proportion Survived Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Dilution Water	5	0.96	0.8489	1	1	0.8	1	0.04	9.32%	0.0%
10		5	0.94	0.872	1	0.9	0.9	1	0.02449	5.83%	2.08%
50		5	0.7	0.5037	0.8963	0.7	0.5	0.9	0.07071	22.59%	27.08%
100		5	0	0	0	0	0	0	0		100.0%

Angular (Corrected) Transformed Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Dilution Water	5	1.351	1.182	1.52	1.412	1.107	1.412	0.06097	10.09%	0.0%
10		5	1.314	1.203	1.425	1.249	1.249	1.412	0.03992	6.79%	2.72%
50		5	1.004	0.7777	1.23	0.9912	0.7854	1.249	0.08141	18.14%	25.7%
100		5	0.1588	0.1588	0.1588	0.1588	0.1588	0.1588	0	0.0%	88.25%

96h Proportion Survived Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	1	0.8	1	1	1
10		1	0.9	1	0.9	0.9
50		0.5	0.8	0.6	0.7	0.9
100		0	0	0	0	0

Angular (Corrected) Transformed Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	1.412	1.107	1.412	1.412	1.412
10		1.412	1.249	1.412	1.249	1.249
50		0.7854	1.107	0.8861	0.9912	1.249
100		0.1588	0.1588	0.1588	0.1588	0.1588

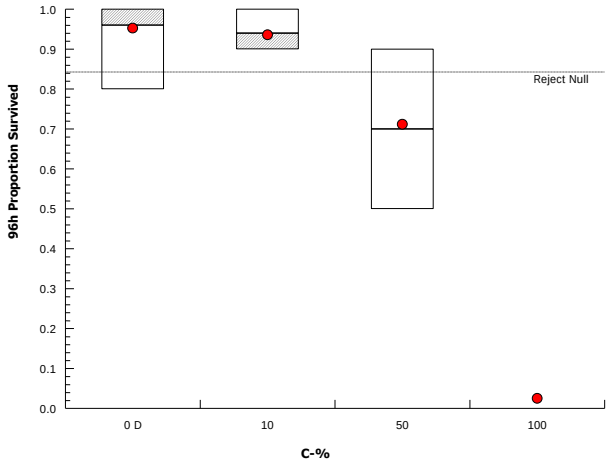
Mysidopsis 96-h Acute Survival Test **ENVIRON**

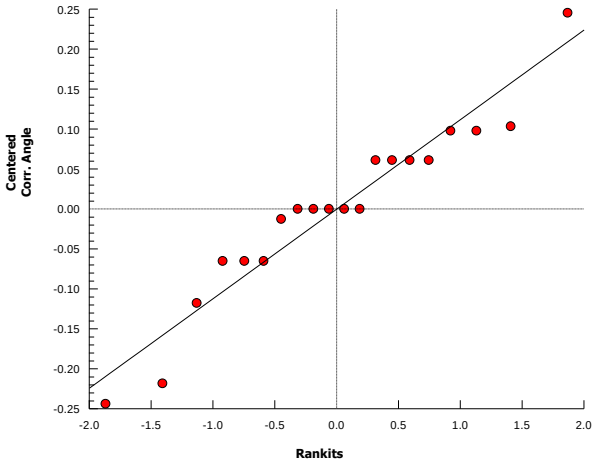
Analysis ID:	06-4609-9028	**Endpoint:**	96h Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	04 Aug-14 12:33	**Analysis:**	Parametric-Control vs Treatments	**Official Results:**	Yes

96h Proportion Survived Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water					
0	Site Water					
10						
50						
100						

Graphics





Mysidopsis 96-h Acute Survival Test **ENVIRON**

Analysis ID:	21-1743-3364	**Endpoint:**	96h Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	04 Aug-14 12:33	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes
Batch ID:	04-8721-2696	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	02 Jul-14 15:50	**Protocol:**	SERIM (2008)	**Diluent:**	Natural Seawater
Ending Date:	06 Jul-14 16:40	**Species:**	Americamysis bahia	**Brine:**	Not Applicable
Duration:	4d 1h	**Source:**	Aquatic Biosystems, CO	**Age:**	3 d
Sample ID:	14-6108-5425	**Code:**	571664F1	**Client:**	ANAMAR
Sample Date:	02 Jun-14 08:58	**Material:**	Sediment Elutriate	**Project:**	Shipyard Creek
Receive Date:	11 Jun-14 13:10	**Source:**	Shipyard Creek		
Sample Age:	30d 7h	**Station:**	SYC14-TB1		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Angular (Corrected)	NA	C > T	NA	NA	8.44%	Passes 96h proportion survived

Equal Variance t Two-Sample Test

Control	vs	Control	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
Dilution Water		Site Water	0.5051	1.86	0.136	8	0.3136	CDF	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.003387206	0.003387206	1	0.2551	0.6271	Non-Significant Effect
Error	0.1062265	0.01327831	8			
Total	0.1096137		9			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	2.333	23.15	0.4321	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.8036	0.7411	0.0160	Normal Distribution

96h Proportion Survived Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Dilution Water	5	0.96	0.8489	1	1	0.8	1	0.04	9.32%	0.0%
0	Site Water	5	0.94	0.872	1	0.9	0.9	1	0.02449	5.83%	2.08%

Angular (Corrected) Transformed Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Dilution Water	5	1.351	1.182	1.52	1.412	1.107	1.412	0.06097	10.09%	0.0%
0	Site Water	5	1.314	1.203	1.425	1.249	1.249	1.412	0.03992	6.79%	2.72%

96h Proportion Survived Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	1	0.8	1	1	1
0	Site Water	0.9	1	1	0.9	0.9

Angular (Corrected) Transformed Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	1.412	1.107	1.412	1.412	1.412
0	Site Water	1.249	1.412	1.412	1.249	1.249

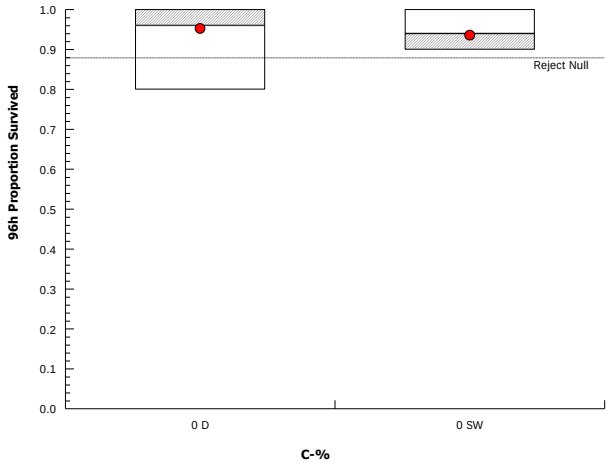
96h Proportion Survived Binomials

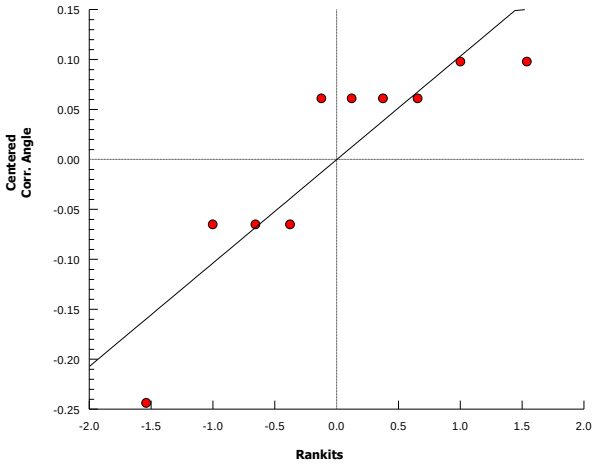
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water					
0	Site Water					

Mysidopsis 96-h Acute Survival Test **ENVIRON**

Analysis ID:	21-1743-3364	**Endpoint:**	96h Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	04 Aug-14 12:33	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Graphics





CETIS Summary Report

Mysidopsis 96-h Acute Survival Test **ENVIRON**

Batch ID:	04-8721-2696	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	02 Jul-14 15:50	**Protocol:**	SERIM (2008)	**Diluent:**	Natural Seawater
Ending Date:	06 Jul-14 16:40	**Species:**	Americamysis bahia	**Brine:**	Not Applicable
Duration:	4d 1h	**Source:**	Aquatic Biosystems, CO	**Age:**	3 d
Sample ID:	10-3022-6550	**Code:**	3D680276	**Client:**	ANAMAR
Sample Date:	02 Jun-14 08:58	**Material:**	Sediment Elutriate	**Project:**	Shipyard Creek
Receive Date:	11 Jun-14 13:10	**Source:**	Shipyard Creek		
Sample Age:	30d 7h	**Station:**	SYC14-TB1-AR		

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
05-5591-9550	96h Proportion Survived	0	>0		8.44%		Equal Variance t Two-Sample Test
16-6643-4608	96h Proportion Survived	100	>100	NA	13.6%	1	Dunnett Multiple Comparison Test

Point Estimate Summary

Analysis ID	Endpoint	Level	%	95% LCL	95% UCL	TU	Method
14-6114-2206	96h Proportion Survived	EC5	57.47	N/A	N/A	1.74	Linear Interpolation (ICPIN)
		EC10	>100	N/A	N/A	<1	
		EC15	>100	N/A	N/A	<1	
		EC20	>100	N/A	N/A	<1	
		EC25	>100	N/A	N/A	<1	
		EC40	>100	N/A	N/A	<1	
		EC50	>100	N/A	N/A	<1	

96h Proportion Survived Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Dilution Water	5	0.96	0.8489	1	0.8	1	0.04	0.08944	9.32%	0.0%
0	Site Water	5	0.94	0.872	1	0.9	1	0.02449	0.05477	5.83%	2.08%
10		5	0.92	0.7581	1	0.7	1	0.05831	0.1304	14.17%	4.17%
50		5	0.92	0.8161	1	0.8	1	0.03742	0.08367	9.09%	4.17%
100		5	0.88	0.7761	0.9839	0.8	1	0.03742	0.08367	9.51%	8.33%

96h Proportion Survived Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	1	0.8	1	1	1
0	Site Water	0.9	1	1	0.9	0.9
10		0.7	1	1	0.9	1
50		0.9	1	1	0.8	0.9
100		0.9	0.9	0.8	1	0.8

96h Proportion Survived Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	10/10	8/10	10/10	10/10	10/10
0	Site Water	9/10	10/10	10/10	9/10	9/10
10		7/10	10/10	10/10	9/10	10/10
50		9/10	10/10	10/10	8/10	9/10
100		9/10	9/10	8/10	10/10	8/10

Mysidopsis 96-h Acute Survival Test **ENVIRON**

Analysis ID:	14-6114-2206	**Endpoint:**	96h Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	04 Aug-14 12:50	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes
Batch ID:	04-8721-2696	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	02 Jul-14 15:50	**Protocol:**	SERIM (2008)	**Diluent:**	Natural Seawater
Ending Date:	06 Jul-14 16:40	**Species:**	Americamysis bahia	**Brine:**	Not Applicable
Duration:	4d 1h	**Source:**	Aquatic Biosystems, CO	**Age:**	3 d
Sample ID:	10-3022-6550	**Code:**	3D680276	**Client:**	ANAMAR
Sample Date:	02 Jun-14 08:58	**Material:**	Sediment Elutriate	**Project:**	Shipyard Creek
Receive Date:	11 Jun-14 13:10	**Source:**	Shipyard Creek		
Sample Age:	30d 7h	**Station:**	SYC14-TB1-AR		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X+1)	Linear	1267773	200	Yes	Two-Point Interpolation

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
EC5	57.47	N/A	N/A	1.74	NA	NA
EC10	>100	N/A	N/A	<1	NA	NA
EC15	>100	N/A	N/A	<1	NA	NA
EC20	>100	N/A	N/A	<1	NA	NA
EC25	>100	N/A	N/A	<1	NA	NA
EC40	>100	N/A	N/A	<1	NA	NA
EC50	>100	N/A	N/A	<1	NA	NA

96h Proportion Survived Summary

			Calculated Variate(A/B)								
C-%	**Control Type**	**Count**	**Mean**	**Min**	**Max**	**Std Err**	**Std Dev**	**CV%**	**%Effect**	**A**	**B**
0	Dilution Water	5	0.96	0.8	1	0.04	0.08944	9.32%	0.0%	48	50
10		5	0.92	0.7	1	0.05831	0.1304	14.17%	4.17%	46	50
50		5	0.92	0.8	1	0.03742	0.08367	9.09%	4.17%	46	50
100		5	0.88	0.8	1	0.03742	0.08367	9.51%	8.33%	44	50

96h Proportion Survived Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	1	0.8	1	1	1
10		0.7	1	1	0.9	1
50		0.9	1	1	0.8	0.9
100		0.9	0.9	0.8	1	0.8

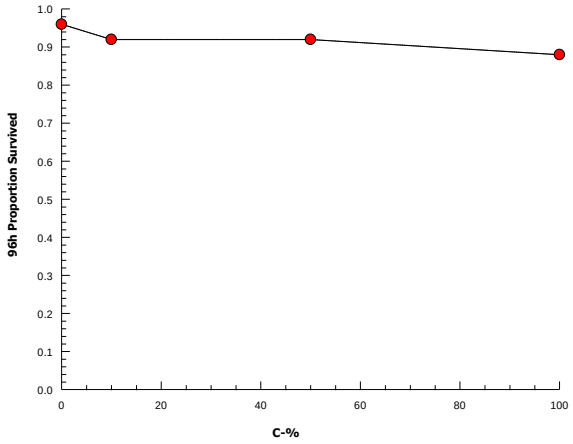
96h Proportion Survived Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	10/10	8/10	10/10	10/10	10/10
0	Site Water	9/10	10/10	10/10	9/10	9/10
10		7/10	10/10	10/10	9/10	10/10
50		9/10	10/10	10/10	8/10	9/10
100		9/10	9/10	8/10	10/10	8/10

Mysidopsis 96-h Acute Survival Test **ENVIRON**

Analysis ID:	14-6114-2206	**Endpoint:**	96h Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	04 Aug-14 12:50	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes

Graphics



Mysidopsis 96-h Acute Survival Test **ENVIRON**

Analysis ID:	16-6643-4608	**Endpoint:**	96h Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	04 Aug-14 12:50	**Analysis:**	Parametric-Control vs Treatments	**Official Results:**	Yes
Batch ID:	04-8721-2696	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	02 Jul-14 15:50	**Protocol:**	SERIM (2008)	**Diluent:**	Natural Seawater
Ending Date:	06 Jul-14 16:40	**Species:**	Americamysis bahia	**Brine:**	Not Applicable
Duration:	4d 1h	**Source:**	Aquatic Biosystems, CO	**Age:**	3 d
Sample ID:	10-3022-6550	**Code:**	3D680276	**Client:**	ANAMAR
Sample Date:	02 Jun-14 08:58	**Material:**	Sediment Elutriate	**Project:**	Shipyard Creek
Receive Date:	11 Jun-14 13:10	**Source:**	Shipyard Creek		
Sample Age:	30d 7h	**Station:**	SYC14-TB1-AR		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	NOEL	LOEL	TOEL	TU
Angular (Corrected)	NA	C > T	NA	NA	13.6%	100	>100	NA	1

Dunnett Multiple Comparison Test

Control	vs	C-%	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
Dilution Water		10	0.6049	2.227	0.205	8	0.4983	CDF	Non-Significant Effect
		50	0.7068	2.227	0.205	8	0.4536	CDF	Non-Significant Effect
		100	1.368	2.227	0.205	8	0.2059	CDF	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.04004613	0.01334871	3	0.6277	0.6076	Non-Significant Effect
Error	0.3402541	0.02126588	16			
Total	0.3803003		19			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance	0.7294	11.34	0.8663	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9173	0.866	0.0879	Normal Distribution

96h Proportion Survived Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Dilution Water	5	0.96	0.8489	1	1	0.8	1	0.04	9.32%	0.0%
10		5	0.92	0.7581	1	1	0.7	1	0.05831	14.17%	4.17%
50		5	0.92	0.8161	1	0.9	0.8	1	0.03742	9.09%	4.17%
100		5	0.88	0.7761	0.9839	0.9	0.8	1	0.03742	9.51%	8.33%

Angular (Corrected) Transformed Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Dilution Water	5	1.351	1.182	1.52	1.412	1.107	1.412	0.06097	10.09%	0.0%
10		5	1.295	1.067	1.524	1.412	0.9912	1.412	0.08231	14.21%	4.13%
50		5	1.286	1.126	1.446	1.249	1.107	1.412	0.05765	10.03%	4.83%
100		5	1.225	1.068	1.382	1.249	1.107	1.412	0.05653	10.32%	9.34%

96h Proportion Survived Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	1	0.8	1	1	1
10		0.7	1	1	0.9	1
50		0.9	1	1	0.8	0.9
100		0.9	0.9	0.8	1	0.8

Mysidopsis 96-h Acute Survival Test **ENVIRON**

Analysis ID:	16-6643-4608	**Endpoint:**	96h Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	04 Aug-14 12:50	**Analysis:**	Parametric-Control vs Treatments	**Official Results:**	Yes

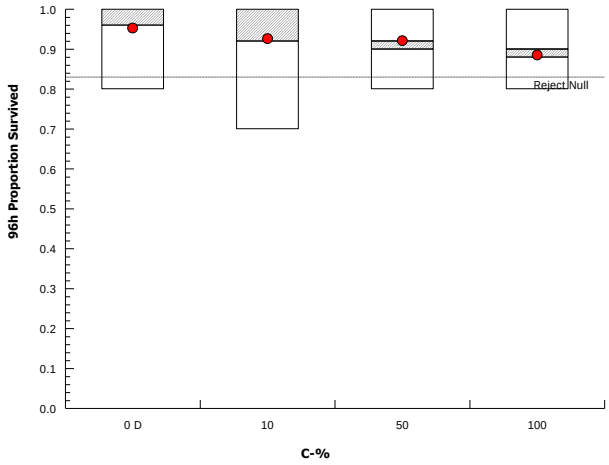
Angular (Corrected) Transformed Detail

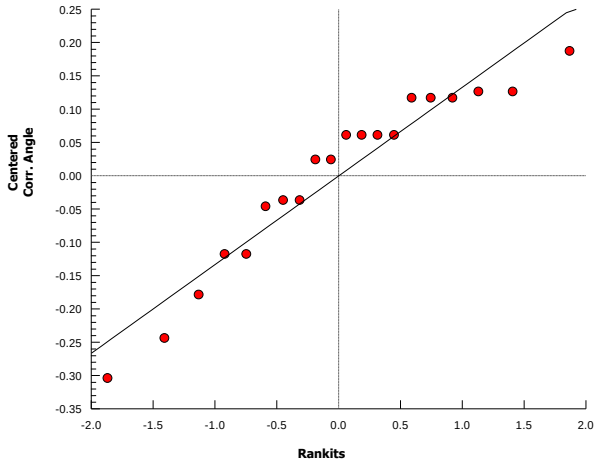
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	1.412	1.107	1.412	1.412	1.412
10		0.9912	1.412	1.412	1.249	1.412
50		1.249	1.412	1.412	1.107	1.249
100		1.249	1.249	1.107	1.412	1.107

96h Proportion Survived Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	10/10	8/10	10/10	10/10	10/10
0	Site Water	9/10	10/10	10/10	9/10	9/10
10		7/10	10/10	10/10	9/10	10/10
50		9/10	10/10	10/10	8/10	9/10
100		9/10	9/10	8/10	10/10	8/10

Graphics





Mysidopsis 96-h Acute Survival Test **ENVIRON**

Analysis ID:	05-5591-9550	**Endpoint:**	96h Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	04 Aug-14 12:50	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes
Batch ID:	04-8721-2696	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	02 Jul-14 15:50	**Protocol:**	SERIM (2008)	**Diluent:**	Natural Seawater
Ending Date:	06 Jul-14 16:40	**Species:**	Americamysis bahia	**Brine:**	Not Applicable
Duration:	4d 1h	**Source:**	Aquatic Biosystems, CO	**Age:**	3 d
Sample ID:	10-3022-6550	**Code:**	3D680276	**Client:**	ANAMAR
Sample Date:	02 Jun-14 08:58	**Material:**	Sediment Elutriate	**Project:**	Shipyard Creek
Receive Date:	11 Jun-14 13:10	**Source:**	Shipyard Creek		
Sample Age:	30d 7h	**Station:**	SYC14-TB1-AR		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Angular (Corrected)	NA	C > T	NA	NA	8.44%	Passes 96h proportion survived

Equal Variance t Two-Sample Test

Control	vs	Control	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
Dilution Water		Site Water	0.5051	1.86	0.136	8	0.3136	CDF	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.003387206	0.003387206	1	0.2551	0.6271	Non-Significant Effect
Error	0.1062265	0.01327831	8			
Total	0.1096137		9			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	2.333	23.15	0.4321	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.8036	0.7411	0.0160	Normal Distribution

96h Proportion Survived Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Dilution Water	5	0.96	0.8489	1	1	0.8	1	0.04	9.32%	0.0%
0	Site Water	5	0.94	0.872	1	0.9	0.9	1	0.02449	5.83%	2.08%

Angular (Corrected) Transformed Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Dilution Water	5	1.351	1.182	1.52	1.412	1.107	1.412	0.06097	10.09%	0.0%
0	Site Water	5	1.314	1.203	1.425	1.249	1.249	1.412	0.03992	6.79%	2.72%

96h Proportion Survived Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	1	0.8	1	1	1
0	Site Water	0.9	1	1	0.9	0.9

Angular (Corrected) Transformed Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	1.412	1.107	1.412	1.412	1.412
0	Site Water	1.249	1.412	1.412	1.249	1.249

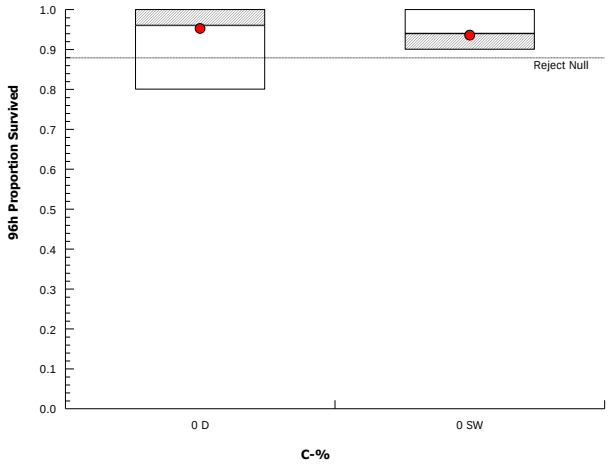
96h Proportion Survived Binomials

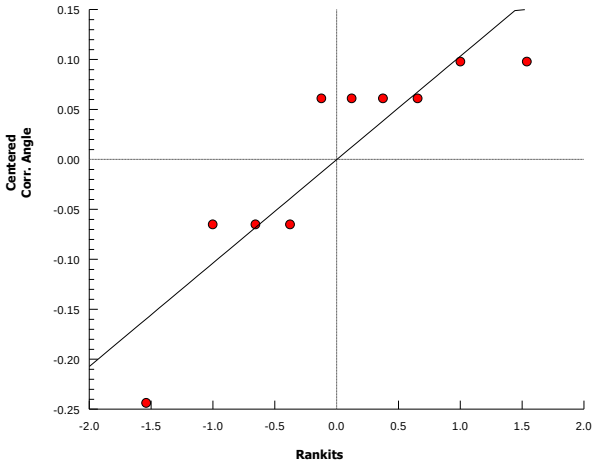
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	10/10	8/10	10/10	10/10	10/10
0	Site Water	9/10	10/10	10/10	9/10	9/10

Mysidopsis 96-h Acute Survival Test **ENVIRON**

Analysis ID:	05-5591-9550	**Endpoint:**	96h Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	04 Aug-14 12:50	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Graphics





CETIS Summary Report

Mysidopsis 96-h Acute Survival Test **ENVIRON**

Batch ID:	04-8721-2696	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	02 Jul-14 15:50	**Protocol:**	SERIM (2008)	**Diluent:**	Natural Seawater
Ending Date:	06 Jul-14 16:40	**Species:**	Americamysis bahia	**Brine:**	Not Applicable
Duration:	4d 1h	**Source:**	Aquatic Biosystems, CO	**Age:**	3 d
Sample ID:	00-1256-8329	**Code:**	BFC709	**Client:**	ANAMAR
Sample Date:	03 Jun-14 11:36	**Material:**	Sediment Elutriate	**Project:**	Shipyard Creek
Receive Date:	11 Jun-14 13:10	**Source:**	Shipyard Creek		
Sample Age:	29d 4h	**Station:**	SYC14-TB2		

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
21-0224-0129	96h Proportion Survived	0	>0		8.44%		Equal Variance t Two-Sample Test
05-6740-0782	96h Proportion Survived	10	50	22.36	18.0%	10	Dunnett Multiple Comparison Test

Point Estimate Summary

Analysis ID	Endpoint	Level	%	95% LCL	95% UCL	TU	Method
20-5598-0838	96h Proportion Survived	EC50	49.76	41.43	59.76	2.01	Trimmed Spearman-Kärber

96h Proportion Survived Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Dilution Water	5	0.96	0.8489	1	0.8	1	0.04	0.08944	9.32%	0.0%
0	Site Water	5	0.94	0.872	1	0.9	1	0.02449	0.05477	5.83%	2.08%
10		5	0.9	0.6849	1	0.6	1	0.07746	0.1732	19.25%	6.25%
50		5	0.66	0.4344	0.8856	0.5	0.9	0.08124	0.1817	27.52%	31.25%
100		5	0	0	0	0	0	0	0		100.0%

96h Proportion Survived Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	1	0.8	1	1	1
0	Site Water	0.9	1	1	0.9	0.9
10		1	1	1	0.6	0.9
50		0.6	0.5	0.8	0.9	0.5
100		0	0	0	0	0

96h Proportion Survived Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	10/10	8/10	10/10	10/10	10/10
0	Site Water	9/10	10/10	10/10	9/10	9/10
10		10/10	10/10	10/10	6/10	9/10
50		6/10	5/10	8/10	9/10	5/10
100		0/10	0/10	0/10	0/10	0/10

CETIS Analytical Report

Mysidopsis 96-h Acute Survival Test **ENVIRON**

Analysis ID:	20-5598-0838	**Endpoint:**	96h Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	04 Aug-14 12:07	**Analysis:**	Trimmed Spearman-Kärber	**Official Results:**	Yes
Batch ID:	04-8721-2696	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	02 Jul-14 15:50	**Protocol:**	SERIM (2008)	**Diluent:**	Natural Seawater
Ending Date:	06 Jul-14 16:40	**Species:**	Americamysis bahia	**Brine:**	Not Applicable
Duration:	4d 1h	**Source:**	Aquatic Biosystems, CO	**Age:**	3 d
Sample ID:	00-1256-8329	**Code:**	BFC709	**Client:**	ANAMAR
Sample Date:	03 Jun-14 11:36	**Material:**	Sediment Elutriate	**Project:**	Shipyard Creek
Receive Date:	11 Jun-14 13:10	**Source:**	Shipyard Creek		
Sample Age:	29d 4h	**Station:**	SYC14-TB2		

Trimmed Spearman-Kärber Estimates

Threshold Option	Threshold	Trim	Mu	Sigma	EC50	95% LCL	95% UCL
Control Threshold	0.04	6.25%	1.697	0.03979	49.76	41.43	59.76

96h Proportion Survived Summary

			Calculated Variate(A/B)								
C-%	**Control Type**	**Count**	**Mean**	**Min**	**Max**	**Std Err**	**Std Dev**	**CV%**	**%Effect**	**A**	**B**
0	Dilution Water	5	0.96	0.8	1	0.04	0.08944	9.32%	0.0%	48	50
10		5	0.9	0.6	1	0.07746	0.1732	19.25%	6.25%	45	50
50		5	0.66	0.5	0.9	0.08124	0.1817	27.52%	31.25%	33	50
100		5	0	0	0	0	0		100.0%	0	50

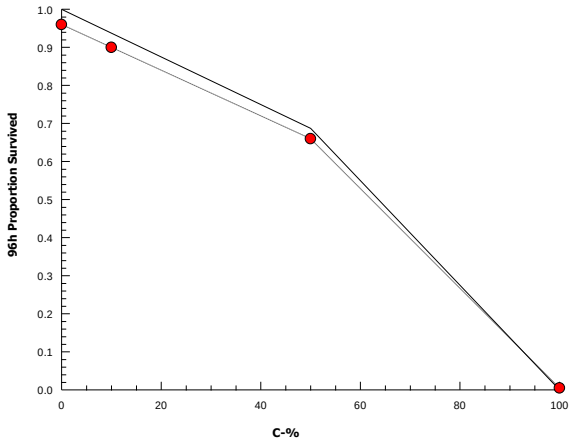
96h Proportion Survived Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	1	0.8	1	1	1
10		1	1	1	0.6	0.9
50		0.6	0.5	0.8	0.9	0.5
100		0	0	0	0	0

96h Proportion Survived Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	10/10	8/10	10/10	10/10	10/10
0	Site Water	9/10	10/10	10/10	9/10	9/10
10		10/10	10/10	10/10	6/10	9/10
50		6/10	5/10	8/10	9/10	5/10
100		0/10	0/10	0/10	0/10	0/10

Graphics



Mysidopsis 96-h Acute Survival Test **ENVIRON**

Analysis ID:	05-6740-0782	**Endpoint:**	96h Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	04 Aug-14 12:07	**Analysis:**	Parametric-Control vs Treatments	**Official Results:**	Yes
Batch ID:	04-8721-2696	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	02 Jul-14 15:50	**Protocol:**	SERIM (2008)	**Diluent:**	Natural Seawater
Ending Date:	06 Jul-14 16:40	**Species:**	Americamysis bahia	**Brine:**	Not Applicable
Duration:	4d 1h	**Source:**	Aquatic Biosystems, CO	**Age:**	3 d
Sample ID:	00-1256-8329	**Code:**	BFC709	**Client:**	ANAMAR
Sample Date:	03 Jun-14 11:36	**Material:**	Sediment Elutriate	**Project:**	Shipyard Creek
Receive Date:	11 Jun-14 13:10	**Source:**	Shipyard Creek		
Sample Age:	29d 4h	**Station:**	SYC14-TB2		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	NOEL	LOEL	TOEL	TU
Angular (Corrected)	NA	C > T	NA	NA	18.0%	10	50	22.36	10

Dunnett Multiple Comparison Test

Control	vs	C-%	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
Dilution Water		10	0.6242	2.108	0.259	8	0.4071	CDF	Non-Significant Effect
		50*	3.157	2.108	0.259	8	0.0076	CDF	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.4231401	0.2115701	2	5.59	0.0193	Significant Effect
Error	0.4542095	0.03785079	12			
Total	0.8773496		14			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance	0.9614	9.21	0.6184	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9307	0.8328	0.2793	Normal Distribution

96h Proportion Survived Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Dilution Water	5	0.96	0.8489	1	1	0.8	1	0.04	9.32%	0.0%
10		5	0.9	0.6849	1	1	0.6	1	0.07746	19.25%	6.25%
50		5	0.66	0.4344	0.8856	0.6	0.5	0.9	0.08124	27.52%	31.25%
100		5	0	0	0	0	0	0	0		100.0%

Angular (Corrected) Transformed Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Dilution Water	5	1.351	1.182	1.52	1.412	1.107	1.412	0.06097	10.09%	0.0%
10		5	1.274	0.9909	1.558	1.412	0.8861	1.412	0.102	17.91%	5.69%
50		5	0.9626	0.7054	1.22	0.8861	0.7854	1.249	0.09263	21.52%	28.75%
100		5	0.1588	0.1588	0.1588	0.1588	0.1588	0.1588	0	0.0%	88.25%

96h Proportion Survived Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	1	0.8	1	1	1
10		1	1	1	0.6	0.9
50		0.6	0.5	0.8	0.9	0.5
100		0	0	0	0	0

Angular (Corrected) Transformed Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	1.412	1.107	1.412	1.412	1.412
10		1.412	1.412	1.412	0.8861	1.249
50		0.8861	0.7854	1.107	1.249	0.7854
100		0.1588	0.1588	0.1588	0.1588	0.1588

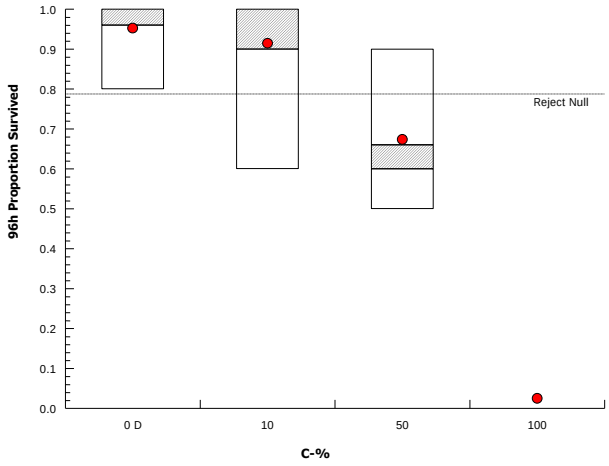
Mysidopsis 96-h Acute Survival Test **ENVIRON**

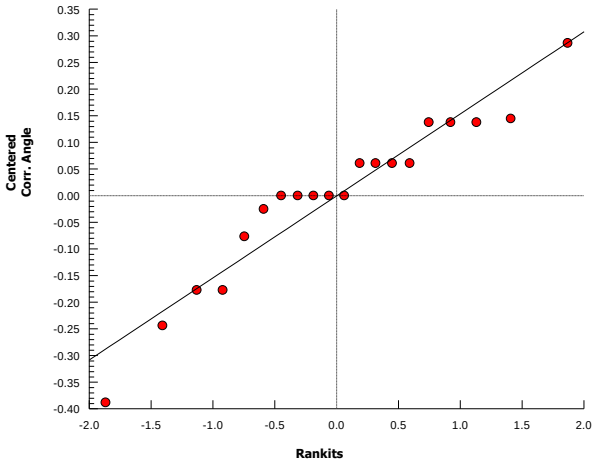
Analysis ID:	05-6740-0782	**Endpoint:**	96h Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	04 Aug-14 12:07	**Analysis:**	Parametric-Control vs Treatments	**Official Results:**	Yes

96h Proportion Survived Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	10/10	8/10	10/10	10/10	10/10
0	Site Water	9/10	10/10	10/10	9/10	9/10
10		10/10	10/10	10/10	6/10	9/10
50		6/10	5/10	8/10	9/10	5/10
100		0/10	0/10	0/10	0/10	0/10

Graphics





Mysidopsis 96-h Acute Survival Test **ENVIRON**

Analysis ID:	21-0224-0129	**Endpoint:**	96h Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	04 Aug-14 12:07	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes
Batch ID:	04-8721-2696	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	02 Jul-14 15:50	**Protocol:**	SERIM (2008)	**Diluent:**	Natural Seawater
Ending Date:	06 Jul-14 16:40	**Species:**	Americamysis bahia	**Brine:**	Not Applicable
Duration:	4d 1h	**Source:**	Aquatic Biosystems, CO	**Age:**	3 d
Sample ID:	00-1256-8329	**Code:**	BFC709	**Client:**	ANAMAR
Sample Date:	03 Jun-14 11:36	**Material:**	Sediment Elutriate	**Project:**	Shipyard Creek
Receive Date:	11 Jun-14 13:10	**Source:**	Shipyard Creek		
Sample Age:	29d 4h	**Station:**	SYC14-TB2		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Angular (Corrected)	NA	C > T	NA	NA	8.44%	Passes 96h proportion survived

Equal Variance t Two-Sample Test

Control	vs	Control	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
Dilution Water		Site Water	0.5051	1.86	0.136	8	0.3136	CDF	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.003387206	0.003387206	1	0.2551	0.6271	Non-Significant Effect
Error	0.1062265	0.01327831	8			
Total	0.1096137		9			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	2.333	23.15	0.4321	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.8036	0.7411	0.0160	Normal Distribution

96h Proportion Survived Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Dilution Water	5	0.96	0.8489	1	1	0.8	1	0.04	9.32%	0.0%
0	Site Water	5	0.94	0.872	1	0.9	0.9	1	0.02449	5.83%	2.08%

Angular (Corrected) Transformed Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Dilution Water	5	1.351	1.182	1.52	1.412	1.107	1.412	0.06097	10.09%	0.0%
0	Site Water	5	1.314	1.203	1.425	1.249	1.249	1.412	0.03992	6.79%	2.72%

96h Proportion Survived Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	1	0.8	1	1	1
0	Site Water	0.9	1	1	0.9	0.9

Angular (Corrected) Transformed Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	1.412	1.107	1.412	1.412	1.412
0	Site Water	1.249	1.412	1.412	1.249	1.249

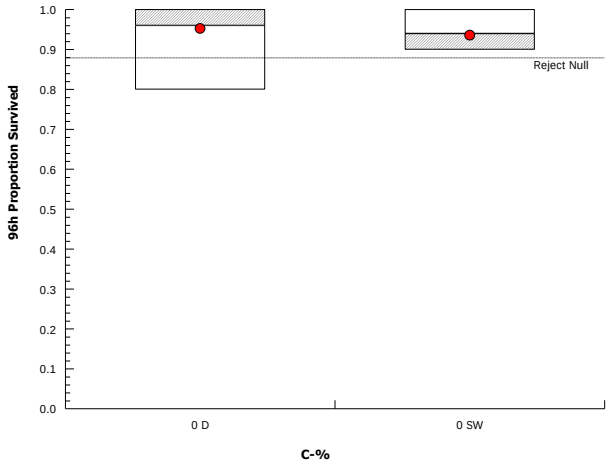
96h Proportion Survived Binomials

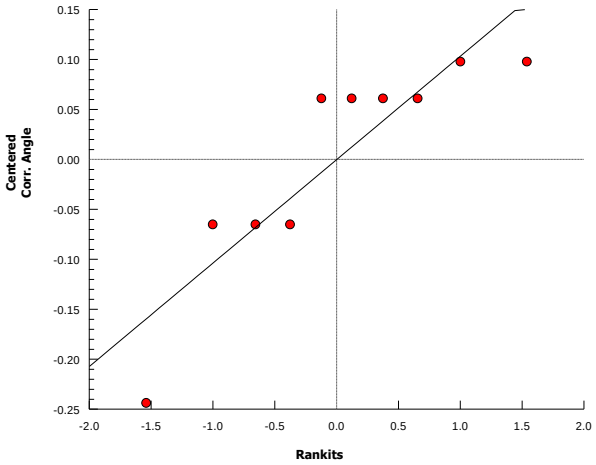
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	10/10	8/10	10/10	10/10	10/10
0	Site Water	9/10	10/10	10/10	9/10	9/10

Mysidopsis 96-h Acute Survival Test **ENVIRON**

Analysis ID:	21-0224-0129	**Endpoint:**	96h Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	04 Aug-14 12:07	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Graphics





CETIS Summary Report

Mysidopsis 96-h Acute Survival Test **ENVIRON**

Batch ID:	04-8721-2696	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	02 Jul-14 15:50	**Protocol:**	SERIM (2008)	**Diluent:**	Natural Seawater
Ending Date:	06 Jul-14 16:40	**Species:**	Americamysis bahia	**Brine:**	Not Applicable
Duration:	4d 1h	**Source:**	Aquatic Biosystems, CO	**Age:**	3 d
Sample ID:	15-2324-8639	**Code:**	5ACAEDFF	**Client:**	ANAMAR
Sample Date:	03 Jun-14 11:36	**Material:**	Sediment Elutriate	**Project:**	Shipyard Creek
Receive Date:	11 Jun-14 13:10	**Source:**	Shipyard Creek		
Sample Age:	29d 4h	**Station:**	SYC14-TB2-AR		

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
06-1221-9628	96h Proportion Survived	0	>0		8.44%		Equal Variance t Two-Sample Test
08-1880-9683	96h Proportion Survived	100	>100	NA	9.49%	1	Steel Many-One Rank Sum Test

Point Estimate Summary

Analysis ID	Endpoint	Level	%	95% LCL	95% UCL	TU	Method
14-7973-0038	96h Proportion Survived	EC5	>100	N/A	N/A	<1	Linear Interpolation (ICPIN)
		EC10	>100	N/A	N/A	<1	
		EC15	>100	N/A	N/A	<1	
		EC20	>100	N/A	N/A	<1	
		EC25	>100	N/A	N/A	<1	
		EC40	>100	N/A	N/A	<1	
		EC50	>100	N/A	N/A	<1	

96h Proportion Survived Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Dilution Water	5	0.96	0.8489	1	0.8	1	0.04	0.08944	9.32%	0.0%
0	Site Water	5	0.94	0.872	1	0.9	1	0.02449	0.05477	5.83%	2.08%
10		5	0.92	0.8161	1	0.8	1	0.03742	0.08367	9.09%	4.17%
50		5	0.98	0.9245	1	0.9	1	0.02	0.04472	4.56%	-2.08%
100		5	0.98	0.9245	1	0.9	1	0.02	0.04472	4.56%	-2.08%

96h Proportion Survived Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	1	0.8	1	1	1
0	Site Water	0.9	1	1	0.9	0.9
10		1	0.9	0.9	0.8	1
50		1	1	0.9	1	1
100		1	1	1	0.9	1

96h Proportion Survived Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	10/10	8/10	10/10	10/10	10/10
0	Site Water	9/10	10/10	10/10	9/10	9/10
10		10/10	9/10	9/10	8/10	10/10
50		10/10	10/10	9/10	10/10	10/10
100		10/10	10/10	10/10	9/10	10/10

Mysidopsis 96-h Acute Survival Test **ENVIRON**

Analysis ID:	14-7973-0038	**Endpoint:**	96h Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	04 Aug-14 13:07	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes
Batch ID:	04-8721-2696	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	02 Jul-14 15:50	**Protocol:**	SERIM (2008)	**Diluent:**	Natural Seawater
Ending Date:	06 Jul-14 16:40	**Species:**	Americamysis bahia	**Brine:**	Not Applicable
Duration:	4d 1h	**Source:**	Aquatic Biosystems, CO	**Age:**	3 d
Sample ID:	15-2324-8639	**Code:**	5ACAEDFF	**Client:**	ANAMAR
Sample Date:	03 Jun-14 11:36	**Material:**	Sediment Elutriate	**Project:**	Shipyard Creek
Receive Date:	11 Jun-14 13:10	**Source:**	Shipyard Creek		
Sample Age:	29d 4h	**Station:**	SYC14-TB2-AR		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X+1)	Linear	121642	200	Yes	Two-Point Interpolation

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
EC5	>100	N/A	N/A	<1	NA	NA
EC10	>100	N/A	N/A	<1	NA	NA
EC15	>100	N/A	N/A	<1	NA	NA
EC20	>100	N/A	N/A	<1	NA	NA
EC25	>100	N/A	N/A	<1	NA	NA
EC40	>100	N/A	N/A	<1	NA	NA
EC50	>100	N/A	N/A	<1	NA	NA

96h Proportion Survived Summary

			Calculated Variate(A/B)								
C-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	A	B
0	Dilution Water	5	0.96	0.8	1	0.04	0.08944	9.32%	0.0%	48	50
10		5	0.92	0.8	1	0.03742	0.08367	9.09%	4.17%	46	50
50		5	0.98	0.9	1	0.02	0.04472	4.56%	-2.08%	49	50
100		5	0.98	0.9	1	0.02	0.04472	4.56%	-2.08%	49	50

96h Proportion Survived Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	1	0.8	1	1	1
10		1	0.9	0.9	0.8	1
50		1	1	0.9	1	1
100		1	1	1	0.9	1

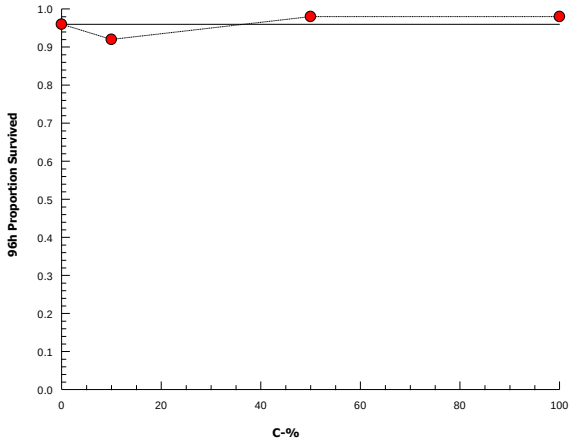
96h Proportion Survived Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	10/10	8/10	10/10	10/10	10/10
0	Site Water	9/10	10/10	10/10	9/10	9/10
10		10/10	9/10	9/10	8/10	10/10
50		10/10	10/10	9/10	10/10	10/10
100		10/10	10/10	10/10	9/10	10/10

Mysidopsis 96-h Acute Survival Test **ENVIRON**

Analysis ID:	14-7973-0038	**Endpoint:**	96h Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	04 Aug-14 13:07	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes

Graphics



Mysidopsis 96-h Acute Survival Test **ENVIRON**

Analysis ID:	08-1880-9683	**Endpoint:**	96h Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	04 Aug-14 13:07	**Analysis:**	Nonparametric-Control vs Treatments	**Official Results:**	Yes
Batch ID:	04-8721-2696	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	02 Jul-14 15:50	**Protocol:**	SERIM (2008)	**Diluent:**	Natural Seawater
Ending Date:	06 Jul-14 16:40	**Species:**	Americamysis bahia	**Brine:**	Not Applicable
Duration:	4d 1h	**Source:**	Aquatic Biosystems, CO	**Age:**	3 d
Sample ID:	15-2324-8639	**Code:**	5ACAEDFF	**Client:**	ANAMAR
Sample Date:	03 Jun-14 11:36	**Material:**	Sediment Elutriate	**Project:**	Shipyard Creek
Receive Date:	11 Jun-14 13:10	**Source:**	Shipyard Creek		
Sample Age:	29d 4h	**Station:**	SYC14-TB2-AR		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	NOEL	LOEL	TOEL	TU
Angular (Corrected)	NA	C > T	NA	NA	9.49%	100	>100	NA	1

Steel Many-One Rank Sum Test

Control	vs	C-%	Test Stat	Critical	Ties	DF	P-Value	P-Type	Decision(α:5%)
Dilution Water		10	23.5	17	2	8	0.3913	Asymp	Non-Significant Effect
		50	28	17	1	8	0.7865	Asymp	Non-Significant Effect
		100	28	17	1	8	0.7865	Asymp	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.02921256	0.00973752	3	0.8498	0.4868	Non-Significant Effect
Error	0.1833293	0.01145808	16			
Total	0.2125418		19			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance	2.47	11.34	0.4808	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.8364	0.866	0.0032	Non-normal Distribution

96h Proportion Survived Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Dilution Water	5	0.96	0.8489	1	1	0.8	1	0.04	9.32%	0.0%
10		5	0.92	0.8161	1	0.9	0.8	1	0.03742	9.09%	4.17%
50		5	0.98	0.9245	1	1	0.9	1	0.02	4.56%	-2.08%
100		5	0.98	0.9245	1	1	0.9	1	0.02	4.56%	-2.08%

Angular (Corrected) Transformed Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Dilution Water	5	1.351	1.182	1.52	1.412	1.107	1.412	0.06097	10.09%	0.0%
10		5	1.286	1.126	1.446	1.249	1.107	1.412	0.05765	10.03%	4.83%
50		5	1.379	1.289	1.47	1.412	1.249	1.412	0.03259	5.28%	-2.1%
100		5	1.379	1.289	1.47	1.412	1.249	1.412	0.03259	5.28%	-2.1%

96h Proportion Survived Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	1	0.8	1	1	1
10		1	0.9	0.9	0.8	1
50		1	1	0.9	1	1
100		1	1	1	0.9	1

Mysidopsis 96-h Acute Survival Test **ENVIRON**

Analysis ID:	08-1880-9683	**Endpoint:**	96h Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	04 Aug-14 13:07	**Analysis:**	Nonparametric-Control vs Treatments	**Official Results:**	Yes

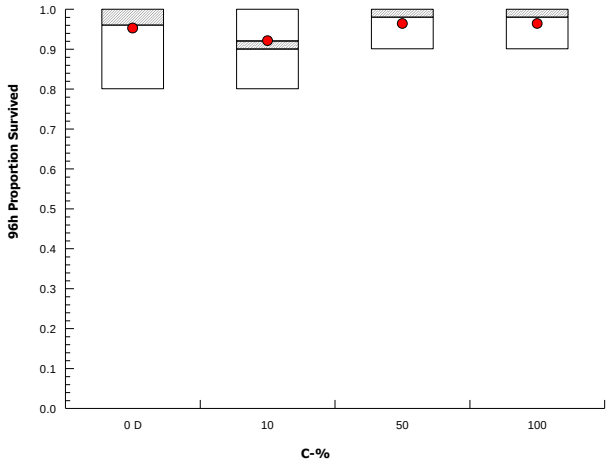
Angular (Corrected) Transformed Detail

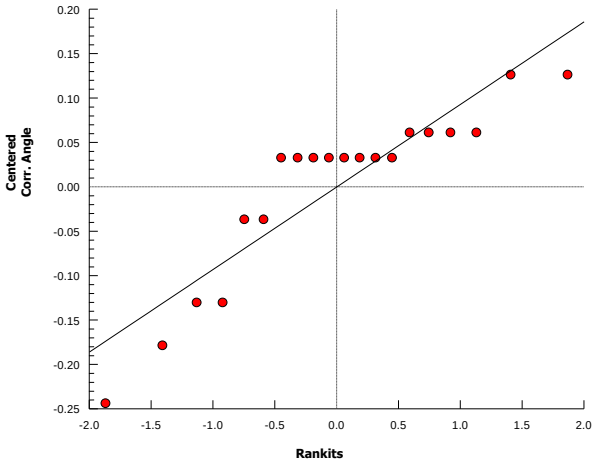
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	1.412	1.107	1.412	1.412	1.412
10		1.412	1.249	1.249	1.107	1.412
50		1.412	1.412	1.249	1.412	1.412
100		1.412	1.412	1.412	1.249	1.412

96h Proportion Survived Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	10/10	8/10	10/10	10/10	10/10
0	Site Water	9/10	10/10	10/10	9/10	9/10
10		10/10	9/10	9/10	8/10	10/10
50		10/10	10/10	9/10	10/10	10/10
100		10/10	10/10	10/10	9/10	10/10

Graphics





Mysidopsis 96-h Acute Survival Test **ENVIRON**

Analysis ID:	06-1221-9628	**Endpoint:**	96h Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	04 Aug-14 13:07	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes
Batch ID:	04-8721-2696	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	02 Jul-14 15:50	**Protocol:**	SERIM (2008)	**Diluent:**	Natural Seawater
Ending Date:	06 Jul-14 16:40	**Species:**	Americamysis bahia	**Brine:**	Not Applicable
Duration:	4d 1h	**Source:**	Aquatic Biosystems, CO	**Age:**	3 d
Sample ID:	15-2324-8639	**Code:**	5ACAEDFF	**Client:**	ANAMAR
Sample Date:	03 Jun-14 11:36	**Material:**	Sediment Elutriate	**Project:**	Shipyard Creek
Receive Date:	11 Jun-14 13:10	**Source:**	Shipyard Creek		
Sample Age:	29d 4h	**Station:**	SYC14-TB2-AR		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Angular (Corrected)	NA	C > T	NA	NA	8.44%	Passes 96h proportion survived

Equal Variance t Two-Sample Test

Control	vs	Control	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
Dilution Water		Site Water	0.5051	1.86	0.136	8	0.3136	CDF	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.003387206	0.003387206	1	0.2551	0.6271	Non-Significant Effect
Error	0.1062265	0.01327831	8			
Total	0.1096137		9			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	2.333	23.15	0.4321	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.8036	0.7411	0.0160	Normal Distribution

96h Proportion Survived Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Dilution Water	5	0.96	0.8489	1	1	0.8	1	0.04	9.32%	0.0%
0	Site Water	5	0.94	0.872	1	0.9	0.9	1	0.02449	5.83%	2.08%

Angular (Corrected) Transformed Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Dilution Water	5	1.351	1.182	1.52	1.412	1.107	1.412	0.06097	10.09%	0.0%
0	Site Water	5	1.314	1.203	1.425	1.249	1.249	1.412	0.03992	6.79%	2.72%

96h Proportion Survived Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	1	0.8	1	1	1
0	Site Water	0.9	1	1	0.9	0.9

Angular (Corrected) Transformed Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	1.412	1.107	1.412	1.412	1.412
0	Site Water	1.249	1.412	1.412	1.249	1.249

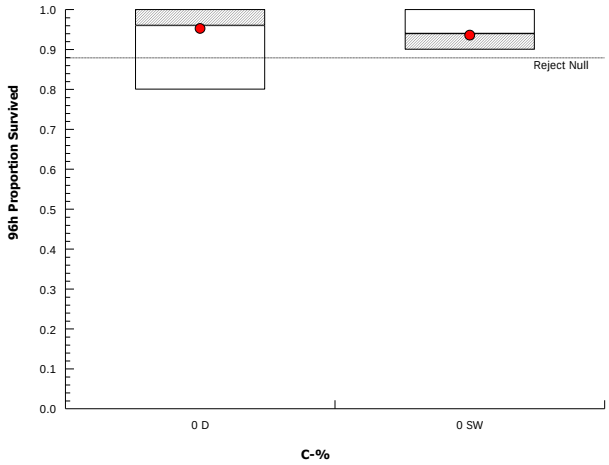
96h Proportion Survived Binomials

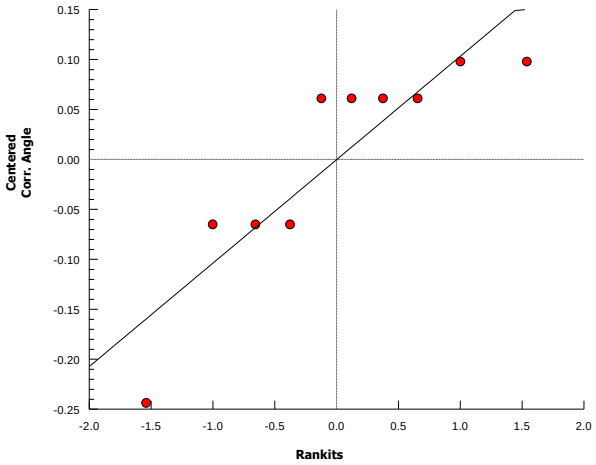
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	10/10	8/10	10/10	10/10	10/10
0	Site Water	9/10	10/10	10/10	9/10	9/10

Mysidopsis 96-h Acute Survival Test **ENVIRON**

Analysis ID:	06-1221-9628	**Endpoint:**	96h Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	04 Aug-14 13:07	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Graphics





APPENDIX B.2 Statistical Results: *M. beryllina* Water-Column Test

Inland Silverside 96-h Acute Survival Test **ENVIRON**

Batch ID:	18-0051-3489	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	02 Jul-14 16:00	**Protocol:**	SERIM (2008)	**Diluent:**	Natural Seawater
Ending Date:	06 Jul-14 17:45	**Species:**	Menidia beryllina	**Brine:**	Not Applicable
Duration:	4d 2h	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	05-9497-1367	**Code:**	23768AE7	**Client:**	ANAMAR
Sample Date:	04 Jun-14 10:29	**Material:**	Sediment Elutriate	**Project:**	Shipyard Creek
Receive Date:	10 Jun-14 13:20	**Source:**	Shipyard Creek		
Sample Age:	28d 6h	**Station:**	SYC14-SW		

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
10-5992-2795	96h Proportion Survived	0	>0		16.1%		Equal Variance t Two-Sample Test

96h Proportion Survived Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Dilution Water	5	0.9	0.7479	1	0.7	1	0.05477	0.1225	13.61%	0.0%
0	Site Water	5	0.92	0.7581	1	0.7	1	0.05831	0.1304	14.17%	-2.22%

96h Proportion Survived Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	0.9	1	1	0.7	0.9
0	Site Water	0.7	1	0.9	1	1

96h Proportion Survived Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	9/10	10/10	10/10	7/10	9/10
0	Site Water	7/10	10/10	9/10	10/10	10/10

Inland Silverside 96-h Acute Survival Test **ENVIRON**

Analysis ID:	10-5992-2795	**Endpoint:**	96h Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	03 Sep-14 10:50	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes
Batch ID:	18-0051-3489	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	02 Jul-14 16:00	**Protocol:**	SERIM (2008)	**Diluent:**	Natural Seawater
Ending Date:	06 Jul-14 17:45	**Species:**	Menidia beryllina	**Brine:**	Not Applicable
Duration:	4d 2h	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	05-9497-1367	**Code:**	23768AE7	**Client:**	ANAMAR
Sample Date:	04 Jun-14 10:29	**Material:**	Sediment Elutriate	**Project:**	Shipyard Creek
Receive Date:	10 Jun-14 13:20	**Source:**	Shipyard Creek		
Sample Age:	28d 6h	**Station:**	SYC14-SW		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Angular (Corrected)	NA	C > T	NA	NA	16.1%	Passes 96h proportion survived

Equal Variance t Two-Sample Test

Control	vs	Control	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
Dilution Water		Site Water	-0.2891	1.86	0.21	8	0.6101	CDF	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.002655933	0.002655933	1	0.08358	0.7799	Non-Significant Effect
Error	0.2542099	0.03177624	8			
Total	0.2568658		9			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.142	23.15	0.9009	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.8136	0.7411	0.0212	Normal Distribution

96h Proportion Survived Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Dilution Water	5	0.9	0.7479	1	0.9	0.7	1	0.05477	13.61%	0.0%
0	Site Water	5	0.92	0.7581	1	1	0.7	1	0.05831	14.17%	-2.22%

Angular (Corrected) Transformed Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Dilution Water	5	1.263	1.049	1.477	1.249	0.9912	1.412	0.07704	13.64%	0.0%
0	Site Water	5	1.295	1.067	1.524	1.412	0.9912	1.412	0.08231	14.21%	-2.58%

96h Proportion Survived Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	0.9	1	1	0.7	0.9
0	Site Water	0.7	1	0.9	1	1

Angular (Corrected) Transformed Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	1.249	1.412	1.412	0.9912	1.249
0	Site Water	0.9912	1.412	1.249	1.412	1.412

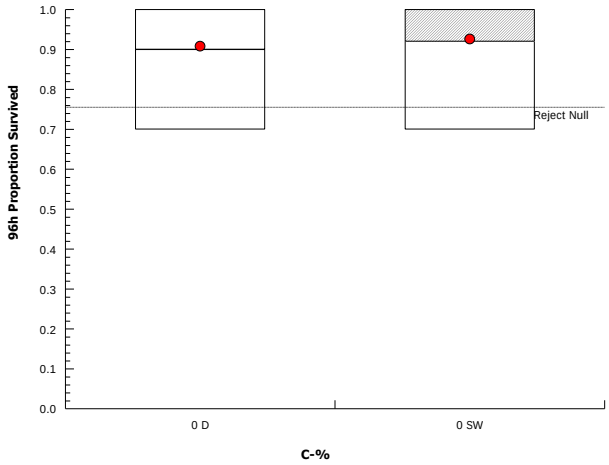
96h Proportion Survived Binomials

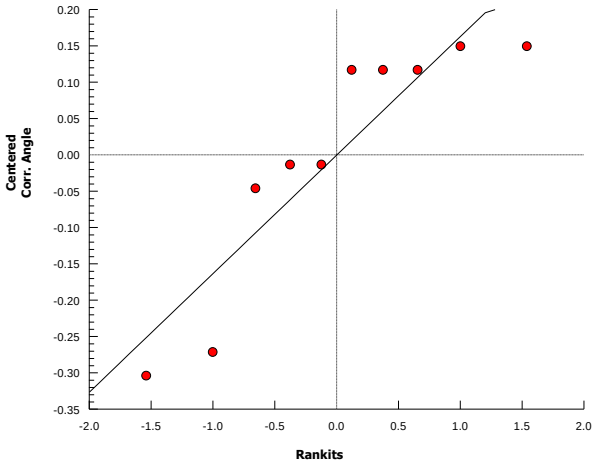
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	9/10	10/10	10/10	7/10	9/10
0	Site Water	7/10	10/10	9/10	10/10	10/10

Inland Silverside 96-h Acute Survival Test **ENVIRON**

Analysis ID:	10-5992-2795	**Endpoint:**	96h Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	03 Sep-14 10:50	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Graphics





CETIS Summary Report

Inland Silverside 96-h Acute Survival Test **ENVIRON**

Batch ID:	18-0051-3489	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	02 Jul-14 16:00	**Protocol:**	SERIM (2008)	**Diluent:**	Natural Seawater
Ending Date:	06 Jul-14 17:45	**Species:**	Menidia beryllina	**Brine:**	Not Applicable
Duration:	4d 2h	**Source:**	Aquatic Biosystems, CO	**Age:**	

Sample ID:	18-5392-8229	**Code:**	6E80B325	**Client:**	ANAMAR
Sample Date:	04 Jun-14 07:11	**Material:**	Sediment Elutriate	**Project:**	Shipyard Creek
Receive Date:	11 Jun-14 13:10	**Source:**	Shipyard Creek		
Sample Age:	28d 9h	**Station:**	SYC14-AC		

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
11-5840-7663	96h Proportion Survived	0	>0		16.1%		Equal Variance t Two-Sample Test
10-3678-0215	96h Proportion Survived	10	50	22.36	21.5%	10	Dunnett Multiple Comparison Test

Point Estimate Summary

Analysis ID	Endpoint	Level	%	95% LCL	95% UCL	TU	Method
14-8774-6479	96h Proportion Survived	EC50	28.15	24.71	32.07	3.552	Spearman-Kärber

96h Proportion Survived Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Dilution Water	5	0.9	0.7479	1	0.7	1	0.05477	0.1225	13.61%	0.0%
0	Site Water	5	0.92	0.7581	1	0.7	1	0.05831	0.1304	14.17%	-2.22%
10		5	0.9	0.7479	1	0.7	1	0.05477	0.1225	13.61%	0.0%
50		5	0.18	0	0.4021	0	0.4	0.08	0.1789	99.38%	80.0%
100		5	0	0	0	0	0	0	0		100.0%

96h Proportion Survived Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	0.9	1	1	0.7	0.9
0	Site Water	0.7	1	0.9	1	1
10		0.7	1	0.9	0.9	1
50		0.3	0	0.2	0.4	0
100		0	0	0	0	0

96h Proportion Survived Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	9/10	10/10	10/10	7/10	9/10
0	Site Water	7/10	10/10	9/10	10/10	10/10
10		7/10	10/10	9/10	9/10	10/10
50		3/10	0/10	2/10	4/10	0/10
100		0/10	0/10	0/10	0/10	0/10

CETIS Analytical Report

Inland Silverside 96-h Acute Survival Test **ENVIRON**

Analysis ID:	14-8774-6479	**Endpoint:**	96h Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	06 Aug-14 8:37	**Analysis:**	Untrimmed Spearman-Kärber	**Official Results:**	Yes
Batch ID:	18-0051-3489	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	02 Jul-14 16:00	**Protocol:**	SERIM (2008)	**Diluent:**	Natural Seawater
Ending Date:	06 Jul-14 17:45	**Species:**	Menidia beryllina	**Brine:**	Not Applicable
Duration:	4d 2h	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	18-5392-8229	**Code:**	6E80B325	**Client:**	ANAMAR
Sample Date:	04 Jun-14 07:11	**Material:**	Sediment Elutriate	**Project:**	Shipyard Creek
Receive Date:	11 Jun-14 13:10	**Source:**	Shipyard Creek		
Sample Age:	28d 9h	**Station:**	SYC14-AC		

Spearman-Kärber Estimates

Threshold Option	Threshold	Trim	Mu	Sigma	EC50	95% LCL	95% UCL
Control Threshold	0.1	0.00%	1.449	0.02828	28.15	24.71	32.07

96h Proportion Survived Summary

			Calculated Variate(A/B)								
C-%	**Control Type**	**Count**	**Mean**	**Min**	**Max**	**Std Err**	**Std Dev**	**CV%**	**%Effect**	**A**	**B**
0	Dilution Water	5	0.9	0.7	1	0.05477	0.1225	13.61%	0.0%	45	50
10		5	0.9	0.7	1	0.05477	0.1225	13.61%	0.0%	45	50
50		5	0.18	0	0.4	0.08	0.1789	99.38%	80.0%	9	50
100		5	0	0	0	0	0		100.0%	0	50

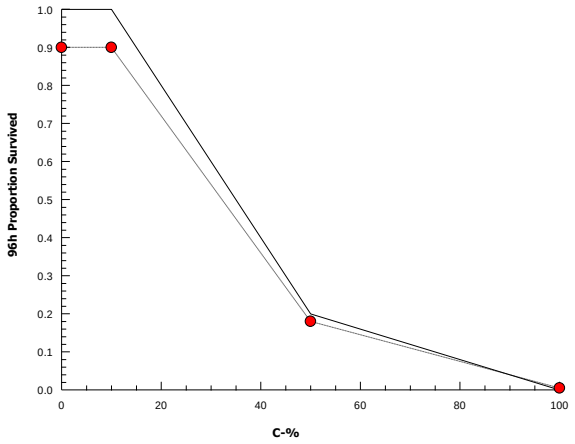
96h Proportion Survived Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	0.9	1	1	0.7	0.9
10		0.7	1	0.9	0.9	1
50		0.3	0	0.2	0.4	0
100		0	0	0	0	0

96h Proportion Survived Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	9/10	10/10	10/10	7/10	9/10
0	Site Water	7/10	10/10	9/10	10/10	10/10
10		7/10	10/10	9/10	9/10	10/10
50		3/10	0/10	2/10	4/10	0/10
100		0/10	0/10	0/10	0/10	0/10

Graphics



Inland Silverside 96-h Acute Survival Test **ENVIRON**

Analysis ID:	10-3678-0215	**Endpoint:**	96h Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	06 Aug-14 8:37	**Analysis:**	Parametric-Control vs Treatments	**Official Results:**	Yes
Batch ID:	18-0051-3489	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	02 Jul-14 16:00	**Protocol:**	SERIM (2008)	**Diluent:**	Natural Seawater
Ending Date:	06 Jul-14 17:45	**Species:**	Menidia beryllina	**Brine:**	Not Applicable
Duration:	4d 2h	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	18-5392-8229	**Code:**	6E80B325	**Client:**	ANAMAR
Sample Date:	04 Jun-14 07:11	**Material:**	Sediment Elutriate	**Project:**	Shipyard Creek
Receive Date:	11 Jun-14 13:10	**Source:**	Shipyard Creek		
Sample Age:	28d 9h	**Station:**	SYC14-AC		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	NOEL	LOEL	TOEL	TU
Angular (Corrected)	NA	C > T	NA	NA	21.5%	10	50	22.36	10

Dunnett Multiple Comparison Test

Control	vs	C-%	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
Dilution Water		10	0	2.108	0.264	8	0.6667	CDF	Non-Significant Effect
		50*	6.814	2.108	0.264	8	<0.0001	CDF	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	2.42845	1.214225	2	30.95	<0.0001	Significant Effect
Error	0.4707438	0.03922865	12			
Total	2.899194		14			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance	0.581	9.21	0.7479	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.8756	0.8328	0.0408	Normal Distribution

96h Proportion Survived Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Dilution Water	5	0.9	0.7479	1	0.9	0.7	1	0.05477	13.61%	0.0%
10		5	0.9	0.7479	1	0.9	0.7	1	0.05477	13.61%	0.0%
50		5	0.18	0	0.4021	0.2	0	0.4	0.08	99.38%	80.0%
100		5	0	0	0	0	0	0	0		100.0%

Angular (Corrected) Transformed Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Dilution Water	5	1.263	1.049	1.477	1.249	0.9912	1.412	0.07704	13.64%	0.0%
10		5	1.263	1.049	1.477	1.249	0.9912	1.412	0.07704	13.64%	0.0%
50		5	0.4091	0.1092	0.709	0.4636	0.1588	0.6847	0.108	59.04%	67.6%
100		5	0.1588	0.1588	0.1588	0.1588	0.1588	0.1588	0	0.0%	87.42%

96h Proportion Survived Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	0.9	1	1	0.7	0.9
10		0.7	1	0.9	0.9	1
50		0.3	0	0.2	0.4	0
100		0	0	0	0	0

Angular (Corrected) Transformed Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	1.249	1.412	1.412	0.9912	1.249
10		0.9912	1.412	1.249	1.249	1.412
50		0.5796	0.1588	0.4636	0.6847	0.1588
100		0.1588	0.1588	0.1588	0.1588	0.1588

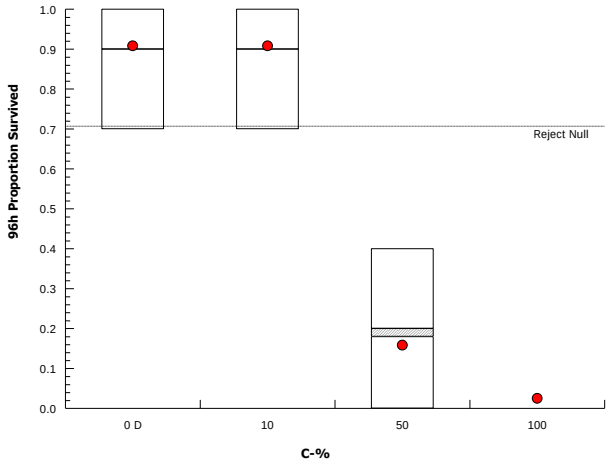
Inland Silverside 96-h Acute Survival Test **ENVIRON**

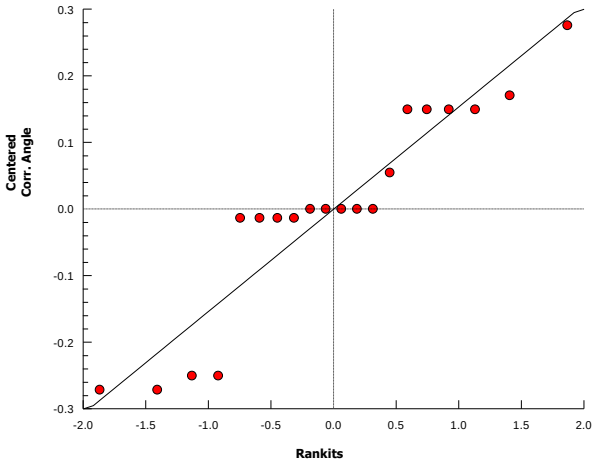
Analysis ID:	10-3678-0215	**Endpoint:**	96h Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	06 Aug-14 8:37	**Analysis:**	Parametric-Control vs Treatments	**Official Results:**	Yes

96h Proportion Survived Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	9/10	10/10	10/10	7/10	9/10
0	Site Water	7/10	10/10	9/10	10/10	10/10
10		7/10	10/10	9/10	9/10	10/10
50		3/10	0/10	2/10	4/10	0/10
100		0/10	0/10	0/10	0/10	0/10

Graphics





Inland Silverside 96-h Acute Survival Test **ENVIRON**

Analysis ID:	11-5840-7663	**Endpoint:**	96h Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	06 Aug-14 8:37	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes
Batch ID:	18-0051-3489	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	02 Jul-14 16:00	**Protocol:**	SERIM (2008)	**Diluent:**	Natural Seawater
Ending Date:	06 Jul-14 17:45	**Species:**	Menidia beryllina	**Brine:**	Not Applicable
Duration:	4d 2h	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	18-5392-8229	**Code:**	6E80B325	**Client:**	ANAMAR
Sample Date:	04 Jun-14 07:11	**Material:**	Sediment Elutriate	**Project:**	Shipyard Creek
Receive Date:	11 Jun-14 13:10	**Source:**	Shipyard Creek		
Sample Age:	28d 9h	**Station:**	SYC14-AC		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Angular (Corrected)	NA	C > T	NA	NA	16.1%	Passes 96h proportion survived

Equal Variance t Two-Sample Test

Control	vs	Control	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
Dilution Water		Site Water	-0.2891	1.86	0.21	8	0.6101	CDF	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.002655933	0.002655933	1	0.08358	0.7799	Non-Significant Effect
Error	0.2542099	0.03177624	8			
Total	0.2568658		9			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.142	23.15	0.9009	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.8136	0.7411	0.0212	Normal Distribution

96h Proportion Survived Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Dilution Water	5	0.9	0.7479	1	0.9	0.7	1	0.05477	13.61%	0.0%
0	Site Water	5	0.92	0.7581	1	1	0.7	1	0.05831	14.17%	-2.22%

Angular (Corrected) Transformed Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Dilution Water	5	1.263	1.049	1.477	1.249	0.9912	1.412	0.07704	13.64%	0.0%
0	Site Water	5	1.295	1.067	1.524	1.412	0.9912	1.412	0.08231	14.21%	-2.58%

96h Proportion Survived Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	0.9	1	1	0.7	0.9
0	Site Water	0.7	1	0.9	1	1

Angular (Corrected) Transformed Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	1.249	1.412	1.412	0.9912	1.249
0	Site Water	0.9912	1.412	1.249	1.412	1.412

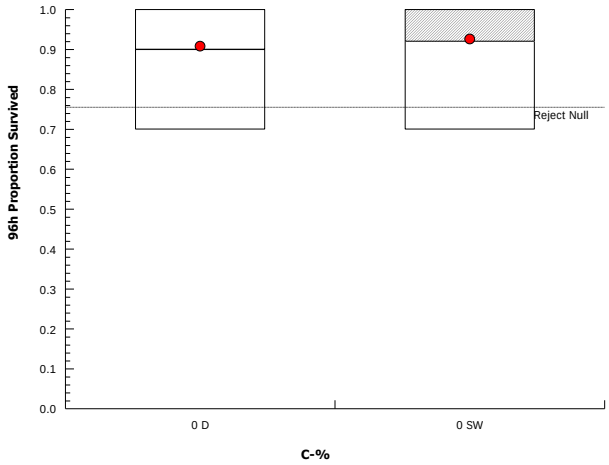
96h Proportion Survived Binomials

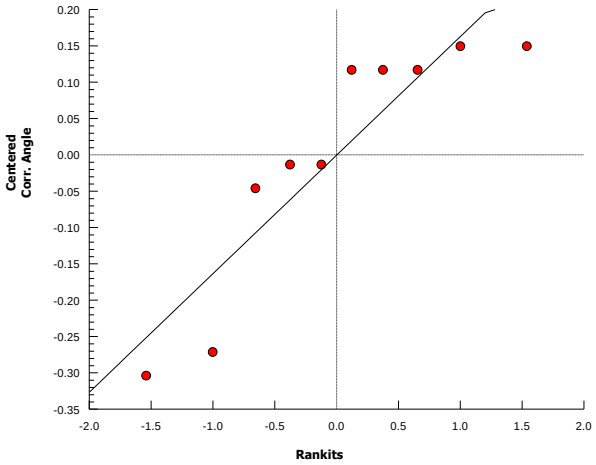
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	9/10	10/10	10/10	7/10	9/10
0	Site Water	7/10	10/10	9/10	10/10	10/10

Inland Silverside 96-h Acute Survival Test **ENVIRON**

Analysis ID:	11-5840-7663	**Endpoint:**	96h Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	06 Aug-14 8:37	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Graphics





CETIS Summary Report

Inland Silverside 96-h Acute Survival Test **ENVIRON**

Batch ID:	18-0051-3489	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	02 Jul-14 16:00	**Protocol:**	SERIM (2008)	**Diluent:**	Natural Seawater
Ending Date:	06 Jul-14 17:45	**Species:**	Menidia beryllina	**Brine:**	Not Applicable
Duration:	4d 2h	**Source:**	Aquatic Biosystems, CO	**Age:**	

Sample ID:	12-0578-7664	**Code:**	47DEDC10	**Client:**	ANAMAR
Sample Date:	04 Jun-14 07:11	**Material:**	Sediment Elutriate	**Project:**	Shipyard Creek
Receive Date:	11 Jun-14 13:10	**Source:**	Shipyard Creek		
Sample Age:	28d 9h	**Station:**	SYC14-AC-AR		

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
10-3572-8456	96h Proportion Survived	0	>0		16.1%		Equal Variance t Two-Sample Test
18-0253-9816	96h Proportion Survived	100	>100	NA	18.0%	1	Steel Many-One Rank Sum Test

Point Estimate Summary

Analysis ID	Endpoint	Level	%	95% LCL	95% UCL	TU	Method
04-7275-9783	96h Proportion Survived	EC5	>100	N/A	N/A	<1	Linear Interpolation (ICPIN)
		EC10	>100	N/A	N/A	<1	
		EC15	>100	N/A	N/A	<1	
		EC20	>100	N/A	N/A	<1	
		EC25	>100	N/A	N/A	<1	
		EC40	>100	N/A	N/A	<1	
		EC50	>100	N/A	N/A	<1	

96h Proportion Survived Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Dilution Water	5	0.9	0.7479	1	0.7	1	0.05477	0.1225	13.61%	0.0%
0	Site Water	5	0.92	0.7581	1	0.7	1	0.05831	0.1304	14.17%	-2.22%
10		5	0.98	0.9245	1	0.9	1	0.02	0.04472	4.56%	-8.89%
50		5	0.94	0.7734	1	0.7	1	0.06	0.1342	14.27%	-4.44%
100		5	0.94	0.7734	1	0.7	1	0.06	0.1342	14.27%	-4.44%

96h Proportion Survived Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	0.9	1	1	0.7	0.9
0	Site Water	0.7	1	0.9	1	1
10		1	0.9	1	1	1
50		1	1	1	1	0.7
100		1	1	1	0.7	1

96h Proportion Survived Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	9/10	10/10	10/10	7/10	9/10
0	Site Water	7/10	10/10	9/10	10/10	10/10
10		10/10	9/10	10/10	10/10	10/10
50		10/10	10/10	10/10	10/10	7/10
100		10/10	10/10	10/10	7/10	10/10

Inland Silverside 96-h Acute Survival Test **ENVIRON**

Analysis ID:	04-7275-9783	**Endpoint:**	96h Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	06 Aug-14 8:41	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes
Batch ID:	18-0051-3489	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	02 Jul-14 16:00	**Protocol:**	SERIM (2008)	**Diluent:**	Natural Seawater
Ending Date:	06 Jul-14 17:45	**Species:**	Menidia beryllina	**Brine:**	Not Applicable
Duration:	4d 2h	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	12-0578-7664	**Code:**	47DEDC10	**Client:**	ANAMAR
Sample Date:	04 Jun-14 07:11	**Material:**	Sediment Elutriate	**Project:**	Shipyard Creek
Receive Date:	11 Jun-14 13:10	**Source:**	Shipyard Creek		
Sample Age:	28d 9h	**Station:**	SYC14-AC-AR		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X+1)	Linear	1310107	200	Yes	Two-Point Interpolation

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
EC5	>100	N/A	N/A	<1	NA	NA
EC10	>100	N/A	N/A	<1	NA	NA
EC15	>100	N/A	N/A	<1	NA	NA
EC20	>100	N/A	N/A	<1	NA	NA
EC25	>100	N/A	N/A	<1	NA	NA
EC40	>100	N/A	N/A	<1	NA	NA
EC50	>100	N/A	N/A	<1	NA	NA

96h Proportion Survived Summary

			Calculated Variate(A/B)								
C-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	A	B
0	Dilution Water	5	0.9	0.7	1	0.05477	0.1225	13.61%	0.0%	45	50
10		5	0.98	0.9	1	0.02	0.04472	4.56%	-8.89%	49	50
50		5	0.94	0.7	1	0.06	0.1342	14.27%	-4.44%	47	50
100		5	0.94	0.7	1	0.06	0.1342	14.27%	-4.44%	47	50

96h Proportion Survived Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	0.9	1	1	0.7	0.9
10		1	0.9	1	1	1
50		1	1	1	1	0.7
100		1	1	1	0.7	1

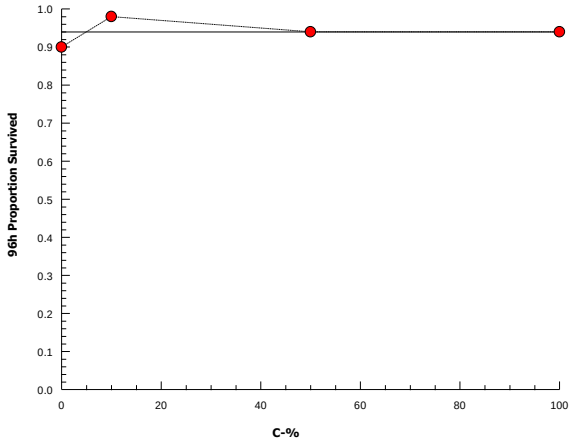
96h Proportion Survived Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	9/10	10/10	10/10	7/10	9/10
0	Site Water	7/10	10/10	9/10	10/10	10/10
10		10/10	9/10	10/10	10/10	10/10
50		10/10	10/10	10/10	10/10	7/10
100		10/10	10/10	10/10	7/10	10/10

Inland Silverside 96-h Acute Survival Test **ENVIRON**

Analysis ID:	04-7275-9783	**Endpoint:**	96h Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	06 Aug-14 8:41	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes

Graphics



Inland Silverside 96-h Acute Survival Test **ENVIRON**

Analysis ID:	18-0253-9816	**Endpoint:**	96h Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	06 Aug-14 8:41	**Analysis:**	Nonparametric-Control vs Treatments	**Official Results:**	Yes
Batch ID:	18-0051-3489	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	02 Jul-14 16:00	**Protocol:**	SERIM (2008)	**Diluent:**	Natural Seawater
Ending Date:	06 Jul-14 17:45	**Species:**	Menidia beryllina	**Brine:**	Not Applicable
Duration:	4d 2h	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	12-0578-7664	**Code:**	47DEDC10	**Client:**	ANAMAR
Sample Date:	04 Jun-14 07:11	**Material:**	Sediment Elutriate	**Project:**	Shipyard Creek
Receive Date:	11 Jun-14 13:10	**Source:**	Shipyard Creek		
Sample Age:	28d 9h	**Station:**	SYC14-AC-AR		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	NOEL	LOEL	TOEL	TU
Angular (Corrected)	NA	C > T	NA	NA	18.0%	100	>100	NA	1

Steel Many-One Rank Sum Test

Control	vs	C-%	Test Stat	Critical	Ties	DF	P-Value	P-Type	Decision(α:5%)
Dilution Water		10	33	17	3	8	0.9773	Asymp	Non-Significant Effect
		50	31.5	17	3	8	0.9492	Asymp	Non-Significant Effect
		100	31.5	17	3	8	0.9492	Asymp	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.03431728	0.01143909	3	0.4323	0.7327	Non-Significant Effect
Error	0.4233432	0.02645895	16			
Total	0.4576604		19			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance	3.287	11.34	0.3495	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.7499	0.866	0.0002	Non-normal Distribution

96h Proportion Survived Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Dilution Water	5	0.9	0.7479	1	0.9	0.7	1	0.05477	13.61%	0.0%
10		5	0.98	0.9245	1	1	0.9	1	0.02	4.56%	-8.89%
50		5	0.94	0.7734	1	1	0.7	1	0.06	14.27%	-4.44%
100		5	0.94	0.7734	1	1	0.7	1	0.06	14.27%	-4.44%

Angular (Corrected) Transformed Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Dilution Water	5	1.263	1.049	1.477	1.249	0.9912	1.412	0.07704	13.64%	0.0%
10		5	1.379	1.289	1.47	1.412	1.249	1.412	0.03259	5.28%	-9.25%
50		5	1.328	1.094	1.562	1.412	0.9912	1.412	0.08417	14.17%	-5.16%
100		5	1.328	1.094	1.562	1.412	0.9912	1.412	0.08417	14.17%	-5.16%

96h Proportion Survived Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	0.9	1	1	0.7	0.9
10		1	0.9	1	1	1
50		1	1	1	1	0.7
100		1	1	1	0.7	1

Inland Silverside 96-h Acute Survival Test **ENVIRON**

Analysis ID:	18-0253-9816	**Endpoint:**	96h Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	06 Aug-14 8:41	**Analysis:**	Nonparametric-Control vs Treatments	**Official Results:**	Yes

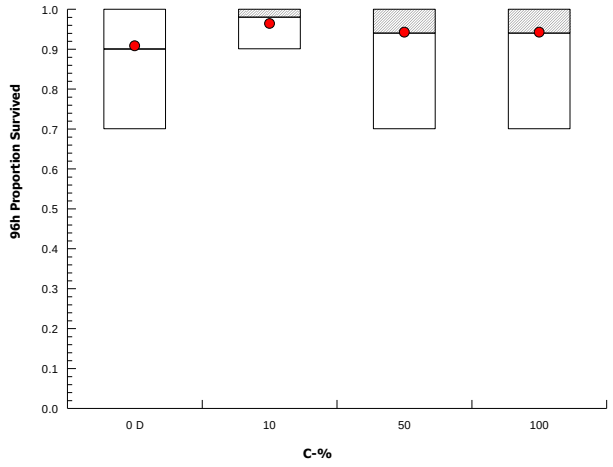
Angular (Corrected) Transformed Detail

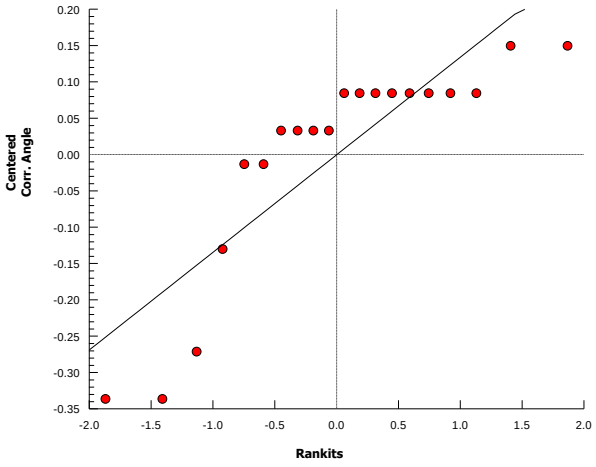
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	1.249	1.412	1.412	0.9912	1.249
10		1.412	1.249	1.412	1.412	1.412
50		1.412	1.412	1.412	1.412	0.9912
100		1.412	1.412	1.412	0.9912	1.412

96h Proportion Survived Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	9/10	10/10	10/10	7/10	9/10
0	Site Water	7/10	10/10	9/10	10/10	10/10
10		10/10	9/10	10/10	10/10	10/10
50		10/10	10/10	10/10	10/10	7/10
100		10/10	10/10	10/10	7/10	10/10

Graphics





Inland Silverside 96-h Acute Survival Test **ENVIRON**

Analysis ID:	10-3572-8456	**Endpoint:**	96h Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	06 Aug-14 8:42	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes
Batch ID:	18-0051-3489	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	02 Jul-14 16:00	**Protocol:**	SERIM (2008)	**Diluent:**	Natural Seawater
Ending Date:	06 Jul-14 17:45	**Species:**	Menidia beryllina	**Brine:**	Not Applicable
Duration:	4d 2h	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	12-0578-7664	**Code:**	47DEDC10	**Client:**	ANAMAR
Sample Date:	04 Jun-14 07:11	**Material:**	Sediment Elutriate	**Project:**	Shipyard Creek
Receive Date:	11 Jun-14 13:10	**Source:**	Shipyard Creek		
Sample Age:	28d 9h	**Station:**	SYC14-AC-AR		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Angular (Corrected)	NA	C > T	NA	NA	16.1%	Passes 96h proportion survived

Equal Variance t Two-Sample Test

Control	vs	Control	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
Dilution Water		Site Water	-0.2891	1.86	0.21	8	0.6101	CDF	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.002655933	0.002655933	1	0.08358	0.7799	Non-Significant Effect
Error	0.2542099	0.03177624	8			
Total	0.2568658		9			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.142	23.15	0.9009	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.8136	0.7411	0.0212	Normal Distribution

96h Proportion Survived Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Dilution Water	5	0.9	0.7479	1	0.9	0.7	1	0.05477	13.61%	0.0%
0	Site Water	5	0.92	0.7581	1	1	0.7	1	0.05831	14.17%	-2.22%

Angular (Corrected) Transformed Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Dilution Water	5	1.263	1.049	1.477	1.249	0.9912	1.412	0.07704	13.64%	0.0%
0	Site Water	5	1.295	1.067	1.524	1.412	0.9912	1.412	0.08231	14.21%	-2.58%

96h Proportion Survived Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	0.9	1	1	0.7	0.9
0	Site Water	0.7	1	0.9	1	1

Angular (Corrected) Transformed Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	1.249	1.412	1.412	0.9912	1.249
0	Site Water	0.9912	1.412	1.249	1.412	1.412

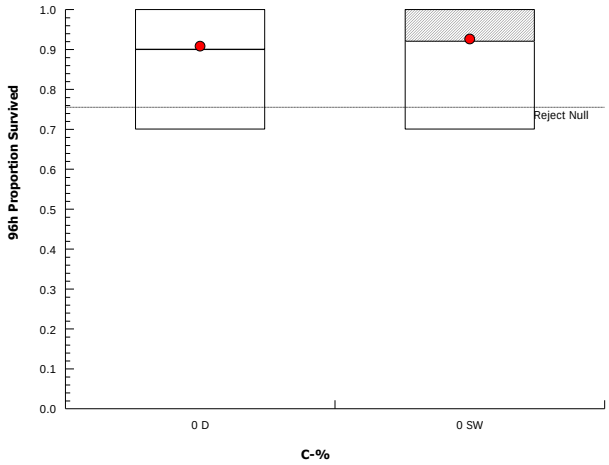
96h Proportion Survived Binomials

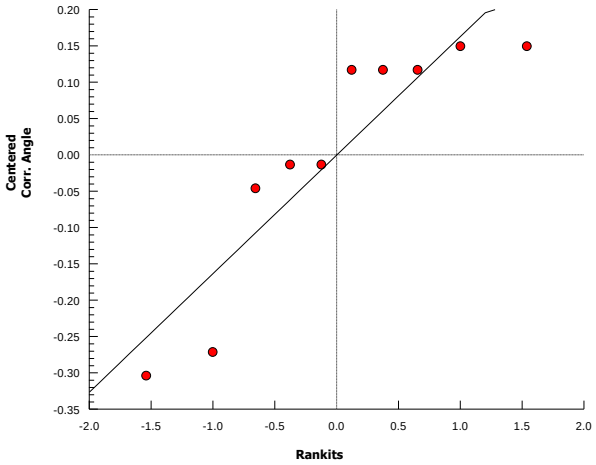
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	9/10	10/10	10/10	7/10	9/10
0	Site Water	7/10	10/10	9/10	10/10	10/10

Inland Silverside 96-h Acute Survival Test **ENVIRON**

Analysis ID:	10-3572-8456	**Endpoint:**	96h Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	06 Aug-14 8:42	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Graphics





CETIS Summary Report

Inland Silverside 96-h Acute Survival Test **ENVIRON**

Batch ID:	18-0051-3489	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	02 Jul-14 16:00	**Protocol:**	SERIM (2008)	**Diluent:**	Natural Seawater
Ending Date:	06 Jul-14 17:45	**Species:**	Menidia beryllina	**Brine:**	Not Applicable
Duration:	4d 2h	**Source:**	Aquatic Biosystems, CO	**Age:**	

Sample ID:	14-6108-5425	**Code:**	571664F1	**Client:**	ANAMAR
Sample Date:	02 Jun-14 08:58	**Material:**	Sediment Elutriate	**Project:**	Shipyard Creek
Receive Date:	11 Jun-14 13:10	**Source:**	Shipyard Creek		
Sample Age:	30d 7h	**Station:**	SYC14-TB1		

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
14-1969-6981	96h Proportion Survived	0	>0		16.1%		Equal Variance t Two-Sample Test
07-2959-3519	96h Proportion Survived	10	50	22.36	11.6%	10	Dunnett Multiple Comparison Test

Point Estimate Summary

Analysis ID	Endpoint	Level	%	95% LCL	95% UCL	TU	Method
10-9314-8702	96h Proportion Survived	EC50	22.36	10	50	4.472	Binomial/Graphical

96h Proportion Survived Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Dilution Water	5	0.9	0.7479	1	0.7	1	0.05477	0.1225	13.61%	0.0%
0	Site Water	5	0.92	0.7581	1	0.7	1	0.05831	0.1304	14.17%	-2.22%
10		5	0.94	0.872	1	0.9	1	0.02449	0.05477	5.83%	-4.44%
50		5	0	0	0	0	0	0	0		100.0%
100		5	0	0	0	0	0	0	0		100.0%

96h Proportion Survived Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	0.9	1	1	0.7	0.9
0	Site Water	0.7	1	0.9	1	1
10		0.9	1	1	0.9	0.9
50		0	0	0	0	0
100		0	0	0	0	0

96h Proportion Survived Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	9/10	10/10	10/10	7/10	9/10
0	Site Water	7/10	10/10	9/10	10/10	10/10
10		9/10	10/10	10/10	9/10	9/10
50		0/10	0/10	0/10	0/10	0/10
100		0/10	0/10	0/10	0/10	0/10

CETIS Analytical Report

Inland Silverside 96-h Acute Survival Test **ENVIRON**

Analysis ID:	10-9314-8702	**Endpoint:**	96h Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	06 Aug-14 8:38	**Analysis:**	Binomial Method	**Official Results:**	Yes
Batch ID:	18-0051-3489	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	02 Jul-14 16:00	**Protocol:**	SERIM (2008)	**Diluent:**	Natural Seawater
Ending Date:	06 Jul-14 17:45	**Species:**	Menidia beryllina	**Brine:**	Not Applicable
Duration:	4d 2h	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	14-6108-5425	**Code:**	571664F1	**Client:**	ANAMAR
Sample Date:	02 Jun-14 08:58	**Material:**	Sediment Elutriate	**Project:**	Shipyard Creek
Receive Date:	11 Jun-14 13:10	**Source:**	Shipyard Creek		
Sample Age:	30d 7h	**Station:**	SYC14-TB1		

Binomial/Graphical Estimates

Threshold Option	Threshold	Trim	Mu	Sigma	EC50	95% LCL	95% UCL
Control Threshold	0.1	0.00%	1.349	0	22.36	10	50

96h Proportion Survived Summary

			Calculated Variate(A/B)								
C-%	**Control Type**	**Count**	**Mean**	**Min**	**Max**	**Std Err**	**Std Dev**	**CV%**	**%Effect**	**A**	**B**
0	Dilution Water	5	0.9	0.7	1	0.05477	0.1225	13.61%	0.0%	45	50
10		5	0.94	0.9	1	0.02449	0.05477	5.83%	-4.44%	47	50
50		5	0	0	0	0	0		100.0%	0	50
100		5	0	0	0	0	0		100.0%	0	50

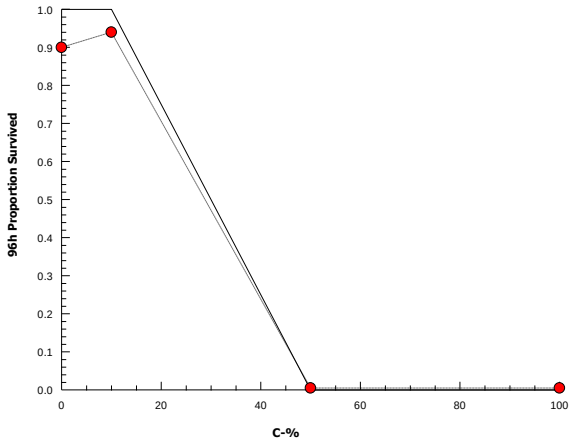
96h Proportion Survived Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	0.9	1	1	0.7	0.9
10		0.9	1	1	0.9	0.9
50		0	0	0	0	0
100		0	0	0	0	0

96h Proportion Survived Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	9/10	10/10	10/10	7/10	9/10
0	Site Water	7/10	10/10	9/10	10/10	10/10
10		9/10	10/10	10/10	9/10	9/10
50		0/10	0/10	0/10	0/10	0/10
100		0/10	0/10	0/10	0/10	0/10

Graphics



Inland Silverside 96-h Acute Survival Test **ENVIRON**

Analysis ID:	07-2959-3519	**Endpoint:**	96h Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	06 Aug-14 8:38	**Analysis:**	Parametric-Control vs Treatments	**Official Results:**	Yes
Batch ID:	18-0051-3489	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	02 Jul-14 16:00	**Protocol:**	SERIM (2008)	**Diluent:**	Natural Seawater
Ending Date:	06 Jul-14 17:45	**Species:**	Menidia beryllina	**Brine:**	Not Applicable
Duration:	4d 2h	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	14-6108-5425	**Code:**	571664F1	**Client:**	ANAMAR
Sample Date:	02 Jun-14 08:58	**Material:**	Sediment Elutriate	**Project:**	Shipyard Creek
Receive Date:	11 Jun-14 13:10	**Source:**	Shipyard Creek		
Sample Age:	30d 7h	**Station:**	SYC14-TB1		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Angular (Corrected)	NA	C > T	NA	NA	11.6%	Passes 96h proportion survived

Dunnett Multiple Comparison Test

Control	vs	C-%	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
Dilution Water		10	-0.5944	1.86	0.161	8	0.7157	CDF	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.006650683	0.006650683	1	0.3534	0.5686	Non-Significant Effect
Error	0.1505705	0.01882131	8			
Total	0.1572212		9			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	3.724	23.15	0.2309	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.8944	0.7411	0.1900	Normal Distribution

96h Proportion Survived Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Dilution Water	5	0.9	0.7479	1	0.9	0.7	1	0.05477	13.61%	0.0%
10		5	0.94	0.872	1	0.9	0.9	1	0.02449	5.83%	-4.44%
50		5	0	0	0	0	0	0	0		100.0%
100		5	0	0	0	0	0	0	0		100.0%

Angular (Corrected) Transformed Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Dilution Water	5	1.263	1.049	1.477	1.249	0.9912	1.412	0.07704	13.64%	0.0%
10		5	1.314	1.203	1.425	1.249	1.249	1.412	0.03992	6.79%	-4.09%
50		5	0.1588	0.1588	0.1588	0.1588	0.1588	0.1588	0	0.0%	87.42%
100		5	0.1588	0.1588	0.1588	0.1588	0.1588	0.1588	0	0.0%	87.42%

96h Proportion Survived Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	0.9	1	1	0.7	0.9
10		0.9	1	1	0.9	0.9
50		0	0	0	0	0
100		0	0	0	0	0

Angular (Corrected) Transformed Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	1.249	1.412	1.412	0.9912	1.249
10		1.249	1.412	1.412	1.249	1.249
50		0.1588	0.1588	0.1588	0.1588	0.1588
100		0.1588	0.1588	0.1588	0.1588	0.1588

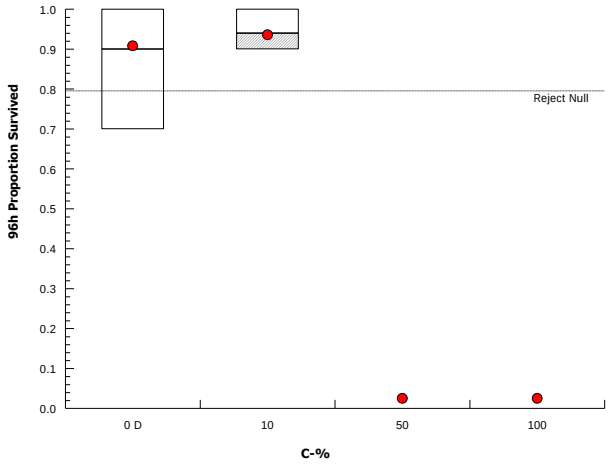
Inland Silverside 96-h Acute Survival Test **ENVIRON**

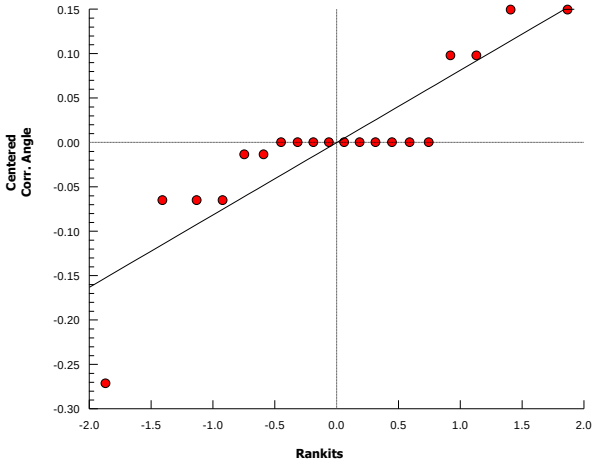
Analysis ID:	07-2959-3519	**Endpoint:**	96h Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	06 Aug-14 8:38	**Analysis:**	Parametric-Control vs Treatments	**Official Results:**	Yes

96h Proportion Survived Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	9/10	10/10	10/10	7/10	9/10
0	Site Water	7/10	10/10	9/10	10/10	10/10
10		9/10	10/10	10/10	9/10	9/10
50		0/10	0/10	0/10	0/10	0/10
100		0/10	0/10	0/10	0/10	0/10

Graphics





Inland Silverside 96-h Acute Survival Test **ENVIRON**

Analysis ID:	14-1969-6981	**Endpoint:**	96h Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	06 Aug-14 8:39	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes
Batch ID:	18-0051-3489	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	02 Jul-14 16:00	**Protocol:**	SERIM (2008)	**Diluent:**	Natural Seawater
Ending Date:	06 Jul-14 17:45	**Species:**	Menidia beryllina	**Brine:**	Not Applicable
Duration:	4d 2h	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	14-6108-5425	**Code:**	571664F1	**Client:**	ANAMAR
Sample Date:	02 Jun-14 08:58	**Material:**	Sediment Elutriate	**Project:**	Shipyard Creek
Receive Date:	11 Jun-14 13:10	**Source:**	Shipyard Creek		
Sample Age:	30d 7h	**Station:**	SYC14-TB1		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Angular (Corrected)	NA	C > T	NA	NA	16.1%	Passes 96h proportion survived

Equal Variance t Two-Sample Test

Control	vs	Control	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
Dilution Water		Site Water	-0.2891	1.86	0.21	8	0.6101	CDF	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.002655933	0.002655933	1	0.08358	0.7799	Non-Significant Effect
Error	0.2542099	0.03177624	8			
Total	0.2568658		9			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.142	23.15	0.9009	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.8136	0.7411	0.0212	Normal Distribution

96h Proportion Survived Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Dilution Water	5	0.9	0.7479	1	0.9	0.7	1	0.05477	13.61%	0.0%
0	Site Water	5	0.92	0.7581	1	1	0.7	1	0.05831	14.17%	-2.22%

Angular (Corrected) Transformed Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Dilution Water	5	1.263	1.049	1.477	1.249	0.9912	1.412	0.07704	13.64%	0.0%
0	Site Water	5	1.295	1.067	1.524	1.412	0.9912	1.412	0.08231	14.21%	-2.58%

96h Proportion Survived Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	0.9	1	1	0.7	0.9
0	Site Water	0.7	1	0.9	1	1

Angular (Corrected) Transformed Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	1.249	1.412	1.412	0.9912	1.249
0	Site Water	0.9912	1.412	1.249	1.412	1.412

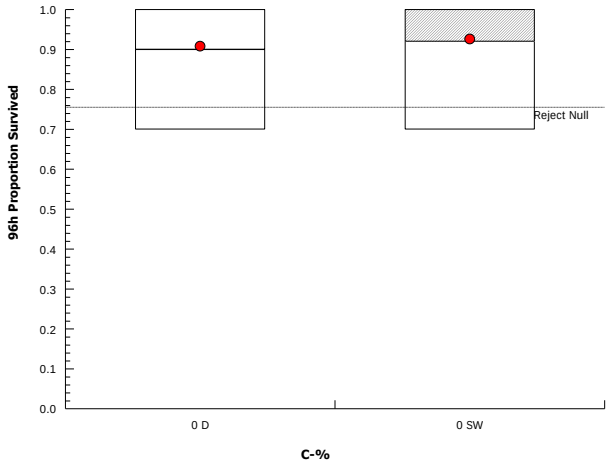
96h Proportion Survived Binomials

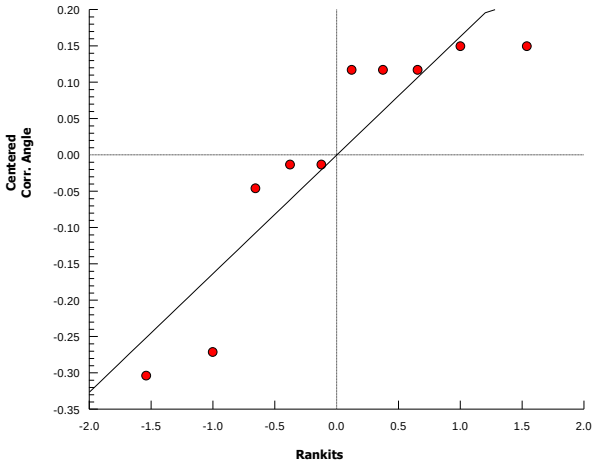
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	9/10	10/10	10/10	7/10	9/10
0	Site Water	7/10	10/10	9/10	10/10	10/10

Inland Silverside 96-h Acute Survival Test **ENVIRON**

Analysis ID:	14-1969-6981	**Endpoint:**	96h Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	06 Aug-14 8:39	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Graphics





CETIS Summary Report

Inland Silverside 96-h Acute Survival Test **ENVIRON**

Batch ID:	18-0051-3489	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	02 Jul-14 16:00	**Protocol:**	SERIM (2008)	**Diluent:**	Natural Seawater
Ending Date:	06 Jul-14 17:45	**Species:**	Menidia beryllina	**Brine:**	Not Applicable
Duration:	4d 2h	**Source:**	Aquatic Biosystems, CO	**Age:**	

Sample ID:	10-3022-6550	**Code:**	3D680276	**Client:**	ANAMAR
Sample Date:	02 Jun-14 08:58	**Material:**	Sediment Elutriate	**Project:**	Shipyard Creek
Receive Date:	11 Jun-14 13:10	**Source:**	Shipyard Creek		
Sample Age:	30d 7h	**Station:**	SYC14-TB1-AR		

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
00-3139-9609	96h Proportion Survived	0	>0		16.1%		Equal Variance t Two-Sample Test
03-4907-9864	96h Proportion Survived	100	>100	NA	18.0%	1	Steel Many-One Rank Sum Test

Point Estimate Summary

Analysis ID	Endpoint	Level	%	95% LCL	95% UCL	TU	Method
13-4593-7843	96h Proportion Survived	EC5	>100	N/A	N/A	<1	Linear Interpolation (ICPIN)
		EC10	>100	N/A	N/A	<1	
		EC15	>100	N/A	N/A	<1	
		EC20	>100	N/A	N/A	<1	
		EC25	>100	N/A	N/A	<1	
		EC40	>100	N/A	N/A	<1	
		EC50	>100	N/A	N/A	<1	

96h Proportion Survived Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Dilution Water	5	0.9	0.7479	1	0.7	1	0.05477	0.1225	13.61%	0.0%
0	Site Water	5	0.92	0.7581	1	0.7	1	0.05831	0.1304	14.17%	-2.22%
10		5	0.9	0.7479	1	0.7	1	0.05477	0.1225	13.61%	0.0%
50		5	0.98	0.9245	1	0.9	1	0.02	0.04472	4.56%	-8.89%
100		5	0.9	0.7244	1	0.7	1	0.06325	0.1414	15.71%	0.0%

96h Proportion Survived Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	0.9	1	1	0.7	0.9
0	Site Water	0.7	1	0.9	1	1
10		1	1	0.9	0.9	0.7
50		1	1	0.9	1	1
100		1	1	0.8	1	0.7

96h Proportion Survived Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	9/10	10/10	10/10	7/10	9/10
0	Site Water	7/10	10/10	9/10	10/10	10/10
10		10/10	10/10	9/10	9/10	7/10
50		10/10	10/10	9/10	10/10	10/10
100		10/10	10/10	8/10	10/10	7/10

Inland Silverside 96-h Acute Survival Test **ENVIRON**

Analysis ID:	13-4593-7843	**Endpoint:**	96h Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	06 Aug-14 8:44	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes
Batch ID:	18-0051-3489	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	02 Jul-14 16:00	**Protocol:**	SERIM (2008)	**Diluent:**	Natural Seawater
Ending Date:	06 Jul-14 17:45	**Species:**	Menidia beryllina	**Brine:**	Not Applicable
Duration:	4d 2h	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	10-3022-6550	**Code:**	3D680276	**Client:**	ANAMAR
Sample Date:	02 Jun-14 08:58	**Material:**	Sediment Elutriate	**Project:**	Shipyard Creek
Receive Date:	11 Jun-14 13:10	**Source:**	Shipyard Creek		
Sample Age:	30d 7h	**Station:**	SYC14-TB1-AR		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X+1)	Linear	1277771	200	Yes	Two-Point Interpolation

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
EC5	>100	N/A	N/A	<1	NA	NA
EC10	>100	N/A	N/A	<1	NA	NA
EC15	>100	N/A	N/A	<1	NA	NA
EC20	>100	N/A	N/A	<1	NA	NA
EC25	>100	N/A	N/A	<1	NA	NA
EC40	>100	N/A	N/A	<1	NA	NA
EC50	>100	N/A	N/A	<1	NA	NA

96h Proportion Survived Summary

			Calculated Variate(A/B)								
C-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	A	B
0	Dilution Water	5	0.9	0.7	1	0.05477	0.1225	13.61%	0.0%	45	50
10		5	0.9	0.7	1	0.05477	0.1225	13.61%	0.0%	45	50
50		5	0.98	0.9	1	0.02	0.04472	4.56%	-8.89%	49	50
100		5	0.9	0.7	1	0.06325	0.1414	15.71%	0.0%	45	50

96h Proportion Survived Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	0.9	1	1	0.7	0.9
10		1	1	0.9	0.9	0.7
50		1	1	0.9	1	1
100		1	1	0.8	1	0.7

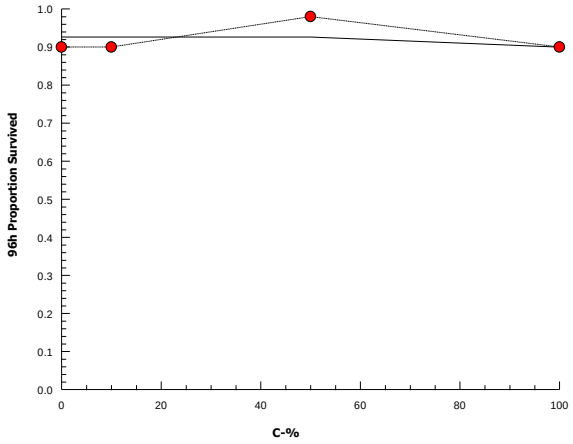
96h Proportion Survived Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	9/10	10/10	10/10	7/10	9/10
0	Site Water	7/10	10/10	9/10	10/10	10/10
10		10/10	10/10	9/10	9/10	7/10
50		10/10	10/10	9/10	10/10	10/10
100		10/10	10/10	8/10	10/10	7/10

Inland Silverside 96-h Acute Survival Test **ENVIRON**

Analysis ID:	13-4593-7843	**Endpoint:**	96h Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	06 Aug-14 8:44	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes

Graphics



Inland Silverside 96-h Acute Survival Test **ENVIRON**

Analysis ID:	03-4907-9864	**Endpoint:**	96h Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	06 Aug-14 8:44	**Analysis:**	Nonparametric-Control vs Treatments	**Official Results:**	Yes
Batch ID:	18-0051-3489	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	02 Jul-14 16:00	**Protocol:**	SERIM (2008)	**Diluent:**	Natural Seawater
Ending Date:	06 Jul-14 17:45	**Species:**	Menidia beryllina	**Brine:**	Not Applicable
Duration:	4d 2h	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	10-3022-6550	**Code:**	3D680276	**Client:**	ANAMAR
Sample Date:	02 Jun-14 08:58	**Material:**	Sediment Elutriate	**Project:**	Shipyard Creek
Receive Date:	11 Jun-14 13:10	**Source:**	Shipyard Creek		
Sample Age:	30d 7h	**Station:**	SYC14-TB1-AR		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	NOEL	LOEL	TOEL	TU
Angular (Corrected)	NA	C > T	NA	NA	18.0%	100	>100	NA	1

Steel Many-One Rank Sum Test

Control	vs	C-%	Test Stat	Critical	Ties	DF	P-Value	P-Type	Decision(α:5%)
Dilution Water		10	27.5	17	4	8	0.7500	Asymp	Non-Significant Effect
		50	33	17	3	8	0.9773	Asymp	Non-Significant Effect
		100	28.5	17	3	8	0.8197	Asymp	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.04996489	0.01665496	3	0.6294	0.6065	Non-Significant Effect
Error	0.423377	0.02646106	16			
Total	0.4733419		19			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance	3.384	11.34	0.3361	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.8436	0.866	0.0042	Non-normal Distribution

96h Proportion Survived Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Dilution Water	5	0.9	0.7479	1	0.9	0.7	1	0.05477	13.61%	0.0%
10		5	0.9	0.7479	1	0.9	0.7	1	0.05477	13.61%	0.0%
50		5	0.98	0.9245	1	1	0.9	1	0.02	4.56%	-8.89%
100		5	0.9	0.7244	1	1	0.7	1	0.06325	15.71%	0.0%

Angular (Corrected) Transformed Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Dilution Water	5	1.263	1.049	1.477	1.249	0.9912	1.412	0.07704	13.64%	0.0%
10		5	1.263	1.049	1.477	1.249	0.9912	1.412	0.07704	13.64%	0.0%
50		5	1.379	1.289	1.47	1.412	1.249	1.412	0.03259	5.28%	-9.25%
100		5	1.267	1.015	1.519	1.412	0.9912	1.412	0.09076	16.02%	-0.33%

96h Proportion Survived Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	0.9	1	1	0.7	0.9
10		1	1	0.9	0.9	0.7
50		1	1	0.9	1	1
100		1	1	0.8	1	0.7

Inland Silverside 96-h Acute Survival Test **ENVIRON**

Analysis ID:	03-4907-9864	**Endpoint:**	96h Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	06 Aug-14 8:44	**Analysis:**	Nonparametric-Control vs Treatments	**Official Results:**	Yes

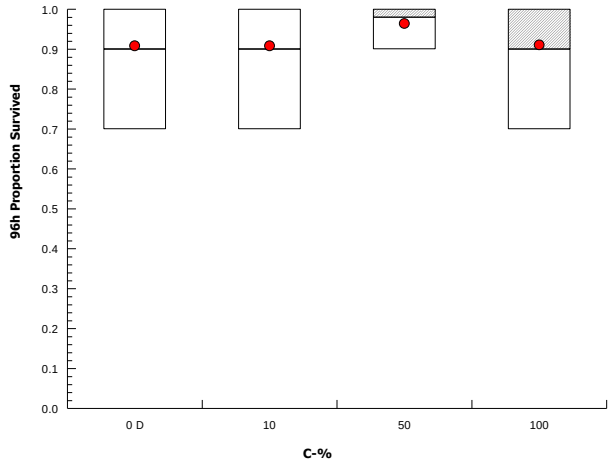
Angular (Corrected) Transformed Detail

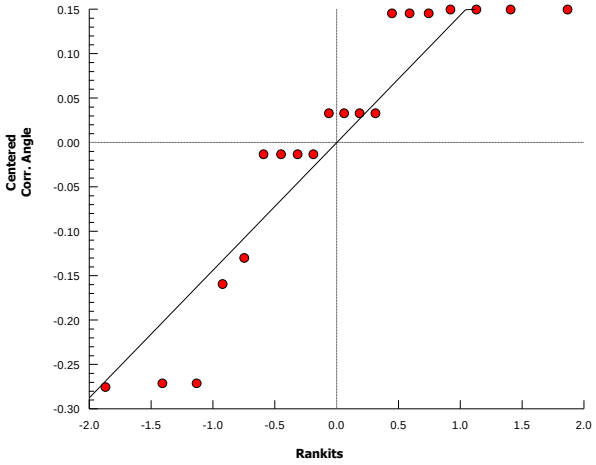
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	1.249	1.412	1.412	0.9912	1.249
10		1.412	1.412	1.249	1.249	0.9912
50		1.412	1.412	1.249	1.412	1.412
100		1.412	1.412	1.107	1.412	0.9912

96h Proportion Survived Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	9/10	10/10	10/10	7/10	9/10
0	Site Water	7/10	10/10	9/10	10/10	10/10
10		10/10	10/10	9/10	9/10	7/10
50		10/10	10/10	9/10	10/10	10/10
100		10/10	10/10	8/10	10/10	7/10

Graphics





Inland Silverside 96-h Acute Survival Test **ENVIRON**

Analysis ID:	00-3139-9609	**Endpoint:**	96h Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	06 Aug-14 8:45	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes
Batch ID:	18-0051-3489	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	02 Jul-14 16:00	**Protocol:**	SERIM (2008)	**Diluent:**	Natural Seawater
Ending Date:	06 Jul-14 17:45	**Species:**	Menidia beryllina	**Brine:**	Not Applicable
Duration:	4d 2h	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	10-3022-6550	**Code:**	3D680276	**Client:**	ANAMAR
Sample Date:	02 Jun-14 08:58	**Material:**	Sediment Elutriate	**Project:**	Shipyard Creek
Receive Date:	11 Jun-14 13:10	**Source:**	Shipyard Creek		
Sample Age:	30d 7h	**Station:**	SYC14-TB1-AR		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Angular (Corrected)	NA	C > T	NA	NA	16.1%	Passes 96h proportion survived

Equal Variance t Two-Sample Test

Control	vs	Control	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
Dilution Water		Site Water	-0.2891	1.86	0.21	8	0.6101	CDF	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.002655933	0.002655933	1	0.08358	0.7799	Non-Significant Effect
Error	0.2542099	0.03177624	8			
Total	0.2568658		9			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.142	23.15	0.9009	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.8136	0.7411	0.0212	Normal Distribution

96h Proportion Survived Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Dilution Water	5	0.9	0.7479	1	0.9	0.7	1	0.05477	13.61%	0.0%
0	Site Water	5	0.92	0.7581	1	1	0.7	1	0.05831	14.17%	-2.22%

Angular (Corrected) Transformed Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Dilution Water	5	1.263	1.049	1.477	1.249	0.9912	1.412	0.07704	13.64%	0.0%
0	Site Water	5	1.295	1.067	1.524	1.412	0.9912	1.412	0.08231	14.21%	-2.58%

96h Proportion Survived Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	0.9	1	1	0.7	0.9
0	Site Water	0.7	1	0.9	1	1

Angular (Corrected) Transformed Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	1.249	1.412	1.412	0.9912	1.249
0	Site Water	0.9912	1.412	1.249	1.412	1.412

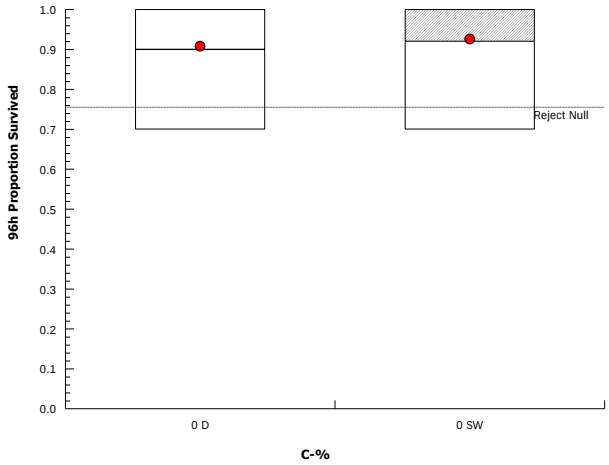
96h Proportion Survived Binomials

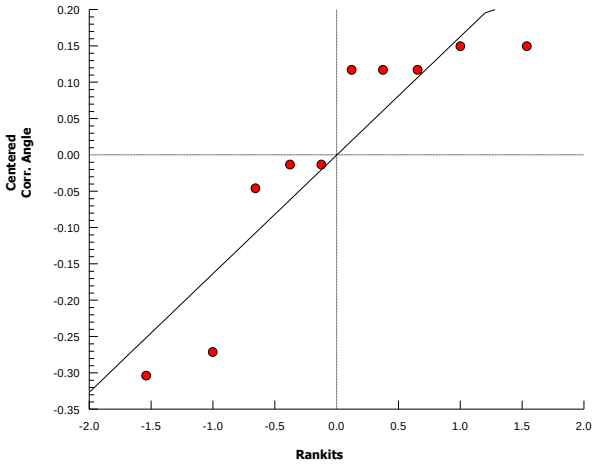
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	9/10	10/10	10/10	7/10	9/10
0	Site Water	7/10	10/10	9/10	10/10	10/10

Inland Silverside 96-h Acute Survival Test **ENVIRON**

Analysis ID:	00-3139-9609	**Endpoint:**	96h Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	06 Aug-14 8:45	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Graphics





Inland Silverside 96-h Acute Survival Test **ENVIRON**

Batch ID:	18-0051-3489	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	02 Jul-14 16:00	**Protocol:**	SERIM (2008)	**Diluent:**	Natural Seawater
Ending Date:	06 Jul-14 17:45	**Species:**	Menidia beryllina	**Brine:**	Not Applicable
Duration:	4d 2h	**Source:**	Aquatic Biosystems, CO	**Age:**	

Sample ID:	00-1256-8329	**Code:**	BFC709	**Client:**	ANAMAR
Sample Date:	03 Jun-14 11:36	**Material:**	Sediment Elutriate	**Project:**	Shipyard Creek
Receive Date:	11 Jun-14 13:10	**Source:**	Shipyard Creek		
Sample Age:	29d 4h	**Station:**	SYC14-TB2		

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
16-1815-1508	96h Proportion Survived	0	>0		16.1%		Equal Variance t Two-Sample Test
05-9299-7576	96h Proportion Survived	10	50	22.36	18.0%	10	Dunnett Multiple Comparison Test

Point Estimate Summary

Analysis ID	Endpoint	Level	%	95% LCL	95% UCL	TU	Method
13-4323-3756	96h Proportion Survived	EC50	21.11	19.78	22.53	4.737	Trimmed Spearman-Kärber

96h Proportion Survived Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Dilution Water	5	0.9	0.7479	1	0.7	1	0.05477	0.1225	13.61%	0.0%
0	Site Water	5	0.92	0.7581	1	0.7	1	0.05831	0.1304	14.17%	-2.22%
10		5	0.84	0.6517	1	0.7	1	0.06782	0.1517	18.05%	6.67%
50		5	0	0	0	0	0	0	0		100.0%
100		5	0	0	0	0	0	0	0		100.0%

96h Proportion Survived Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	0.9	1	1	0.7	0.9
0	Site Water	0.7	1	0.9	1	1
10		0.7	1	0.8	1	0.7
50		0	0	0	0	0
100		0	0	0	0	0

96h Proportion Survived Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	9/10	10/10	10/10	7/10	9/10
0	Site Water	7/10	10/10	9/10	10/10	10/10
10		7/10	10/10	8/10	10/10	7/10
50		0/10	0/10	0/10	0/10	0/10
100		0/10	0/10	0/10	0/10	0/10

CETIS Analytical Report

Inland Silverside 96-h Acute Survival Test **ENVIRON**

Analysis ID:	13-4323-3756	**Endpoint:**	96h Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	06 Aug-14 8:40	**Analysis:**	Trimmed Spearman-Kärber	**Official Results:**	Yes
Batch ID:	18-0051-3489	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	02 Jul-14 16:00	**Protocol:**	SERIM (2008)	**Diluent:**	Natural Seawater
Ending Date:	06 Jul-14 17:45	**Species:**	Menidia beryllina	**Brine:**	Not Applicable
Duration:	4d 2h	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	00-1256-8329	**Code:**	BFC709	**Client:**	ANAMAR
Sample Date:	03 Jun-14 11:36	**Material:**	Sediment Elutriate	**Project:**	Shipyard Creek
Receive Date:	11 Jun-14 13:10	**Source:**	Shipyard Creek		
Sample Age:	29d 4h	**Station:**	SYC14-TB2		

Trimmed Spearman-Kärber Estimates

Threshold Option	Threshold	Trim	Mu	Sigma	EC50	95% LCL	95% UCL
Control Threshold	0.1	6.67%	1.325	0.01415	21.11	19.78	22.53

96h Proportion Survived Summary

			Calculated Variate(A/B)								
C-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	A	B
0	Dilution Water	5	0.9	0.7	1	0.05477	0.1225	13.61%	0.0%	45	50
10		5	0.84	0.7	1	0.06782	0.1517	18.05%	6.67%	42	50
50		5	0	0	0	0	0		100.0%	0	50
100		5	0	0	0	0	0		100.0%	0	50

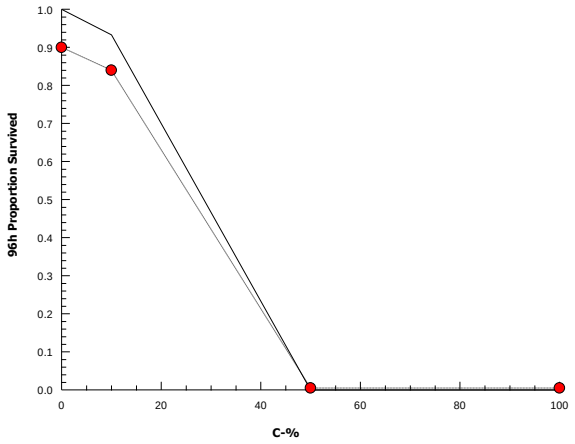
96h Proportion Survived Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	0.9	1	1	0.7	0.9
10		0.7	1	0.8	1	0.7
50		0	0	0	0	0
100		0	0	0	0	0

96h Proportion Survived Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	9/10	10/10	10/10	7/10	9/10
0	Site Water	7/10	10/10	9/10	10/10	10/10
10		7/10	10/10	8/10	10/10	7/10
50		0/10	0/10	0/10	0/10	0/10
100		0/10	0/10	0/10	0/10	0/10

Graphics



Inland Silverside 96-h Acute Survival Test **ENVIRON**

Analysis ID:	05-9299-7576	**Endpoint:**	96h Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	06 Aug-14 8:40	**Analysis:**	Parametric-Control vs Treatments	**Official Results:**	Yes
Batch ID:	18-0051-3489	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	02 Jul-14 16:00	**Protocol:**	SERIM (2008)	**Diluent:**	Natural Seawater
Ending Date:	06 Jul-14 17:45	**Species:**	Menidia beryllina	**Brine:**	Not Applicable
Duration:	4d 2h	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	00-1256-8329	**Code:**	BFC709	**Client:**	ANAMAR
Sample Date:	03 Jun-14 11:36	**Material:**	Sediment Elutriate	**Project:**	Shipyard Creek
Receive Date:	11 Jun-14 13:10	**Source:**	Shipyard Creek		
Sample Age:	29d 4h	**Station:**	SYC14-TB2		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Angular (Corrected)	NA	C > T	NA	NA	18.0%	Passes 96h proportion survived

Dunnett Multiple Comparison Test

Control	vs	C-%	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
Dilution Water		10	0.6497	1.86	0.229	8	0.2671	CDF	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.0159829	0.0159829	1	0.4221	0.5341	Non-Significant Effect
Error	0.3029568	0.0378696	8			
Total	0.3189397		9			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.552	23.15	0.6805	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9149	0.7411	0.3161	Normal Distribution

96h Proportion Survived Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Dilution Water	5	0.9	0.7479	1	0.9	0.7	1	0.05477	13.61%	0.0%
10		5	0.84	0.6517	1	0.8	0.7	1	0.06782	18.05%	6.67%
50		5	0	0	0	0	0	0	0		100.0%
100		5	0	0	0	0	0	0	0		100.0%

Angular (Corrected) Transformed Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Dilution Water	5	1.263	1.049	1.477	1.249	0.9912	1.412	0.07704	13.64%	0.0%
10		5	1.183	0.9162	1.449	1.107	0.9912	1.412	0.09598	18.15%	6.33%
50		5	0.1588	0.1588	0.1588	0.1588	0.1588	0.1588	0	0.0%	87.42%
100		5	0.1588	0.1588	0.1588	0.1588	0.1588	0.1588	0	0.0%	87.42%

96h Proportion Survived Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	0.9	1	1	0.7	0.9
10		0.7	1	0.8	1	0.7
50		0	0	0	0	0
100		0	0	0	0	0

Angular (Corrected) Transformed Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	1.249	1.412	1.412	0.9912	1.249
10		0.9912	1.412	1.107	1.412	0.9912
50		0.1588	0.1588	0.1588	0.1588	0.1588
100		0.1588	0.1588	0.1588	0.1588	0.1588

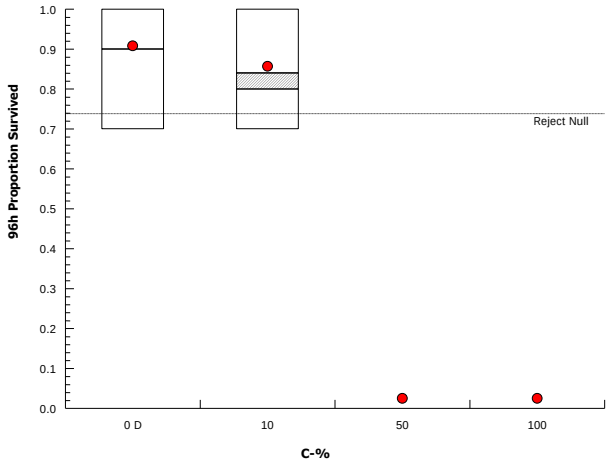
Inland Silverside 96-h Acute Survival Test **ENVIRON**

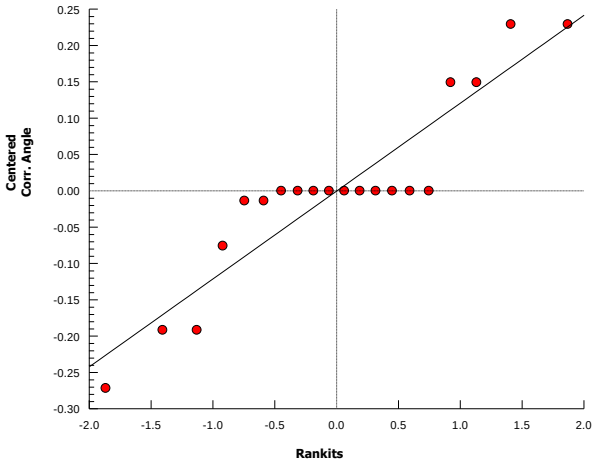
Analysis ID:	05-9299-7576	**Endpoint:**	96h Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	06 Aug-14 8:40	**Analysis:**	Parametric-Control vs Treatments	**Official Results:**	Yes

96h Proportion Survived Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	9/10	10/10	10/10	7/10	9/10
0	Site Water	7/10	10/10	9/10	10/10	10/10
10		7/10	10/10	8/10	10/10	7/10
50		0/10	0/10	0/10	0/10	0/10
100		0/10	0/10	0/10	0/10	0/10

Graphics





Inland Silverside 96-h Acute Survival Test **ENVIRON**

Analysis ID:	16-1815-1508	**Endpoint:**	96h Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	06 Aug-14 8:40	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes
Batch ID:	18-0051-3489	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	02 Jul-14 16:00	**Protocol:**	SERIM (2008)	**Diluent:**	Natural Seawater
Ending Date:	06 Jul-14 17:45	**Species:**	Menidia beryllina	**Brine:**	Not Applicable
Duration:	4d 2h	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	00-1256-8329	**Code:**	BFC709	**Client:**	ANAMAR
Sample Date:	03 Jun-14 11:36	**Material:**	Sediment Elutriate	**Project:**	Shipyard Creek
Receive Date:	11 Jun-14 13:10	**Source:**	Shipyard Creek		
Sample Age:	29d 4h	**Station:**	SYC14-TB2		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Angular (Corrected)	NA	C > T	NA	NA	16.1%	Passes 96h proportion survived

Equal Variance t Two-Sample Test

Control	vs	Control	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
Dilution Water		Site Water	-0.2891	1.86	0.21	8	0.6101	CDF	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.002655933	0.002655933	1	0.08358	0.7799	Non-Significant Effect
Error	0.2542099	0.03177624	8			
Total	0.2568658		9			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.142	23.15	0.9009	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.8136	0.7411	0.0212	Normal Distribution

96h Proportion Survived Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Dilution Water	5	0.9	0.7479	1	0.9	0.7	1	0.05477	13.61%	0.0%
0	Site Water	5	0.92	0.7581	1	1	0.7	1	0.05831	14.17%	-2.22%

Angular (Corrected) Transformed Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Dilution Water	5	1.263	1.049	1.477	1.249	0.9912	1.412	0.07704	13.64%	0.0%
0	Site Water	5	1.295	1.067	1.524	1.412	0.9912	1.412	0.08231	14.21%	-2.58%

96h Proportion Survived Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	0.9	1	1	0.7	0.9
0	Site Water	0.7	1	0.9	1	1

Angular (Corrected) Transformed Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	1.249	1.412	1.412	0.9912	1.249
0	Site Water	0.9912	1.412	1.249	1.412	1.412

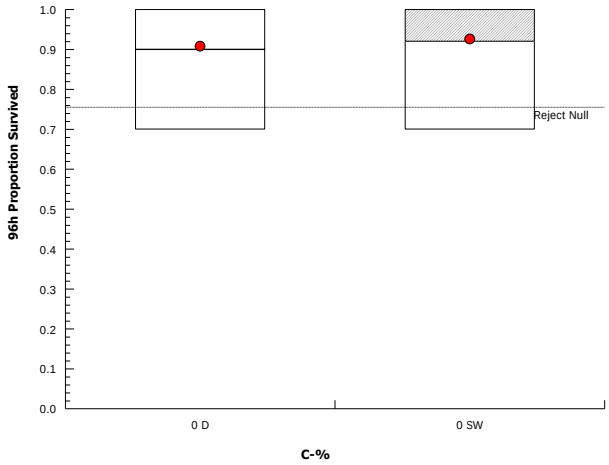
96h Proportion Survived Binomials

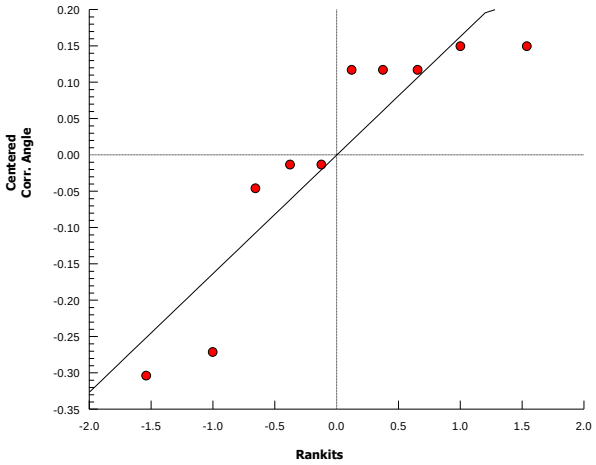
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	9/10	10/10	10/10	7/10	9/10
0	Site Water	7/10	10/10	9/10	10/10	10/10

Inland Silverside 96-h Acute Survival Test **ENVIRON**

Analysis ID:	16-1815-1508	**Endpoint:**	96h Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	06 Aug-14 8:40	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Graphics





CETIS Summary Report

Inland Silverside 96-h Acute Survival Test **ENVIRON**

Batch ID:	18-0051-3489	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	02 Jul-14 16:00	**Protocol:**	SERIM (2008)	**Diluent:**	Natural Seawater
Ending Date:	06 Jul-14 17:45	**Species:**	Menidia beryllina	**Brine:**	Not Applicable
Duration:	4d 2h	**Source:**	Aquatic Biosystems, CO	**Age:**	

Sample ID:	15-2324-8639	**Code:**	5ACAEDFF	**Client:**	ANAMAR
Sample Date:	03 Jun-14 11:36	**Material:**	Sediment Elutriate	**Project:**	Shipyard Creek
Receive Date:	11 Jun-14 13:10	**Source:**	Shipyard Creek		
Sample Age:	29d 4h	**Station:**	SYC14-TB2-AR		

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
07-9275-9017	96h Proportion Survived	0	>0		16.1%		Equal Variance t Two-Sample Test
06-6353-7235	96h Proportion Survived	100	>100	NA	15.0%	1	Dunnett Multiple Comparison Test

Point Estimate Summary

Analysis ID	Endpoint	Level	%	95% LCL	95% UCL	TU	Method
01-9368-9865	96h Proportion Survived	EC5	>100	N/A	N/A	<1	Linear Interpolation (ICPIN)
		EC10	>100	N/A	N/A	<1	
		EC15	>100	N/A	N/A	<1	
		EC20	>100	N/A	N/A	<1	
		EC25	>100	N/A	N/A	<1	
		EC40	>100	N/A	N/A	<1	
		EC50	>100	N/A	N/A	<1	

96h Proportion Survived Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Dilution Water	5	0.9	0.7479	1	0.7	1	0.05477	0.1225	13.61%	0.0%
0	Site Water	5	0.92	0.7581	1	0.7	1	0.05831	0.1304	14.17%	-2.22%
10		5	0.94	0.8289	1	0.8	1	0.04	0.08944	9.52%	-4.44%
50		5	0.88	0.744	1	0.7	1	0.04899	0.1095	12.45%	2.22%
100		5	0.96	0.892	1	0.9	1	0.02449	0.05477	5.71%	-6.67%

96h Proportion Survived Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	0.9	1	1	0.7	0.9
0	Site Water	0.7	1	0.9	1	1
10		1	0.8	1	0.9	1
50		0.7	0.9	0.9	1	0.9
100		1	1	0.9	0.9	1

96h Proportion Survived Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	9/10	10/10	10/10	7/10	9/10
0	Site Water	7/10	10/10	9/10	10/10	10/10
10		10/10	8/10	10/10	9/10	10/10
50		7/10	9/10	9/10	10/10	9/10
100		10/10	10/10	9/10	9/10	10/10

Inland Silverside 96-h Acute Survival Test **ENVIRON**

Analysis ID:	01-9368-9865	**Endpoint:**	96h Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	06 Aug-14 8:46	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes
Batch ID:	18-0051-3489	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	02 Jul-14 16:00	**Protocol:**	SERIM (2008)	**Diluent:**	Natural Seawater
Ending Date:	06 Jul-14 17:45	**Species:**	Menidia beryllina	**Brine:**	Not Applicable
Duration:	4d 2h	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	15-2324-8639	**Code:**	5ACAEDFF	**Client:**	ANAMAR
Sample Date:	03 Jun-14 11:36	**Material:**	Sediment Elutriate	**Project:**	Shipyard Creek
Receive Date:	11 Jun-14 13:10	**Source:**	Shipyard Creek		
Sample Age:	29d 4h	**Station:**	SYC14-TB2-AR		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X+1)	Linear	572021	200	Yes	Two-Point Interpolation

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
EC5	>100	N/A	N/A	<1	NA	NA
EC10	>100	N/A	N/A	<1	NA	NA
EC15	>100	N/A	N/A	<1	NA	NA
EC20	>100	N/A	N/A	<1	NA	NA
EC25	>100	N/A	N/A	<1	NA	NA
EC40	>100	N/A	N/A	<1	NA	NA
EC50	>100	N/A	N/A	<1	NA	NA

96h Proportion Survived Summary

			Calculated Variate(A/B)								
C-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	A	B
0	Dilution Water	5	0.9	0.7	1	0.05477	0.1225	13.61%	0.0%	45	50
10		5	0.94	0.8	1	0.04	0.08944	9.52%	-4.44%	47	50
50		5	0.88	0.7	1	0.04899	0.1095	12.45%	2.22%	44	50
100		5	0.96	0.9	1	0.02449	0.05477	5.71%	-6.67%	48	50

96h Proportion Survived Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	0.9	1	1	0.7	0.9
10		1	0.8	1	0.9	1
50		0.7	0.9	0.9	1	0.9
100		1	1	0.9	0.9	1

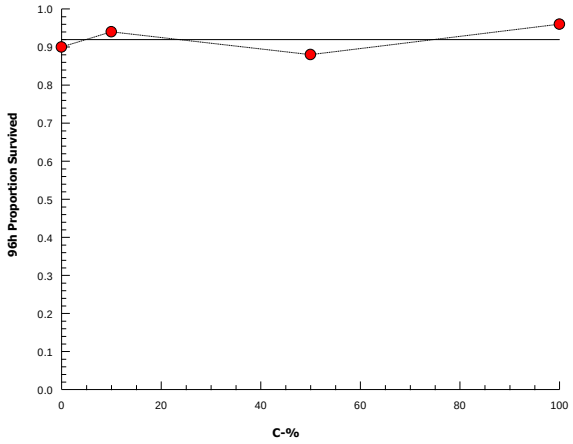
96h Proportion Survived Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	9/10	10/10	10/10	7/10	9/10
0	Site Water	7/10	10/10	9/10	10/10	10/10
10		10/10	8/10	10/10	9/10	10/10
50		7/10	9/10	9/10	10/10	9/10
100		10/10	10/10	9/10	9/10	10/10

Inland Silverside 96-h Acute Survival Test **ENVIRON**

Analysis ID:	01-9368-9865	**Endpoint:**	96h Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	06 Aug-14 8:46	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes

Graphics



Inland Silverside 96-h Acute Survival Test **ENVIRON**

Analysis ID:	06-6353-7235	**Endpoint:**	96h Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	06 Aug-14 8:46	**Analysis:**	Parametric-Control vs Treatments	**Official Results:**	Yes
Batch ID:	18-0051-3489	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	02 Jul-14 16:00	**Protocol:**	SERIM (2008)	**Diluent:**	Natural Seawater
Ending Date:	06 Jul-14 17:45	**Species:**	Menidia beryllina	**Brine:**	Not Applicable
Duration:	4d 2h	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	15-2324-8639	**Code:**	5ACAEDFF	**Client:**	ANAMAR
Sample Date:	03 Jun-14 11:36	**Material:**	Sediment Elutriate	**Project:**	Shipyard Creek
Receive Date:	11 Jun-14 13:10	**Source:**	Shipyard Creek		
Sample Age:	29d 4h	**Station:**	SYC14-TB2-AR		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	NOEL	LOEL	TOEL	TU
Angular (Corrected)	NA	C > T	NA	NA	15.0%	100	>100	NA	1

Dunnett Multiple Comparison Test

Control	vs	C-%	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
Dilution Water		10	-0.6262	2.227	0.198	8	0.9151	CDF	Non-Significant Effect
		50	0.3658	2.227	0.198	8	0.6035	CDF	Non-Significant Effect
		100	-0.9447	2.227	0.198	8	0.9569	CDF	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.04188994	0.01396331	3	0.7035	0.5637	Non-Significant Effect
Error	0.3175638	0.01984774	16			
Total	0.3594537		19			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance	1.515	11.34	0.6787	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9225	0.866	0.1106	Normal Distribution

96h Proportion Survived Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Dilution Water	5	0.9	0.7479	1	0.9	0.7	1	0.05477	13.61%	0.0%
10		5	0.94	0.8289	1	1	0.8	1	0.04	9.52%	-4.44%
50		5	0.88	0.744	1	0.9	0.7	1	0.04899	12.45%	2.22%
100		5	0.96	0.892	1	1	0.9	1	0.02449	5.71%	-6.67%

Angular (Corrected) Transformed Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Dilution Water	5	1.263	1.049	1.477	1.249	0.9912	1.412	0.07704	13.64%	0.0%
10		5	1.318	1.148	1.489	1.412	1.107	1.412	0.06153	10.44%	-4.42%
50		5	1.23	1.043	1.418	1.249	0.9912	1.412	0.06755	12.28%	2.58%
100		5	1.347	1.236	1.458	1.412	1.249	1.412	0.03992	6.63%	-6.67%

96h Proportion Survived Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	0.9	1	1	0.7	0.9
10		1	0.8	1	0.9	1
50		0.7	0.9	0.9	1	0.9
100		1	1	0.9	0.9	1

Inland Silverside 96-h Acute Survival Test **ENVIRON**

Analysis ID:	06-6353-7235	**Endpoint:**	96h Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	06 Aug-14 8:46	**Analysis:**	Parametric-Control vs Treatments	**Official Results:**	Yes

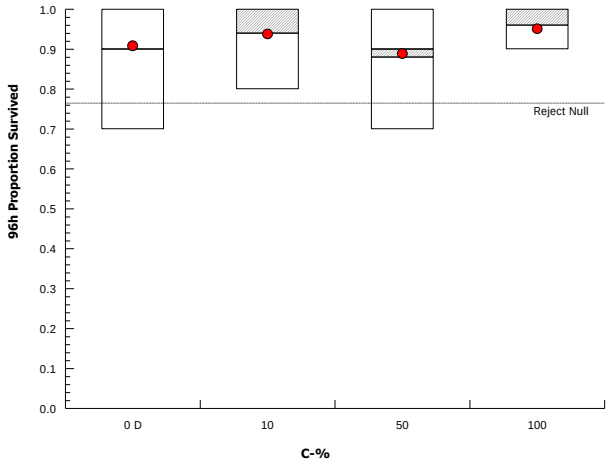
Angular (Corrected) Transformed Detail

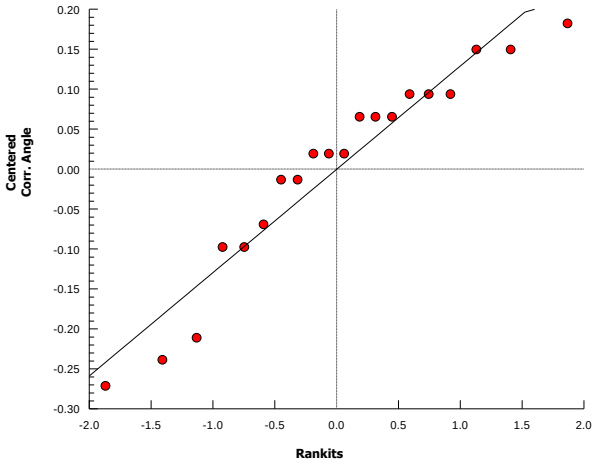
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	1.249	1.412	1.412	0.9912	1.249
10		1.412	1.107	1.412	1.249	1.412
50		0.9912	1.249	1.249	1.412	1.249
100		1.412	1.412	1.249	1.249	1.412

96h Proportion Survived Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	9/10	10/10	10/10	7/10	9/10
0	Site Water	7/10	10/10	9/10	10/10	10/10
10		10/10	8/10	10/10	9/10	10/10
50		7/10	9/10	9/10	10/10	9/10
100		10/10	10/10	9/10	9/10	10/10

Graphics





Inland Silverside 96-h Acute Survival Test **ENVIRON**

Analysis ID:	07-9275-9017	**Endpoint:**	96h Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	06 Aug-14 8:46	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes
Batch ID:	18-0051-3489	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	02 Jul-14 16:00	**Protocol:**	SERIM (2008)	**Diluent:**	Natural Seawater
Ending Date:	06 Jul-14 17:45	**Species:**	Menidia beryllina	**Brine:**	Not Applicable
Duration:	4d 2h	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	15-2324-8639	**Code:**	5ACAEDFF	**Client:**	ANAMAR
Sample Date:	03 Jun-14 11:36	**Material:**	Sediment Elutriate	**Project:**	Shipyard Creek
Receive Date:	11 Jun-14 13:10	**Source:**	Shipyard Creek		
Sample Age:	29d 4h	**Station:**	SYC14-TB2-AR		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Angular (Corrected)	NA	C > T	NA	NA	16.1%	Passes 96h proportion survived

Equal Variance t Two-Sample Test

Control	vs	Control	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
Dilution Water		Site Water	-0.2891	1.86	0.21	8	0.6101	CDF	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.002655933	0.002655933	1	0.08358	0.7799	Non-Significant Effect
Error	0.2542099	0.03177624	8			
Total	0.2568658		9			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.142	23.15	0.9009	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.8136	0.7411	0.0212	Normal Distribution

96h Proportion Survived Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Dilution Water	5	0.9	0.7479	1	0.9	0.7	1	0.05477	13.61%	0.0%
0	Site Water	5	0.92	0.7581	1	1	0.7	1	0.05831	14.17%	-2.22%

Angular (Corrected) Transformed Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Dilution Water	5	1.263	1.049	1.477	1.249	0.9912	1.412	0.07704	13.64%	0.0%
0	Site Water	5	1.295	1.067	1.524	1.412	0.9912	1.412	0.08231	14.21%	-2.58%

96h Proportion Survived Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	0.9	1	1	0.7	0.9
0	Site Water	0.7	1	0.9	1	1

Angular (Corrected) Transformed Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	1.249	1.412	1.412	0.9912	1.249
0	Site Water	0.9912	1.412	1.249	1.412	1.412

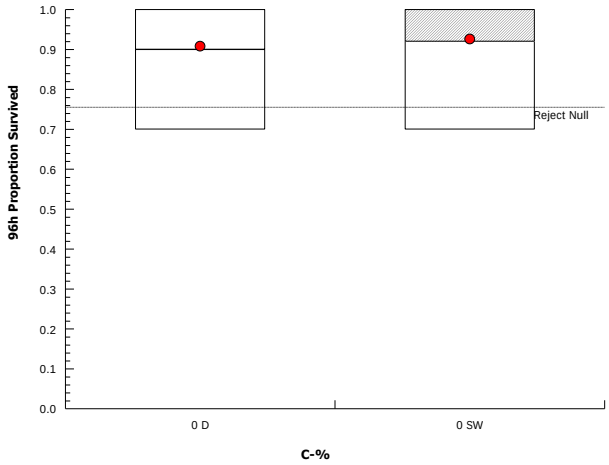
96h Proportion Survived Binomials

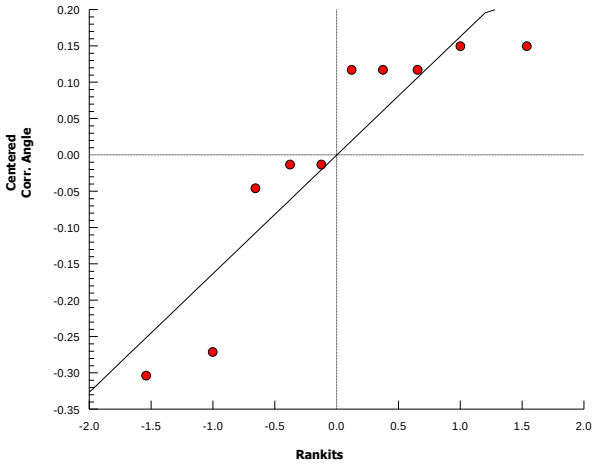
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	9/10	10/10	10/10	7/10	9/10
0	Site Water	7/10	10/10	9/10	10/10	10/10

Inland Silverside 96-h Acute Survival Test **ENVIRON**

Analysis ID:	07-9275-9017	**Endpoint:**	96h Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	06 Aug-14 8:46	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Graphics





APPENDIX B.3 Statistical Results: *Mytilus* sp. Water-Column Test

CETIS Analytical Report

Bivalve Larval Survival and Development Test **ENVIRON**

Analysis ID:	18-8029-6157	**Endpoint:**	Combined Proportion Normal	**CETIS Version:**	CETISv1.8.7
Analyzed:	05 Aug-14 10:28	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes
Batch ID:	16-1099-4192	**Test Type:**	Development-Survival	**Analyst:**	
Start Date:	28 Jun-14 17:25	**Protocol:**	SERIM (2008)	**Diluent:**	Natural Seawater
Ending Date:	30 Jun-14	**Species:**	Mytilus edulis	**Brine:**	Not Applicable
Duration:	31h	**Source:**	Aquatic Research Organisms, NH	**Age:**	
Sample ID:	15-2324-8639	**Code:**	5ACAEDFF	**Client:**	ANAMAR
Sample Date:	03 Jun-14 11:36	**Material:**	Sediment Elutriate	**Project:**	Shipyard Creek
Receive Date:	11 Jun-14 13:10	**Source:**	Shipyard Creek		
Sample Age:	25d 6h	**Station:**	SYC14-TB2-AR		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X+1)	Linear	1640385	200	Yes	Two-Point Interpolation

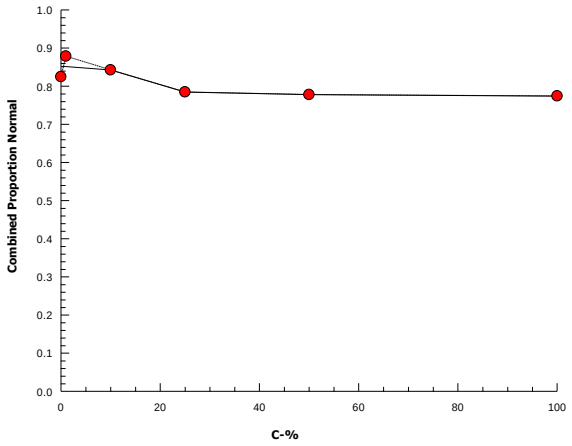
Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
EC5	17.11	N/A	89.55	5.843	1.117	NA
EC10	>100	N/A	N/A	<1	NA	NA
EC15	>100	N/A	N/A	<1	NA	NA
EC20	>100	N/A	N/A	<1	NA	NA
EC25	>100	N/A	N/A	<1	NA	NA
EC40	>100	N/A	N/A	<1	NA	NA
EC50	>100	N/A	N/A	<1	NA	NA

Combined Proportion Normal Summary **Calculated Variate(A/B)**

C-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	A	B
0	Dilution Water	5	0.8248	0.7481	0.8835	0.02289	0.05117	6.2%	0.0%	1097	1330
1		5	0.8789	0.7895	0.9774	0.03355	0.07502	8.54%	-6.56%	1169	1330
10		5	0.8429	0.7331	0.9962	0.0431	0.09638	11.43%	-2.19%	1121	1330
25		5	0.785	0.6917	0.8722	0.03603	0.08056	10.26%	4.83%	1044	1330
50		5	0.7782	0.6955	0.8835	0.03369	0.07533	9.68%	5.65%	1035	1330
100		5	0.7759	0.7406	0.8045	0.01261	0.02821	3.64%	5.93%	1030	1330

Graphics



Bivalve Larval Survival and Development Test **ENVIRON**

Analysis ID:	04-0972-9777	**Endpoint:**	Combined Proportion Normal	**CETIS Version:**	CETISv1.8.7
Analyzed:	05 Aug-14 10:28	**Analysis:**	Parametric-Control vs Treatments	**Official Results:**	Yes
Batch ID:	16-1099-4192	**Test Type:**	Development-Survival	**Analyst:**	
Start Date:	28 Jun-14 17:25	**Protocol:**	SERIM (2008)	**Diluent:**	Natural Seawater
Ending Date:	30 Jun-14	**Species:**	Mytilus edulis	**Brine:**	Not Applicable
Duration:	31h	**Source:**	Aquatic Research Organisms, NH	**Age:**	
Sample ID:	15-2324-8639	**Code:**	5ACAEDFF	**Client:**	ANAMAR
Sample Date:	03 Jun-14 11:36	**Material:**	Sediment Elutriate	**Project:**	Shipyard Creek
Receive Date:	11 Jun-14 13:10	**Source:**	Shipyard Creek		
Sample Age:	25d 6h	**Station:**	SYC14-TB2-AR		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	NOEL	LOEL	TOEL	TU
Angular (Corrected)	NA	C > T	NA	NA	16.9%	100	>100	NA	1

Dunnett Multiple Comparison Test

Control	vs	C-%	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
Dilution Water		1	-1.271	2.362	0.167	8	0.9924	CDF	Non-Significant Effect
		10	-0.7361	2.362	0.167	8	0.9663	CDF	Non-Significant Effect
		25	0.6807	2.362	0.167	8	0.5658	CDF	Non-Significant Effect
		50	0.8008	2.362	0.167	8	0.5106	CDF	Non-Significant Effect
		100	0.9023	2.362	0.167	8	0.4640	CDF	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.1008622	0.02017245	5	1.621	0.1927	Non-Significant Effect
Error	0.2986884	0.01244535	24			
Total	0.3995506		29			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance	9.877	15.09	0.0788	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9376	0.9031	0.0786	Normal Distribution

Combined Proportion Normal Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Dilution Water	5	0.8248	0.7613	0.8884	0.8195	0.7481	0.8835	0.02289	6.2%	0.0%
1		5	0.8789	0.7858	0.9721	0.9023	0.7895	0.9774	0.03355	8.54%	-6.56%
10		5	0.8429	0.7232	0.9625	0.8158	0.7331	0.9962	0.0431	11.43%	-2.19%
25		5	0.785	0.6849	0.885	0.8271	0.6917	0.8722	0.03603	10.26%	4.83%
50		5	0.7782	0.6847	0.8717	0.7594	0.6955	0.8835	0.03369	9.68%	5.65%
100		5	0.7759	0.7409	0.811	0.7707	0.7406	0.8045	0.01261	3.64%	5.93%

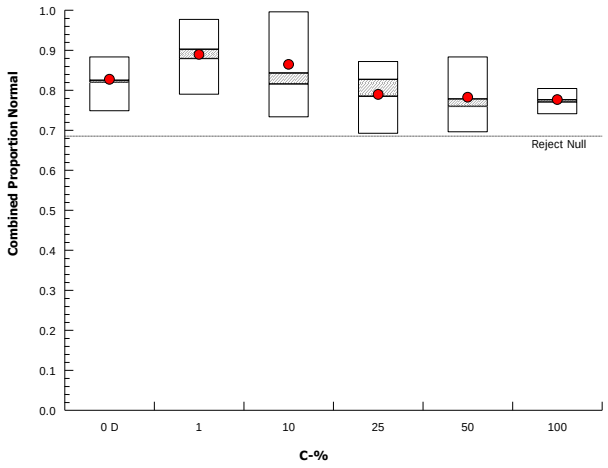
Angular (Corrected) Transformed Summary

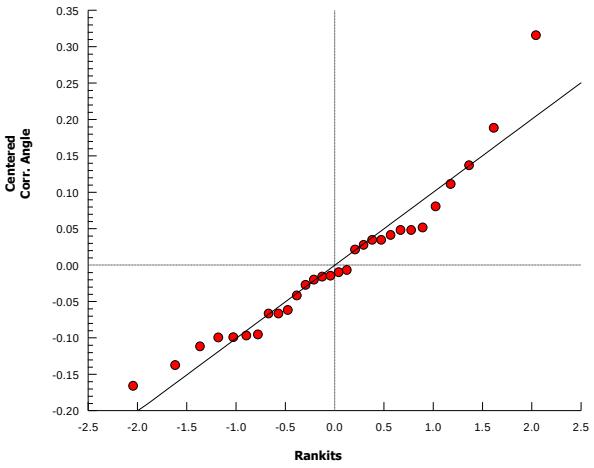
C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Dilution Water	5	1.142	1.059	1.225	1.132	1.045	1.222	0.0299	5.86%	0.0%
1		5	1.232	1.073	1.391	1.253	1.094	1.42	0.05724	10.39%	-7.85%
10		5	1.194	0.9647	1.423	1.127	1.028	1.509	0.08255	15.46%	-4.55%
25		5	1.094	0.972	1.216	1.142	0.9822	1.205	0.04391	8.98%	4.21%
50		5	1.085	0.968	1.203	1.058	0.9862	1.222	0.04232	8.72%	4.95%
100		5	1.078	1.036	1.12	1.071	1.036	1.113	0.01515	3.14%	5.58%

Bivalve Larval Survival and Development Test **ENVIRON**

Analysis ID:	04-0972-9777	**Endpoint:**	Combined Proportion Normal	**CETIS Version:**	CETISv1.8.7
Analyzed:	05 Aug-14 10:28	**Analysis:**	Parametric-Control vs Treatments	**Official Results:**	Yes

Graphics





CETIS Analytical Report

Bivalve Larval Survival and Development Test **ENVIRON**

Analysis ID:	15-8157-5555	**Endpoint:**	Combined Proportion Normal	**CETIS Version:**	CETISv1.8.7
Analyzed:	05 Aug-14 10:22	**Analysis:**	Untrimmed Spearman-Kärber	**Official Results:**	Yes
Batch ID:	16-1099-4192	**Test Type:**	Development-Survival	**Analyst:**	
Start Date:	28 Jun-14 17:25	**Protocol:**	SERIM (2008)	**Diluent:**	Natural Seawater
Ending Date:	30 Jun-14	**Species:**	Mytilus edulis	**Brine:**	Not Applicable
Duration:	31h	**Source:**	Aquatic Research Organisms, NH	**Age:**	
Sample ID:	00-1256-8329	**Code:**	BFC709	**Client:**	ANAMAR
Sample Date:	03 Jun-14 11:36	**Material:**	Sediment Elutriate	**Project:**	Shipyard Creek
Receive Date:	11 Jun-14 13:10	**Source:**	Shipyard Creek		
Sample Age:	25d 6h	**Station:**	SYC14-TB2		

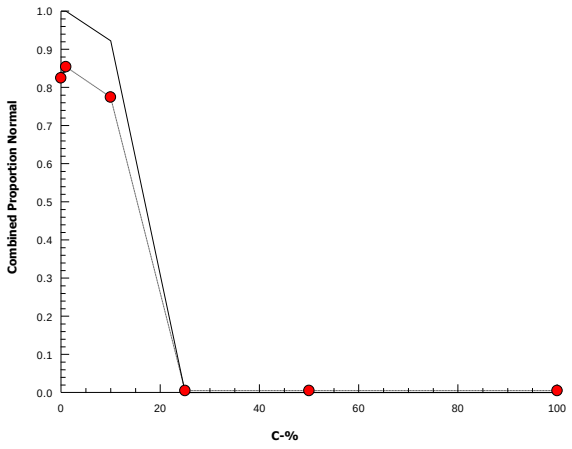
Spearman-Kärber Estimates

Threshold Option	Threshold	Trim	Mu	Sigma	EC50	95% LCL	95% UCL
Control Threshold	0.1752	0.00%	1.145	0.005124	13.96	13.63	14.29

Combined Proportion Normal Summary **Calculated Variate(A/B)**

C-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	A	B
0	Dilution Water	5	0.8248	0.7481	0.8835	0.02289	0.05117	6.2%	0.0%	1097	1330
1		5	0.8541	0.7857	0.9211	0.02867	0.0641	7.5%	-3.56%	1136	1330
10		5	0.7744	0.718	0.8496	0.02302	0.05148	6.65%	6.11%	1030	1330
25		5	0	0	0	0	0		100.0%	0	1330
50		5	0	0	0	0	0		100.0%	0	1330
100		5	0	0	0	0	0		100.0%	0	1330

Graphics



Bivalve Larval Survival and Development Test **ENVIRON**

Analysis ID:	17-9788-3229	**Endpoint:**	Combined Proportion Normal	**CETIS Version:**	CETISv1.8.7
Analyzed:	05 Aug-14 10:22	**Analysis:**	Parametric-Control vs Treatments	**Official Results:**	Yes
Batch ID:	16-1099-4192	**Test Type:**	Development-Survival	**Analyst:**	
Start Date:	28 Jun-14 17:25	**Protocol:**	SERIM (2008)	**Diluent:**	Natural Seawater
Ending Date:	30 Jun-14	**Species:**	Mytilus edulis	**Brine:**	Not Applicable
Duration:	31h	**Source:**	Aquatic Research Organisms, NH	**Age:**	
Sample ID:	00-1256-8329	**Code:**	BFC709	**Client:**	ANAMAR
Sample Date:	03 Jun-14 11:36	**Material:**	Sediment Elutriate	**Project:**	Shipyard Creek
Receive Date:	11 Jun-14 13:10	**Source:**	Shipyard Creek		
Sample Age:	25d 6h	**Station:**	SYC14-TB2		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	NOEL	LOEL	TOEL	TU
Angular (Corrected)	NA	C > T	NA	NA	9.72%	10	25	15.81	10

Dunnett Multiple Comparison Test

Control	vs	C-%	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
Dilution Water		1	-0.9214	2.108	0.101	8	0.9188	CDF	Non-Significant Effect
		10	1.334	2.108	0.101	8	0.1708	CDF	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.02950637	0.01475319	2	2.572	0.1176	Non-Significant Effect
Error	0.06882641	0.005735534	12			
Total	0.09833279		14			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance	0.6833	9.21	0.7106	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9188	0.8328	0.1846	Normal Distribution

Combined Proportion Normal Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Dilution Water	5	0.8248	0.7613	0.8884	0.8195	0.7481	0.8835	0.02289	6.2%	0.0%
1		5	0.8541	0.7745	0.9337	0.8496	0.7857	0.9211	0.02867	7.5%	-3.56%
10		5	0.7744	0.7105	0.8384	0.7744	0.718	0.8496	0.02302	6.65%	6.11%
25		5	0	0	0	0	0	0	0		100.0%
50		5	0	0	0	0	0	0	0		100.0%
100		5	0	0	0	0	0	0	0		100.0%

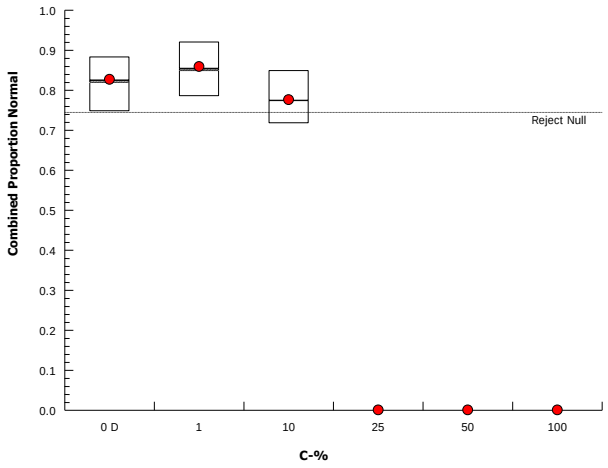
Angular (Corrected) Transformed Summary

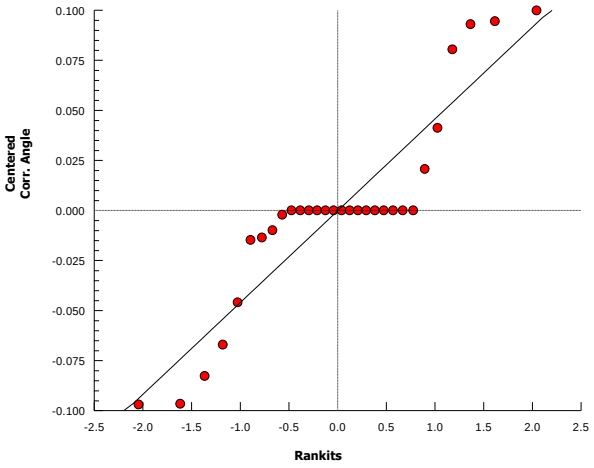
C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Dilution Water	5	1.142	1.059	1.225	1.132	1.045	1.222	0.0299	5.86%	0.0%
1		5	1.186	1.07	1.302	1.173	1.09	1.286	0.04182	7.88%	-3.87%
10		5	1.078	0.9996	1.157	1.076	1.011	1.173	0.02826	5.86%	5.6%
25		5	0.03066	0.03065	0.03067	0.03066	0.03066	0.03066	0	0.0%	97.32%
50		5	0.03066	0.03065	0.03067	0.03066	0.03066	0.03066	0	0.0%	97.32%
100		5	0.03066	0.03065	0.03067	0.03066	0.03066	0.03066	0	0.0%	97.32%

Bivalve Larval Survival and Development Test **ENVIRON**

Analysis ID:	17-9788-3229	**Endpoint:**	Combined Proportion Normal	**CETIS Version:**	CETISv1.8.7
Analyzed:	05 Aug-14 10:22	**Analysis:**	Parametric-Control vs Treatments	**Official Results:**	Yes

Graphics





CETIS Analytical Report

Bivalve Larval Survival and Development Test **ENVIRON**

Analysis ID:	20-2074-3180	**Endpoint:**	Combined Proportion Normal	**CETIS Version:**	CETISv1.8.7
Analyzed:	05 Aug-14 10:31	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X+1)	Linear	1227540	200	Yes	Two-Point Interpolation

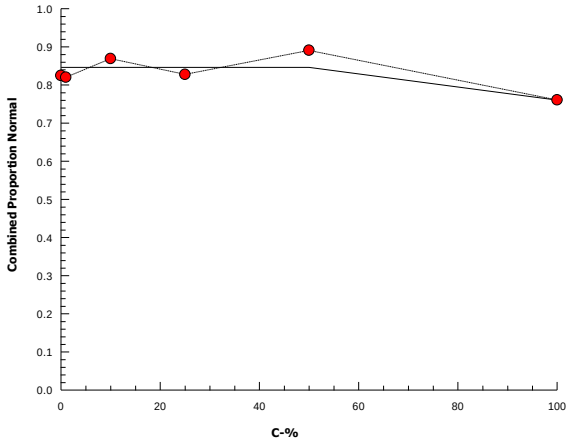
Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
EC5	70.43	52.32	N/A	1.42	NA	1.911
EC10	99.05	61.45	N/A	1.01	NA	1.627
EC15	>100	N/A	N/A	<1	NA	NA
EC20	>100	N/A	N/A	<1	NA	NA
EC25	>100	N/A	N/A	<1	NA	NA
EC40	>100	N/A	N/A	<1	NA	NA
EC50	>100	N/A	N/A	<1	NA	NA

Combined Proportion Normal Summary **Calculated Variate(A/B)**

C-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	A	B
0	Dilution Water	5	0.8248	0.7481	0.8835	0.02289	0.05117	6.2%	0.0%	1097	1330
1		5	0.8203	0.7669	0.906	0.02534	0.05667	6.91%	0.55%	1091	1330
10		5	0.8692	0.797	0.9286	0.02328	0.05205	5.99%	-5.38%	1156	1330
25		5	0.8286	0.782	0.906	0.02438	0.05452	6.58%	-0.46%	1101	1330
50		5	0.891	0.8158	0.9474	0.02714	0.06068	6.81%	-8.02%	1185	1330
100		5	0.7609	0.6767	0.8759	0.03389	0.07578	9.96%	7.75%	1012	1330

Graphics



Bivalve Larval Survival and Development Test **ENVIRON**

Analysis ID: 04-5745-3692 **Endpoint:** Combined Proportion Normal **CETIS Version:** CETISv1.8.7
Analyzed: 05 Aug-14 10:30 **Analysis:** Parametric-Control vs Treatments **Official Results:** Yes

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	NOEL	LOEL	TOEL	TU
Angular (Corrected)	NA	C > T	NA	NA	12.1%	100	>100	NA	1

Dunnett Multiple Comparison Test

Control	vs	C-%	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
Dilution Water		1	0.08941	2.362	0.123	8	0.8056	CDF	Non-Significant Effect
		10	-1.229	2.362	0.123	8	0.9914	CDF	Non-Significant Effect
		25	-0.1177	2.362	0.123	8	0.8658	CDF	Non-Significant Effect
		50	-1.959	2.362	0.123	8	0.9992	CDF	Non-Significant Effect
		100	1.487	2.362	0.123	8	0.2281	CDF	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.09618195	0.01923639	5	2.834	0.0378	Significant Effect
Error	0.1629106	0.006787941	24			
Total	0.2590925		29			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance	0.7379	15.09	0.9808	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9578	0.9031	0.2720	Normal Distribution

Combined Proportion Normal Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Dilution Water	5	0.8248	0.7613	0.8884	0.8195	0.7481	0.8835	0.02289	6.2%	0.0%
1		5	0.8203	0.7499	0.8907	0.812	0.7669	0.906	0.02534	6.91%	0.55%
10		5	0.8692	0.8045	0.9338	0.8722	0.797	0.9286	0.02328	5.99%	-5.38%
25		5	0.8286	0.7609	0.8963	0.8045	0.782	0.906	0.02438	6.58%	-0.46%
50		5	0.891	0.8156	0.9663	0.9098	0.8158	0.9474	0.02714	6.81%	-8.02%
100		5	0.7609	0.6668	0.855	0.7556	0.6767	0.8759	0.03389	9.96%	7.75%

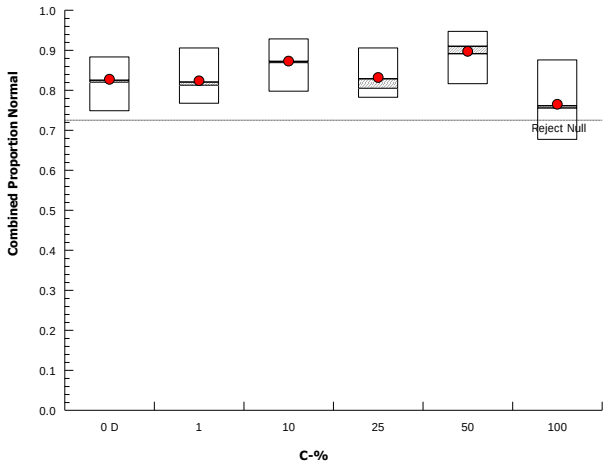
Angular (Corrected) Transformed Summary

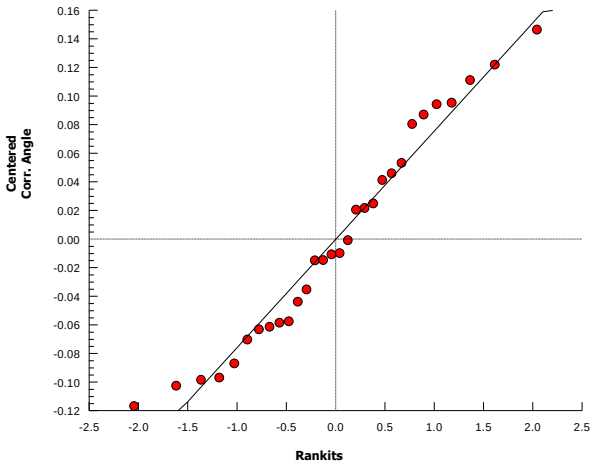
C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Dilution Water	5	1.142	1.059	1.225	1.132	1.045	1.222	0.0299	5.86%	0.0%
1		5	1.137	1.04	1.234	1.122	1.067	1.259	0.03494	6.87%	0.41%
10		5	1.206	1.11	1.303	1.205	1.103	1.3	0.03476	6.44%	-5.61%
25		5	1.148	1.054	1.243	1.113	1.085	1.259	0.034	6.62%	-0.54%
50		5	1.244	1.122	1.366	1.266	1.127	1.339	0.04378	7.87%	-8.94%
100		5	1.064	0.9484	1.181	1.054	0.966	1.211	0.04182	8.79%	6.79%

Bivalve Larval Survival and Development Test **ENVIRON**

Analysis ID:	04-5745-3692	**Endpoint:**	Combined Proportion Normal	**CETIS Version:**	CETISv1.8.7
Analyzed:	05 Aug-14 10:30	**Analysis:**	Parametric-Control vs Treatments	**Official Results:**	Yes

Graphics





CETIS Analytical Report

Bivalve Larval Survival and Development Test **ENVIRON**

Analysis ID:	14-9117-3068	**Endpoint:**	Combined Proportion Normal	**CETIS Version:**	CETISv1.8.7
Analyzed:	03 Sep-14 15:03	**Analysis:**	Untrimmed Spearman-Kärber	**Official Results:**	Yes

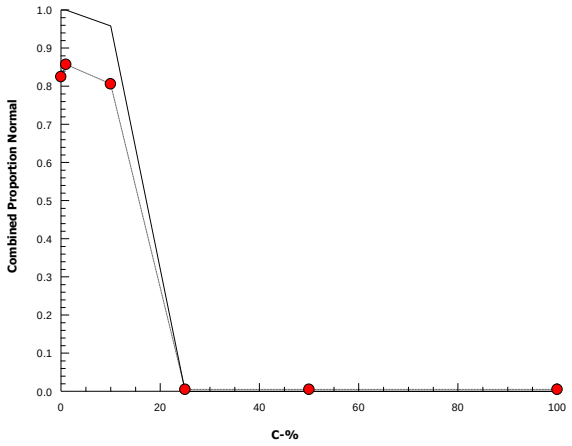
Spearman-Kärber Estimates

Threshold Option	Threshold	Trim	Mu	Sigma	EC50	95% LCL	95% UCL
Control Threshold	0.1752	0.00%	1.17	0.003826	14.79	14.53	15.05

Combined Proportion Normal Summary

			Calculated Variate(A/B)								
C-%	**Control Type**	**Count**	**Mean**	**Min**	**Max**	**Std Err**	**Std Dev**	**CV%**	**%Effect**	**A**	**B**
0	Dilution Water	5	0.8248	0.7481	0.8835	0.02289	0.05117	6.2%	0.0%	1097	1330
1		5	0.8553	0.7368	0.9737	0.03774	0.0844	9.87%	-3.69%	1368	1596
10		5	0.806	0.7481	0.8647	0.02132	0.04767	5.91%	2.28%	1072	1330
25		5	0	0	0	0	0		100.0%	0	1330
50		5	0	0	0	0	0		100.0%	0	1330
100		5	0	0	0	0	0		100.0%	0	1330

Graphics



CETIS Analytical Report

Bivalve Larval Survival and Development Test **ENVIRON**

Analysis ID: 12-5729-1669 **Endpoint:** Combined Proportion Normal **CETIS Version:** CETISv1.8.7
Analyzed: 12 Sep-14 18:55 **Analysis:** Parametric-Control vs Treatments **Official Results:** Yes

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	NOEL	LOEL	TOEL	TU
Angular (Corrected)	NA	C > T	NA	NA	12.3%	10	25	15.81	10

Dunnett Multiple Comparison Test

Control	vs	C-%	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
Dilution Water		1	-0.9171	2.108	0.125	8	0.9181	CDF	Non-Significant Effect
		10	0.4199	2.108	0.125	8	0.4924	CDF	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.01651448	0.008257241	2	0.9349	0.4195	Non-Significant Effect
Error	0.1059911	0.008832587	12			
Total	0.1225055		14			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance	2.956	9.21	0.2281	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9551	0.8328	0.6074	Normal Distribution

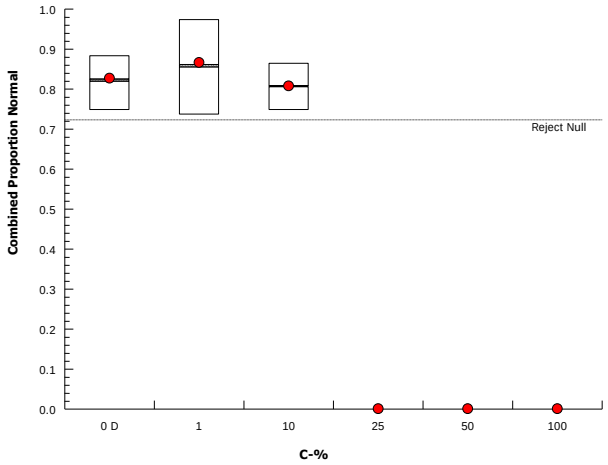
Combined Proportion Normal Summary

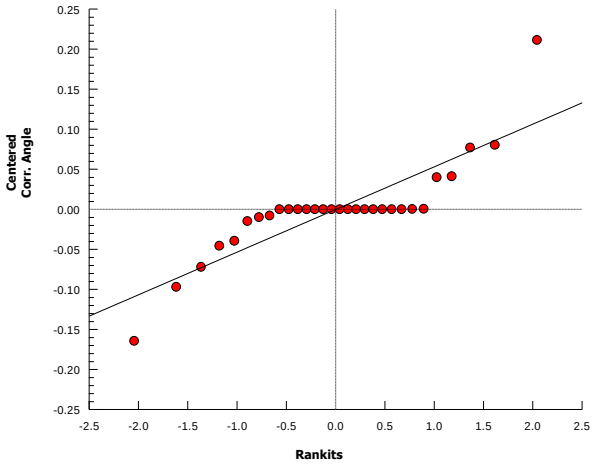
C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Dilution Water	5	0.8248	0.7613	0.8884	0.8195	0.7481	0.8835	0.02289	6.2%	0.0%
1		5	0.8553	0.7505	0.9601	0.8609	0.7368	0.9737	0.03774	9.87%	-3.69%
10		5	0.806	0.7468	0.8652	0.8083	0.7481	0.8647	0.02132	5.91%	2.28%
25		5	0	0	0	0	0	0	0		100.0%
50		5	0	0	0	0	0	0	0		100.0%
100		5	0	0	0	0	0	0	0		100.0%

Angular (Corrected) Transformed Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Dilution Water	5	1.142	1.059	1.225	1.132	1.045	1.222	0.0299	5.86%	0.0%
1		5	1.196	1.028	1.365	1.189	1.032	1.408	0.06054	11.31%	-4.77%
10		5	1.117	1.041	1.193	1.118	1.045	1.194	0.0272	5.45%	2.19%
25		5	0.03066	0.03065	0.03067	0.03066	0.03066	0.03066	0	0.0%	97.32%
50		5	0.03066	0.03065	0.03067	0.03066	0.03066	0.03066	0	0.0%	97.32%
100		5	0.03066	0.03065	0.03067	0.03066	0.03066	0.03066	0	0.0%	97.32%

Graphics





CETIS Analytical Report

Bivalve Larval Survival and Development Test **ENVIRON**

Analysis ID:	18-8910-5612	**Endpoint:**	Combined Proportion Normal	**CETIS Version:**	CETISv1.8.7
Analyzed:	05 Aug-14 10:10	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X+1)	Linear	1430544	200	Yes	Two-Point Interpolation

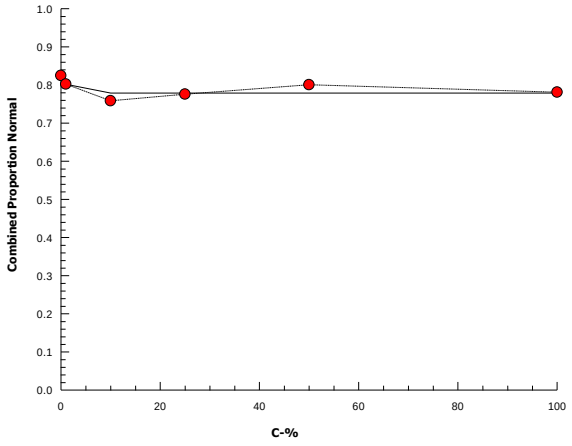
Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
EC5	6.931	N/A	N/A	14.43	NA	NA
EC10	>100	N/A	N/A	<1	NA	NA
EC15	>100	N/A	N/A	<1	NA	NA
EC20	>100	N/A	N/A	<1	NA	NA
EC25	>100	N/A	N/A	<1	NA	NA
EC40	>100	N/A	N/A	<1	NA	NA
EC50	>100	N/A	N/A	<1	NA	NA

Combined Proportion Normal Summary **Calculated Variate(A/B)**

C-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	A	B
0	Dilution Water	5	0.8248	0.7481	0.8835	0.02289	0.05117	6.2%	0.0%	1097	1330
1		5	0.8023	0.7293	0.8835	0.02562	0.0573	7.14%	2.74%	1067	1330
10		5	0.7586	0.7218	0.8308	0.02019	0.04514	5.95%	8.02%	1009	1330
25		5	0.7759	0.7143	0.8233	0.02119	0.04737	6.11%	5.93%	1032	1330
50		5	0.8008	0.7218	0.8459	0.0211	0.04718	5.89%	2.92%	1065	1330
100		5	0.7812	0.6805	0.9248	0.04252	0.09508	12.17%	5.29%	1039	1330

Graphics



Bivalve Larval Survival and Development Test **ENVIRON**

Analysis ID: 00-9050-0656 **Endpoint:** Combined Proportion Normal **CETIS Version:** CETISv1.8.7
Analyzed: 05 Aug-14 10:10 **Analysis:** Parametric-Control vs Treatments **Official Results:** Yes

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	NOEL	LOEL	TOEL	TU
Angular (Corrected)	NA	C > T	NA	NA	11.2%	100	>100	NA	1

Dunnett Multiple Comparison Test

Control	vs	C-%	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
Dilution Water		1	0.5892	2.362	0.115	8	0.6074	CDF	Non-Significant Effect
		10	1.716	2.362	0.115	8	0.1610	CDF	Non-Significant Effect
		25	1.291	2.362	0.115	8	0.2984	CDF	Non-Significant Effect
		50	0.6595	2.362	0.115	8	0.5755	CDF	Non-Significant Effect
		100	0.998	2.362	0.115	8	0.4208	CDF	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.02103588	0.004207177	5	0.7155	0.6179	Non-Significant Effect
Error	0.1411196	0.005879983	24			
Total	0.1621555		29			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance	4.452	15.09	0.4864	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9673	0.9031	0.4694	Normal Distribution

Combined Proportion Normal Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Dilution Water	5	0.8248	0.7613	0.8884	0.8195	0.7481	0.8835	0.02289	6.2%	0.0%
1		5	0.8023	0.7311	0.8734	0.8008	0.7293	0.8835	0.02562	7.14%	2.74%
10		5	0.7586	0.7026	0.8147	0.7368	0.7218	0.8308	0.02019	5.95%	8.02%
25		5	0.7759	0.7171	0.8348	0.7857	0.7143	0.8233	0.02119	6.11%	5.93%
50		5	0.8008	0.7422	0.8593	0.812	0.7218	0.8459	0.0211	5.89%	2.92%
100		5	0.7812	0.6631	0.8993	0.7932	0.6805	0.9248	0.04252	12.17%	5.29%

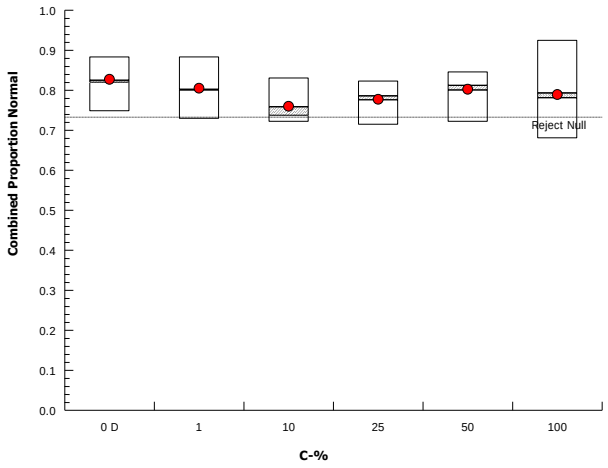
Angular (Corrected) Transformed Summary

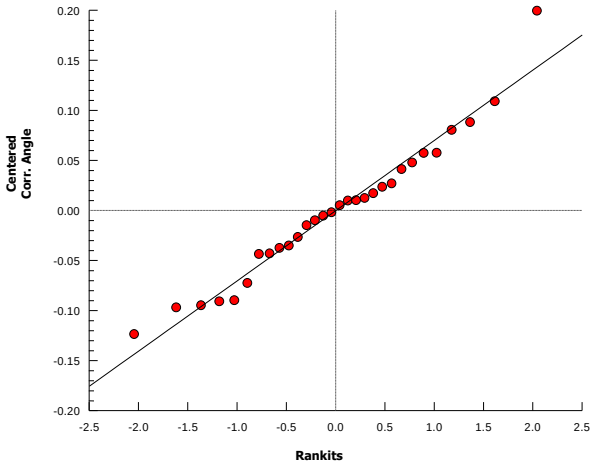
C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Dilution Water	5	1.142	1.059	1.225	1.132	1.045	1.222	0.0299	5.86%	0.0%
1		5	1.113	1.021	1.205	1.108	1.024	1.222	0.03311	6.65%	2.5%
10		5	1.059	0.991	1.126	1.032	1.015	1.147	0.0244	5.15%	7.29%
25		5	1.079	1.009	1.15	1.09	1.007	1.137	0.02531	5.24%	5.48%
50		5	1.11	1.039	1.181	1.122	1.015	1.167	0.02565	5.17%	2.8%
100		5	1.094	0.9372	1.25	1.099	0.97	1.293	0.05632	11.52%	4.24%

Bivalve Larval Survival and Development Test **ENVIRON**

Analysis ID:	00-9050-0656	**Endpoint:**	Combined Proportion Normal	**CETIS Version:**	CETISv1.8.7
Analyzed:	05 Aug-14 10:10	**Analysis:**	Parametric-Control vs Treatments	**Official Results:**	Yes

Graphics





CETIS Analytical Report

Bivalve Larval Survival and Development Test **ENVIRON**

Analysis ID: 16-1133-4519 **Endpoint:** Combined Proportion Normal **CETIS Version:** CETISv1.8.7
Analyzed: 05 Aug-14 10:01 **Analysis:** Trimmed Spearman-Kärber **Official Results:** Yes

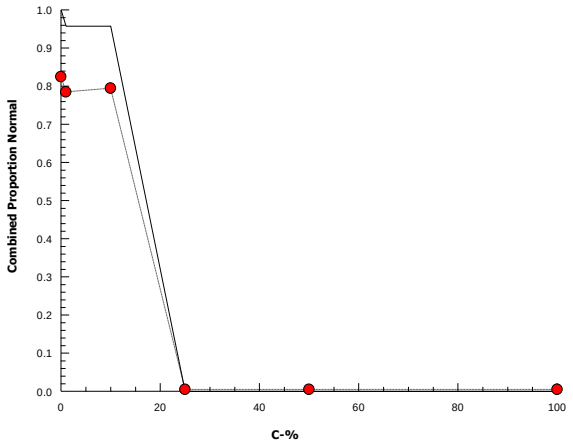
Trimmed Spearman-Kärber Estimates

Threshold Option	Threshold	Trim	Mu	Sigma	EC50	95% LCL	95% UCL
Control Threshold	0.1752	4.24%	1.19	0.001199	15.49	15.41	15.58

Combined Proportion Normal Summary

			Calculated Variate(A/B)								
C-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	A	B
0	Dilution Water	5	0.8248	0.7481	0.8835	0.02289	0.05117	6.2%	0.0%	1097	1330
1		5	0.785	0.6992	0.8759	0.03651	0.08165	10.4%	4.83%	1044	1330
10		5	0.7947	0.6729	0.8722	0.03324	0.07432	9.35%	3.65%	1057	1330
25		5	0	0	0	0	0		100.0%	0	1330
50		5	0	0	0	0	0		100.0%	0	1330
100		5	0	0	0	0	0		100.0%	0	1330

Graphics



CETIS Analytical Report

Report Date: 12 Sep-14 18:52 (p 1 of 1)
Test Code: D1A5650 | 02-1982-9840

Bivalve Larval Survival and Development Test **ENVIRON**

Analysis ID: 12-6927-5058 **Endpoint:** Combined Proportion Normal **CETIS Version:** CETISv1.8.7
Analyzed: 05 Aug-14 10:01 **Analysis:** Parametric-Control vs Treatments **Official Results:** Yes

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	NOEL	LOEL	TOEL	TU
Angular (Corrected)	NA	C > T	NA	NA	11.3%	10	25	15.81	10

Dunnett Multiple Comparison Test

Control	vs	C-%	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
Dilution Water		1	0.8675	2.108	0.116	8	0.3130	CDF	Non-Significant Effect
		10	0.6717	2.108	0.116	8	0.3879	CDF	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.00624752	0.00312376	2	0.414	0.6701	Non-Significant Effect
Error	0.09053349	0.007544457	12			
Total	0.09678101		14			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance	0.5983	9.21	0.7415	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9391	0.8328	0.3711	Normal Distribution

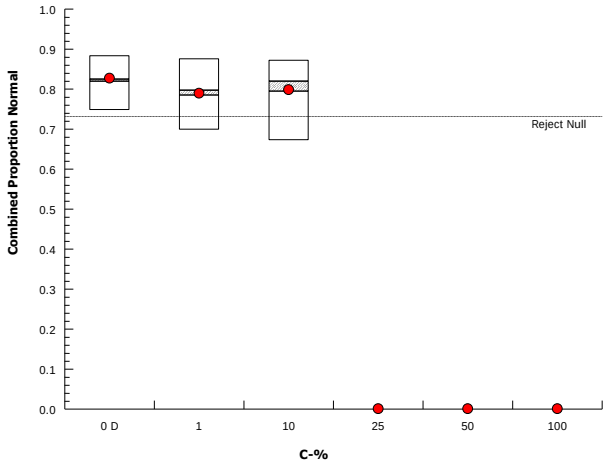
Combined Proportion Normal Summary

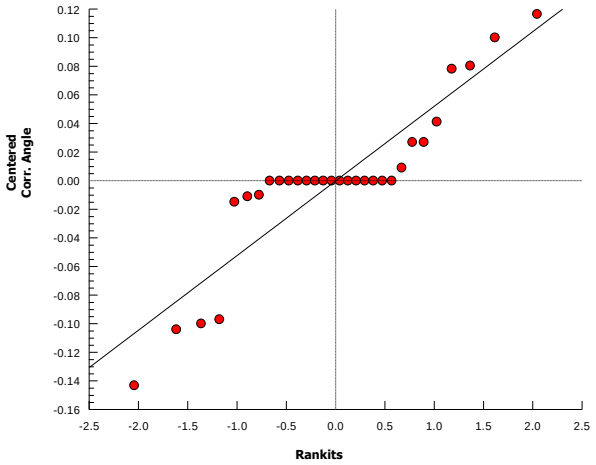
C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Dilution Water	5	0.8248	0.7613	0.8884	0.8195	0.7481	0.8835	0.02289	6.2%	0.0%
1		5	0.785	0.6836	0.8863	0.797	0.6992	0.8759	0.03651	10.4%	4.83%
10		5	0.7947	0.7025	0.887	0.8195	0.6729	0.8722	0.03324	9.35%	3.65%
25		5	0	0	0	0	0	0	0		100.0%
50		5	0	0	0	0	0	0	0		100.0%
100		5	0	0	0	0	0	0	0		100.0%

Angular (Corrected) Transformed Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Dilution Water	5	1.142	1.059	1.225	1.132	1.045	1.222	0.0299	5.86%	0.0%
1		5	1.094	0.9693	1.219	1.103	0.9903	1.211	0.04504	9.2%	4.17%
10		5	1.105	0.9939	1.216	1.132	0.962	1.205	0.04005	8.1%	3.23%
25		5	0.03066	0.03065	0.03067	0.03066	0.03066	0.03066	0	0.0%	97.32%
50		5	0.03066	0.03065	0.03067	0.03066	0.03066	0.03066	0	0.0%	97.32%
100		5	0.03066	0.03065	0.03067	0.03066	0.03066	0.03066	0	0.0%	97.32%

Graphics





Bivalve Larval Survival and Development Test **ENVIRON**

Analysis ID: 09-5270-2322 **Endpoint:** Combined Proportion Normal **CETIS Version:** CETISv1.8.7
Analyzed: 05 Aug-14 10:02 **Analysis:** Parametric-Two Sample **Official Results:** Yes

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Angular (Corrected)	NA	C > T	NA	NA	7.18%	Passes combined proportion normal

Equal Variance t Two-Sample Test

Control	vs	Control	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
Dilution Water		Site Water	0.39	1.86	0.077	8	0.3534	CDF	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.0006455234	0.0006455234	1	0.1521	0.7067	Non-Significant Effect
Error	0.03395225	0.004244031	8			
Total	0.03459777		9			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.113	23.15	0.9198	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9281	0.7411	0.4298	Normal Distribution

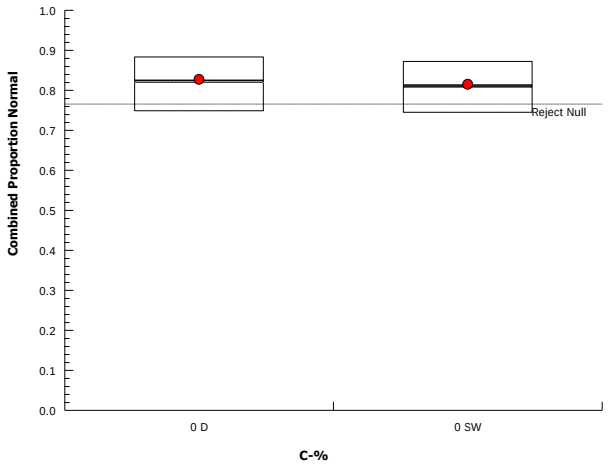
Combined Proportion Normal Summary

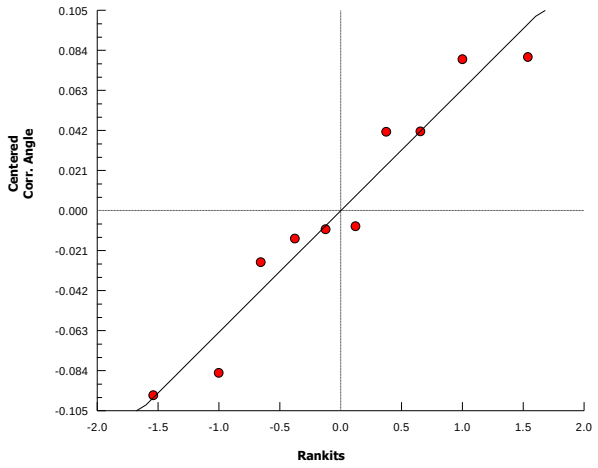
C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Dilution Water	5	0.8248	0.7613	0.8884	0.8195	0.7481	0.8835	0.02289	6.2%	0.0%
0	Site Water	5	0.8128	0.7516	0.8739	0.8083	0.7444	0.8722	0.02203	6.06%	1.46%

Angular (Corrected) Transformed Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Dilution Water	5	1.142	1.059	1.225	1.132	1.045	1.222	0.0299	5.86%	0.0%
0	Site Water	5	1.126	1.047	1.205	1.118	1.041	1.205	0.02834	5.63%	1.41%

Graphics





Bivalve Larval Survival and Development Test **ENVIRON**

Analysis ID: 04-7588-0578 **Endpoint:** Proportion Normal **CETIS Version:** CETISv1.8.7
Analyzed: 05 Aug-14 10:02 **Analysis:** Parametric-Two Sample **Official Results:** Yes

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Angular (Corrected)	NA	C > T	NA	NA	1.95%	Passes proportion normal

Equal Variance t Two-Sample Test

Control	vs	Control	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
Dilution Water		Site Water	-0.09196	1.86	0.047	8	0.5355	CDF	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	1.337331E-05	1.337331E-05	1	0.008457	0.9290	Non-Significant Effect
Error	0.01265069	0.001581336	8			
Total	0.01266406		9			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.42	23.15	0.7425	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9473	0.7411	0.6365	Normal Distribution

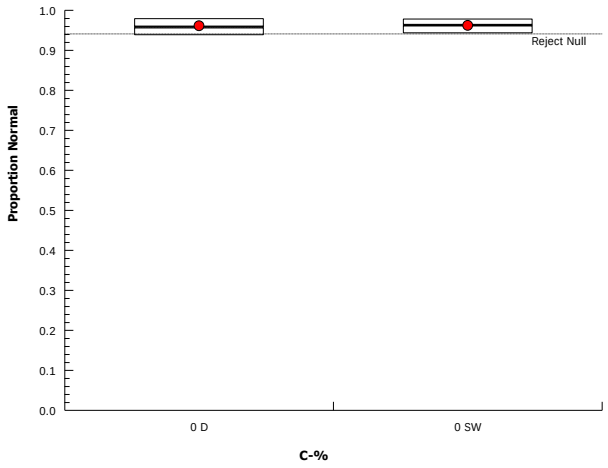
Proportion Normal Summary

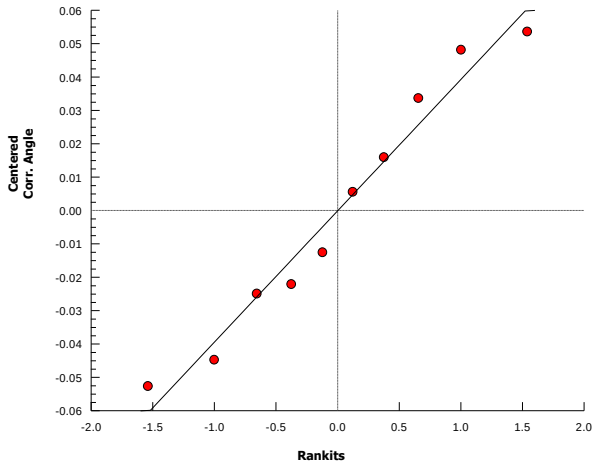
C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Dilution Water	5	0.9598	0.9393	0.9802	0.9561	0.9383	0.9792	0.007373	1.72%	0.0%
0	Site Water	5	0.9611	0.944	0.9782	0.9641	0.9431	0.9783	0.006158	1.43%	-0.13%

Angular (Corrected) Transformed Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Dilution Water	5	1.372	1.319	1.426	1.36	1.32	1.426	0.01926	3.14%	0.0%
0	Site Water	5	1.375	1.33	1.42	1.38	1.33	1.423	0.01617	2.63%	-0.17%

Graphics





Bivalve Larval Survival and Development Test **ENVIRON**

Analysis ID: 19-6916-4496 **Endpoint:** Proportion Survived **CETIS Version:** CETISv1.8.7
Analyzed: 05 Aug-14 10:02 **Analysis:** Parametric-Two Sample **Official Results:** Yes

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Angular (Corrected)	NA	C > T	NA	NA	7.46%	Passes proportion survived

Equal Variance t Two-Sample Test

Control	vs	Control	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
Dilution Water		Site Water	0.389	1.86	0.09	8	0.3537	CDF	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.0008791869	0.0008791869	1	0.1513	0.7074	Non-Significant Effect
Error	0.04648241	0.005810302	8			
Total	0.0473616		9			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.118	23.15	0.9168	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9669	0.7411	0.8611	Normal Distribution

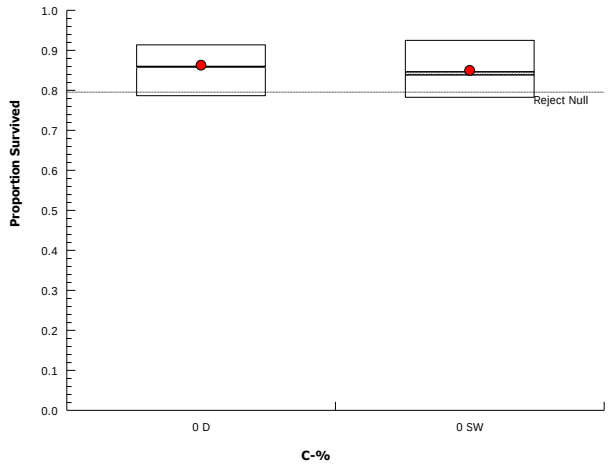
Proportion Survived Summary

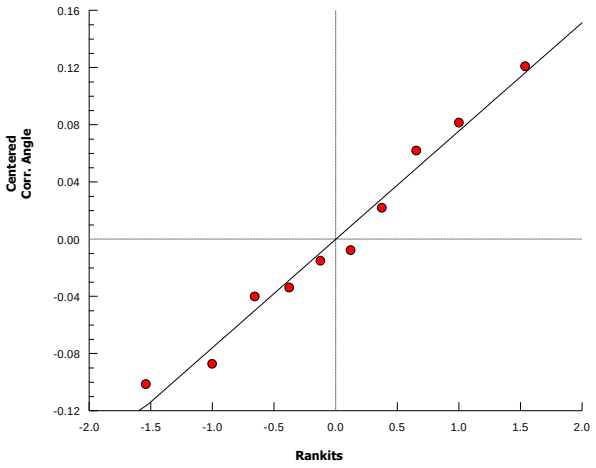
C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Dilution Water	5	0.8594	0.7953	0.9235	0.8571	0.7857	0.9135	0.02307	6.0%	0.0%
0	Site Water	5	0.8459	0.7795	0.9122	0.8383	0.782	0.9248	0.0239	6.32%	1.58%

Angular (Corrected) Transformed Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Dilution Water	5	1.191	1.099	1.283	1.183	1.09	1.272	0.03313	6.22%	0.0%
0	Site Water	5	1.172	1.075	1.269	1.157	1.085	1.293	0.03502	6.68%	1.58%

Graphics





APPENDIX B.4 Statistical Results: Benthic Tests

Ampelisca 10-d Survival Sediment Test **ENVIRON**

Batch ID:	13-4443-8368	**Test Type:**	Survival	**Analyst:**	
Start Date:	28 Jul-14	**Protocol:**	EPA/600/R-94/025 (1994)	**Diluent:**	Not Applicable
Ending Date:	07 Aug-14	**Species:**	Ampelisca abdita	**Brine:**	Not Applicable
Duration:	10d 0h	**Source:**	Brezina and Associates	**Age:**	

Sample ID:	18-5392-8229	**Code:**	6E80B325	**Client:**	ANAMAR
Sample Date:	04 Jun-14 07:11	**Material:**	Sediment Elutriate	**Project:**	Shipyard Creek
Receive Date:	11 Jun-14 13:10	**Source:**	Shipyard Creek		
Sample Age:	53d 17h	**Station:**	SYC14-AC		

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
12-5359-0887	Proportion Survived	100	>100	NA	3.06%	1	Wilcoxon Rank Sum Two-Sample Test

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits	Overlap	Decision
12-5359-0887	Proportion Survived	Control Resp	0.97	0.9 - NL	Yes	Passes Acceptability Criteria

Proportion Survived Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Control Sed	5	0.98	0.9245	1	0.9	1	0.02	0.04472	4.56%	0.0%
0	Reference Sed	5	0.97	0.936	1	0.95	1	0.01225	0.02739	2.82%	1.02%
100		5	0.96	0.9322	0.9878	0.95	1	0.01	0.02236	2.33%	2.04%

Proportion Survived Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Control Sed	1	1	1	0.9	1
0	Reference Sed	1	0.95	0.95	0.95	1
100		0.95	1	0.95	0.95	0.95

Proportion Survived Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Control Sed	20/20	20/20	20/20	18/20	20/20
0	Reference Sed	20/20	19/20	19/20	19/20	20/20
100		19/20	20/20	19/20	19/20	19/20

Ampelisca 10-d Survival Sediment Test **ENVIRON**

Analysis ID:	12-5359-0887	**Endpoint:**	Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	28 Aug-14 13:04	**Analysis:**	Nonparametric-Two Sample	**Official Results:**	Yes
Batch ID:	13-4443-8368	**Test Type:**	Survival	**Analyst:**	
Start Date:	28 Jul-14	**Protocol:**	EPA/600/R-94/025 (1994)	**Diluent:**	Not Applicable
Ending Date:	07 Aug-14	**Species:**	Ampelisca abdita	**Brine:**	Not Applicable
Duration:	10d 0h	**Source:**	Brezina and Associates	**Age:**	
Sample ID:	18-5392-8229	**Code:**	6E80B325	**Client:**	ANAMAR
Sample Date:	04 Jun-14 07:11	**Material:**	Sediment Elutriate	**Project:**	Shipyard Creek
Receive Date:	11 Jun-14 13:10	**Source:**	Shipyard Creek		
Sample Age:	53d 17h	**Station:**	SYC14-AC		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Angular (Corrected)	NA	C > T	NA	NA	3.06%	Passes proportion survived

Wilcoxon Rank Sum Two-Sample Test

Control	vs	C-%	Test Stat	Critical	Ties	DF	P-Value	P-Type	Decision(α:5%)
Reference Sed		100	25	NA	3	8	0.5000	Exact	Non-Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	0.97	0.9 - NL	Yes	Passes Acceptability Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.001287675	0.001287675	1	0.4	0.5447	Non-Significant Effect
Error	0.0257535	0.003219187	8			
Total	0.02704117		9			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.5	23.15	0.7040	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.7586	0.7411	0.0045	Non-normal Distribution

Proportion Survived Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Reference Sed	5	0.97	0.936	1	0.95	0.95	1	0.01225	2.82%	0.0%
100		5	0.96	0.9322	0.9878	0.95	0.95	1	0.01	2.33%	1.03%

Angular (Corrected) Transformed Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Reference Sed	5	1.391	1.314	1.468	1.345	1.345	1.459	0.0278	4.47%	0.0%
100		5	1.368	1.305	1.431	1.345	1.345	1.459	0.02269	3.71%	1.63%

Proportion Survived Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Reference Sed	1	0.95	0.95	0.95	1
100		0.95	1	0.95	0.95	0.95

Angular (Corrected) Transformed Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Reference Sed	1.459	1.345	1.345	1.345	1.459
100		1.345	1.459	1.345	1.345	1.345

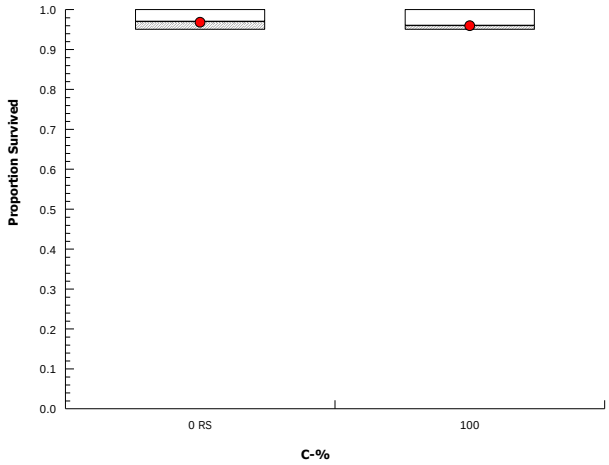
Proportion Survived Binomials

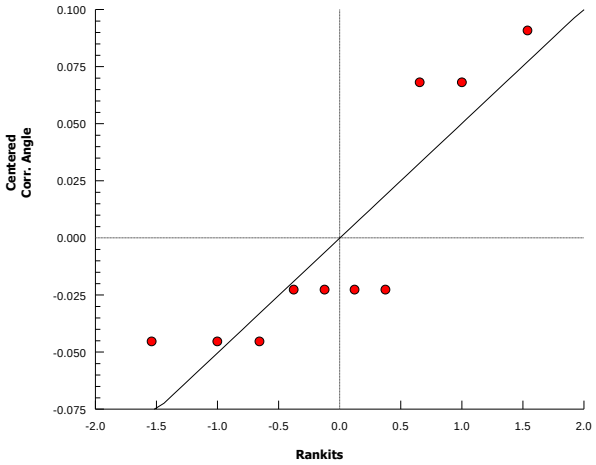
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Control Sed	20/20	20/20	20/20	18/20	20/20
0	Reference Sed	20/20	19/20	19/20	19/20	20/20
100		19/20	20/20	19/20	19/20	19/20

Ampelisca 10-d Survival Sediment Test **ENVIRON**

Analysis ID:	12-5359-0887	**Endpoint:**	Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	28 Aug-14 13:04	**Analysis:**	Nonparametric-Two Sample	**Official Results:**	Yes

Graphics





Ampelisca 10-d Survival Sediment Test **ENVIRON**

Batch ID:	13-4443-8368	**Test Type:**	Survival	**Analyst:**	
Start Date:	28 Jul-14	**Protocol:**	EPA/600/R-94/025 (1994)	**Diluent:**	Not Applicable
Ending Date:	07 Aug-14	**Species:**	Ampelisca abdita	**Brine:**	Not Applicable
Duration:	10d 0h	**Source:**	Brezina and Associates	**Age:**	

Sample ID:	14-6108-5425	**Code:**	571664F1	**Client:**	ANAMAR
Sample Date:	02 Jun-14 08:58	**Material:**	Sediment Elutriate	**Project:**	Shipyard Creek
Receive Date:	11 Jun-14 13:10	**Source:**	Shipyard Creek		
Sample Age:	55d 15h	**Station:**	SYC14-TB1		

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
05-9567-5619	Proportion Survived	100	>100	NA	3.38%	1	Wilcoxon Rank Sum Two-Sample Test

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits	Overlap	Decision
05-9567-5619	Proportion Survived	Control Resp	0.97	0.9 - NL	Yes	Passes Acceptability Criteria

Proportion Survived Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Control Sed	5	0.98	0.9245	1	0.9	1	0.02	0.04472	4.56%	0.0%
0	Reference Sed	5	0.97	0.936	1	0.95	1	0.01225	0.02739	2.82%	1.02%
100		5	0.97	0.936	1	0.95	1	0.01225	0.02739	2.82%	1.02%

Proportion Survived Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Control Sed	1	1	1	0.9	1
0	Reference Sed	1	0.95	0.95	0.95	1
100		0.95	0.95	1	1	0.95

Proportion Survived Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Control Sed	20/20	20/20	20/20	18/20	20/20
0	Reference Sed	20/20	19/20	19/20	19/20	20/20
100		19/20	19/20	20/20	20/20	19/20

Ampelisca 10-d Survival Sediment Test **ENVIRON**

Analysis ID:	05-9567-5619	**Endpoint:**	Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	28 Aug-14 12:47	**Analysis:**	Nonparametric-Two Sample	**Official Results:**	Yes
Batch ID:	13-4443-8368	**Test Type:**	Survival	**Analyst:**	
Start Date:	28 Jul-14	**Protocol:**	EPA/600/R-94/025 (1994)	**Diluent:**	Not Applicable
Ending Date:	07 Aug-14	**Species:**	Ampelisca abdita	**Brine:**	Not Applicable
Duration:	10d 0h	**Source:**	Brezina and Associates	**Age:**	
Sample ID:	14-6108-5425	**Code:**	571664F1	**Client:**	ANAMAR
Sample Date:	02 Jun-14 08:58	**Material:**	Sediment Elutriate	**Project:**	Shipyard Creek
Receive Date:	11 Jun-14 13:10	**Source:**	Shipyard Creek		
Sample Age:	55d 15h	**Station:**	SYC14-TB1		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Angular (Corrected)	NA	C > T	NA	NA	3.38%	Passes proportion survived

Wilcoxon Rank Sum Two-Sample Test

Control	vs	C-%	Test Stat	Critical	Ties	DF	P-Value	P-Type	Decision(α:5%)
Reference Sed		100	27.5	NA	3	8	0.7381	Exact	Non-Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	0.97	0.9 - NL	Yes	Passes Acceptability Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0	0	1	0	1.0000	Non-Significant Effect
Error	0.0309042	0.003863025	8			
Total	0.0309042		9			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1	23.15	1.0000	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.6405	0.7411	0.0002	Non-normal Distribution

Proportion Survived Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Reference Sed	5	0.97	0.936	1	0.95	0.95	1	0.01225	2.82%	0.0%
100		5	0.97	0.936	1	0.95	0.95	1	0.01225	2.82%	0.0%

Angular (Corrected) Transformed Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Reference Sed	5	1.391	1.314	1.468	1.345	1.345	1.459	0.0278	4.47%	0.0%
100		5	1.391	1.314	1.468	1.345	1.345	1.459	0.0278	4.47%	0.0%

Proportion Survived Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Reference Sed	1	0.95	0.95	0.95	1
100		0.95	0.95	1	1	0.95

Angular (Corrected) Transformed Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Reference Sed	1.459	1.345	1.345	1.345	1.459
100		1.345	1.345	1.459	1.459	1.345

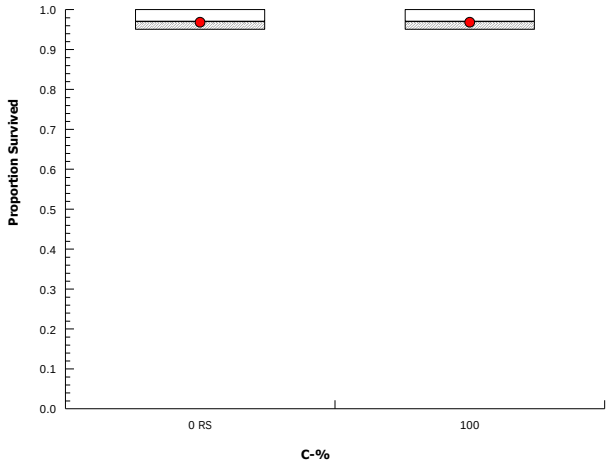
Proportion Survived Binomials

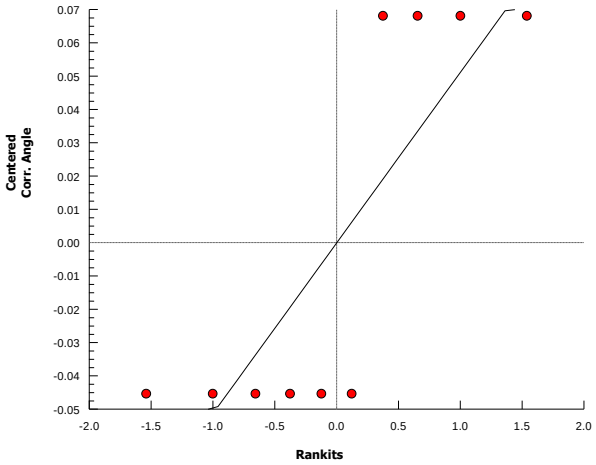
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Control Sed	20/20	20/20	20/20	18/20	20/20
0	Reference Sed	20/20	19/20	19/20	19/20	20/20
100		19/20	19/20	20/20	20/20	19/20

Ampelisca 10-d Survival Sediment Test **ENVIRON**

Analysis ID:	05-9567-5619	**Endpoint:**	Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	28 Aug-14 12:47	**Analysis:**	Nonparametric-Two Sample	**Official Results:**	Yes

Graphics





Ampelisca 10-d Survival Sediment Test **ENVIRON**

Batch ID:	13-4443-8368	**Test Type:**	Survival	**Analyst:**	
Start Date:	28 Jul-14	**Protocol:**	EPA/600/R-94/025 (1994)	**Diluent:**	Not Applicable
Ending Date:	07 Aug-14	**Species:**	Ampelisca abdita	**Brine:**	Not Applicable
Duration:	10d 0h	**Source:**	Brezina and Associates	**Age:**	

Sample ID:	00-1256-8329	**Code:**	BFC709	**Client:**	ANAMAR
Sample Date:	03 Jun-14 11:36	**Material:**	Sediment Elutriate	**Project:**	Shipyard Creek
Receive Date:	11 Jun-14 13:10	**Source:**	Shipyard Creek		
Sample Age:	54d 12h	**Station:**	SYC14-TB2		

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
05-2100-5083	Proportion Survived	100	>100	NA	3.39%	1	Equal Variance t Two-Sample Test

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits	Overlap	Decision
05-2100-5083	Proportion Survived	Control Resp	0.97	0.9 - NL	Yes	Passes Acceptability Criteria

Proportion Survived Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Control Sed	5	0.98	0.9245	1	0.9	1	0.02	0.04472	4.56%	0.0%
0	Reference Sed	5	0.97	0.936	1	0.95	1	0.01225	0.02739	2.82%	1.02%
100		5	0.98	0.946	1	0.95	1	0.01225	0.02739	2.8%	0.0%

Proportion Survived Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Control Sed	1	1	1	0.9	1
0	Reference Sed	1	0.95	0.95	0.95	1
100		1	0.95	0.95	1	1

Proportion Survived Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Control Sed	20/20	20/20	20/20	18/20	20/20
0	Reference Sed	20/20	19/20	19/20	19/20	20/20
100		21/21	19/20	19/20	20/20	20/20

Ampelisca 10-d Survival Sediment Test **ENVIRON**

Analysis ID:	05-2100-5083	**Endpoint:**	Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	28 Aug-14 13:02	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes
Batch ID:	13-4443-8368	**Test Type:**	Survival	**Analyst:**	
Start Date:	28 Jul-14	**Protocol:**	EPA/600/R-94/025 (1994)	**Diluent:**	Not Applicable
Ending Date:	07 Aug-14	**Species:**	Ampelisca abdita	**Brine:**	Not Applicable
Duration:	10d 0h	**Source:**	Brezina and Associates	**Age:**	
Sample ID:	00-1256-8329	**Code:**	BFC709	**Client:**	ANAMAR
Sample Date:	03 Jun-14 11:36	**Material:**	Sediment Elutriate	**Project:**	Shipyard Creek
Receive Date:	11 Jun-14 13:10	**Source:**	Shipyard Creek		
Sample Age:	54d 12h	**Station:**	SYC14-TB2		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Angular (Corrected)	NA	C > T	NA	NA	3.39%	Passes proportion survived

Equal Variance t Two-Sample Test

Control	vs	C-%	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
Reference Sed		100	-0.5887	1.86	0.073	8	0.7139	CDF	Non-Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	0.97	0.9 - NL	Yes	Passes Acceptability Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.001349937	0.001349937	1	0.3466	0.5723	Non-Significant Effect
Error	0.03115619	0.003894523	8			
Total	0.03250613		9			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.016	23.15	0.9879	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.8016	0.7411	0.0151	Normal Distribution

Proportion Survived Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Reference Sed	5	0.97	0.936	1	0.95	0.95	1	0.01225	2.82%	0.0%
100		5	0.98	0.946	1	1	0.95	1	0.01225	2.8%	-1.03%

Angular (Corrected) Transformed Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Reference Sed	5	1.391	1.314	1.468	1.345	1.345	1.459	0.0278	4.47%	0.0%
100		5	1.414	1.336	1.492	1.459	1.345	1.461	0.02802	4.43%	-1.67%

Proportion Survived Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Reference Sed	1	0.95	0.95	0.95	1
100		1	0.95	0.95	1	1

Angular (Corrected) Transformed Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Reference Sed	1.459	1.345	1.345	1.345	1.459
100		1.461	1.345	1.345	1.459	1.459

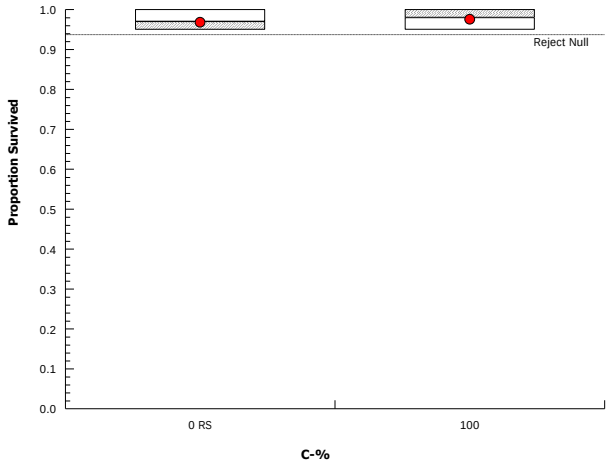
Proportion Survived Binomials

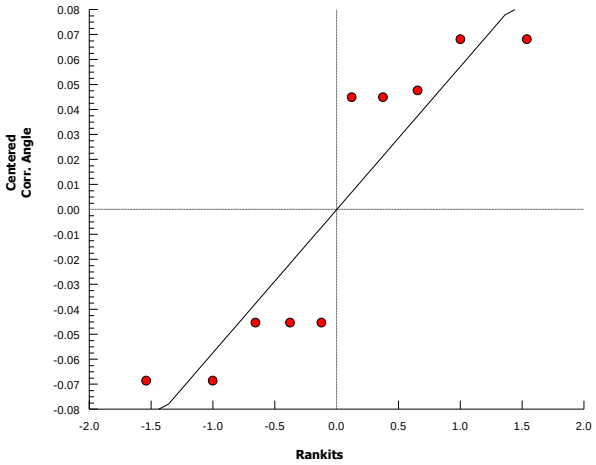
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Control Sed	20/20	20/20	20/20	18/20	20/20
0	Reference Sed	20/20	19/20	19/20	19/20	20/20
100		21/21	19/20	19/20	20/20	20/20

Ampelisca 10-d Survival Sediment Test **ENVIRON**

Analysis ID:	05-2100-5083	**Endpoint:**	Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	28 Aug-14 13:02	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Graphics





Leptocheirus 10-d Survival and Reburial Sediment Test **ENVIRON**

Batch ID:	20-7754-4623	**Test Type:**	Survival-Reburial	**Analyst:**	
Start Date:	27 Jun-14	**Protocol:**	EPA/600/R-94/025 (1994)	**Diluent:**	Not Applicable
Ending Date:	07 Jul-14	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	10d 0h	**Source:**	Aquatic Research Organisms, NH	**Age:**	

Sample ID:	18-5392-8229	**Code:**	6E80B325	**Client:**	ANAMAR
Sample Date:	04 Jun-14 07:11	**Material:**	Sediment Elutriate	**Project:**	Shipyard Creek
Receive Date:	11 Jun-14 13:10	**Source:**	Shipyard Creek		
Sample Age:	22d 17h	**Station:**	SYC14-AC		

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
07-9874-0251	Proportion Survived	<100	100	NA	7.35%	>1	Equal Variance t Two-Sample Test

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits	Overlap	Decision
07-9874-0251	Proportion Survived	Control Resp	0.97	0.9 - NL	Yes	Passes Acceptability Criteria

Proportion Survived Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Control Sed	5	0.91	0.7618	1	0.7	1	0.05339	0.1194	13.12%	0.0%
0	Reference Sed	5	0.97	0.936	1	0.95	1	0.01225	0.02739	2.82%	-6.59%
100		5	0.61	0.4166	0.8034	0.4	0.75	0.06964	0.1557	25.53%	32.97%

Proportion Survived Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Control Sed	0.95	0.95	0.95	0.7	1
0	Reference Sed	1	1	0.95	0.95	0.95
100		0.65	0.5	0.4	0.75	0.75

Proportion Survived Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Control Sed	19/20	19/20	19/20	14/20	20/20
0	Reference Sed	20/20	20/20	19/20	19/20	19/20
100		13/20	10/20	8/20	15/20	15/20

Leptocheirus 10-d Survival and Reburial Sediment Test **ENVIRON**

Analysis ID:	07-9874-0251	**Endpoint:**	Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	28 Aug-14 14:36	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes
Batch ID:	20-7754-4623	**Test Type:**	Survival-Reburial	**Analyst:**	
Start Date:	27 Jun-14	**Protocol:**	EPA/600/R-94/025 (1994)	**Diluent:**	Not Applicable
Ending Date:	07 Jul-14	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	10d 0h	**Source:**	Aquatic Research Organisms, NH	**Age:**	
Sample ID:	18-5392-8229	**Code:**	6E80B325	**Client:**	ANAMAR
Sample Date:	04 Jun-14 07:11	**Material:**	Sediment Elutriate	**Project:**	Shipyard Creek
Receive Date:	11 Jun-14 13:10	**Source:**	Shipyard Creek		
Sample Age:	22d 17h	**Station:**	SYC14-AC		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Angular (Corrected)	NA	C > T	NA	NA	7.35%	Fails proportion survived

Equal Variance t Two-Sample Test

Control	vs	C-%	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
Reference Sed		100*	6.337	1.86	0.144	8	0.0001	CDF	Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	0.97	0.9 - NL	Yes	Passes Acceptability Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.6007936	0.6007936	1	40.16	0.0002	Significant Effect
Error	0.1196894	0.01496117	8			
Total	0.7204829		9			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	6.746	23.15	0.0914	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9413	0.7411	0.5676	Normal Distribution

Proportion Survived Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Reference Sed	5	0.97	0.936	1	0.95	0.95	1	0.01225	2.82%	0.0%
100		5	0.61	0.4166	0.8034	0.65	0.4	0.75	0.06964	25.53%	37.11%

Angular (Corrected) Transformed Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Reference Sed	5	1.391	1.314	1.468	1.345	1.345	1.459	0.0278	4.47%	0.0%
100		5	0.9005	0.7	1.101	0.9377	0.6847	1.047	0.07219	17.93%	35.25%

Proportion Survived Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Reference Sed	1	1	0.95	0.95	0.95
100		0.65	0.5	0.4	0.75	0.75

Angular (Corrected) Transformed Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Reference Sed	1.459	1.459	1.345	1.345	1.345
100		0.9377	0.7854	0.6847	1.047	1.047

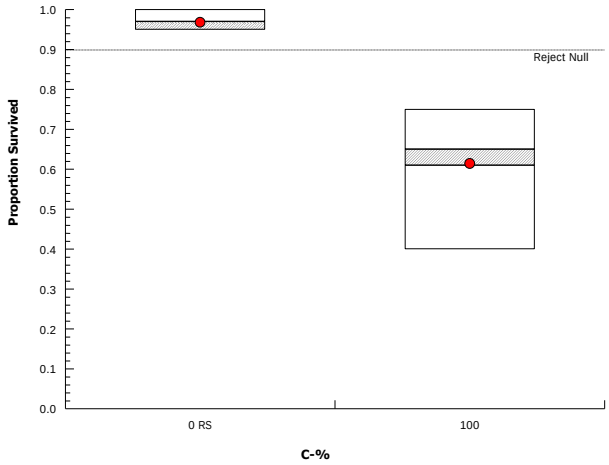
Proportion Survived Binomials

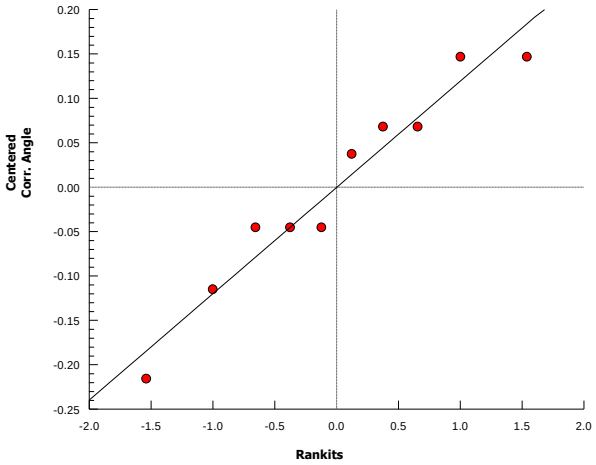
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Control Sed	19/20	19/20	19/20	14/20	20/20
0	Reference Sed	20/20	20/20	19/20	19/20	19/20
100		13/20	10/20	8/20	15/20	15/20

Leptocheirus 10-d Survival and Reburial Sediment Test **ENVIRON**

Analysis ID:	07-9874-0251	**Endpoint:**	Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	28 Aug-14 14:36	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Graphics





CETIS Summary Report

Leptocheirus 10-d Survival and Reburial Sediment Test **ENVIRON**

Batch ID:	20-7754-4623	**Test Type:**	Survival-Reburial	**Analyst:**	
Start Date:	27 Jun-14	**Protocol:**	EPA/600/R-94/025 (1994)	**Diluent:**	Not Applicable
Ending Date:	07 Jul-14	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	10d 0h	**Source:**	Aquatic Research Organisms, NH	**Age:**	

Sample ID:	14-6108-5425	**Code:**	571664F1	**Client:**	ANAMAR
Sample Date:	02 Jun-14 08:58	**Material:**	Sediment Elutriate	**Project:**	Shipyard Creek
Receive Date:	11 Jun-14 13:10	**Source:**	Shipyard Creek		
Sample Age:	24d 15h	**Station:**	SYC14-TB1		

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
19-7292-8023	Proportion Survived	<100	100	NA	7.72%	>1	Equal Variance t Two-Sample Test

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits	Overlap	Decision
19-7292-8023	Proportion Survived	Control Resp	0.97	0.9 - NL	Yes	Passes Acceptability Criteria

Proportion Survived Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Control Sed	5	0.91	0.7618	1	0.7	1	0.05339	0.1194	13.12%	0.0%
0	Reference Sed	5	0.97	0.936	1	0.95	1	0.01225	0.02739	2.82%	-6.59%
100		5	0.7	0.519	0.881	0.5	0.9	0.06519	0.1458	20.82%	23.08%

Proportion Survived Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Control Sed	0.95	0.95	0.95	0.7	1
0	Reference Sed	1	1	0.95	0.95	0.95
100		0.5	0.9	0.65	0.7	0.75

Proportion Survived Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Control Sed	19/20	19/20	19/20	14/20	20/20
0	Reference Sed	20/20	20/20	19/20	19/20	19/20
100		10/20	18/20	13/20	14/20	15/20

Leptocheirus 10-d Survival and Reburial Sediment Test **ENVIRON**

Analysis ID:	19-7292-8023	**Endpoint:**	Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	28 Aug-14 14:19	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes
Batch ID:	20-7754-4623	**Test Type:**	Survival-Reburial	**Analyst:**	
Start Date:	27 Jun-14	**Protocol:**	EPA/600/R-94/025 (1994)	**Diluent:**	Not Applicable
Ending Date:	07 Jul-14	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	10d 0h	**Source:**	Aquatic Research Organisms, NH	**Age:**	
Sample ID:	14-6108-5425	**Code:**	571664F1	**Client:**	ANAMAR
Sample Date:	02 Jun-14 08:58	**Material:**	Sediment Elutriate	**Project:**	Shipyard Creek
Receive Date:	11 Jun-14 13:10	**Source:**	Shipyard Creek		
Sample Age:	24d 15h	**Station:**	SYC14-TB1		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Angular (Corrected)	NA	C > T	NA	NA	7.72%	Fails proportion survived

Equal Variance t Two-Sample Test

Control	vs	C-%	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
Reference Sed		100*	4.825	1.86	0.15	8	0.0007	CDF	Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	0.97	0.9 - NL	Yes	Passes Acceptability Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.3774563	0.3774563	1	23.28	0.0013	Significant Effect
Error	0.1296892	0.01621115	8			
Total	0.5071455		9			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	7.393	23.15	0.0784	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9252	0.7411	0.4021	Normal Distribution

Proportion Survived Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Reference Sed	5	0.97	0.936	1	0.95	0.95	1	0.01225	2.82%	0.0%
100		5	0.7	0.519	0.881	0.7	0.5	0.9	0.06519	20.82%	27.84%

Angular (Corrected) Transformed Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Reference Sed	5	1.391	1.314	1.468	1.345	1.345	1.459	0.0278	4.47%	0.0%
100		5	1.002	0.7923	1.212	0.9912	0.7854	1.249	0.07558	16.86%	27.94%

Proportion Survived Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Reference Sed	1	1	0.95	0.95	0.95
100		0.5	0.9	0.65	0.7	0.75

Angular (Corrected) Transformed Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Reference Sed	1.459	1.459	1.345	1.345	1.345
100		0.7854	1.249	0.9377	0.9912	1.047

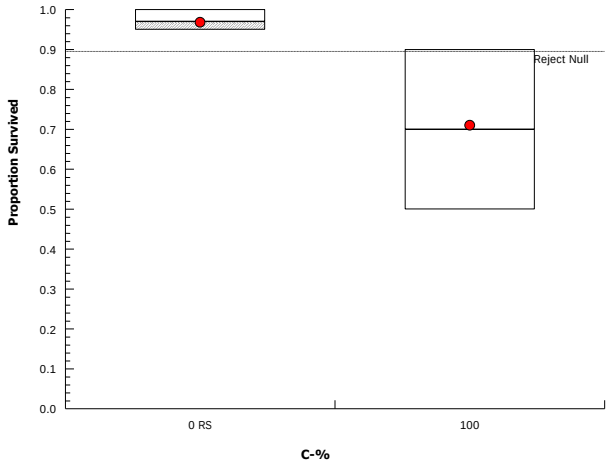
Proportion Survived Binomials

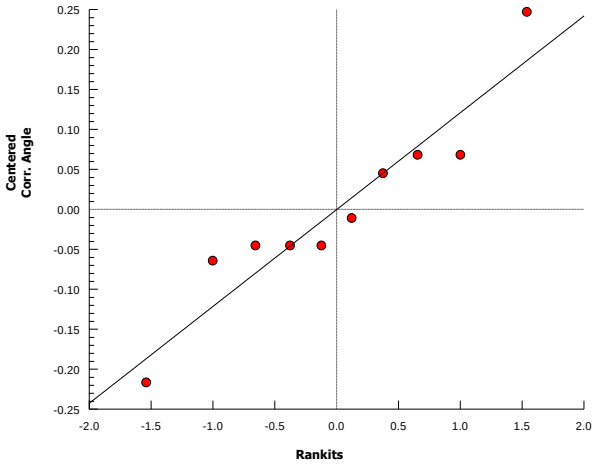
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Control Sed	19/20	19/20	19/20	14/20	20/20
0	Reference Sed	20/20	20/20	19/20	19/20	19/20
100		10/20	18/20	13/20	14/20	15/20

Leptocheirus 10-d Survival and Reburial Sediment Test **ENVIRON**

Analysis ID:	19-7292-8023	**Endpoint:**	Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	28 Aug-14 14:19	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Graphics





CETIS Summary Report

Leptocheirus 10-d Survival and Reburial Sediment Test **ENVIRON**

Batch ID:	20-7754-4623	**Test Type:**	Survival-Reburial	**Analyst:**	
Start Date:	27 Jun-14	**Protocol:**	EPA/600/R-94/025 (1994)	**Diluent:**	Not Applicable
Ending Date:	07 Jul-14	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	10d 0h	**Source:**	Aquatic Research Organisms, NH	**Age:**	
Sample ID:	00-1256-8329	**Code:**	BFC709	**Client:**	ANAMAR
Sample Date:	03 Jun-14 11:36	**Material:**	Sediment Elutriate	**Project:**	Shipyard Creek
Receive Date:	11 Jun-14 13:10	**Source:**	Shipyard Creek		
Sample Age:	23d 12h	**Station:**	SYC14-TB2		

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
14-6691-3513	Proportion Survived	<100	100	NA	10.4%	>1	Equal Variance t Two-Sample Test

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits	Overlap	Decision
14-6691-3513	Proportion Survived	Control Resp	0.97	0.9 - NL	Yes	Passes Acceptability Criteria

Proportion Survived Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Control Sed	5	0.91	0.7618	1	0.7	1	0.05339	0.1194	13.12%	0.0%
0	Reference Sed	5	0.97	0.936	1	0.95	1	0.01225	0.02739	2.82%	-6.59%
100		5	0.52	0.2618	0.7782	0.25	0.8	0.09301	0.208	39.99%	42.86%

Proportion Survived Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Control Sed	0.95	0.95	0.95	0.7	1
0	Reference Sed	1	1	0.95	0.95	0.95
100		0.55	0.8	0.6	0.4	0.25

Proportion Survived Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Control Sed	19/20	19/20	19/20	14/20	20/20
0	Reference Sed	20/20	20/20	19/20	19/20	19/20
100		11/20	16/20	12/20	8/20	5/20

Leptocheirus 10-d Survival and Reburial Sediment Test **ENVIRON**

Analysis ID:	14-6691-3513	**Endpoint:**	Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	28 Aug-14 14:21	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes
Batch ID:	20-7754-4623	**Test Type:**	Survival-Reburial	**Analyst:**	
Start Date:	27 Jun-14	**Protocol:**	EPA/600/R-94/025 (1994)	**Diluent:**	Not Applicable
Ending Date:	07 Jul-14	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Duration:	10d 0h	**Source:**	Aquatic Research Organisms, NH	**Age:**	
Sample ID:	00-1256-8329	**Code:**	BFC709	**Client:**	ANAMAR
Sample Date:	03 Jun-14 11:36	**Material:**	Sediment Elutriate	**Project:**	Shipyard Creek
Receive Date:	11 Jun-14 13:10	**Source:**	Shipyard Creek		
Sample Age:	23d 12h	**Station:**	SYC14-TB2		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Angular (Corrected)	NA	C > T	NA	NA	10.4%	Fails proportion survived

Equal Variance t Two-Sample Test

Control	vs	C-%	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
Reference Sed		100*	5.721	1.86	0.19	8	0.0002	CDF	Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	0.97	0.9 - NL	Yes	Passes Acceptability Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.8505042	0.8505042	1	32.73	0.0004	Significant Effect
Error	0.2078738	0.02598422	8			
Total	1.058378		9			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	12.45	23.15	0.0315	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9408	0.7411	0.5621	Normal Distribution

Proportion Survived Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Reference Sed	5	0.97	0.936	1	0.95	0.95	1	0.01225	2.82%	0.0%
100		5	0.52	0.2618	0.7782	0.55	0.25	0.8	0.09301	39.99%	46.39%

Angular (Corrected) Transformed Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Reference Sed	5	1.391	1.314	1.468	1.345	1.345	1.459	0.0278	4.47%	0.0%
100		5	0.8074	0.5351	1.08	0.8355	0.5236	1.107	0.09809	27.16%	41.94%

Proportion Survived Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Reference Sed	1	1	0.95	0.95	0.95
100		0.55	0.8	0.6	0.4	0.25

Angular (Corrected) Transformed Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Reference Sed	1.459	1.459	1.345	1.345	1.345
100		0.8355	1.107	0.8861	0.6847	0.5236

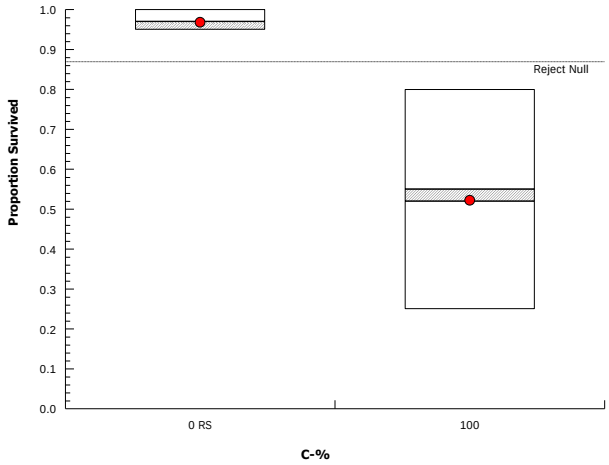
Proportion Survived Binomials

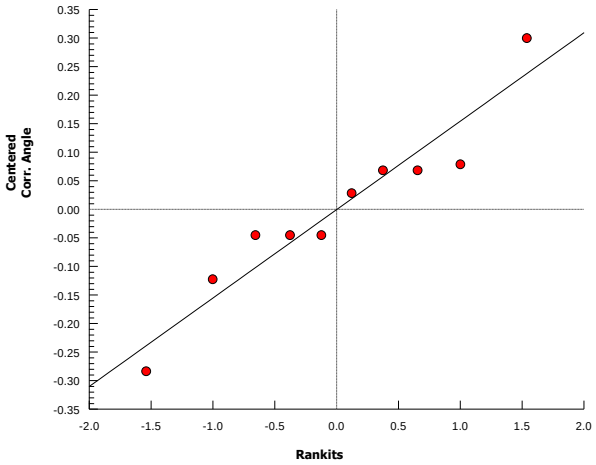
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Control Sed	19/20	19/20	19/20	14/20	20/20
0	Reference Sed	20/20	20/20	19/20	19/20	19/20
100		11/20	16/20	12/20	8/20	5/20

Leptocheirus 10-d Survival and Reburial Sediment Test **ENVIRON**

Analysis ID:	14-6691-3513	**Endpoint:**	Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	28 Aug-14 14:21	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Graphics





Neanthes 10-d Survival and Growth Sediment Test **ENVIRON**

Batch ID:	00-9862-2791	**Test Type:**	Survival-Growth	**Analyst:**	
Start Date:	20 Jun-14	**Protocol:**	ASTM E1611-00 (2000)	**Diluent:**	Not Applicable
Ending Date:	30 Jun-14	**Species:**	Neanthes arenaceodentata	**Brine:**	Not Applicable
Duration:	10d 0h	**Source:**	Aquatic Toxicology Support	**Age:**	
Sample ID:	18-5392-8229	**Code:**	6E80B325	**Client:**	ANAMAR
Sample Date:	04 Jun-14 07:11	**Material:**	Sediment Elutriate	**Project:**	Shipyard Creek
Receive Date:	11 Jun-14 13:10	**Source:**	Shipyard Creek		
Sample Age:	15d 17h	**Station:**	SYC14-AC		

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
09-9197-7639	Proportion Survived	100	>100	NA	4.3%	1	Wilcoxon Rank Sum Two-Sample Test

Proportion Survived Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Control Sed	5	1	1	1	1	1	0	0	0.0%	0.0%
0	Reference Sed	5	0.98	0.9245	1	0.9	1	0.02	0.04472	4.56%	2.0%
100		5	1	1	1	1	1	0	0	0.0%	0.0%

Proportion Survived Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Control Sed	1	1	1	1	1
0	Reference Sed	1	0.9	1	1	1
100		1	1	1	1	1

Proportion Survived Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Control Sed	10/10	10/10	10/10	10/10	10/10
0	Reference Sed	10/10	9/10	10/10	10/10	10/10
100		10/10	10/10	10/10	10/10	10/10

Neanthes 10-d Survival and Growth Sediment Test **ENVIRON**

Analysis ID:	09-9197-7639	**Endpoint:**	Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	28 Aug-14 14:06	**Analysis:**	Nonparametric-Two Sample	**Official Results:**	Yes
Batch ID:	00-9862-2791	**Test Type:**	Survival-Growth	**Analyst:**	
Start Date:	20 Jun-14	**Protocol:**	ASTM E1611-00 (2000)	**Diluent:**	Not Applicable
Ending Date:	30 Jun-14	**Species:**	Neanthes arenaceodentata	**Brine:**	Not Applicable
Duration:	10d 0h	**Source:**	Aquatic Toxicology Support	**Age:**	
Sample ID:	18-5392-8229	**Code:**	6E80B325	**Client:**	ANAMAR
Sample Date:	04 Jun-14 07:11	**Material:**	Sediment Elutriate	**Project:**	Shipyard Creek
Receive Date:	11 Jun-14 13:10	**Source:**	Shipyard Creek		
Sample Age:	15d 17h	**Station:**	SYC14-AC		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Angular (Corrected)	NA	C > T	NA	NA	4.3%	Passes proportion survived

Wilcoxon Rank Sum Two-Sample Test

Control	vs	C-%	Test Stat	Critical	Ties	DF	P-Value	P-Type	Decision(α:5%)
Reference Sed		100	30	NA	1	8	1.0000	Exact	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.002655933	0.002655933	1	1	0.3466	Non-Significant Effect
Error	0.02124747	0.002655933	8			
Total	0.0239034		9			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Mod Levene Equality of Variance	1	13.75	0.3559	Equal Variances
Variances	Levene Equality of Variance	7.111	11.26	0.0285	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.6247	0.7411	0.0001	Non-normal Distribution

Proportion Survived Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Reference Sed	5	0.98	0.9245	1	1	0.9	1	0.02	4.56%	0.0%
100		5	1	1	1	1	1	1	0	0.0%	-2.04%

Angular (Corrected) Transformed Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Reference Sed	5	1.379	1.289	1.47	1.412	1.249	1.412	0.03259	5.28%	0.0%
100		5	1.412	1.412	1.412	1.412	1.412	1.412	0	0.0%	-2.36%

Proportion Survived Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Reference Sed	1	0.9	1	1	1
100		1	1	1	1	1

Angular (Corrected) Transformed Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Reference Sed	1.412	1.249	1.412	1.412	1.412
100		1.412	1.412	1.412	1.412	1.412

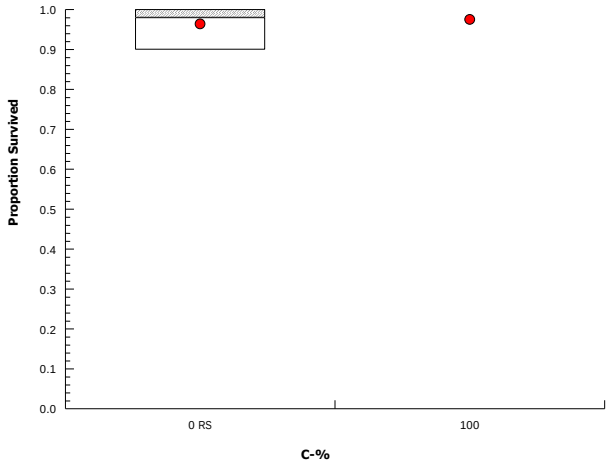
Proportion Survived Binomials

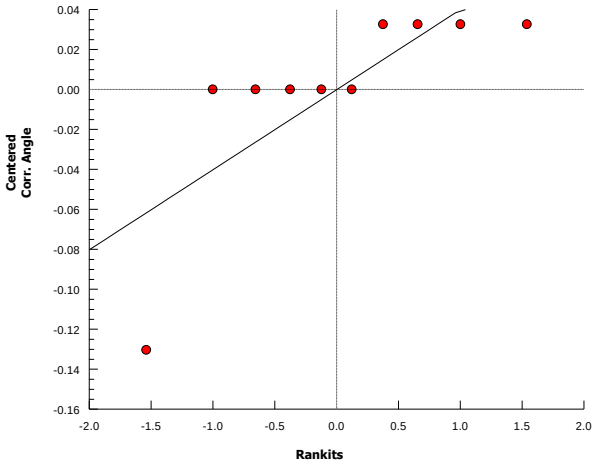
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Control Sed	10/10	10/10	10/10	10/10	10/10
0	Reference Sed	10/10	9/10	10/10	10/10	10/10
100		10/10	10/10	10/10	10/10	10/10

Neanthes 10-d Survival and Growth Sediment Test **ENVIRON**

Analysis ID:	09-9197-7639	**Endpoint:**	Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	28 Aug-14 14:06	**Analysis:**	Nonparametric-Two Sample	**Official Results:**	Yes

Graphics





CETIS Summary Report

Neanthes 10-d Survival and Growth Sediment Test **ENVIRON**

Batch ID:	00-9862-2791	**Test Type:**	Survival-Growth	**Analyst:**	
Start Date:	20 Jun-14	**Protocol:**	ASTM E1611-00 (2000)	**Diluent:**	Not Applicable
Ending Date:	30 Jun-14	**Species:**	Neanthes arenaceodentata	**Brine:**	Not Applicable
Duration:	10d 0h	**Source:**	Aquatic Toxicology Support	**Age:**	
Sample ID:	14-6108-5425	**Code:**	571664F1	**Client:**	ANAMAR
Sample Date:	02 Jun-14 08:58	**Material:**	Sediment Elutriate	**Project:**	Shipyard Creek
Receive Date:	11 Jun-14 13:10	**Source:**	Shipyard Creek		
Sample Age:	17d 15h	**Station:**	SYC14-TB1		

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
13-4871-6469	Proportion Survived	100	>100	NA	8.05%	1	Wilcoxon Rank Sum Two-Sample Test

Proportion Survived Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Control Sed	5	1	1	1	1	1	0	0	0.0%	0.0%
0	Reference Sed	5	0.98	0.9245	1	0.9	1	0.02	0.04472	4.56%	2.0%
100		5	0.96	0.8489	1	0.8	1	0.04	0.08944	9.32%	4.0%

Proportion Survived Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Control Sed	1	1	1	1	1
0	Reference Sed	1	0.9	1	1	1
100		1	1	0.8	1	1

Proportion Survived Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Control Sed	10/10	10/10	10/10	10/10	10/10
0	Reference Sed	10/10	9/10	10/10	10/10	10/10
100		10/10	10/10	8/10	10/10	10/10

Neanthes 10-d Survival and Growth Sediment Test **ENVIRON**

Analysis ID:	13-4871-6469	**Endpoint:**	Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	28 Aug-14 14:09	**Analysis:**	Nonparametric-Two Sample	**Official Results:**	Yes
Batch ID:	00-9862-2791	**Test Type:**	Survival-Growth	**Analyst:**	
Start Date:	20 Jun-14	**Protocol:**	ASTM E1611-00 (2000)	**Diluent:**	Not Applicable
Ending Date:	30 Jun-14	**Species:**	Neanthes arenaceodentata	**Brine:**	Not Applicable
Duration:	10d 0h	**Source:**	Aquatic Toxicology Support	**Age:**	
Sample ID:	14-6108-5425	**Code:**	571664F1	**Client:**	ANAMAR
Sample Date:	02 Jun-14 08:58	**Material:**	Sediment Elutriate	**Project:**	Shipyard Creek
Receive Date:	11 Jun-14 13:10	**Source:**	Shipyard Creek		
Sample Age:	17d 15h	**Station:**	SYC14-TB1		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Angular (Corrected)	NA	C > T	NA	NA	8.05%	Passes proportion survived

Wilcoxon Rank Sum Two-Sample Test

Control	vs	C-%	Test Stat	Critical	Ties	DF	P-Value	P-Type	Decision(α:5%)
Reference Sed		100	27	NA	1	8	0.5000	Exact	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.002013477	0.002013477	1	0.1685	0.6922	Non-Significant Effect
Error	0.09560277	0.01195035	8			
Total	0.09761624		9			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	3.499	23.15	0.2525	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.6403	0.7411	0.0002	Non-normal Distribution

Proportion Survived Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Reference Sed	5	0.98	0.9245	1	1	0.9	1	0.02	4.56%	0.0%
100		5	0.96	0.8489	1	1	0.8	1	0.04	9.32%	2.04%

Angular (Corrected) Transformed Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Reference Sed	5	1.379	1.289	1.47	1.412	1.249	1.412	0.03259	5.28%	0.0%
100		5	1.351	1.182	1.52	1.412	1.107	1.412	0.06097	10.09%	2.06%

Proportion Survived Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Reference Sed	1	0.9	1	1	1
100		1	1	0.8	1	1

Angular (Corrected) Transformed Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Reference Sed	1.412	1.249	1.412	1.412	1.412
100		1.412	1.412	1.107	1.412	1.412

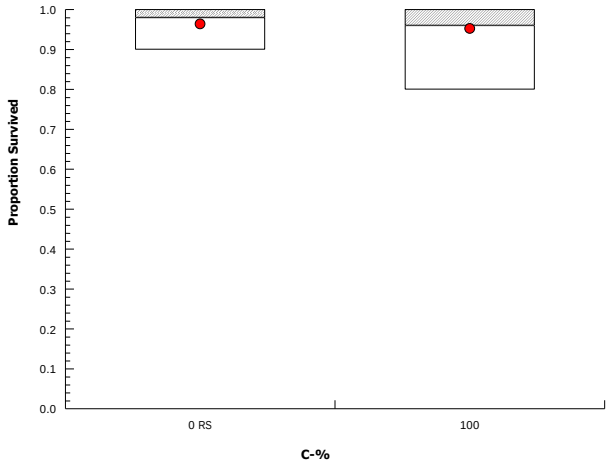
Proportion Survived Binomials

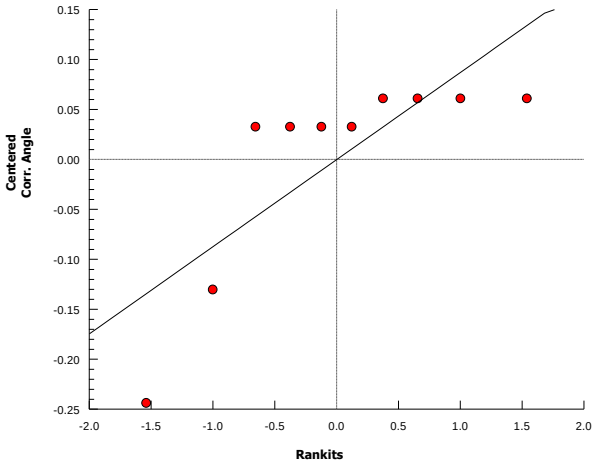
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Control Sed	10/10	10/10	10/10	10/10	10/10
0	Reference Sed	10/10	9/10	10/10	10/10	10/10
100		10/10	10/10	8/10	10/10	10/10

Neanthes 10-d Survival and Growth Sediment Test **ENVIRON**

Analysis ID:	13-4871-6469	**Endpoint:**	Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	28 Aug-14 14:09	**Analysis:**	Nonparametric-Two Sample	**Official Results:**	Yes

Graphics





CETIS Summary Report

Neanthes 10-d Survival and Growth Sediment Test **ENVIRON**

Batch ID:	00-9862-2791	**Test Type:**	Survival-Growth	**Analyst:**	
Start Date:	20 Jun-14	**Protocol:**	ASTM E1611-00 (2000)	**Diluent:**	Not Applicable
Ending Date:	30 Jun-14	**Species:**	Neanthes arenaceodentata	**Brine:**	Not Applicable
Duration:	10d 0h	**Source:**	Aquatic Toxicology Support	**Age:**	
Sample ID:	00-1256-8329	**Code:**	BFC709	**Client:**	ANAMAR
Sample Date:	03 Jun-14 11:36	**Material:**	Sediment Elutriate	**Project:**	Shipyard Creek
Receive Date:	11 Jun-14 13:10	**Source:**	Shipyard Creek		
Sample Age:	16d 12h	**Station:**	SYC14-TB2		

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
15-8818-4192	Proportion Survived	100	>100	NA	8.11%	1	Equal Variance t Two-Sample Test

Proportion Survived Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Control Sed	5	1	1	1	1	1	0	0	0.0%	0.0%
0	Reference Sed	5	0.98	0.9245	1	0.9	1	0.02	0.04472	4.56%	2.0%
100		5	0.94	0.8289	1	0.8	1	0.04	0.08944	9.52%	6.0%

Proportion Survived Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Control Sed	1	1	1	1	1
0	Reference Sed	1	0.9	1	1	1
100		1	0.8	1	1	0.9

Proportion Survived Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Control Sed	10/10	10/10	10/10	10/10	10/10
0	Reference Sed	10/10	9/10	10/10	10/10	10/10
100		10/10	8/10	10/10	10/10	9/10

Neanthes 10-d Survival and Growth Sediment Test **ENVIRON**

Analysis ID:	15-8818-4192	**Endpoint:**	Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	28 Aug-14 14:07	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes
Batch ID:	00-9862-2791	**Test Type:**	Survival-Growth	**Analyst:**	
Start Date:	20 Jun-14	**Protocol:**	ASTM E1611-00 (2000)	**Diluent:**	Not Applicable
Ending Date:	30 Jun-14	**Species:**	Neanthes arenaceodentata	**Brine:**	Not Applicable
Duration:	10d 0h	**Source:**	Aquatic Toxicology Support	**Age:**	
Sample ID:	00-1256-8329	**Code:**	BFC709	**Client:**	ANAMAR
Sample Date:	03 Jun-14 11:36	**Material:**	Sediment Elutriate	**Project:**	Shipyard Creek
Receive Date:	11 Jun-14 13:10	**Source:**	Shipyard Creek		
Sample Age:	16d 12h	**Station:**	SYC14-TB2		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Angular (Corrected)	NA	C > T	NA	NA	8.11%	Passes proportion survived

Equal Variance t Two-Sample Test

Control	vs	C-%	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
Reference Sed		100	0.8756	1.86	0.13	8	0.2034	CDF	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.009294413	0.009294413	1	0.7667	0.4068	Non-Significant Effect
Error	0.0969765	0.01212206	8			
Total	0.1062709		9			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	3.564	23.15	0.2460	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.8288	0.7411	0.0324	Normal Distribution

Proportion Survived Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Reference Sed	5	0.98	0.9245	1	1	0.9	1	0.02	4.56%	0.0%
100		5	0.94	0.8289	1	1	0.8	1	0.04	9.52%	4.08%

Angular (Corrected) Transformed Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Reference Sed	5	1.379	1.289	1.47	1.412	1.249	1.412	0.03259	5.28%	0.0%
100		5	1.318	1.148	1.489	1.412	1.107	1.412	0.06153	10.44%	4.42%

Proportion Survived Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Reference Sed	1	0.9	1	1	1
100		1	0.8	1	1	0.9

Angular (Corrected) Transformed Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Reference Sed	1.412	1.249	1.412	1.412	1.412
100		1.412	1.107	1.412	1.412	1.249

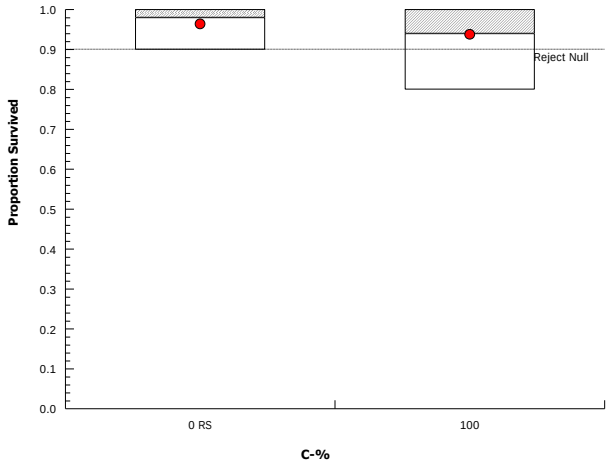
Proportion Survived Binomials

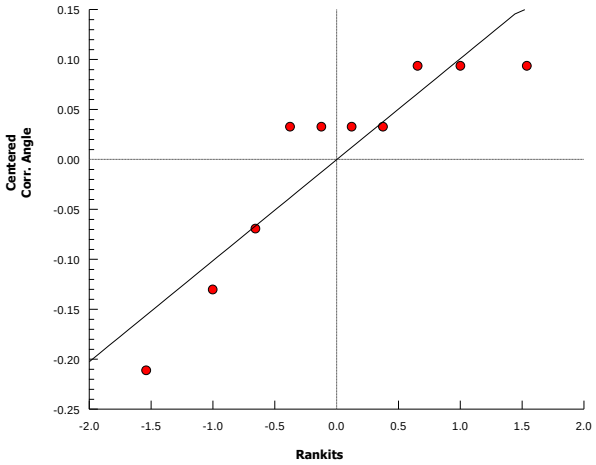
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Control Sed	10/10	10/10	10/10	10/10	10/10
0	Reference Sed	10/10	9/10	10/10	10/10	10/10
100		10/10	8/10	10/10	10/10	9/10

Neanthes 10-d Survival and Growth Sediment Test **ENVIRON**

Analysis ID:	15-8818-4192	**Endpoint:**	Proportion Survived	**CETIS Version:**	CETISv1.8.7
Analyzed:	28 Aug-14 14:07	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Graphics





APPENDIX C.1 CHAIN-OF-CUSTODY FORMS

ANAMAR
Environmental Consulting, Inc.

PROJECT: SHIPYARD CREEK MPRSA §103

Shipped via Fed Ex to ENVIRON

Chain-of-Custody

Station ID	Sample Date	Sample Time	Sample Matrix	Sample Containers	Number of Containers	Analyses Requested	Comments
SYC14-AC	06/04/14	0711	Sediment	Plastic bag	5	Water column, benthic, bioaccumulation	
SYC14-TB	06/02/14	0858	Sediment	Plastic bag	4	bioaccumulation	
SYC14-REF	06/03/14	0745	Sediment	Plastic bag	5	benthic, bioaccumulation	
SYC14-TB1	06/02/14	0858	Sediment	Plastic bag	1	water column, benthic	
SYC14-TB2	06/03/14	1136	Sediment	Plastic bag	1	water column, benthic	

Samples Relinquished by: Paul Bem

Date: 6/10/14 Time: 1500

Received by:

Date: 6/11/14 Time: 1310

Custody seals intact (Y/N) Y

Samples Relinquished by: _____

Date: _____ Time: _____

Received by: _____

Date: _____ Time: _____

Samples Relinquished by: _____

Date: _____ Time: _____

Received by: _____

Date: _____ Time: _____

ANAMAR Environmental Consulting, Inc.

2106 NW 67th Place, Suite 5

Gainesville, FL 32653

(352) 377-5770 FAX (352) 378-1500

ANAMAR
Environmental Consulting, Inc.

PROJECT: SHIPYARD CREEK MPRSA §103

Shipped via Fed Ex to ENVIRON

Chain-of-Custody

Station ID	Sample Date	Sample Time	Sample Matrix	Sample Containers	Number of Containers	Analyses Requested		Comments
SYC14-SW	06/04/14	1029	Water	Cubitainers	5	For elutriate preparation		Sediment samples will be shipped 6/10/14

Samples Relinquished by: Paul Bess

Date: 6/9/14 Time: 1400

Received by: [signature]

Date: 6/10/14 Time: 1320

Custody seals intact (Y/N) Y

Samples Relinquished by: _____

Date: _____ Time: _____

Received by: _____

Date: _____ Time: _____

Samples Relinquished by: _____

Date: _____ Time: _____

Received by: _____

Date: _____ Time: _____

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