Appendix A

Water Quality Monitoring Field Logs and Tide Data

This page intentionally left blank

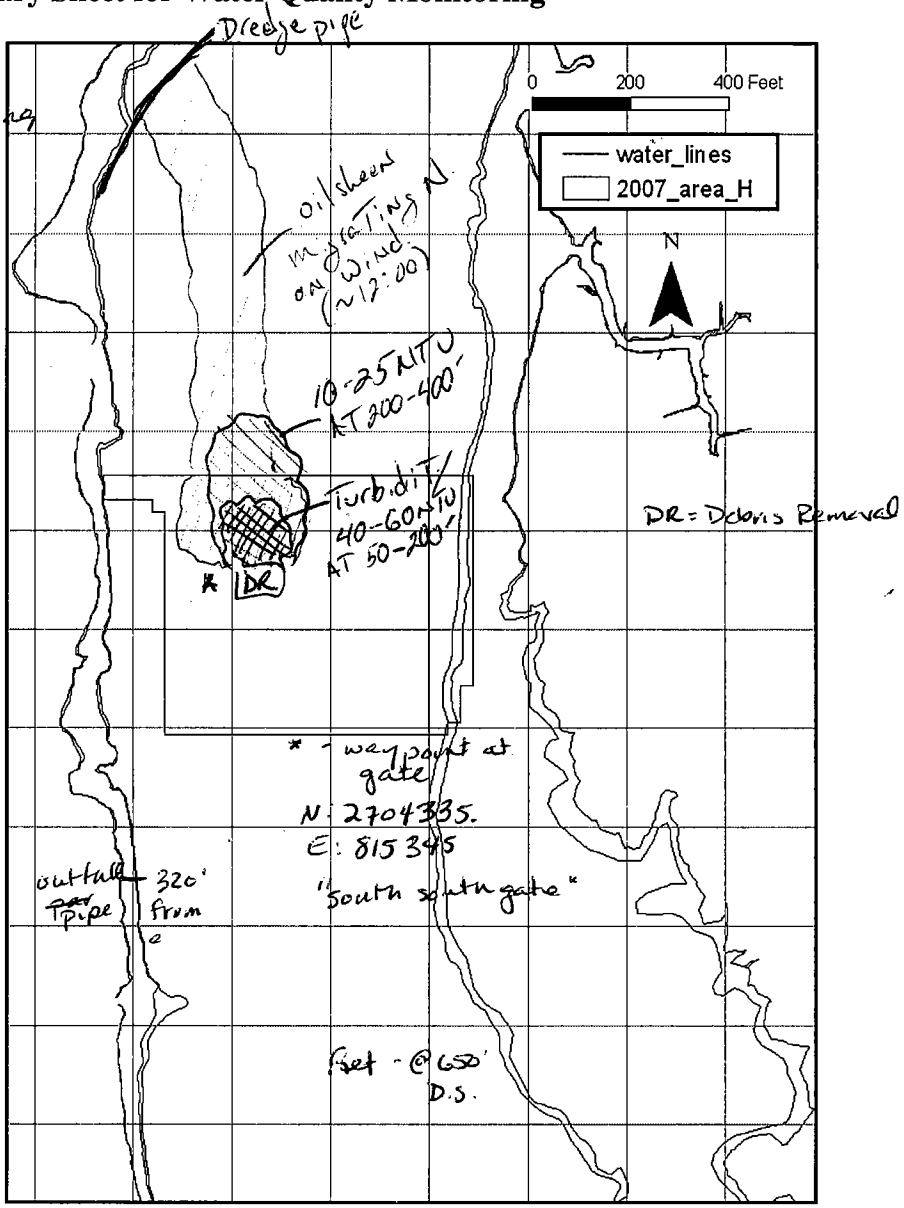
Battelle **Daily Field Summary Sheet for Water Quality Monitoring**

Date: 8/6/07
Weather: S wind, sunny w/ building clouds.
Tides:
Low @ ~~6:40~~ 7:38
High @ ~~13:48~~ 2:51pm
Low @ 8:57pm

Monitoring Period:
From: 0950 **To:** 13:15

Tidal Stage: HWS Ebb LWS Flood

Dredging Activity:
Debris removal,
pipe line testing.



Turbidity Summary

Location	Turbidity (NTU)	Sensor/water Depth (ft)
Ref.	4.5	2.4

Oil sheen/ Debris:
Sheen moving up to 1,000' N of debris removal

Fish Passage: bait fish active throughout area w/ Gulls and Terns feeding.

Samples Collected for Laboratory Analysis – Sample IDs:
TSS (1L) _____ **Turbidity (500ml)** _____
Total PCB (1L) _____ **Dissolved PCB (2x1L)** _____
Toxicity (21L) _____ **Metals (500ml)** _____

Notes:
No active dredging - Testing lines. Debris removal in Area-H only activity. Turbidity elevated in close proximity to D.R., but <20 greater than 200'

Sampling Crew: T. Himmer, M. Walsh, A. Manofeld
Chief Scientist Signature: A. Manofeld

Battelle

Water Quality Monitoring
In situ Data Field Form

Dredging Location	Area H
Dredging Description	Debris Removal, Pipeline testing
Survey Vessel	R/V Gale Force
Chief Scientist	A. Mansfield
Sampling Technician	T. Hummer
Vessel Captain	Mike Walsh
Other Personnel	N/A
Weather conditions	5 wind, sunny but building clouds, windy.

Date	8/6/07
Page	1 of 1

Tide information		
High	2:13 Am	3.6'
Low	7:38 Am	0.2'
High	14:51 PM	4.5'
Low	20:57	0.7'

Station Number	Time	Latitude N	Longitude E	Water depth	Sample Depth	Turbidity	Salinity	DO mg/L	Temp	Notes
REF	10:10	2704009.6	815183.99	5.5'	2.4'	4.5	30.8	~~9.69~~ 6.3	25.6°	@ 320' up current of south dredge area

YSI Calibration Form
Daily 2007 WQ Monitoring for New Bedford Harbor – G606422

Instrument Model # 6920 S/N# N/A

Date: 8/6/07		Initials: JMH	
DO membrane changed? Y (N)	Turbidity Wiper Changed? Y (N)		
Battery Voltage: —	Turbidly wiper parks 180° from optics? (Y) N		
Parameter	**Initial Reading**	**Calibrated Reading**	**Calibration Data (acceptable range)**
Conductivity (mS/cm)	0.8	1.0	Cell constant (4.55 – 5.45)
Depth (ft)	0.3	0.0	Pressure offset, vented (0 ± 6)
Turbidity (NTU) 0	-5.2	0.0	Turbidity Offset:
Turbidity (NTU) 123	127.0	123.0	
D.O. (% Sat)	—	~~123~~ 101.6 TH	D.O. Gain (0.7 - 1.4)
pH 4	4.09	4.01	
pH 7	6.89	7.01	
Comments:			

Date: 8/7/07		Initials: MV	
DO membrane changed? Y (N)	Turbidity Wiper Changed? Y (N)		
Battery Voltage: N/A	Turbidly wiper parks 180° from optics? (Y) N		
Parameter	**Initial Reading**	**Calibrated Reading**	**Calibration Data (acceptable range)**
Conductivity (mS/cm)	1000	1000	Cell constant (4.55 – 5.45)
Depth (ft)	-0.059	-0.000	Pressure offset, vented (0 ± 6)
Turbidity (NTU) 0	1.0	0.0	Turbidity Offset:
Turbidity (NTU) 123	123.1	123.0	
D.O. (% Sat)	100.2	100.2	D.O. Gain (0.7 - 1.4)
pH 4	4.20	4.00	
pH 7	6.73	7.00	
Comments:			

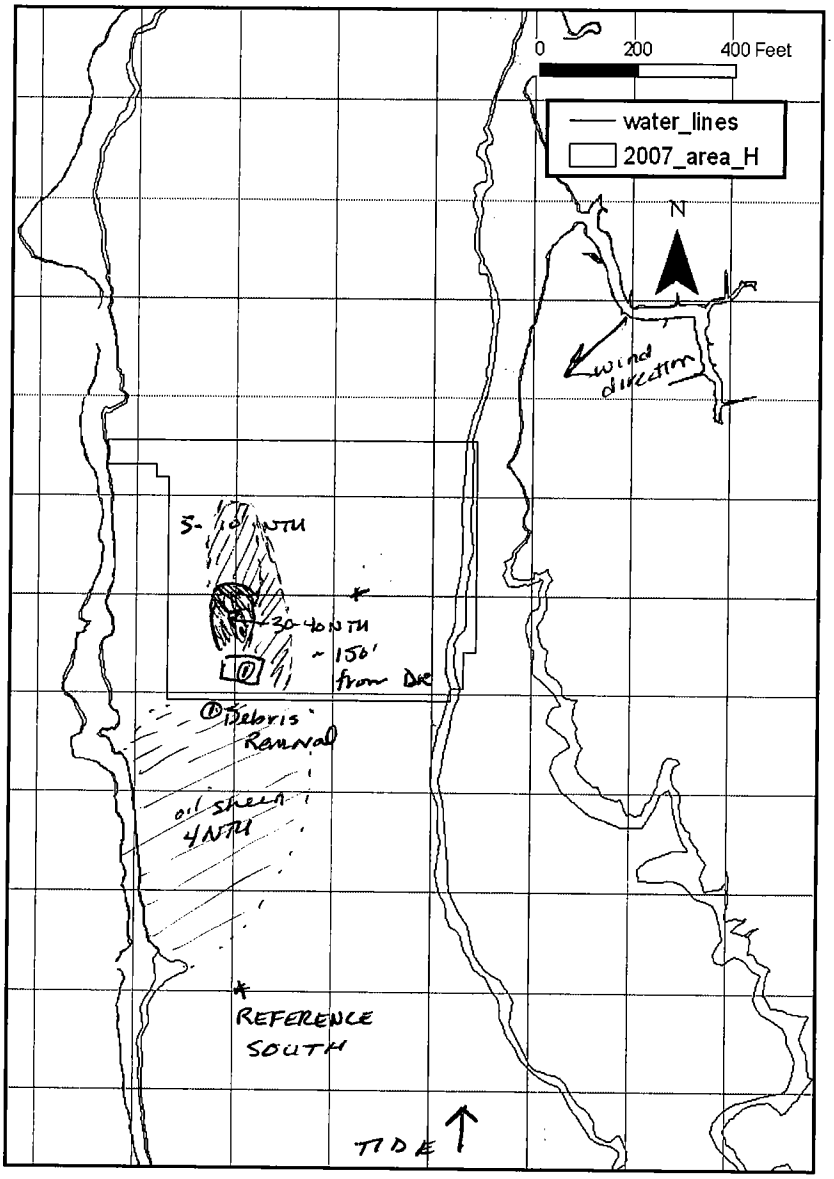
Battelle **Daily Field Summary Sheet for Water Quality Monitoring**

Date: 8/7/07
Weather: Overcast / Humid
Tides:
High @ 318 am 3.4
Low @ 844 am
High @ 355 pm

Monitoring Period:
From: 0930 **To:** 1230

Tidal Stage: HWS Ebb LWS Flood

Dredging Activity:
Debris Removal Area H
Pipline Testing



Turbidity Summary

Location	Turbidity (NTU)	Sensor/water Depth (ft)
*Ref. South	2-4	0.5-2.0'
150' down ~~up current~~ of debris removal	30-40	~1.5'
400' down ~~up current~~	5-10	~1.5'

Oil sheen/ Debris:
Heavy Sheen noted mid to late morning SW of debris removal outside oil booms.

Fish Passage: Bait fish activity noted within + outside dredge area

Samples Collected for Laboratory Analysis – Sample IDs:
TSS (1L) _____ **Turbidity (500ml)** _____
Total PCB (1L) NO SAMPLES **Dissolved PCB (2x1L)** NO SAMPLES
Toxicity (21L) _____ **Metals (500ml)** _____

Notes: ① Slight oil sheen outside boom in morning; observed 2-3 ceq Herring near Southern oil boom - crippled.
② Oil sheen increased into later morning (shown in sketch) - turbidity remained low.
③ Lots of bait fish activity within and outside dredge area H

Sampling Crew: M. Walsh T. Hammer
Chief Scientist Signature: [signature]

Battelle

Water Quality Monitoring
In situ Data Field Form

Dredging Location	AREA H
Dredging Description	Debris Removal Area H
Survey Vessel	Gale Force
Chief Scientist	T. Hinzman
Sampling Technician	M. Walsh
Vessel Captain	M. WALSH / T. Hinzman
Other Personnel	
Weather conditions	Overcast

Date	5/7/07
Page	1 of 1

Tide information		
High	3:18	3.4'
Low	8:44	0.4'
High	3:55	4.5'
Low	10:25	0.7'

Station Number	Time	Latitude	Longitude	Water depth TH	Sample Depth	Turbidity	Salinity	DO mg/L	Temp	Notes
REF South	9:40	2703674	815262	~~6.7~~ 4.3'	0.5'	2.3	29.42	4.16	25.3	
REF South	9:40	"	"	~~6.7~~ 4.3'	2.0'	4.0	30.58	3.42	25.4	
300' South of H	10:52			5.4	1.0'	4.2	30.1	3.5	25.5	
200' N of Debris										
Removal	12:30			5.5	1.5	~~15.0~~ 5/5/07 TH	29.6	2.9	25.6	

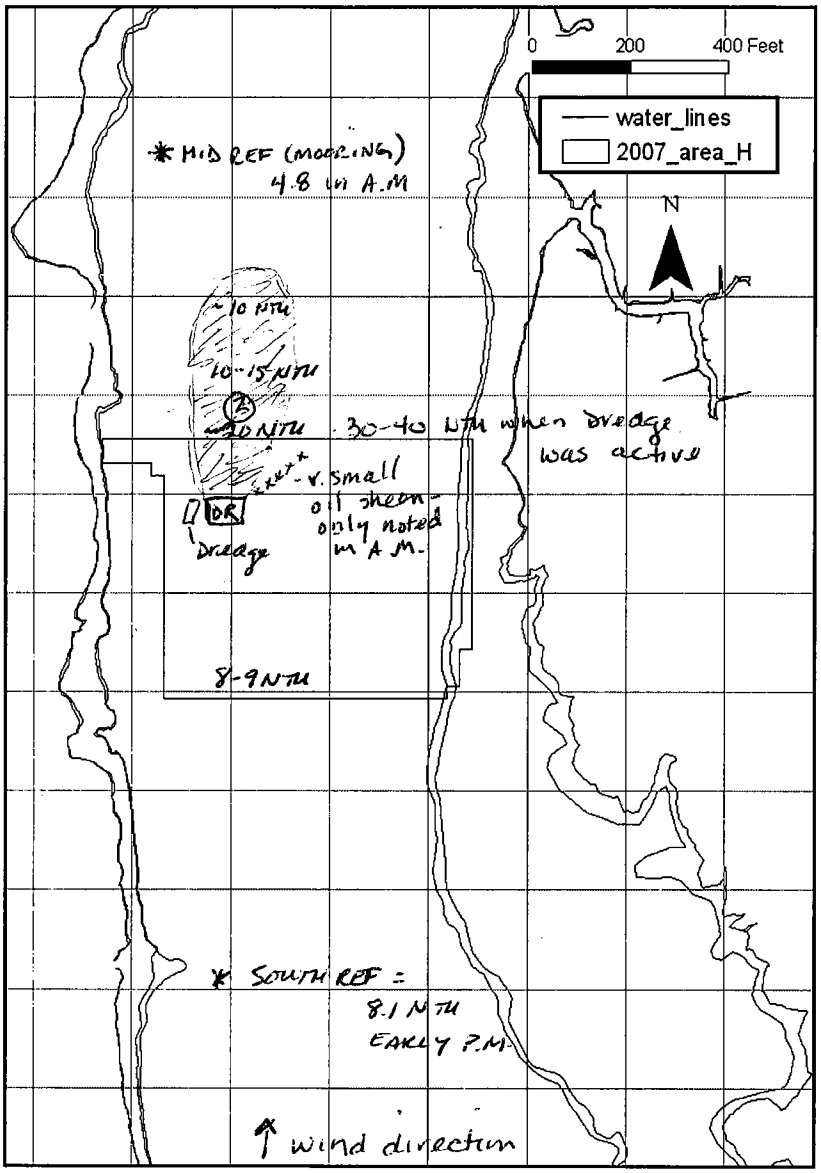
Battelle **Daily Field Summary Sheet for Water Quality Monitoring**

Date: 8/8/07
Weather: stormy early am. windy, humid
Tides:

3.4'	~~High 4:23 AM~~	@	~~3.4'~~ 4:23 AM
	0.4'	@	10:00 AM
	4.6'	@	~~*~~ 16:57

Monitoring Period:
From: 09:30 ~~12:30~~ **To:** 11:15 ~~15:15~~
Tidal Stage: HWS Ebb LWS Flood

Dredging Activity:
Debris Removal in Area H; moved working dredge down from Area G & moved broken dredge from Area H to dock



Turbidity Summary

Location	Turbidity (NTU)	Sensor/water Depth (ft)
MID REF	4.8	0.8'
N. Dredge Bound.	20.3	0.3'
S. Dredge Bound	8-9	0.3'
① N. Dredge Boundary	30-40 NTU	0.5'

Oil sheen/ Debris:
very small, localized sheen seen in ~~morning~~ morning; contained by oil booms & dissipated quickly. See ② below.
Fish Passage: noted a few crippled herring N of area H; numerous birds South of Area H.

Samples Collected for Laboratory Analysis – Sample IDs:
TSS (1L) _____ **Turbidity (500ml)** _____
Total PCB (1L) _____ **Dissolved PCB (2x1L)** _____
Toxicity (21L) _____ **Metals (500ml)** _____
NO SAMPLES

Notes: gusty winds resulted in difficulty maneuvering boat in late morning.
① Saw readings of 30-40 NTU ~150' down current of dredge.
② Small oil sheen noted North of H when actually dredging

Sampling Crew: M. Walsh . JM Himmler
Chief Scientist Signature: [signature]

Battelle

Water Quality Monitoring
In situ Data Field Form

Dredging Location	Debris Removal Area H
Dredging Description	Debris removal ; moved 2nd Dredge from Area G
Survey Vessel	Gale Force
Chief Scientist	T. Hinman
Sampling Technician	M. Walsh
Vessel Captain	M. Walsh
Other Personnel	
Weather conditions	Overcast / Rain Wind SW @ 20 - 35 late

Date	8/8/07
Page	1 of 1

Tide information		
High	423am	3.4ft
Low	1000	.4ft
High	457pm	4.6
Low	1142pm	.5

Station Number	Time	Latitude	Longitude	Water depth	Sample Depth	Turbidity	Salinity	DO mg/L	Temp	Notes
Ref Mid CABLE	10:00	2705783	815397	3.0ft	.800	4.8 NTU	29.97	2.86	25.98	slack high tide
N. Dredge Boundary H	10:25	2764951	815144	3.9ft	1.8	20.3 NTU	30.25	3.36	25.94	
Ref South	1250	2703743.4	815240.1	6.0ft	.3	8.1	31.07	3.37	25.8	
N. DREDGE BOUNDARY	1334	2764951	815144	5.8ft	0.3	20.4	30.4	3.06	25.9	swapping dredge.
100' N of Dredge B.	14:33	2705047	815083	5.7'	0.2	37.7	30.4	2.97	26.1	~150' Not Dredge

YSI Calibration Form
Daily 2007 WQ Monitoring for New Bedford Harbor – G606422

Instrument Model # 6920 S/N# NA

Date: 8/8/2007		Initials: MW	
DO membrane changed? Y (N)	Turbidity Wiper Changed? Y (N)		
Battery Voltage: NA	Turbidly wiper parks 180° from optics? (Y) N		
Parameter	**Initial Reading**	**Calibrated Reading**	**Calibration Data (acceptable range)**
Conductivity (mS/cm)	990	1000	Cell constant (4.55 – 5.45)
Depth (ft)	-0.156	-0.001	Pressure offset, vented (0 ± 6)
Turbidity (NTU) 0	-0.6	0.0	Turbidity Offset:
Turbidity (NTU) 123	123.0	123.0	
D.O. (% Sat)	99.8	99.8	D.O. Gain (0.7 - 1.4)
pH 4	4.06	4.00	
pH 7	6.85	7.00	
Comments:			

Date: 8/9/2007		Initials: MW	
DO membrane changed? Y (N)	Turbidity Wiper Changed? Y (N)		
Battery Voltage: NA	Turbidly wiper parks 180° from optics? (Y) N		
Parameter	**Initial Reading**	**Calibrated Reading**	**Calibration Data (acceptable range)**
Conductivity (mS/cm)	1017	1000	Cell constant (4.55 – 5.45)
Depth (ft)	0.176	0.000	Pressure offset, vented (0 ± 6)
Turbidity (NTU) 0	1.1	0.0	Turbidity Offset:
Turbidity (NTU) 123	122.0	123.0	
D.O. (% Sat)	100.4	100.4	D.O. Gain (0.7 - 1.4)
pH 4	4.06	4.00	
pH 7	6.97	7.00	
Comments:			

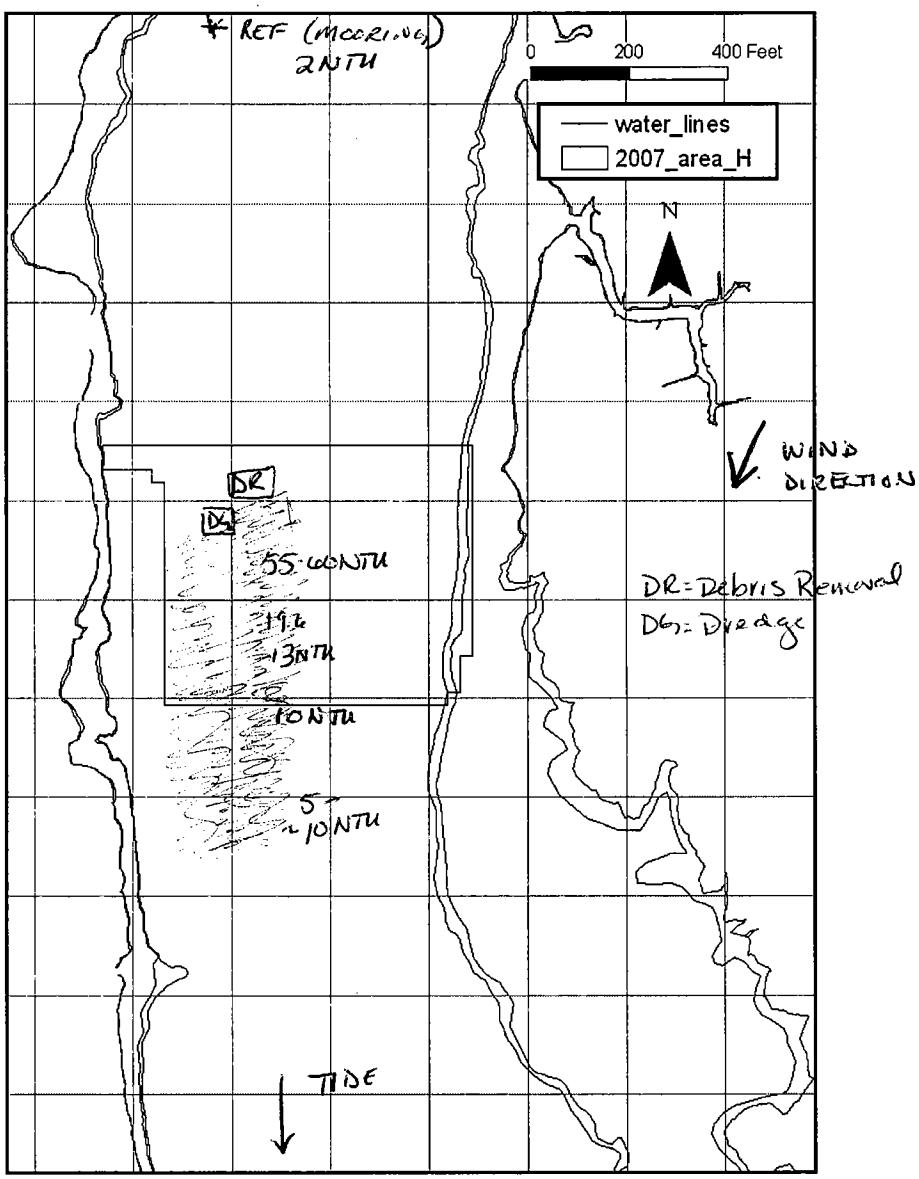
Battelle **Daily Field Summary Sheet for Water Quality Monitoring**

Date: 8/9/07
Weather: Sunny, NNE wind @ 5-10 kts
Tides:
3.6' @ 5:25 AM
~~0.04~~ 0.4' @ 11:16 AM
4.7' @ ~~5:3~~ 17:55 AM

Monitoring Period:
From: 0800 **To:** 10:30

Tidal Stage: HWS (Ebb) LWS Flood

Dredging Activity:
Debris Removal
Dredge repair + dredging.



Turbidity Summary

Location	Turbidity (NTU)	Sensor/water Depth (ft)
REF	2	1.5'
13NTU	13	1.8
19.6NTU	19.6	2.2
55NTU	55	1.5'
S. Boundary of H	10	1-1.5'

Oil sheen/ Debris:
None noted today

Fish Passage: Birds working above & below Dredge Area.

Samples Collected for Laboratory Analysis – Sample IDs:
TSS (1L) _____ **Turbidity (500ml)** See attached
Total PCB (1L) See attached **Dissolved PCB (2x1L)** See attached
Toxicity (21L) _____ **Metals (500ml)** _____

Notes: Collected samples for chemistry based on turbidity. Needed to get within ~100-150' of debris removal to get consistent readings near 55NTU. Prop wash in shallow water (from pushing boats) resulted in v. ephemeral spikes of 90-100 NTU - these dissapated very quickly.

Sampling Crew: M. Walsh, T. Himmer
Chief Scientist Signature: [signature]

Battelle

Water Quality Monitoring
In situ Data Field Form

Dredging Location	Dredging & Debris Removal - Area H
Dredging Description	↓ TH
Survey Vessel	Gale Force
Chief Scientist	T. Hummer
Sampling Technician	M. Walsh
Vessel Captain	M. Walsh
Other Personnel	N/A
Weather conditions	sunny - NE wind @ 5-10 kts.

Date	8/9/07
Page	1 of 1

Tide information		
High	5:25 am	3.6'
Low	11:16 am	0.4'
High	17:55 pm	4.7'
Low		

	Station Number	Time	Latitude	Longitude	Water depth	Sample Depth	Turbidity	Salinity	DO	Temp	Notes TH
MD	REF080907	8:40	2705729.6	815370.7	3.4	1.5'	2.2	29.61	2.88	25.7°	WQ-001-XXX-080907
13	NTU080907	9:15	2704398.2	815147.6	4.0'	1.8'	13.2	29.6	2.90	25.3°	WQ-002-XXX-080907
20	NTU080907	9:30	2704605.5	815145.7	3.8	~~3~~ 2.2'	19.6	~~29~~ 29.4	2.96	25.4°	WQ-003-XXX-080907
55	NTU080907	10:05	2704603.0	815131.9	3.8'	1.5'	~55 NTU	29.3	2.99	25.2	WQ-004-XXX-080907
						~~3~~					TH - Numbers should be ~~ahead of~~ behind XXX.

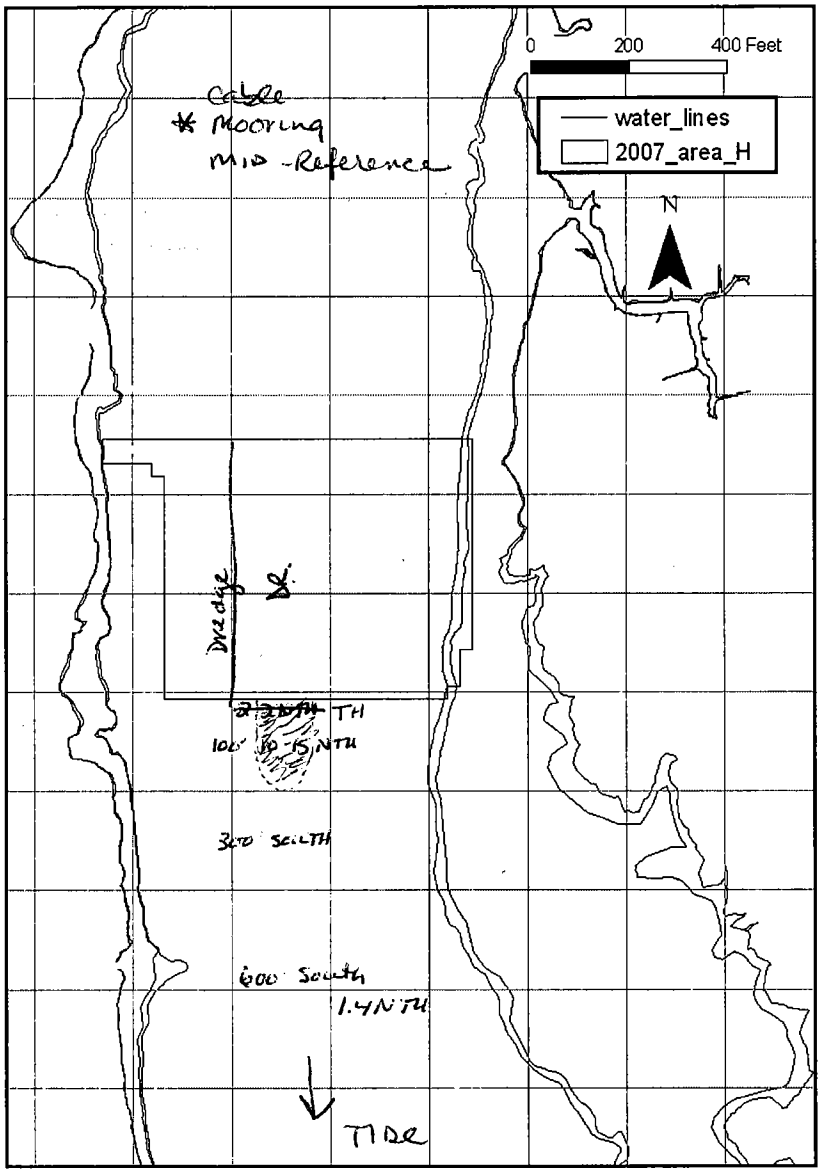
Battelle **Daily Field Summary Sheet for Water Quality Monitoring**

Date: 8/13/07
Weather: overcast ; rain
Tides:
4.4' @ 8:45
0.0' @ ~~2~~ 14:47
4.7' @ 21:06

Monitoring Period:
From: 0930 **To:** 14:15

Tidal Stage: HWS (Ebb) LWS Flood

Dredging Activity:
Dredging - Area H
Debris Removal Area H



Turbidity Summary

Location	Turbidity (NTU)	Sensor/water Depth (ft)
MID Reference	2.1	1.3'
600' South	1.4	0.7'
100' South	14.3	0.9'
S. Dredge Boundary in P.M	5.1	0.9'

Oil sheen/ Debris:
V. minor sheen noted next to debris removal - contained by oil boom

Fish Passage: No negative impacts to fish passage observed; fish noted w/in and outside dredge area moving freely.

Samples Collected for Laboratory Analysis – Sample IDs:
TSS (1L) _____ **Turbidity (500ml)** _____
Total PCB (1L) N/A **Dissolved PCB (2x1L)** N/A
Toxicity (21L) _____ **Metals (500ml)** _____

Notes: any turbidity detected mainly associated w/ debris removal. Level III meet.

Sampling Crew: J. Hemmer, M. Walsh
Chief Scientist Signature: [signature]

Battelle

Water Quality Monitoring
In situ Data Field Form

Dredging Location	Area H
Dredging Description	Dredging
Survey Vessel	Gale Force
Chief Scientist	T. Himmer
Sampling Technician	M. Walsh
Vessel Captain	M. Walsh
Other Personnel	N/A
Weather conditions	Rainy, overcast

Date	8/13/07
Page	1 of 1

Tide information		
High	8:45	4.4'
Low	14:47	0.0'
High	21:06	4.7
Low		

	Station Number	Time	Latitude	Longitude	Water depth	Sample Depth	Turbidity	Salinity	DO mg/L	Temp	Notes
MID REF	081307	0940	2705727	815393	6.5'	1.3'	2.1	29.96	7.96	25.1°	
100' South		10:00	2703730.	815208.	8.0'	0.7'	1.4	30.7	5.04	24.6°	
100' S of Dredge Boundary		11:30	2704224	815130	6.5'	0.9'	14.3	30.0	5.96	25.0	
S Dredge Boundary		2 14:10	2704328	815270	3.7	0.9	5.1	29.9	6.68	25.7	

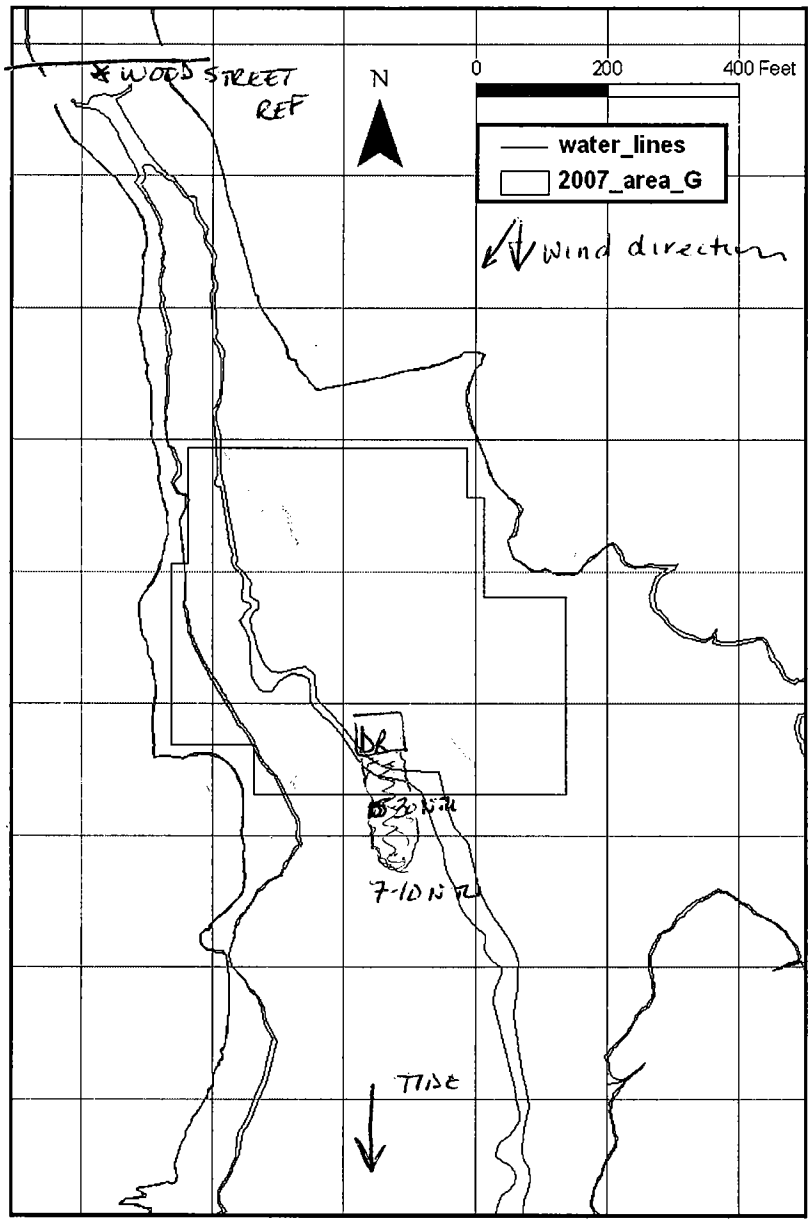
Battelle **Daily Field Summary Sheet for Water Quality Monitoring**

Date: 8/14/07
Weather: sunny, light breeze
Tides:
0.0 @ 0313
4.4 @ 0928
0.1 @ 15:24

Monitoring Period:
From: 0945 **To:** 1130

Tidal Stage: HWS (Ebb) LWS Flood

Dredging Activity:
Debris Removal during high tide; ~~the~~ barge moved back to HD @ 11:30



Turbidity Summary

Location	Turbidity (NTU)	Sensor/water Depth (ft)
WOOD ST. REF	8.2	1.0'
DREDGE BOUNDARY	15.30	0.8
200' FROM DREDGE BOUNDARY	7+10	0.8'

Oil sheen/ Debris:
Sheen & small debris seen during debris removal - all contained by oil boom.

Fish Passage: No fish damming or fish kills observed; birds working above + below dredge area.

Samples Collected for Laboratory Analysis – Sample IDs:
TSS (1L) _____ **Turbidity (500ml)** _____
Total PCB (1L) _____ **Dissolved PCB (2x1L)** _____
Toxicity (21L) _____ **Metals (500ml)** _____

Notes: ~~From~~ Looked along pipeline for evidence of obstructed fish passage; no indications of obstruction observed.
Level II Monitoring

Sampling Crew: T. Hammer; M. WALSH
Chief Scientist Signature: [signature]

Battelle

Water Quality Monitoring
In situ Data Field Form

Dredging Location	AREA G
Dredging Description	Debris Removal
Survey Vessel	GALE FORCE
Chief Scientist	T. HIMMER
Sampling Technician	M. WALSH
Vessel Captain	M. WALSH
Other Personnel	N/A
Weather conditions	SUNNY MILD

Date	8/14/07
Page	1 of 1

Tide information		
High	0928	4.4'
Low	15:24	0.0
High		
Low		

	Station Number	Time	Latitude	Longitude	Water depth	Sample Depth	Turbidity	Salinity	DO	Temp	Notes
	WOODSTREF	10:10	2708295	815451	7.5'	1.0	8.2	29.1	9.6	24.4	
MOORING	North of G	12:40	2707919	815599	5.9'	0.5'	7.3	29.86	9.07	24.5	
MOORING	SOUTH of G	13:00	2707076	815819	5.0	0.5'	15.8	29.8	10.11	24.9	

Battelle

Daily Field Summary Sheet for Water Quality Monitoring

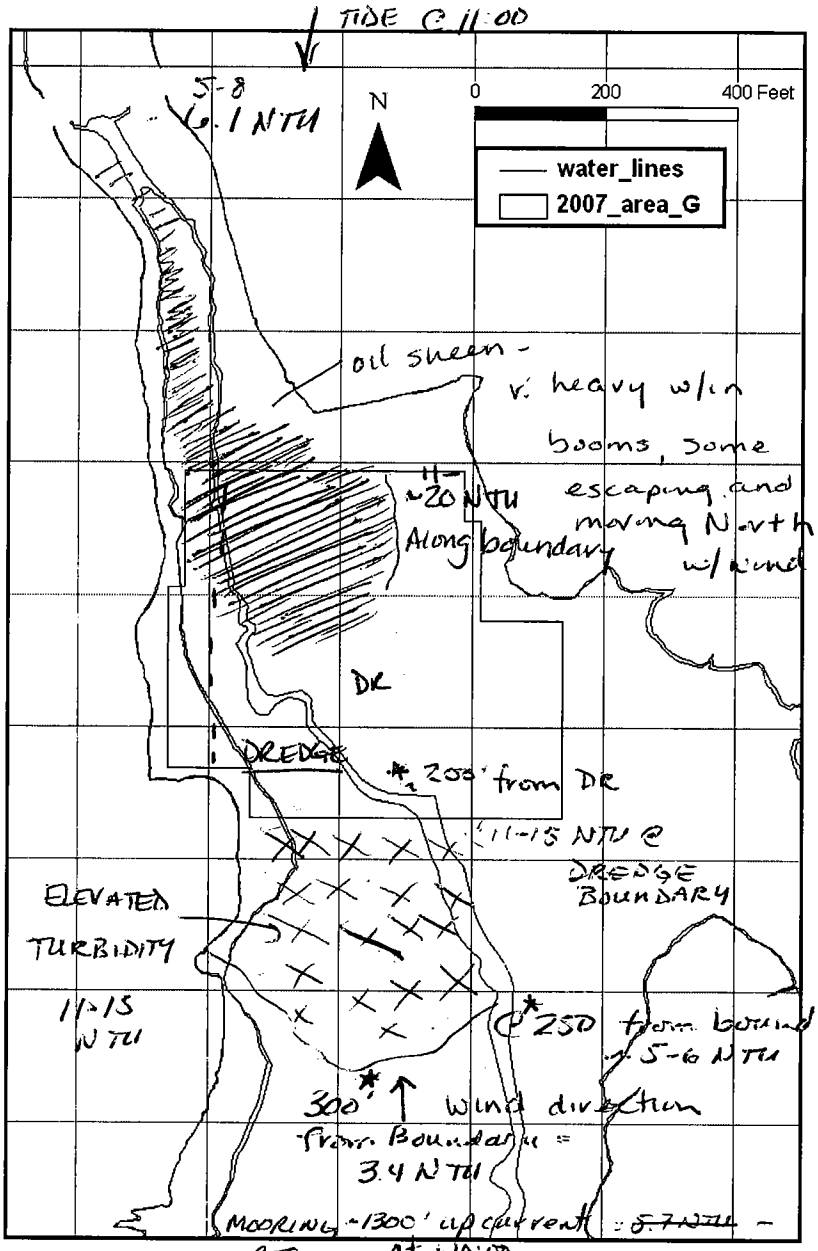
Date: 8/16/07
Weather: overcast, humid
Tides:

4.4'	@	10:09
0.3'	@	15:58
4.2	@	22:26

Monitoring Period:
From: 09:40 **To:** 12:30

Tidal Stage: HWS Ebb LWS Flood

Dredging Activity:
Debris Removal - Dredge set up



Turbidity Summary

Location	Turbidity (NTU)	Sensor/water Depth (ft)
WOOD ST BRIDGE ST-8	6.1	~~0.~~ 1'
~200' from DR	16	0.9'
DREDGE BOUND.	11.1	1.0'
300' from DREDGE BOUNDARY	3.4	1.0'

Oil sheen/ Debris: Heavy sheen noted in Northern part of area & migrating up river w/ wind. working

Fish Passage: Birds noted in ALL AREAS - SEE NOTE BELOW dissipated slightly by 11:40

Samples Collected for Laboratory Analysis – Sample IDs:

TSS (1L)	See attached	**Turbidity (500ml)**	see attached
Total PCB (1L)		**Dissolved PCB (2x1L)**	
Toxicity (21L)		**Metals (500ml)**	See attached

Notes: went N. of WOOD ST ~800' @ 10:00 AM DO @ sampling location = 3.1 @ 1.1' from surface. Noted several dozen dead shad along western shore of Acushnet River. Higher DO readings as moved down stream. (6.1 @ WOOD ST. BRIDGE) Also noted some oil sheen along shore line. Steve Fox, Mark Gouveia & Paul L'Hereaux notified

Level II Monitoring

Sampling Crew: Himmer, Walsh, Hardy

Chief Scientist Signature:

Battelle

Water Quality Monitoring
In situ Data Field Form

Dredging Location	AREA G
Dredging Description	Debris Removal - Dredge Set up
Survey Vessel	GALE FORCE
Chief Scientist	T. Hummer
Sampling Technician	J. HARDY
Vessel Captain	M. WALSH
Other Personnel	—
Weather conditions	overcast / humid.

Date	8/16/07
Page	of

Tide information		
High	10:09	4.4'
Low	15:58	0.3'
High	~~10~~ 22:26	4.2'
Low		

	Station Number	Time	Latitude	Longitude	Water depth	Sample Depth	Turbidity	Salinity	DO	Temp	Notes
Not	WOOD ST.	10:22	2709149	815362	4.8'	1.1'	8.8	29.38	3.1	24.9	@ 800' Not Wood ST → See below ①
WOOD ST BRIDGE		11:10	2708277	815487	7.2	1.0'	5.8	28.2	7.9	24.8	WQ-TSS/TUR-001-081607
	(REF)										WQ-MET-001-081607
EQUIP. BLANK		11:13	"	"	NA	NA	NA	NA	NA	NA	WQ-TSS/TUR-005-081607-EB
200' from Debris		11:40	2707352	815838	4.4'	0.9	16	28.7	7.0	25.1	WQ-TSS/TUR-002-081607
	Removal	"	"	"	"	"	"	"	"	"	WQ-MET-002-081607
DREDGE BOUNDARY		12:00	2707198	815841	6.3'	1.0'	11.1	28.8	7.5	25.2	WQ-TSS/TUR-003-081607
			"	"	"	"	"	"	"	"	WQ-MET-003-081607
300' S. of DREDGE		12:15	2706913	815789	6.0'	1.0'	3.4	29.2	8.2	25.3	WQ-TSS/TUR-004-081607
	BOUNDARY		"	"	"	"	"	"	"	"	WQ-MET-004-081607

① several dozen shad dead (juvenile along shoreline)

(2)

Battelle

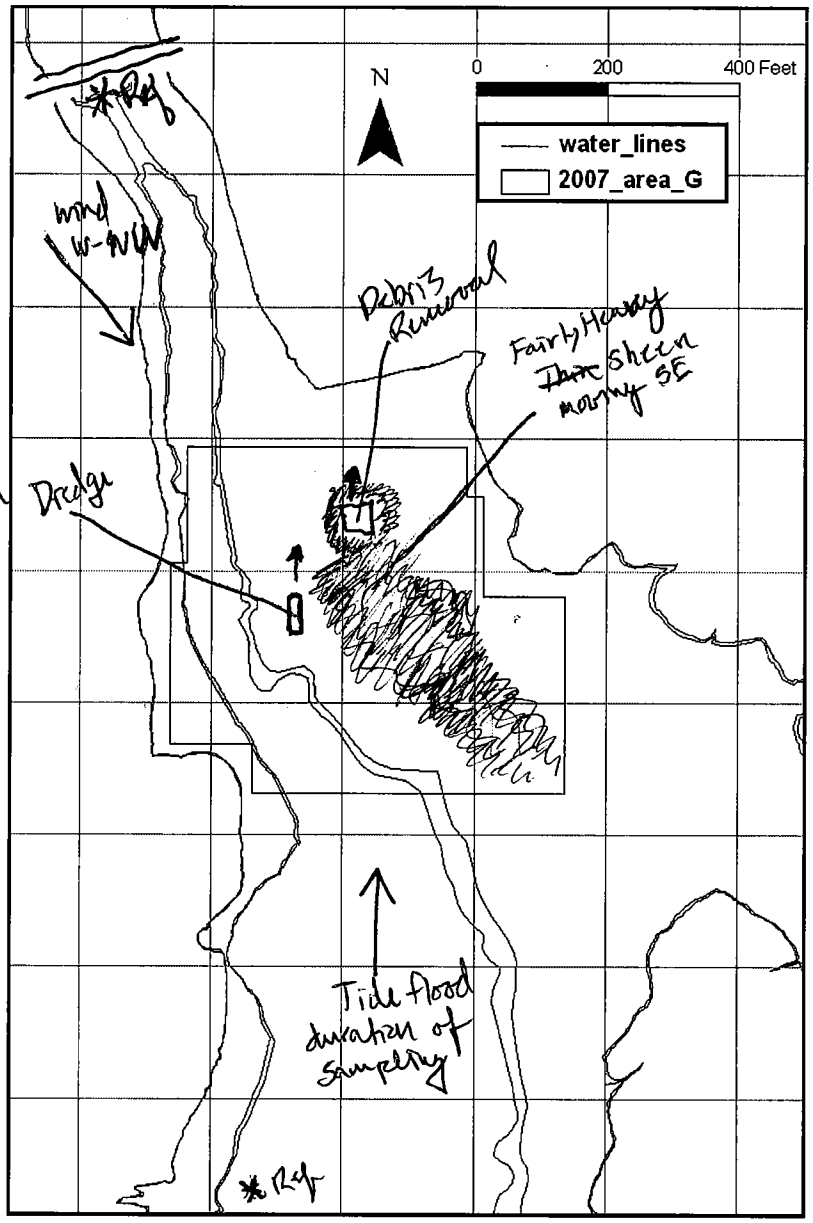
Daily Field Summary Sheet for Water Quality Monitoring

Date: 8/17/07
Weather: Overcast
Tides:
Low tide 0.3 @ 0437 AM
High tide 4.1 @ 1132 AM
Low 0.6 @ 05:04 pm

Monitoring Period:
From: 1042 **To:** 1230

Tidal Stage: (HWS) (Ebb) LWS Flood

Dredging Activity:
Dredging middle west working to north
Debris Removal North middle working to North



Turbidity Summary

Location	Turbidity (NTU)	Sensor/water Depth (ft)
W Cable Mooring	8.5	6

Oil sheen/ Debris:
Moving NW to SE from Debris Removal

Fish Passage: Schooling and Feeding Fish At N. St Bridge / Sporadic dead fish noted in dredge Area

Samples Collected for Laboratory Analysis – Sample IDs:
TSS (1L) _____ **Turbidity (500ml)** _____
Total PCB (1L) _____ **Dissolved PCB (2x1L)** _____
Toxicity (21L) _____ **Metals (500ml)** _____

Notes: Light to Heavy sheen moving to south East corner of Dredge Area (Wind W-NW 5-10) - Turbidity ranges 20-50 NTU within 100 ft of debris removal to Low to high ~~teens~~ throughout dredge Area.
Dissolved O_2 range 5.5 mg/L to as low as 3.8 mg/L.

Sampling Crew: Mike Walsh + Jessica Fahey
Chief Scientist Signature: Mike Walsh

Battelle

Water Quality Monitoring
In situ Data Field Form

Dredging Location	Area G
Dredging Description	Debris Removal, dredging
Survey Vessel	Gale Force
Chief Scientist	M. Walsh
Sampling Technician	J. Fahey
Vessel Captain	M. Walsh
Other Personnel	–
Weather conditions	Overcast W @ ~5

Date	8-17-07
Page	1 of 1

Tide information	
High	~~0437 0.3~~
Low	0437 0.3
High	1132 4.1
Low	1704 0.6

	Station Number	Time	Latitude	Longitude	Water depth	Sample Depth	Turbidity	Salinity	DO	Temp	Notes
Ref	W. Cable Mooring	1055	–	–	6	.98	8.5	30.6	5.26	24.79	Reference
Ref	N. 5th Bridge	1202	–	–	6.6	.98	9.0	28.2	6.37	25.3	Ref

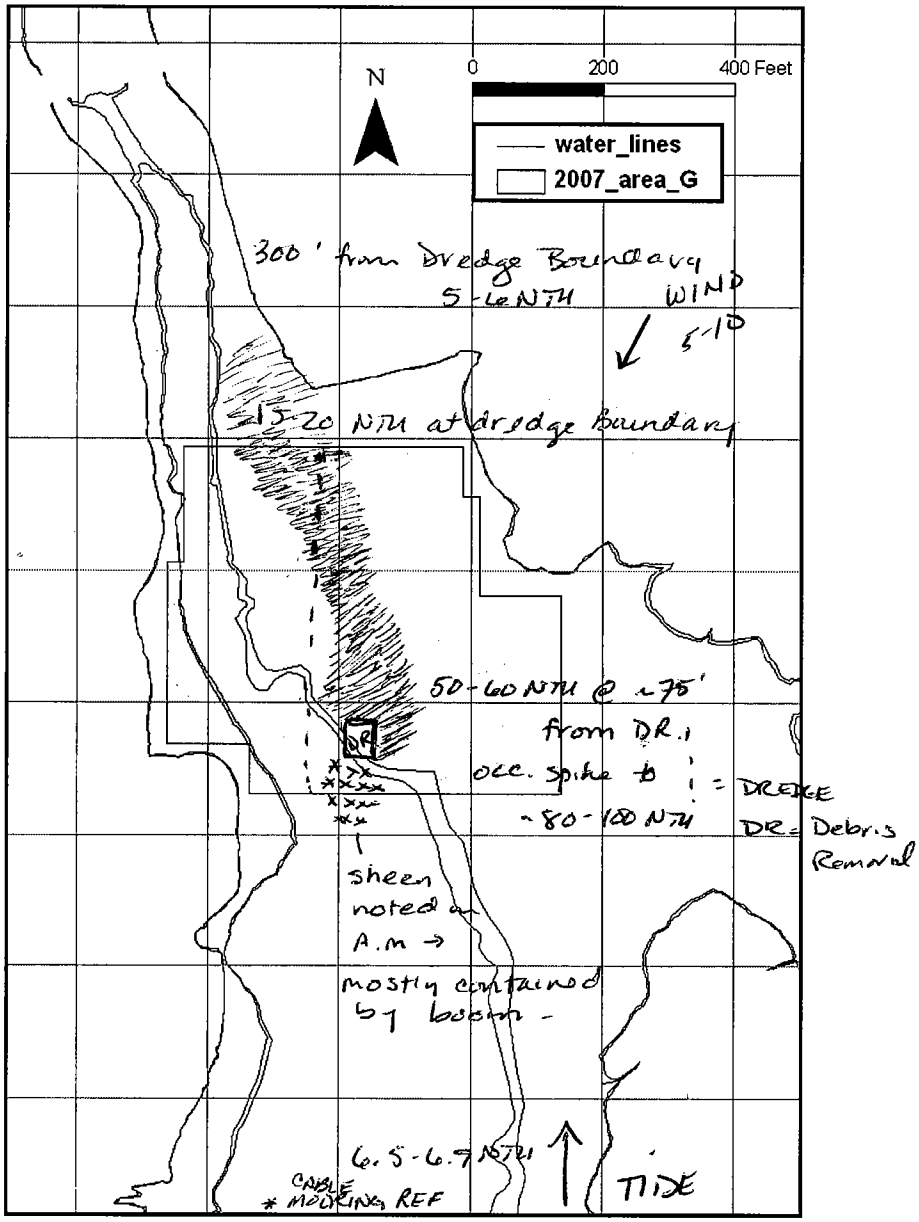
Battelle **Daily Field Summary Sheet for Water Quality Monitoring**

Date: 8/20/07
Weather:
Tides:
0.7 @ 0621
3.6 @ 1354
1.2 @ 1910

Monitoring Period:
From: 10:00 **To:** 13:30

Tidal Stage: HWS Ebb LWS Flood

Dredging Activity:
Debris Removal
Dredge Placement & Active Dredging



Turbidity Summary

Location	Turbidity (NTU)	Sensor/water Depth (ft)
CABLE MOORING	6.5-6.9	0.5'/4'
N DREDGE BOUNDARY	15-20 NTU	~1'
300' DOWN CURRENT	5-6	~1'

Oil sheen/ Debris:
LIGHT OIL SHEEN NOTED IN AM. SOUTHWEST OF D.R. - FAIRLY-WELL CONTAINED BY OIL BOOMS.

Fish Passage: BIRDS WORKING NORTH & SOUTH OF DREDGE AREA; NO DEAD FISH NOTED

Samples Collected for Laboratory Analysis – Sample IDs:
TSS (1L) ~~_____~~ **Turbidity (500ml)** ~~_____~~
Total PCB (1L) ~~_____~~ **Dissolved PCB (2x1L)** ~~_____~~
Toxicity (21L) ~~_____~~ **Metals (500ml)** ~~_____~~

Notes: Retrieved moorings from N. of Dredge Area. Saw localized High Turbidity values v. near dredge & Debris Removal (avg 50-60 NTU w/spikes to 80-100 NTU). V. thin plume traveled ~~upcurrent~~ down current; turbidity dropped to 15-20 by time plume reached dredge boundary.

Sampling Crew: T. Himmer & M. Walsh
Chief Scientist Signature: JMH

Battelle

Water Quality Monitoring
In situ Data Field Form

Dredging Location	AREA H G
Dredging Description	DREDGING WEST OF GATE; ~~ABOVE DEBRIS REMOVAL TO "6"~~
Survey Vessel	RV GALE FORCE
Chief Scientist	T. HIMMER
Sampling Technician	M. WALSH
Vessel Captain	M. WALSH
Other Personnel	N/A.
Weather conditions	SUNNY, MILD, LIGHT WIND (5-10 KTS) OUT OF NE.

Date	8/20/07
Page	of

Tide information		
High	~~0.7'~~	0118
Low	0621	0.7'
High	1354	3.6'
Low	1910	1.2'

	Station Number	Time	Latitude	Longitude	Water depth	Sample Depth	Turbidity	Salinity	DO	Temp	Notes
REF SOUTH		1000	2707371 4	815217	6.0'	4.5'	4.9	30.50	5.67	22.2°	
"		"	"	"	"	0.3'	1.4	29.83	4.87	22.2°	
REF - CABLE MOORING		10:36	2705751	815360	4.0'	0.5'	6.6 NTU	29.61	6.06	22.7	
~ 75' NOF		12:13	2707908	815574	4.5	0.8	19.7	28.51	9.07	24.1	
DREDGE											
BOUND									9.06 TH		
N. OF WOODST		12:20	2709063	815389	3.5	0.8'	6.2	27.47	~~7.84~~	24.5	DO RANGED FROM 9-10 on TRANSECT N. OF WOOD ST.
IN DREDGE			↑	↑ TH	2.2'	0.4'	21.7	29.32	6.75	24.5	
BOUNDARY		12:47	2707780	815824							

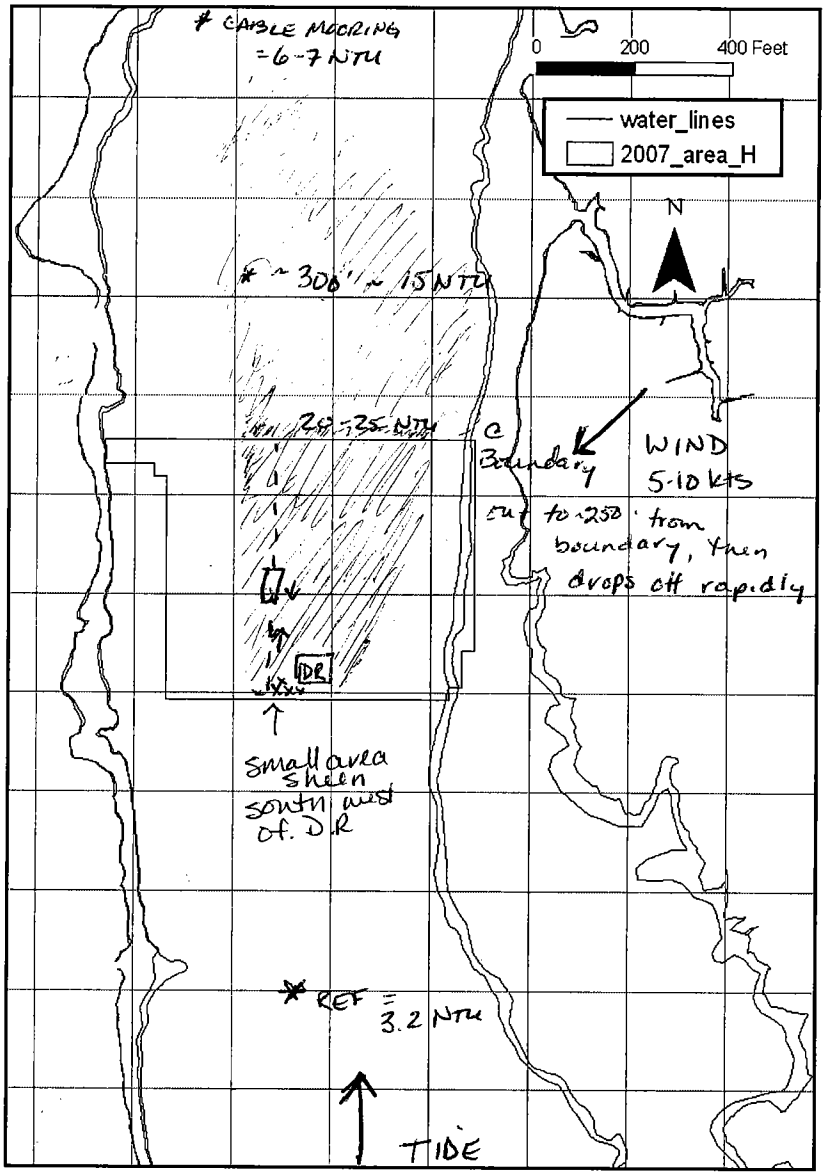
Battelle **Daily Field Summary Sheet for Water Quality Monitoring**

Date: 8/21/07
Weather: Sunny, Breezy
Tides:
0.9' @ 7:08
3.6' @ 14:51
1.3' @ 20:11

Monitoring Period:
From: 0930 **To:** ~~012~~ 1210

Tidal Stage: HWS Ebb LWS Flood

Dredging Activity:
Debris Removal ; Dredging in Area H



Turbidity Summary

Location	Turbidity (NTU)	Sensor/water Depth (ft)
SOUTH REF	3.2	~~7'/1'~~ 1'/7'
NORTHERN BOUND	20-25 NTU	1.1/5.3'
300' FROM BOUND	15 NTU	1.1/4.0'
CABLE MOORING	6-7 NTU	1.1/4.0'

Oil sheen/ Debris:
NONE OBSERVED. NORTH OF DREDGE AREA - SMALL AREA NOTED SOUTH OF DEBRIS REMOVAL → CONTAINED BY OIL BOOMS.

Fish Passage: BIRDS WORKING IN / OUTSIDE DREDGE AREA; SAW BASS OUTSIDE OF DREDGE AREA / BAITFISH JUMPING WITH DREDGE AREA

Samples Collected for Laboratory Analysis – Sample IDs:

TSS (1L) _____ **Turbidity (500ml)** _____
Total PCB (1L) ~~DONE~~ **Dissolved PCB (2x1L)** ~~NONE~~
Toxicity (21L) _____ **Metals (500ml)** _____

Notes: OBSERVED FAIRLY LARGE, BUT LOW LEVEL TURBIDITY PLUME DURING THE MORNING. VALUES WERE 20-25 NTU AT BOUNDARY ; ~15 NTU @ 300' FROM BOUNDARY. PLUME BEGAN TO DISSIPATE AROUND 11:30 ; READINGS BEGAN TO DROP.

Sampling Crew: Hammer, WACSH
Chief Scientist Signature: [signature]

Battelle

Water Quality Monitoring
In situ Data Field Form

Dredging Location	AREA H
Dredging Description	DEBRIS REMOVAL : DREDGING
Survey Vessel	R.V GALE FORCE
Chief Scientist	T. HIMMER
Sampling Technician	M. WALSH
Vessel Captain	HIMMER
Other Personnel	N/A
Weather conditions	SUNNY, ~~BREEZY~~ ENE WIND 5-10 kts.

Date	8/21/07
Page	of

Tide information		
High	2:14	2.9'
Low	7:08	0.9'
High	14:51	3.6'
Low	20:11	1.3'

Station Number	Time	Latitude	Longitude	Water depth	Sample Depth	Turbidity	Salinity	DO	Temp	Notes
REF SOUTH-H	9:35	27073748	815166	7'	1.0	3.2	29.8	5.68	21.74	
NORTH BOUNDARY				~~5~~						
OF H	10:45	2704979	815307	5.3	1.1	~~25~~ 25.1	30.11	4.99	22.42	
~300' N.										
of Boundary	10:51	27075271	815312	4.0'	1.1	15.1	30.01	5.05	22.43	
OF H										
~600' N	10:57	2705585	~~815553~~ 815370	4.0'	1.1'	13.0	29.86	5.00	22.4	
of Boundary										

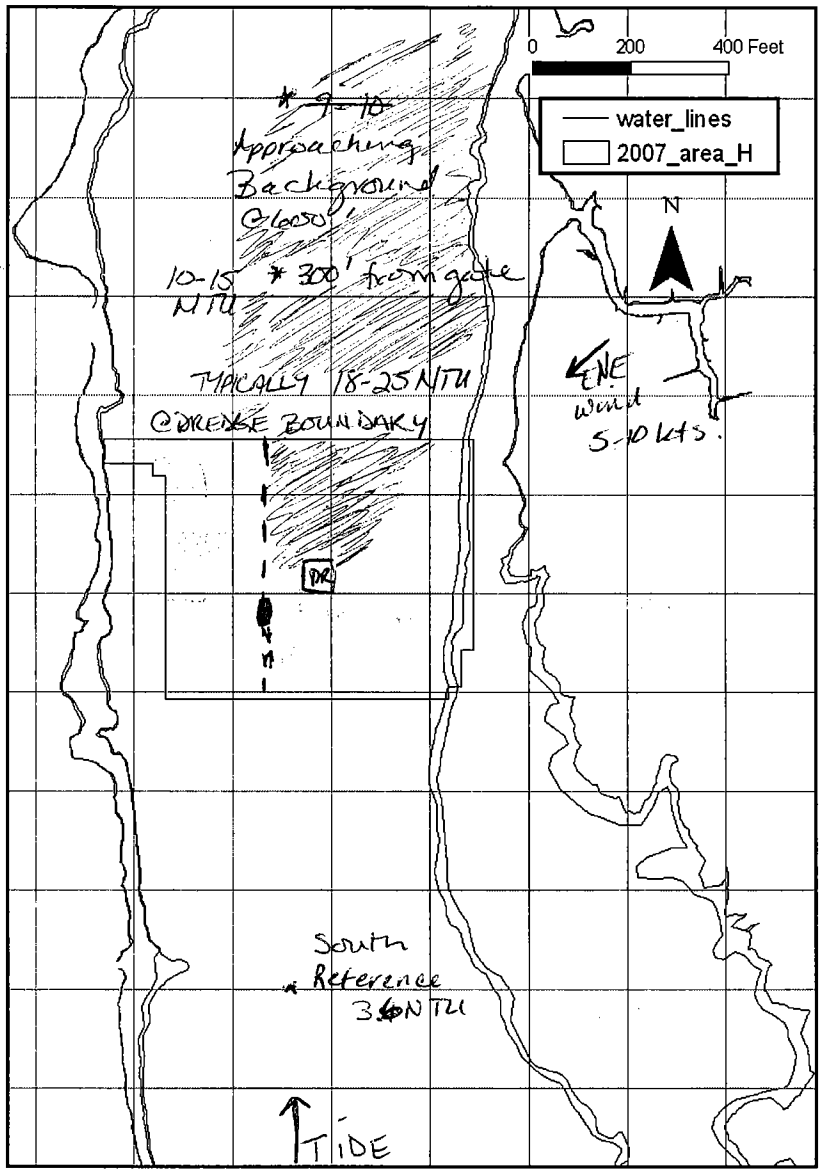
Battelle **Daily Field Summary Sheet for Water Quality Monitoring**

Date: 8/22/07
Weather:
Tides:
2.8' @ 3:16
1.0' @ 8:06
3.6' @ 15:50

Monitoring Period:
From: 0930 **To:** 1200

Tidal Stage: HWS Ebb LWS Flood

Dredging Activity:
DREDGING & DEBRIS REMOVAL



Turbidity Summary

Location	Turbidity (NTU)	Sensor/water Depth (ft)
Ref - South	3.6	1.1'/4.9
BOUNDARY (NORTH)	21.4	1.5/4.2'
300' from BOUNDARY	13.6	1.1'/3.7'

Oil sheen/ Debris: None Noted

Fish Passage: BIRDS NOTED WORKING ABOVE, BELOW & WITHIN DREDGE AREA

Samples Collected for Laboratory Analysis – Sample IDs:
TSS (1L) ~~None~~ **Turbidity (500ml)** ~~None~~
Total PCB (1L) **Dissolved PCB (2x1L)**
Toxicity (21L) **Metals (500ml)**

Notes: Similar to Tuesday 8/21/07: observed widespread but relatively low level plume. Turbidity @ dredge boundary typically averaged 18-25 NTU w/ occasional spikes to 40-60 NTU. at 300' the turbidity had dropped to 10-15 NTU; turbidity values dropped off rapidly between 550-600' from Boundary.

Sampling Crew: M. WALSH ; T. HIMMER
Chief Scientist Signature:

Battelle

Water Quality Monitoring
In situ Data Field Form

Dredging Location	AREA H
Dredging Description	DREDGING & DEBRIS REMOVAL
Survey Vessel	GALE FORCE
Chief Scientist	T. HIMMER
Sampling Technician	M. WALSH
Vessel Captain	WALSH
Other Personnel	N/A
Weather conditions	SUNNY, NE WIND 5-10 kts.

Date	8/22/07
Page	1 of 1

Tide information	
High	2.8' @ 3:16
Low	1.0' @ 8:06
High	3.6' @ ~~3:50~~ 15:50
Low	1.3' @ ~~17~~ 21:25

	Station Number	Time	Latitude	Longitude	Water depth	Sample Depth	Turbidity	Salinity	DO	Temp	Notes
REF	SOUTH of H.	9:39	2703718	815192	4.9'	1.0'	3.6	29.59	5.46	20.83	
MOORING Deployment	South		2704242	815441	4.2'	1.5'	3.3	30.1	5.65	21.2	
MOORING Depl.	North		2705061	815466	4.2'	1.5'	21.4	29.71	5.07	21.43	
~~Dredging~~ Gate	North	11:00	2704986	815365	4.2'	1.7'	42.5	29.89	4.94	21.44	
300' from	GATE	11:14	2705266	815286	3.7	1.1	13.6	29.66	5.16	21.42	

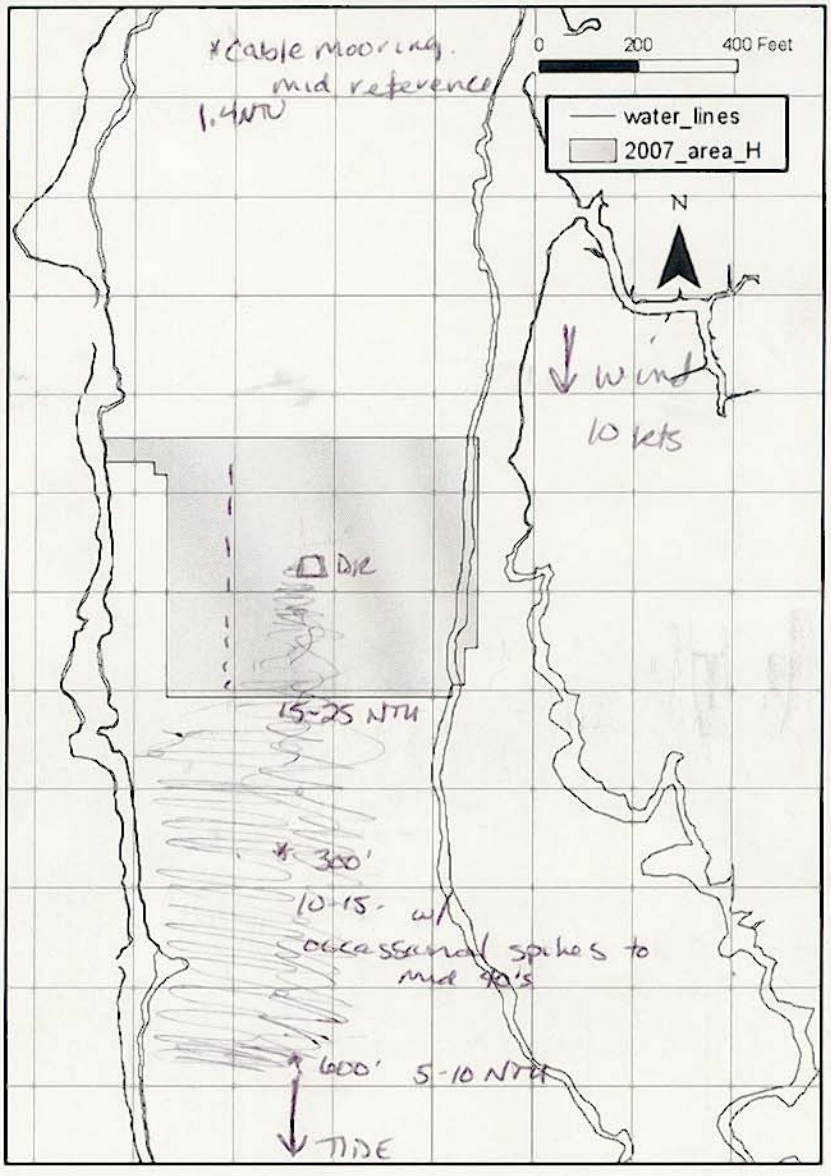
Battelle **Daily Field Summary Sheet for Water Quality Monitoring**

Date: 8/27/07
Weather:
Tides:
4.3' @ 7:39
-0.1' @ 1318
4.8' @ 1959

Monitoring Period:
From: 8:45 **To:** 12:00

Tidal Stage: HWS (Ebb) LWS Flood

Dredging Activity:
Debris Removal area H
Dredging on later morning.



Turbidity Summary

Location	Turbidity (NTU)	Sensor/water Depth (ft)
REF-CABLE MOORING	1.4	1.2
Dredge Bound	21.1	0.66'
300'	10-15 NTU	0.66'

Oil sheen/ Debris: None observed.

Fish Passage: BIRDS WORKING BETWEEN AREAS G & H

Samples Collected for Laboratory Analysis – Sample IDs:
TSS (1L) ~~NONE~~ **Turbidity (500ml)** ~~None~~
Total PCB (1L) **Dissolved PCB (2x1L)**
Toxicity (21L) **Metals (500ml)**

Notes: widespread but ~~too~~ generally low level plume w/ 15-25 NTU @ Dredge boundary; 10-15 NTU @ 300' down current & 5-10 NTU @ 600'. Between 700-750' from boundary turbidity values returned to reference levels.

Sampling Crew: T. Hammer, J. Hardy
Chief Scientist Signature:

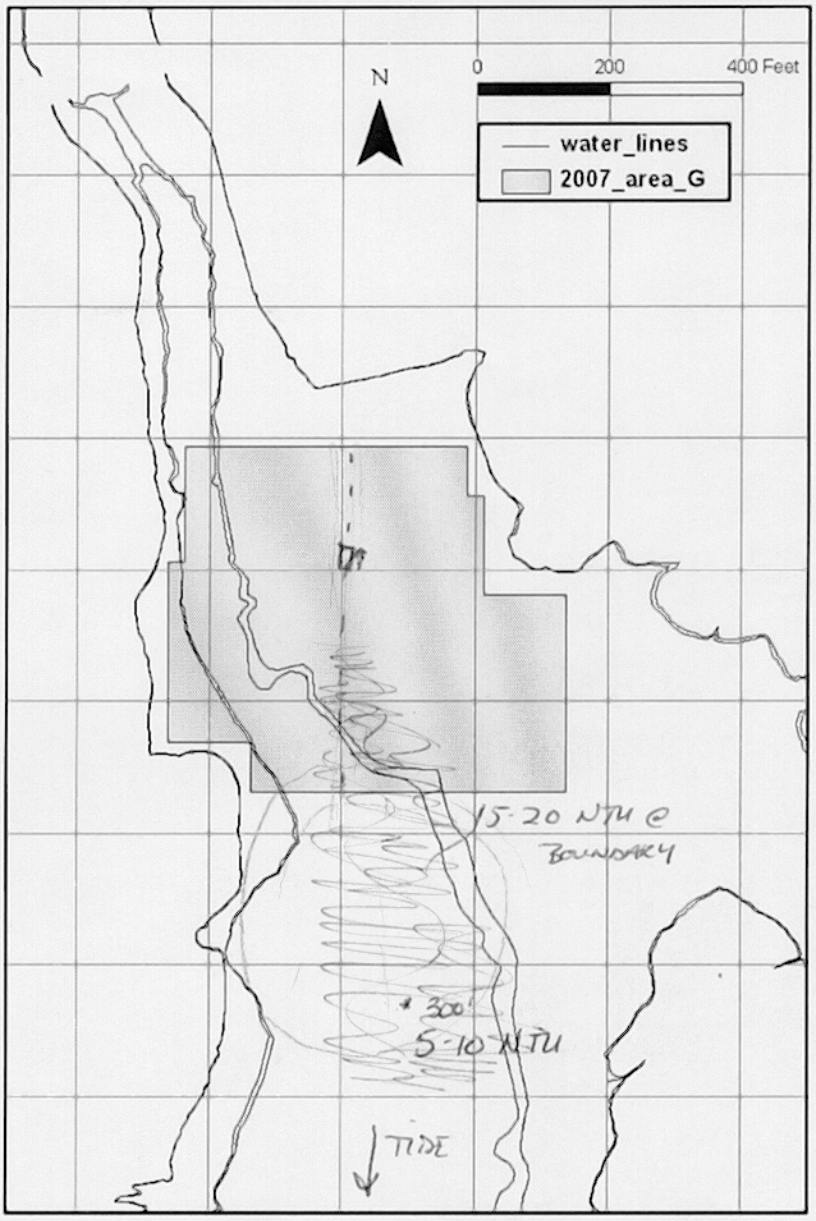
Battelle **Daily Field Summary Sheet for Water Quality Monitoring**

Date: 8/27/07
Weather: Sunny NW wind.
Tides:
4.3' @ 7:39
-0.1' @ 1318
4.8' @ 1959

Monitoring Period:
From: 0845 **To:** 10:45

Tidal Stage: HWS (Ebb) LWS Flood

Dredging Activity:
Dredging only. Debris removed in area H



Turbidity Summary

Location	Turbidity (NTU)	Sensor/water Depth (ft)
South Boundary	~~0.7~~ 23.5	0.72
~300' from Boundary	5-10	0.72

Oil sheen/ Debris: None observed.

Fish Passage: BIRDS WORKING BETWEEN AREAS G & H.

Samples Collected for Laboratory Analysis – Sample IDs:
TSS (1L) ____ **Turbidity (500ml)** ____
Total PCB (1L) ____ **Dissolved PCB (2x1L)** ____
Toxicity (21L) ____ **Metals (500ml)** ____

Notes: 15-20 NTU @ boundry w/ some higher spikes when push boats being used; @ 300' turbidity down to 5-10 NTU; rapidly dropped off after 600'

Sampling Crew: T. Himmer J. Hardy
Chief Scientist Signature: [signature]

Battelle

Water Quality Monitoring
In situ Data Field Form

Dredging Location	AREA ~~N~~ G
Dredging Description	Debris Removal & Dredging
Survey Vessel	GALE FORCE
Chief Scientist	T. Himmer
Sampling Technician	J. HARDY
Vessel Captain	T. Himmer
Other Personnel	N/A
Weather conditions	SUNNY N, NE wind @ 10 kts

Date	8/27/07
Page	of

Tide information	
High	4.3' @ 7:39
Low	-0.1' @ 13:18
High	4.8' @ 19:59
Low	

Station Number	Time	Latitude	Longitude	Water depth	Sample Depth	Turbidity	Salinity	DO	Temp	Notes
MIDREF/ Cable Mooring	0903	2705578.6	815282.82	5.0'	1.2ft	1.4	30.96	NA	24.02	
"	9:28	"	"	5.0'	1.1	1.0	30.1	3.75	24.12	45I from North Mooring
HBoundary South	11:26	2704292	815141	4.4'	0.66	21.1	30.23	3.73	24.72	"
300ft Foamgate	11:46	2704035	815308	7.0'	0.55	42.1	30.18	4.58	24.94	

Battelle **Daily Field Summary Sheet for Water Quality Monitoring**

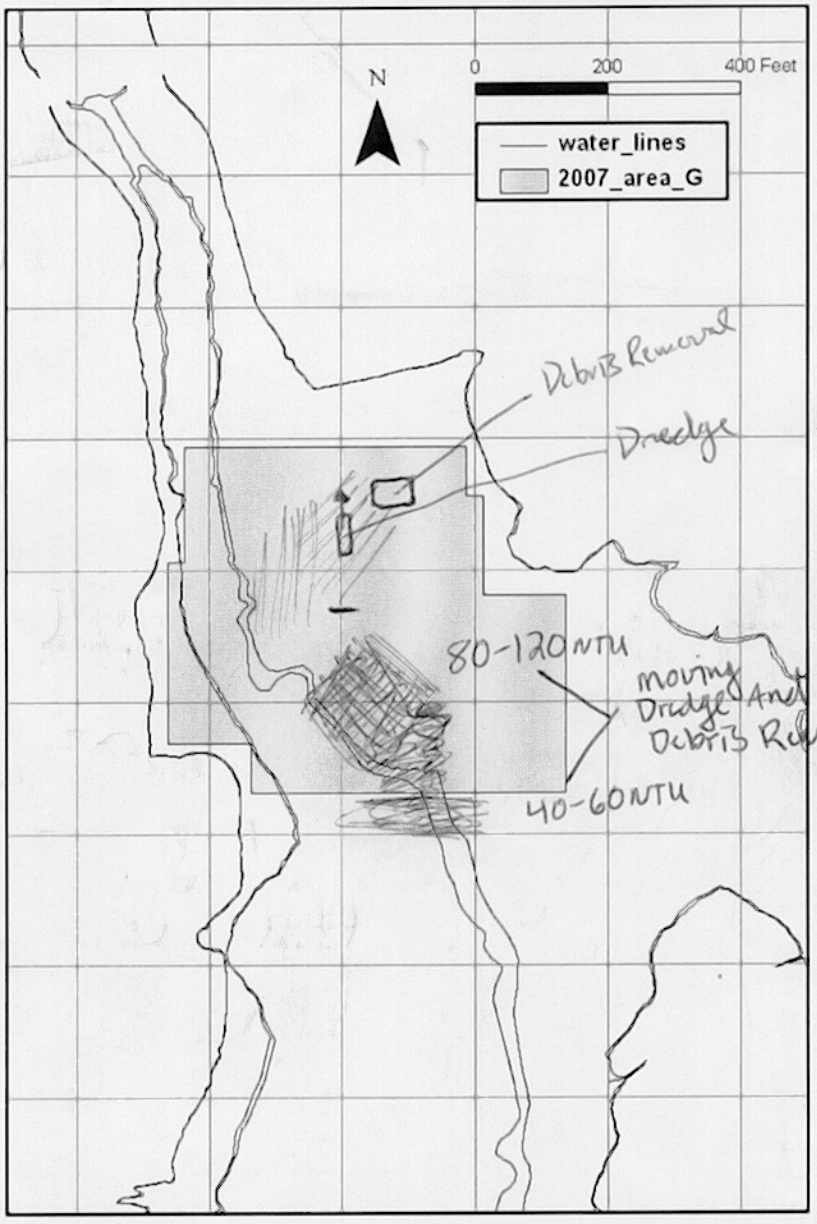
Date: 8-28-07
Weather: Sunny E/NE 5-10
Tides:
high @ 0823
low @ 1407
high @ 2044

Monitoring Period:
From: 0930 **To:** 1250

Tidal Stage: HWS (Ebb) LWS Flood

Dredging Activity:
Dredge working middle east to the North

Debris Removal NE Corner



Turbidity Summary

Location	Turbidity (NTU)	Sensor/water Depth (ft)
Inside Gate South Area G	30.0	.86 / 5.0
1130 Just South Of Area G	40-60	.91 / Approx. 4'

Oil sheen/ Debris:
Thin film with spotty Blotches Concentrated to Dredge + Debris Removal Areas (see below)

Fish Passage: Several small schools and individual fish noted

Samples Collected for Laboratory Analysis – Sample IDs:
TSS (1L) _____ **Turbidity (500ml)** _____
Total PCB (1L) _____ **Dissolved PCB (2x1L)** _____
Toxicity (21L) _____ **Metals (500ml)** _____

Notes: Sheen expanded to west as East North East wind developed.
1120 Heavy sheen and Turbidity counts in Dredge Area when moving debris Removal - Counts continued high off Aerovox but diminished in deeper water.

Sampling Crew: M. Walsh, J. Hardy
Chief Scientist Signature: Michael Walsh

Battelle

Water Quality Monitoring
In situ Data Field Form

Dredging Location	Area G
Dredging Description	Middle East Section of Area Working to North
Survey Vessel	Gale Force
Chief Scientist	Mike Walsh
Sampling Technician	Jessica Hardy
Vessel Captain	Mike Walsh
Other Personnel	
Weather conditions	sunny

Date	8-28-07
Page	of

Tide information	
High	0823
Low	1407
High	2044
Low	

Station Number	Time	Latitude	Longitude	Water depth	Sample Depth	Turbidity	Salinity	DO	Temp	Notes
Wood St. Bridge	1008	815460.7	2708264.1	5.7	.99	10.0	29.5	5.1	25.9	
Ref Mooring NG	1022	815621.9	2707893.9	4.0	.84	8.9	29.7	3.8	24.71	Mooring Site North G2 23 ft north of Gate
Gate South G	0953	815922.8	2707236.6	5.0	.86	30.0	29.9	4.68	24.5	
Ref Mooring SG	1155	816048.9	2707082.3	3.4	.91	21.4	30.1	3.9	24.8	Mooring Site South G2 129' south of Gate

Battelle **Daily Field Summary Sheet for Water Quality Monitoring**

Date: 8/29/07
Weather: Sunny, SSE wind @ 5 kt
Tides:

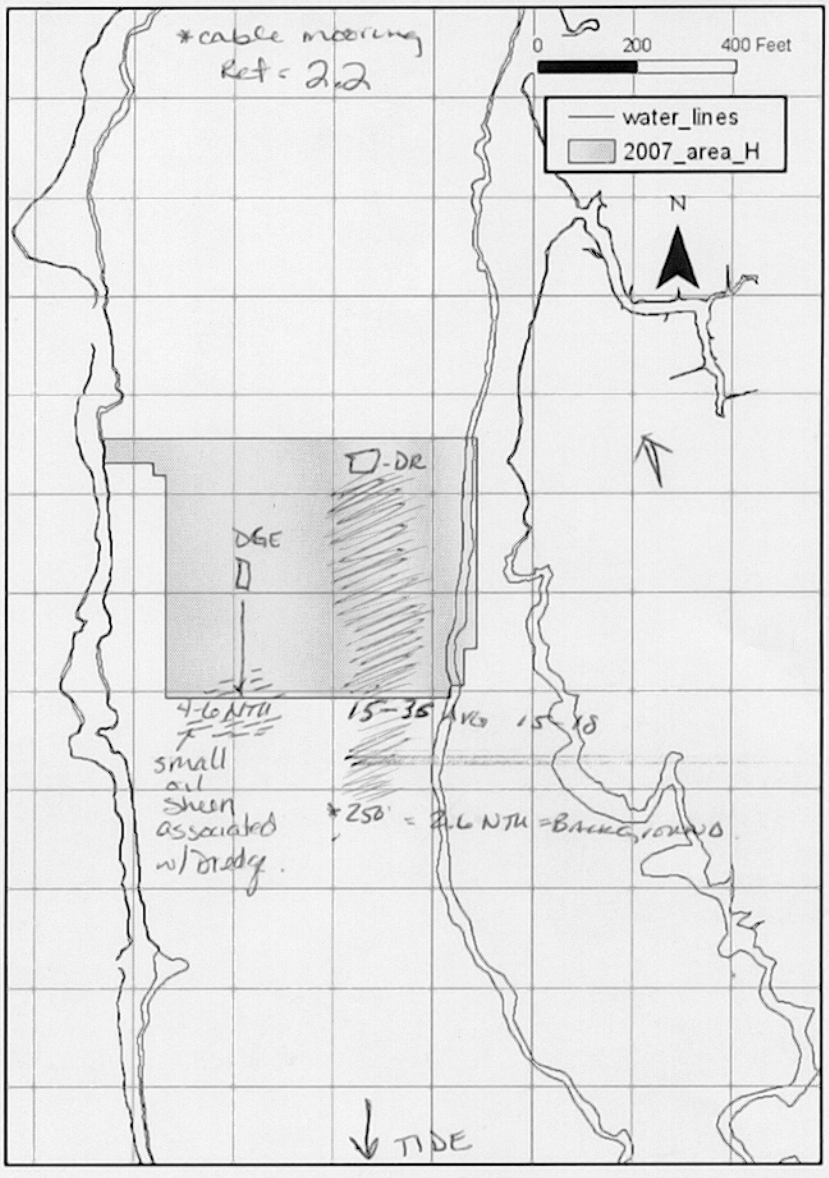
4.9'	@	0908
-0.5'	@	1454
4.8'	@	2129

Monitoring Period:
From: 11:30 **To:** 12:40

Tidal Stage: HWS (Ebb) LWS Flood

Dredging Activity:
Dredging + Debris Removal

Debris removal only from ~11:45 to 12:30



Turbidity Summary

Location	Turbidity (NTU)	Sensor/water Depth (ft)
REF.	2.2	0.7/4.7'
Boundary near Dredge	4-6 NTU	0.7'
Boundary near Debris Removal	15-35 NTU	0.7

Oil sheen/ Debris:
Small sheen observed south of dredge; did not extend more than ~60' from Dredge Area.
Fish Passage: birds working North; south of dredge area. Observed numerous baitfish south of Area H.
Samples Collected for Laboratory Analysis – Sample IDs:
TSS (1L) — **Turbidity (500ml)** —
Total PCB (1L) — **Dissolved PCB (2x1L)** —
Toxicity (21L) — **Metals (500ml)** —

Notes: DO Data not collected due to faulty sensor. Highest turbidity readings associated with the debris removal. Dredge only appeared to increase turbidity by 2-4 units.

Sampling Crew: T. Himmer, J Hardy
Chief Scientist Signature: [signature]

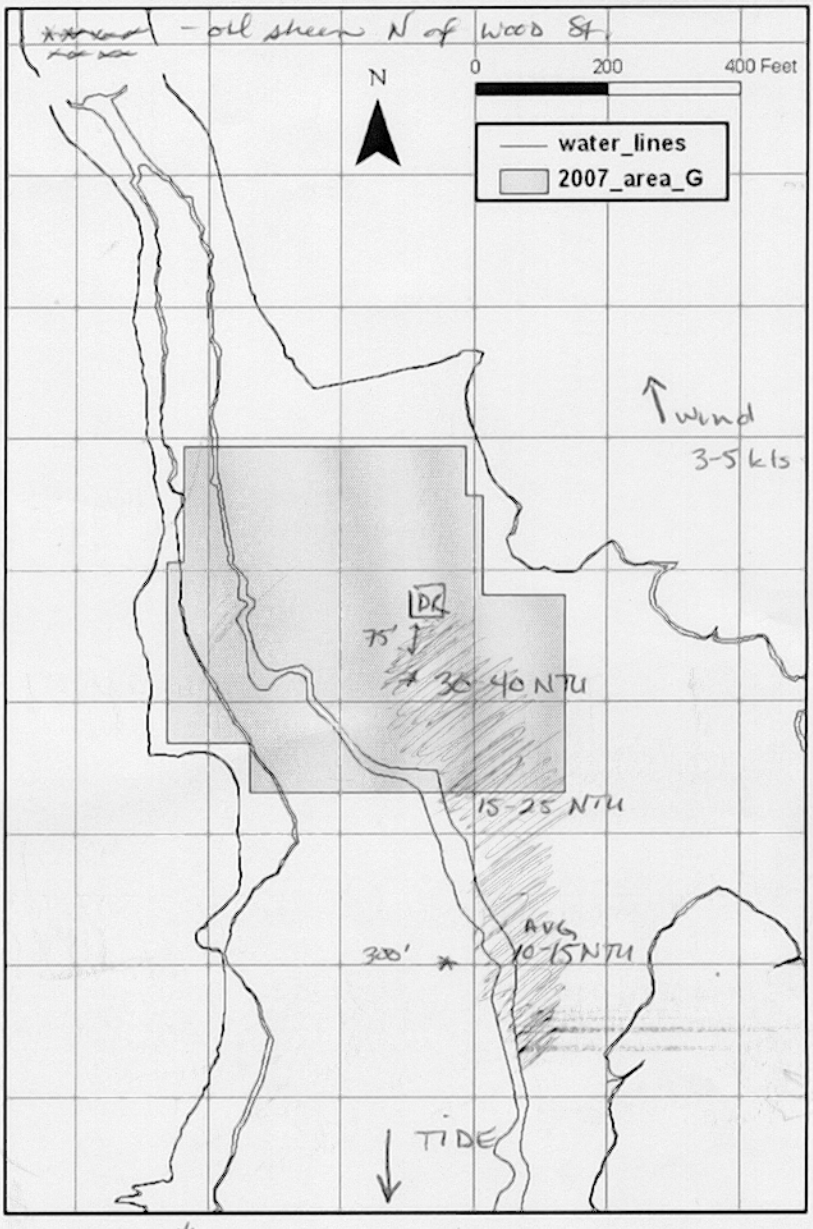
Battelle **Daily Field Summary Sheet for Water Quality Monitoring**

Date: 8/29/07
Weather: Sunny, minimal wind out of south
Tides:
4.9' @ 0908
-0.5' @ 1454
4.8' @ 2129

Monitoring Period:
From: 0920 **To:** 11:30

Tidal Stage: HWS Ebb LWS Flood

Dredging Activity:
Debris Removal



Turbidity Summary

Location	Turbidity (NTU)	Sensor/water Depth (ft)
REF Wood St Bridge	9.1	0.7/7'
75' from Debris Removal	30.5	0.9/3.6'
Dredge Boundary	17.2	0.7/5.1
300' from Boundary	10-15 NTU	0.9/5.6

Oil sheen/ Debris:
Oil sheen noted north of Wood St (~350' North of Bridge) ~~due~~ to before tide started racing out.

Fish Passage: Large numbers of bait fish working immediately south of Wood St. ~~Dr~~

Samples Collected for Laboratory Analysis – Sample IDs:
The TSS (1L) WQ-TSS/THR-001-004-082907 **Turbidity (500ml)** - See Left.
Total PCB (1L) — **Dissolved PCB (2x1L)** —
Toxicity (21L) — **Metals (500ml)** —

Notes: DO data not collected due to bad sensor. Values averaged 15-25 NTU @ Dredge Boundary; decreased with distance down current. No exceedences noted.

Sampling Crew: T. Hemmer J Hardy
Chief Scientist Signature: [signature]

Battelle

Water Quality Monitoring
In situ Data Field Form

Dredging Location	AREA H & AREA G
Dredging Description	Dredging & Debris Removal - Dredging in Area H Debris Removal in G
Survey Vessel	GALE FORCE
Chief Scientist	T. Himmer
Sampling Technician	J Hardy
Vessel Captain	T Himmer
Other Personnel	N/A
Weather conditions	Sunny, ~~wind from~~ S wind @ ~5 kts

Date	8/29/07
Page	1 of 1

Tide information	
High	4.9' @ 0908
Low	-0.5' @ 1454
High	4.8' @ 2129
Low	

	Station Number	Time	Latitude	Longitude	Water depth	Sample Depth	Turbidity	Salinity	DO	Temp	Notes
AREA G	WOOD ST REF	10:10	2708297	815468	7.0	0.7	9.1	30.19	NA ①	24.7	WQ-TSS/TUR-001-082907
	"	10:12	↓	↓	↓	↓	↓	↓	↓	↓	WQ-TSS/TUR-001-082907 DUP
	AREA G, 75 from Debris Removal	10:35	2707403	815930	3.6	0.9	30.5	30.5	NA	25.0	WQ-TSS/TUR-002-082907
	Dredge Bound.	11:00	2707174	816015	5.1	0.7	17.2	30.5	NO	25.2	WQ-TSS/TUR-003-082907
	300' from Dredge Bound	11:21	2706926	816015	5.4	0.9	16.7	30.5	—	25.5	WQ-TSS/TUR-004-082907
MID	MOORING REF	11:35	2705626	815278	4.7	0.7	2.2	30.7	—	24.8	NA

① Bad DO sensor, ~~Moorings~~ DO data not collected. TH 8/29/07

Battelle **Daily Field Summary Sheet for Water Quality Monitoring**

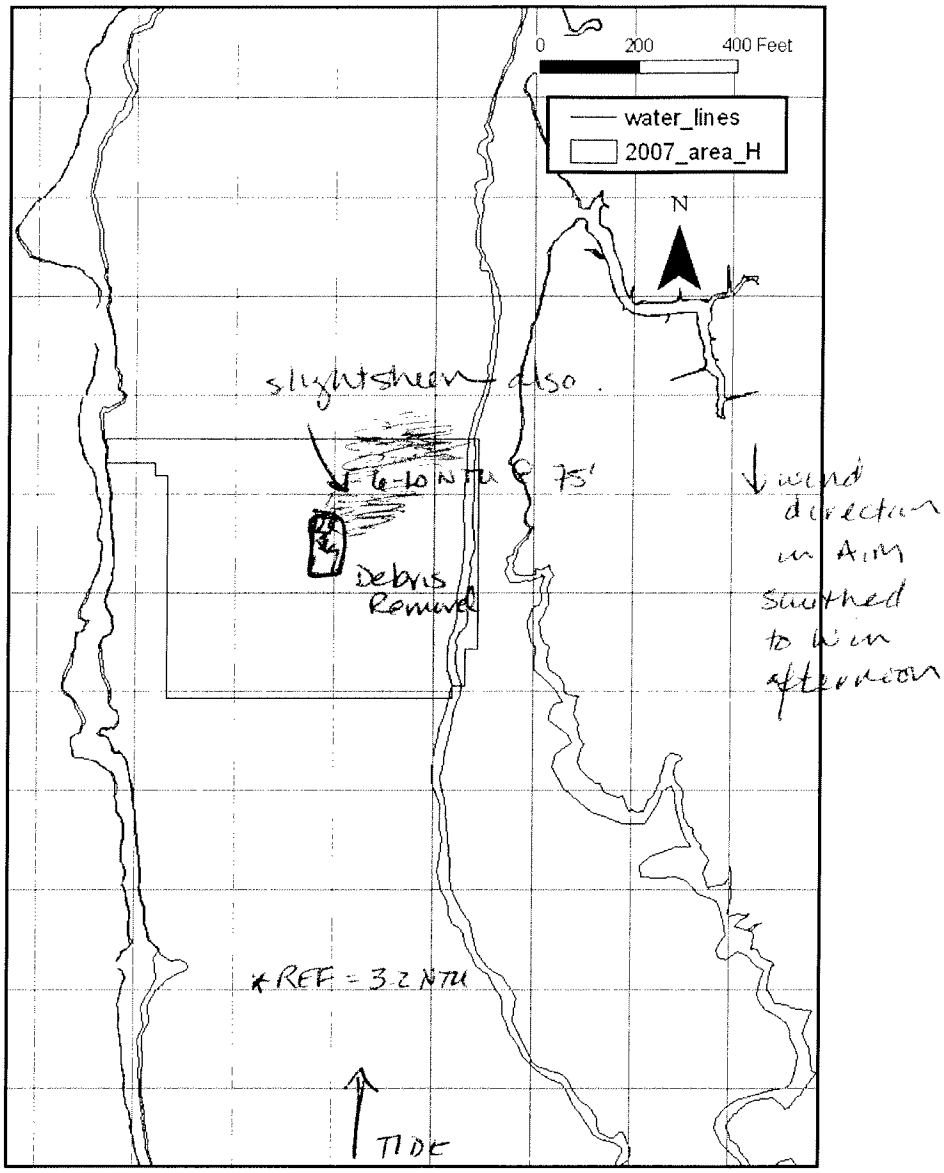
Date: 9/4/07
Weather: Mostly Sunny Wind NE 5
Tides:
0.4 @ 0719
4.4 @ 1432
0.8 @ 2053

Monitoring Period:
From: 0930 **To:** 1340

Tidal Stage: HWS Ebb LWS Flood

Dredging Activity:
ON Hold until ~11:15-11:30

Debris Removal from ~11:15 to 13:30



Turbidity Summary

Location	Turbidity (NTU)	Sensor/water Depth (ft)
REF	32	0.6/5.8
~75' from Debris Removal	6-10	1.0

Oil sheen/ Debris:
light sheen noted Northwest of Debris Removal

Fish Passage: Birds noted above and below work area.

Samples Collected for Laboratory Analysis – Sample IDs:
TSS (1L) _____ **Turbidity (500ml)** _____
Total PCB (1L) _____ **Dissolved PCB (2x1L)** _____
Toxicity (21L) _____ **Metals (500ml)** _____

Notes: Due to holiday dredging started later. Moorings from around area G were retrieved. Slight elevations in turbidity seen associated with debris removal (6-10 NTU @ 75-80' away).

Sampling Crew: T. Hammer, M. Walsh
Chief Scientist Signature: [signature]

Battelle

Water Quality Monitoring
In situ Data Field Form

Dredging Location	Area H
Dredging Description	on Hold
Survey Vessel	Gale Force
Chief Scientist	T. Himmer
Sampling Technician	M. Walsh
Vessel Captain	M. Walsh
Other Personnel	–
Weather conditions	Mostly Sunny Wind – N @ 5

Date	9/4/07
Page	of

Tide information	
High	5.5' @0155
Low	0.4' @ 7:19
High	4.4' @ 14.32
Low	0.8' @2053

Station Number	Time	Latitude	Longitude	Water depth	Sample Depth	Turbidity	Salinity	DO	Temp	Notes
Ref South	1122	270365.5	815258.0	5.8	.6	3.2	31.29	2.93	23.1	

Battelle **Daily Field Summary Sheet for Water Quality Monitoring**

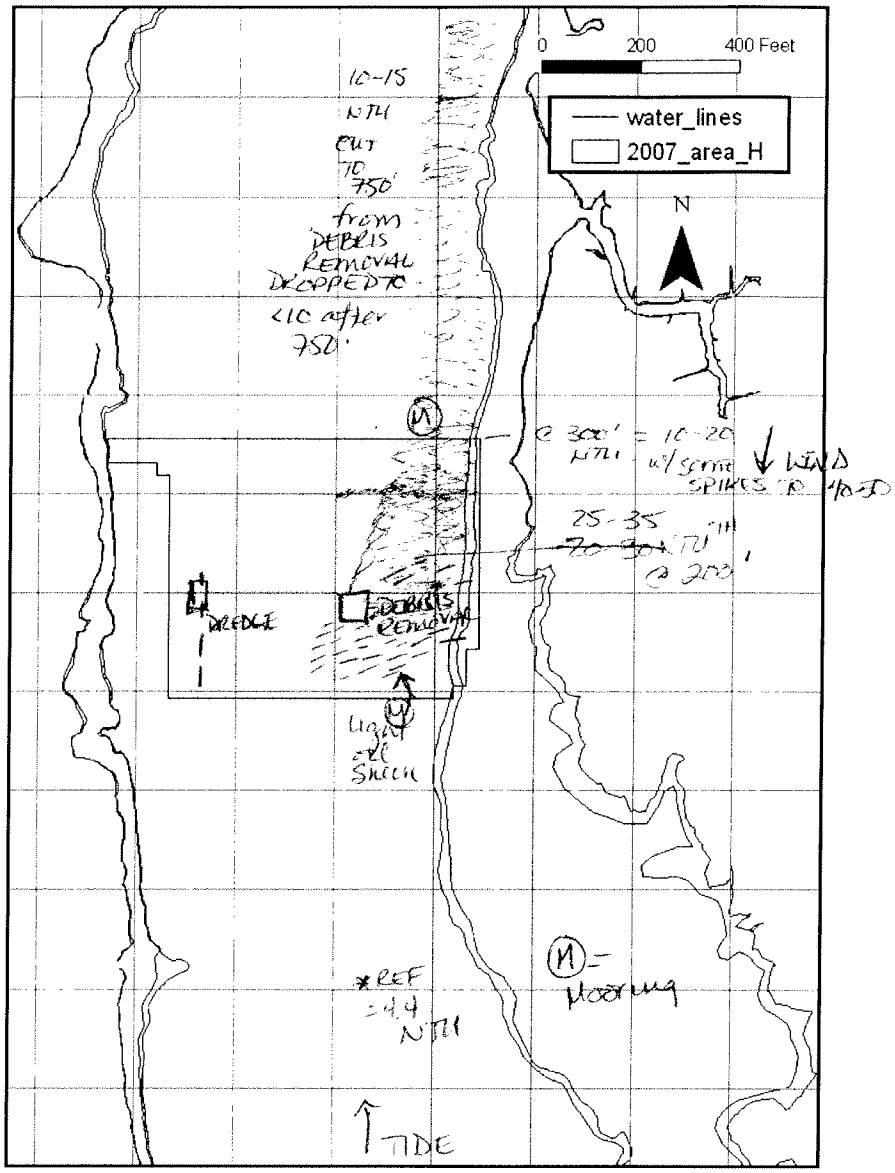
Date: 9/5/07
Weather:
Tides:
3.3' @ 0304
0.6' @ 0835
4.3' @ 1540

Monitoring Period:
From: 9 30 **To:** 12 50

Tidal Stage: HWS Ebb LWS Flood

Dredging Activity:

MOSTLY DEBRIS REMOVAL, DREDGE WASN'T ACTIVE ENTIRE TIME.



Turbidity Summary

Location	Turbidity (NTU)	Sensor/water Depth (ft)
REF	4.4	0.7 / 47'
200' from DEBRIS REMOVAL	30 NTU	0.8
300' from DEBRIS REMOVAL	15 NTU	0.7

Oil sheen/ Debris:
OBSERVED LIGHT OIL SHEEN DURING LATE MORNING TO SOUTH ~~WEST~~ / EAST OF DEBRIS REMOVAL - CONTAINED BY BOOMS.
Fish Passage: BIRDS WORKING ABOVE & BELOW DREDGE UNIT.

Samples Collected for Laboratory Analysis – Sample IDs:
TSS (1L) ____ **Turbidity (500ml)** ____
Total PCB (1L) ____ **Dissolved PCB (2x1L)** ____
Toxicity (21L) ____ **Metals (500ml)** ____

Notes: ~~DET~~ OBSERVED A WIDESPREAD TURBIDITY PLUME TO THE NORTH & ~~WEST~~ EAST OF THE DEBRIS REMOVAL. TURBIDITY VALUES TYPICALLY RANGED FROM 25-35 NTU @ 200' AND 10-20 NTU AT ~300' FROM THE DEBRIS REMOVAL. ~~BEA~~ OCCASSIONAL HIGHER SPIKES WERE OBSERVED WERE VALUES REACHED 40-50 NTU at 275 to 300', THESE SPIKES (cont)

Sampling Crew: Theresa Hemmer, Jessica Hardy
Chief Scientist Signature: [signature]

(cont) were spatially & temporally short lived and were not sampled because they dissipated quickly.

Battelle

Water Quality Monitoring
In situ Data Field Form

Dredging Location	AREA H
Dredging Description	MOSTLY DEBRIS REMOVAL, SOME DREDGING
Survey Vessel	RV GALE FORCE
Chief Scientist	T. HIMMER
Sampling Technician	Jessica Hardy
Vessel Captain	T. HIMMER
Other Personnel	NA.
Weather conditions	Sunny, N wind up to 10kts.

Date	9/5/07
Page	1 of 1

Tide information		
High	0304	3.3'
Low	0835	0.6'
High	1546	4.3'
Low	2229	0.7'

Station Number	Time	Latitude	Longitude	Water depth	Sample Depth	Turbidity	Salinity	DO	Temp	Notes
REF	0930	2703527	815441	4.7'	0.7	4.4	31.7	5.29	22.17	upcurrent ref
H SOUTH	0946	2704262.9	815478.3	3.1	0.8	4.0	31.53	5.73	21.79	Mooring Deployment
MOORING										
H NORTH	1236	2704988	815574.9	3.9	0.8	12.4	31.76	5.99	23.27	"
MOORING										

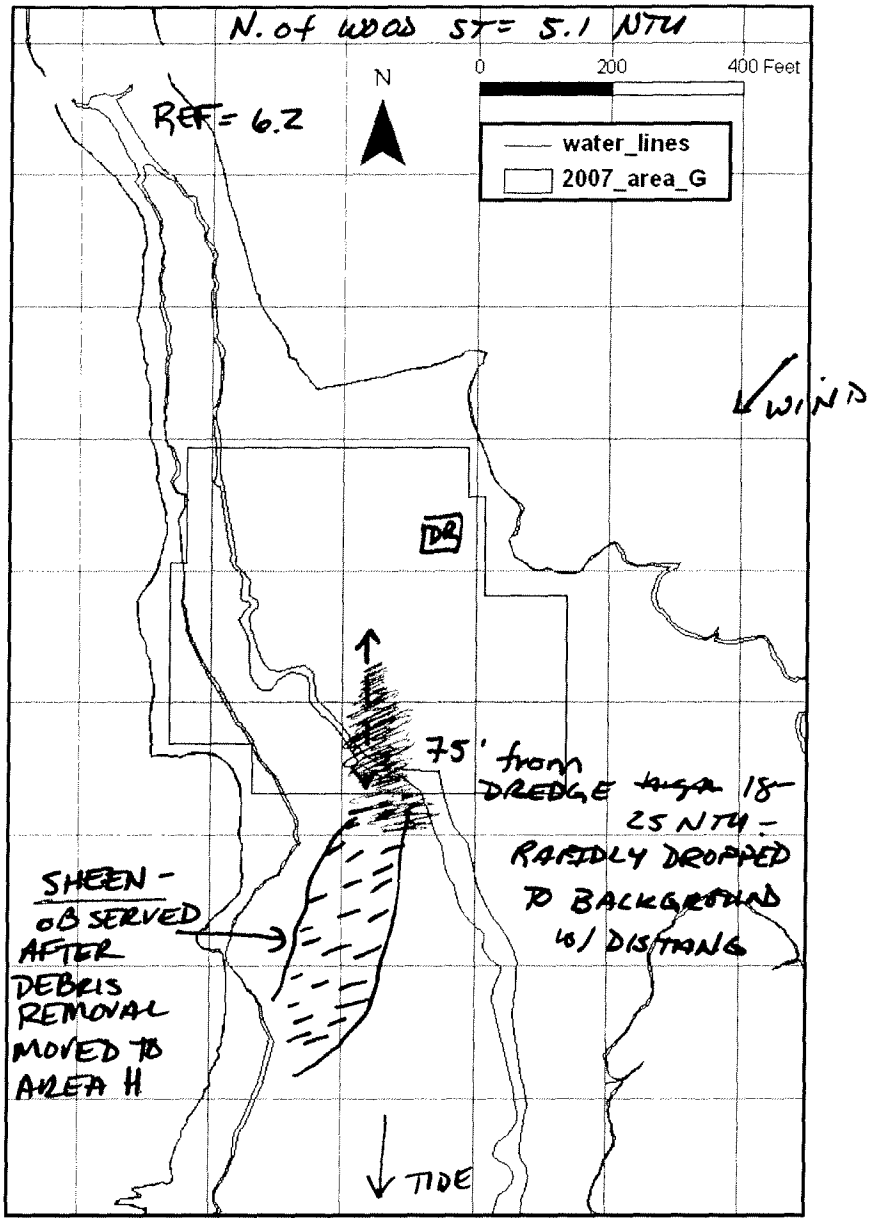
Battelle **Daily Field Summary Sheet for Water Quality Monitoring**

Date: 9/10/07
Weather: OVERCAST, RAINY
Tides:
4.4' @ 7:38
0.1' @ 13:54
4.5' @ 19:59

Monitoring Period:
From: 0900 **To:** 10:15

Tidal Stage: HWS (Ebb) LWS Flood

Dredging Activity:
DREDGING; SOME DEBRIS REMOVAL EARLY ON. DEBRIS REMOVAL BARGE MOVED TO AREA H @ 9:45



Turbidity Summary

Location	Turbidity (NTU)	Sensor/water Depth (ft)
REF	6.2	0.7
75' from DREDGE	18-25	0.7'

Oil sheen/ Debris:
HEAVY SHEEN OBSERVED SOUTH OF DREDGE AREA;

Fish Passage: LARGE NUMBER OF GULLS WORKING IN AND AROUND DREDGE UNIT.

Samples Collected for Laboratory Analysis – Sample IDs:
TSS (1L) _____ **Turbidity (500ml)** _____
Total PCB (1L) ~~_____~~ NN **Dissolved PCB (2x1L)** ~~_____~~ NN
Toxicity (21L) _____ **Metals (500ml)** _____

Notes: Localized turbidity plume noted 75-100' from dredge; beyond 1/100' units returned quickly to background.

Sampling Crew: T. HAMMER, J.C. HARDY
Chief Scientist Signature: [signature]

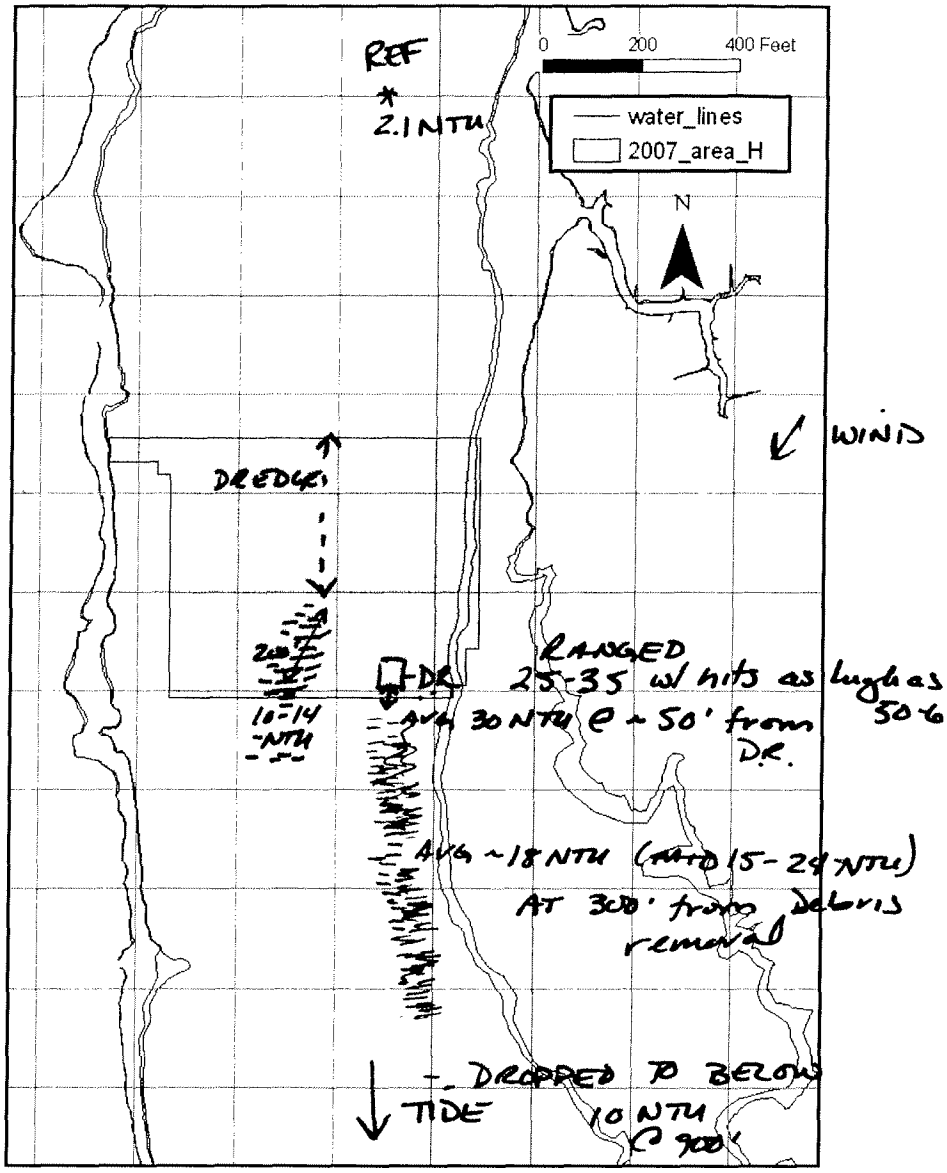
Battelle Daily Field Summary Sheet for Water Quality Monitoring

Date: 9/10/07
Weather: OVERCAST,
Tides:
4.4' @ 7:38
0.1' @ 13:54
4.5' @ 19:59

Monitoring Period:
From: 10:15 To: 12:45

Tidal Stage: HWS (Ebb) LWS Flood

Dredging Activity:
DEBRIS REMOVAL; MOVE & SET UP DREDGE, MOVING GATES.



Turbidity Summary

Location	Turbidity (NTU)	Sensor/water Depth (ft)
REF	2.1	0.76
200' SOUTH OF DREDGE	12	0.8/4.3
50' SOUTH OF DEBRIS REMOVAL	29	0.8/3.2

Oil sheen/ Debris:
SMALL, BUT HEAVY SHEEN OBSERVED SOUTH OF DEBRIS REMOVAL. EXTRA BOOMS ADDED.

Fish Passage: BIRDS WORKING SOUTH OF DREDGE UNIT; LARGE NUMBERS OF FISH JUMPING IN SOUTHWEST CORNER.

Samples Collected for Laboratory Analysis – Sample IDs:
TSS (1L) / Turbidity (500ml) /
Total PCB (1L) / Dissolved PCB (2x1L) /
Toxicity (21L) / Metals (500ml) /

Notes: DO. VALUES RANGED FROM 3-4; generally 3.5 to 3.7 mg/L.
- NARROW TURBIDITY PLUME FROM DEBRIS REMOVAL DETECTED OUT TO ~700'
- TURBIDITY ASSOC'D W/ DREDGE REMAINED IN MID TEENS TO ~200'; DROPPED RAPIDLY.

Sampling Crew: J.C. HARDY; TM. HIMMER.
Chief Scientist Signature: [signature]

Battelle

Water Quality Monitoring
In situ Data Field Form

Dredging Location	DREDGING + DEBRIS REMOVAL IN AREA G
Dredging Description	✓
Survey Vessel	GALE FORCE
Chief Scientist	T. HIMMER
Sampling Technician	J C. HARDY
Vessel Captain	T. HIMMER
Other Personnel	D/H
Weather conditions	OVERCAST, RAINY

Date	9/10/09
Page	1 of 1

Tide information	
High	4.4' @ 7.38
Low	0.1' @ 13.54
High	4.5' @ 19.59
Low	

Station Number	Time	Latitude	Longitude	Water depth	Sample Depth	Turbidity	Salinity	DO	Temp	Notes
N of Wood St.	0918	2725916	815413	5.5	0.72	5.1	29.53	1.7	23.76	~[illegible] N of Wood St.
WOOD ST REF	0932	2708266	815467	6.7	0.75	6.4	29.84	2.39	23.41	
AREA H REF	10:20	2705721	815557	4.8	0.76	2.8	30.95	3.74	23.04	AT CABLE CROSSING

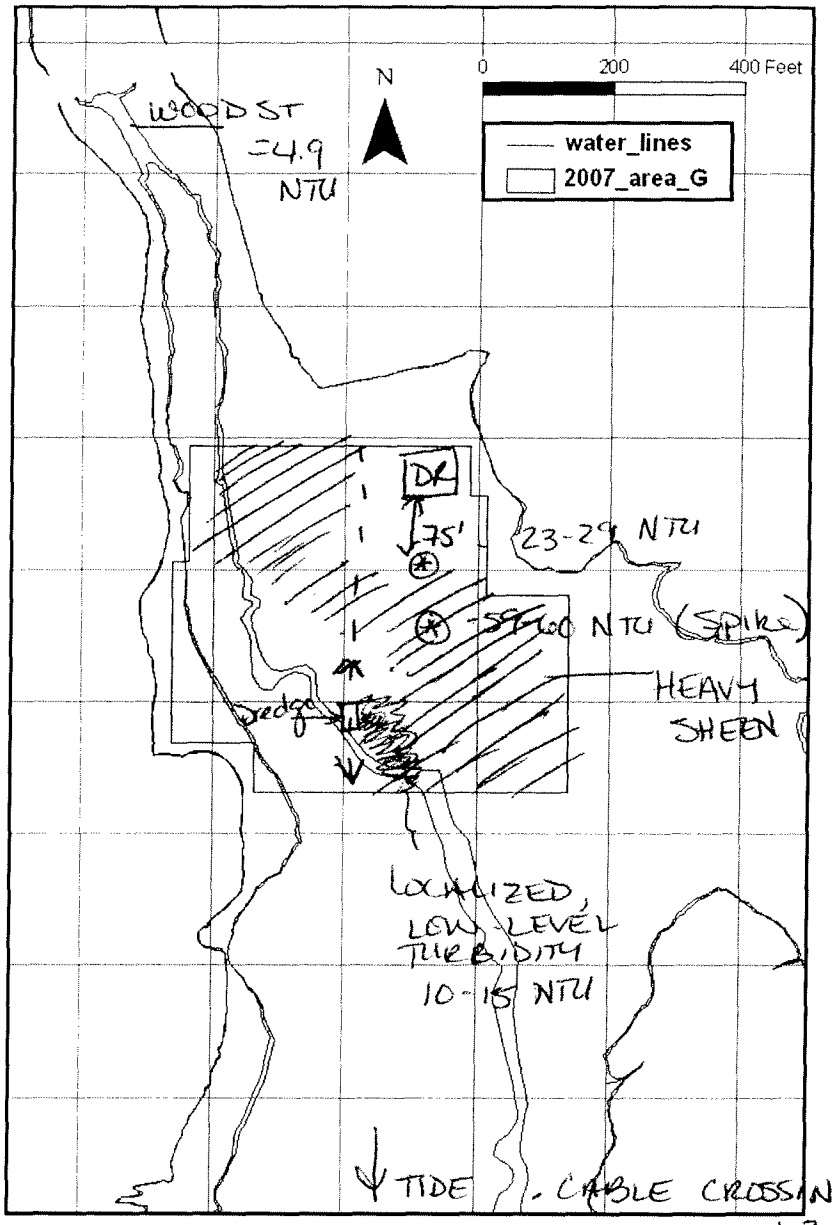
Battelle **Daily Field Summary Sheet for Water Quality Monitoring**

Date: 9/11/07
Weather: Overcast
Tides:
High 4.5 @ 0819
Low 0.1 @ 1428
High 4.4 @ 2039

Monitoring Period:
From: 0745 **To:** 11:30

Tidal Stage: HWS Ebb LWS Flood

Dredging Activity:
Dredging & Debris Removal



Turbidity Summary

Location	Turbidity (NTU)	Sensor/water Depth (ft)
WOOD ST REF	4.9	0.6 / 6.0
CABLE CROSSING (SOUTH)	~~4.9~~ 1.3 TH	0.72 / 6.2

Oil sheen/ Debris:
VERY HEAVY SHEEN NOTED; APPEARED TO BE ASS'D MOSTLY W/ THE DEBRIS REMOVAL

Fish Passage: ~~Several~~ * NUMEROUS DEAD HERRING (?); POSSIBLE MENHADEN WITHIN & SOUTH OF DREDGE AREA. (SEVERAL HUNDRED)

Samples Collected for Laboratory Analysis – Sample IDs:
TSS (1L) WQ-TSS/TUR 001-003-091107 TH **Turbidity (500ml)** See left
Total PCB (1L) WQ-TPC-001-003L 091107 **Dissolved PCB (2x1L)** WQ-DPC-001-003-091107
Toxicity (21L) WQ-TOX 001-003-091107 **Metals (500ml)** WQ-MET-001-004-091107

Notes: COE WAS NOTIFIED OF FISH KILL; Debris Removal shut down & additional oil booms deployed. Diss. Oxy values ranged from 1.47 to 2.75 mg/L.

Sampling Crew: T. Himmer, M. Walsh
Chief Scientist Signature: [signature]

Battelle

Water Quality Monitoring
In situ Data Field Form

Dredging Location	Area G
Dredging Description	Dredging + Debris Removal
Survey Vessel	Gale Force
Chief Scientist	T. Himmer
Sampling Technician	M. Walsh
Vessel Captain	M. Walsh
Other Personnel	—
Weather conditions	overcast

Date	9/11/07
Page	of

Tide information	
High	4.5 @ 0819
Low	0.1 @ 1428
High	4.4 @ 2039
Low	

	Station Number	Time	Latitude	Longitude	Water depth	Sample Depth	Turbidity	Salinity	DO	Temp	Notes
Ref Mid		0751	2705780.03	815591.00	6.2	.72	1.3	29.95	2.40	22.15	
Mooring	G South	0807	2707026.83	816098.40	7.0	.3	1.4	29.67	2.07	22.4	WQ Ref for Mooring G South
Mooring	G North	0836	2707904.12	815673.24	6.0	.6	3.5	29.7	2.75	22.41	WQ Ref for Mooring G North
Ref	Wood St Bridge	0857	2708263.77	815456.44	7.1	.6	4.9	29.5	2.49	22.28	WQ-~~xxx~~-001-091107 9-01
							~~23-99~~				WQ-xxx-001 091107-Dup ①
75' from DC-	~~115 NTU~~ ~~80 NTU~~ ~~TOO~~ ~~23-29 NTU~~	0945	2707619	815972	4.0'	1.2	~~115.1~~ 23-29 NTU	29.69	1.42	22.37	WQ-xxx-002 ~~Dup~~
	100 NTU	10:15	2707557.43	815953.3	4.0	1.2	59-6	29.80	1.79	22.35	WQ-xxx-003-091107
	EQ Blank	10:50	↓	↓							WQ-PCB-004-091107-EB -MET

Dups for PCB + TSS/TUR

Battelle Daily Field Summary Sheet for Water Quality Monitoring

Date: 7/12/2007 West/NW
Weather: Sunny/Clear Breezy 10-20

Tides:

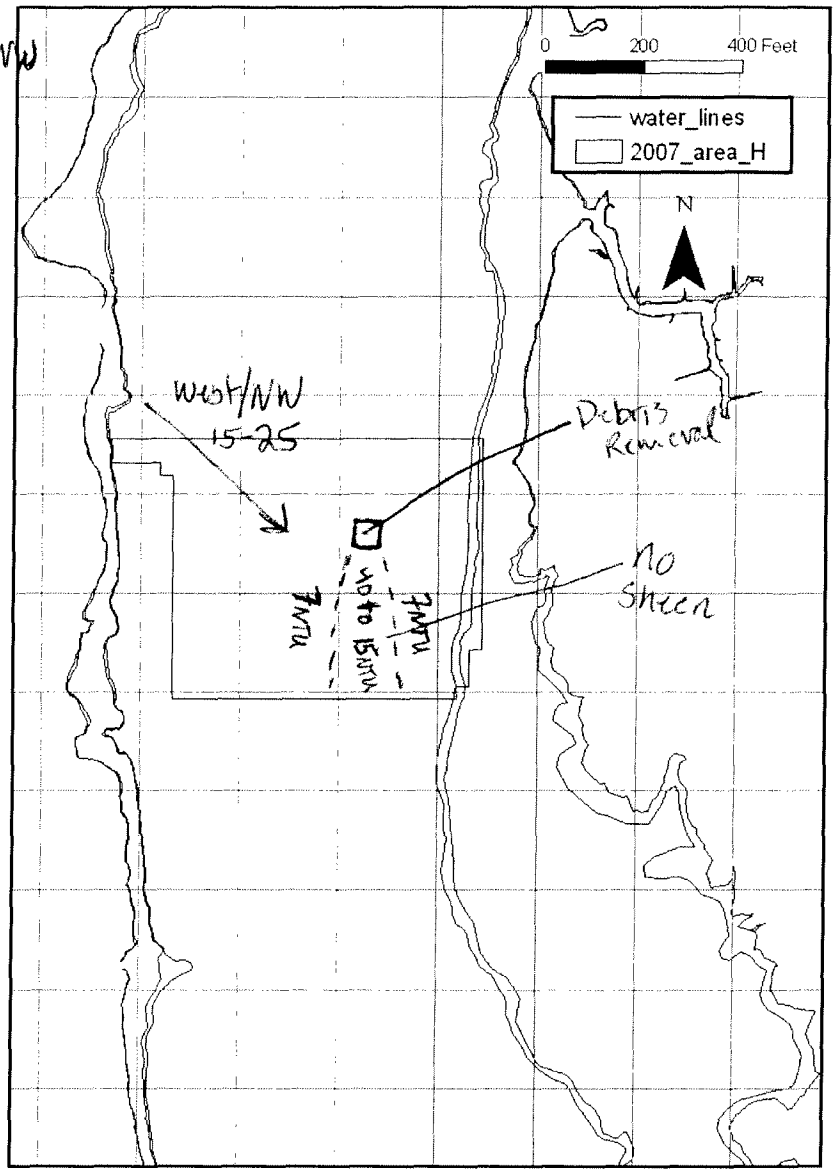
4.6	@	0859
0.1	@	1458
4.3	@	2117

Monitoring Period:
From: 0810 **To:** 1230

Tidal Stage: HWS (Ebb) LWS Flood

Dredging Activity:
AM. No Dredging

Debris Removal (middle East) of Area H
0840 Dpt for Area G



Turbidity Summary

Location	Turbidity (NTU)	Sensor/water Depth (ft)
100' East of DR	4.0 NTU	1.0'

Oil sheen/ Debris:
No sheen

Fish Passage: occasional Fish on surface

Samples Collected for Laboratory Analysis – Sample IDs:

TSS (1L)		**Turbidity (500ml)**	
Total PCB (1L)		**Dissolved PCB (2x1L)**	
Toxicity (21L)		**Metals (500ml)**	

Notes: Thin Band of Turbidity 40 to 15 NTU Associated with debris Removal Decreasing North to South.

Sampling Crew: M Walsh, J. Hardy
Chief Scientist Signature: Mark Walsh

Battelle Daily Field Summary Sheet for Water Quality Monitoring

Date: 9/12/2007
Weather: Sunny/Clear Breezy West/NW 10-20

Tides:

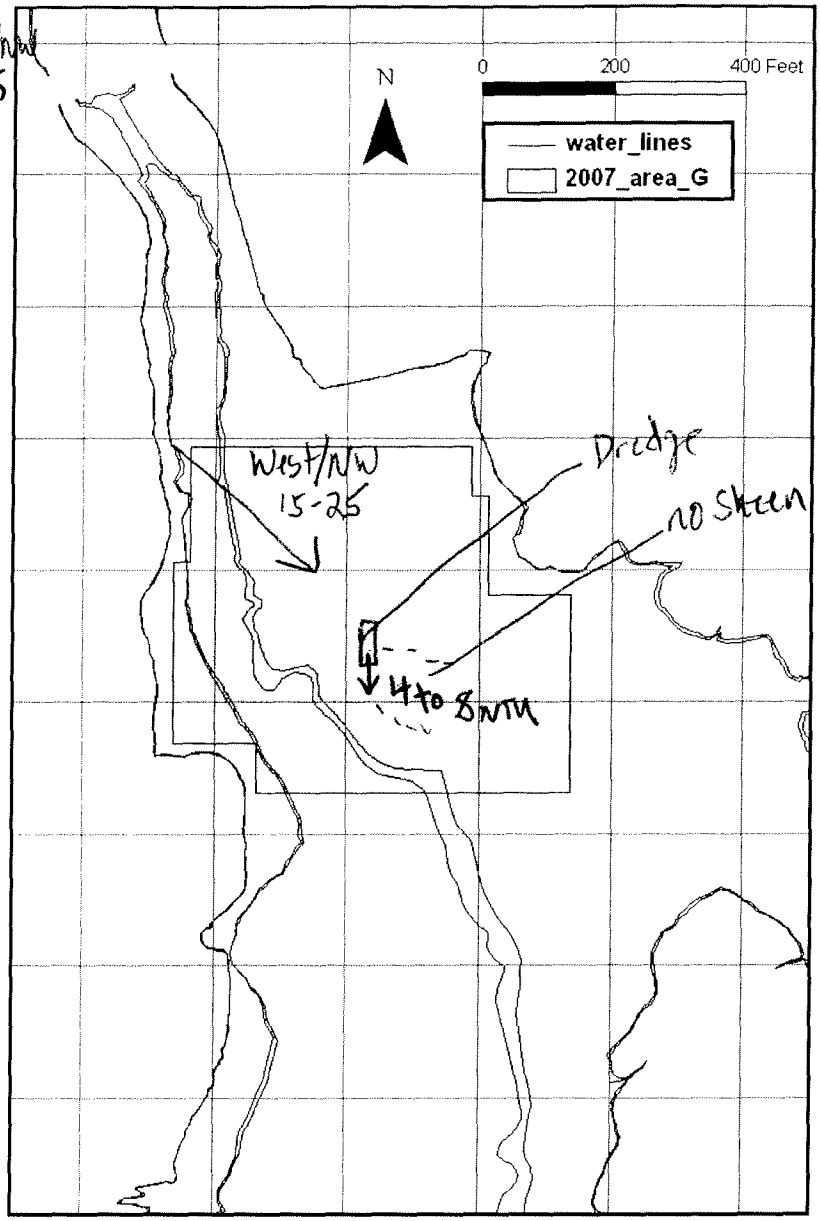
4.6	@	0859
0.1	@	1458
4.3	@	2117

Monitoring Period:
From: 0847 **To:** 1055

Tidal Stage: HWS (Ebb) LWS Flood

Dredging Activity:
middle working North to South

1055 Depart for Area H



Turbidity Summary

Location	Turbidity (NTU)	Sensor/water Depth (ft)
100' East of Dredge	4 - 8 NTU	1.0'/4.6

Oil sheen/ Debris:
No sheen Associated with Dredge

Fish Passage: Sporadic Fish passage - Occasional dead Fish

Samples Collected for Laboratory Analysis – Sample IDs:

TSS (1L)		**Turbidity (500ml)**	
Total PCB (1L)		**Dissolved PCB (2x1L)**	
Toxicity (21L)		**Metals (500ml)**	

Notes: Turbidity from Dredge rarely exceeded Background (7.6 NTU)

Sampling Crew: M Walsh, J Hardy
Chief Scientist Signature: Mike Walsh

Battelle

Water Quality Monitoring
In situ Data Field Form

Dredging Location	Area G
Dredging Description	
Survey Vessel	Gale Force
Chief Scientist	M. Walsh
Sampling Technician	J. Hardy
Vessel Captain	M. Walsh
Other Personnel	–
Weather conditions	Sunny Clear / Breezy

Date	9/12/2007
Page	of

Tide information	
High	4.6 @ 0859
Low	0.1 @ 1458
High	4.3 @ 2117
Low	

	Station Number	Time	Latitude	Longitude	Water depth	Sample Depth	Turbidity	Salinity	DO	Temp	Notes
Ref	South H	0807	270 3720.57	815263.84	7.7	.74	2.6	30.30	2.9	21.72	
						~~.57~~	~~7.6~~	~~21.19~~	~~2.97~~	~~21.71~~	WL MW
Ref	1st Bridge	0951	270 8220.23	815466.89	7.0	.57	7.6	21.19	2.97	21.71	

Battelle **Daily Field Summary Sheet for Water Quality Monitoring**

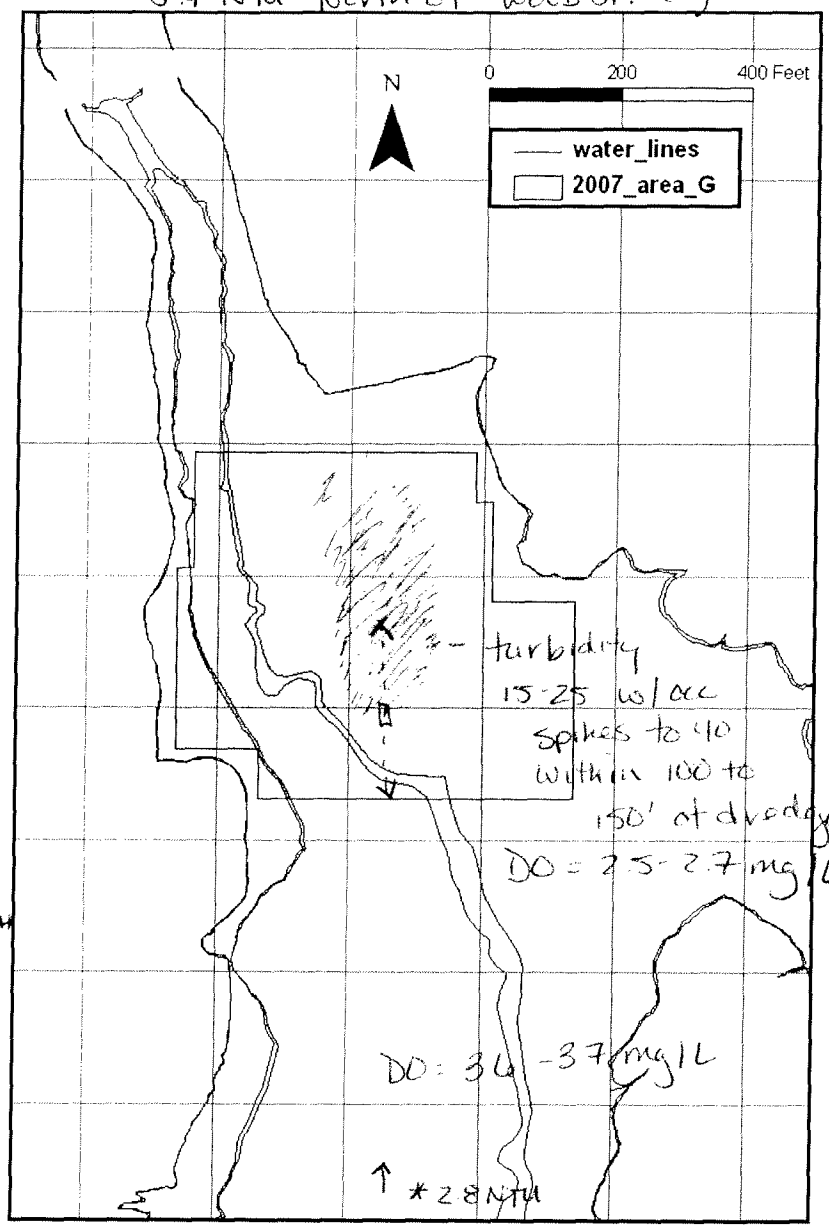
*5.7 NTU North of WOOD St. (1)

Date: 9/14/07
Weather: Sunny; hot
Tides:
0.1' @ 3:28
4.4 @ 10:16
0.4' @ 15:56

Monitoring Period:
From: 0845 **To:** 11:15

Tidal Stage: HWS Ebb LWS Flood

Dredging Activity:
Dredging in Area G



Turbidity Summary

Location	Turbidity (NTU)	Sensor/water Depth (ft)
Ref-South	2.8 NTU	0.8/~~6.0~~ 7.0 m
North of WOOD St	5.7 NTU	0.7/6.0

Oil sheen/ Debris:
None

Fish Passage: Birds working above, minnows scattered at dredge area

Samples Collected for Laboratory Analysis – Sample IDs:
TSS (1L) ____ **Turbidity (500ml)** ____
Total PCB (1L) ____ **Dissolved PCB (2x1L)** ____
Toxicity (21L) ____ **Metals (500ml)** ____

Notes: (1) Approximately 850-900' North of WOOD St. Bridge the DO values dropped to 1.5-1.8 mg/L. Very large numbers of fish present, appeared stressed & were surfacing frequently. Noted some dead fish floating, but numbers were not significant given the large number of total fish in area.

Sampling Crew: J. Hardy, J. Hummer
Chief Scientist Signature: [signature]

Battelle

Water Quality Monitoring
In situ Data Field Form

Dredging Location	Debris Removal in H, Dredging in G
Dredging Description	see above
Survey Vessel	RV GALE FORCE
Chief Scientist	Himmer
Sampling Technician	J. HARDY
Vessel Captain	Himmer
Other Personnel	N/A
Weather conditions	Sunny, sun out of south

Date	9/14/07
Page	of

Tide information	
High	
Low	0.1 @ 3:28
High	4.4 @ 10:16
Low	0.4 @ 15:56

Station Number	Time	Latitude	Longitude	Water depth	Sample Depth	Turbidity	Salinity	DO	Temp	Notes
SRef	8:51	2703821	815340	9.0	0.832	2.4	31.92	3.69	20.18	
Mid Ref	8:59	2705534	815587	7.0	0.74	2.8	31.28	3.74	20.34	
* NWOODST	10:23	2708619	815430	6.0	0.71	5.7	28.33	3.64	21.08	

* ~880' N of Wood St. DO dropped to ~1.8 & ~1200' DO ~1.2
lots of fish & a few dozen dead ones (blue backs of juvenile menhaden) fish appear stressed w/ lesions on their sides in front of tail

Battelle **Daily Field Summary Sheet for Water Quality Monitoring**

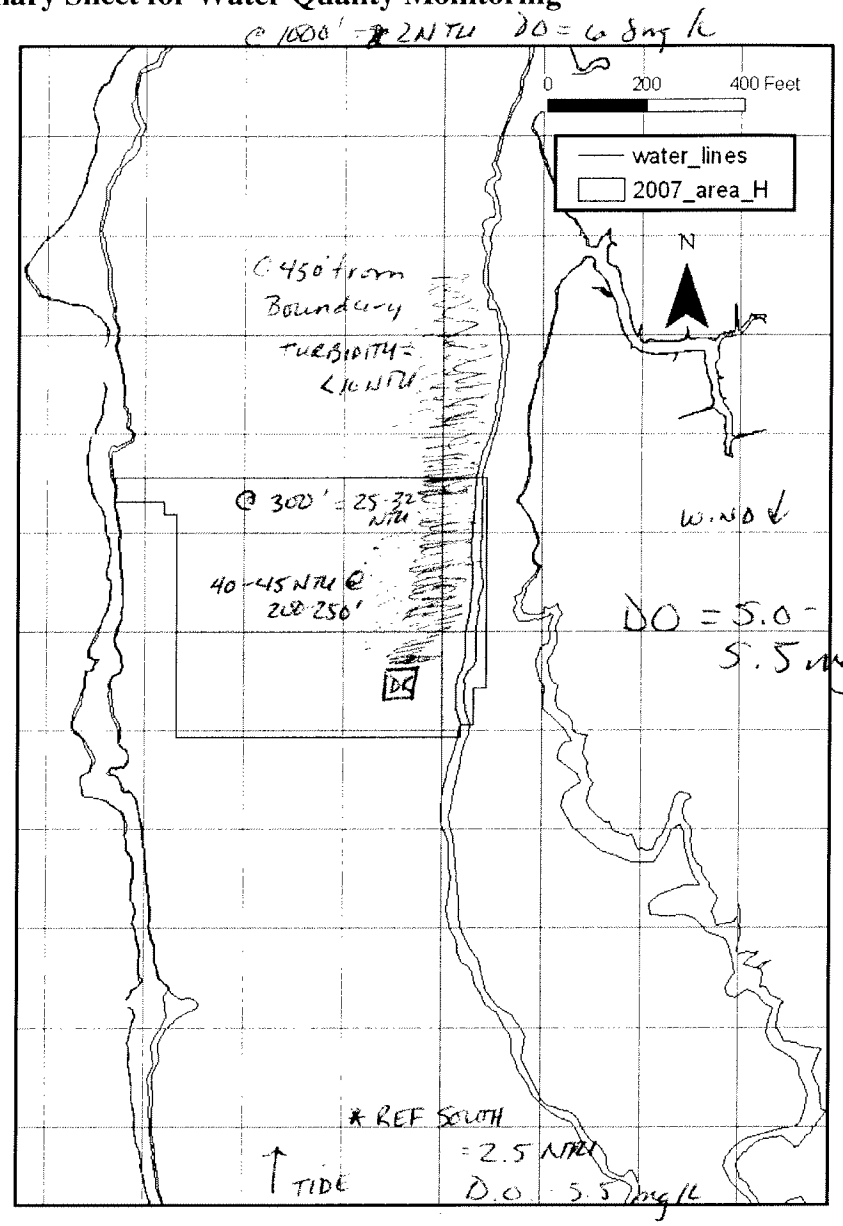
Date: 9/17/07
Weather: Sunny N wind 5-10
Tides:

0.5'	@	5:01
3.7	@	12:20
0.91	@	17:42

Monitoring Period:
From: 0900 **To:** 10:40

Tidal Stage: HWS Ebb LWS Flood

Dredging Activity:
~~DREDGING~~ DEBRIS REMOVAL



Turbidity Summary

Location	Turbidity (NTU)	Sensor/water Depth (ft)
S. REF	2.5	0.7/5.9
200' from Debris Removal	45 NTU	0.3/4.0

Oil sheen/ Debris:
None observed

Fish Passage: No evidence of fish damming observed

Samples Collected for Laboratory Analysis – Sample IDs:

TSS (1L)		**Turbidity (500ml)**	
Total PCB (1L)		**Dissolved PCB (2x1L)**	
Toxicity (21L)		**Metals (500ml)**	

Notes: Observed narrow plume that hugged eastern shoreline. No exceedances, turbidity @ 300' from debris removal typically ranged from 25-32 NTU. Diss. Oxy. in area ranged from 5 to 5.5 mg/L

Sampling Crew: J. Hardy, T. Hammon
Chief Scientist Signature: [signature]

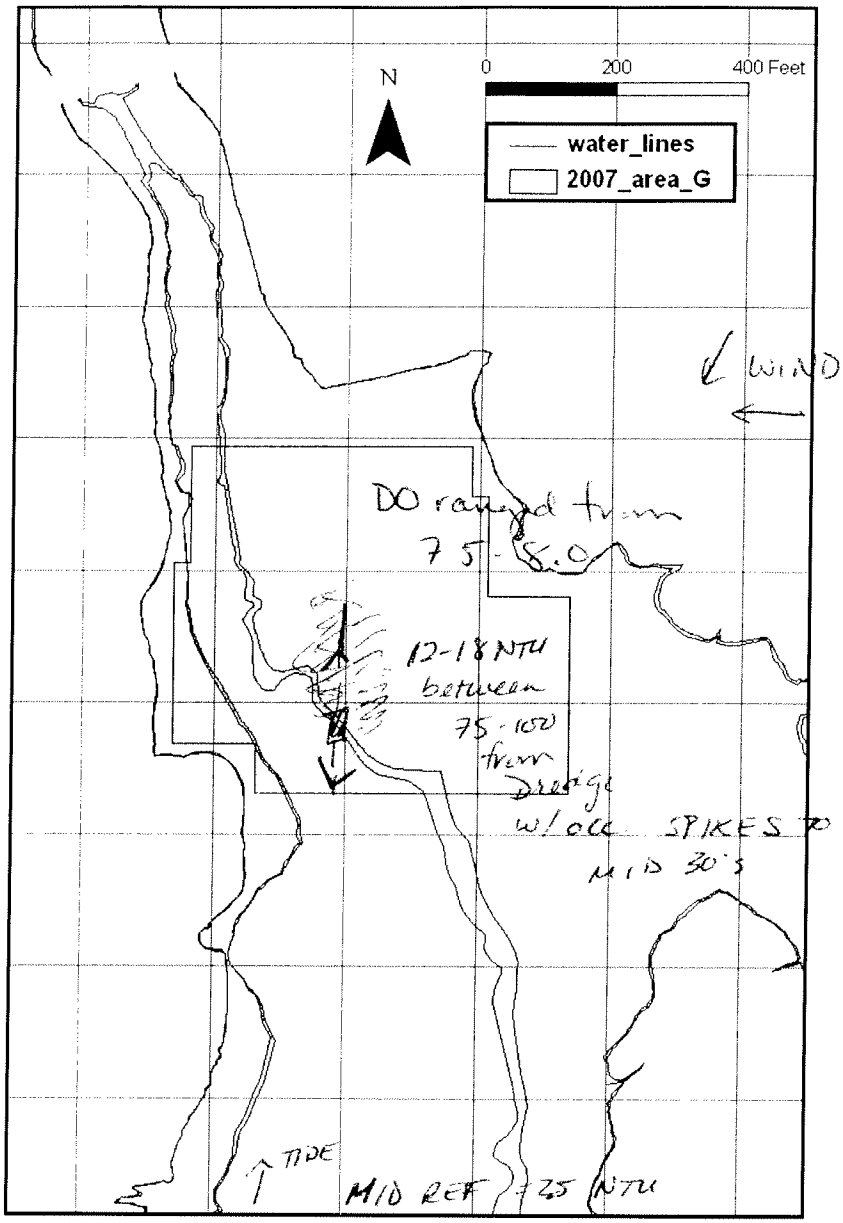
Battelle **Daily Field Summary Sheet for Water Quality Monitoring**

Date: 9/7/07
Weather: Sunny, some clouds
Tides:
0.5 @ 5:01
3.7 @ 12:20
0.9 @ 17:42

Monitoring Period:
From: 1:45 **To:** 12:30

Tidal Stage: HWS Ebb LWS Flood

Dredging Activity:
DREDGING



Turbidity Summary

Location	Turbidity (NTU)	Sensor/water Depth (ft)
REF	2.5	0.8'
75' from DREDGE	15	0.8'

Oil sheen/ Debris:
NONE OBSERVED

Fish Passage: LARGE NUMBERS OF BIRDS WORKING ABOVE, WITHIN & SOUTH OF DREDGE UNIT

Samples Collected for Laboratory Analysis – Sample IDs:
TSS (1L) ____ **Turbidity (500ml)** ____
Total PCB (1L) ____ **Dissolved PCB (2x1L)** ____
Toxicity (21L) ____ **Metals (500ml)** ____

Notes: N. of WOOD ST – TURB = ~~35~~ 25 DO = 35
DO in Dredge area ranged from 7.5 to 8.0 mg/L; North of WOOD ST. VALUES dropped to 3.5 mg/L. Numerous fish seen north of Bridge.

Sampling Crew: T. Hammer J. Hardy
Chief Scientist Signature: [signature]

Battelle

Water Quality Monitoring
In situ Data Field Form

Dredging Location	AREA A
Dredging Description	Dredging & Debris Removal
Survey Vessel	GALE FORCE
Chief Scientist	HIMMER
Sampling Technician	J. HARDY
Vessel Captain	HIMMER
Other Personnel	N/A
Weather conditions	SUNNY, N. wind @ 5-10 kts

Date	9/17/07
Page	of

Tide information	
High	12:20 +3.7'
Low	17.42 +0.9'
High	
Low	

	Station Number	Time	Latitude	Longitude	Water depth	Sample Depth	Turbidity	Salinity	DO	Temp	Notes
1-1	South Ref	0900	2703631	815462	5.9	0.72	2.5	30.18	5.5	18.73	
	200' from PR	933	2704783	815604	3.8	0.85	3.45	29.86	5.0	18.25	

Battelle **Daily Field Summary Sheet for Water Quality Monitoring**

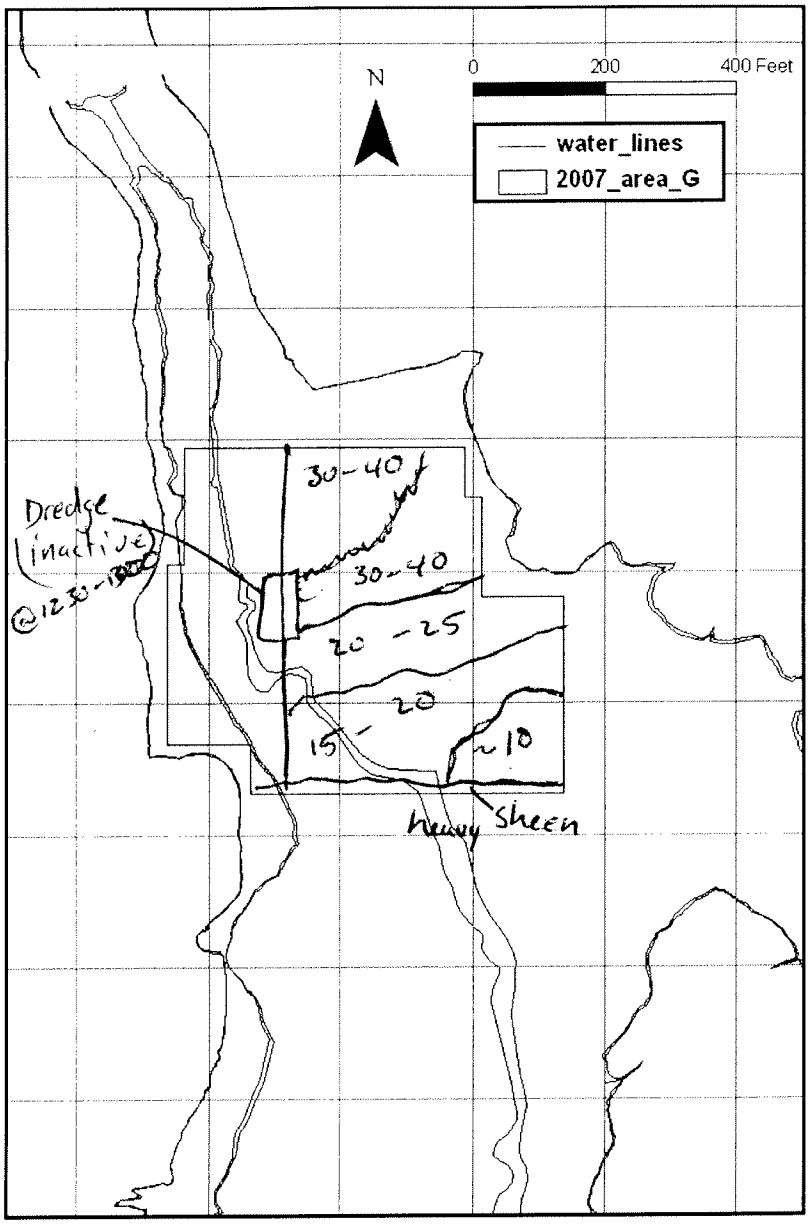
Date: 9/19/2007
Weather: overcast / wind North 5-10
Tides:

2.9	@	1:24
1.0	@	0630
3.9	@	1349

Monitoring Period:
From: 1140 **To:** 1330

Tidal Stage: HWS Ebb LWS (Flood)

Dredging Activity:
None while Present



Turbidity Summary

Location	Turbidity (NTU)	Sensor/water Depth (ft)
Central area	16-18	.7/3.8
North of Dredge	30-40	~~4.0~~ .7/4.0

Oil sheen/ Debris:
Heavy sheen found only on southern boom lite sheen throughout area

Fish Passage: fish found in all areas North of Area H + in dredge area

Samples Collected for Laboratory Analysis – Sample IDs:

TSS (1L)		**Turbidity (500ml)**	
Total PCB (1L)		**Dissolved PCB (2x1L)**	
Toxicity (21L)		**Metals (500ml)**	

Notes:

Sampling Crew: M. Walsh, M. Fitzpatrick
Chief Scientist Signature: M. Walsh

Battelle **Daily Field Summary Sheet for Water Quality Monitoring**

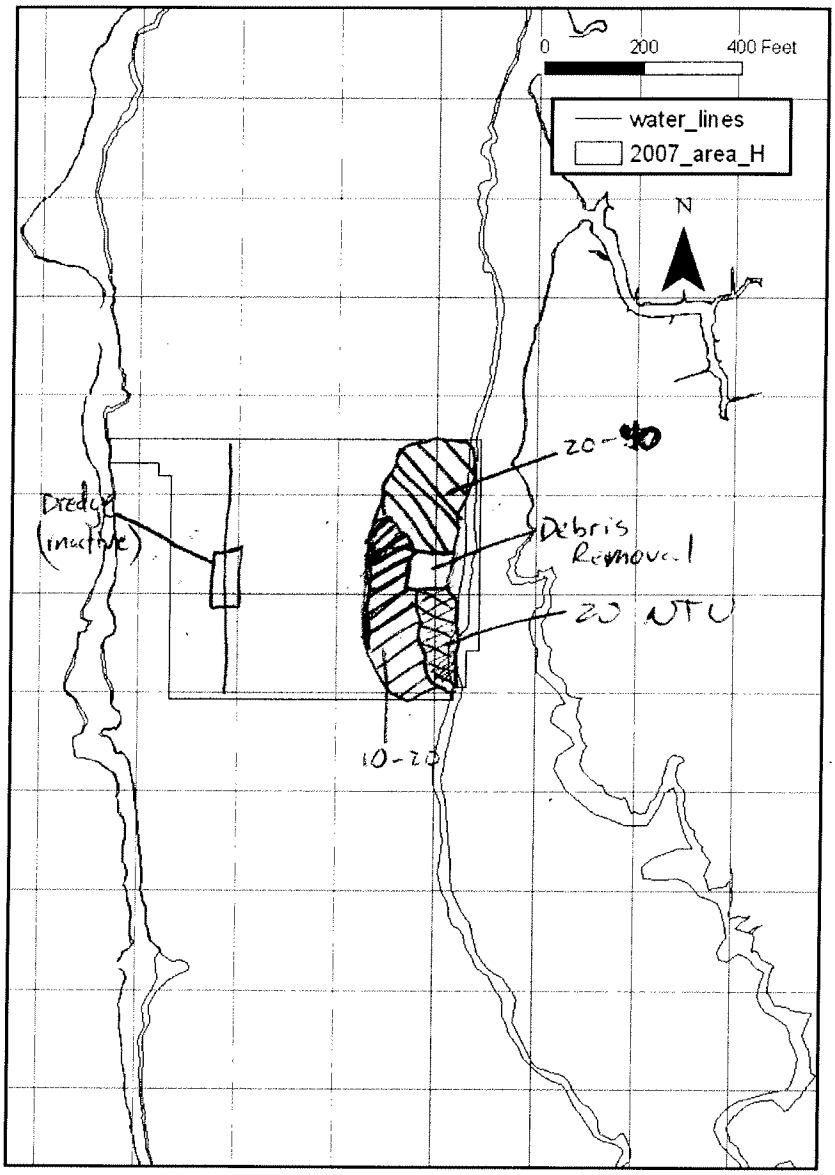
Date: 9/19/07
Weather: Overcast/wind N 5-10
Tides:

2.9	@	1 21
1.0	@	0630
3.4	@	1349

Monitoring Period:
From: 1140 **To:** 1330

Tidal Stage: HWS Ebb LWS (Flood)

Dredging Activity:
Active Debris removal



Turbidity Summary

Location	Turbidity (NTU)	Sensor/water Depth (ft)
50-100' South of Debris removal	16-22	.72 / 3.8
50-100' North of Debris removal	20-40	.7 / 4.8

Oil sheen/ Debris:
None

Fish Passage: nothing noted

Samples Collected for Laboratory Analysis – Sample IDs:

TSS (1L)		**Turbidity (500ml)**	
Total PCB (1L)		**Dissolved PCB (2x1L)**	
Toxicity (21L)		**Metals (500ml)**	

Notes:

Sampling Crew: M. Walsh, M. Fitzpatrick, J. Mardy
Chief Scientist Signature: M. Walsh

Battelle

Water Quality Monitoring
In situ Data Field Form

Dredging Location	Area H / not operating
Dredging Description	/ Debris Removal in area G
Survey Vessel	Gale Force
Chief Scientist	M Walsh
Sampling Technician	M. Fitzpatrick, J. Hardy
Vessel Captain	M Walsh
Other Personnel	–
Weather conditions	overcast

Date	9/19/2007
Page	of

Tide information	
High	~~1.21~~ ~~2.9~~ 2.9 @ ~1.21
Low	1.0 @ 0630
High	3.4 @ 1349
Low	1.2 @ 2004pm

Station Number	Time	Latitude	Longitude	Water depth	Sample Depth	Turbidity	Salinity	DO	Temp	Notes
Ref South	1142	2703790.52	815241.04	7.0	.73	5.0	30.11	6.7	18.48	
Ref South	1142	"	"	"	6.5	3.2	30.33	6.2	18.63	
Area H	1245	2707762.12	815773.91	3.2	.65	35.3	28.99	10.34	18.93	
N Boundary										

Battelle **Daily Field Summary Sheet for Water Quality Monitoring**

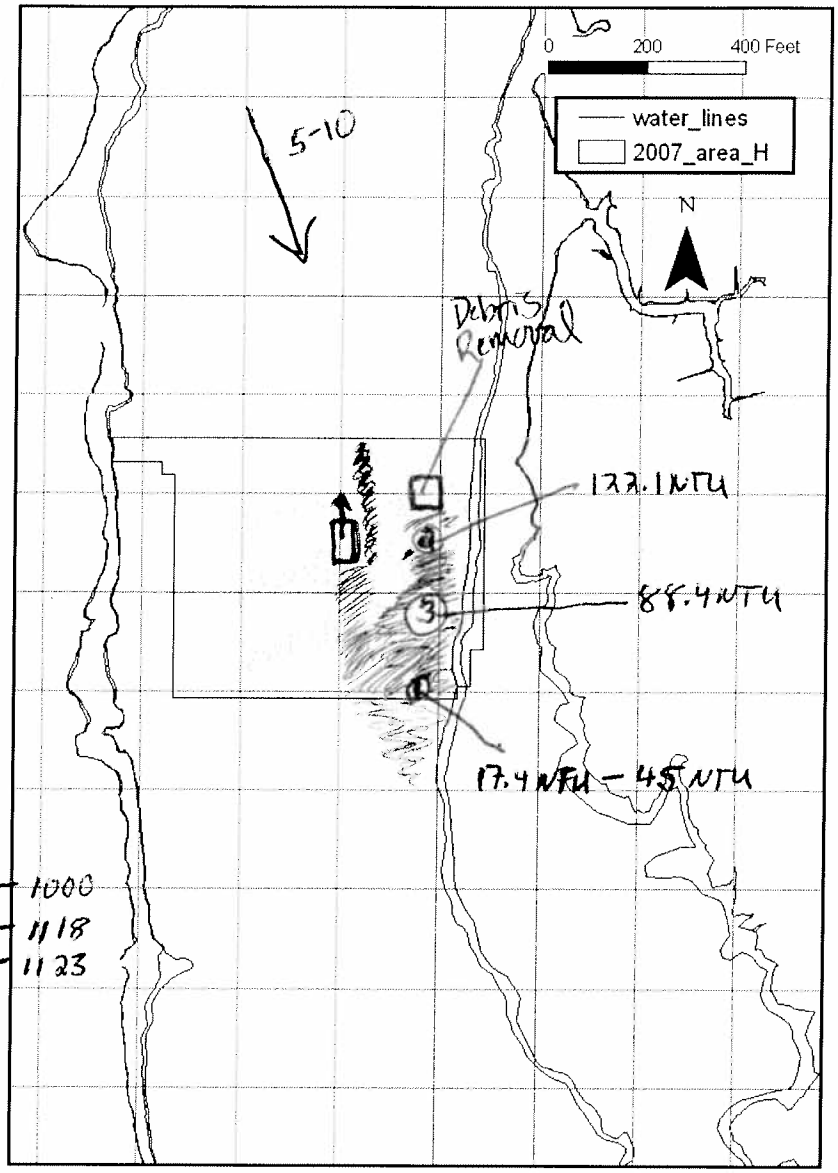
Date: 9/24/07
Weather: Mostly Sunny / wind WNW 5-10
Tides:
9.0 @ 0619
0.3 @ 1204
4.4 @ 1845

Monitoring Period:
From: 0950 **To:** 1245

Tidal Stage: HWS (Ebb) LWS Flood

Dredging Activity:
Dredge - Middle working North

Debris Removal NE corner



Turbidity Summary

Location	Turbidity (NTU)	Sensor/water Depth (ft)	
① Area H boundary	17.4	.71 / 2.6'	1000
② 25' south of DR	122.1	.76 / 2.0'	1118
③ 100' south of DR	88.4	.76 / 2.0'	1123

Oil sheen/ Debris:
No sheen observed with Debris Removal / Slight sheen Associated with Dredge

Fish Passage: occasional fish in surface

Samples Collected for Laboratory Analysis – Sample IDs:
TSS (1L) ____ **Turbidity (500ml)** ____
Total PCB (1L) ____ **Dissolved PCB (2x1L)** ____
Toxicity (21L) ____ **Metals (500ml)** ____

Notes: High Turbidity close to sources (Dredge/Debris Removal) Travelled south with wind and Tide. High turbidity associated with support vessel traffic due to astronomically low tide. Diminishing Turbidity away from sources and south of Area H boundry. Elevated NTU's and D.O. also noted south of Area H.

Sampling Crew: M. Walsh, J. Hardy
Chief Scientist Signature: Michael Walsh

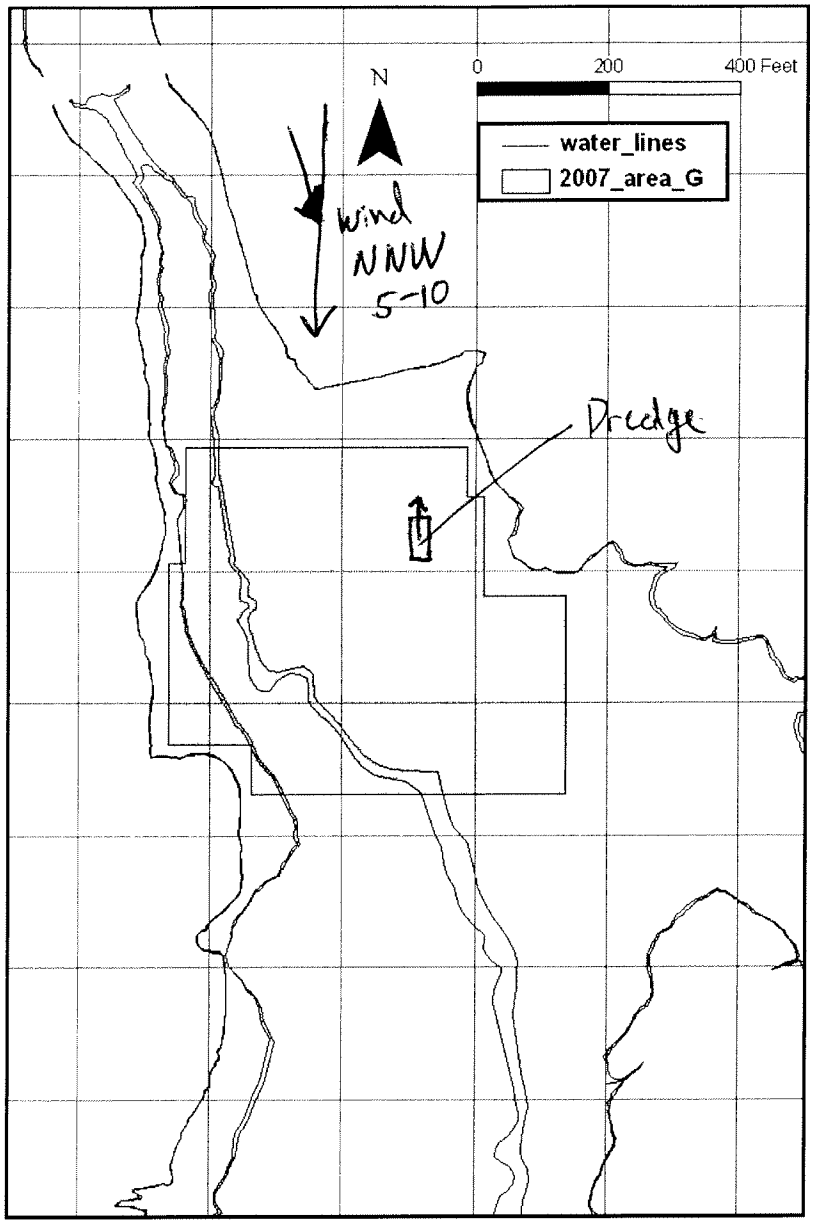
Battelle **Daily Field Summary Sheet for Water Quality Monitoring**

Date: 9/24/07
Weather: Mostly Sunny / wind NNW 5-10
Tides:
4.0 @ 0619
0.3 @ 1204
4.4 @ 1845

Monitoring Period:
From: 0840 **To:** 0720

Tidal Stage: HWS (Ebb) LWS Flood

Dredging Activity:
Dredging NE quadrant
- Activity Stopped due to Tide



Turbidity Summary

Location	Turbidity (NTU)	Sensor/water Depth (ft)

Oil sheen/ Debris:
No sheen observed

Fish Passage: Occasional Fish on surface

Samples Collected for Laboratory Analysis – Sample IDs:
TSS (1L) ____ **Turbidity (500ml)** ____
Total PCB (1L) ____ **Dissolved PCB (2x1L)** ____
Toxicity (21L) ____ **Metals (500ml)** ____

Notes: Dredge Activity stopped due to Low Tide. No recordings taken Needed to retrieve YSI moorings before low tide.

Sampling Crew: M. Walsh, J. Hardy
Chief Scientist Signature: Michael Walsh

Battelle

Water Quality Monitoring
In situ Data Field Form

Dredging Location	Area H / Debris Removal Area G
Dredging Description	North East Area H / MIDDLE ~~East~~ Area G
Survey Vessel	Gale Force
Chief Scientist	M. Walsh
Sampling Technician	J. Hardy
Vessel Captain	M. Walsh
Other Personnel	—
Weather conditions	Mostly Sunny wind NW 5-10

Date	9/24/07
Page	of

Tide information	
High	~~0.3 @ 1204~~ 4.0 @ 0619
Low	0.3 @ 1204
High	4.4 @ 1845
Low	

	Station Number	Time	Latitude	Longitude	Water depth	Sample Depth	Turbidity	Salinity	DO	Temp	Notes
Mooring Site North		0916	2707984.12	815623.24	3.6	0.716	3.6	29.77	6.17	21.09	USED AS Ref
Ref middle/Cable crossing		0949	2705579.59	815292.75	3.0	0.66	3.1	30.28	7.78	20.49	

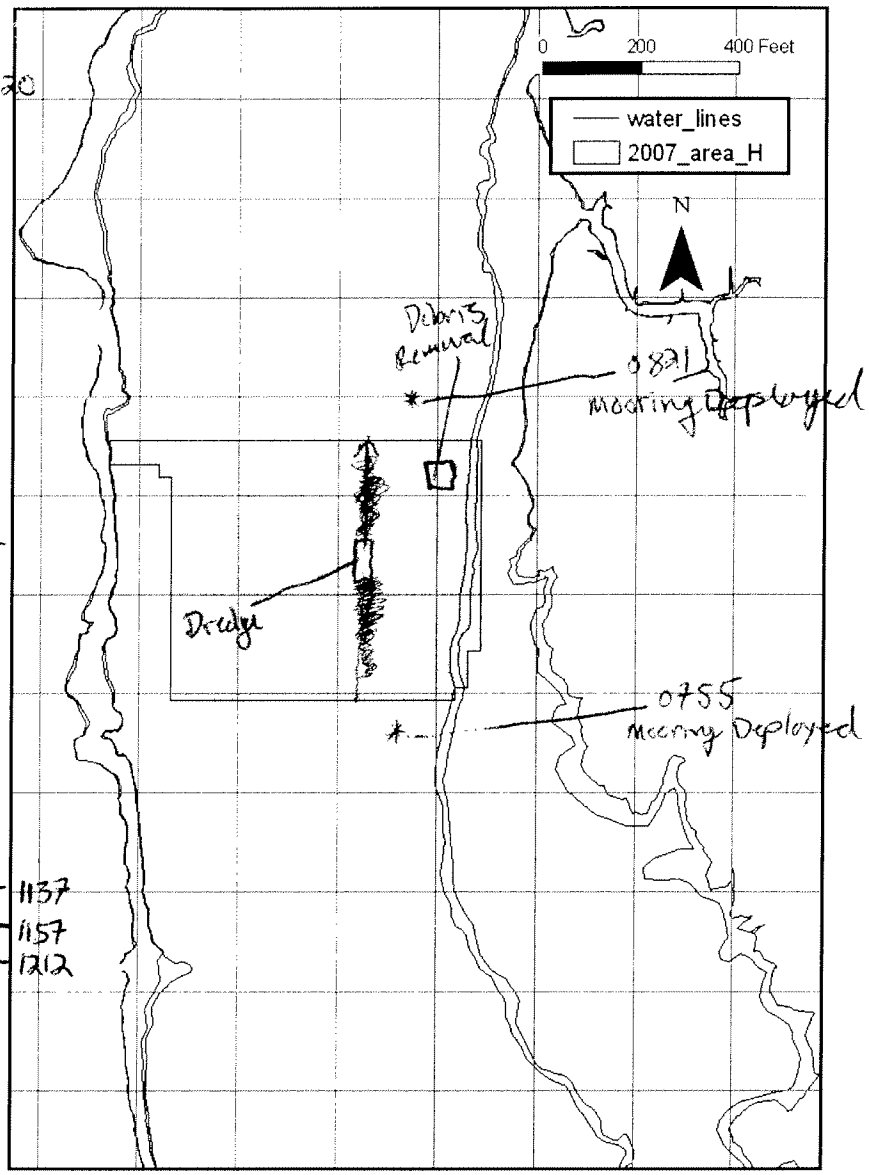
Battelle **Daily Field Summary Sheet for Water Quality Monitoring**

Date: 7/25/07
Weather: Sunny Clear/Wind WSW 10-20
Tides:
4.5 @ 0707
-0.1 @ 1257
4.6 @ 1932

Monitoring Period:
From: 1006 **To:** 1230

Tidal Stage: HWS (Ebb) LWS Flood

Dredging Activity:
1006 - 1025 NO Activity
1025 - 1230 Dredging in progress
1006 - 1230 NO DR



Turbidity Summary

Location	Turbidity (NTU)	Sensor/water Depth (ft)	
75' south of Dredge	55 - 65 NTU	0.81 / 2.6	1137
50' south of Dredge	90 - 100 NTU	.79 / 2.6	1157
100' south of Dredge	10 - 20 NTU	.82 / 2.3	1212

Oil sheen/ Debris: Occasional slight sheen noted around Dredge

Fish Passage: Occasional Fish on Surface

Samples Collected for Laboratory Analysis – Sample IDs:
TSS (1L) WQ-TSS/TUR-001-092507 **Turbidity (500ml)** WQ-TSS/TUR-001-092507
Total PCB (1L) / **Dissolved PCB (2x1L)** /
Toxicity (21L) / **Metals (500ml)** /

Notes: Background Turbidity in Dredge and Debris Removal Area 5-10 NTU
Turbidity readings above background confined to Dredge Path (see Turbidity summary)

Sampling Crew: M Walsh, J. Hardy
Chief Scientist Signature: Michael Walsh

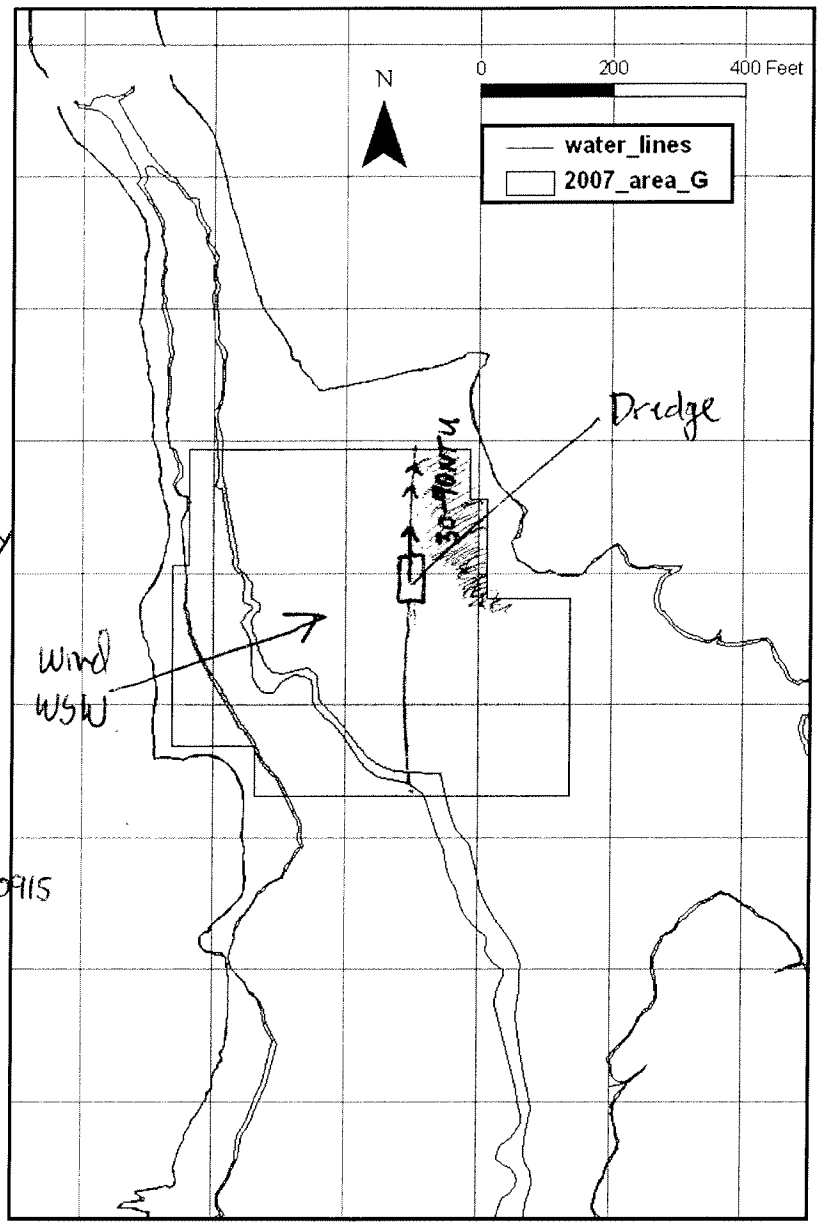
Battelle **Daily Field Summary Sheet for Water Quality Monitoring**

Date: 9/25/07
Weather: Sunny / wind - WSW 5-10
Tides:
4.5 @ 0707
-0.1 @ 1757
4.6 @ 1932

Monitoring Period:
From: 0836 **To:** 1000

Tidal Stage: HWS (Ebb) LWS Flood

Dredging Activity:
Middle East working North
0836 - 0918 Dredge on Stand By no Activity
0918 - 1000 - Dredge working
1003 Dpt for Area H



Turbidity Summary

Location	Turbidity (NTU)	Sensor/water Depth (ft)
50' East of Dredge	6-10 NTU	.94 / 3.5' -0915

Oil sheen/ Debris:
Slight sheen observed on East North East Boundry.

Fish Passage: Occasional Fish on Surface

Samples Collected for Laboratory Analysis – Sample IDs:
TSS (1L) _____ **Turbidity (500ml)** _____
Total PCB (1L) _____ **Dissolved PCB (2x1L)** _____
Toxicity (21L) _____ **Metals (500ml)** _____

Notes: Dredge working very tight into NE corner - Higher NTU's concentrated to that Area with a slight sheen. NTU values dropped off to background values of 6-10 NTU to the south and east of Dredge.

Sampling Crew: M. Walsh, J. Hardy
Chief Scientist Signature: Michael Walsh

Battelle

Water Quality Monitoring
In situ Data Field Form

Dredging Location	Area G / Debris Removal Area H
Dredging Description	Middle East working North / Debris Removal NE Corner
Survey Vessel	Gale Force
Chief Scientist	M. Walsh
Sampling Technician	J. Hardy
Vessel Captain	M. Walsh
Other Personnel	–
Weather conditions	Sunny Clear / wind WSW 5-10

Date	9/25/07
Page	of

Tide information	
High	4.5 @ 0707
Low	-0.1 @ 1257
High	4.6 @ 1932
Low	

	Station Number	Time	Latitude	Longitude	Water depth	Sample Depth	Turbidity	Salinity	DO	Temp	Notes
Mooring	South H	0755	2704231	815493.90	6.6	0.89	25	31.39	6.85	20.09	Mooring Deployment water Description
mooring	North H	0821	2705058.87	815580.17	6.2	0.82	3.1	31.46	6.59	20.16	Mooring Deployment water Description
RAW	BOD St Brid	0852	2708262.9	815478.1	6.9	0.88	8.3	29.39	6.24	21.28	
						~~0.71~~					
Ref	Middle	1006	2705723.47	815588.16	4.2	0.71	6.4	30.7	9.51	20.90	
						~~0.81~~					
	55-65 NTU	1137	2704548.11	815459.6	2.6	0.81	57.6	30.86	5.4	21.47	TSS/Turb sample Taken ② 55-65 NTU
											WQ-TSS/Turb-001-092507
	90-100 NTU	1157	2704502.56	815458.3	2.6	.79	94.6	30.59	6.31	21.59	TSS/Turb sample Taken ③ 90-100 NTU
											WQ-TSS/Turb-002-092507
	10-20 NTU	1212	2704495.6	815487.6	2.3	.82	13.2	30.47	7.51	21.69	TSS/Turb Samples Taken ④ 10-20 NTU
											WQ-TSS/Turb-003-092507
											WQ-TSS/Turb-003-092507-Dup

Battelle

Daily Field Summary Sheet for Water Quality Monitoring

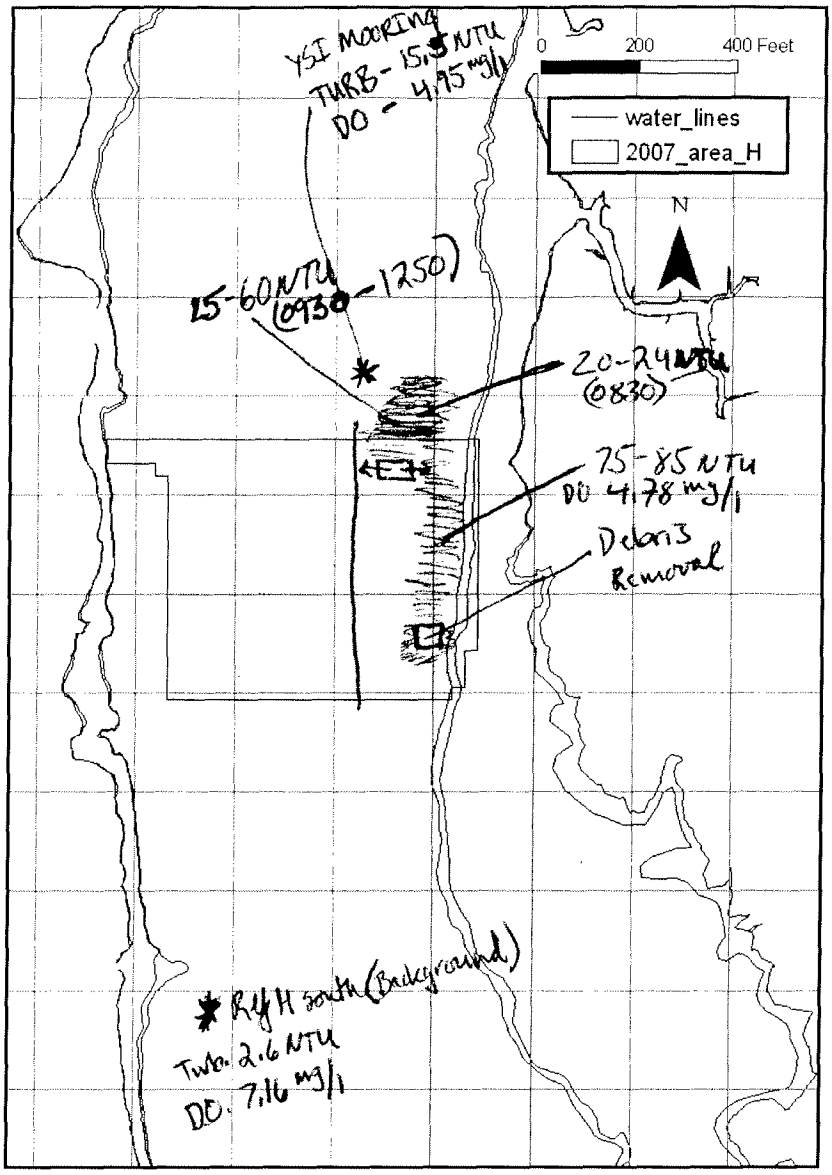
Date: 10/1/07
Weather: Sunny Cloud / Calm / SSE 5-10
Tides:

-0.2	@ 0458
4.5	@ 1707
0.3	@ 1759

Monitoring Period:
From: 0810 **To:** 1310

Tidal Stage: HWS Ebb LWS (Flood)

Dredging Activity:
0845 - Dredging Inactive to 0915
0915 - Dredging in progress 1245
0810 DR in Progress to 1030



Turbidity Summary

Location	Turbidity (NTU)	Sensor/water Depth (ft)
150' N of DR	75.6 NTU	0.77/2.5'
50 N of Area H	20.9	0.73/4.5'

Oil sheen/ Debris:
No noticeable sheen

Fish Passage: Many Fish on Surface in all Areas. There appeared to be no effects from Debris Removal and Dredging to passage of fish.

Samples Collected for Laboratory Analysis – Sample IDs:

TSS (1L)		**Turbidity (500ml)**	
Total PCB (1L)		**Dissolved PCB (2x1L)**	
Toxicity (21L)		**Metals (500ml)**	

Notes: Turbidity Ranges of 75-85 NTU confined to within Dredge Area and in Close proximity to Debris Removal and Dredge. North of Dredge Area in Close proximity to Dredge, short lived plumes of 20-60 NTU were monitored. Counts dropped of quickly to just above background. Dissolved Oxygen levels Range throughout Dredge Area 4.5-6 mg/L

Sampling Crew: M. Walsh, J. Hardin
Chief Scientist Signature: Mike Walsh

Battelle

Water Quality Monitoring
In situ Data Field Form

Dredging Location	Area H
Dredging Description	moving Dredge / Debris Removal middle east South
Survey Vessel	Gale Force
Chief Scientist	M. Walsh
Sampling Technician	J. Harlin
Vessel Captain	M. Walsh
Other Personnel	—
Weather conditions	Sunny Clear - Wind Calm

Date	10/1/07
Page	of

Tide information	
High	
Low	-0.2 @ 0458
High	4.5 @ 1207
Low	0.3 @ 1759

	Station Number	Time	Latitude	Longitude	Water depth	Sample Depth	Turbidity	Salinity	DO	Temp	Notes
Ref	South	0830	270 3733.28	815310.12	7.0	.77	2.6	30.9	7.16	18.45	Ph - 7.87
150' North of DR		0915 ~~0457~~	270 4786.33	815647.16	3.5	.78	88.2	31.15	4.78	18.66	Ph - 7.60
Area H YSI mooring		0952	270 3075.0	815570.12	4.5	0.78	15.5	31.41	4.95	18.99	Ph - 7.79

* Wood St. Bridge Ref
Turb - 7.0 NTU
DO - 9.21 mg/L

Battelle

Daily Field Summary Sheet for Water Quality Monitoring

Date: 10/2/07
Weather: mostly Cloudy / wind calm
Tides:

0.2	@	0552
4.2	@	1307
0.6	@	1919

Monitoring Period:
From: 0845 **To:** 1440

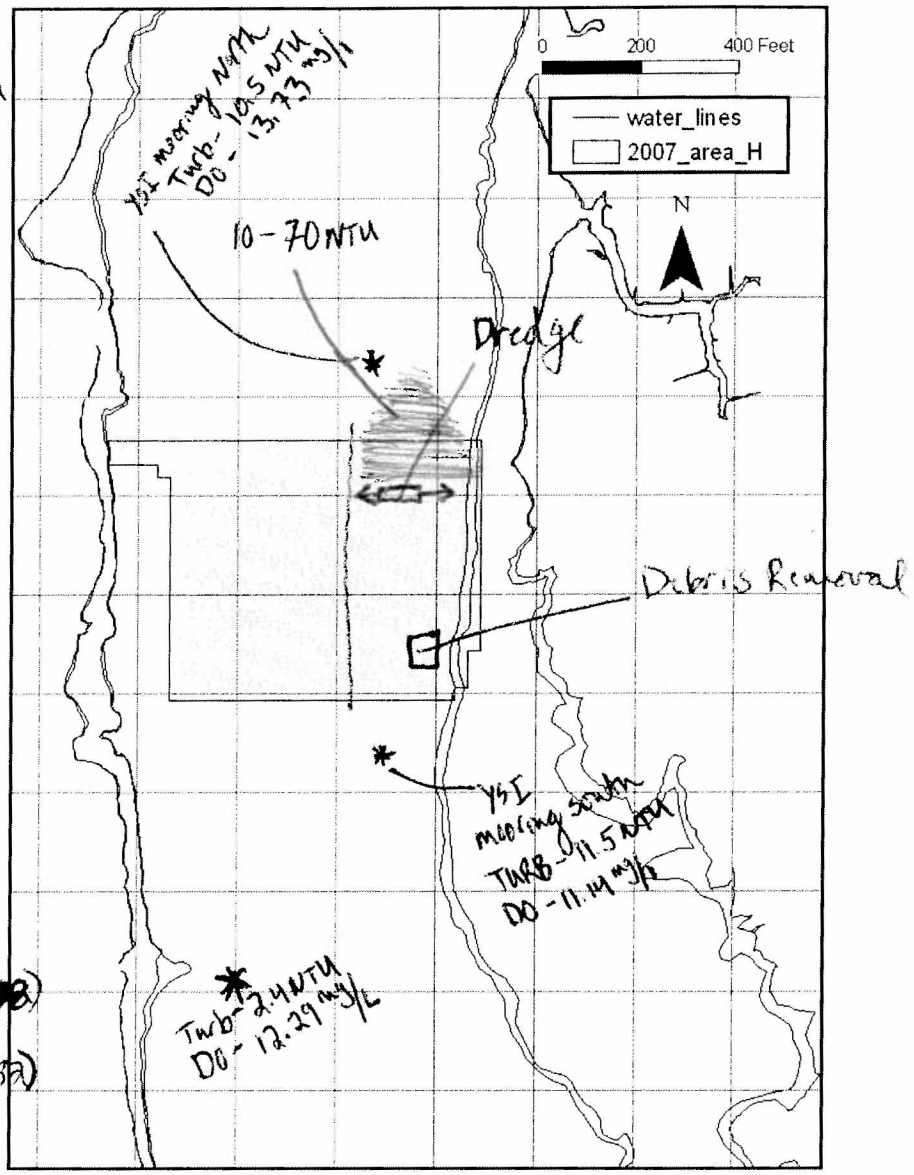
Tidal Stage: HWS Ebb LWS Flood

Dredging Activity:
Dredge East to West 75' south of Area H north Boundry

Debris Removal Southeast Corner of Area H
Debris Removal Done

Turbidity Summary

Location	Turbidity (NTU)	Sensor/water Depth (ft)
130' south of Area H	3.7	1.2/3.5
130' north of Area H	32.1	1.2/3.0'
Moring North Retrieve	10.5	0.8/5.5 (1448)
Moring South Retrieve	11.5	0.8/6.0' (1457)



Oil sheen/ Debris:
No Sheen observed

Fish Passage: Large Schools of Fish observed in all areas of River. No apparent Attraction from Dredging or Debris Removal

Samples Collected for Laboratory Analysis – Sample IDs:

TSS (1L)		Turbidity (500ml)	
Total PCB (1L)		Dissolved PCB (2x1L)	
Toxicity (21L)		Metals (500ml)	

Notes: Due to inaccessability to Dredge Area H new work area, WQ was not conducted in close proximity to sources. However, Both Dredge and Debris Removal were working edges of Boundry. Turbidity values along Area H North Boundry ranged between just above background NTU'S (10 NTU) to (70 NTU) which corresponded with dredge pass from west to east. Elevated NTU'S (70 NTU) were observed due to support vessels. Higher NTU'S dropped off quickly with distance.

Sampling Crew: M. Walsh, M. McKee
Chief Scientist Signature: M. Walsh

YSI moorings Retrieved Area H
Sediment Trap Deployed North of Area G

Battelle

Water Quality Monitoring
In situ Data Field Form

Dredging Location	Area H
Dredging Description	Northeast Corner Area H / Debris Removal Southeast corner Area H
Survey Vessel	Gale Force
Chief Scientist	M. Walsh
Sampling Technician	M. McKee
Vessel Captain	M. Walsh
Other Personnel	—
Weather conditions	Pretty Cldy / wind calm

Date	10/2/07
Page	of

Tide information	
High	
Low	~~0552~~ ~~0552~~ MW 0.2 @ 0552
High	4.2 @ 13:09
Low	0.6 @ 19:19

Station Number	Time	Latitude	Longitude	Water depth	Sample Depth	Turbidity	Salinity	DO	Temp	Notes
R4 South	0900	2703755.0	815238.99	6.2	1.0	2.4	30.22	12.29	18.0	Ph 7.85
wood st. Bridge ST 03	1344	2708189.74	815545.62	6.7 MW	~~7.0~~ 7	7.0	30.02	9.21	20.30	Ph 8.45
Area H North Mooring	1418	2705058.87	815580.17	~~3.6~~ 5.5	0.85	10.5	31.04	13.73	19.72	Ph 7.97 mooring Retrieval
Area H South Mooring	1432	2704231.30	815493.90	6.0	0.8	11.5	31.40	11.14	19.74	Ph 7.82

Battelle Daily Field Summary Sheet for Water Quality Monitoring

Date: 10/3/07
Weather: Foggy / wind calm/SE 5
Tides:

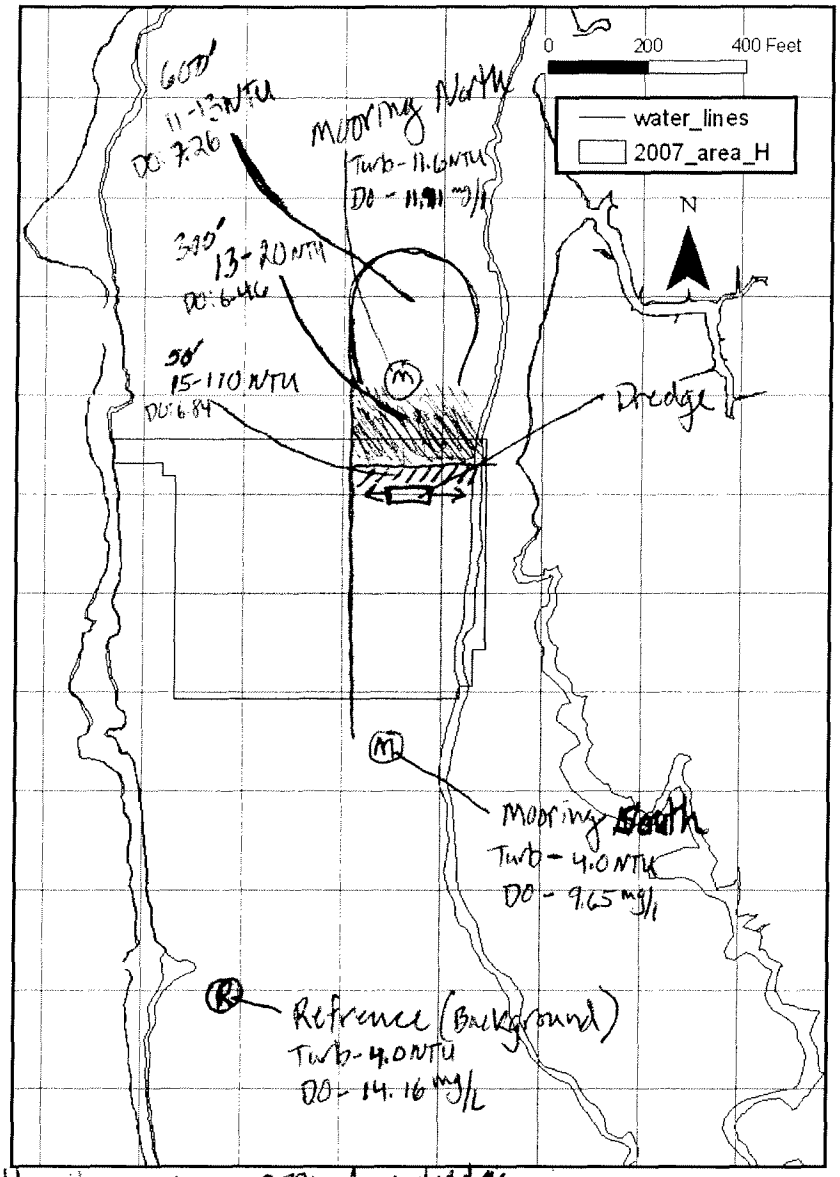
0.6	@	0700
3.9	@	1415
0.7	@	2122

Monitoring Period:
From: 0855 **To:** 1230

Tidal Stage: HWS Ebb LWS Flood

Dredging Activity:
Area H middle North work East to West

- Debris Removal finished



Turbidity Summary

	Location	Turbidity (NTU)	Sensor/water Depth (ft)
	50'	15-110	1.95 / 3.8
	300'	13-20	2.00 / 3.8
	600'	11-13	1.95 / 4.8
M	130' south boundary	4.0	0.70 / 4.0
M	130' North boundary	11.6	0.71 / 3.0
R	600' south boundary	4.0	0.74 / 4.9

Oil sheen/ Debris: occasional slightly sheen seen around dredge.
Schools of Fish Observed within dredge Area and outside dredge Area. No obstruction observed from Dredging Activities
Fish Passage:

Samples Collected for Laboratory Analysis – Sample IDs:

TSS (1L)	WQ-TSS/TUR-XXX-100307	**Turbidity (500ml)**	WQ-TSS/TUR-XXX-100307
Total PCB (1L)	WQ-TCB-XXX-100307	**Dissolved PCB (2x1L)**	WQ-DCB-XXX-100307
Toxicity (21L)	WQ-TOX-XXX-100307	**Metals (500ml)**	WQ-MET-XXX-100307

Notes: 15-110 NTU Turbidity readings in close proximity to dredge ~50 feet. Broad range in readings due to stop and go Activity of Dredge. These broad ranges continued but diminished with distance from Dredge as seen at 300' with 11.6-20 NTU. At 600' from dredge ranges ~~tight~~ were closer and diminished again (11-13 NTU). Dissolved Oxygen values can be seen on map.

Sampling Crew: M. Walsh, J. Hardy
Chief Scientist Signature: Mike Walsh

Battelle

Water Quality Monitoring
In situ Data Field Form

Dredging Location	Area H
Dredging Description	Middle North Working West to East
Survey Vessel	Gale Force
Chief Scientist	M. Walsh
Sampling Technician	J. Hardy
Vessel Captain	M. Walsh
Other Personnel	—
Weather conditions	Foggy / wind calm / SSE 5

Date	10 / 3 / 07
Page	of

Tide information	
High	
Low	0.6 @ 0700
High	3.9 @ 1415
Low	0.7 @ 2122

	Station Number	Time	Latitude	Longitude	Water depth	Sample Depth	Turbidity	Salinity	DO	Temp	Notes
Mooring	South H	0855	2704221.41	815447.12	4.0	0.70	4.0	30.27	9.65	19.7	~130' South of Dredge Area H (Ph 7.94)
Mooring	North H	0911	2705116.73	815563.25	3.0	0.71	11.6	30.63	11.41	19.66	~130' North of Dredge Area H (Ph 7.91)
	South Ref	0926	2703744.15	815189.42	4.9	0.74	4.0	30.62	14.16	19.69	600' South of Dredge Area H (Ph 8.05)
50' North of Source		1100	2704830.16	815638.56	3.8	1.95	65-100	31.16	6.84	19.97	Ph: 7.73
300' North of Source		1150	2705144.22	815606.61	3.8	2.00	13-20	31.23	6.46	20.12	Ph: 7.79
600' North of Source		1228	2705434.1	815573.26	4.8	1.95	11-13	31.29	7.26	20.26	Ph: 7.88

Battelle Daily Field Summary Sheet for Water Quality Monitoring

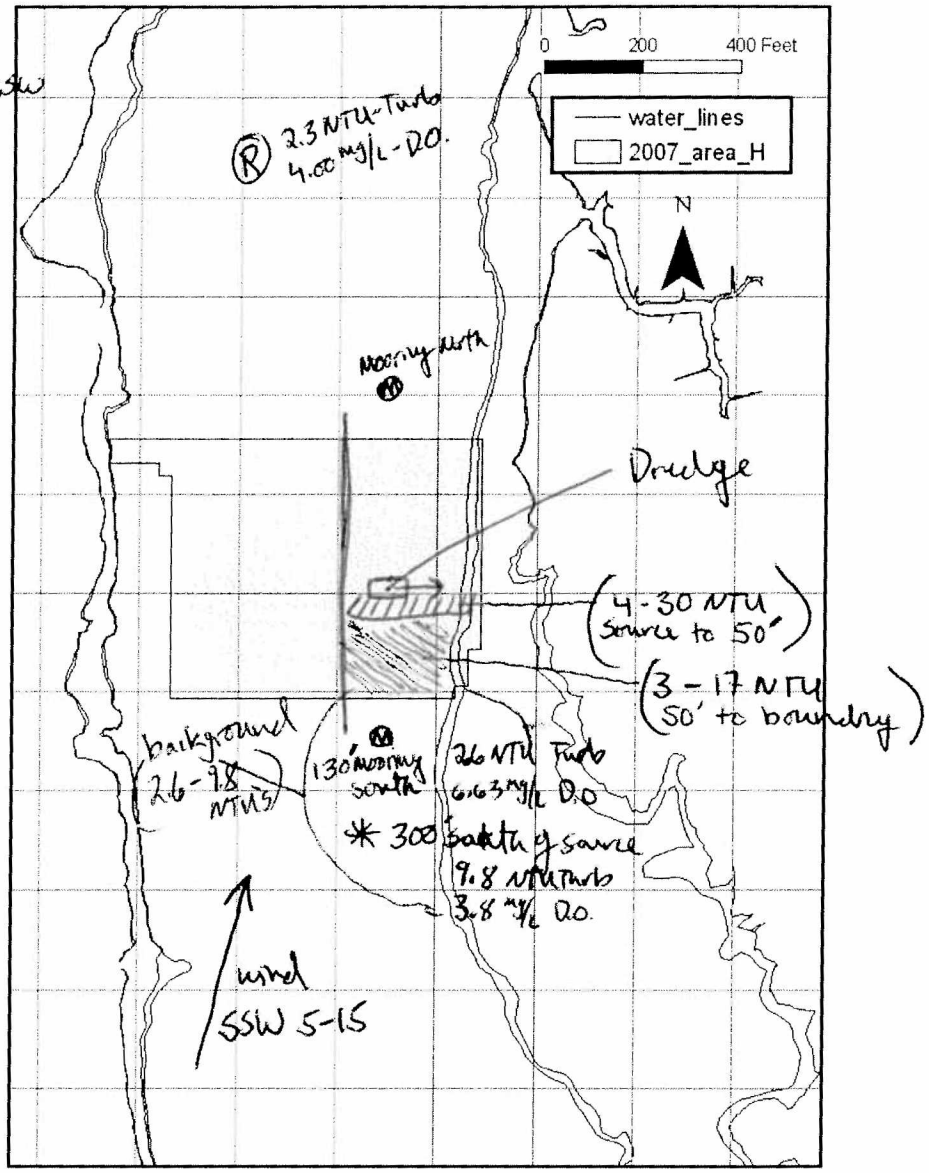
Date: 10/8/07
Weather: overcast/Rain/wind 5-15 SSW
Tides:

3.9	@	0626
0.2	@	1311
4.0	@	1846

Monitoring Period:
From: 0820 **To:** 1245

Tidal Stage: HWS Ebb LWS Flood

Dredging Activity:
Working middle west to East



Turbidity Summary

Location	Turbidity (NTU)	Sensor/water Depth (ft)
(R) Ref North	2.3	0.4 / 5.9
* 300' south of Source	9.8	0.8 / 4.9
600' south of Source	2.5	0.7 / 4.0
(M) YSI mooring South	2.6	0.8 / 6.4

Oil sheen/ Debris:
Occasional spotty sheen Associated with dredge Activity

Fish Passage: Fished observed in all areas / No Apparent obstruction from dredge Activity

Samples Collected for Laboratory Analysis – Sample IDs:

TSS (1L)		**Turbidity (500ml)**	
Total PCB (1L)		**Dissolved PCB (2x1L)**	
Toxicity (21L)		**Metals (500ml)**	

Notes: Overall Turbidity quite low today. An average of 4-30 NTU was observed in close proximity to dredge (source) with an occasional higher spike to 50 NTU. From 50' to the dredge boundry Turbidity Ranged from 3-17 NTUs. Turbidity values dropped off to background and just above beyond the 130'-300' mark (25-98 NTU) Dissolved Oxygen ranged between 3.5-4 mg/L inside the dredge area to 3-6.6 mg/L outside the Dredge Area.

Sampling Crew: M. Walsh, T. Monnier
Chief Scientist Signature: Mike Walsh

Battelle

Water Quality Monitoring
In situ Data Field Form

Dredging Location	Area H
Dredging Description	working west to East (middle)
Survey Vessel	Gale Force
Chief Scientist	
Sampling Technician	
Vessel Captain	M. Walsh
Other Personnel	
Weather conditions	overcast rain / wind SSW 5-15

Date	10/8/07
Page	of

Tide information	
High	3.9 @ 0626
Low	0.2 @ 1311
High	4.0 @ 1846
Low	

	Station Number	Time	Latitude	Longitude	Water depth	Sample Depth	Turbidity	Salinity	DO	Temp	Notes
YAI Mooring	H Sth	0820	2704243.29	815486.1	6.4	0.8	2.6	31.10	6.63	19.98	
Ref North		0827	2705623.2	815365.7	5.9	.4	2.3	30.78	4.00	19.96	
300' N of Boundy		0830	2705251.6	815580.1	5.7	.5	2.6	30.95	4.18	19.82	
300' south of Source		0844	2704305.4	815473.8	4.9	.8	9.8	31.25	3.8	19.92	
600' south of Source		0847	2703997.8	815540.1	4.0	.7	2.5	30.35	4.18	19.96	
170' south of Source		0932	2704447.2	815607.0	4.5	.8	10.8	30.61	4.28	19.75	

Battelle Daily Field Summary Sheet for Water Quality Monitoring

Date: 10/9/07
Weather: Pty Cloudy / wind N 10-15

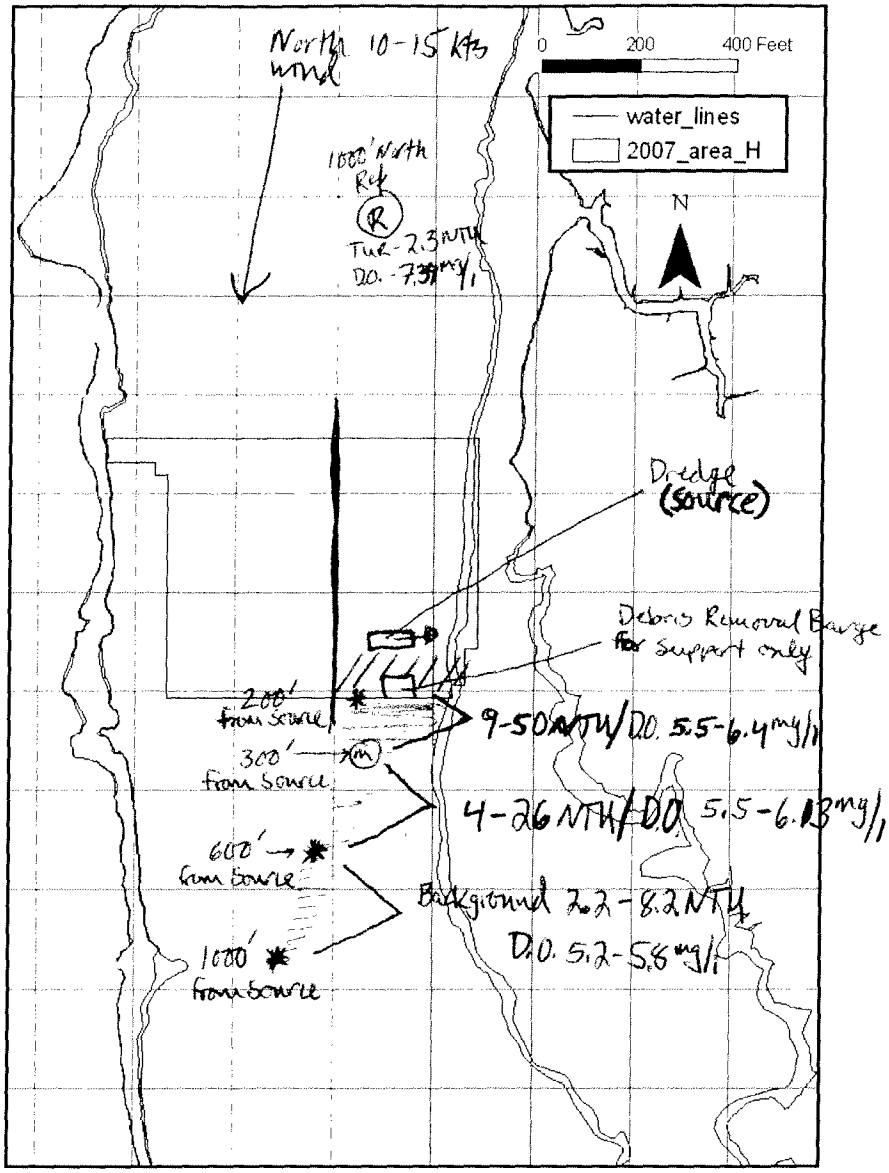
Tides:

4.1	@	0706
0.2	@	1337
4.0	@	1926

Monitoring Period:
From: 0845 **To:** 1345

Tidal Stage: HWS (Ebb) LWS Flood

Dredging Activity:
Middle South working west to East
- Debris Removal Barge for support



Turbidity Summary

Location (Reference)	Turbidity (NTU)	Sensor/water Depth (ft)
1000' North of Source	2.3	1.03/ 4.8
Area H Buoy 200' South of Source	39.8	1.08/ 3.9
mooring 300' South of Source	26.4	1.06/ 3.8
600' South of Source	8.2	1.07/ 5.4
1000' South of Source	2.2	1.04/ 7.2

Oil sheen/ Debris:
Occasional spotty sheen

Fish Passage: Occasional Fish on Surface / No obvious obstruction from Dredging Activity

Samples Collected for Laboratory Analysis – Sample IDs:

TSS (1L)		**Turbidity (500ml)**	
Total PCB (1L)		**Dissolved PCB (2x1L)**	
Toxicity (21L)		**Metals (500ml)**	

Notes: - Sampling Crew did not enter Dredge Area Due to Close proximity of Dredges Debris Removal and Support Vessels. Highest Turbidity readings observed between 200' and 300' downstream. Averages between 9-30NTU with spikes to 50NTU depending on dredge passage location. Outside of 300' Turbidity dropped off to just above background (4NTU) with spikes to the mid twenties (26NTU). This too was dependent on dredge location.

Sampling Crew: M Walsh, M Mikes
Chief Scientist Signature: Mike Walsh

Battelle

Water Quality Monitoring
In situ Data Field Form

Dredging Location	Area H
Dredging Description	Middle South working West to East / Debris Removal Barge Support Only
Survey Vessel	Gale Force
Chief Scientist	M. Walsh
Sampling Technician	M. McKee
Vessel Captain	M. Walsh
Other Personnel	—
Weather conditions	Partly Cloudy / wind N 10-15

Date	10/9/07
Page	of

Tide information	
High	4.1 @ 0706
Low	0.2 @ 1337
High	4.0 @ 1926
Low	

	Station Number	Time	Latitude	Longitude	Water depth	Sample Depth	Turbidity	Salinity	DO	Temp	Notes
1000' North of Source	Ref North	0951	2705736.68	815613.24	4.8	1.03	2.3	30.52	7.39	19.34	Ph 7.29
300' south of Source		1017	2704228.30	815499.11	5.2	0.98	13.4	31.03	6.39	19.53	Ph 7.43
600' south of Source		1030	2703920.66	815444.69	6.1	1.13	4.0	31.00	6.13	19.51	Ph 7.46
200' ~~150'~~ south of Source (Boundary)		~~1139~~ 1201	2704316.30	815447.20	3.9	1.08	39.8	30.71	5.60	19.58	Ph 7.50
300' south of Source			2704221.39	815497.76	3.8	1.06	26.4	30.75	5.89	19.56	Ph 7.50 moving silt
600' south of Source		1152	2703927.61	815405.89	5.4	1.07	8.2	30.78	5.85	19.54	Ph 7.49
1000' Ref South of Source		1146	2703526.61	815360.88	7.2	1.04	2.2	30.71	5.26	19.48	Ph 7.44

minimal dredge Activity

Belleville, Acushnet River, Buzzards Bay, Massachusetts
Newport, Rhode Island + Corrections: High(+0:07 *1.08) Low(+0:09 *1.08)
Units are feet
Mark level: 0.00

Tidal Stage	Date	Time	Time Zone	Tidal Height
High Tide:	8/6/2007	2:13	EDT	3.6
Low Tide:	8/6/2007	7:38	EDT	0.2
High Tide:	8/6/2007	14:51	EDT	4.5
Low Tide:	8/6/2007	20:57	EDT	0.7
High Tide:	8/7/2007	3:18	EDT	3.4
Low Tide:	8/7/2007	8:44	EDT	0.4
High Tide:	8/7/2007	15:55	EDT	4.5
Low Tide:	8/7/2007	22:25	EDT	0.7
High Tide:	8/8/2007	4:23	EDT	3.4
Low Tide:	8/8/2007	10:00	EDT	0.4
High Tide:	8/8/2007	16:57	EDT	4.6
Low Tide:	8/8/2007	23:42	EDT	0.5
High Tide:	8/9/2007	5:25	EDT	3.6
Low Tide:	8/9/2007	11:16	EDT	0.4
High Tide:	8/9/2007	17:55	EDT	4.7
Low Tide:	8/10/2007	0:40	EDT	0.4
High Tide:	8/10/2007	6:22	EDT	3.8
Low Tide:	8/10/2007	12:23	EDT	0.2
High Tide:	8/10/2007	18:49	EDT	4.8
Low Tide:	8/11/2007	1:28	EDT	0.2
High Tide:	8/11/2007	7:13	EDT	4
Low Tide:	8/11/2007	13:18	EDT	0.1
High Tide:	8/11/2007	19:38	EDT	4.8
Low Tide:	8/12/2007	2:07	EDT	0.1
High Tide:	8/12/2007	8:01	EDT	4.2
Low Tide:	8/12/2007	14:05	EDT	0
High Tide:	8/12/2007	20:23	EDT	4.8
Low Tide:	8/13/2007	2:42	EDT	0
High Tide:	8/13/2007	8:45	EDT	4.4
Low Tide:	8/13/2007	14:47	EDT	0
High Tide:	8/13/2007	21:06	EDT	4.7
Low Tide:	8/14/2007	3:13	EDT	0
High Tide:	8/14/2007	9:28	EDT	4.4
Low Tide:	8/14/2007	15:24	EDT	0.1
High Tide:	8/14/2007	21:46	EDT	4.5
Low Tide:	8/15/2007	3:42	EDT	0.1
High Tide:	8/15/2007	10:09	EDT	4.4
Low Tide:	8/15/2007	15:58	EDT	0.3
High Tide:	8/15/2007	22:26	EDT	4.2
Low Tide:	8/16/2007	4:09	EDT	0.2
High Tide:	8/16/2007	10:50	EDT	4.3
Low Tide:	8/16/2007	16:31	EDT	0.4
High Tide:	8/16/2007	23:06	EDT	3.9

Belleville, Acushnet River, Buzzards Bay, Massachusetts
Newport, Rhode Island + Corrections: High(+0:07 *1.08) Low(+0:09 *1.08)
Units are feet
Mark level: 0.00

Tidal Stage	Date	Time	Time Zone	Tidal Height
Low Tide:	8/17/2007	4:37	EDT	0.3
High Tide:	8/17/2007	11:32	EDT	4.1
Low Tide:	8/17/2007	17:04	EDT	0.6
High Tide:	8/17/2007	23:46	EDT	3.6
Low Tide:	8/18/2007	5:08	EDT	0.4
High Tide:	8/18/2007	12:15	EDT	3.9
Low Tide:	8/18/2007	17:40	EDT	0.9
High Tide:	8/19/2007	0:29	EDT	3.3
Low Tide:	8/19/2007	5:42	EDT	0.6
High Tide:	8/19/2007	13:02	EDT	3.7
Low Tide:	8/19/2007	18:21	EDT	1.1
High Tide:	8/20/2007	1:18	EDT	3.1
Low Tide:	8/20/2007	6:21	EDT	0.7
High Tide:	8/20/2007	13:54	EDT	3.6
Low Tide:	8/20/2007	19:10	EDT	1.2
High Tide:	8/21/2007	2:14	EDT	2.9
Low Tide:	8/21/2007	7:08	EDT	0.9
High Tide:	8/21/2007	14:51	EDT	3.6
Low Tide:	8/21/2007	20:11	EDT	1.3
High Tide:	8/22/2007	3:16	EDT	2.8
Low Tide:	8/22/2007	8:06	EDT	1
High Tide:	8/22/2007	15:50	EDT	3.6
Low Tide:	8/22/2007	21:25	EDT	1.3
High Tide:	8/23/2007	4:18	EDT	2.9
Low Tide:	8/23/2007	9:13	EDT	1
High Tide:	8/23/2007	16:47	EDT	3.8
Low Tide:	8/23/2007	22:42	EDT	1.1
High Tide:	8/24/2007	5:15	EDT	3.1
Low Tide:	8/24/2007	10:25	EDT	0.8
High Tide:	8/24/2007	17:40	EDT	4.1
Low Tide:	8/24/2007	23:42	EDT	0.7
High Tide:	8/25/2007	6:07	EDT	3.5
Low Tide:	8/25/2007	11:31	EDT	0.6
High Tide:	8/25/2007	18:29	EDT	4.4
Low Tide:	8/26/2007	0:29	EDT	0.4
High Tide:	8/26/2007	6:54	EDT	3.9
Low Tide:	8/26/2007	12:27	EDT	0.2
High Tide:	8/26/2007	19:15	EDT	4.6
Low Tide:	8/27/2007	1:11	EDT	0.1
High Tide:	8/27/2007	7:39	EDT	4.3
Low Tide:	8/27/2007	13:18	EDT	-0.1
High Tide:	8/27/2007	19:59	EDT	4.8
Low Tide:	8/28/2007	1:52	EDT	-0.2

Belleville, Acushnet River, Buzzards Bay, Massachusetts
Newport, Rhode Island + Corrections: High(+0:07 *1.08) Low(+0:09 *1.08)
Units are feet
Mark level: 0.00

Tidal Stage	Date	Time	Time Zone	Tidal Height
High Tide:	8/28/2007	8:23	EDT	4.6
Low Tide:	8/28/2007	14:07	EDT	-0.3
High Tide:	8/28/2007	20:44	EDT	4.9
Low Tide:	8/29/2007	2:33	EDT	-0.4
High Tide:	8/29/2007	9:08	EDT	4.9
Low Tide:	8/29/2007	14:54	EDT	-0.5
High Tide:	8/29/2007	21:29	EDT	4.8
Low Tide:	8/30/2007	3:14	EDT	-0.6
High Tide:	8/30/2007	9:54	EDT	5
Low Tide:	8/30/2007	15:42	EDT	-0.5
High Tide:	8/30/2007	22:15	EDT	4.7
Low Tide:	8/31/2007	3:56	EDT	-0.5
High Tide:	8/31/2007	10:41	EDT	5.1
Low Tide:	8/31/2007	16:31	EDT	-0.3
High Tide:	8/31/2007	23:03	EDT	4.4
Low Tide:	9/1/2007	4:40	EDT	-0.4
High Tide:	9/1/2007	11:32	EDT	5
Low Tide:	9/1/2007	17:22	EDT	-0.1
High Tide:	9/1/2007	23:55	EDT	4.1
Low Tide:	9/2/2007	5:26	EDT	-0.2
High Tide:	9/2/2007	12:27	EDT	4.8
Low Tide:	9/2/2007	18:19	EDT	0.2
High Tide:	9/3/2007	0:52	EDT	3.7
Low Tide:	9/3/2007	6:18	EDT	0.1
High Tide:	9/3/2007	13:27	EDT	4.6
Low Tide:	9/3/2007	19:27	EDT	0.6
High Tide:	9/4/2007	1:55	EDT	3.5
Low Tide:	9/4/2007	7:19	EDT	0.4
High Tide:	9/4/2007	14:32	EDT	4.4
Low Tide:	9/4/2007	20:53	EDT	0.8
High Tide:	9/5/2007	3:04	EDT	3.3
Low Tide:	9/5/2007	8:35	EDT	0.6
High Tide:	9/5/2007	15:40	EDT	4.3
Low Tide:	9/5/2007	22:29	EDT	0.7
High Tide:	9/6/2007	4:11	EDT	3.4
Low Tide:	9/6/2007	10:07	EDT	0.6
High Tide:	9/6/2007	16:43	EDT	4.3
Low Tide:	9/6/2007	23:40	EDT	0.6
High Tide:	9/7/2007	5:12	EDT	3.6
Low Tide:	9/7/2007	11:29	EDT	0.5
High Tide:	9/7/2007	17:41	EDT	4.4
Low Tide:	9/8/2007	0:31	EDT	0.4
High Tide:	9/8/2007	6:06	EDT	3.9

Belleville, Acushnet River, Buzzards Bay, Massachusetts
Newport, Rhode Island + Corrections: High(+0:07 *1.08) Low(+0:09 *1.08)
Units are feet
Mark level: 0.00

Tidal Stage	Date	Time	Time Zone	Tidal Height
Low Tide:	9/8/2007	12:29	EDT	0.3
High Tide:	9/8/2007	18:32	EDT	4.5
Low Tide:	9/9/2007	1:11	EDT	0.3
High Tide:	9/9/2007	6:55	EDT	4.1
Low Tide:	9/9/2007	13:15	EDT	0.2
High Tide:	9/9/2007	19:18	EDT	4.5
Low Tide:	9/10/2007	1:44	EDT	0.2
High Tide:	9/10/2007	7:38	EDT	4.4
Low Tide:	9/10/2007	13:54	EDT	0.1
High Tide:	9/10/2007	19:59	EDT	4.5
Low Tide:	9/11/2007	2:11	EDT	0.1
High Tide:	9/11/2007	8:19	EDT	4.5
Low Tide:	9/11/2007	14:28	EDT	0.1
High Tide:	9/11/2007	20:39	EDT	4.4
Low Tide:	9/12/2007	2:37	EDT	0.1
High Tide:	9/12/2007	8:59	EDT	4.6
Low Tide:	9/12/2007	14:58	EDT	0.1
High Tide:	9/12/2007	21:17	EDT	4.3
Low Tide:	9/13/2007	3:02	EDT	0.1
High Tide:	9/13/2007	9:37	EDT	4.5
Low Tide:	9/13/2007	15:27	EDT	0.2
High Tide:	9/13/2007	21:54	EDT	4.1
Low Tide:	9/14/2007	3:28	EDT	0.1
High Tide:	9/14/2007	10:16	EDT	4.4
Low Tide:	9/14/2007	15:56	EDT	0.4
High Tide:	9/14/2007	22:31	EDT	3.8
Low Tide:	9/15/2007	3:56	EDT	0.2
High Tide:	9/15/2007	10:55	EDT	4.2
Low Tide:	9/15/2007	16:28	EDT	0.5
High Tide:	9/15/2007	23:10	EDT	3.5
Low Tide:	9/16/2007	4:26	EDT	0.4
High Tide:	9/16/2007	11:35	EDT	4
Low Tide:	9/16/2007	17:02	EDT	0.7
High Tide:	9/16/2007	23:52	EDT	3.2
Low Tide:	9/17/2007	5:01	EDT	0.5
High Tide:	9/17/2007	12:20	EDT	3.7
Low Tide:	9/17/2007	17:42	EDT	0.9
High Tide:	9/18/2007	0:39	EDT	3
Low Tide:	9/18/2007	5:41	EDT	0.7
High Tide:	9/18/2007	13:11	EDT	3.6
Low Tide:	9/18/2007	18:29	EDT	1.1
High Tide:	9/19/2007	1:37	EDT	2.8
Low Tide:	9/19/2007	6:29	EDT	0.9

Belleville, Acushnet River, Buzzards Bay, Massachusetts
Newport, Rhode Island + Corrections: High(+0:07 *1.08) Low(+0:09 *1.08)
Units are feet
Mark level: 0.00

Tidal Stage	Date	Time	Time Zone	Tidal Height
High Tide:	9/19/2007	14:10	EDT	3.5
Low Tide:	9/19/2007	19:28	EDT	1.2
High Tide:	9/20/2007	2:42	EDT	2.8
Low Tide:	9/20/2007	7:29	EDT	1
High Tide:	9/20/2007	15:13	EDT	3.5
Low Tide:	9/20/2007	20:40	EDT	1.1
High Tide:	9/21/2007	3:47	EDT	2.9
Low Tide:	9/21/2007	8:42	EDT	1
High Tide:	9/21/2007	16:14	EDT	3.7
Low Tide:	9/21/2007	21:56	EDT	0.9
High Tide:	9/22/2007	4:45	EDT	3.2
Low Tide:	9/22/2007	9:59	EDT	0.8
High Tide:	9/22/2007	17:09	EDT	3.9
Low Tide:	9/22/2007	23:00	EDT	0.6
High Tide:	9/23/2007	5:37	EDT	3.7
Low Tide:	9/23/2007	11:09	EDT	0.4
High Tide:	9/23/2007	17:59	EDT	4.2
Low Tide:	9/23/2007	23:51	EDT	0.2
High Tide:	9/24/2007	6:25	EDT	4.2
Low Tide:	9/24/2007	12:08	EDT	0.1
High Tide:	9/24/2007	18:47	EDT	4.5
Low Tide:	9/25/2007	0:37	EDT	-0.1
High Tide:	9/25/2007	7:11	EDT	4.6
Low Tide:	9/25/2007	13:00	EDT	-0.3
High Tide:	9/25/2007	19:33	EDT	4.7
Low Tide:	9/26/2007	1:20	EDT	-0.5
High Tide:	9/26/2007	7:56	EDT	5
Low Tide:	9/26/2007	13:49	EDT	-0.6
High Tide:	9/26/2007	20:18	EDT	4.8
Low Tide:	9/27/2007	2:03	EDT	-0.7
High Tide:	9/27/2007	8:42	EDT	5.3
Low Tide:	9/27/2007	14:37	EDT	-0.7
High Tide:	9/27/2007	21:05	EDT	4.8
Low Tide:	9/28/2007	2:47	EDT	-0.8
High Tide:	9/28/2007	9:29	EDT	5.4
Low Tide:	9/28/2007	15:26	EDT	-0.7
High Tide:	9/28/2007	21:52	EDT	4.6
Low Tide:	9/29/2007	3:31	EDT	-0.7
High Tide:	9/29/2007	10:18	EDT	5.3
Low Tide:	9/29/2007	16:15	EDT	-0.5
High Tide:	9/29/2007	22:42	EDT	4.3
Low Tide:	9/30/2007	4:17	EDT	-0.5
High Tide:	9/30/2007	11:10	EDT	5.1

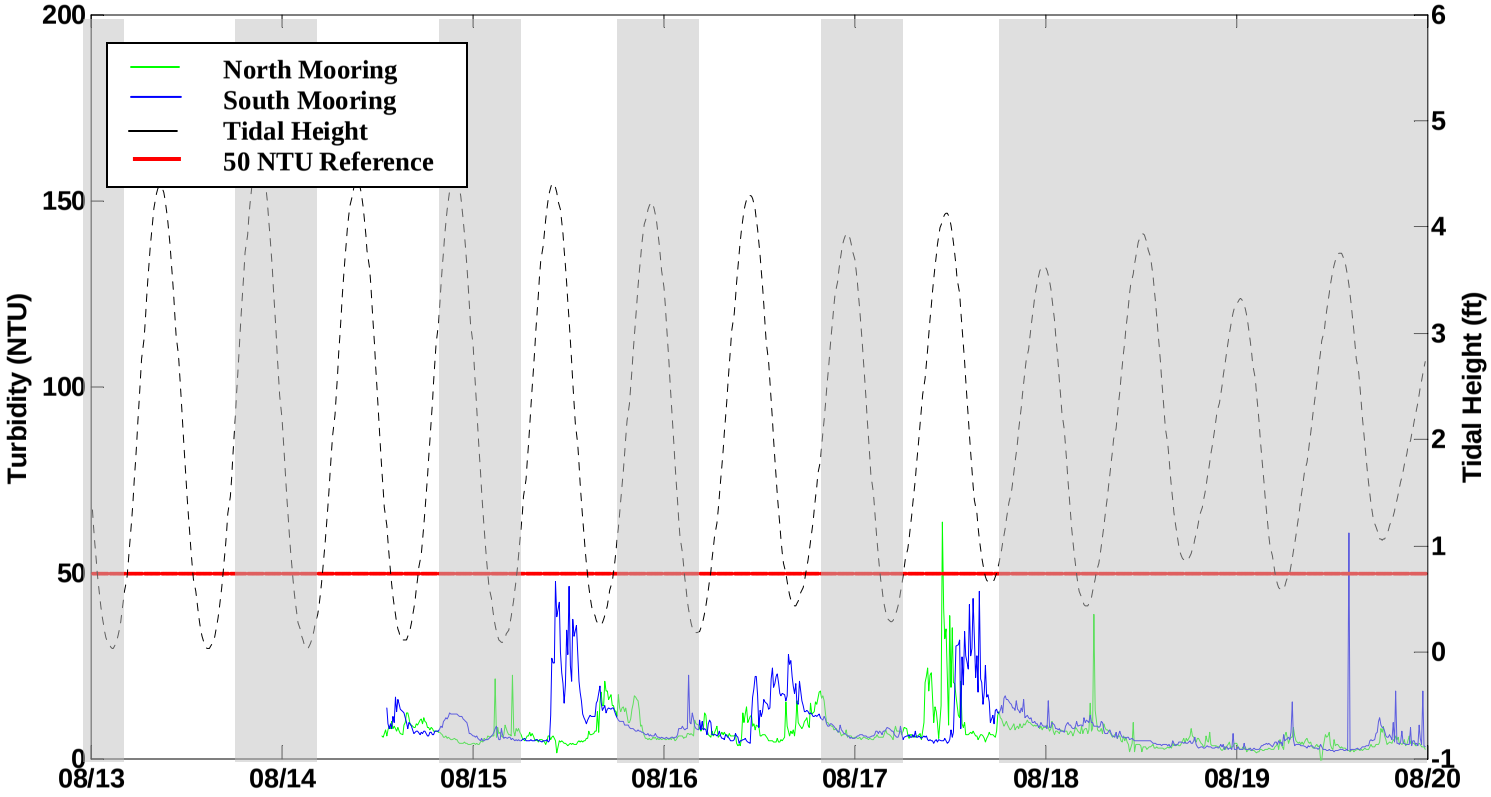
Belleville, Acushnet River, Buzzards Bay, Massachusetts
Newport, Rhode Island + Corrections: High(+0:07 *1.08) Low(+0:09 *1.08)
Units are feet
Mark level: 0.00

Tidal Stage	Date	Time	Time Zone	Tidal Height
Low Tide:	9/30/2007	17:08	EDT	-0.2
High Tide:	9/30/2007	23:35	EDT	4
Low Tide:	10/1/2007	5:06	EDT	-0.2
High Tide:	10/1/2007	12:06	EDT	4.8
Low Tide:	10/1/2007	18:06	EDT	0.2
High Tide:	10/2/2007	0:34	EDT	3.6
Low Tide:	10/2/2007	6:01	EDT	0.2
High Tide:	10/2/2007	13:08	EDT	4.5
Low Tide:	10/2/2007	19:16	EDT	0.5
High Tide:	10/3/2007	1:39	EDT	3.4
Low Tide:	10/3/2007	7:07	EDT	0.5
High Tide:	10/3/2007	14:14	EDT	4.2
Low Tide:	10/3/2007	20:47	EDT	0.7
High Tide:	10/4/2007	2:48	EDT	3.3
Low Tide:	10/4/2007	8:36	EDT	0.7
High Tide:	10/4/2007	15:21	EDT	4
Low Tide:	10/4/2007	22:18	EDT	0.7
High Tide:	10/5/2007	3:54	EDT	3.4
Low Tide:	10/5/2007	10:19	EDT	0.7
High Tide:	10/5/2007	16:24	EDT	4
Low Tide:	10/5/2007	23:21	EDT	0.6
High Tide:	10/6/2007	4:53	EDT	3.6
Low Tide:	10/6/2007	11:31	EDT	0.5
High Tide:	10/6/2007	17:20	EDT	4
Low Tide:	10/7/2007	0:07	EDT	0.5
High Tide:	10/7/2007	5:45	EDT	3.9
Low Tide:	10/7/2007	12:22	EDT	0.4
High Tide:	10/7/2007	18:09	EDT	4.1
Low Tide:	10/8/2007	0:42	EDT	0.3
High Tide:	10/8/2007	6:30	EDT	4.2
Low Tide:	10/8/2007	13:03	EDT	0.2
High Tide:	10/8/2007	18:52	EDT	4.1
Low Tide:	10/9/2007	1:10	EDT	0.2
High Tide:	10/9/2007	7:12	EDT	4.4
Low Tide:	10/9/2007	13:35	EDT	0.1
High Tide:	10/9/2007	19:32	EDT	4.1

Appendix B

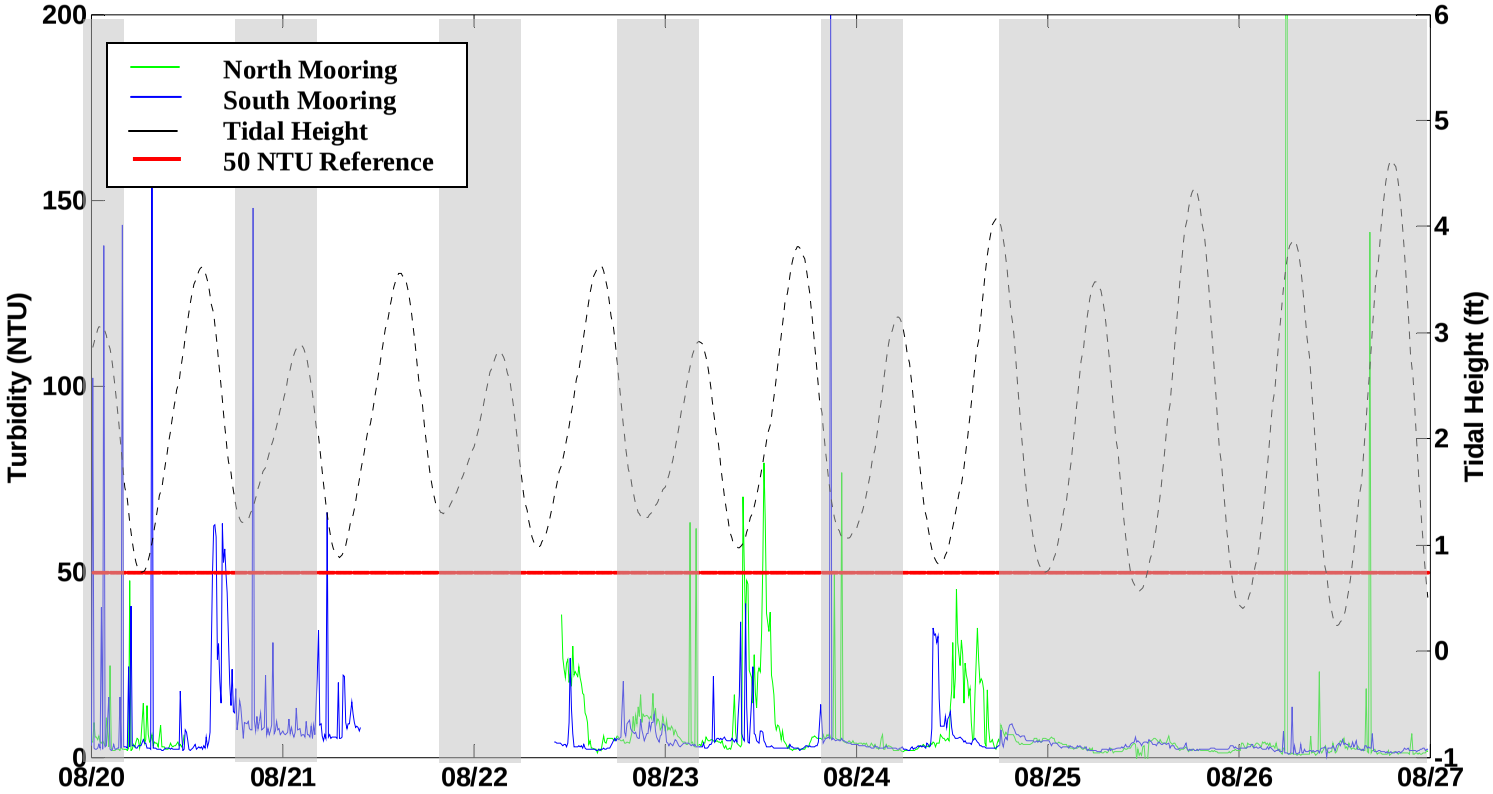
Continuous *In Situ* Water Quality Data

This page intentionally left blank



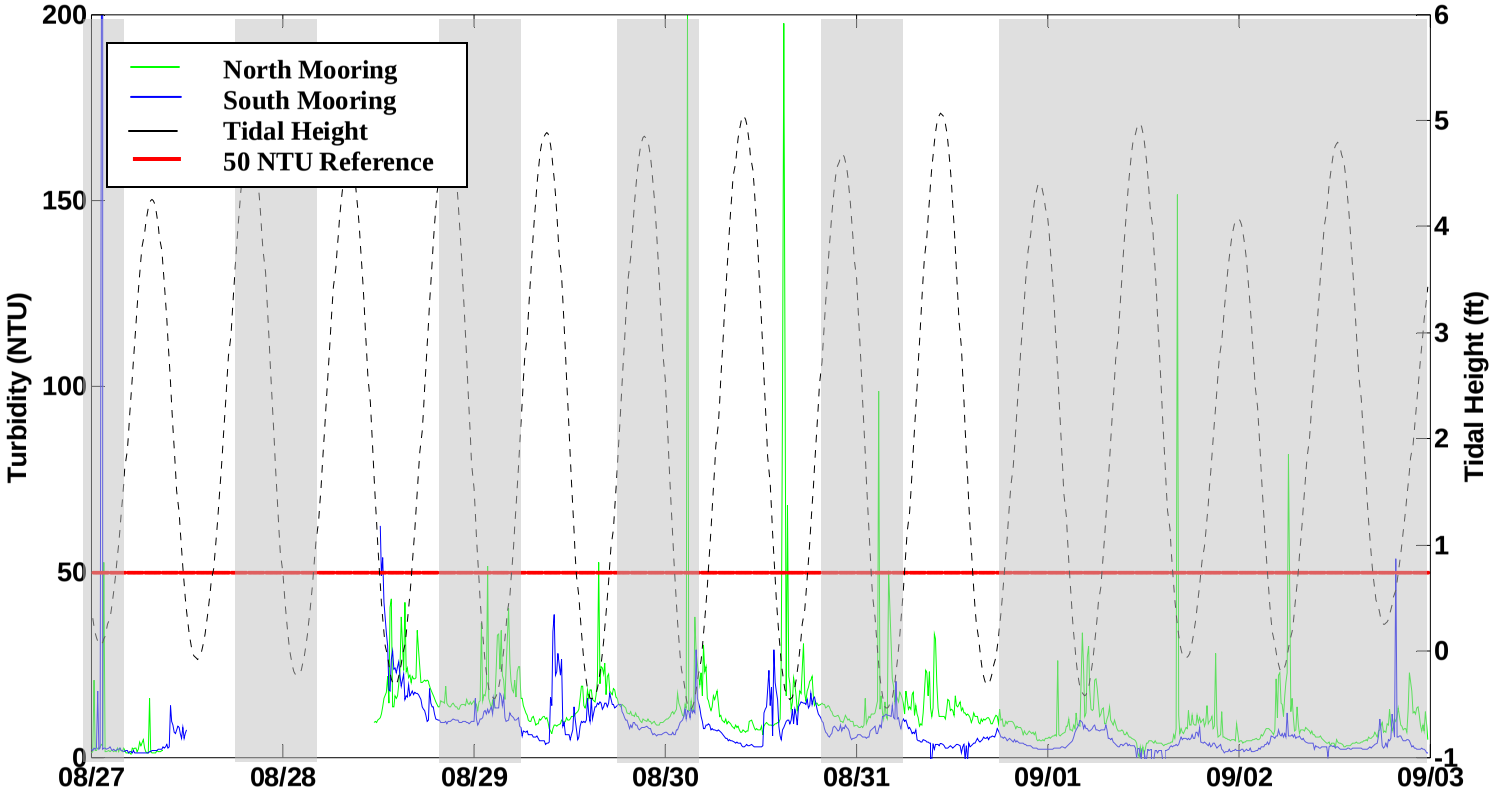
*Shaded areas represent nights and weekends.

Figure B-1. Turbidity Monitoring at New Bedford Harbor Superfund Site 8/13/2007 to 8/20/2007.



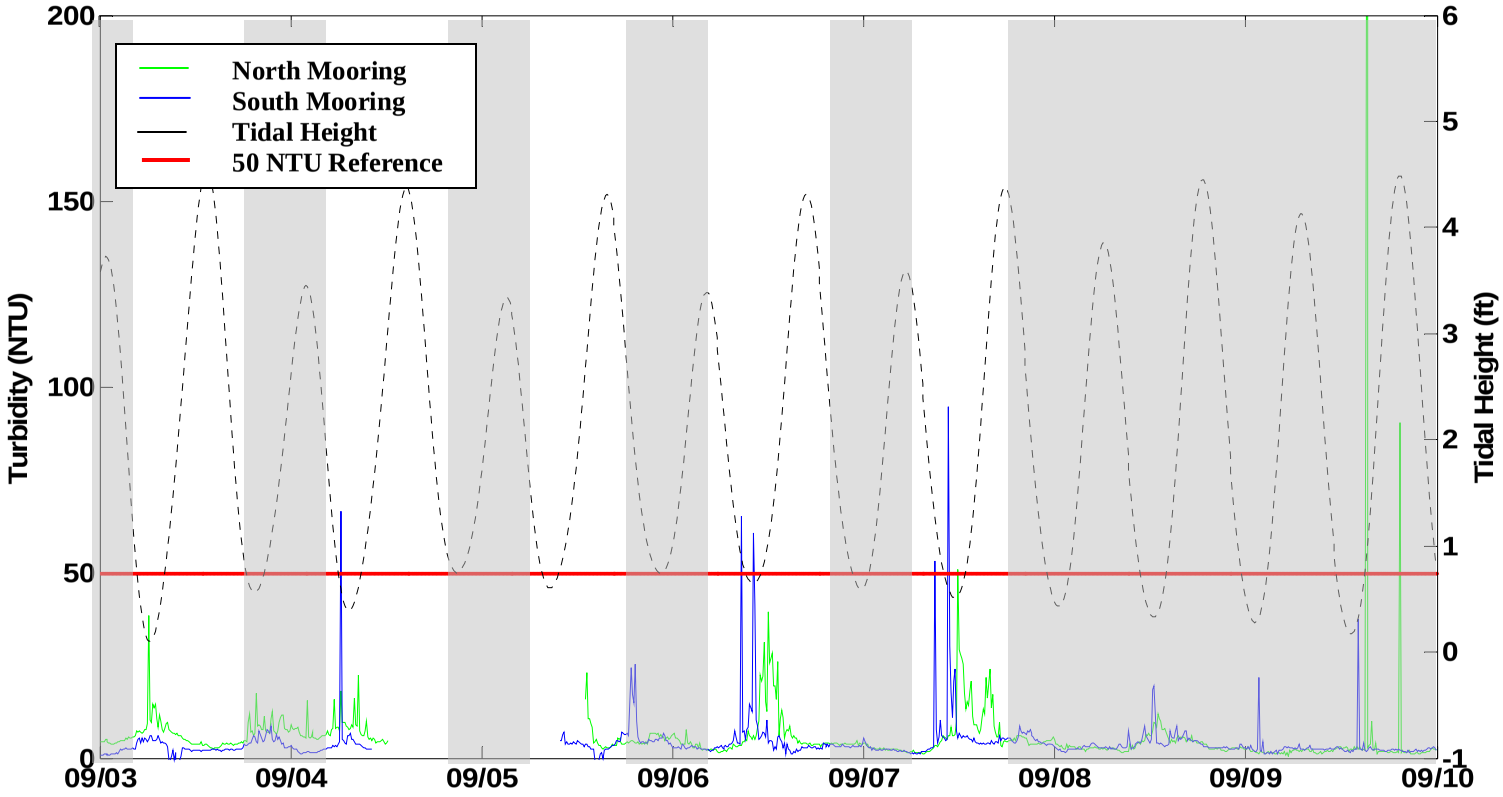
*Shaded areas represent nights and weekends.

Figure B-2. Turbidity Monitoring at New Bedford Harbor Superfund Site 8/20/2007 to 8/27/2007.



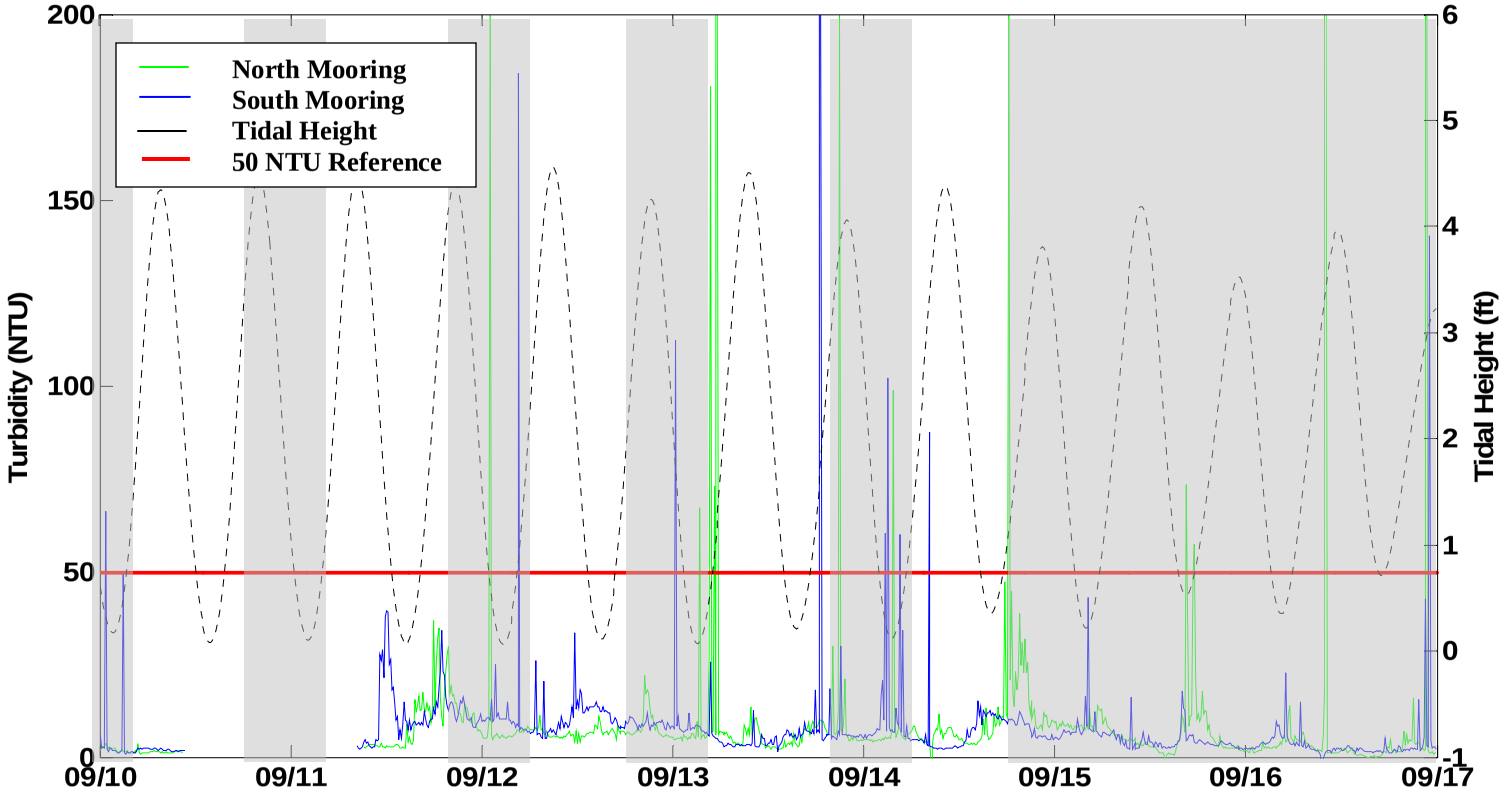
*Shaded areas represent nights and weekends.

Figure B-3. Turbidity Monitoring at New Bedford Harbor Superfund Site 8/27/2007 to 9/3/2007.



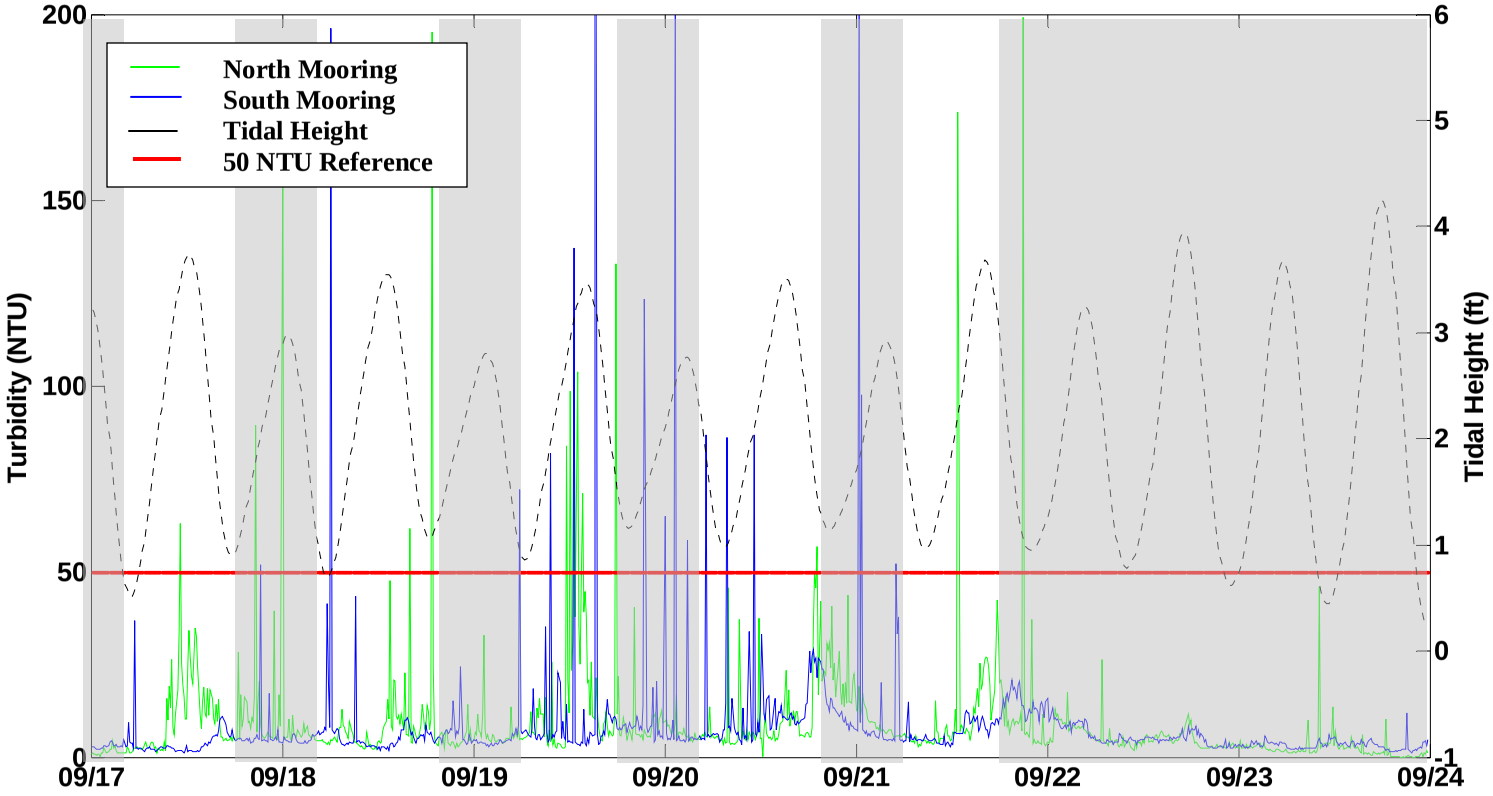
*Shaded areas represent nights and weekends.

Figure B-4. Turbidity Monitoring at New Bedford Harbor Superfund Site 9/3/2007 to 9/10/2007.



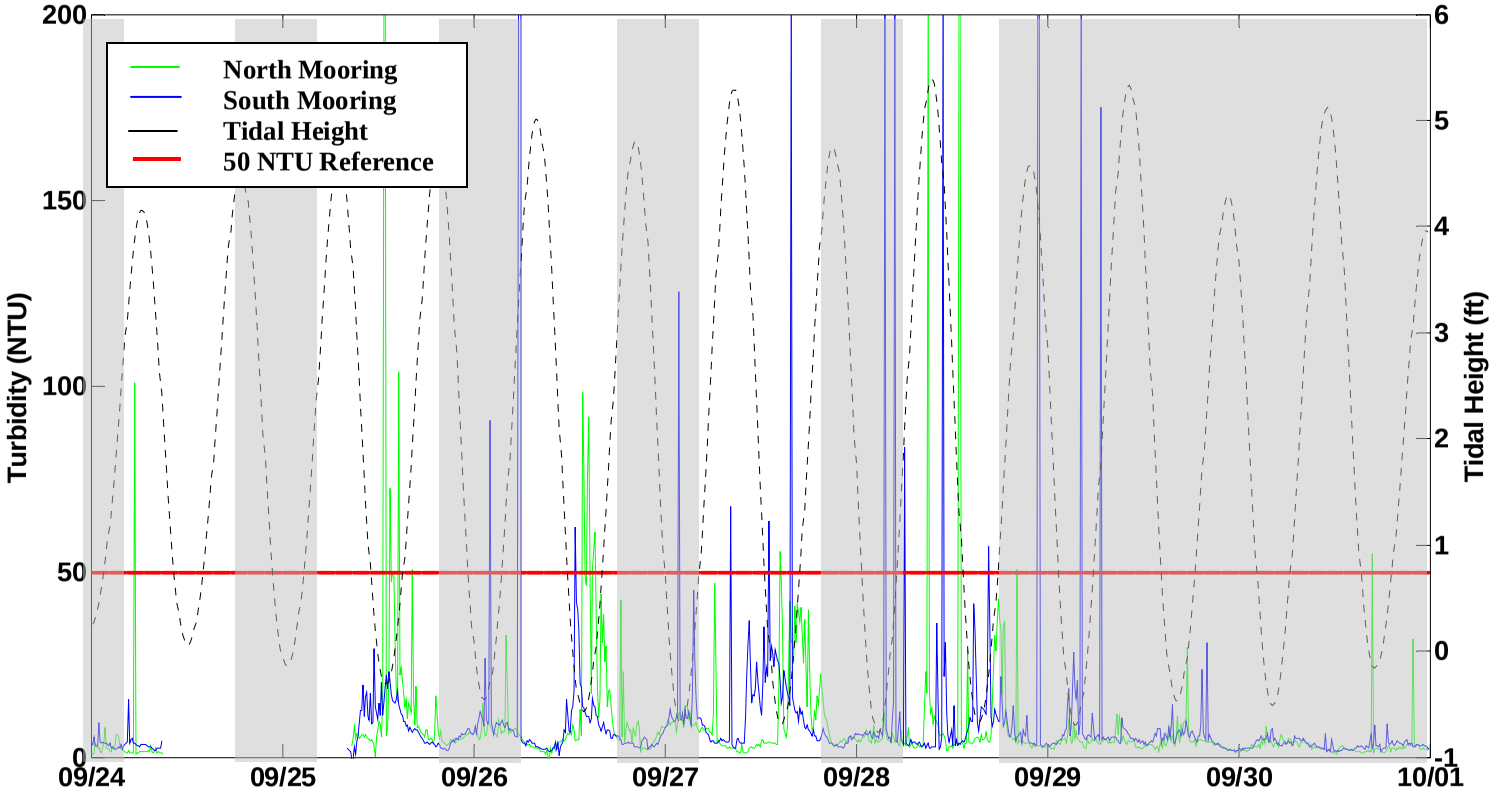
*Shaded areas represent nights and weekends.

Figure B-5. Turbidity Monitoring at New Bedford Harbor Superfund Site 9/10/2007 to 9/17/2007.



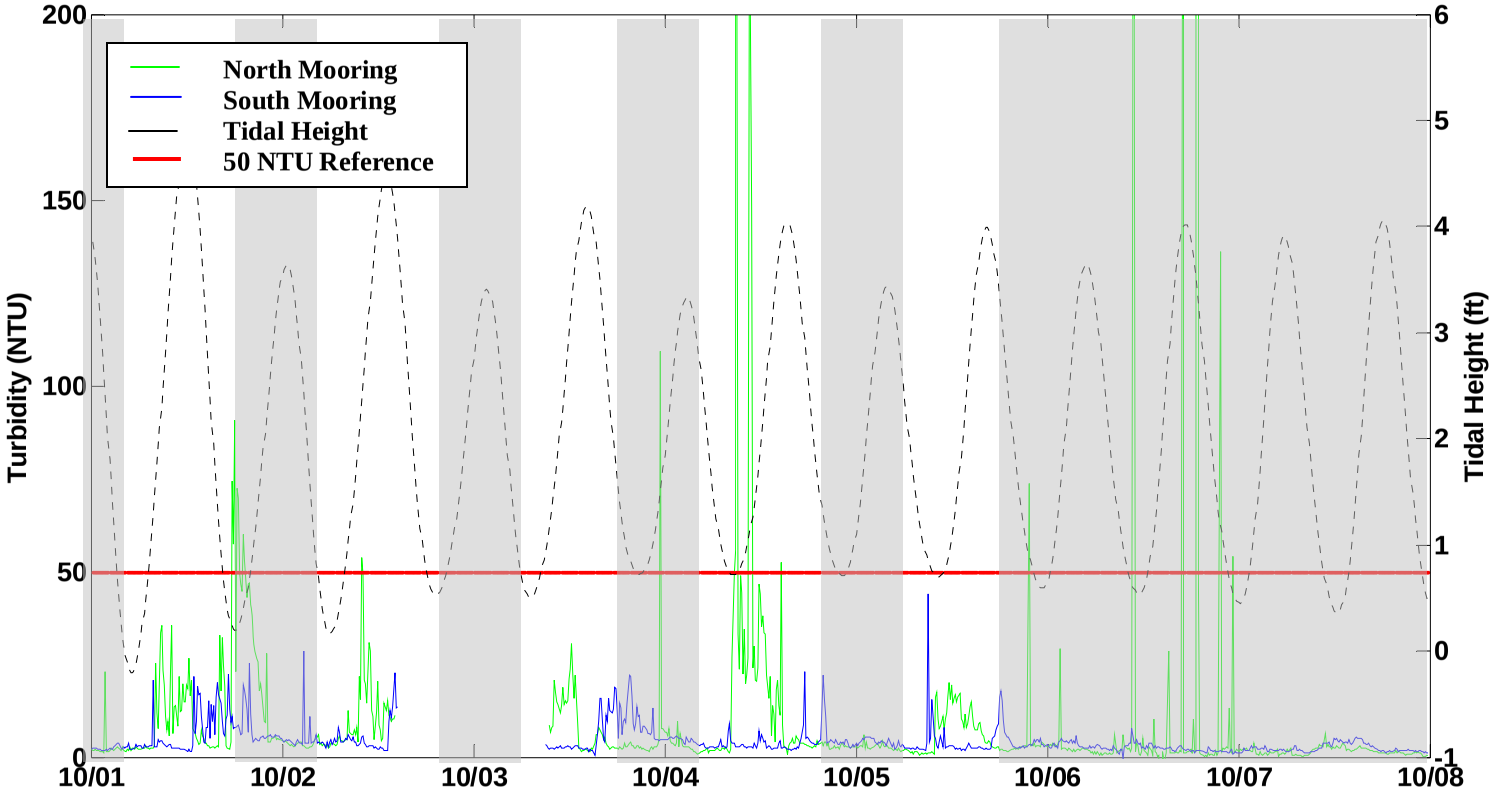
*Shaded areas represent nights and weekends.

Figure B-6. Turbidity Monitoring at New Bedford Harbor Superfund Site 9/17/2007 to 9/24/2007.



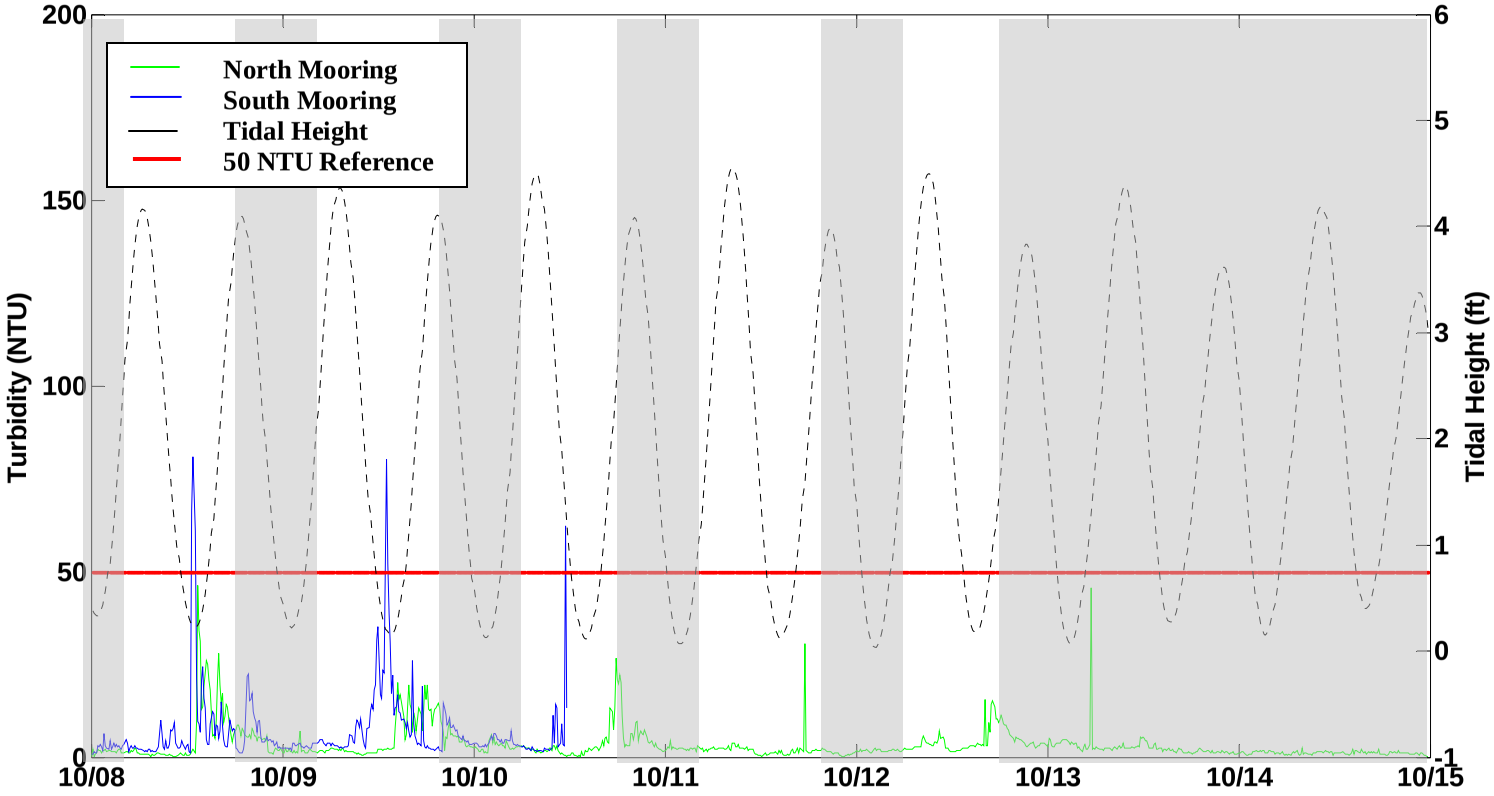
*Shaded areas represent nights and weekends.

Figure B-7. Turbidity Monitoring at New Bedford Harbor Superfund Site 9/24/2007 to 10/1/2007.



*Shaded areas represent nights and weekends.

Figure B-8. Turbidity Monitoring at New Bedford Harbor Superfund Site 10/1/2007 to 10/8/2007.



*Shaded areas represent nights and weekends.

Figure B-9. Turbidity Monitoring at New Bedford Harbor Superfund Site 10/8/2007 to 10/15/2007.

This page intentionally left blank

Appendix C

Total and Dissolved PCB Analytical Data

This page intentionally left blank

APPENDIX C

Individual Congener and Sum of Congeners Results

Station ID	Station ID	MIDREF080907			MIDREF080907				13NTU080907			13NTU080907			
Collected	Collected	8/9/2007			8/9/2007				8/9/2007			8/9/2007			
Fraction	Fraction	TOTAL			DISS				TOTAL			DISS			
QC Code	QC Code	SA			SA				SA			SA			
Sample ID	Sample ID	WQ-TPC-001-080907			WQ-DPC-001-080907				WQ-TPC-002-080907			WQ-DPC-002-080907			
Param Name	Param Code	Result	Unit	Final Q	Result	Unit	Final Q		Result	Unit	Final Q	Result	Unit	Final Q	
2,4'-Dicb (PCB 8)	34883-43-7	0.0200	UG/L	D	0.0160	UG/L	D		0.0160	UG/L	D	0.0200	UG/L	D	
2,2',5-Tricb (PCB 18)	37680-65-2	0.0250	UG/L	D	0.0180	UG/L	D		0.0230	UG/L	D	0.0220	UG/L	D	
2,4,4'-Tricb (PCB 28)	7012-37-5	0.0220	UG/L	D	0.0100	UG/L	D		0.0270	UG/L	D	0.0130	UG/L	D	
2,2',3,5'-Tetracb (PCB 44)	41464-39-5	0.0080	UG/L	D	0.0730	UG/L			0.0150	UG/L	D	0.0035	UG/L	D	
2,2',5,5'-Tetracb (PCB 52)	35693-99-3	0.0230	UG/L	D	0.0078	UG/L	D		0.0270	UG/L	D	0.0079	UG/L	D	
2,3',4,4'-Tetracb (PCB 66)	32598-10-0	0.0500	UG/L		0.0140	UG/L			0.0049	UG/L	D	0.0170	UG/L		
2,2',4,5,5'-Pentacb (PCB 101)	37680-73-2	0.0034	UG/L	D	0.0150	UG/L			0.0099	UG/L	D	0.0200	UG/L		
2,3,3',4,4'-Pentacb (PCB 105)	32598-14-4	0.0046	UG/L		0.0005	UG/L	U		0.0210	UG/L		0.0005	UG/L	U	
2,3',4,4',5-Pentacb (PCB 118)	31508-00-6	0.0480	UG/L		0.0058	UG/L			0.0044	UG/L	D	0.0074	UG/L		
2,2',3,3',4,4'-Hexacb (PCB 128)	38380-07-3	0.0027	UG/L		0.0005	UG/L	U		0.0180	UG/L	p	0.0005	UG/L	U	
2,2',3,4,4',5'-Hexacb (PCB 138)	35065-28-2	0.0360	UG/L		0.0017	UG/L			0.0025	UG/L	D	0.0020	UG/L	p	
2,2',4,4',5,5'-Hexacb (PCB 153)	35065-27-1	0.0540	UG/L		0.0041	UG/L			0.0055	UG/L	D	0.0046	UG/L		
2,2',3,3',4,4',5-Heptacb (PCB 170)	35065-30-6	0.0035	UG/L		0.0005	UG/L	U		0.0240	UG/L	p	0.0005	UG/L	U	
2,2',3,4,4',5,5'-Heptacb (PCB 180)	35065-29-3	0.0052	UG/L		0.0005	UG/L	U		0.0320	UG/L	p	0.0005	UG/L	U	
2,2',3,4',5,5',6-Heptacb (PCB 187)	52663-68-0	0.0064	UG/L		0.0005	UG/L	U		0.0390	UG/L	p	0.0005	UG/L	U	
2,2',3,3',4,4',5,6-Octacb (PCB 195)	52663-78-2	0.0005	UG/L	U	0.0005	UG/L	U		0.0026	UG/L	p	0.0005	UG/L	U	
2,2',3,3',4,4',5,5',6-Nonacb (PCB 206)	40186-72-9	0.0005	UG/L	U	0.0005	UG/L	U		0.0034	UG/L	p	0.0005	UG/L	U	
DecaCB (PCB 209)	2051-24-3	0.0005	UG/L	U	0.0005	UG/L	U		0.0005	UG/L	U	0.0005	UG/L	U	
Sum of 18 NOAA Congeners (SUM 18 CONG)		0.31	UG/L		0.17	UG/L			0.28	UG/L		0.12	UG/L		

APPENDIX C

Individual Congener and Sum of Congeners Results

Station ID	Station ID	20NTU080907			20NTU080907				55NTU080907			55NTU080907			
Collected	Collected			8/9/2007			8/9/2007				8/9/2007			8/9/2007	
Fraction	Fraction	TOTAL			DISS				TOTAL			DISS			
QC Code	QC Code	SA			SA				SA			SA			
Sample ID	Sample ID	WQ-TPC-003-080907			WQ-DPC-003-080907				WQ-TPC-004-080907			WQ-DPC-004-080907			
Param Name	Param Code	Result	Unit	Final Q	Result	Unit	Final Q		Result	Unit	Final Q	Result	Unit	Final Q	
2,4'-Dicb (PCB 8)	34883-43-7	0.0160	UG/L	D	0.0220	UG/L	D		0.0180	UG/L	D	0.0300	UG/L	D	
2,2',5-Tricb (PCB 18)	37680-65-2	0.0240	UG/L	D	0.0230	UG/L	D		0.0260	UG/L	D	0.0300	UG/L	D	
2,4,4'-Tricb (PCB 28)	7012-37-5	0.0250	UG/L	D	0.0140	UG/L	D		0.0310	UG/L	D	0.0170	UG/L	D	
2,2',3,5'-Tetracb (PCB 44)	41464-39-5	0.0130	UG/L	D	0.0038	UG/L	D		0.0160	UG/L	D	0.0050	UG/L	D	
2,2',5,5'-Tetracb (PCB 52)	35693-99-3	0.0250	UG/L	D	0.0087	UG/L	D		0.0280	UG/L	D	0.0096	UG/L	D	
2,3',4,4'-Tetracb (PCB 66)	32598-10-0	0.0044	UG/L	D	0.0180	UG/L			0.0053	UG/L	D	0.0210	UG/L		
2,2',4,5,5'-Pentacb (PCB 101)	37680-73-2	0.0097	UG/L	D	0.0270	UG/L			0.0140	UG/L	D	0.0310	UG/L		
2,3,3',4,4'-Pentacb (PCB 105)	32598-14-4	0.0180	UG/L		0.0005	UG/L	U		0.0460	UG/L	p	0.0005	UG/L	U	
2,3',4,4',5-Pentacb (PCB 118)	31508-00-6	0.0044	UG/L	D	0.0099	UG/L			0.0064	UG/L	D	0.0120	UG/L		
2,2',3,3',4,4'-Hexacb (PCB 128)	38380-07-3	0.0170	UG/L	p	0.0005	UG/L	U		0.0440	UG/L	p	0.0005	UG/L	U	
2,2',3,4,4',5'-Hexacb (PCB 138)	35065-28-2	0.0019	UG/L	D	0.0035	UG/L			0.0034	UG/L	D	0.0050	UG/L		
2,2',4,4',5,5'-Hexacb (PCB 153)	35065-27-1	0.0052	UG/L	D	0.0068	UG/L			0.0072	UG/L	D	0.0100	UG/L		
2,2',3,3',4,4',5-Heptacb (PCB 170)	35065-30-6	0.0230	UG/L	p	0.0005	UG/L	U		0.0590	UG/L	p	0.0005	UG/L	U	
2,2',3,4,4',5,5'-Heptacb (PCB 180)	35065-29-3	0.0310	UG/L	p	0.0005	UG/L	U		0.0005	UG/L	DUH	0.0005	UG/L	U	
2,2',3,4',5,5',6-Heptacb (PCB 187)	52663-68-0	0.0330	UG/L	p	0.0005	UG/L	U		0.0005	UG/L	DUH	0.0005	UG/L	U	
2,2',3,3',4,4',5,6-Octacb (PCB 195)	52663-78-2	0.0022	UG/L	p	0.0005	UG/L	U		0.0076	UG/L	p	0.0005	UG/L	U	
2,2',3,3',4,4',5,5',6-Nonacb (PCB 206)	40186-72-9	0.0027	UG/L	p	0.0005	UG/L	U		0.0086	UG/L	p	0.0005	UG/L	U	
DecaCB (PCB 209)	2051-24-3	0.0005	UG/L	U	0.0005	UG/L	U		0.0008	UG/L	p	0.0005	UG/L	U	
Sum of 18 NOAA Congeners (SUM 18 CONG)		0.25	UG/L		0.14	UG/L			0.32	UG/L		0.17	UG/L		

APPENDIX C

Individual Congener and Sum of Congeners Results

Station ID	Station ID	WOODR091107			WOODR091107				WOODR091107			WOODR091107			
Collected	Collected	9/11/2007			9/11/2007				9/11/2007			9/11/2007			
Fraction	Fraction	TOTAL			DISS				TOTAL			DISS			
QC Code	QC Code	SA			SA				REP			REP			
Sample ID	Sample ID	WQ-TPC-001-091107			WQ-DPC-001-091107				WQ-TPC-001-091107-DUP			WQ-DPC-001-091107-DUP			
Param Name	Param Code	Result	Unit	Final Q	Result	Unit	Final Q		Result	Unit	Final Q	Result	Unit	Final Q	
2,4'-Dicb (PCB 8)	34883-43-7	0.3410	UG/L	D	0.2560	UG/L	D		0.2720	UG/L	D	0.2180	UG/L	D	
2,2',5-Tricb (PCB 18)	37680-65-2	0.5150	UG/L	D	0.3370	UG/L	D		0.4060	UG/L	D	0.2940	UG/L	D	
2,4,4'-Tricb (PCB 28)	7012-37-5	0.3550	UG/L	D	0.1890	UG/L	D		0.2810	UG/L	D	0.1520	UG/L	D	
2,2',3,5'-Tetracb (PCB 44)	41464-39-5	0.1270	UG/L	D	0.0480	UG/L			0.0930	UG/L	D	0.0510	UG/L		
2,2',5,5'-Tetracb (PCB 52)	35693-99-3	0.4380	UG/L	D	0.1830	UG/L	D		0.3400	UG/L	D	0.1600	UG/L	D	
2,3',4,4'-Tetracb (PCB 66)	32598-10-0	0.0270	UG/L		0.0072	UG/L			0.0210	UG/L		0.0074	UG/L		
2,2',4,5,5'-Pentacb (PCB 101)	37680-73-2	0.0560	UG/L		0.0140	UG/L			0.0440	UG/L		0.0150	UG/L		
2,3,3',4,4'-Pentacb (PCB 105)	32598-14-4	0.0020	UG/L		0.0005	UG/L	U		0.0012	UG/L		0.0005	UG/L	U	
2,3',4,4',5-Pentacb (PCB 118)	31508-00-6	0.0330	UG/L		0.0072	UG/L			0.0260	UG/L		0.0071	UG/L		
2,2',3,3',4,4'-Hexacb (PCB 128)	38380-07-3	0.0017	UG/L		0.0005	UG/L	U		0.0008	UG/L		0.0005	UG/L	U	
2,2',3,4,4',5'-Hexacb (PCB 138)	35065-28-2	0.0270	UG/L		0.0039	UG/L			0.0210	UG/L		0.0038	UG/L		
2,2',4,4',5,5'-Hexacb (PCB 153)	35065-27-1	0.0410	UG/L		0.0081	UG/L			0.0310	UG/L		0.0067	UG/L		
2,2',3,3',4,4',5-Heptacb (PCB 170)	35065-30-6	0.0016	UG/L		0.0005	UG/L	U		0.0009	UG/L		0.0005	UG/L	U	
2,2',3,4,4',5,5'-Heptacb (PCB 180)	35065-29-3	0.0036	UG/L		0.0005	UG/L	U		0.0022	UG/L		0.0005	UG/L	U	
2,2',3,4',5,5',6-Heptacb (PCB 187)	52663-68-0	0.0053	UG/L		0.0005	UG/L	U		0.0037	UG/L		0.0005	UG/L	U	
2,2',3,3',4,4',5,6-Octacb (PCB 195)	52663-78-2	0.0005	UG/L	U	0.0005	UG/L	U		0.0005	UG/L	U	0.0005	UG/L	U	
2,2',3,3',4,4',5,5',6-Nonacb (PCB 206)	40186-72-9	0.0005	UG/L	U	0.0005	UG/L	U		0.0005	UG/L	U	0.0005	UG/L	U	
DecaCB (PCB 209)	2051-24-3	0.0005	UG/L	U	0.0005	UG/L	U		0.0005	UG/L	U	0.0005	UG/L	U	
Sum of 18 NOAA Congeners (SUM 18 CONG)		2	UG/L		1.1	UG/L			1.5	UG/L		0.91	UG/L		

APPENDIX C

Individual Congener and Sum of Congeners Results

Station ID	Station ID	23NTU091107			23NTU091107				60NTU091107			60NTU091107			
Collected	Collected	9/11/2007			9/11/2007				9/11/2007			9/11/2007			
Fraction	Fraction	TOTAL			DISS				TOTAL			DISS			
QC Code	QC Code	SA			SA				SA			SA			
Sample ID	Sample ID	WQ-TPC-002-091107			WQ-DPC-002-091107				WQ-TPC-003-091107			WQ-DPC-003-091107			
Param Name	Param Code	Result	Unit	Final Q	Result	Unit	Final Q		Result	Unit	Final Q	Result	Unit	Final Q	
2,4'-Dicb (PCB 8)	34883-43-7	0.7210	UG/L	D	0.4350	UG/L	D		2.3070	UG/L	D	0.5420	UG/L	D	
2,2',5-Tricb (PCB 18)	37680-65-2	1.2140	UG/L	D	0.5020	UG/L	D		4.8040	UG/L	D	0.5540	UG/L	D	
2,4,4'-Tricb (PCB 28)	7012-37-5	0.8800	UG/L	D	0.2020	UG/L	D		3.8780	UG/L	D	0.2470	UG/L	D	
2,2',3,5'-Tetracb (PCB 44)	41464-39-5	0.4310	UG/L	D	0.0640	UG/L			1.8580	UG/L	D	0.0730	UG/L		
2,2',5,5'-Tetracb (PCB 52)	35693-99-3	1.8200	UG/L	D	0.2570	UG/L	D		7.9340	UG/L	D	0.2860	UG/L	D	
2,3',4,4'-Tetracb (PCB 66)	32598-10-0	0.0110	UG/L	D	0.0064	UG/L			0.2770	UG/L	D	0.0050	UG/L		
2,2',4,5,5'-Pentacb (PCB 101)	37680-73-2	0.2290	UG/L	D	0.0150	UG/L			0.8310	UG/L	D	0.0140	UG/L		
2,3,3',4,4'-Pentacb (PCB 105)	32598-14-4	0.0140	UG/L		0.0005	UG/L	U		0.0430	UG/L	p	0.0005	UG/L	U	
2,3',4,4',5-Pentacb (PCB 118)	31508-00-6	0.0980	UG/L	D	0.0057	UG/L			0.3360	UG/L	D	0.0053	UG/L		
2,2',3,3',4,4'-Hexacb (PCB 128)	38380-07-3	0.0150	UG/L		0.0005	UG/L	U		0.0440	UG/L	p	0.0005	UG/L	U	
2,2',3,4,4',5'-Hexacb (PCB 138)	35065-28-2	0.0870	UG/L	D	0.0037	UG/L			0.4040	UG/L	D	0.0033	UG/L		
2,2',4,4',5,5'-Hexacb (PCB 153)	35065-27-1	0.2160	UG/L	D	0.0077	UG/L			1.0110	UG/L	D	0.0071	UG/L		
2,2',3,3',4,4',5-Heptacb (PCB 170)	35065-30-6	0.0240	UG/L	p	0.0005	UG/L	U		0.0430	UG/L	D	0.0005	UG/L	U	
2,2',3,4,4',5,5'-Heptacb (PCB 180)	35065-29-3	0.0330	UG/L	p	0.0005	UG/L	U		0.1010	UG/L	D	0.0005	UG/L	U	
2,2',3,4',5,5',6-Heptacb (PCB 187)	52663-68-0	0.0460	UG/L	p	0.0005	UG/L	U		0.2710	UG/L	D	0.0005	UG/L	U	
2,2',3,3',4,4',5,6-Octacb (PCB 195)	52663-78-2	0.0047	UG/L	p	0.0005	UG/L	U		0.0170	UG/L	p	0.0005	UG/L	U	
2,2',3,3',4,4',5,5',6-Nonacb (PCB 206)	40186-72-9	0.0063	UG/L	p	0.0005	UG/L	U		0.0190	UG/L	p	0.0005	UG/L	U	
DecaCB (PCB 209)	2051-24-3	0.0016	UG/L	p	0.0005	UG/L	U		0.0050	UG/L	p	0.0005	UG/L	U	
Sum of 18 NOAA Congeners (SUM 18 CONG)		5.9	UG/L		1.5	UG/L			24	UG/L		1.7	UG/L		

APPENDIX C

Individual Congener and Sum of Congeners Results

Station ID	Station ID	50N100307			50N100307				300N100307			300N100307			
Collected	Collected			10/3/2007			10/3/2007				10/3/2007			10/3/2007	
Fraction	Fraction	TOTAL			DISS				TOTAL			DISS			
QC Code	QC Code	SA			SA				SA			SA			
Sample ID	Sample ID	WQ-TPC-001-100307			WQ-DPC-001-100307				WQ-TPC-002-100307			WQ-DPC-002-100307			
Param Name	Param Code	Result	Unit	Final Q	Result	Unit	Final Q		Result	Unit	Final Q	Result	Unit	Final Q	
2,4'-Dicb (PCB 8)	34883-43-7	0.6590	UG/L	D	0.2800	UG/L	D		0.2530	UG/L	D	0.2550	UG/L	D	
2,2',5-Tricb (PCB 18)	37680-65-2	1.3910	UG/L	D	0.3720	UG/L	D		0.4610	UG/L	D	0.4100	UG/L	D	
2,4,4'-Tricb (PCB 28)	7012-37-5	1.4920	UG/L	D	0.1850	UG/L	D		0.3660	UG/L	D	0.3110	UG/L	D	
2,2',3,5'-Tetracb (PCB 44)	41464-39-5	0.6520	UG/L	D	0.0420	UG/L	D		0.0920	UG/L	D	0.1220	UG/L	D	
2,2',5,5'-Tetracb (PCB 52)	35693-99-3	1.9500	UG/L	D	0.1670	UG/L	D		0.4550	UG/L	D	0.3440	UG/L	D	
2,3',4,4'-Tetracb (PCB 66)	32598-10-0	0.2340	UG/L	D	0.0052	UG/L	DU		0.0240	UG/L	DU	0.0250	UG/L	D	
2,2',4,5,5'-Pentacb (PCB 101)	37680-73-2	0.6680	UG/L	D	0.0052	UG/L	DU		0.0650	UG/L	D	0.0840	UG/L	D	
2,3,3',4,4'-Pentacb (PCB 105)	32598-14-4	0.0250	UG/L	DU	0.0052	UG/L	DU		0.0240	UG/L	DU	0.0049	UG/L	DU	
2,3',4,4',5-Pentacb (PCB 118)	31508-00-6	0.4530	UG/L	D	0.0053	UG/L	DU		0.0250	UG/L	Dp	0.0490	UG/L	D	
2,2',3,3',4,4'-Hexacb (PCB 128)	38380-07-3	0.0250	UG/L	DU	0.0052	UG/L	DU		0.0240	UG/L	DU	0.0049	UG/L	DU	
2,2',3,4,4',5'-Hexacb (PCB 138)	35065-28-2	0.2280	UG/L	D	0.0053	UG/L	DU		0.0250	UG/L	DU	0.0230	UG/L	Dp	
2,2',4,4',5,5'-Hexacb (PCB 153)	35065-27-1	0.4950	UG/L	D	0.0052	UG/L	DU		0.0240	UG/L	DpJ	0.0560	UG/L	D	
2,2',3,3',4,4',5-Heptacb (PCB 170)	35065-30-6	0.0250	UG/L	DU	0.0052	UG/L	DU		0.0240	UG/L	DU	0.0049	UG/L	DU	
2,2',3,4,4',5,5'-Heptacb (PCB 180)	35065-29-3	0.0250	UG/L	DU	0.0052	UG/L	DU		0.0240	UG/L	DU	0.0049	UG/L	DU	
2,2',3,4',5,5',6-Heptacb (PCB 187)	52663-68-0	0.0250	UG/L	DU	0.0052	UG/L	DU		0.0240	UG/L	DU	0.0049	UG/L	DU	
2,2',3,3',4,4',5,6-Octacb (PCB 195)	52663-78-2	0.0250	UG/L	DU	0.0052	UG/L	DU		0.0240	UG/L	DU	0.0049	UG/L	DU	
2,2',3,3',4,4',5,5',6-Nonacb (PCB 206)	40186-72-9	0.0250	UG/L	DU	0.0052	UG/L	DU		0.0240	UG/L	DU	0.0049	UG/L	DU	
DecaCB (PCB 209)	2051-24-3	0.0250	UG/L	DU	0.0052	UG/L	DU		0.0240	UG/L	DU	0.0049	UG/L	DU	
Sum of 18 NOAA Congeners (SUM 18 CONG)		8.2	UG/L		1	UG/L			1.7	UG/L		1.7	UG/L		

APPENDIX C

Individual Congener and Sum of Congeners Results

Station ID	Station ID	300N100307			300N100307				600N100307			600N100307			
Collected	Collected			10/3/2007			10/3/2007				10/3/2007			10/3/2007	
Fraction	Fraction	TOTAL			DISS				TOTAL			DISS			
QC Code	QC Code	REP			REP				SA			SA			
Sample ID	Sample ID	WQ-TPC-002-100307-DUP			WQ-DPC-002-100307-DUP				WQ-TPC-003-100307			WQ-DPC-003-100307			
Param Name	Param Code	Result	Unit	Final Q	Result	Unit	Final Q		Result	Unit	Final Q	Result	Unit	Final Q	
2,4'-Dicb (PCB 8)	34883-43-7	0.2440	UG/L	D	0.1730	UG/L	D		0.2440	UG/L	D	0.1750	UG/L	D	
2,2',5-Tricb (PCB 18)	37680-65-2	0.4860	UG/L	D	0.2550	UG/L	D		0.4720	UG/L	D	0.2390	UG/L	D	
2,4,4'-Tricb (PCB 28)	7012-37-5	0.4360	UG/L	D	0.1560	UG/L	D		0.3860	UG/L	D	0.1320	UG/L	D	
2,2',3,5'-Tetracb (PCB 44)	41464-39-5	0.1110	UG/L	D	0.0360	UG/L	D		0.0960	UG/L	D	0.0260	UG/L	D	
2,2',5,5'-Tetracb (PCB 52)	35693-99-3	0.5040	UG/L	D	0.1300	UG/L	D		0.4430	UG/L	D	0.1110	UG/L	D	
2,3',4,4'-Tetracb (PCB 66)	32598-10-0	0.0250	UG/L	DU	0.0050	UG/L	UJ		0.0240	UG/L	DU	0.0049	UG/L	DU	
2,2',4,5,5'-Pentacb (PCB 101)	37680-73-2	0.0250	UG/L	UJ	0.0050	UG/L	DU		0.0620	UG/L	D	0.0049	UG/L	DU	
2,3,3',4,4'-Pentacb (PCB 105)	32598-14-4	0.0250	UG/L	DU	0.0050	UG/L	DU		0.0240	UG/L	DU	0.0049	UG/L	DU	
2,3',4,4',5-Pentacb (PCB 118)	31508-00-6	0.0370	UG/L	Dp	0.0051	UG/L	DU		0.0200	UG/L	DpJ	0.0050	UG/L	DU	
2,2',3,3',4,4'-Hexacb (PCB 128)	38380-07-3	0.0250	UG/L	DU	0.0050	UG/L	DU		0.0240	UG/L	DU	0.0049	UG/L	DU	
2,2',3,4,4',5'-Hexacb (PCB 138)	35065-28-2	0.0250	UG/L	DU	0.0051	UG/L	UJ		0.0240	UG/L	DU	0.0050	UG/L	DU	
2,2',4,4',5,5'-Hexacb (PCB 153)	35065-27-1	0.0530	UG/L	Dp	0.0050	UG/L	DU		0.0270	UG/L	Dp	0.0049	UG/L	DU	
2,2',3,3',4,4',5-Heptacb (PCB 170)	35065-30-6	0.0250	UG/L	DU	0.0050	UG/L	DU		0.0240	UG/L	DU	0.0049	UG/L	DU	
2,2',3,4,4',5,5'-Heptacb (PCB 180)	35065-29-3	0.0250	UG/L	DU	0.0050	UG/L	DU		0.0240	UG/L	DU	0.0049	UG/L	DU	
2,2',3,4',5,5',6-Heptacb (PCB 187)	52663-68-0	0.0250	UG/L	DU	0.0050	UG/L	DU		0.0240	UG/L	DU	0.0049	UG/L	DU	
2,2',3,3',4,4',5,6-Octacb (PCB 195)	52663-78-2	0.0250	UG/L	DU	0.0050	UG/L	DU		0.0240	UG/L	DU	0.0049	UG/L	DU	
2,2',3,3',4,4',5,5',6-Nonacb (PCB 206)	40186-72-9	0.0250	UG/L	DU	0.0050	UG/L	DU		0.0240	UG/L	DU	0.0049	UG/L	DU	
DecaCB (PCB 209)	2051-24-3	0.0250	UG/L	DU	0.0050	UG/L	DU		0.0240	UG/L	DU	0.0049	UG/L	DU	
Sum of 18 NOAA Congeners (SUM 18 CONG)		1.9	UG/L		0.75	UG/L			1.8	UG/L		0.68	UG/L		

APPENDIX C

Individual Congener and Sum of Congeners Results

Station ID	Station ID	EB091107		
Collected	Collected	9/11/2007		
Fraction	Fraction	TOTAL		
QC Code	QC Code	SA		
Sample ID	Sample ID	WQ-TPC-004-091107-EB		
Param Name	**Param Code**	**Result**	**Unit**	**Final Q**
2,4'-Dicb (PCB 8)	34883-43-7	0.0039	UG/L	
2,2',5-Tricb (PCB 18)	37680-65-2	0.0056	UG/L	
2,4,4'-Tricb (PCB 28)	7012-37-5	0.0015	UG/L	
2,2',3,5'-Tetracb (PCB 44)	41464-39-5	0.0005	UG/L	U
2,2',5,5'-Tetracb (PCB 52)	35693-99-3	0.0042	UG/L	
2,3',4,4'-Tetracb (PCB 66)	32598-10-0	0.0005	UG/L	U
2,2',4,5,5'-Pentacb (PCB 101)	37680-73-2	0.0005	UG/L	U
2,3,3',4,4'-Pentacb (PCB 105)	32598-14-4	0.0005	UG/L	U
2,3',4,4',5-Pentacb (PCB 118)	31508-00-6	0.0005	UG/L	U
2,2',3,3',4,4'-Hexacb (PCB 128)	38380-07-3	0.0005	UG/L	U
2,2',3,4,4',5'-Hexacb (PCB 138)	35065-28-2	0.0005	UG/L	U
2,2',4,4',5,5'-Hexacb (PCB 153)	35065-27-1	0.0005	UG/L	U
2,2',3,3',4,4',5-Heptacb (PCB 170)	35065-30-6	0.0005	UG/L	U
2,2',3,4,4',5,5'-Heptacb (PCB 180)	35065-29-3	0.0005	UG/L	U
2,2',3,4',5,5',6-Heptacb (PCB 187)	52663-68-0	0.0005	UG/L	U
2,2',3,3',4,4',5,6-Octacb (PCB 195)	52663-78-2	0.0005	UG/L	U
2,2',3,3',4,4',5,5',6-Nonacb (PCB 206)	40186-72-9	0.0005	UG/L	U
DecaCB (PCB 209)	2051-24-3	0.0005	UG/L	U
Sum of 18 NOAA Congeners (SUM 18 CONG)		0.015		

APPENDIX C

PCB Data Qualifiers

Qualifiers:

D	Dilution run. Initial run outside linear range of instrument
J	Analyte detected below the sample specific reporting limit
p	The relative percent difference (RPD) between the values obtained from the dual columns is >40%.
U	Analyte not detected at 3:1 signal:noise ratio. Reporting limit is reported.

Appendix D

Toxicity Analytical Data

This page intentionally left blank

Biomonitoring of Surface Water Samples
New Bedford Harbor
New Bedford, Massachusetts

Fall 2007

Prepared for

Battelle
397 Washington Street
Duxbury, Massachusetts 02332

Prepared by

EnviroSystems, Incorporated
1 Lafayette Road
Hampton, New Hampshire 03843

August-October 2007
Reference Number: Battele16150,16234,16391

Biomonitoring of Surface Water Samples
New Bedford Harbor, New Bedford, Massachusetts

Fall 2007

1.0 INTRODUCTION

This report provides a summarization of data generated from a series of acute and chronic exposure screening assays evaluating surface water samples collected from New Bedford Harbor. Toxicity tests were conducted on grab surface water samples collected from the specified areas in the harbor. Assay design included a laboratory control treatment and one or more surface water samples. Samples were evaluated "As Received" without dilutions. Assays were conducted based on water quality levels in the vicinity of dredging operations. Samples were collected by Battelle personnel from the Duxbury, Massachusetts office. Testing was based on programs and protocols developed by the US EPA (2002) and included the following assays; modified 2 day acute and 7 day chronic assays conducted with the mysid shrimp, *Americamysis bahia*, and the red macro alga, *Champia parvula*, and 60 minute chronic fertilization assays conducted with the purple sea urchin, *Arbacia punctulata*. All mysid and urchin fertilization assays and a portion of the algal assays were conducted by ESI at its Hampton, New Hampshire facility. Additionally, the algal assays were conducted by the Saskatchewan Research Council, SRC, Saskatoon, Saskatchewan, Canada.

2.0 MATERIALS AND METHODS

2.1 General Methods

Toxicological and analytical protocols used in this program followed procedures primarily designed by the EPA to provide standard approaches for the evaluation of toxicological effects of discharges on aquatic organisms, and for the analysis of water samples.

2.2 Test Species

A. bahia, ≤5 days, were obtained from cultures maintained by Aquatic Research Organisms (ARO), Hampton, New Hampshire. Juvenile shrimp were collected daily, isolated, and placed in a rearing tank for up to 6 days. Holding tanks were maintained in a flow-through culture mode at a temperature of 25±2°C. At the start of the assays the mysids were 7 days old. Juveniles were fed ≤24 hour old brine shrimp on a daily basis. Water temperature, salinity, and pH were monitored on a daily basis. Prior to testing, organisms were siphoned from the rearing tanks to a holding vessel, and then transferred to test chambers using a large bore pipet, minimizing the amount of water added to test solutions.

A. punctulata adults were from cultures maintained by ESI. Original stock was obtained from commercial supply. Male and female urchins are maintained in separate chambers as recommended by protocol (EPA 2002) and ESI. Adult urchins were induced to spawn by the injection of a potassium chloride solution. The viability of gametes obtained was determined prior to their addition to the test solutions. Eggs and/or sperm that would not result in a fertilized egg were rejected from the pool of gametes used in the assay.

C. parvula biomass was obtained from stock cultures maintained by the Saskatchewan Research Council. Original stocks were obtained from the University of Texas algal collection. The male and female plants are maintained in separate culture vessels under sterile conditions. Algal cultures were maintained on an orbital shaker (100 rpm) at 23±2°C under 16 hour light : 8 hours dark at 40 to 75 foot candles light intensity. Cultures are "cropped" and transferred to fresh nutrient solutions on a weekly basis.

2.3 Surface Water Samples and Laboratory Control Water

Grab surface water samples were collected by Battelle staff on three occasions in the Harbor, Table 1. Samples were placed in polyethylene cubitainers for shipment to the laboratory. Two, 2.5 gallon cubitainers were collected for each of the chronic assays. Prior to testing, samples were evaluated to document salinity, conductivity, and total residual chlorine. Total residual chlorine was measured by amperometric titration (MDL

0.05 mg/L). Prior to use in the assays, the salinity of the samples was adjusted, if necessary, to predetermined levels using artificial sea salts for *A. bahia* and *A. punctulata* assays, and GP-2 salts (EPA 2002) for the *C. parvula* assays. The salinity of samples for the *A. bahia* acute and chronic exposure assays were adjusted to 25±2‰ while samples used for the *A. punctulata* and *C. parvula* assays were adjusted to 30±2‰. Samples with "as received" salinity above these levels were not adjusted.

Laboratory control water used for mysid and sea urchin assays was collected from the Hampton/Seabrook Estuary. This water is classified as SA-1 and has been used to culture marine test organisms since 1981. The laboratory control water used in the algal assay, collected from Rye, New Hampshire, is the same water used in culture maintenance. Prior to use, seawater used in the algal assays was filtered through glass fiber filters and sterilized. Dilution water used in the algal assays conducted by SRC was natural seawater collected from the West Coast of Canada. Salinity of the surface water samples was adjusted using commercial sea salts.

2.4 Bioassays

2.4.1 *Americamysis bahia* Modified Acute and Chronic Exposure Bioassays

Modified acute and chronic exposure screening assays were conducted in a static renewal test mode with renewals made at 24-hour intervals. The 7 day assays were conducted at a temperature of 26±1°C with a photoperiod of 16:8 hours light:dark. Mysids were maintained in 250 mL beakers containing 150 mL of test solution. Approximately 100 mL of the test solution were replaced each day. The assay incorporated 8 replicates with 5 organisms/replicate. Survival and dissolved oxygen were measured daily in each replicate prior to test solution renewal. Salinity, temperature and pH were recorded in a composite sample of the "old" test solution and in the "new" test solution prior to being added to the test chamber. Incubator temperatures were also recorded on a daily basis.

During the test, mysids were fed ≤24 hour old *Artemia* nauplii. On Day 7 of the assay, surviving mysids were removed from test solutions, rinsed to remove any surface detritus and salts, and transferred to tared foils and dried for 24 hours at 103°C. Foils were weighed to the nearest 0.01 mg. Mean dry weights per individual were obtained by dividing the net dry weight of all surviving organisms by the number of organisms added at the start of the assay.

2.4.2 *Arbacia punctulata* Chronic Exposure Fertilization Assays

Gametes were obtained by potassium chloride injection to induce spawning. Sperm were collected dry, diluted to achieve a concentration of approximately 5.0×10^7 sperm/mL in the surface water treatments. Actual sperm concentrations are provided on laboratory bench sheets in Appendix A. Sperm solutions were added to 5 mL aliquots of each sample being evaluated and allowed to remain in the test solutions for 60 minutes before the addition of unfertilized eggs. Each treatment incorporated a total of four (4) replicates. After 20 minutes exposure, the assay was terminated by the addition of 0.2 mL of preservative. Aliquots of preserved solution were counted to determine numbers of fertilized and unfertilized eggs. Fertilization was accepted based on the presence or absence of a fertilization membrane around the egg.

2.4.3 *Champia parvula* Modified Acute and Chronic Exposure Assays

The 7 day red algae assay was conducted with a 2 day exposure period to the surface waters and laboratory control treatments. Each treatment used four replicates with five female branches and one male branch per replicate. Temperature was maintained at 23±1°C. The light source was cool white and fluorescent bulbs set on a 16:8 hours light:dark cycle, with a light intensity of 40 to 75 foot candles. Light intensity was checked at the start of each assay. Temperatures were monitored on a daily basis. Test chambers were 200 mL borosilicate glass fleakers. After 2 days exposure, female branch tips were transferred to approximately 100 mL of recovery medium with added nutrients and allowed to recover and mature for 5 days. During transfer, plants were examined to determine the physical condition of the individual branches. Branches showing signs of degeneration were noted and used to establish an acute endpoint. After the recovery period, the number of cystocarps (reproductive bodies) on each female branch were counted.

2.5 Data Analysis

Statistical analysis of acute and chronic exposure data was completed using CETIS, Comprehensive Environmental Toxicity Testing System, software. The program computes acute and chronic exposure endpoints based on EPA decision tree guidelines specified in individual test methods. For chronic exposure endpoints statistical significance was accepted at $\propto$ <0.05.

2.6 Quality Control

As part of the laboratory quality control program, standard reference toxicant assays are conducted on a regular basis for each test species. These results, summarized in Table 7, provide relative health and response data while allowing for comparison with historic data sets.

2.7 Protocol Deviations and Unacceptable Assays

Review of data collected from the three sets of assays conducted during the monitoring period documented no protocol deviations.

3.0 RESULTS SUMMARY

Table 2 provides a summary of test acceptability for the three rounds of assays conducted during this monitoring period. Tables 3-5 provide summaries of survival, growth, development and reproduction endpoints and associated statistical analyses. Table 6 provides a summary of basic water quality data associated with the assays. Support data, including laboratory bench sheets, are provided in Appendix A.

4.0 REFERENCES

APHA. 1998. *Standard Methods for the Examination of Water and Wastewater*, 20th edition. Washington D.C.

US EPA. 2002. *Methods for Measuring the Acute Toxicity of Effluents to Freshwater and Marine Organisms*. Fourth Edition. EPA-821-R-02-012.

US EPA. 2002. *Short Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms*. Fourth Edition. EPA-821-R-02-013.

Table 1. Summary of Sample Collection Data. New Bedford Harbor Surface Water Monitoring Program. Fall 2007.

Sample ID	Lab Code	Collected		Received		Temperature °C
WQ-TOX-001-080907	16150-001	08/09/07	0840	08/09/07	1455	6
WQ-TOX-002-080907	16150-002	08/09/07	0915	08/09/07	1455	6
WQ-TOX-003-080907	16150-003	08/09/07	0930	08/09/07	1455	6
WQ-TOX-004-080907	16150-004	08/09/07	1005	08/09/07	1455	6
WQ-TOX-001-091107	16234-001	09/11/07	0901	09/11/07	1600	5
WQ-TOX-002-091107	16234-002	09/11/07	0945	09/11/07	1600	5
WQ-TOX-003-091107	16234-003	09/11/07	1015	09/11/07	1600	5
WQ-TOX-001-100307	16391-001	10/03/07	1100	10/03/07	1432	6
WQ-TOX-002-100307	16391-002	10/03/07	1150	10/03/07	1432	6
WQ-TOX-003-100307	16391-003	10/03/07	1228	10/03/07	1432	6

Table 2. Summary of Assay Acceptability. New Bedford Harbor Surface Water Monitoring Program. Fall 2007.

	Americamysis bahia		*Champia parvula*		*Arbacia punctulata*
Lab Code	Acute Exposure	Chronic Exposure	Acute Exposure	Chronic Exposure	Chronic Exposure
16150-001	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
16150-002	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
16150-003	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
16150-004	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
16234-001	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
16234-002	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
16234-003	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
16391-001	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
16391-002	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
16391-003	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable

Table 3. Endpoint Summary Table - New Bedford Harbor Water Quality Monitoring August 09, 2007 Sampling Event. New Bedford Harbor Surface Water Monitoring Program. Fall 2007.

Sample ID	Reps	Mean	Min	Max	CV	Significant Difference vs			
						p Value	Lab	p Value	Ref
Arbacia punctulata			Portion Fertilized						
Lab Control		96.9%	95.2%	98.1%	1.45%	-	-	-	-
TOX-001-080907		97.3%	96.2%	98.1%	0.93%	0.6832	NO	-	-
TOX-002-080907	4	96.7%	95.2%	99.0%	1.69%	0.4592	NO	0.3084	NO
TOX-003-080907		97.8%	97.1%	98.1%	0.49%	0.8642	NO	0.7947	NO
TOX-004-080907		95.0%	90.1%	100.0%	4.67%	0.3293	NO	0.2616	NO
Americamysis bahia									
			Day 2 Survival						
Lab Control		92.5%	60.0%	100.0%	16.09%	-	-	-	-
TOX-001-080907		97.5%	80.0%	100.0%	7.25%	0.6395	NO	-	-
TOX-002-080907	8	97.5%	80.0%	100.0%	7.25%	0.6395	NO	0.4796	NO
TOX-003-080907		97.5%	80.0%	100.0%	7.25%	0.6395	NO	0.4796	NO
TOX-004-080907		97.5%	80.0%	100.0%	7.25%	0.6395	NO	0.4796	NO
			Day 7 Survival						
Lab Control		92.5%	60.0%	100.0%	16.09%	-	-	-	-
TOX-001-080907		97.5%	80.0%	100.0%	7.25%	0.6395	NO	-	-
TOX-002-080907	8	97.5%	80.0%	100.0%	7.25%	0.6395	NO	0.4796	NO
TOX-003-080907		95.0%	80.0%	100.0%	9.75%	0.5204	NO	0.3605	NO
TOX-004-080907		95.0%	80.0%	100.0%	9.75%	0.5204	NO	0.3605	NO
			Day 7 Dry Weight Biomass - mg						
Lab Control		0.350	0.138	0.448	30.72%	-	-	-	-
TOX-001-080907		0.473	0.330	0.660	25.53%	0.9753	NO	-	-
TOX-002-080907	8	0.423	0.314	0.610	20.82%	0.9195	NO	0.1789	NO
TOX-003-080907		0.436	0.274	0.536	18.13%	0.9550	NO	0.2403	NO
TOX-004-080907		0.372	0.328	0.402	7.19%	0.6998	NO	0.0267	YES
Champia parvula									
			Day 2 Survival						
Lab Control		100.0%	100.0%	100.0%	0.00%	-	-	-	-
TOX-001-080907		100.0%	100.0%	100.0%	0.00%	0.4796	NO	-	-
TOX-002-080907	4	100.0%	100.0%	100.0%	0.00%	0.4796	NO	0.4796	NO
TOX-003-080907		100.0%	100.0%	100.0%	0.00%	0.4796	NO	0.4796	NO
TOX-004-080907		100.0%	100.0%	100.0%	0.00%	0.4796	NO	0.4796	NO
			Day 7 Mean # Cystocarps						
Lab Control		38.55	29.6	43.2	16.18%	-	-	-	-
TOX-001-080907		34.15	26.6	42.8	24.46%	0.2155	NO	-	-
TOX-002-080907	4	19.5	13.6	24.4	24.29%	0.0014	YES	0.0112	YES
TOX-003-080907		40.35	33.8	46.6	16.32%	0.6474	NO	0.8561	NO
TOX-004-080907		24.35	10.4	36.2	43.79%	0.0306	YES	0.0990	NO

Table 4. Endpoint Summary Table - New Bedford Harbor Water Quality Monitoring September 11, 2007 Sampling Event. New Bedford Harbor Surface Water Monitoring Program. Fall 2007.

Sample ID	Reps	Mean	Min	Max	CV	Significant Difference vs			
						p Value	Lab	p Value	Ref
Arbacia punctulata			Portion Fertilized						
Lab Control	4	86.3%	78.0%	92.0%	7.19%	-	-	-	-
TOX-001-091107		92.7%	90.0%	97.2%	2.08%	0.9592	NO	-	-
TOX-002-091107		94.1%	91.7%	96.2%	2.46%	0.9789	NO	0.8224	NO
TOX-003-091107		84.8%	79.2%	90.0%	6.23%	0.3130	NO	0.0098	YES
Americamysis bahia									
			Day 2 Survival						
Lab Control	8	100.0%	100.0%	100.0%	0.00%	-	-	-	-
TOX-001-091107		100.0%	100.0%	100.0%	0.00%	0.4796	NO	-	-
TOX-002-091107		100.0%	100.0%	100.0%	0.00%	0.4796	NO	0.4796	NO
TOX-003-091107		100.0%	100.0%	100.0%	0.00%	0.4796	NO	0.4796	NO
			Day 7 Survival						
Lab Control	8	100.0%	100.0%	100.0%	0.00%	-	-	-	-
TOX-001-091107		98.8%	90.0%	100.0%	3.58%	0.3605	NO	-	-
TOX-002-091107		98.8%	90.0%	100.0%	3.58%	0.3605	NO	0.4796	NO
TOX-003-091107		45.0%	30.0%	70.0%	35.63%	0.0001	YES	0.0001	YES
			Day 7 Dry Weight Biomass - mg						
Lab Control	8	0.278	0.249	0.293	5.33%	-	-	-	-
TOX-001-091107		0.322	0.291	0.356	6.35%	0.9999	NO	-	-
TOX-002-091107		0.283	0.241	0.312	9.04%	0.6718	NO	0.0021	YES
TOX-003-091107		0.090	0.040	0.150	37.10%	0.0000	YES	0.0000	YES
Champia parvula									
			Day 2 Survival						
Lab Control	4	100.0%	100.0%	100.0%	0.00%	-	-	-	-
TOX-001-091107		100.0%	100.0%	100.0%	0.00%	0.4796	NO	-	-
TOX-002-091107		100.0%	100.0%	100.0%	0.00%	0.4796	NO	0.4796	NO
TOX-003-091107		100.0%	100.0%	100.0%	0.00%	0.4796	NO	0.4796	NO
			Day 7 Mean # Cystocarps						
Lab Control	4	19.00	15.0	22.6	17.45%	-	-	-	-
TOX-001-091107		20.80	17.4	24.4	13.80%	0.7785	NO	-	-
TOX-002-091107		27.35	23.6	29.4	9.39%	0.9964	NO	0.9928	NO
TOX-003-091107		5.45	1.6	8.2	51.58%	0.0004	YES	0.0001	YES

Table 5. Endpoint Summary Table - New Bedford Harbor Water Quality Monitoring October 13, 2007 Sampling Event. New Bedford Harbor Surface Water Monitoring Program. Fall 2007.

Sample ID	Reps	Mean	Min	Max	CV	Significant Difference vs			
						p Value	Lab	p Value	Ref
Arbacia punctulata			Portion Fertilized						
Lab Control	4	93.2%	88.5%	100.0%	5.53%	-	-	-	-
TOX-003-100307		95.5%	92.6%	98.0%	2.35%	0.6532	NO	-	-
TOX-002-100307		92.3%	90.0%	95.0%	2.40%	0.2961	NO	0.0464	YES
TOX-001-100307		94.7%	88.9%	100.0%	5.04%	0.6240	NO	0.5019	NO
Americamysis bahia									
			Day 2 Survival						
Lab Control	8	97.5%	80.0%	100.0%	7.25%	-	-	-	-
TOX-003-100307		100.0%	100.0%	100.0%	0.00%	0.6395	NO	-	-
TOX-002-100307		100.0%	100.0%	100.0%	0.00%	0.6395	NO	0.4796	NO
TOX-001-100307		100.0%	100.0%	100.0%	0.00%	0.6395	NO	0.4796	NO
			Day 7 Survival						
Lab Control	8	97.5%	80.0%	100.0%	7.25%	-	-	-	-
TOX-003-100307		100.0%	100.0%	100.0%	0.00%	0.6395	NO	-	-
TOX-002-100307		97.5%	80.0%	100.0%	7.25%	0.4796	NO	0.3605	NO
TOX-001-100307		100.0%	100.0%	100.0%	0.00%	0.6395	NO	0.4796	NO
			Day 7 Dry Weight Biomass - mg						
Lab Control	8	0.352	0.214	0.424	17.53%	-	-	-	-
TOX-003-100307		0.415	0.348	0.456	8.47%	0.9875	NO	-	-
TOX-002-100307		0.431	0.360	0.514	11.69%	0.4796	NO	0.7666	NO
TOX-001-100307		0.580	0.516	0.664	8.29%	1.0000	NO	1.0000	NO
Champia parvula									
			Day 2 Survival						
Lab Control	4	100.0%	100.0%	100.0%	0.00%	-	-	-	-
TOX-003-100307		100.0%	100.0%	100.0%	0.00%	0.4796	NO	-	-
TOX-002-100307		100.0%	100.0%	100.0%	0.00%	0.4796	NO	0.4796	NO
TOX-001-100307		100.0%	100.0%	100.0%	0.00%	0.4796	NO	0.4796	NO
			Day 7 Mean # Cystocarps						
Lab Control	4	16.55	12.40	19.40	18.10%	-	-	-	-
TOX-003-100307		11.40	8.00	17.80	38.41%	0.0501	NO	-	-
TOX-002-100307		9.65	6.60	12.60	27.04%	0.0066	YES	0.2590	NO
TOX-001-100307		0.00	0.00	0.00	0.00%	0.0000	YES	0.0010	YES

Table 6. Summary of "As Received" Sample Physical and Chemical Characteristics. New Bedford Harbor Surface Water Monitoring Program. Fall 2007.

Sample ID	Lab Code	Ammonia (mg/L)	pH (SU)	Salinity (‰)	Specific Conductance (µmhos/cm)	Total Residual Chlorine (mg/L)
WQ-TOX-001-080907	16150-001	<0.1	7.36	30	44910	<0.05
WQ-TOX-002-080907	16150-002	<0.1	7.26	30	45100	<0.05
WQ-TOX-003-080907	16150-003	<0.1	7.38	30	45260	<0.05
WQ-TOX-004-080907	16150-004	<0.1	7.39	30	44960	<0.05
WQ-TOX-001-091107	16234-001	<0.1	6.96	31	45540	<0.05
WQ-TOX-002-091107	16234-002	<0.1	6.99	31	47230	<0.05
WQ-TOX-003-091107	16234-003	<0.1	6.99	31	47740	<0.05
WQ-TOX-001-100307	16391-001	0.16	7.51	31	41300	<0.05
WQ-TOX-002-100307	16391-002	0.12	7.66	30	41200	<0.05
WQ-TOX-003-100307	16391-003	<0.1	7.72	31	41200	<0.05

Table 7. Reference Toxicant Summary. New Bedford Harbor Surface Water Monitoring Program. Fall 2007.

Date	Endpoint		Value	Historic Mean/ Central Tendency	Acceptable Range	Reference Toxicant
A. bahia						
08/08/07	Survival	LC-50	19.4	21.2	16.4 - 26.0	SDS (mg/L)
09/04/07	Survival	LC-50	25.1	21.2	6.26 - 26.18	SDS (mg/L)
10/02/07	Survival	LC-50	17.2	21.0	15.8 - 26.3	SDS (mg/L)
08/08/07	Survival	C-NOEC	15.0	15.0	10.0 - 25.0	SDS (mg/L)
08/08/07	Growth	C-NOEC	15.0	10.0	5.0 - 15.0	SDS (mg/L)
A. Punctulata						
08/17/07	Fertilization	C-NOEC	40.0	20.0	10.0 - 40.0	Copper (µg/L)
08/17/07	Fertilization	IC-25	80.0	45.0	0.0 - 101.8	Copper (µg/L)
10/04/07	Fertilization	C-NOEC	20.0	20.0	10.0 - 40.0	Copper (µg/L)
10/04/07	Fertilization	IC-25	43.7	45.0	0.0 - 101.8	Copper (µg/L)
08/29/07	Cystocarp	IC-50	0.08	0.12	0.0 - 0.27	SDS (mg/L)
10/17/07	Cystocarp	IC-50	0.06	0.12	0.0 - 0.27	SDS (mg/L)

Mean and Acceptable Ranges based on most recent 20 reference toxicant assays (NELAP standard)

APPENDIX A
SUPPORT DATA

Contents	# Pages
Methods Summary	1
Study 16150: Sample Date 08/08/07	
A. bahia Bench Sheets & Statistical Analysis Report	22
A. punctulata Bench Sheets and Statistical Analysis Report	9
C. parvula Bench Sheets and Statistical Analysis Report	9
Water Quality Bench Sheets and Dilution Prep Sheets	5
Study 16234: Sample Date 09/11/07	
A. bahia Bench Sheets & Statistical Analysis Report	17
A. punctulata Bench Sheets and Statistical Analysis Report	8
C. parvula Bench Sheets and Statistical Analysis Report	11
Water Quality Bench Sheets and Dilution Prep Sheets	4
Study 16391: Sample Date 10/03/07	
A. bahia Bench Sheets & Statistical Analysis Report	22
A. punctulata Bench Sheets and Statistical Analysis Report	8
C. parvula Bench Sheets and Statistical Analysis Report	11
Water Quality Bench Sheets and Dilution Prep Sheets	4
“As Received” Ammonia Data Report	1
Sample Receipt Records	3
Chain of Custody	3
Total Appendix Pages	138

METHODS USED IN NPDES PERMIT BIOMONITORING TESTING

Parameter	Method
Acute Exposure Bioassays:	
Ceriodaphnia dubia, Daphnia pulex	EPA-821-R-02-012
Pimephales promelas	EPA-821-R-02-012
Americamysis bahia	EPA-821-R-02-012
Menidia beryllina, Cyprinodon variegatus	EPA-821-R-02-012
Chronic Exposure Bioassays:	
Ceriodaphnia dubia	EPA-821-R-02-013 1002.0
Pimephales promelas	EPA-821-R-02-013 1000.0
Cyprinodon variegatus	EPA-821-R-02-014 1004.0
Menidia beryllina	EPA-821-R-02-014 1006.0
Arbacia punctulata	EPA-821-R-02-014 1008.0
Champia parvula	EPA-821-R-02-014 1009.0
Trace Metals:	
ICP Metals	EPA 200.7/SW 6010
Hardness	Standard Methods 20th Edition - Method 2340 B
Wet Chemistries:	
Alkalinity	EPA 310.2
Chlorine, Residual	Standard Methods 20th Edition - Method 4500CLD
Total Organic Carbon	Standard Methods 20th Edition - Method 5310C
Specific Conductance	Standard Methods 20th Edition - Method 2510B
Nitrogen - Ammonia	Standard Methods 20th Edition - Method 4500NH3G
pH	Standard Methods 20th Edition - Method 4500H+B
Solids, Total (TS)	Standard Methods 20th Edition - Method 2540.B
Solids, Total Suspended (TSS)	Standard Methods 20th Edition - Method 2540D
Dissolved Oxygen	Standard Methods 20th Edition - Method 4500-O G

Americamysis bahia 7 DAY CHRONIC ASSAY
SURVIVAL & OLD WATER QUALITIES

STUDY: 16150	CLIENT: Battelle	LOCATION: NEW BEDFORD	LAB CONTROL: HAMPTON ESTUARY	ORGANISM BATCH/LOT#

		NUMBER OF SURVIVORS								OLD DISSOLVED OXYGEN (mg/L)						
SAMPLE	Rep	0	1	2	3	4	5	6	7	1	2	3	4	5	6*	7
Lab Control	A	5	5	5	5	5	5	5	5	5.8	6.0	5.9	6.0	5.6	5.2	6.6
	B	5	3	3	3	3	3	3	3	5.8	6.1	6.0	6.0	5.6	5.6	6.5
	C	5	5	5	5	5	5	5	5	5.8	5.7	5.6	5.9	5.5	5.6	6.5
	D	5	5	5	5	5	5	5	5	5.9	5.4	5.6	5.7	5.6	5.5	6.4
	E	5	5	5	5	5	5	5	5	5.9	5.9	5.8	5.7	5.4	5.5	6.4
	F	5	5	5	5	5	5	5	5	5.8	5.7	5.7	5.6	5.6	5.4	6.4
	G	5	5	4	4	4	4	4	4	5.8	5.4	5.5	5.6	5.6	4.6	6.4
	H	5	5	5	5	5	5	5	5	5.9	5.5	5.6	5.4	5.6	5.0	6.5
-001	A	5	4	4	4	4	4	4	4	5.9	5.7	5.6	5.6	5.6	5.5	6.4
	B	5	5	5	5	5	5	5	5	5.9	5.7	5.6	5.6	5.5	4.9	6.3
	C	5	5	5	5	5	5	5	5	5.8	5.5	5.5	5.4	5.3	4.9	6.3
	D	5	5	5	5	5	5	5	5	5.7	5.3	5.4	5.4	5.3	4.9	6.4
	E	5	5	5	5	5	5	5	5	5.7	5.3	5.4	5.4	5.4	5.1	6.4
	F	5	5	5	5	5	5	5	5	5.7	5.5	5.4	5.5	5.3	5.0	6.4
	G	5	5	5	5	5	5	5	5	5.6	5.6	5.5	5.6	5.4	4.7	6.3
	H	5	5	5	5	5	5	5	5	5.8	5.5	5.6	5.6	5.4	4.9	6.3
-002	A	5	5	5	5	5	5	5	5	5.9	5.6	5.7	5.5	5.3	5.0	6.3
	B	5	5	5	5	5	5	5	5	5.9	5.6	5.7	5.5	4.8	4.7	6.2
	C	5	5	4	4	4	4	4	4	5.8	5.8	5.7	5.6	4.7	4.2	6.3
	D	5	5	5	5	5	5	5	5	5.8	5.7	5.6	5.6	4.6	4.6	6.3
	E	5	5	5	5	5	5	5	5	5.9	5.7	5.6	5.4	5.2	5.0	6.3
	F	5	5	5	5	5	5	5	5	5.8	5.7	5.6	5.5	5.3	5.0	6.3
	G	5	5	5	5	5	5	5	5	5.8	5.3	5.5	5.5	5.3	4.9	6.4
	H	5	5	5	5	5	5	5	5	5.8	5.8	5.7	5.6	5.2	5.0	6.3
INC TEMP:		25	26	26	26	26	26	26	26							
DATE:		8/9/07	8/10	8/11	8/12	8/13	8/14	8/15	8/16							
TIME:		1620	0845	1342	0940	1100	1000	1515	1045							
INITIALS:		SJ	RAM	CS	SJ	SJ	RAM	JM	SJ							

* on Air 8/15

Americamysis bahia 7 DAY CHRONIC ASSAY
SURVIVAL & OLD WATER QUALITIES

STUDY:	CLIENT:	LOCATION:	LAB CONTROL:	ORGANISM BATCH/LOT#
16150	Battelle	NEW BEDFORD	HAMPTON ESTUARY	

		NUMBER OF SURVIVORS								OLD DISSOLVED OXYGEN (mg/L)						
SAMPLE	Rep	0	1	2	3	4	5	6	7	1	2	3	4	5	6	7
-003	A	5	5	5	5	5	5	5	5	5.8	5.3	5.4	5.6	5.3	5.0	6.1
	B	5	5	5	5	5	5	5	5	5.7	5.3	5.4	5.6	5.4	4.6	6.2
	C	5	5	5	5	5	5	5	5	5.7	5.2	5.3	5.5	5.4	4.9	6.3
	D	5	5	5	5	5	5	5	5	5.7	5.1	5.4	5.4	5.5	5.0	6.4
	E	5	5	~~3~~ 4	4	4	4	4	4	5.8	5.4	5.4	5.4	5.5	5.5	6.4
	F	5	5	5	5	5	5	5	5	5.7	5.2	5.3	5.3	5.5	4.6	6.3
	G	5	5	4	4	4	4	4	4	5.7	5.0	5.2	5.2	5.5	4.0	6.4
	H	5	5	5	5	5	5	5	5	5.7	5.2	5.2	5.2	4.5	4.1	6.4
-004	A	5	5	5	5	5	5	5	5	5.9	5.6	5.4	5.3	5.2	4.5	6.4
	B	5	5	5	5	5	5	5	5	5.8	5.5	5.6	5.2	5.2	5.0	6.5
	C	5	5	5	5	5	5	5	5	5.8	5.5	5.6	5.3	5.2	5.0	6.4
	D	5	5	5	5	5	5	5	5	5.9	5.5	5.4	5.4	5.0	5.0	6.4
	E	5	4	4	4	4	4	4	4	5.9	5.4	5.3	5.6	5.3	5.0	6.2
	F	5	5	5	5	5	5	5	5	5.9	5.8	5.7	5.7	5.3	5.0	6.1
	G	5	5	5	4	4	4	4	4	5.9	5.8	5.7	5.6	4.6	5.0	6.2
	H	5	5	5	5	5	5	5	5	5.9	5.4	5.3	5.6	5.1	4.4	6.2
INC TEMP:		25	26	26	26	26	26	26	26							
DATE:		8/9/07	8/10	8/11	8/12	8/13	8/14	8/15	8/16							
TIME:		1620	0845	1349	0940	1100	1000	1575	1045							
INITIALS:		SJ	RAM	CS	SJ	SJ	RAM	[illegible]	SJ							

Americamysis bahia 7 DAY CHRONIC ASSAY
ORGANISM WEIGHTS

CLIENT: BATTELLE - NEW BEDFORD				TEST DATES: 8/9/07 – 8/16/07				
STUDY #: 16150				SPECIES: *A. bahia*				
CONC	REP	TARE WEIGHT (g)	SHRIMP + FOIL (g)	NET WEIGHT (mg)	# SHRIMP DAY 0	MEAN WEIGHT (mg) DAY 0	# SHRIMP DAY 7	MEAN WEIGHT (mg) DAY 7
Lab	A	0.20791	0.20978					
	B	0.20911	0.20980					
	C	0.20854	0.21069					
	D	0.21283	0.21475 ~~0.21043~~ (E2)					
	E	0.20907	0.21130 ~~0.21476~~ (E3)					
	F	0.20692	0.20916					
	G	0.20988	0.21117					
	H	0.20850	0.21012 ~~0.209~~ (E3)					
-001	A	0.20948	0.21136					
	B	0.20815	0.20980					
	C	0.20762	0.21092					
	D	0.20834	0.21148 ~~0.2119~~ (E3)					
	E	0.20898	0.21133					
	F	0.20972	0.21226					
	G	0.20973	0.21197					
	H	0.20917	0.21100					
-002	A	0.20969	0.21166					
	B	0.20921	0.21135					
	C	0.20766	0.20963					
	D	0.20914	0.21219					
	E	0.20851	0.21038					
	F	0.20701	0.20858					
	G	0.20964	0.21162					
	H	0.20791	0.21028					
DATE		8/16/07	8/18/07					
TIME		1005	1330					
INITIALS		SJ	RAM					

Americamysis bahia 7 DAY CHRONIC ASSAY
ORGANISM WEIGHTS

CLIENT: BATTELLE - NEW BEDFORD	TEST DATES: 8/9/07 – 8/16/07
STUDY #: 16150	SPECIES: *A. bahia*

CONC	REP	TARE WEIGHT (g)	SHRIMP + FOIL (g)	NET WEIGHT (mg)	# SHRIMP DAY 0	MEAN WEIGHT (mg) DAY 0	# SHRIMP DAY 7	MEAN WEIGHT (mg) DAY 7
-003	A	0.20952	0.21186					
	B	0.20951	0.21167					
	C	0.20928	0.21165					
	D	0.20892	0.21131					
	E	0.20825	0.21015					
	F	0.20882	0.21106					
	G	0.20780	0.20917					
	H	0.20785	0.21053					
-004	A	0.20961	0.21144					
	B	0.20947	0.21128					
	C	0.20660	0.20860					
	D	0.20679	0.20879					
	E	0.21002	0.21178 ~~0.20~~ E3					
	F	0.20846	0.21047					
	G	0.21030	0.21194					
	H	0.20961	0.21143					
	A							
	B							
	C							
	D							
	E							
	F							
	G							
	H							
DATE			08/18/07					
TIME			1330					
INITIALS			RAM					

Aquatic Research Organisms

DATA SHEET

I. Organism History

Species: AMERICAMYSIS BAHIA

Source: Lab reared ✓ Hatchery reared ____ Field collected ____

Hatch date 8-2-07 Receipt date ____

Lot number 080207MS Strain ____

Brood Origination FLORIDA

II. Water Quality

Temperature 25 °C Salinity ≈30 ppt DO —

pH 7.8 Hardness — ppm

III. Culture Conditions

System: RECIRC

Diet: Flake Food ✓ Phytoplankton ____ Trout Chow ✓

Brine Shrimp ✓ Rotifers ____ Other Encap. Shrimp Diet

Prophylactic Treatments: ____

Comments: ____

IV. Shipping Information

Client: EST # of Organisms: 2000+

Carrier: ____ Date Shipped: 8-9-07

Biologist: Mark [illegible]

1 - 800 - 927 - 1650

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

CETIS Test Summary

Report Date: 21 Aug-07 2:04 PM
Link: 09-0394-9498

Americamysis 7-d Survival, Growth and Fecundity Test — **EnviroSystems, Inc.**

Test No:	07-1279-8610	**Test Type:**	Growth-Survival-Fec (7d)	**Duration:**	6d 18h
Start Date:	09 Aug-07 04:20 PM	**Protocol:**	EPA/821/R-02-014 (2002)	**Species:**	Americamysis bahia
Ending Date:	16 Aug-07 10:45 AM	**Dil Water:**	Not Applicable	**Source:**	ARO - Aquatic Research Organisms, N
Setup Date:	09 Aug-07 04:20 PM	**Brine:**	Not Applicable		

Sample No:	06-6444-1965	**Material:**	Surface Water	**Client:**	Battelle Labs
Sample Date:	09 Aug-07 04:00 PM	**Code:**	16150-000	**Project:**	Ecological Risk Assessment
Receive Date:	09 Aug-07 04:00 PM	**Source:**	New Bedford Harbor Dredge Monitorin		
Sample Age:	20m	**Station:**	Laboratory Water Control		
Sample No:	14-0079-4493	**Material:**	Surface Water	**Client:**	Battelle Labs
Sample Date:	09 Aug-07 08:40 AM	**Code:**	16150-001	**Project:**	Ecological Risk Assessment
Receive Date:	09 Aug-07 02:55 PM	**Source:**	New Bedford Harbor Dredge Monitorin		
Sample Age:	8h	**Station:**	WQ-TOX-001		
Sample No:	18-5933-9189	**Material:**	Surface Water	**Client:**	Battelle Labs
Sample Date:	09 Aug-07 09:15 AM	**Code:**	16150-002	**Project:**	Ecological Risk Assessment
Receive Date:	09 Aug-07 02:55 PM	**Source:**	New Bedford Harbor Dredge Monitorin		
Sample Age:	7h	**Station:**	WQ-TOX-002		
Sample No:	08-7827-7773	**Material:**	Surface Water	**Client:**	Battelle Labs
Sample Date:	09 Aug-07 09:30 AM	**Code:**	16150-003	**Project:**	Ecological Risk Assessment
Receive Date:	09 Aug-07 02:55 PM	**Source:**	New Bedford Harbor Dredge Monitorin		
Sample Age:	7h	**Station:**	WQ-TOX-003		
Sample No:	04-4490-4090	**Material:**	Surface Water	**Client:**	Battelle Labs
Sample Date:	09 Aug-07 10:05 AM	**Code:**	16150-004	**Project:**	Ecological Risk Assessment
Receive Date:	09 Aug-07 02:55 PM	**Source:**	New Bedford Harbor Dredge Monitorin		
Sample Age:	6h	**Station:**	WQ-TOX-004		

CETIS Test Summary

Report Date: 21 Aug-07 2:04 PM
Link: 09-0394-9498

2d Proportion Survived Summary

Sample Code	Reps	Mean	Minimum	Maximum	SE	SD	CV
16150-000	8	0.92500	0.60000	1.00000	0.05261	0.14880	16.09%
16150-001	8	0.97500	0.80000	1.00000	0.02500	0.07071	7.25%
16150-002	8	0.97500	0.80000	1.00000	0.02500	0.07071	7.25%
16150-003	8	0.97500	0.80000	1.00000	0.02500	0.07071	7.25%
16150-004	8	0.97500	0.80000	1.00000	0.02500	0.07071	7.25%

7d Proportion Survived Summary

Sample Code	Reps	Mean	Minimum	Maximum	SE	SD	CV
16150-000	8	0.92500	0.60000	1.00000	0.05261	0.14880	16.09%
16150-001	8	0.97500	0.80000	1.00000	0.02500	0.07071	7.25%
16150-002	8	0.97500	0.80000	1.00000	0.02500	0.07071	7.25%
16150-003	8	0.95000	0.80000	1.00000	0.03273	0.09258	9.75%
16150-004	8	0.95000	0.80000	1.00000	0.03273	0.09258	9.75%

Mean Dry Biomass-mg Summary

Sample Code	Reps	Mean	Minimum	Maximum	SE	SD	CV
16150-000	8	0.35025	0.13800	0.44800	0.03804	0.10759	30.72%
16150-001	8	0.47325	0.33000	0.66000	0.04271	0.12081	25.53%
16150-002	8	0.42300	0.31400	0.61000	0.03114	0.08806	20.82%
16150-003	8	0.43625	0.27400	0.53600	0.02796	0.07908	18.13%
16150-004	8	0.37175	0.32800	0.40200	0.00945	0.02674	7.19%

Mean Dry Weight-mg Summary

Sample Code	Reps	Mean	Minimum	Maximum	SE	SD	CV
16150-000	8	0.36981	0.23000	0.44800	0.02661	0.07526	20.35%
16150-001	8	0.48500	0.33000	0.66000	0.04045	0.11440	23.59%
16150-002	8	0.43531	0.31400	0.61000	0.03192	0.09029	20.74%
16150-003	8	0.45669	0.34250	0.53600	0.01947	0.05507	12.06%
16150-004	8	0.39300	0.36200	0.44000	0.00964	0.02728	6.94%

CETIS Test Summary

Report Date: 21 Aug-07 2:04 PM
Link: 09-0394-9498

2d Proportion Survived Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
16150-000	1.00000	0.60000	1.00000	1.00000	1.00000	1.00000	0.80000	1.00000
16150-001	0.80000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
16150-002	1.00000	1.00000	0.80000	1.00000	1.00000	1.00000	1.00000	1.00000
16150-003	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	0.80000	1.00000
16150-004	1.00000	1.00000	1.00000	1.00000	0.80000	1.00000	1.00000	1.00000

7d Proportion Survived Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
16150-000	1.00000	0.60000	1.00000	1.00000	1.00000	1.00000	0.80000	1.00000
16150-001	0.80000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
16150-002	1.00000	1.00000	0.80000	1.00000	1.00000	1.00000	1.00000	1.00000
16150-003	1.00000	1.00000	1.00000	1.00000	0.80000	1.00000	0.80000	1.00000
16150-004	1.00000	1.00000	1.00000	1.00000	0.80000	1.00000	0.80000	1.00000

Mean Dry Biomass-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
16150-000	0.37400	0.13800	0.43000	0.38400	0.44600	0.44800	0.25800	0.32400
16150-001	0.37600	0.33000	0.66000	0.62800	0.47000	0.50800	0.44800	0.36600
16150-002	0.39400	0.42800	0.39400	0.61000	0.37400	0.31400	0.39600	0.47400
16150-003	0.46800	0.43200	0.47400	0.47800	0.38000	0.44800	0.27400	0.53600
16150-004	0.36600	0.36200	0.40000	0.40000	0.35200	0.40200	0.32800	0.36400

Mean Dry Weight-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
16150-000	0.37400	0.23000	0.43000	0.38400	0.44600	0.44800	0.32250	0.32400
16150-001	0.47000	0.33000	0.66000	0.62800	0.47000	0.50800	0.44800	0.36600
16150-002	0.39400	0.42800	0.49250	0.61000	0.37400	0.31400	0.39600	0.47400
16150-003	0.46800	0.43200	0.47400	0.47800	0.47500	0.44800	0.34250	0.53600
16150-004	0.36600	0.36200	0.40000	0.40000	0.44000	0.40200	0.41000	0.36400

CETIS Analysis Detail

Americamysis 7-d Survival, Growth and Fecundity Test — EnviroSystems, Inc.

Test No:	07-1279-8610	**Test Type:**	Growth-Survival-Fec (7d)	**Duration:**	6d 18h
Start Date:	09 Aug-07 04:20 PM	**Protocol:**	EPA/821/R-02-014 (2002)	**Species:**	Americamysis bahia
Ending Date:	16 Aug-07 10:45 AM	**Dil Water:**	Not Applicable	**Source:**	ARO - Aquatic Research Organisms, N
Setup Date:	09 Aug-07 04:20 PM	**Brine:**	Not Applicable		

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
7d Proportion Survived	Comparison	09-0394-9498	09-0394-9498	21 Aug-07 1:42 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Mann-Whitney U	C > T	Angular (Corrected)				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	4.16757	8.88539	0.07923	Equal Variances
Distribution	Shapiro-Wilk W	0.67052	0.84420	0.00001	Non-normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.0131794	0.0131794	1	0.72	0.41055	Non-Significant Effect
Error	0.2564119	0.0183151	14			
Total	0.26959125	0.0314945	15			

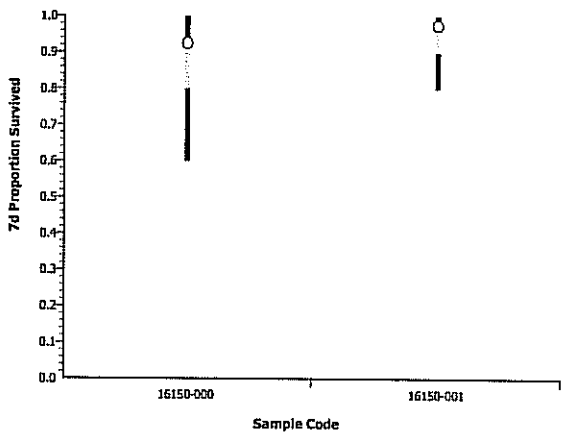
Group Comparisons

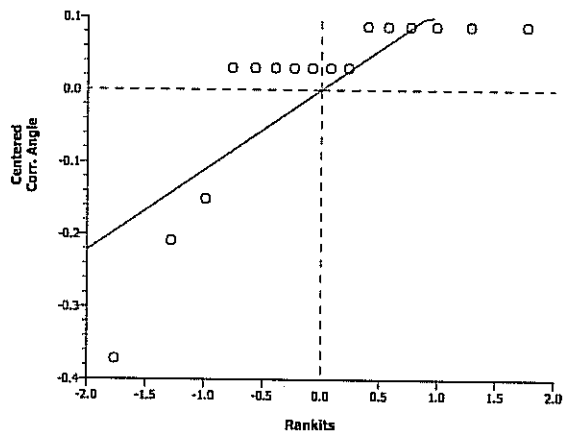
Sample	vs	Sample	Statistic	Critical	P Level	Ties	Decision(0.05)
16150-000		16150-001	27.5		0.6395	2	Non-Significant Effect

Data Summary

		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
16150-000	8	0.92500	0.60000	1.00000	0.14880	1.25812	0.88608	1.34528	0.17188
16150-001	8	0.97500	0.80000	1.00000	0.07071	1.31552	1.10715	1.34528	0.08419

Graphics





CETIS Analysis Detail

Americamysis 7-d Survival, Growth and Fecundity Test — **EnviroSystems, Inc.**

Test No:	07-1279-8610	**Test Type:**	Growth-Survival-Fec (7d)	**Duration:**	6d 18h
Start Date:	09 Aug-07 04:20 PM	**Protocol:**	EPA/821/R-02-014 (2002)	**Species:**	Americamysis bahia
Ending Date:	16 Aug-07 10:45 AM	**Dil Water:**	Not Applicable	**Source:**	ARO - Aquatic Research Organisms, N
Setup Date:	09 Aug-07 04:20 PM	**Brine:**	Not Applicable		

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
7d Proportion Survived	Comparison	09-0394-9498	09-0394-9498	21 Aug-07 1:42 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Mann-Whitney U	C > T	Angular (Corrected)				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	4.16757	8.88539	0.07923	Equal Variances
Distribution	Shapiro-Wilk W	0.67052	0.84420	0.00001	Non-normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.0131794	0.0131794	1	0.72	0.41055	Non-Significant Effect
Error	0.2564119	0.0183151	14			
Total	0.26959125	0.0314945	15			

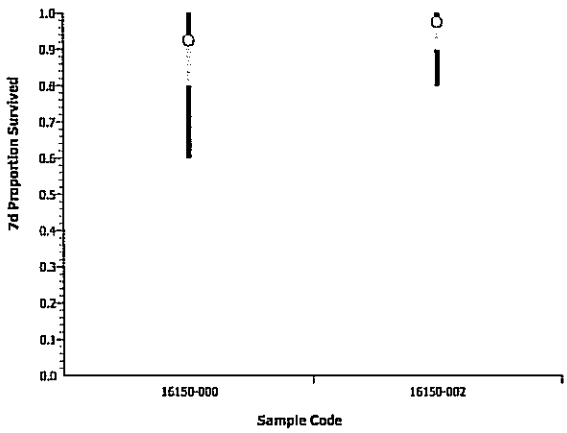
Group Comparisons

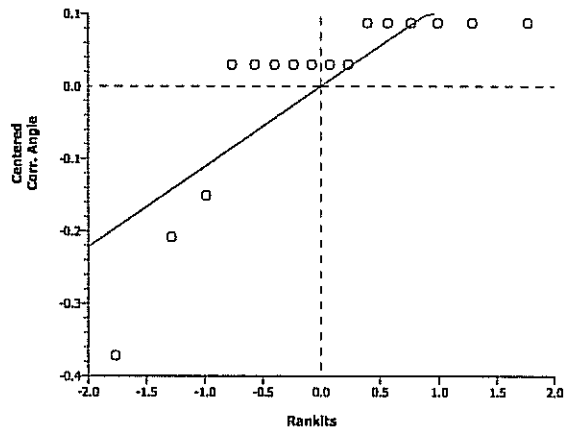
Sample	vs	Sample	Statistic	Critical	P Level	Ties	Decision(0.05)
16150-000		16150-002	27.5		0.6395	2	Non-Significant Effect

Data Summary

		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
16150-000	8	0.92500	0.60000	1.00000	0.14880	1.25812	0.88608	1.34528	0.17188
16150-002	8	0.97500	0.80000	1.00000	0.07071	1.31552	1.10715	1.34528	0.08419

Graphics





CETIS Analysis Detail

Americamysis 7-d Survival, Growth and Fecundity Test — EnviroSystems, Inc.

Test No:	07-1279-8610	**Test Type:**	Growth-Survival-Fec (7d)	**Duration:**	6d 18h
Start Date:	09 Aug-07 04:20 PM	**Protocol:**	EPA/821/R-02-014 (2002)	**Species:**	Americamysis bahia
Ending Date:	16 Aug-07 10:45 AM	**Dil Water:**	Not Applicable	**Source:**	ARO - Aquatic Research Organisms, N
Setup Date:	09 Aug-07 04:20 PM	**Brine:**	Not Applicable		

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
7d Proportion Survived	Comparison	09-0394-9498	09-0394-9498	21 Aug-07 1:42 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Mann-Whitney U	C > T	Angular (Corrected)				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	2.43108	8.88539	0.26405	Equal Variances
Distribution	Shapiro-Wilk W	0.66203	0.84420	0.00001	Non-normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.0030545	0.0030545	1	0.15	0.70763	Non-Significant Effect
Error	0.2918543	0.0208467	14			
Total	0.29490886	0.0239013	15			

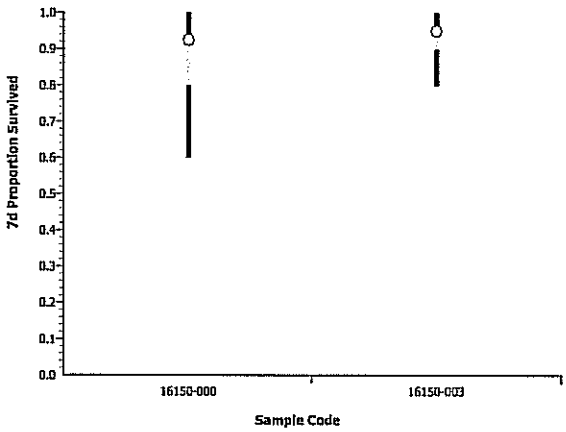
Group Comparisons

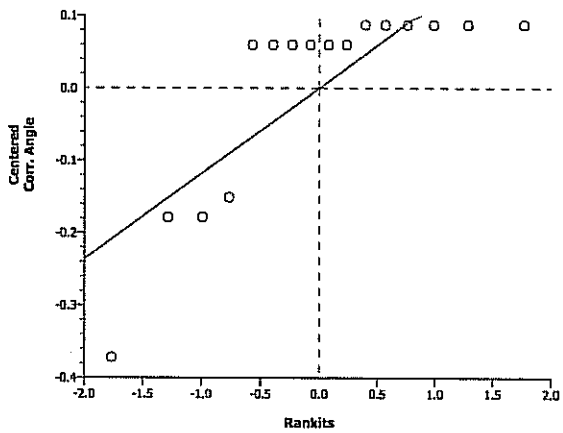
Sample	vs	Sample	Statistic	Critical	P Level	Ties	Decision(0.05)
16150-000		16150-003	31		0.5204	2	Non-Significant Effect

Data Summary

		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
16150-000	8	0.92500	0.60000	1.00000	0.14880	1.25812	0.88608	1.34528	0.17188
16150-003	8	0.95000	0.80000	1.00000	0.09258	1.28575	1.10715	1.34528	0.11023

Graphics





CETIS Analysis Detail

Americamysis 7-d Survival, Growth and Fecundity Test — EnviroSystems, Inc.

Test No:	07-1279-8610	**Test Type:**	Growth-Survival-Fec (7d)	**Duration:**	6d 18h
Start Date:	09 Aug-07 04:20 PM	**Protocol:**	EPA/821/R-02-014 (2002)	**Species:**	Americamysis bahia
Ending Date:	16 Aug-07 10:45 AM	**Dil Water:**	Not Applicable	**Source:**	ARO - Aquatic Research Organisms, N
Setup Date:	09 Aug-07 04:20 PM	**Brine:**	Not Applicable		

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
7d Proportion Survived	Comparison	09-0394-9498	09-0394-9498	21 Aug-07 1:42 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Mann-Whitney U	C > T	Angular (Corrected)				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	2.43108	8.88539	0.26405	Equal Variances
Distribution	Shapiro-Wilk W	0.66203	0.84420	0.00001	Non-normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.0030545	0.0030545	1	0.15	0.70763	Non-Significant Effect
Error	0.2918543	0.0208467	14			
Total	0.29490886	0.0239013	15			

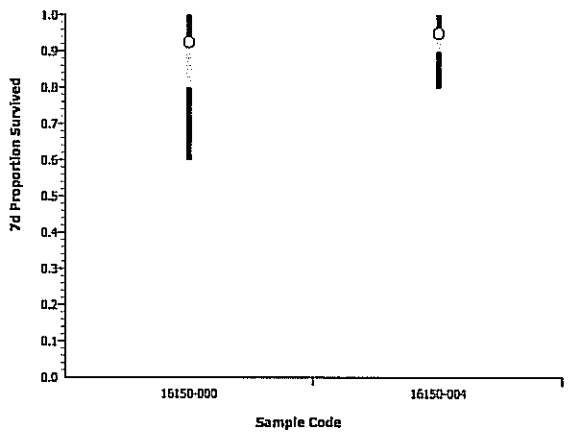
Group Comparisons

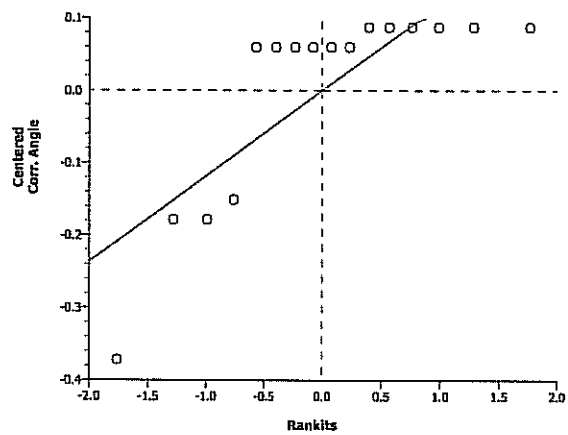
Sample	vs	Sample	Statistic	Critical	P Level	Ties	Decision(0.05)
16150-000		16150-004	31		0.5204	2	Non-Significant Effect

Data Summary

		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
16150-000	8	0.92500	0.60000	1.00000	0.14880	1.25812	0.88608	1.34528	0.17188
16150-004	8	0.95000	0.80000	1.00000	0.09258	1.28575	1.10715	1.34528	0.11023

Graphics





CETIS Analysis Detail

Americamysis 7-d Survival, Growth and Fecundity Test — **EnviroSystems, Inc.**

Test No:	07-1279-8610	**Test Type:**	Growth-Survival-Fec (7d)	**Duration:**	6d 18h
Start Date:	09 Aug-07 04:20 PM	**Protocol:**	EPA/821/R-02-014 (2002)	**Species:**	Americamysis bahia
Ending Date:	16 Aug-07 10:45 AM	**Dil Water:**	Not Applicable	**Source:**	ARO - Aquatic Research Organisms, N
Setup Date:	09 Aug-07 04:20 PM	**Brine:**	Not Applicable		

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
7d Proportion Survived	Comparison	09-0394-9498	09-0394-9498	21 Aug-07 1:42 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Mann-Whitney U	C > T	Angular (Corrected)				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	1.00000	8.88539	1.00000	Equal Variances
Distribution	Shapiro-Wilk W	0.39803	0.84420	0.00000	Non-normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0	0	1	0.00	1.00000	Non-Significant Effect
Error	0.0992388	0.0070885	14			
Total	0.09923882	0.0070885	15			

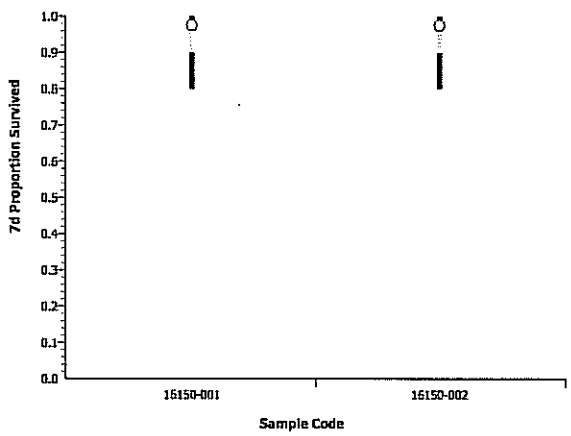
Group Comparisons

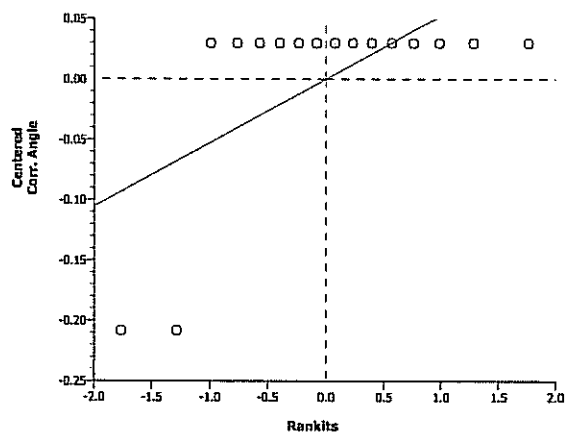
Sample	vs	Sample	Statistic	Critical	P Level	Ties	Decision(0.05)
16150-001		16150-002	32		0.4796	2	Non-Significant Effect

Data Summary

		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
16150-001	8	0.97500	0.80000	1.00000	0.07071	1.31552	1.10715	1.34528	0.08419
16150-002	8	0.97500	0.80000	1.00000	0.07071	1.31552	1.10715	1.34528	0.08419

Graphics





CETIS Analysis Detail

Americamysis 7-d Survival, Growth and Fecundity Test — EnviroSystems, Inc.

Test No:	07-1279-8610	**Test Type:**	Growth-Survival-Fec (7d)	**Duration:**	6d 18h
Start Date:	09 Aug-07 04:20 PM	**Protocol:**	EPA/821/R-02-014 (2002)	**Species:**	Americamysis bahia
Ending Date:	16 Aug-07 10:45 AM	**Dil Water:**	Not Applicable	**Source:**	ARO - Aquatic Research Organisms, N
Setup Date:	09 Aug-07 04:20 PM	**Brine:**	Not Applicable		

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
7d Proportion Survived	Comparison	09-0394-9498	09-0394-9498	21 Aug-07 1:42 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Mann-Whitney U	C > T	Angular (Corrected)				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	1.71429	8.88539	0.49388	Equal Variances
Distribution	Shapiro-Wilk W	0.61116	0.84420	0.00000	Non-normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.0035442	0.0035442	1	0.37	0.55358	Non-Significant Effect
Error	0.1346813	0.0096201	14			
Total	0.1382255	0.0131643	15			

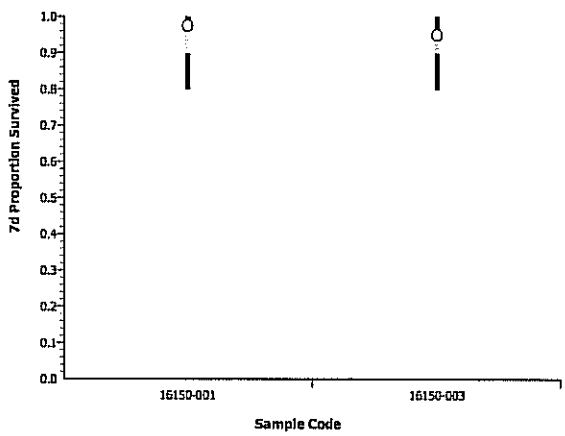
Group Comparisons

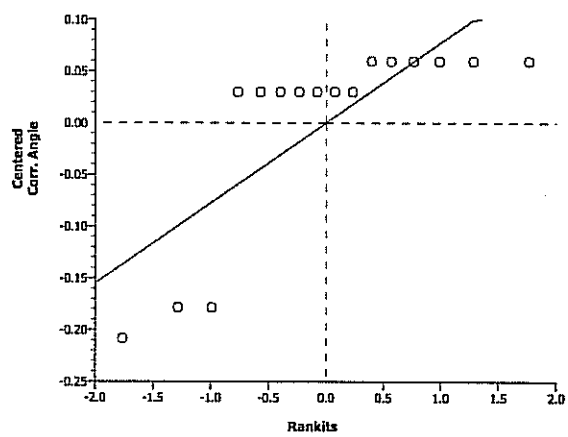
Sample	vs	Sample	Statistic	Critical	P Level	Ties	Decision(0.05)
16150-001		16150-003	36		0.3605	2	Non-Significant Effect

Data Summary

		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
16150-001	8	0.97500	0.80000	1.00000	0.07071	1.31552	1.10715	1.34528	0.08419
16150-003	8	0.95000	0.80000	1.00000	0.09258	1.28575	1.10715	1.34528	0.11023

Graphics





CETIS Analysis Detail

Americamysis 7-d Survival, Growth and Fecundity Test — **EnviroSystems, Inc.**

Test No:	07-1279-8610	**Test Type:**	Growth-Survival-Fec (7d)	**Duration:**	6d 18h
Start Date:	09 Aug-07 04:20 PM	**Protocol:**	EPA/821/R-02-014 (2002)	**Species:**	Americamysis bahia
Ending Date:	16 Aug-07 10:45 AM	**Dil Water:**	Not Applicable	**Source:**	ARO - Aquatic Research Organisms, N
Setup Date:	09 Aug-07 04:20 PM	**Brine:**	Not Applicable		

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
7d Proportion Survived	Comparison	09-0394-9498	09-0394-9498	21 Aug-07 1:42 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Mann-Whitney U	C > T	Angular (Corrected)				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	1.71429	8.88539	0.49388	Equal Variances
Distribution	Shapiro-Wilk W	0.61116	0.84420	0.00000	Non-normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.0035442	0.0035442	1	0.37	0.55358	Non-Significant Effect
Error	0.1346813	0.0096201	14			
Total	0.1382255	0.0131643	15			

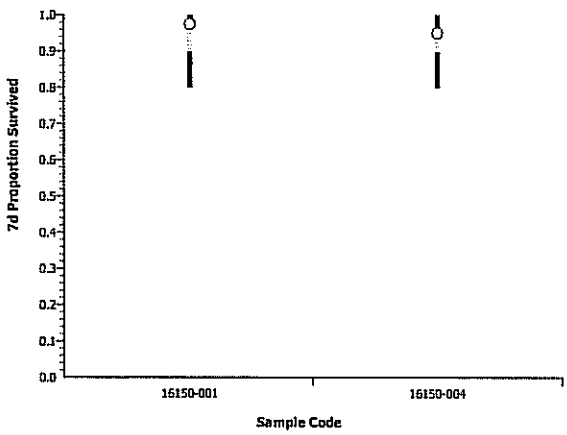
Group Comparisons

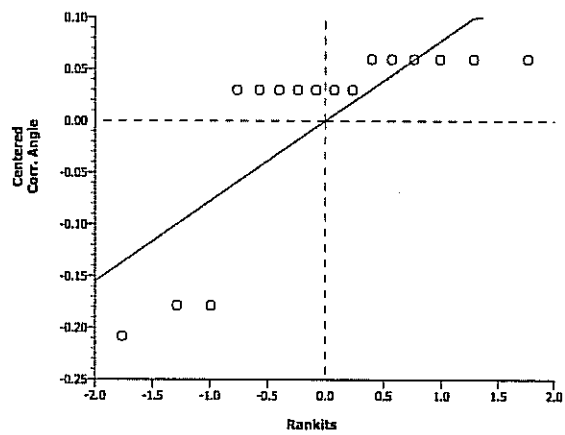
Sample	vs	Sample	Statistic	Critical	P Level	Ties	Decision(0.05)
16150-001		16150-004	36		0.3605	2	Non-Significant Effect

Data Summary

		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
16150-001	8	0.97500	0.80000	1.00000	0.07071	1.31552	1.10715	1.34528	0.08419
16150-004	8	0.95000	0.80000	1.00000	0.09258	1.28575	1.10715	1.34528	0.11023

Graphics





CETIS Analysis Detail

Americamysis 7-d Survival, Growth and Fecundity Test — **EnviroSystems, Inc.**

Test No:	07-1279-8610	**Test Type:**	Growth-Survival-Fec (7d)	**Duration:**	6d 18h
Start Date:	09 Aug-07 04:20 PM	**Protocol:**	EPA/821/R-02-014 (2002)	**Species:**	Americamysis bahia
Ending Date:	16 Aug-07 10:45 AM	**Dil Water:**	Not Applicable	**Source:**	ARO - Aquatic Research Organisms, N
Setup Date:	09 Aug-07 04:20 PM	**Brine:**	Not Applicable		

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Mean Dry Biomass-mg	Comparison	09-0394-9498	09-0394-9498	21 Aug-07 1:42 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Equal Variance t	C > T	Untransformed				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	1.26068	8.88539	0.76768	Equal Variances
Distribution	Shapiro-Wilk W	0.98100	0.84420	0.95262	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.0605160	0.0605160	1	4.62	0.04947	Significant Effect
Error	0.1831949	0.0130854	14			
Total	0.24371094	0.0736014	15			

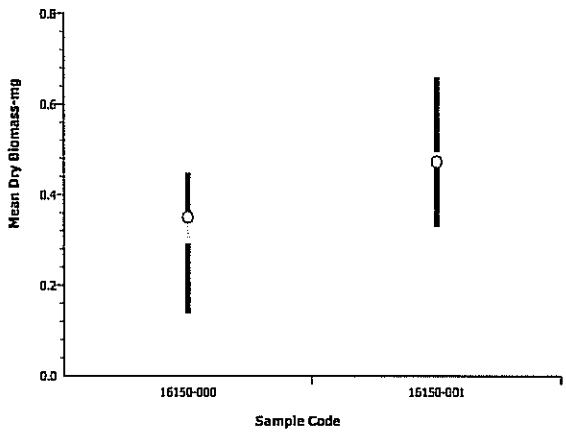
Group Comparisons

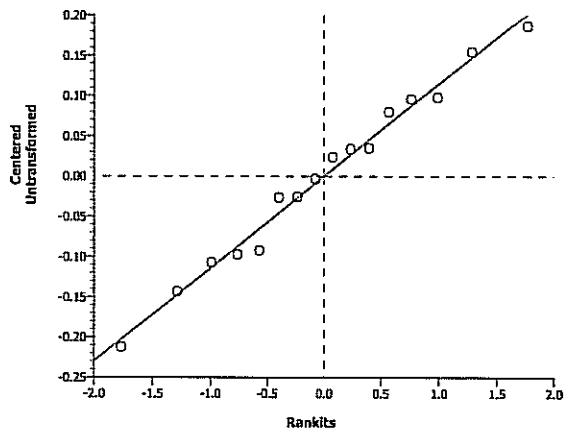
Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
16150-000		16150-001	-2.1505	1.76131	0.9753	0.10074	Non-Significant Effect

Data Summary

		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
16150-000	8	0.35025	0.13800	0.44800	0.10759				
16150-001	8	0.47325	0.33000	0.66000	0.12081				

Graphics





CETIS Analysis Detail

Americamysis 7-d Survival, Growth and Fecundity Test — EnviroSystems, Inc.

Test No:	07-1279-8610	**Test Type:**	Growth-Survival-Fec (7d)	**Duration:**	6d 18h
Start Date:	09 Aug-07 04:20 PM	**Protocol:**	EPA/821/R-02-014 (2002)	**Species:**	Americamysis bahia
Ending Date:	16 Aug-07 10:45 AM	**Dil Water:**	Not Applicable	**Source:**	ARO - Aquatic Research Organisms, N
Setup Date:	09 Aug-07 04:20 PM	**Brine:**	Not Applicable		

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Mean Dry Biomass-mg	Comparison	09-0394-9498	09-0394-9498	21 Aug-07 1:43 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Equal Variance t	C > T	Untransformed				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	1.49270	8.88539	0.61022	Equal Variances
Distribution	Shapiro-Wilk W	0.97774	0.84420	0.91772	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.0211702	0.0211702	1	2.19	0.16104	Non-Significant Effect
Error	0.1353234	0.009666	14			
Total	0.15649364	0.0308362	15			

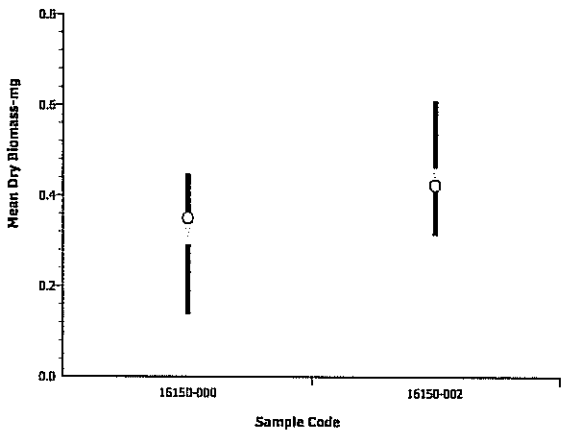
Group Comparisons

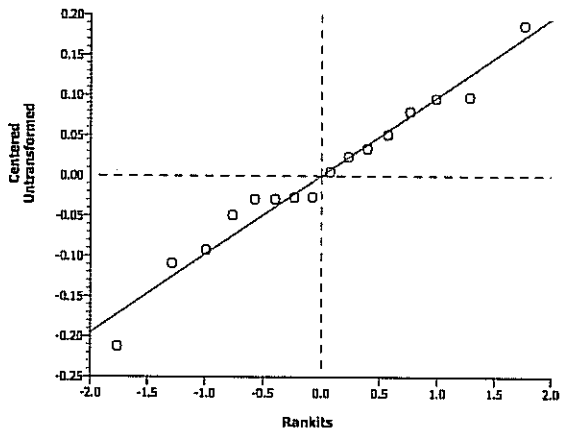
Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
16150-000		16150-002	-1.4799	1.76131	0.9195	0.08658	Non-Significant Effect

Data Summary

		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
16150-000	8	0.35025	0.13800	0.44800	0.10759				
16150-002	8	0.42300	0.31400	0.61000	0.08806				

Graphics





CETIS Analysis Detail

Americamysis 7-d Survival, Growth and Fecundity Test — **EnviroSystems, Inc.**

Test No:	07-1279-8610	**Test Type:**	Growth-Survival-Fec (7d)	**Duration:**	6d 18h
Start Date:	09 Aug-07 04:20 PM	**Protocol:**	EPA/821/R-02-014 (2002)	**Species:**	Americamysis bahia
Ending Date:	16 Aug-07 10:45 AM	**Dil Water:**	Not Applicable	**Source:**	ARO - Aquatic Research Organisms, N
Setup Date:	09 Aug-07 04:20 PM	**Brine:**	Not Applicable		

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Mean Dry Biomass-mg	Comparison	09-0394-9498	09-0394-9498	21 Aug-07 1:43 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Equal Variance t	C > T	Untransformed				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	1.85133	8.88539	0.43514	Equal Variances
Distribution	Shapiro-Wilk W	0.88621	0.84420	0.04823	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.029584	0.029584	1	3.32	0.08993	Non-Significant Effect
Error	0.124807	0.0089148	14			
Total	0.15439094	0.0384988	15			

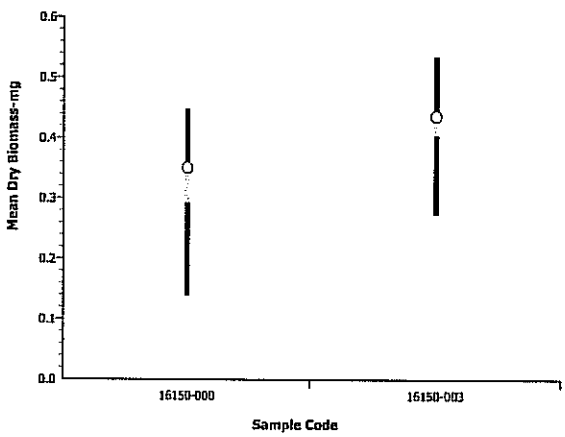
Group Comparisons

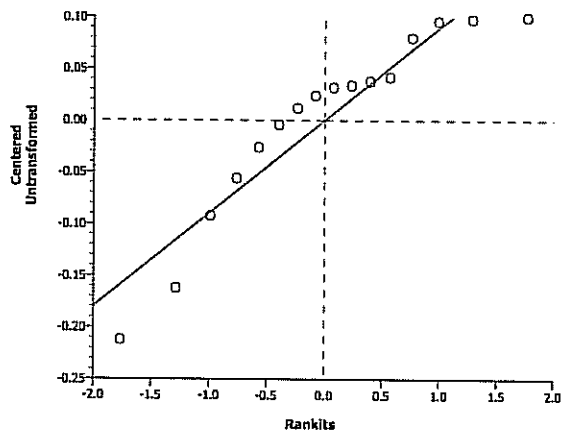
Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
16150-000		16150-003	-1.8217	1.76131	0.9550	0.08315	Non-Significant Effect

Data Summary

		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
16150-000	8	0.35025	0.13800	0.44800	0.10759				
16150-003	8	0.43625	0.27400	0.53600	0.07908				

Graphics





CETIS Analysis Detail

Americamysis 7-d Survival, Growth and Fecundity Test — EnviroSystems, Inc.

Test No:	07-1279-8610	**Test Type:**	Growth-Survival-Fec (7d)	**Duration:**	6d 18h
Start Date:	09 Aug-07 04:20 PM	**Protocol:**	EPA/821/R-02-014 (2002)	**Species:**	Americamysis bahia
Ending Date:	16 Aug-07 10:45 AM	**Dil Water:**	Not Applicable	**Source:**	ARO - Aquatic Research Organisms, N
Setup Date:	09 Aug-07 04:20 PM	**Brine:**	Not Applicable		

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Mean Dry Biomass-mg	Comparison	09-0394-9498	09-0394-9498	21 Aug-07 1:43 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Unequal Variance t	C > T	Untransformed				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	16.19568	8.88539	0.00157	Unequal Variances
Distribution	Shapiro-Wilk W	0.87975	0.84420	0.03789	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.001849	0.001849	1	0.30	0.59198	Non-Significant Effect
Error	0.086039	0.0061456	14			
Total	0.08788798	0.0079946	15			

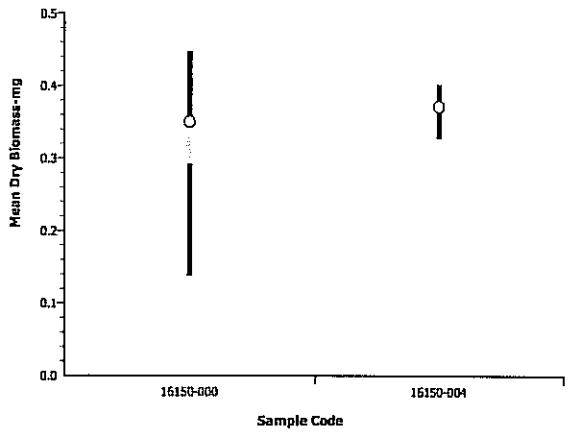
Group Comparisons

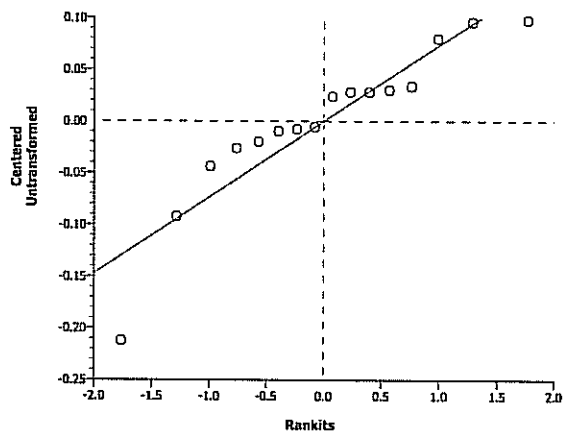
Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
16150-000		16150-004	-0.5485	1.89458	0.6998	0.07426	Non-Significant Effect

Data Summary

		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
16150-000	8	0.35025	0.13800	0.44800	0.10759				
16150-004	8	0.37175	0.32800	0.40200	0.02674				

Graphics





CETIS Analysis Detail

Americamysis 7-d Survival, Growth and Fecundity Test — **EnviroSystems, Inc.**

Test No:	07-1279-8610	**Test Type:**	Growth-Survival-Fec (7d)	**Duration:**	6d 18h
Start Date:	09 Aug-07 04:20 PM	**Protocol:**	EPA/821/R-02-014 (2002)	**Species:**	Americamysis bahia
Ending Date:	16 Aug-07 10:45 AM	**Dil Water:**	Not Applicable	**Source:**	ARO - Aquatic Research Organisms, N
Setup Date:	09 Aug-07 04:20 PM	**Brine:**	Not Applicable		

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Mean Dry Biomass-mg	Comparison	09-0394-9498	09-0394-9498	21 Aug-07 1:43 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Equal Variance t	C > T	Untransformed				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	1.88181	8.88539	0.42325	Equal Variances
Distribution	Shapiro-Wilk W	0.90448	0.84420	0.09508	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.0101003	0.0101003	1	0.90	0.35788	Non-Significant Effect
Error	0.1564474	0.0111748	14			
Total	0.16654767	0.0212751	15			

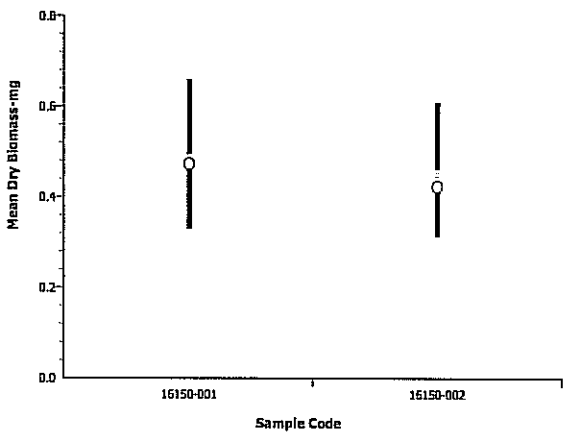
Group Comparisons

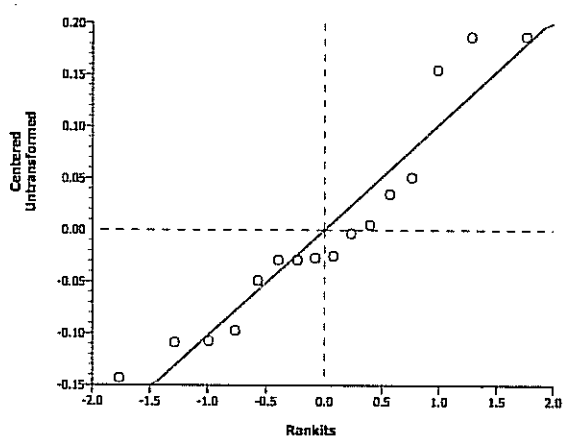
Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
16150-001		16150-002	0.95071	1.76131	0.1789	0.09309	Non-Significant Effect

Data Summary

		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
16150-001	8	0.47325	0.33000	0.66000	0.12081				
16150-002	8	0.42300	0.31400	0.61000	0.08806				

Graphics





CETIS Analysis Detail

Americamysis 7-d Survival, Growth and Fecundity Test — **EnviroSystems, Inc.**

Test No:	07-1279-8610	**Test Type:**	Growth-Survival-Fec (7d)	**Duration:**	6d 18h
Start Date:	09 Aug-07 04:20 PM	**Protocol:**	EPA/821/R-02-014 (2002)	**Species:**	Americamysis bahia
Ending Date:	16 Aug-07 10:45 AM	**Dil Water:**	Not Applicable	**Source:**	ARO - Aquatic Research Organisms, N
Setup Date:	09 Aug-07 04:20 PM	**Brine:**	Not Applicable		

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Mean Dry Biomass-mg	Comparison	09-0394-9498	09-0394-9498	21 Aug-07 1:43 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Equal Variance t	C > T	Untransformed				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	2.33393	8.88539	0.28596	Equal Variances
Distribution	Shapiro-Wilk W	0.96721	0.84420	0.75694	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.0054760	0.0054760	1	0.53	0.48051	Non-Significant Effect
Error	0.1459309	0.0104236	14			
Total	0.15140696	0.0158997	15			

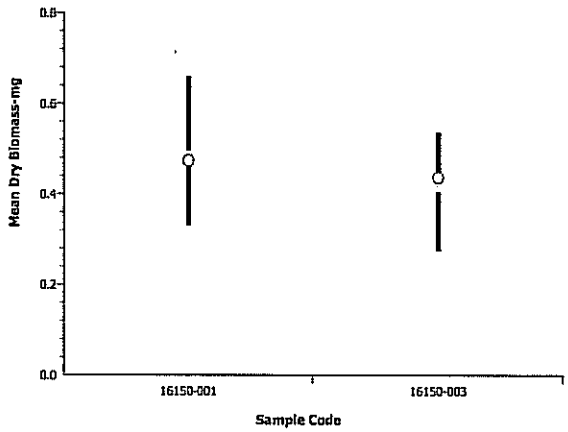
Group Comparisons

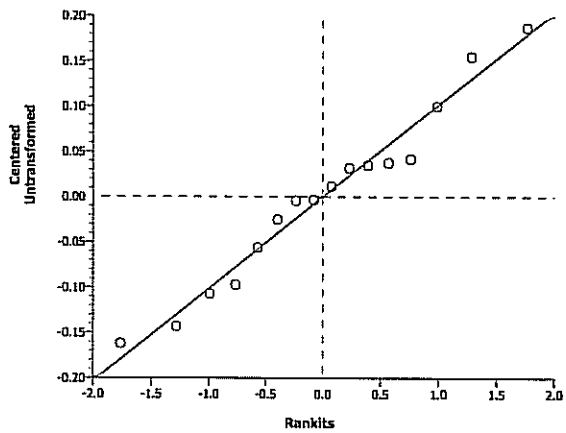
Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
16150-001		16150-003	0.72481	1.76131	0.2403	0.08991	Non-Significant Effect

Data Summary

		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
16150-001	8	0.47325	0.33000	0.66000	0.12081				
16150-003	8	0.43625	0.27400	0.53600	0.07908				

Graphics





CETIS Analysis Detail

Americamysis 7-d Survival, Growth and Fecundity Test — EnviroSystems, Inc.

Test No:	07-1279-8610	**Test Type:**	Growth-Survival-Fec (7d)	**Duration:**	6d 18h
Start Date:	09 Aug-07 04:20 PM	**Protocol:**	EPA/821/R-02-014 (2002)	**Species:**	Americamysis bahia
Ending Date:	16 Aug-07 10:45 AM	**Dil Water:**	Not Applicable	**Source:**	ARO - Aquatic Research Organisms, N
Setup Date:	09 Aug-07 04:20 PM	**Brine:**	Not Applicable		

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Mean Dry Biomass-mg	Comparison	09-0394-9498	09-0394-9498	21 Aug-07 1:43 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Unequal Variance t	C > T	Untransformed				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	20.41750	8.88539	0.00075	Unequal Variances
Distribution	Shapiro-Wilk W	0.91808	0.84420	0.15659	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.0412090	0.0412090	1	5.38	0.03594	Significant Effect
Error	0.107163	0.0076545	14			
Total	0.14837201	0.0488635	15			

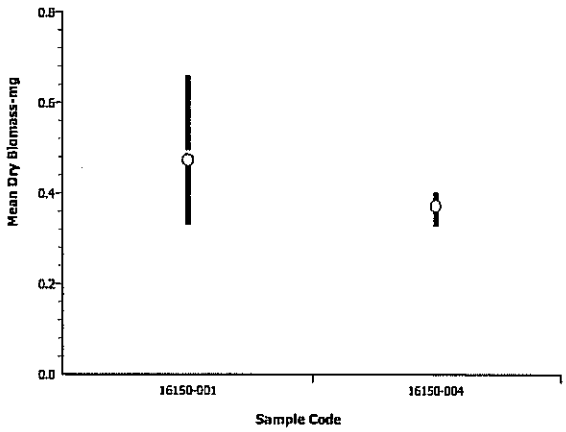
Group Comparisons

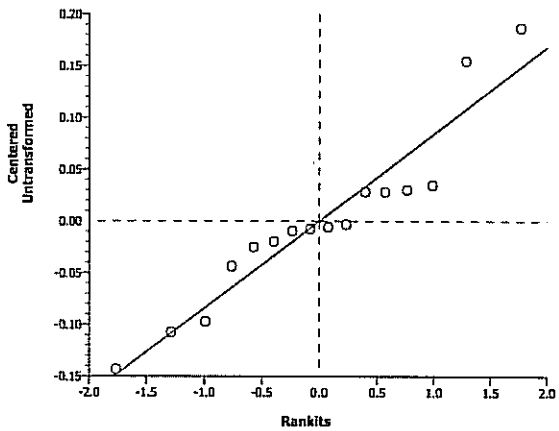
Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
16150-001		16150-004	2.32027	1.89458	0.0267	0.08288	Significant Effect

Data Summary

		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
16150-001	8	0.47325	0.33000	0.66000	0.12081				
16150-004	8	0.37175	0.32800	0.40200	0.02674				

Graphics





Arbacia punctulata Chronic Fertilization Assay

SAMPLE USE RECORD

STUDY: 16150	CLIENT: Battelle - New Bedford
SPECIES: *A. punctulata*	

	Day: 0	
SAMPLE	Volume Used (mL)	ESI Cube ID
Lab Control	200	N/A
-001		-001
-002		-002
-003		-003
-004		-004
INITIALS:	BB	
TIME:	1545	
DATE:	8/9/07	

FERTILIZATION COUNTS

STUDY	CLIENT	LOCATION	DATE 8/10/07
	BATTELLE	New Bedford	INITIALS BB

	REPLICATE VIAL			
	1	2	3	4
SAMPLE	FERT/TOTAL	FERT/TOTAL	FERT/TOTAL	FERT/TOTAL
Lab Control	100/105	100/102	100/104	101/103
-001	100/102	100/104	101/104	101/103
-002	100/104	100/105	101/102	102/106
-003	100/102	100/103	100/102	101/103
-004	102/105	101/109	100/103	100/111

CETIS Test Summary

Report Date: 21 Aug-07 1:59 PM
Link: 02-1118-1875

Arbacia Sperm Cell Fertilization Test — EnviroSystems, Inc.

Test No:	03-9154-3054	**Test Type:**	Fertilization	**Duration:**	80m
Start Date:	09 Aug-07 04:20 PM	**Protocol:**	EPA/821/R-02-014 (2002)	**Species:**	Arbacia punctulata
Ending Date:	09 Aug-07 05:40 PM	**Dil Water:**	Not Applicable	**Source:**	In-House Culture
Setup Date:	09 Aug-07 04:20 PM	**Brine:**	Not Applicable		

Sample No:	06-6444-1965	**Material:**	Surface Water	**Client:**	Battelle Labs
Sample Date:	09 Aug-07 04:00 PM	**Code:**	16150-000	**Project:**	Ecological Risk Assessment
Receive Date:	09 Aug-07 04:00 PM	**Source:**	New Bedford Harbor Dredge Monitorin		
Sample Age:	20m	**Station:**	Laboratory Water Control		
Sample No:	14-0079-4493	**Material:**	Surface Water	**Client:**	Battelle Labs
Sample Date:	09 Aug-07 08:40 AM	**Code:**	16150-001	**Project:**	Ecological Risk Assessment
Receive Date:	09 Aug-07 02:55 PM	**Source:**	New Bedford Harbor Dredge Monitorin		
Sample Age:	8h	**Station:**	WQ-TOX-001		
Sample No:	18-5933-9189	**Material:**	Surface Water	**Client:**	Battelle Labs
Sample Date:	09 Aug-07 09:15 AM	**Code:**	16150-002	**Project:**	Ecological Risk Assessment
Receive Date:	09 Aug-07 02:55 PM	**Source:**	New Bedford Harbor Dredge Monitorin		
Sample Age:	7h	**Station:**	WQ-TOX-002		
Sample No:	08-7827-7773	**Material:**	Surface Water	**Client:**	Battelle Labs
Sample Date:	09 Aug-07 09:30 AM	**Code:**	16150-003	**Project:**	Ecological Risk Assessment
Receive Date:	09 Aug-07 02:55 PM	**Source:**	New Bedford Harbor Dredge Monitorin		
Sample Age:	7h	**Station:**	WQ-TOX-003		
Sample No:	04-4490-4090	**Material:**	Surface Water	**Client:**	Battelle Labs
Sample Date:	09 Aug-07 10:05 AM	**Code:**	16150-004	**Project:**	Ecological Risk Assessment
Receive Date:	09 Aug-07 02:55 PM	**Source:**	New Bedford Harbor Dredge Monitorin		
Sample Age:	6h	**Station:**	WQ-TOX-004		

Proportion Fertilized Summary

Sample Code	Reps	Mean	Minimum	Maximum	SE	SD	CV
16150-000	4	0.96872	0.95238	0.98058	0.00704	0.01409	1.45%
16150-001	4	0.97342	0.96154	0.98058	0.00453	0.00906	0.93%
16150-002	4	0.96659	0.95238	0.99020	0.00818	0.01636	1.69%
16150-003	4	0.97806	0.97087	0.98058	0.00240	0.00479	0.49%
16150-004	4	0.94960	0.90090	1.00000	0.02216	0.04432	4.67%

Proportion Fertilized Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4
16150-000	0.95238	0.98039	0.96154	0.98058
16150-001	0.98039	0.96154	0.97115	0.98058
16150-002	0.96154	0.95238	0.99020	0.96226
16150-003	0.98039	0.97087	0.98039	0.98058
16150-004	1.00000	0.92661	0.97087	0.90090

CETIS Analysis Detail

Arbacia Sperm Cell Fertilization Test — EnviroSystems, Inc.

Test No:	03-9154-3054	**Test Type:**	Fertilization	**Duration:**	80m
Start Date:	09 Aug-07 04:20 PM	**Protocol:**	EPA/821/R-02-014 (2002)	**Species:**	Arbacia punctulata
Ending Date:	09 Aug-07 05:40 PM	**Dil Water:**	Not Applicable	**Source:**	In-House Culture
Setup Date:	09 Aug-07 04:20 PM	**Brine:**	Not Applicable		

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Proportion Fertilized	Comparison	02-1118-1875	02-1118-1875	13 Aug-07 3:10 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Equal Variance t	C > T	Angular (Corrected)				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	2.16955	47.46723	0.54107	Equal Variances
Distribution	Shapiro-Wilk W	0.88468	0.74935	0.20206	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.0003040	0.0003040	1	0.25	0.63352	Non-Significant Effect
Error	0.0072375	0.0012062	6			
Total	0.00754151	0.0015103	7			

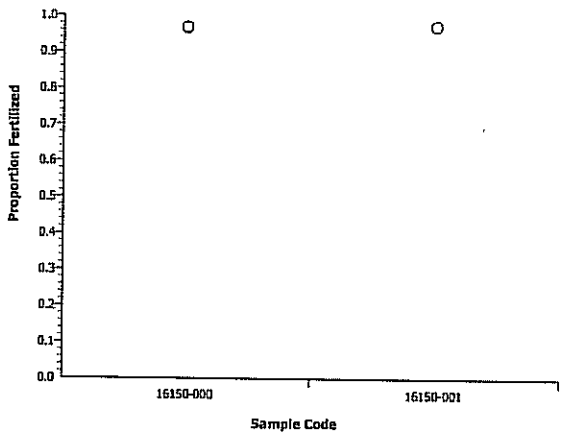
Group Comparisons

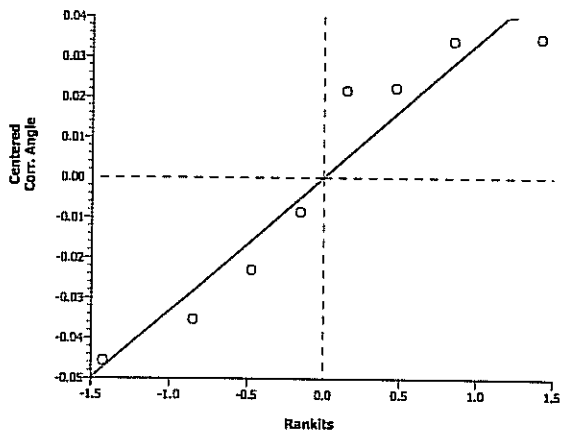
Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
16150-000		16150-001	-0.5021	1.94318	0.6832	0.04772	Non-Significant Effect

Data Summary

		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
16150-000	4	0.96872	0.95238	0.98058	0.01409	1.39638	1.35081	1.43099	0.04064
16150-001	4	0.97342	0.96154	0.98058	0.00906	1.40871	1.37340	1.43099	0.02759

Graphics





CETIS Analysis Detail

Arbacia Sperm Cell Fertilization Test — EnviroSystems, Inc.

Test No:	03-9154-3054	**Test Type:**	Fertilization	**Duration:**	80m
Start Date:	09 Aug-07 04:20 PM	**Protocol:**	EPA/821/R-02-014 (2002)	**Species:**	Arbacia punctulata
Ending Date:	09 Aug-07 05:40 PM	**Dil Water:**	Not Applicable	**Source:**	In-House Culture
Setup Date:	09 Aug-07 04:20 PM	**Brine:**	Not Applicable		

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Proportion Fertilized	Comparison	02-1118-1875	02-1118-1875	13 Aug-07 3:10 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Equal Variance t	C > T	Angular (Corrected)				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	1.74776	47.46723	0.65783	Equal Variances
Distribution	Shapiro-Wilk W	0.88162	0.74935	0.18999	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	2.587E-05	2.587E-05	1	0.01	0.91844	Non-Significant Effect
Error	0.0136125	0.0022687	6			
Total	0.01363833	0.0022946	7			

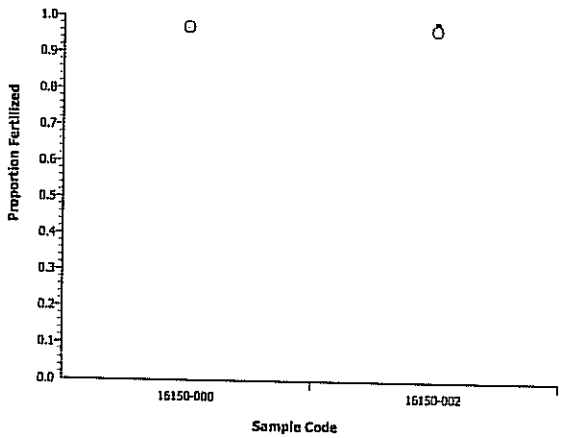
Group Comparisons

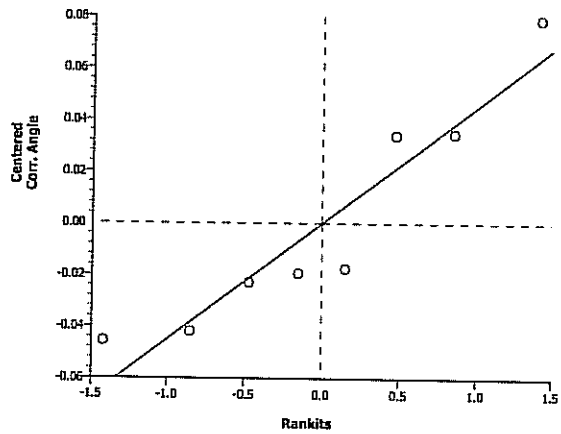
Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
16150-000		16150-002	0.10679	1.94318	0.4592	0.06545	Non-Significant Effect

Data Summary

		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
16150-000	4	0.96872	0.95238	0.98058	0.01409	1.39638	1.35081	1.43099	0.04064
16150-002	4	0.96659	0.95238	0.99020	0.01636	1.39278	1.35081	1.47162	0.05372

Graphics





CETIS Analysis Detail

Arbacia Sperm Cell Fertilization Test — EnviroSystems, Inc.

Test No:	03-9154-3054	**Test Type:**	Fertilization	**Duration:**	80m
Start Date:	09 Aug-07 04:20 PM	**Protocol:**	EPA/821/R-02-014 (2002)	**Species:**	Arbacia punctulata
Ending Date:	09 Aug-07 05:40 PM	**Dil Water:**	Not Applicable	**Source:**	In-House Culture
Setup Date:	09 Aug-07 04:20 PM	**Brine:**	Not Applicable		

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Proportion Fertilized	Comparison	02-1118-1875	02-1118-1875	13 Aug-07 3:10 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Equal Variance t	C > T	Angular (Corrected)				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	6.76388	47.46723	0.15074	Equal Variances
Distribution	Shapiro-Wilk W	0.91479	0.74935	0.36413	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.0013884	0.0013884	1	1.46	0.27166	Non-Significant Effect
Error	0.0056864	0.0009477	6			
Total	0.00707484	0.0023361	7			

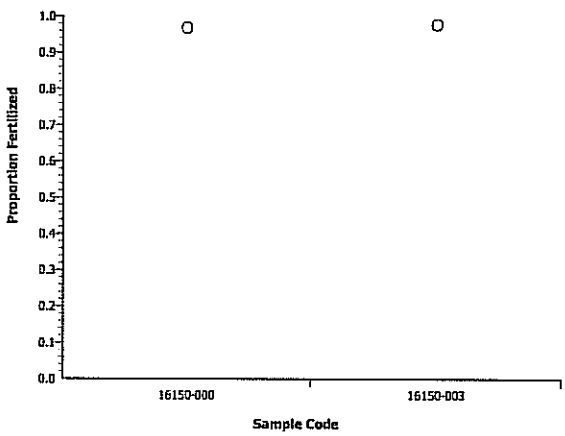
Group Comparisons

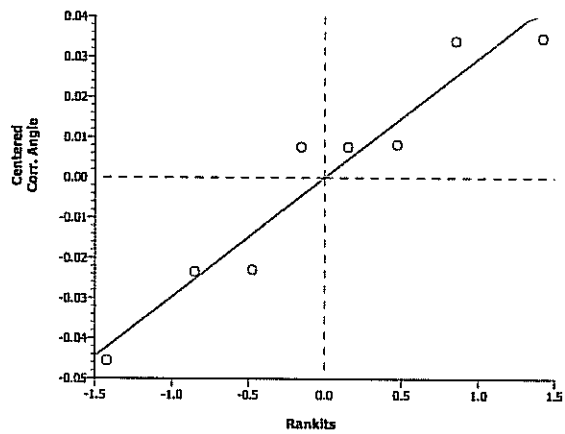
Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
16150-000		16150-003	-1.2103	1.94318	0.8642	0.04230	Non-Significant Effect

Data Summary

		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
16150-000	4	0.96872	0.95238	0.98058	0.01409	1.39638	1.35081	1.43099	0.04064
16150-003	4	0.97806	0.97087	0.98058	0.00479	1.42273	1.39929	1.43099	0.01562

Graphics





CETIS Analysis Detail

Arbacia Sperm Cell Fertilization Test — EnviroSystems, Inc.

Test No:	03-9154-3054	**Test Type:**	Fertilization	**Duration:**	80m
Start Date:	09 Aug-07 04:20 PM	**Protocol:**	EPA/821/R-02-014 (2002)	**Species:**	Arbacia punctulata
Ending Date:	09 Aug-07 05:40 PM	**Dil Water:**	Not Applicable	**Source:**	In-House Culture
Setup Date:	09 Aug-07 04:20 PM	**Brine:**	Not Applicable		

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Proportion Fertilized	Comparison	02-1118-1875	02-1118-1875	13 Aug-07 3:10 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Equal Variance t	C > T	Angular (Corrected)				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	8.75630	47.46723	0.10793	Equal Variances
Distribution	Shapiro-Wilk W	0.94788	0.74935	0.65313	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.0017389	0.0017389	1	0.22	0.65859	Non-Significant Effect
Error	0.0483329	0.0080555	6			
Total	0.05007182	0.0097944	7			

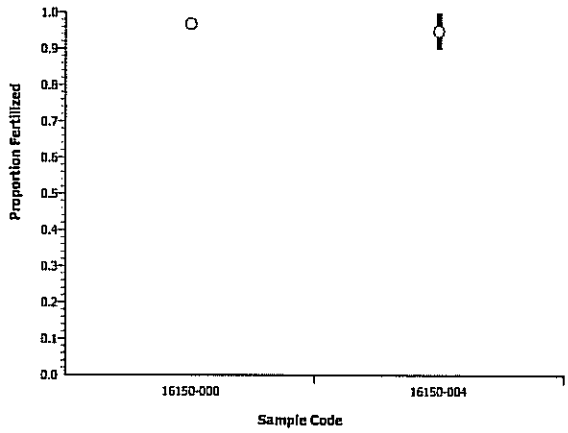
Group Comparisons

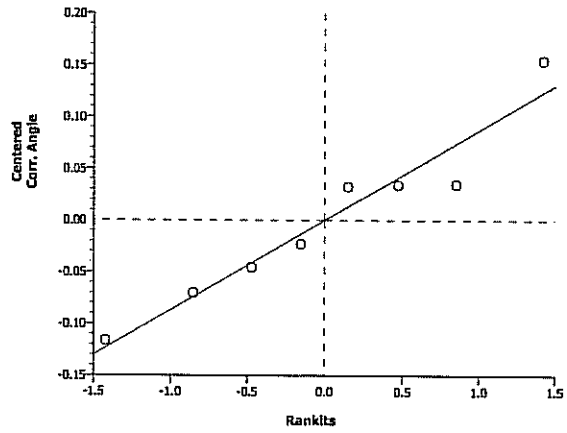
Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
16150-000		16150-004	0.46461	1.94318	0.3293	0.12332	Non-Significant Effect

Data Summary

		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
16150-000	4	0.96872	0.95238	0.98058	0.01409	1.39638	1.35081	1.43099	0.04064
16150-004	4	0.94960	0.90090	1.00000	0.04432	1.36689	1.25055	1.52127	0.12025

Graphics





CETIS Analysis Detail

Arbacia Sperm Cell Fertilization Test — EnviroSystems, Inc.

Test No:	03-9154-3054	**Test Type:**	Fertilization	**Duration:**	80m
Start Date:	09 Aug-07 04:20 PM	**Protocol:**	EPA/821/R-02-014 (2002)	**Species:**	Arbacia punctulata
Ending Date:	09 Aug-07 05:40 PM	**Dil Water:**	Not Applicable	**Source:**	In-House Culture
Setup Date:	09 Aug-07 04:20 PM	**Brine:**	Not Applicable		

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Proportion Fertilized	Comparison	02-1118-1875	02-1118-1875	13 Aug-07 3:10 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Equal Variance t	C > T	Angular (Corrected)				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	3.79185	47.46723	0.30260	Equal Variances
Distribution	Shapiro-Wilk W	0.89537	0.74935	0.25002	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.0005073	0.0005073	1	0.28	0.61682	Non-Significant Effect
Error	0.0109419	0.0018236	6			
Total	0.01144916	0.0023309	7			

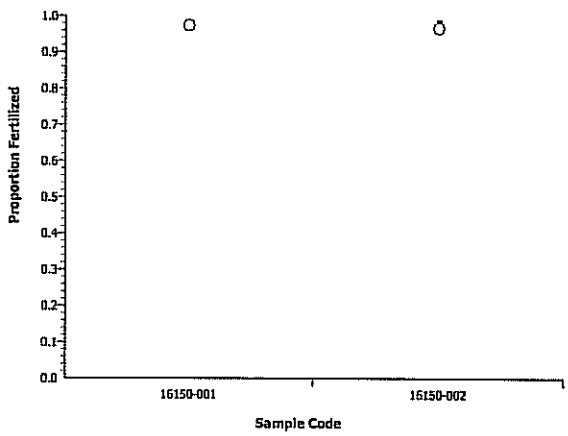
Group Comparisons

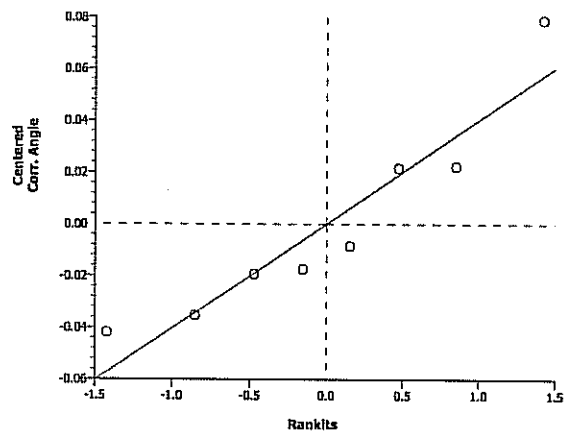
Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
16150-001		16150-002	0.52743	1.94318	0.3084	0.05868	Non-Significant Effect

Data Summary

		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
16150-001	4	0.97342	0.96154	0.98058	0.00906	1.40871	1.37340	1.43099	0.02759
16150-002	4	0.96659	0.95238	0.99020	0.01636	1.39278	1.35081	1.47162	0.05372

Graphics





CETIS Analysis Detail

Arbacia Sperm Cell Fertilization Test — EnviroSystems, Inc.

Test No:	03-9154-3054	**Test Type:**	Fertilization	**Duration:**	80m
Start Date:	09 Aug-07 04:20 PM	**Protocol:**	EPA/821/R-02-014 (2002)	**Species:**	Arbacia punctulata
Ending Date:	09 Aug-07 05:40 PM	**Dil Water:**	Not Applicable	**Source:**	In-House Culture
Setup Date:	09 Aug-07 04:20 PM	**Brine:**	Not Applicable		

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Proportion Fertilized	Comparison	02-1118-1875	02-1118-1875	13 Aug-07 3:10 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Equal Variance t	C > T	Angular (Corrected)				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	3.11764	47.46723	0.37533	Equal Variances
Distribution	Shapiro-Wilk W	0.89800	0.74935	0.26335	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.000393	0.000393	1	0.78	0.41060	Non-Significant Effect
Error	0.0030159	0.0005026	6			
Total	0.00340885	0.0008956	7			

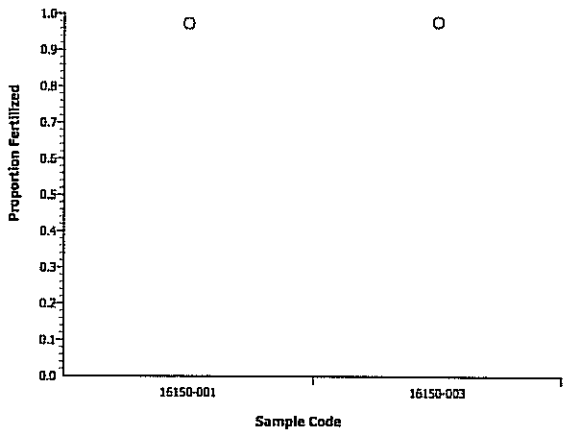
Group Comparisons

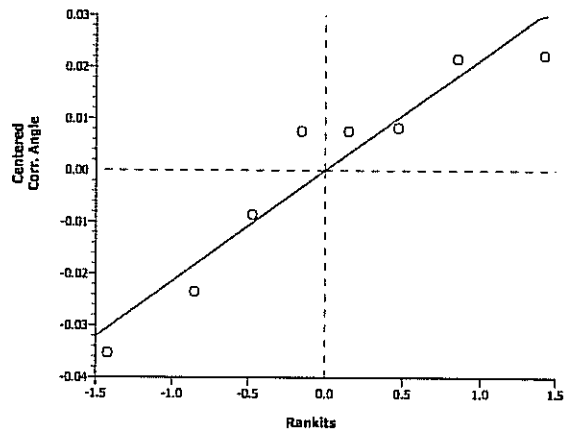
Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
16150-001		16150-003	-0.8842	1.94318	0.7947	0.03081	Non-Significant Effect

Data Summary

		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
16150-001	4	0.97342	0.96154	0.98058	0.00906	1.40871	1.37340	1.43099	0.02759
16150-003	4	0.97806	0.97087	0.98058	0.00479	1.42273	1.39929	1.43099	0.01562

Graphics





CETIS Analysis Detail

Arbacia Sperm Cell Fertilization Test — EnviroSystems, Inc.

Test No:	03-9154-3054	**Test Type:**	Fertilization	**Duration:**	80m
Start Date:	09 Aug-07 04:20 PM	**Protocol:**	EPA/821/R-02-014 (2002)	**Species:**	Arbacia punctulata
Ending Date:	09 Aug-07 05:40 PM	**Dil Water:**	Not Applicable	**Source:**	In-House Culture
Setup Date:	09 Aug-07 04:20 PM	**Brine:**	Not Applicable		

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Proportion Fertilized	Comparison	02-1118-1875	02-1118-1875	13 Aug-07 3:11 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Equal Variance t	C > T	Angular (Corrected)				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	18.99722	47.46723	0.03739	Equal Variances
Distribution	Shapiro-Wilk W	0.94847	0.74935	0.65926	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.0034972	0.0034972	1	0.46	0.52311	Non-Significant Effect
Error	0.0456624	0.0076104	6			
Total	0.04915951	0.0111076	7			

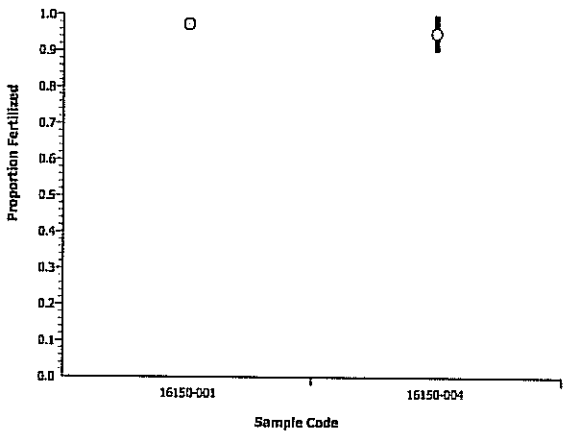
Group Comparisons

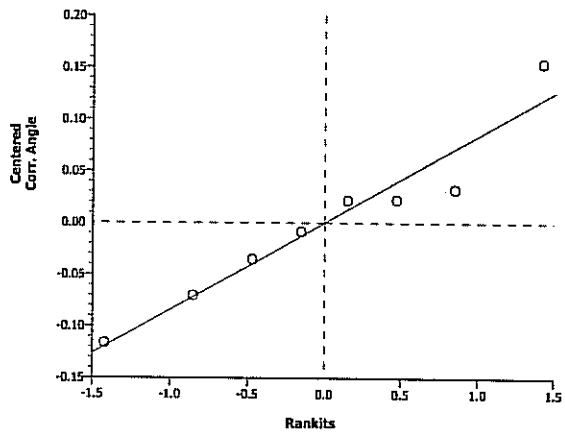
Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
16150-001		16150-004	0.67788	1.94318	0.2616	0.11987	Non-Significant Effect

Data Summary

		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
16150-001	4	0.97342	0.96154	0.98058	0.00906	1.40871	1.37340	1.43099	0.02759
16150-004	4	0.94960	0.90090	1.00000	0.04432	1.36689	1.25055	1.52127	0.12025

Graphics





Saskatchewan Research Council
15 Innovation Boulevard, Saskatoon, SK S7N 2X8
Phone: 306-933-5469

Sample Identification	16150-001 16150-002 16150-003 16150-004	Analyst	Mary Moody	SRC#	E 556, 557, 558, 559

E	556 to 559									
Date	Aug 14/07									
			Cystocarps per branch				**Mean**	**SD**	**Group mean and SD**	**Comments**
Control	NSW	41	37	42	51	41	**42.4**	5.2	**38.6**	Healthy red colour
		29	19	32	24	44	**29.6**	9.4	**11.8**	Normal growth
		41	52	63	27	33	**43.2**	14.5		
		61	42	30	26	36	**39.0**	13.7		
	16150-001	46	39	49	24	41	**39.8**	9.7	**34.2**	Healthy red colour
		21	26	30	21	39	**27.4**	7.5	**10.5**	Normal growth
		21	39	22	29	22	**26.6**	7.6		
		40	51	40	49	34	**42.8**	7.0		
	16150-002	110 cystocarps on all 5 branches					**22.0**	nc	**19.5**	Branches white with red tips.
		68 cystocarps on all 5 branches					**13.6**	nc	**nc**	Branches fragmented.
		90 cystocarps on all 5 branches					**18.0**	nc		
		122 cystocarps on all 5 branches					**24.4**	nc		
	16150-003	50	39	54	46	44	**46.6**	5.7	**40.4**	Branches white with red tips.
		37	30	33	41	28	**33.8**	5.3	**8.3**	
		54	43	40	45	45	**45.4**	5.2		
		24	30	46	39	39	**35.6**	8.6		
	16150-004	26	25	20	31	32	**26.8**	4.9	**24.4**	Branches white with red tips.
		6	13	10	8	15	**10.4**	3.6	**10.8**	
		28	35	41	44	33	**36.2**	6.4		
		24	22	20	18	36	**24.0**	7.1		

SD: Standard Deviation

nc: not calculable

Submitted by: _____ Date: _____

CETIS Test Summary

Report Date: 21 Aug-07 3:55 PM
Link: 06-9683-0298

Champia parvula Red Macroalga Sexual Reproduction Test — **Saskatchewan Research Council**

Test No:	04-7828-8134	**Test Type:**	Champia	**Duration:**	7d 0h
Start Date:	13 Aug-07 12:00 PM	**Protocol:**	EPA/600/4-91/003 (1994)	**Species:**	Champia parvula
Ending Date:	20 Aug-07 12:00 PM	**Dil Water:**	Not Applicable	**Source:**	In-House Culture
Setup Date:	13 Aug-07 12:00 PM	**Brine:**	Not Applicable		

Sample No:	06-6444-1965	**Material:**	Surface Water	**Client:**	Battelle Labs
Sample Date:	09 Aug-07 04:00 PM	**Code:**	16150-000	**Project:**	Ecological Risk Assessment
Receive Date:	09 Aug-07 04:00 PM	**Source:**	New Bedford Harbor Dredge Monitorin		
Sample Age:	92h	**Station:**	Laboratory Water Control		
Sample No:	14-0079-4493	**Material:**	Surface Water	**Client:**	Battelle Labs
Sample Date:	09 Aug-07 08:40 AM	**Code:**	16150-001	**Project:**	Ecological Risk Assessment
Receive Date:	09 Aug-07 02:55 PM	**Source:**	New Bedford Harbor Dredge Monitorin		
Sample Age:	4d 3h	**Station:**	WQ-TOX-001		
Sample No:	18-5933-9189	**Material:**	Surface Water	**Client:**	Battelle Labs
Sample Date:	09 Aug-07 09:15 AM	**Code:**	16150-002	**Project:**	Ecological Risk Assessment
Receive Date:	09 Aug-07 02:55 PM	**Source:**	New Bedford Harbor Dredge Monitorin		
Sample Age:	4d 2h	**Station:**	WQ-TOX-002		
Sample No:	08-7827-7773	**Material:**	Surface Water	**Client:**	Battelle Labs
Sample Date:	09 Aug-07 09:30 AM	**Code:**	16150-003	**Project:**	Ecological Risk Assessment
Receive Date:	09 Aug-07 02:55 PM	**Source:**	New Bedford Harbor Dredge Monitorin		
Sample Age:	4d 2h	**Station:**	WQ-TOX-003		
Sample No:	04-4490-4090	**Material:**	Surface Water	**Client:**	Battelle Labs
Sample Date:	09 Aug-07 10:05 AM	**Code:**	16150-004	**Project:**	Ecological Risk Assessment
Receive Date:	09 Aug-07 02:55 PM	**Source:**	New Bedford Harbor Dredge Monitorin		
Sample Age:	4d 1h	**Station:**	WQ-TOX-004		

Mean Cystocarps Summary

Sample Code	Reps	Mean	Minimum	Maximum	SE	SD	CV
16150-000	4	38.55	29.6	43.2	3.11916	6.23832	16.18%
16150-001	4	34.15	26.6	42.8	4.17642	8.35284	24.46%
16150-002	4	19.5	13.6	24.4	2.36854	4.73709	24.29%
16150-003	4	40.35	33.8	46.6	3.29178	6.58357	16.32%
16150-004	4	24.35	10.4	36.2	5.33190	10.6638	43.79%

Mean Cystocarps Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4
16150-000	42.4	29.6	43.2	39
16150-001	39.8	27.4	26.6	42.8
16150-002	22	13.6	18	24.4
16150-003	46.6	33.8	45.4	35.6
16150-004	26.8	10.4	36.2	24

CETIS Analysis Detail

Champia parvula Red Macroalga Sexual Reproduction Test — Saskatchewan Research Council

Test No:	04-7828-8134	**Test Type:**	Champia	**Duration:**	7d 0h
Start Date:	13 Aug-07 12:00 PM	**Protocol:**	EPA/600/4-91/003 (1994)	**Species:**	Champia parvula
Ending Date:	20 Aug-07 12:00 PM	**Dil Water:**	Not Applicable	**Source:**	In-House Culture
Setup Date:	13 Aug-07 12:00 PM	**Brine:**	Not Applicable		

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Mean Cystocarps	Comparison	06-9683-0298	06-9683-0298	21 Aug-07 3:54 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Equal Variance t	C > T	Untransformed				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	1.79281	47.46723	0.64348	Equal Variances
Distribution	Shapiro-Wilk W	0.88694	0.74935	0.21144	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	38.72	38.72	1	0.71	0.43098	Non-Significant Effect
Error	326.06	54.34333	6			
Total	364.779999	93.063335	7			

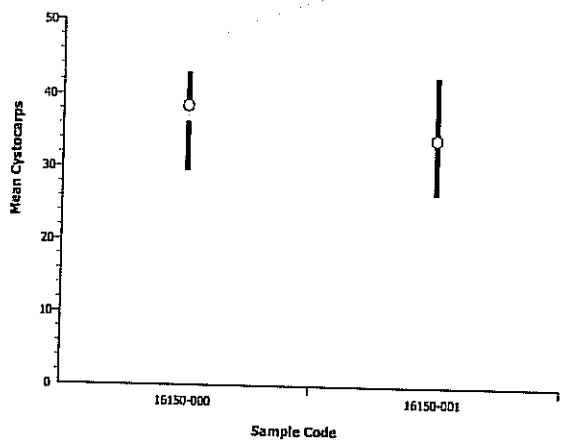
Group Comparisons

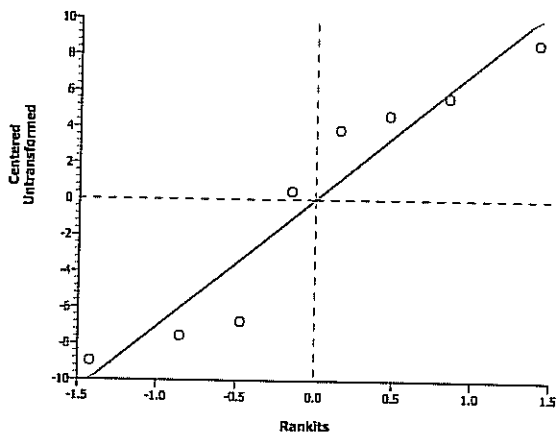
Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
16150-000		16150-001	0.84410	1.94318	0.2155	10.1291	Non-Significant Effect

Data Summary

Sample Code	Count	Original Data Mean	Original Data Minimum	Original Data Maximum	Original Data SD	Transformed Data Mean	Transformed Data Minimum	Transformed Data Maximum	Transformed Data SD
16150-000	4	38.5500	29.6	43.2	6.23832				
16150-001	4	34.15	26.6	42.8	8.35284				

Graphics





CETIS Analysis Detail

Champia parvula Red Macroalga Sexual Reproduction Test — **Saskatchewan Research Council**

Test No:	04-7828-8134	**Test Type:**	Champia	**Duration:**	7d 0h
Start Date:	13 Aug-07 12:00 PM	**Protocol:**	EPA/600/4-91/003 (1994)	**Species:**	Champia parvula
Ending Date:	20 Aug-07 12:00 PM	**Dil Water:**	Not Applicable	**Source:**	In-House Culture
Setup Date:	13 Aug-07 12:00 PM	**Brine:**	Not Applicable		

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Mean Cystocarps	Comparison	06-9683-0298	06-9683-0298	21 Aug-07 3:54 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Equal Variance t	C > T	Untransformed				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	1.73425	47.46723	0.66224	Equal Variances
Distribution	Shapiro-Wilk W	0.88559	0.74935	0.20579	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	725.805	725.805	1	23.66	0.00281	Significant Effect
Error	184.07	30.67833	6			
Total	909.875	756.48333	7			

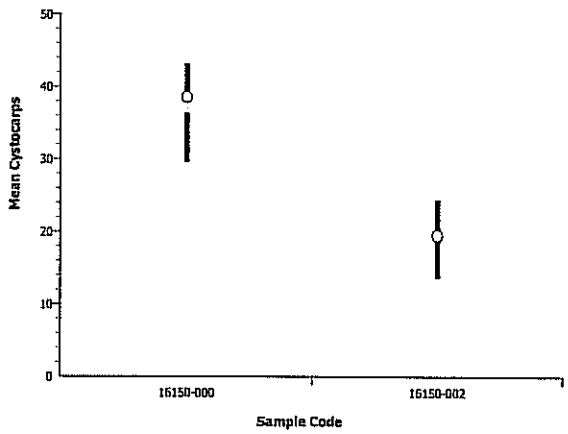
Group Comparisons

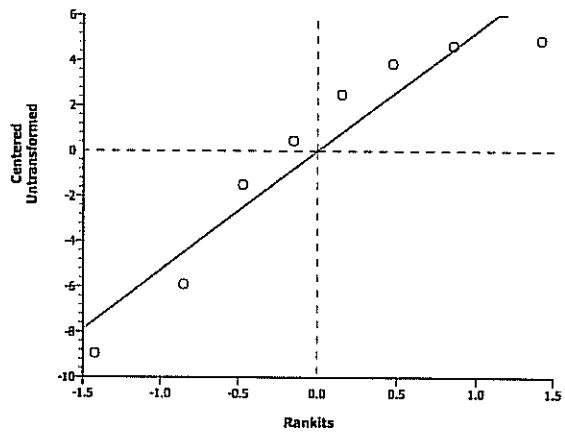
Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
16150-000		16150-002	4.86401	1.94318	0.0014	7.61051	Significant Effect

Data Summary

		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
16150-000	4	38.5500	29.6	43.2	6.23832				
16150-002	4	19.5	13.6	24.4	4.73709				

Graphics





CETIS Analysis Detail

Champia parvula Red Macroalga Sexual Reproduction Test — **Saskatchewan Research Council**

Test No:	04-7828-8134	**Test Type:**	Champia	**Duration:**	7d 0h
Start Date:	13 Aug-07 12:00 PM	**Protocol:**	EPA/600/4-91/003 (1994)	**Species:**	Champia parvula
Ending Date:	20 Aug-07 12:00 PM	**Dil Water:**	Not Applicable	**Source:**	In-House Culture
Setup Date:	13 Aug-07 12:00 PM	**Brine:**	Not Applicable		

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Mean Cystocarps	Comparison	06-9683-0298	06-9683-0298	21 Aug-07 3:54 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Equal Variance t	C > T	Untransformed				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	1.11375	47.46723	0.93152	Equal Variances
Distribution	Shapiro-Wilk W	0.87545	0.74935	0.16764	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	6.48	6.48	1	0.16	0.70516	Non-Significant Effect
Error	246.78	41.13	6			
Total	253.259999	47.610001	7			

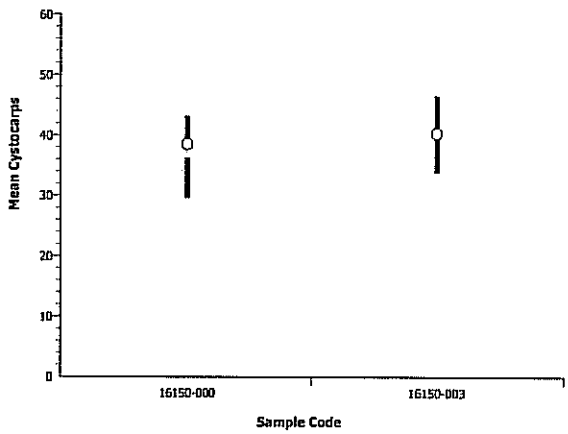
Group Comparisons

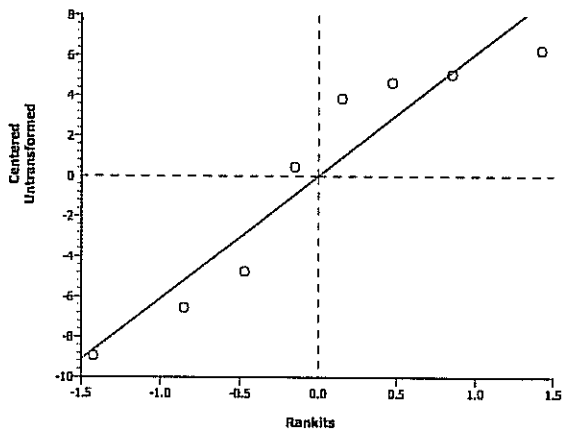
Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
16150-000		16150-003	-0.3969	1.94318	0.6474	8.81206	Non-Significant Effect

Data Summary

		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
16150-000	4	38.5500	29.6	43.2	6.23832				
16150-003	4	40.35	33.8	46.6	6.58356				

Graphics





CETIS Analysis Detail

Champia parvula Red Macroalga Sexual Reproduction Test — **Saskatchewan Research Council**

Test No:	04-7828-8134	**Test Type:**	Champia	**Duration:**	7d 0h
Start Date:	13 Aug-07 12:00 PM	**Protocol:**	EPA/600/4-91/003 (1994)	**Species:**	Champia parvula
Ending Date:	20 Aug-07 12:00 PM	**Dil Water:**	Not Applicable	**Source:**	In-House Culture
Setup Date:	13 Aug-07 12:00 PM	**Brine:**	Not Applicable		

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Mean Cystocarps	Comparison	06-9683-0298	06-9683-0298	21 Aug-07 3:55 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Equal Variance t	C > T	Untransformed				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	2.92206	47.46723	0.40199	Equal Variances
Distribution	Shapiro-Wilk W	0.94134	0.74935	0.58692	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	403.28	403.28	1	5.28	0.06120	Non-Significant Effect
Error	457.9	76.31667	6			
Total	861.179993	479.59666	7			

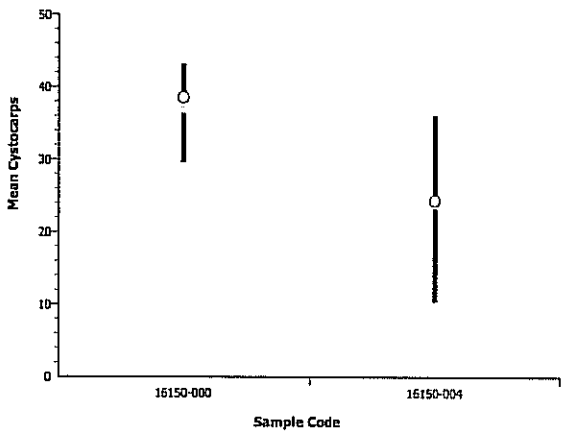
Group Comparisons

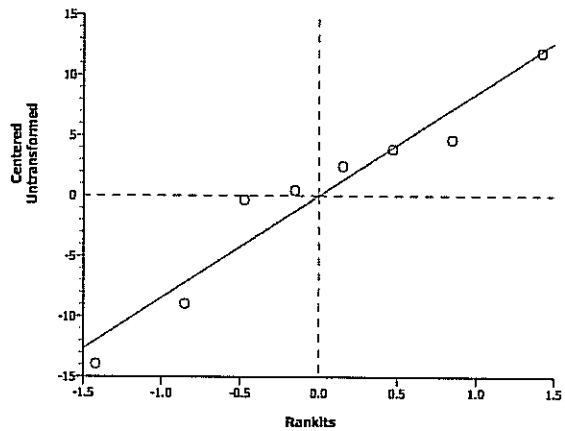
Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
16150-000		16150-004	2.29876	1.94318	0.0306	12.0035	Significant Effect

Data Summary

		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
16150-000	4	38.5500	29.6	43.2	6.23832				
16150-004	4	24.35	10.4	36.2	10.6638				

Graphics





CETIS Analysis Detail

Champia parvula Red Macroalga Sexual Reproduction Test — **Saskatchewan Research Council**

Test No:	04-7828-8134	**Test Type:**	Champia	**Duration:**	7d 0h
Start Date:	13 Aug-07 12:00 PM	**Protocol:**	EPA/600/4-91/003 (1994)	**Species:**	Champia parvula
Ending Date:	20 Aug-07 12:00 PM	**Dil Water:**	Not Applicable	**Source:**	In-House Culture
Setup Date:	13 Aug-07 12:00 PM	**Brine:**	Not Applicable		

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Mean Cystocarps	Comparison	06-9683-0298	06-9683-0298	21 Aug-07 3:55 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Equal Variance t	C > T	Untransformed				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	3.10918	47.46723	0.37642	Equal Variances
Distribution	Shapiro-Wilk W	0.90637	0.74935	0.30999	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	429.245	429.245	1	9.31	0.02248	Significant Effect
Error	276.63	46.105	6			
Total	705.875	475.34999	7			

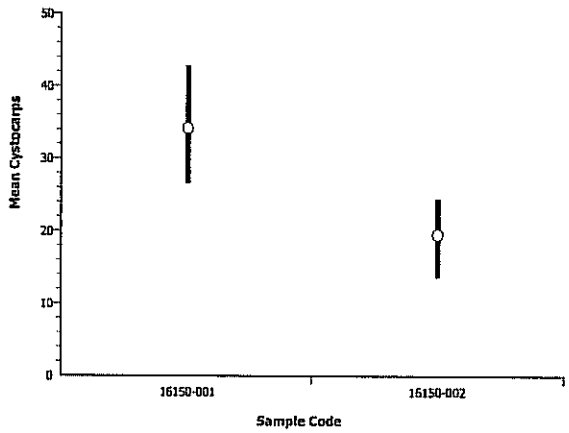
Group Comparisons

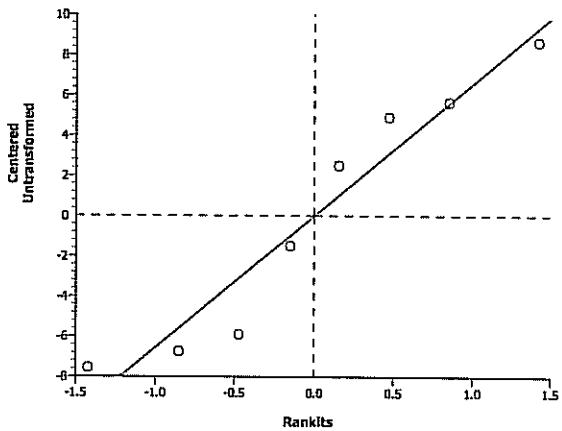
Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
16150-001		16150-002	3.05126	1.94318	0.0112	9.3298	Significant Effect

Data Summary

		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
16150-001	4	34.15	26.6	42.8	8.35284				
16150-002	4	19.5	13.6	24.4	4.73709				

Graphics





CETIS Analysis Detail

Champia parvula Red Macroalga Sexual Reproduction Test — **Saskatchewan Research Council**

Test No:	04-7828-8134	**Test Type:**	Champia	**Duration:**	7d 0h
Start Date:	13 Aug-07 12:00 PM	**Protocol:**	EPA/600/4-91/003 (1994)	**Species:**	Champia parvula
Ending Date:	20 Aug-07 12:00 PM	**Dil Water:**	Not Applicable	**Source:**	In-House Culture
Setup Date:	13 Aug-07 12:00 PM	**Brine:**	Not Applicable		

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Mean Cystocarps	Comparison	06-9683-0298	06-9683-0298	21 Aug-07 3:55 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Equal Variance t	C > T	Untransformed				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	1.60971	47.46723	0.70526	Equal Variances
Distribution	Shapiro-Wilk W	0.81143	0.74935	0.04292	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	76.88	76.88	1	1.36	0.28790	Non-Significant Effect
Error	339.34	56.55667	6			
Total	416.219994	133.43666	7			

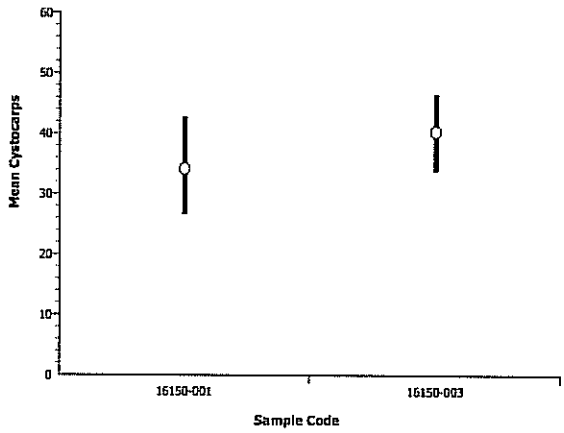
Group Comparisons

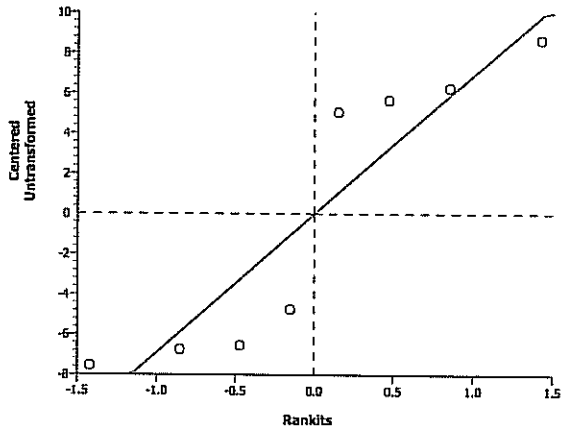
Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
16150-001		16150-003	-1.1659	1.94318	0.8561	10.3333	Non-Significant Effect

Data Summary

		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
16150-001	4	34.15	26.6	42.8	8.35284				
16150-003	4	40.35	33.8	46.6	6.58356				

Graphics





CETIS Analysis Detail

Champia parvula Red Macroalga Sexual Reproduction Test — **Saskatchewan Research Council**

Test No:	04-7828-8134	**Test Type:**	Champia	**Duration:**	7d 0h
Start Date:	13 Aug-07 12:00 PM	**Protocol:**	EPA/600/4-91/003 (1994)	**Species:**	Champia parvula
Ending Date:	20 Aug-07 12:00 PM	**Dil Water:**	Not Applicable	**Source:**	In-House Culture
Setup Date:	13 Aug-07 12:00 PM	**Brine:**	Not Applicable		

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Mean Cystocarps	Comparison	06-9683-0298	06-9683-0298	21 Aug-07 3:55 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Equal Variance t	C > T	Untransformed				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	1.62988	47.46723	0.69799	Equal Variances
Distribution	Shapiro-Wilk W	0.96589	0.74935	0.84219	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	192.08	192.08	1	2.09	0.19806	Non-Significant Effect
Error	550.46	91.74333	6			
Total	742.540024	283.82333	7			

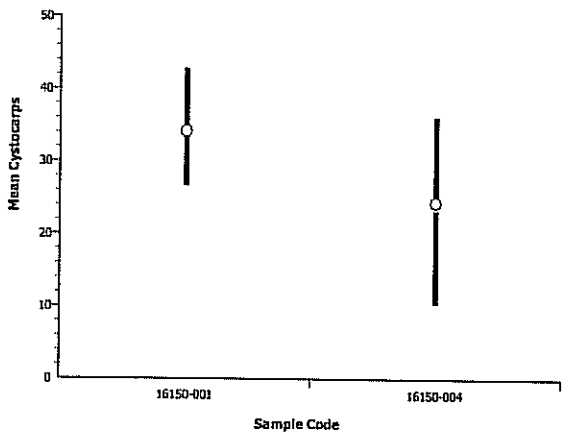
Group Comparisons

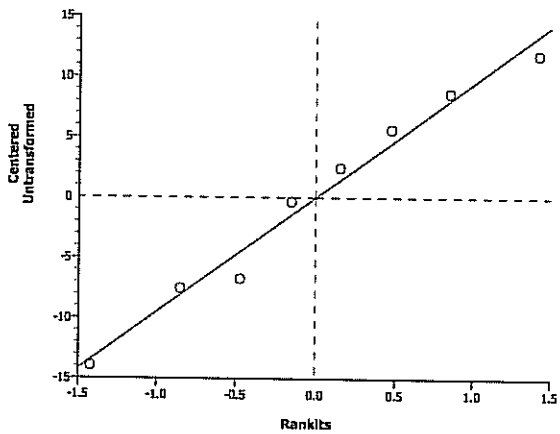
Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
16150-001		16150-004	1.44695	1.94318	0.0990	13.1609	Non-Significant Effect

Data Summary

		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
16150-001	4	34.15	26.6	42.8	8.35284				
16150-004	4	24.35	10.4	36.2	10.6638				

Graphics





SALTWATER ASSAYS

A. bahia, A. punctulata, C. parvula

STUDY:	LOCATION: New Bedford Harbor				
CHEMISTRY	Lab Salt Control	-001	-002	-003	-004
AMMONIA	-007	-005	-006	-007	-008
AS RECEIVED WATER QUALITIES	Lab Salt Control	-001	-002	-003	-004
SALINITY (ppt)	30	30	30	30	30
pH (SU)	7.95	7.36	7.26	7.38	7.39
TRC (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05
DO (mg/L)	6.8	6.8	6.6	7.2	5.8
S/C (µmhos/cm)	44630	(E3) ~~44630~~ 44910	45100	45260	44960
WQ STATION USED	1				
INITIALS	SJ				
A. bahia SALINITY ADJUSTMENT RECORD	Lab Salt Control	-001	-002	-003	-004
SAMPLE (mLs)					
SEA SALT (g)					
DATE:					
TIME:					
INITIALS:					

Sample ID	ESI Cube ID
-001	-001
-002	-002
-003	-003
-004	-004

Americamysis bahia 7 DAY CHRONIC ASSAY
NEW WATER QUALITIES

STUDY: 16150	CLIENT: BATTELLE	LOCATION: NEW BEDFORD	LAB CONTROL: HAMPTON ESTUARY

		NEW DISSOLVED OXYGEN (mg/L)							NEW SALINITY (ppt)						
CONC	REP	0	1	2	3	4	5	6	0	1	2	3	4	5	6
LAB	A	6.8	6.6	6.4	6.9	6.8	6.8	6.4	~~7.45~~ 30	29	30	29	30	29	29
-001	A	6.3	6.3	6.4	6.6	6.7	7.2	6.5	~~7.36~~ 30	29	30	29	29	29	29
-002	A	6.6	6.7	6.6	6.7	6.5	7.1	6.7	~~7.36~~ 30	29	30	29	29	28	29
-003	A	7.2	6.8	6.7	6.8	6.6	6.8	7.0	~~7.38~~ 30	29	29	29	30	29	29
-004	A	5.8	6.0	6.0	5.9	6.5	7.1	7.0	~~7.31~~ 30	29	29	29	30	29	29

		NEW pH (SU)							(EB) SJ 8/9/07 NEW TEMPERATURE (°C)						
CONC	REP	0	1	2	3	4	5	6	0	1	2	3	4	5	6
LAB	A	7.95	7.85	7.89	7.72	7.75	7.86	7.71	25	25	25	25	25	25	25
-001	A	7.36	7.20	7.36	7.30	7.19	7.14	7.10	25	25	25	25	25	25	25
-002	A	7.26	7.06	7.24	7.23	7.16	7.19	6.94	25	25	25	25	25	25	25
-003	A	7.38	7.14	7.31	7.30	7.25	7.33	7.11	25	25	25	25	25	25	25
-004	A	7.39	7.19	7.28	7.31	7.28	7.38	7.21	25	25	25	25	25	25	25
INC TEMP:		25	26	26	26	24	26	26							
DATE:		8/9/07	8/10	8/11	8/12	8/13	8/14	8/15							
TIME:		1600	0910	1410	1010	1125	1040	1555							
INIT:		SJ	RAM	CS	SJ	SJ	RAM	DMS							

WATER QUALITY METERS USED NEW WATER QUALITIES								
	0	1	2	3	4	5	6	7
Water Quality Station #		2	1	1	1	1	1	
Initials		RAM	CS	SJ	SJ	RAM	DMS	
Date	8/9/07	8/10	8/11	8/12	8/13	8/14	8/15	

Americamysis bahia 7 DAY CHRONIC ASSAY
OLD WATER QUALITIES

STUDY: 16150	CLIENT: BATTELLE	LOCATION: NEW BEDFORD	LAB CONTROL: HAMPTON ESTUARY

OLD SALINITY (ppt)

Conc	Rep	1	2	3	4	5	6	7
Control	A	29	29	29	29	28	29	30
-001	A	29	29	29	30	30	30	30
-002	A	29	29	29	30	30	30	30
-003	A	29	29	29	30	30	30	30
-004	A	29	29	29	30	30	30	30

OLD pH (SU)

Conc	Rep	1	2	3	4	5	6	7
Control	A	7.85	7.69	7.85	7.81	7.98	7.61	7.97
-001	A	7.68	7.80	7.73	7.78	7.85	7.50	7.93
-002	A	7.70	7.72	7.75	7.80	7.81	7.44	7.91
-003	A	7.67	7.71	7.74	7.82	7.88	7.71	7.97
-004	A	7.81	7.80	7.76	7.80	7.88	7.61	7.98

OLD TEMPERATURE (°C)

Conc	Rep	1	2	3	4	5	6	7
Control	A	25	25	25	25	25	25	25
-001	A	25	25	25	25	25	25	25
-002	A	25	25	25	25	25	25	25
-003	A	25	25	25	25	25	25	25
-004	A	25	25	25	25	25	25	25
INC TEMP:		26	26	26	26	26	26	26
DATE:		8/10/07	8/11	8/12	8/13	8/14	8/15	8/16
TIME:		0815	1355	0840	1035	0840	1515	1030
INITIALS:		RAM	CS	SJ	SJ	RAM	[illegible]	SJ

GENERAL NOTES - for additional information refer to SOP #1411 or EPA manual 600/4-91/003

- Test vessels will be 250 mL glass beakers containing a minimum of 150 mL of solution
- 8 replicates per site with 5 organisms each

- Test Temperature: 26±1°C
- Salinity: 25 ±2ppt
- Dissolved Oxygen: >4.3 mg/L

- Photoperiod will be 16 hours light and 8 hours dark.
- Passing criteria require ≥80% survival and average dry weight of ≥0.20 mg/organism in the control vessels.

WATER QUALITY METERS USED
OLD WATER QUALITIES

	0	1	2	3	4	5	6	7
Water Quality Station #		2	1	1	1	1	1	1
Initials		RAM	CS	SJ	SJ	RAM	[illegible]	SJ
Date	8/9/07	8/10/07	8/11/07	8/12	8/13	8/14	8/15	8/16

Arbacia punctulata Chronic Fertilization Assay
Water Quality and Gamete Preparation Data

STUDY: 16150	CLIENT: BATTELLE	LOCATION: New Bedford	DATE: 8/9/07 INITIALS: BB

SALINITY ADJUSTMENT RECORD: _____ mL -001 + _____ g SALT

SALINITY ADJUSTMENT RECORD: _____ mL -002 + _____ g SALT

SALINITY ADJUSTMENT RECORD: _____ mL -003 + _____ g SALT

SALINITY ADJUSTMENT RECORD: _____ mL -004 + _____ g SALT

N/A BB 8/9/07

SALINITY ADJUSTED SAMPLE	D.O. (mg/L)	pH (SU)	SPEC COND (µmhos)	TEMP (°C)	SALINITY (ppt)
Lab Control	6.8	7.95	44630	22	29
-001	6.3	7.36	~~45~~ 44910	22	29
-002	6.6	7.26	45100	22	29
-003	7.2	7.38	45260	22	29
-004	5.8	7.39	44960	22	29

METERS USED

DO meter # 19 DO probe # 12 pH meter # 1097 pH probe # 50 S/C meter # YSI30c S/C probe # YSI30c

SALINITY meter # YSI30c

DATE & INITIALS FOR GAMETE PREPARATION: BB 8/9/07

SPERM DILUTIONS:

HEMACYTOMETER COUNT, E: 125 X 10^4 = SPM SOLUTION E = 1.25×10^6

SPERM CONCENTRATIONS:

SOLUTION E X 40 = SOLUTION A = 5.0×10^7 SPM

SOLUTION E X 20 = SOLUTION B = 2.5×10^7 SPM

SOLUTION E X 5 = SOLUTION C = 6.25×10^6 SPM

FINAL COUNTS:

FINAL SPERM COUNT: 5.0×10^7

FINAL EGG COUNT: 2800

TEST TIMES:

SPERM COLLECTED: 1600

EGGS COLLECTED: 1600

SPERM ADDED: 1620

EGGS ADDED: 1720

FIXATIVE ADDED: 1740

See ESI SOP #1412 for additional information

Americamysis bahia 7 DAY CHRONIC ASSAY
SAMPLE USE RECORD

STUDY: 16150 | CLIENT: BATTELLE - New Bedford

SPECIES: *A. bahia* | TEST: chronic renewal

Sample	Day: 0 Volume Used (mL)	Day: 0 ESI Cube ID	Day: 1 Volume Used (mL)	Day: 1 ESI Cube ID	Day: 2 Volume Used (mL)	Day: 2 ESI Cube ID	Day	Date	Time	Init
Lab Control	1200	n/a	1000	n/a	1000	n/a	0	8/9/07	1555	SJ
-001	↓	-001	↓	-001	↓	-001	1	8/10	0855	RAM
-002	↓	-002	↓	-002	↓	-002	2	8/11	1410	CS
-003	↓	-003	↓	-003	↓	-003	3	8/12	1005	SJ
-004	↓	-004	↓	-004	✓	-004	4	8/13	1115	SJ
							5	8/14	1015	RAM
							6	8/15	1545	[illegible]

Sample	Day: 3 Volume Used (mL)	Day: 3 ESI Cube ID	Day: 4 Volume Used (mL)	Day: 4 ESI Cube ID	Day: 5 Volume Used (mL)	Day: 5 ESI Cube ID
Lab Control	1000	n/a	1000	n/a	1000	n/a
-001	↓	-001	↓	-001	↓	-001
-002	↓	-002	↓	-002	↓	-002
-003	↓	-003	↓	-003	↓	-003
-004	↓	-004	↓	-004	↓	-004

Sample	Day: 6 Volume Used (mL)	Day: 6 ESI Cube ID
Lab Control	1000	n/a
-001	↓	-001
-002	↓	-002
-003	↓	-003
-004	↓	-004

Americamysis bahia 7 DAY CHRONIC ASSAY
SURVIVAL & OLD WATER QUALITIES

STUDY:	CLIENT:	LOCATION:	LAB CONTROL:	ORGANISM BATCH/LOT#
16234	Battelle	NEW BEDFORD	HAMPTON ESTUARY	

		NUMBER OF SURVIVORS								OLD DISSOLVED OXYGEN (mg/L)						
SAMPLE	Rep	0	1	2	3	4*	5	6	7	1	2	3	4	5	6	7
Lab Control	A	10	10	10	10	10	10	10	10	6.6	6.0	5.3	5.8	5.7	5.2	5.8
	B	10	10	10	10	10	10	10	10	6.4	6.0	5.0	5.4	5.6	4.9	5.9
	C	10	10	10	10	10	10	10	10	6.5	5.9	5.1	5.3	5.3	5.1	5.9
	D	10	10	10	10	10	10	10	10	6.7	5.9	5.2	5.4	5.1	5.2	5.8
	E	10	10	10	10	10	10	10	10	6.6	6.0	5.5	5.4	4.9	5.1	5.8
	F	10	10	10	10	10	10	10	10	6.5	6.0	5.4	5.4	4.9	5.0	5.8
	G	10	10	10	10	10	10	10	10	6.6	6.0	5.5	5.6	5.0	5.0	5.7
	H	10	10	10	10	10	10	10	10	6.8	6.0	5.6	5.6	5.1	5.1	5.7
-001	A	10	10	10	10	10	10	10	10	6.4	4.9	4.3	5.1	5.1	5.0	5.2
	B	10	10	10	10	10	10	10	10	5.8	4.5	4.6	5.2	4.9	4.8	5.2
	C	10	10	10	10	10	10	10	10	5.7	4.7	5.0	5.1	4.9	4.6	5.2
	D	10	10	10	10	10	10	10	10	6.1	4.7	5.1	5.4	4.8	4.6	5.3
	E	10	10	9	9	9	9	9	9	6.2	4.7	5.1	5.3	4.6	4.7	5.4
	F	10	10	10	10	10	10	10	10	5.8	4.5	5.0	5.1	4.7	4.9	5.4
	G	10	10	10	10	10	10	10	10	5.9	4.5	5.0	5.1	4.6	4.8	5.3
	H	10	10	10	10	10	10	10	10	6.2	4.6	4.9	4.8	4.7	4.8	5.3
-002	A	10	10	10	10	10	10	10	10	6.9	5.5	4.9	5.0	4.9	4.9	5.3
	B	10	10	10	10	10	10	10	10	6.7	5.6	4.7	5.1	4.9	4.9	5.3
	C	10	10	10	10	10	10	10	10	6.8	5.5	5.2	5.3	5.1	4.7	5.3
	D	10	10	10	10	10	10	10	10	6.8	5.5	5.0	5.1	5.1	4.6	5.3
	E	10	10	10	10	10	10	10	10	7.0	5.4	5.3	5.1	5.3	4.9	5.5
	F	10	10	10	10	9	9	9	9	7.1	5.4	5.3	5.2	5.4	5.1	5.5
	G	10	10	10	10	10	10	10	10	7.0	5.4	5.1	5.1	5.4	5.1	5.5
	H	10	10	10	10	10	10	10	10	7.0	5.5	5.1	5.1	5.3	4.9	5.5
INC TEMP:		25	26	26	26	26	26	26	26							
DATE:		9/12	9/13	9/14	9/15	9/16	9/17	9/18	9/19							
TIME:		1540	1545	1010	1230	0950	1145	1010	0850							
INITIALS:		AK	PA	LB	RAM	SJ	SJ	SJ	RAM							

*car #2

Americamysis bahia 7 DAY CHRONIC ASSAY
SURVIVAL & OLD WATER QUALITIES

STUDY:	CLIENT:	LOCATION:	LAB CONTROL:	ORGANISM BATCH/LOT#
16234	Battelle	NEW BEDFORD	HAMPTON ESTUARY	

		NUMBER OF SURVIVORS								OLD DISSOLVED OXYGEN (mg/L)						
SAMPLE	Rep	0	1	2	3	4	5	6	7	1	2	3	4	5	6	7
-003	A	10	10	10	10	10	8	7	7	6.6	5.1	5.0	5.1	5.2	4.9	5.6
	B	10	10	10	10	10	9	8	4	6.7	5.2	5.1	5.6	5.2	4.9	5.6
	C	10	10	10	10	10	10	9	4	6.9	5.4	5.2	5.4	5.2	4.9	5.5
	D	10	10	10	10	10	10	8	7	6.9	5.4	5.2	5.9	5.3	4.7	5.3
	E	10	10	10	10	10	10	8	4	6.4	5.5	5.1	5.4	5.4	4.6	5.3
	F	10	10	10	10	9	9	7	3	6.8	5.4	5.1	5.4	5.4	4.6	5.2
	G	10	10	10	10	10	10	8	4	6.7	5.2	5.2	5.3	5.4	4.8	5.2
	H	10	10	10	10	10	10	8	3	6.8	5.4	5.3	5.2	5.4	4.6	5.3
-004	A															
	B															
	C															
	D															
	E															
	F															
	G															
	H															
INC TEMP:		25	26	26	26	26	26	26	26							
DATE:		9/12	9/13	9/14	9/15	9/16	9/17	9/18	9/19							
TIME:		1515	1545	1055	1230	0950	1145	1010	0850							
INITIALS:		AK	[illegible]	LB	RAM	SJ	SJ	SJ	RAM							

Americamysis bahia 7 DAY CHRONIC ASSAY
ORGANISM WEIGHTS

CLIENT: BATTELLE - NEW BEDFORD				TEST DATES:				
STUDY #: 16234				SPECIES: *A. bahia*				
CONC	REP	TARE WEIGHT (g)	SHRIMP + FOIL (g)	NET WEIGHT (mg)	# SHRIMP DAY 0	MEAN WEIGHT (mg) DAY 0	# SHRIMP DAY 7	MEAN WEIGHT (mg) DAY 7
Lab	A	0.21012	0.21291					
	B	0.20835	0.21104					
	C	0.20875	0.21158					
	D	0.20840	0.21132					
	E	0.20753	0.21046					
	F	0.21050	0.21321					
	G	0.20882	0.21131					
	H	0.20888	0.21177					
-001	A	0.20844	0.21170					
	B	0.20762	0.21071					
	C	0.20778	0.21096					
	D	0.20903	0.21259					
	E	0.20995	0.21286					
	F	0.21090	0.21425					
	G	0.20880	0.21217					
	H	0.20933	0.21240					
-002	A	0.20657	0.20965					
	B	0.20814	0.21103					
	C	0.20774	0.21086					
	D	0.21034	0.21309					
	E	0.20828	0.21069					
	F	0.20845	0.21096					
	G	0.20977	0.21270					
	H	0.20856	0.21150					
DATE		9/19/07	9/20/07					
TIME		0930	0935					
INITIALS		RAM	SJ					

Americamysis bahia 7 DAY CHRONIC ASSAY
ORGANISM WEIGHTS

CLIENT: BATTELLE - NEW BEDFORD				TEST DATES:				
STUDY #: 16234				SPECIES: *A. bahia*				
CONC	REP	TARE WEIGHT (g)	SHRIMP + FOIL (g)	NET WEIGHT (mg)	# SHRIMP DAY 0	MEAN WEIGHT (mg) DAY 0	# SHRIMP DAY 7	MEAN WEIGHT (mg) DAY 7
-003	A	0.20904	0.21024					
	B	0.20981	0.21072					
	C	0.20977	0.21050					
	D	0.20789	0.20939					
	E	0.20772	0.20852					
	F	0.20872	0.20912					
	G	0.20830	0.20923					
	H	0.20766	0.20837					
	A							
	B							
	C							
	D							
	E							
	F							
	G							
	H							
	A							
	B							
	C							
	D							
	E							
	F							
	G							
	H							
DATE		9/19/07	9/20/07					
TIME		0930	0935					
INITIALS		RAM	SJ					

CETIS Test Summary

Report Date: 20 Sep-07 10:36 AM
Link: 03-1251-8257

Mysidopsis 7-d Survival, Growth and Fecundity Test — **EnviroSystems, Inc.**

Test No:	02-9890-7741	**Test Type:**	Growth-Survival-Fec (7d)	**Duration:**	6d 18h
Start Date:	12 Sep-07 03:40 PM	**Protocol:**	EPA/821/R-02-014 (2002)	**Species:**	Mysidopsis bahia
Ending Date:	19 Sep-07 09:50 AM	**Dil Water:**	Not Applicable	**Source:**	ARO - Aquatic Research Organisms, N
Setup Date:	12 Sep-07 03:40 PM	**Brine:**	Not Applicable		

Sample No:	07-3947-2649	**Material:**	Surface Water	**Client:**	Battelle Labs
Sample Date:	12 Sep-07 03:00 PM	**Code:**	16234-000	**Project:**	Ecological Risk Assessment
Receive Date:	12 Sep-07 03:00 PM	**Source:**	New Bedford Harbor Dredge Monitorin		
Sample Age:	40m	**Station:**	WQ-TOX-Lab Control		
Sample No:	10-1282-1229	**Material:**	Surface Water	**Client:**	Battelle Labs
Sample Date:	11 Sep-07 09:01 AM	**Code:**	16234-001	**Project:**	Ecological Risk Assessment
Receive Date:	11 Sep-07 04:00 PM	**Source:**	New Bedford Harbor Dredge Monitorin		
Sample Age:	31h	**Station:**	WQ-TOX-001		
Sample No:	06-2367-6386	**Material:**	Surface Water	**Client:**	Battelle Labs
Sample Date:	11 Sep-07 09:45 AM	**Code:**	16234-002	**Project:**	Ecological Risk Assessment
Receive Date:	11 Sep-07 04:00 PM	**Source:**	New Bedford Harbor Dredge Monitorin		
Sample Age:	30h	**Station:**	WQ-TOX-002		
Sample No:	12-6128-6246	**Material:**	Surface Water	**Client:**	Battelle Labs
Sample Date:	11 Sep-07 10:15 AM	**Code:**	16234-003	**Project:**	Ecological Risk Assessment
Receive Date:	11 Sep-07 04:00 PM	**Source:**	New Bedford Harbor Dredge Monitorin		
Sample Age:	29h	**Station:**	WQ-TOX-003		

7d Proportion Survived Summary

Sample Code	Reps	Mean	Minimum	Maximum	SE	SD	CV
16234-000	8	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
16234-001	8	0.98750	0.90000	1.00000	0.01250	0.03536	3.58%
16234-002	8	0.98750	0.90000	1.00000	0.01250	0.03536	3.58%
16234-003	8	0.45000	0.30000	0.70000	0.05669	0.16036	35.63%

Mean Dry Biomass-mg Summary

Sample Code	Reps	Mean	Minimum	Maximum	SE	SD	CV
16234-000	8	0.27813	0.24900	0.29300	0.00524	0.01483	5.33%
16234-001	8	0.32238	0.29100	0.35600	0.00724	0.02048	6.35%
16234-002	8	0.28287	0.24100	0.31200	0.00904	0.02556	9.04%
16234-003	8	0.08975	0.04000	0.15000	0.01177	0.03329	37.10%

Mean Dry Weight-mg Summary

Sample Code	Reps	Mean	Minimum	Maximum	SE	SD	CV
16234-000	8	0.27813	0.24900	0.29300	0.00524	0.01483	5.33%
16234-001	8	0.32642	0.30700	0.35600	0.00570	0.01613	4.94%
16234-002	8	0.28636	0.24100	0.31200	0.00788	0.02229	7.78%
16234-003	8	0.19978	0.13333	0.23666	0.01263	0.03571	17.88%

CETIS Test Summary

Report Date: 20 Sep-07 10:36 AM
Link: 03-1251-8257

7d Proportion Survived Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
16234-000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
16234-001	1.00000	1.00000	1.00000	1.00000	0.90000	1.00000	1.00000	1.00000
16234-002	1.00000	1.00000	1.00000	1.00000	1.00000	0.90000	1.00000	1.00000
16234-003	0.70000	0.40000	0.40000	0.70000	0.40000	0.30000	0.40000	0.30000

Mean Dry Biomass-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
16234-000	0.27900	0.26900	0.28300	0.29200	0.29300	0.27100	0.24900	0.28900
16234-001	0.32600	0.30900	0.31800	0.35600	0.29100	0.33500	0.33700	0.30700
16234-002	0.30800	0.28900	0.31200	0.27500	0.24100	0.25100	0.29300	0.29400
16234-003	0.12000	0.09100	0.07300	0.15000	0.08000	0.04000	0.09300	0.07100

Mean Dry Weight-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
16234-000	0.27900	0.26900	0.28300	0.29200	0.29300	0.27100	0.24900	0.28900
16234-001	0.32600	0.30900	0.31800	0.35600	0.32333	0.33500	0.33700	0.30700
16234-002	0.30800	0.28900	0.31200	0.27500	0.24100	0.27889	0.29300	0.29400
16234-003	0.17143	0.22750	0.18250	0.21429	0.20000	0.13333	0.23250	0.23666

CETIS Analysis Detail

Mysidopsis 7-d Survival, Growth and Fecundity Test — **EnviroSystems, Inc.**

Test No:	02-9890-7741	**Test Type:**	Growth-Survival-Fec (7d)	**Duration:**	6d 18h
Start Date:	12 Sep-07 03:40 PM	**Protocol:**	EPA/821/R-02-014 (2002)	**Species:**	Mysidopsis bahia
Ending Date:	19 Sep-07 09:50 AM	**Dil Water:**	Not Applicable	**Source:**	ARO - Aquatic Research Organisms, N
Setup Date:	12 Sep-07 03:40 PM	**Brine:**	Not Applicable		

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
7d Proportion Survived	Comparison	03-1251-8257	03-1251-8257	20 Sep-07 10:34 AM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Mann-Whitney U	C > T	Angular (Corrected)				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	13082630000	8.88539	0.00000	Unequal Variances
Distribution	Shapiro-Wilk W	0.46890	0.84420	0.00000	Non-normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.00166	0.00166	1	1.00	0.33428	Non-Significant Effect
Error	0.0232394	0.00166	14			
Total	0.02489937	0.0033199	15			

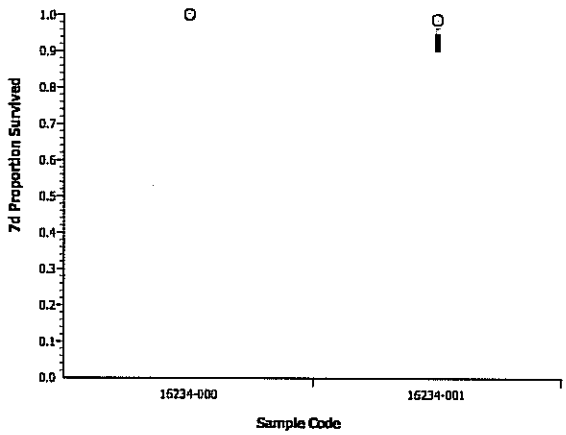
Group Comparisons

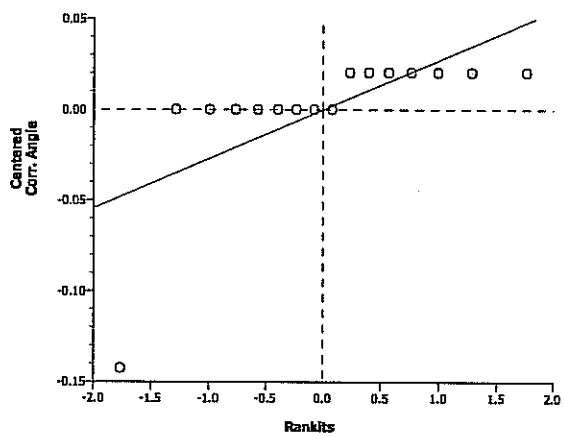
Sample	vs	Sample	Statistic	Critical	P Level	Ties	Decision(0.05)
16234-000		16234-001	36		0.3605	1	Non-Significant Effect

Data Summary

		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
16234-000	8	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00025
16234-001	8	0.98750	0.90000	1.00000	0.03536	1.39164	1.24905	1.41202	0.05762

Graphics





CETIS Analysis Detail

Mysidopsis 7-d Survival, Growth and Fecundity Test — **EnviroSystems, Inc.**

Test No:	02-9890-7741	**Test Type:**	Growth-Survival-Fec (7d)	**Duration:**	6d 18h
Start Date:	12 Sep-07 03:40 PM	**Protocol:**	EPA/821/R-02-014 (2002)	**Species:**	Mysidopsis bahia
Ending Date:	19 Sep-07 09:50 AM	**Dil Water:**	Not Applicable	**Source:**	ARO - Aquatic Research Organisms, N
Setup Date:	12 Sep-07 03:40 PM	**Brine:**	Not Applicable		

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
7d Proportion Survived	Comparison	03-1251-8257	03-1251-8257	20 Sep-07 10:34 AM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Mann-Whitney U	C > T	Angular (Corrected)				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	13082630000	8.88539	0.00000	Unequal Variances
Distribution	Shapiro-Wilk W	0.46890	0.84420	0.00000	Non-normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.00166	0.00166	1	1.00	0.33428	Non-Significant Effect
Error	0.0232394	0.00166	14			
Total	0.02489937	0.0033199	15			

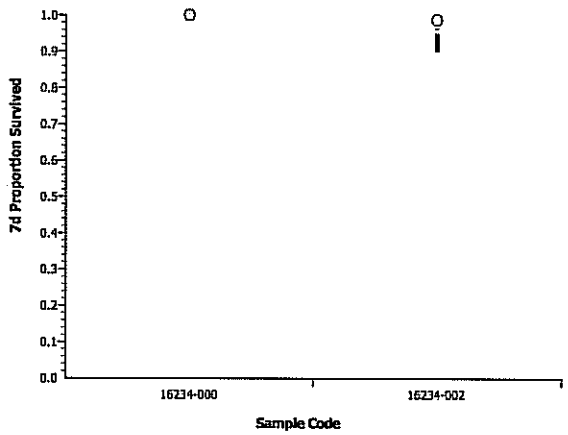
Group Comparisons

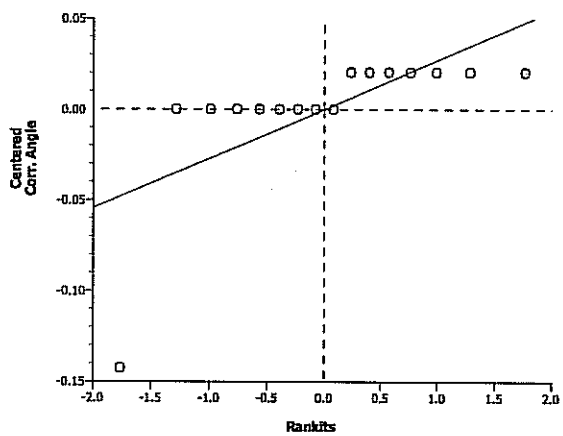
Sample	vs	Sample	Statistic	Critical	P Level	Ties	Decision(0.05)
16234-000		16234-002	36		0.3605	1	Non-Significant Effect

Data Summary

		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
16234-000	8	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00025
16234-002	8	0.98750	0.90000	1.00000	0.03536	1.39164	1.24905	1.41202	0.05762

Graphics





CETIS Analysis Detail

Mysidopsis 7-d Survival, Growth and Fecundity Test — **EnviroSystems, Inc.**

Test No:	02-9890-7741	**Test Type:**	Growth-Survival-Fec (7d)	**Duration:**	6d 18h
Start Date:	12 Sep-07 03:40 PM	**Protocol:**	EPA/821/R-02-014 (2002)	**Species:**	Mysidopsis bahia
Ending Date:	19 Sep-07 09:50 AM	**Dil Water:**	Not Applicable	**Source:**	ARO - Aquatic Research Organisms, N
Setup Date:	12 Sep-07 03:40 PM	**Brine:**	Not Applicable		

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
7d Proportion Survived	Comparison	03-1251-8257	03-1251-8257	20 Sep-07 10:35 AM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Mann-Whitney U	C > T	Angular (Corrected)				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	10674580000	8.88539	0.00000	Unequal Variances
Distribution	Shapiro-Wilk W	0.75452	0.84420	0.00033	Non-normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	1.833085	1.833085	1	135.34	0.00000	Significant Effect
Error	0.1896186	0.0135442	14			
Total	2.02270404	1.8466296	15			

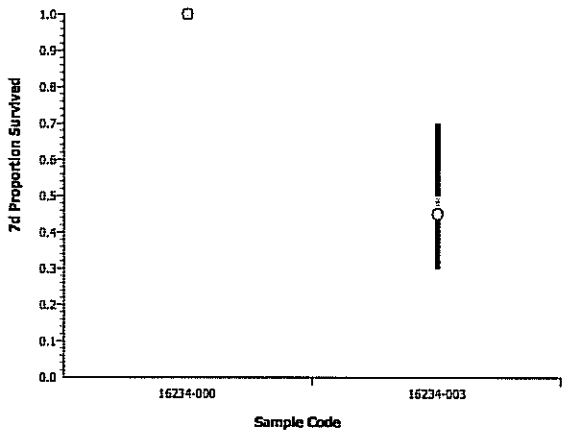
Group Comparisons

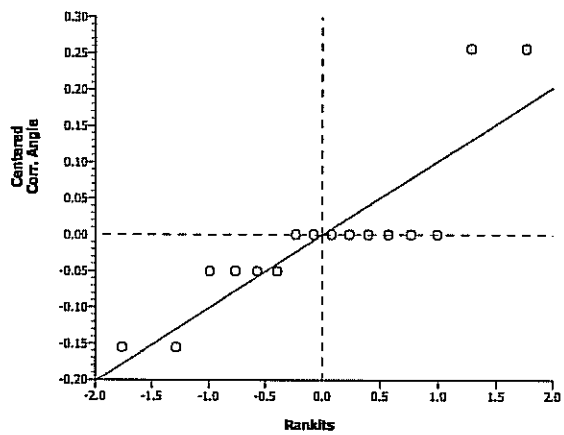
Sample	vs	Sample	Statistic	Critical	P Level	Ties	Decision(0.05)
16234-000		16234-003	64		0.0001	4	Significant Effect

Data Summary

		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
16234-000	8	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00025
16234-003	8	0.45000	0.30000	0.70000	0.16036	0.73506	0.57964	0.99116	0.16459

Graphics





CETIS Analysis Detail

Mysidopsis 7-d Survival, Growth and Fecundity Test — **EnviroSystems, Inc.**

Test No:	02-9890-7741	**Test Type:**	Growth-Survival-Fec (7d)	**Duration:**	6d 18h
Start Date:	12 Sep-07 03:40 PM	**Protocol:**	EPA/821/R-02-014 (2002)	**Species:**	Mysidopsis bahia
Ending Date:	19 Sep-07 09:50 AM	**Dil Water:**	Not Applicable	**Source:**	ARO - Aquatic Research Organisms, N
Setup Date:	12 Sep-07 03:40 PM	**Brine:**	Not Applicable		

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
7d Proportion Survived	Comparison	03-1251-8257	03-1251-8257	20 Sep-07 10:35 AM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Mann-Whitney U	C > T	Angular (Corrected)				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	1.00000	8.88539	1.00000	Equal Variances
Distribution	Shapiro-Wilk W	0.39803	0.84420	0.00000	Non-normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0	0	1	0.00	1.00000	Non-Significant Effect
Error	0.0464788	0.0033199	14			
Total	0.04647883	0.0033199	15			

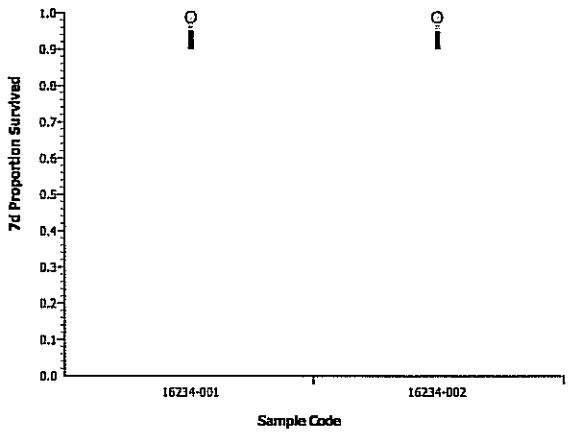
Group Comparisons

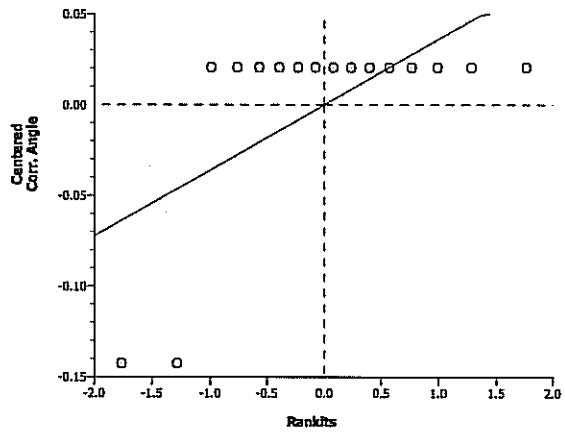
Sample	vs	Sample	Statistic	Critical	P Level	Ties	Decision(0.05)
16234-001		16234-002	32		0.4796	2	Non-Significant Effect

Data Summary

		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
16234-001	8	0.98750	0.90000	1.00000	0.03536	1.39164	1.24905	1.41202	0.05762
16234-002	8	0.98750	0.90000	1.00000	0.03536	1.39164	1.24905	1.41202	0.05762

Graphics





CETIS Analysis Detail

Mysidopsis 7-d Survival, Growth and Fecundity Test — **EnviroSystems, Inc.**

Test No:	02-9890-7741	**Test Type:**	Growth-Survival-Fec (7d)	**Duration:**	6d 18h
Start Date:	12 Sep-07 03:40 PM	**Protocol:**	EPA/821/R-02-014 (2002)	**Species:**	Mysidopsis bahia
Ending Date:	19 Sep-07 09:50 AM	**Dil Water:**	Not Applicable	**Source:**	ARO - Aquatic Research Organisms, N
Setup Date:	12 Sep-07 03:40 PM	**Brine:**	Not Applicable		

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
7d Proportion Survived	Comparison	03-1251-8257	03-1251-8257	20 Sep-07 10:35 AM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Mann-Whitney U	C > T	Angular (Corrected)				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	8.15935	8.88539	0.01284	Equal Variances
Distribution	Shapiro-Wilk W	0.82785	0.84420	0.00541	Non-normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	1.724421	1.724421	1	113.42	0.00000	Significant Effect
Error	0.212858	0.0152042	14			
Total	1.93727942	1.7396255	15			

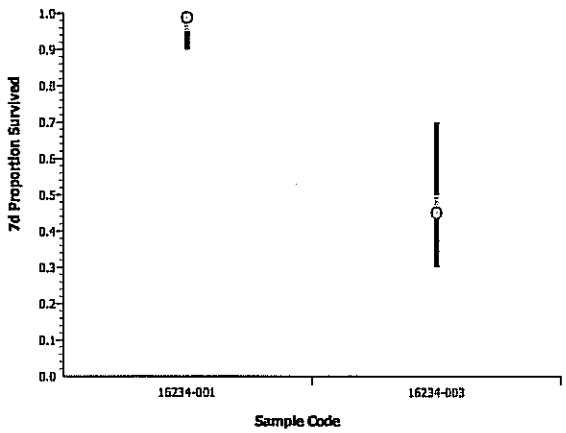
Group Comparisons

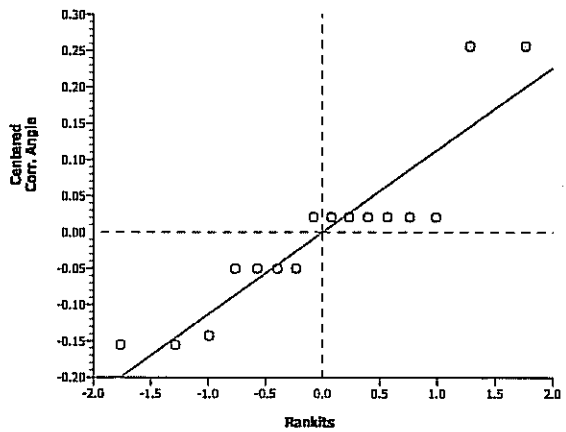
Sample	vs	Sample	Statistic	Critical	P Level	Ties	Decision(0.05)
16234-001		16234-003	64		0.0001	4	Significant Effect

Data Summary

		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
16234-001	8	0.98750	0.90000	1.00000	0.03536	1.39164	1.24905	1.41202	0.05762
16234-003	8	0.45000	0.30000	0.70000	0.16036	0.73506	0.57964	0.99116	0.16459

Graphics





CETIS Analysis Detail

ESI

Mysidopsis 7-d Survival, Growth and Fecundity Test — **EnviroSystems, Inc.**

Test No:	02-9890-7741	**Test Type:**	Growth-Survival-Fec (7d)	**Duration:**	6d 18h
Start Date:	12 Sep-07 03:40 PM	**Protocol:**	EPA/821/R-02-014 (2002)	**Species:**	Mysidopsis bahia
Ending Date:	19 Sep-07 09:50 AM	**Dil Water:**	Not Applicable	**Source:**	ARO - Aquatic Research Organisms, N
Setup Date:	12 Sep-07 03:40 PM	**Brine:**	Not Applicable		

Envirosystems, Inc.
One Lafayette Road
P.O. Box 778
Hampton, N.H. 03843-0778
(603) 926-3345 • (603) 926-3521 Fax
www.envirosystems.com

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Mean Dry Biomass-mg	Comparison	03-1251-8257	03-1251-8257	20 Sep-07 10:35 AM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Equal Variance t	C > T	Untransformed				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	1.90761	8.88539	0.41349	Equal Variances
Distribution	Shapiro-Wilk W	0.96597	0.84420	0.73539	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.0078322	0.0078322	1	24.50	0.00021	Significant Effect
Error	0.0044748	0.0003196	14			
Total	0.01230705	0.0081519	15			

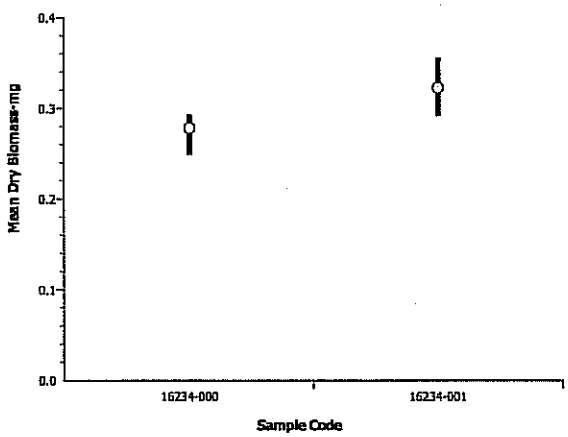
Group Comparisons

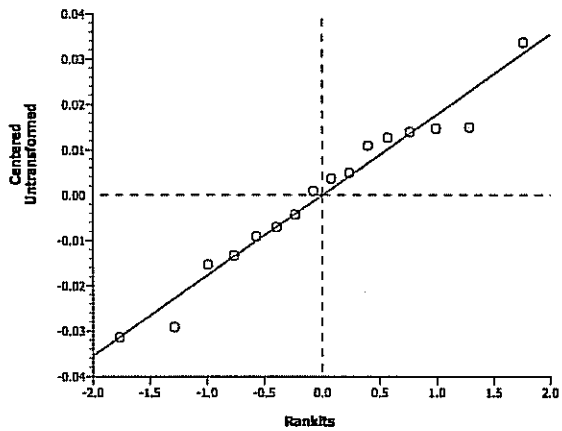
Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
16234-000		16234-001	-4.9501	1.76131	0.9999	0.01574	Non-Significant Effect

Data Summary

		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
16234-000	8	0.27813	0.24900	0.29300	0.01483				
16234-001	8	0.32238	0.29100	0.35600	0.02048				

Graphics





CETIS Analysis Detail

ESI

Mysidopsis 7-d Survival, Growth and Fecundity Test — **EnviroSystems, Inc.**

Test No:	02-9890-7741	**Test Type:**	Growth-Survival-Fec (7d)	**Duration:**	6d 18h
Start Date:	12 Sep-07 03:40 PM	**Protocol:**	EPA/821/R-02-014 (2002)	**Species:**	Mysidopsis bahia
Ending Date:	19 Sep-07 09:50 AM	**Dil Water:**	Not Applicable	**Source:**	ARO - Aquatic Research Organisms, N
Setup Date:	12 Sep-07 03:40 PM	**Brine:**	Not Applicable		

EnviroSystems, Inc.
One Industrial Park Road
P.O. Box 778
Hampton, N.H. 03843-0778
(603) 926-3345 • (603) 926-3521 Fax
www.envirosystems.com

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Mean Dry Biomass-mg	Comparison	03-1251-8257	03-1251-8257	20 Sep-07 10:35 AM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Equal Variance t	C > T	Untransformed				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	2.97248	8.88539	0.17393	Equal Variances
Distribution	Shapiro-Wilk W	0.92827	0.84420	0.22590	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	9.024E-05	9.024E-05	1	0.21	0.65638	Non-Significant Effect
Error	0.0061137	0.0004367	14			
Total	0.00620392	0.0005269	15			

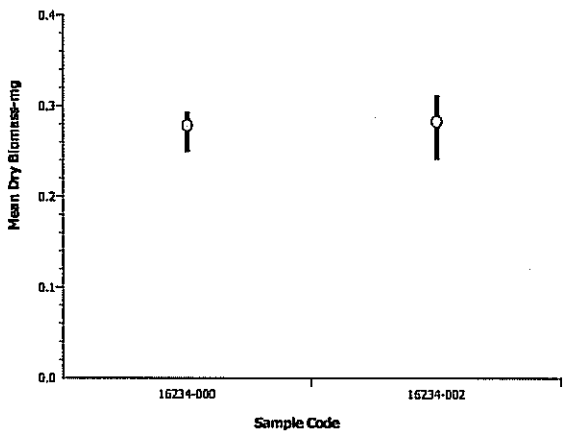
Group Comparisons

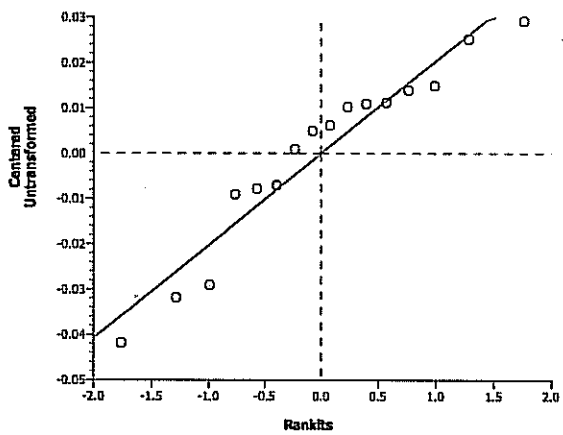
Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
16234-000		16234-002	-0.4546	1.76131	0.6718	0.01840	Non-Significant Effect

Data Summary

		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
16234-000	8	0.27813	0.24900	0.29300	0.01483				
16234-002	8	0.28287	0.24100	0.31200	0.02556				

Graphics





CETIS Analysis Detail

ES

Mysidopsis 7-d Survival, Growth and Fecundity Test — **EnviroSystems, Inc.**

Test No:	02-9890-7741	**Test Type:**	Growth-Survival-Fec (7d)	**Duration:**	6d 18h
Start Date:	12 Sep-07 03:40 PM	**Protocol:**	EPA/821/R-02-014 (2002)	**Species:**	Mysidopsis bahia
Ending Date:	19 Sep-07 09:50 AM	**Dil Water:**	Not Applicable	**Source:**	ARO - Aquatic Research Organisms, N
Setup Date:	12 Sep-07 03:40 PM	**Brine:**	Not Applicable		

Environmental Systems, Inc.
One Industrial Park
P.O. Box 778
Hampton, N.H. 03843-0778
(603) 926-3345 • (603) 926-3521 Fax
www.envirosystems.com

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Mean Dry Biomass-mg	Comparison	03-1251-8257	03-1251-8257	20 Sep-07 10:35 AM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Equal Variance t	C > T	Untransformed				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	5.04200	8.88539	0.04879	Equal Variances
Distribution	Shapiro-Wilk W	0.96203	0.84420	0.66666	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.141941	0.141941	1	213.70	0.00000	Significant Effect
Error	0.0092987	0.0006642	14			
Total	0.15123966	0.1426052	15			

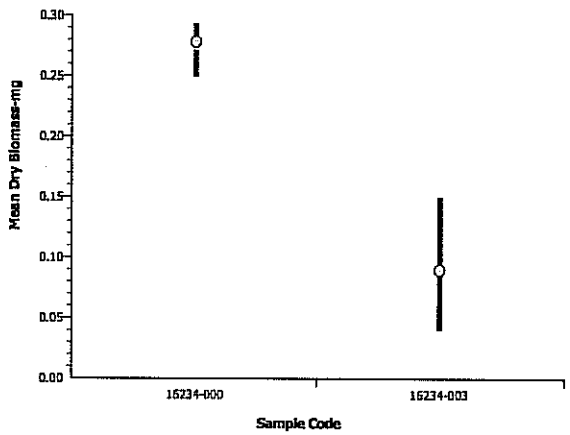
Group Comparisons

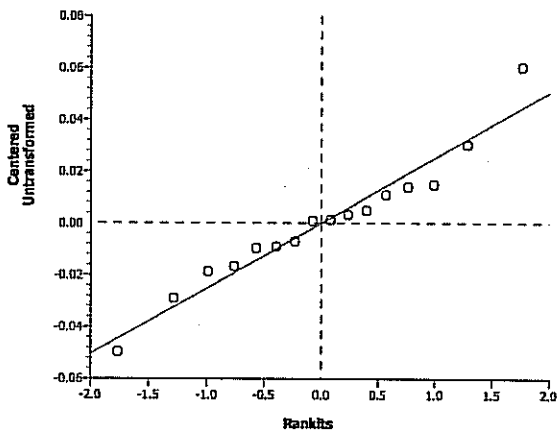
Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
16234-000		16234-003	14.6187	1.76131	0.0000	0.0227	Significant Effect

Data Summary

		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
16234-000	8	0.27813	0.24900	0.29300	0.01483				
16234-003	8	0.08975	0.04000	0.15000	0.03329				

Graphics





CETIS Analysis Detail

ESI

Mysidopsis 7-d Survival, Growth and Fecundity Test — **EnviroSystems, Inc.**

Test No:	02-9890-7741	**Test Type:**	Growth-Survival-Fec (7d)	**Duration:**	6d 18hs
Start Date:	12 Sep-07 03:40 PM	**Protocol:**	EPA/821/R-02-014 (2002)	**Species:**	Mysidopsis bahia
Ending Date:	19 Sep-07 09:50 AM	**Dil Water:**	Not Applicable	**Source:**	ARO - Aquatic Research Organisms, N
Setup Date:	12 Sep-07 03:40 PM	**Brine:**	Not Applicable		

Envirosystems, Inc.
One Lafayette Road
P.O. Box 778
Hampton, N.H. 03843-0778
(603) 926-3345 • (603) 926-3521 Fax
www.envirosystems.com

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Mean Dry Biomass-mg	Comparison	03-1251-8257	03-1251-8257	20 Sep-07 10:35 AM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Equal Variance t	C > T	Untransformed				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	1.55823	8.88539	0.57273	Equal Variances
Distribution	Shapiro-Wilk W	0.95931	0.84420	0.61969	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.0062411	0.0062411	1	11.63	0.00422	Significant Effect
Error	0.0075105	0.0005365	14			
Total	0.01375157	0.0067775	15			

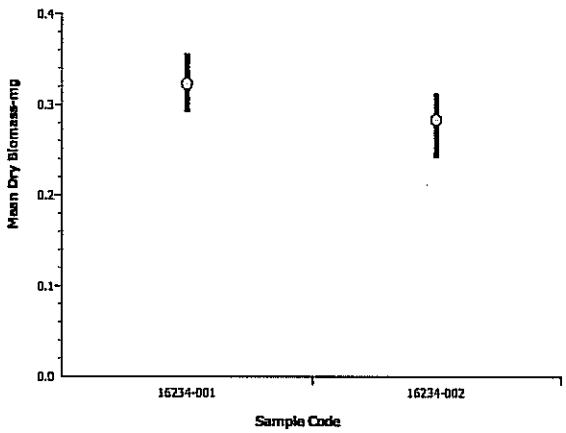
Group Comparisons

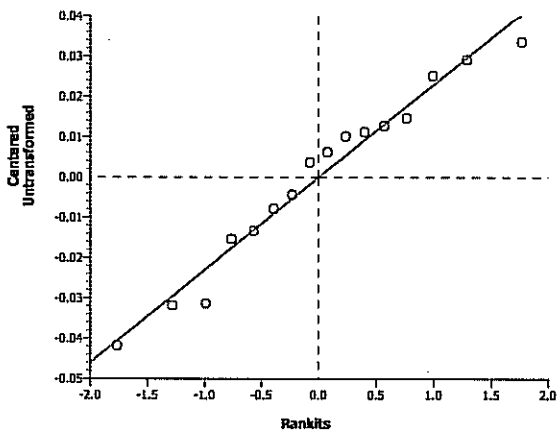
Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
16234-001		16234-002	3.41083	1.76131	0.0021	0.0204	Significant Effect

Data Summary

		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
16234-001	8	0.32238	0.29100	0.35600	0.02048				
16234-002	8	0.28287	0.24100	0.31200	0.02556				

Graphics





CETIS Analysis Detail

ESI

Mysidopsis 7-d Survival, Growth and Fecundity Test — **EnviroSystems, Inc.**

Test No:	02-9890-7741	**Test Type:**	Growth-Survival-Fec (7d)	**Duration:**	6 days 18 hrs
Start Date:	12 Sep-07 03:40 PM	**Protocol:**	EPA/821/R-02-014 (2002)	**Species:**	Mysidopsis bahia
Ending Date:	19 Sep-07 09:50 AM	**Dil Water:**	Not Applicable	**Source:**	ARO - Aquatic Research Organisms, N
Setup Date:	12 Sep-07 03:40 PM	**Brine:**	Not Applicable		

Envirosystems, Inc.
One Lafayette Road
P.O. Box 778
Hampton, N.H. 03843-0778
(603) 926-3345 • (603) 926-3521 Fax
www.envirosystems.com

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Mean Dry Biomass-mg	Comparison	03-1251-8257	03-1251-8257	20 Sep-07 10:35 AM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Equal Variance t	C > T	Untransformed				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	2.64310	8.88539	0.22304	Equal Variances
Distribution	Shapiro-Wilk W	0.97426	0.84420	0.87102	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.2164579	0.2164579	1	283.34	0.00000	Significant Effect
Error	0.0106955	0.000764	14			
Total	0.22715343	0.2172219	15			

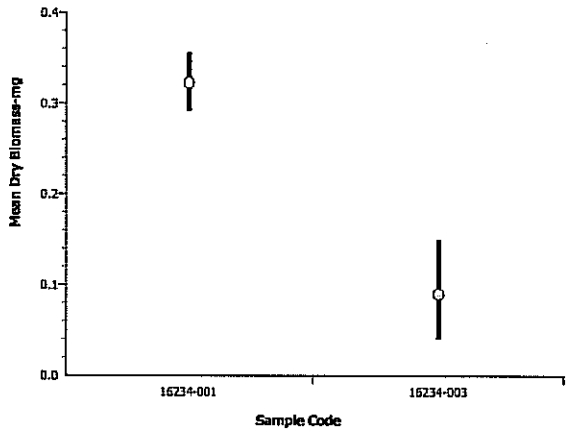
Group Comparisons

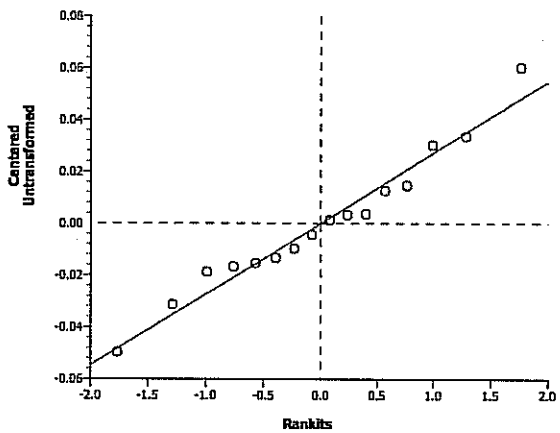
Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
16234-001		16234-003	16.8326	1.76131	0.0000	0.02434	Significant Effect

Data Summary

		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
16234-001	8	0.32238	0.29100	0.35600	0.02048				
16234-003	8	0.08975	0.04000	0.15000	0.03329				

Graphics





rec. 9/12/07

Aquatic Research Organisms

DATA SHEET

I. Organism History

Species: AMERICAMYSIS bahia

Source: Lab reared ✓ Hatchery reared ____ Field collected ____

Hatch date 9-5-07 Receipt date ____

Lot number 090507MS Strain ____

Brood Origination Florida

II. Water Quality

Temperature 25 °C Salinity ≈30 ppt DO —

pH 7.8 Hardness — ppm

III. Culture Conditions

System: RECIRC

Diet: Flake Food ✓ Phytoplankton ____ Trout Chow ✓

Brine Shrimp ✓ Rotifers ____ Other Encap Shrimp Diet

Prophylactic Treatments: ____

Comments: ____

IV. Shipping Information

Client: ESJ # of Organisms: 320+

Carrier: ____ Date Shipped: 9-12-07

Biologist: Mark Domengiraff

1 - 800 - 927 - 1650

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

Arbacia punctulata Chronic Fertilization Assay
Water Quality and Gamete Preparation Data

STUDY: 16234	CLIENT: BATTELLE	LOCATION: New Bedford	DATE: 9/12/07 INITIALS: LB

SALINITY ADJUSTMENT RECORD: 1000 mL -001 + 0 g SALT

SALINITY ADJUSTMENT RECORD: 1000 mL -002 + 0 g SALT

SALINITY ADJUSTMENT RECORD: 1000 mL -003 + 0 g SALT

SALINITY ADJUSTMENT RECORD: 1000 mL -004 + 0 g SALT

SALINITY ADJUSTED SAMPLE	D.O. (mg/L)	pH (SU)	SPEC COND (µmhos)	TEMP (°C)	SALINITY (ppt)
Lab Control	6.6	7.76	47400	21	31
-001	(E3) LB 5.69	7.11	46400	21	30
-002	6.6	7.09	46800	21	30
-003	6.0	7.05	46800	21	30
~~-004~~					

METERS USED

DO meter # 19 DO probe # 12 pH meter # 476 pH probe # 48 S/C meter # YS130C S/C probe # YS130C

SALINITY meter # YS130C

DATE & INITIALS FOR GAMETE PREPARATION: 9/12/07 LB

SPERM DILUTIONS:

HEMACYTOMETER COUNT, E: 121 X 10^4= SPM SOLUTION E = 1.21×10^6

SPERM CONCENTRATIONS:
SOLUTION E X 40 = SOLUTION A = 4.84×10^7 SPM
SOLUTION E X 20 = SOLUTION B = 2.42×10^7 SPM
SOLUTION E X 5 = SOLUTION C = 6.05×10^6 SPM

FINAL COUNTS:

FINAL SPERM COUNT: 4.84×10^7
FINAL EGG COUNT: 2300

TEST TIMES:

SPERM COLLECTED: 1615
EGGS COLLECTED: 1615
SPERM ADDED: 1635
EGGS ADDED: 1735
FIXATIVE ADDED: 1755

See ESI SOP #1412 for additional information

Arbacia punctulata Chronic Fertilization Assay

SAMPLE USE RECORD

STUDY: 16234	CLIENT: Battelle - New Bedford
SPECIES: *A. punctulata*	

	Day: 0	
SAMPLE	Volume Used (mL)	ESI Cube ID
Lab Control	100	16263
-001		-001
-002		-002
-003		-003
-004		
INITIALS:	LB	
TIME:	1350	
DATE:	9/12/07	

FERTILIZATION COUNTS

STUDY 16234	CLIENT BATTELLE	LOCATION New Bedford	DATE 9/13/07 INITIALS LB

	REPLICATE VIAL			
	1	2	3	4
SAMPLE	FERT/TOTAL	FERT/TOTAL	FERT/TOTAL	FERT/TOTAL
Lab Control	98/109	88/103	85/109	92/100
-001	99/110	94/100	97/103	99/107
-002	100/104	100/108	99/108	96/100
-003	90/100	100/114	100/124	84/104
-004				

CETIS Test Summary

Report Date: 13 Sep-07 9:26 PM
Link: 17-8040-2040

Arbacia Sperm Cell Fertilization Test — **EnviroSystems, Inc.**

Test No:	17-8705-3341	**Test Type:**	Fertilization	**Duration:**	80m
Start Date:	12 Sep-07 04:35 PM	**Protocol:**	EPA/821/R-02-014 (2002)	**Species:**	Arbacia punctulata
Ending Date:	12 Sep-07 05:55 PM	**Dil Water:**	Not Applicable	**Source:**	In-House Culture
Setup Date:	12 Sep-07 04:35 PM	**Brine:**	Not Applicable		

Sample No:	07-3947-2649	**Material:**	Surface Water	**Client:**	Battelle Labs
Sample Date:	12 Sep-07 03:00 PM	**Code:**	16234-000	**Project:**	Ecological Risk Assessment
Receive Date:	12 Sep-07 03:00 PM	**Source:**	New Bedford Harbor Dredge Monitorin		
Sample Age:	95m	**Station:**	WQ-TOX-Lab Control		
Sample No:	10-1282-1229	**Material:**	Surface Water	**Client:**	Battelle Labs
Sample Date:	11 Sep-07 09:01 AM	**Code:**	16234-001	**Project:**	Ecological Risk Assessment
Receive Date:	11 Sep-07 04:00 PM	**Source:**	New Bedford Harbor Dredge Monitorin		
Sample Age:	32h	**Station:**	WQ-TOX-001		
Sample No:	06-2367-6386	**Material:**	Surface Water	**Client:**	Battelle Labs
Sample Date:	11 Sep-07 09:45 AM	**Code:**	16234-002	**Project:**	Ecological Risk Assessment
Receive Date:	11 Sep-07 04:00 PM	**Source:**	New Bedford Harbor Dredge Monitorin		
Sample Age:	31h	**Station:**	WQ-TOX-002		
Sample No:	12-6128-6246	**Material:**	Surface Water	**Client:**	Battelle Labs
Sample Date:	11 Sep-07 10:15 AM	**Code:**	16234-003	**Project:**	Ecological Risk Assessment
Receive Date:	11 Sep-07 04:00 PM	**Source:**	New Bedford Harbor Dredge Monitorin		
Sample Age:	30h	**Station:**	WQ-TOX-003		

Proportion Fertilized Summary

Sample Code	Reps	Mean	Minimum	Maximum	SE	SD	CV
16234-000	4	0.86332	0.77982	0.92000	0.03102	0.06203	7.19%
16234-001	4	0.92675	0.90000	0.94175	0.00965	0.01931	2.08%
16234-002	4	0.94103	0.91667	0.96154	0.01155	0.02311	2.46%
16234-003	4	0.84402	0.79245	0.90000	0.02631	0.05261	6.23%

Proportion Fertilized Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4
16234-000	0.89908	0.85437	0.77982	0.92000
16234-001	0.90000	0.94000	0.94175	0.92523
16234-002	0.96154	0.92593	0.91667	0.96000
16234-003	0.90000	0.87719	0.80645	0.79245

CETIS Analysis Detail

Arbacia Sperm Cell Fertilization Test — EnviroSystems, Inc.

Test No:	17-8705-3341	**Test Type:**	Fertilization	**Duration:**	80m
Start Date:	12 Sep-07 04:35 PM	**Protocol:**	EPA/821/R-02-014 (2002)	**Species:**	Arbacia punctulata
Ending Date:	12 Sep-07 05:55 PM	**Dil Water:**	Not Applicable	**Source:**	In-House Culture
Setup Date:	12 Sep-07 04:35 PM	**Brine:**	Not Applicable		

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Proportion Fertilized	Comparison	17-8040-2040	17-8040-2040	13 Sep-07 9:25 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Equal Variance t	C > T	Angular (Corrected)				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	6.04834	47.46723	0.17352	Equal Variances
Distribution	Shapiro-Wilk W	0.96933	0.74935	0.87570	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.0200063	0.0200063	1	4.37	0.08157	Non-Significant Effect
Error	0.0274746	0.0045791	6			
Total	0.04748086	0.0245854	7			

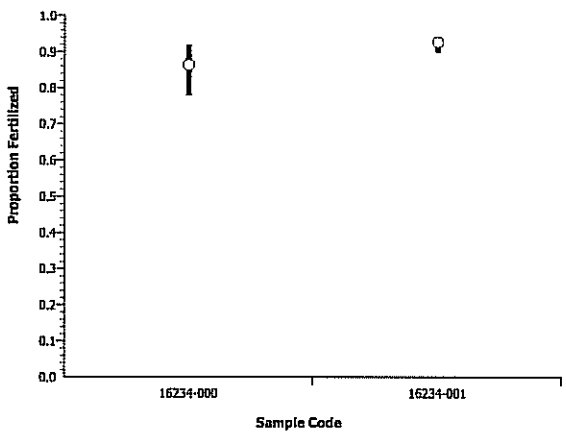
Group Comparisons

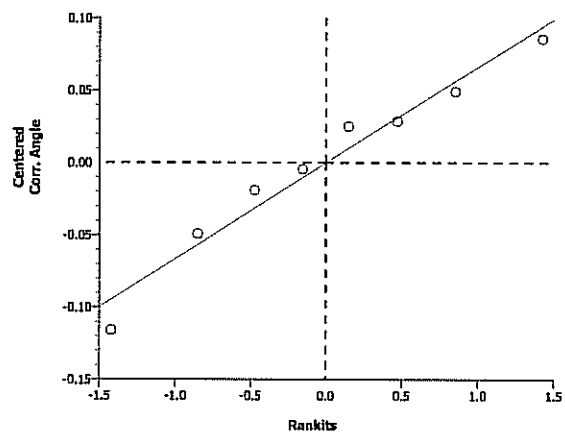
Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
16234-000		16234-001	-2.0902	1.94318	0.9592	0.09298	Non-Significant Effect

Data Summary

		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
16234-000	4	0.86332	0.77982	0.92000	0.06203	1.19830	1.08237	1.28404	0.08865
16234-001	4	0.92675	0.90000	0.94175	0.01931	1.29831	1.24905	1.32703	0.03605

Graphics





CETIS Analysis Detail

Arbacia Sperm Cell Fertilization Test — EnviroSystems, Inc.

Test No:	17-8705-3341	**Test Type:**	Fertilization	**Duration:**	80m
Start Date:	12 Sep-07 04:35 PM	**Protocol:**	EPA/821/R-02-014 (2002)	**Species:**	Arbacia punctulata
Ending Date:	12 Sep-07 05:55 PM	**Dil Water:**	Not Applicable	**Source:**	In-House Culture
Setup Date:	12 Sep-07 04:35 PM	**Brine:**	Not Applicable		

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Proportion Fertilized	Comparison	17-8040-2040	17-8040-2040	13 Sep-07 9:25 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Equal Variance t	C > T	Angular (Corrected)				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	3.20421	47.46723	0.36444	Equal Variances
Distribution	Shapiro-Wilk W	0.94247	0.74935	0.59816	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.0341604	0.0341604	1	6.63	0.04211	Significant Effect
Error	0.0309346	0.0051558	6			
Total	0.06509499	0.0393162	7			

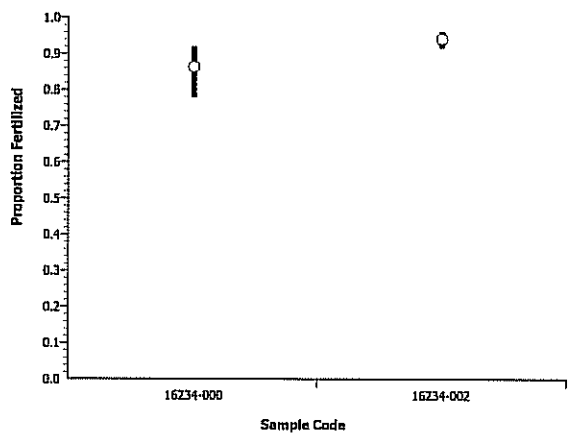
Group Comparisons

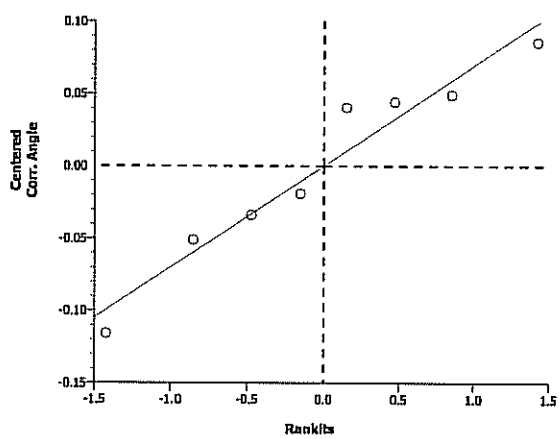
Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
16234-000		16234-002	-2.5740	1.94318	0.9789	0.09866	Non-Significant Effect

Data Summary

		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
16234-000	4	0.86332	0.77982	0.92000	0.06203	1.19830	1.08237	1.28404	0.08865
16234-002	4	0.94103	0.91667	0.96154	0.02311	1.32899	1.27795	1.37340	0.04952

Graphics





CETIS Analysis Detail

Arbacia Sperm Cell Fertilization Test — **EnviroSystems, Inc.**

Test No:	17-8705-3341	**Test Type:**	Fertilization	**Duration:**	80m
Start Date:	12 Sep-07 04:35 PM	**Protocol:**	EPA/821/R-02-014 (2002)	**Species:**	Arbacia punctulata
Ending Date:	12 Sep-07 05:55 PM	**Dil Water:**	Not Applicable	**Source:**	In-House Culture
Setup Date:	12 Sep-07 04:35 PM	**Brine:**	Not Applicable		

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Proportion Fertilized	Comparison	17-8040-2040	17-8040-2040	13 Sep-07 9:25 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Equal Variance t	C > T	Angular (Corrected)				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	1.44805	47.46723	0.76828	Equal Variances
Distribution	Shapiro-Wilk W	0.91859	0.74935	0.39111	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.0017504	0.0017504	1	0.26	0.62608	Non-Significant Effect
Error	0.0398582	0.0066430	6			
Total	0.04160862	0.0083934	7			

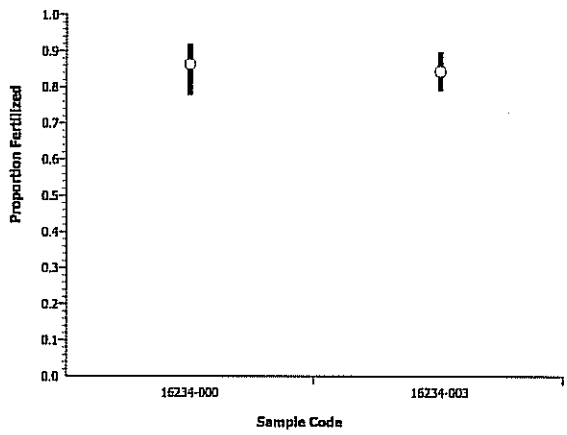
Group Comparisons

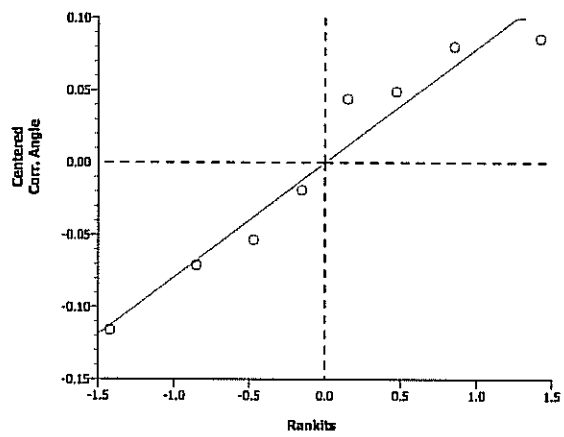
Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
16234-000		16234-003	0.51332	1.94318	0.3130	0.11199	Non-Significant Effect

Data Summary

		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
16234-000	4	0.86332	0.77982	0.92000	0.06203	1.19830	1.08237	1.28404	0.08865
16234-003	4	0.84402	0.79245	0.90000	0.05261	1.16871	1.09778	1.24905	0.07367

Graphics





CETIS Analysis Detail

Arbacia Sperm Cell Fertilization Test — **EnviroSystems, Inc.**

Test No:	17-8705-3341	**Test Type:**	Fertilization	**Duration:**	80m
Start Date:	12 Sep-07 04:35 PM	**Protocol:**	EPA/821/R-02-014 (2002)	**Species:**	Arbacia punctulata
Ending Date:	12 Sep-07 05:55 PM	**Dil Water:**	Not Applicable	**Source:**	In-House Culture
Setup Date:	12 Sep-07 04:35 PM	**Brine:**	Not Applicable		

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Proportion Fertilized	Comparison	17-8040-2040	17-8040-2040	13 Sep-07 9:26 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Equal Variance t	C > T	Angular (Corrected)				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	1.88762	47.46723	0.61487	Equal Variances
Distribution	Shapiro-Wilk W	0.86563	0.74935	0.13703	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.001882	0.001882	1	1.00	0.35521	Non-Significant Effect
Error	0.0112560	0.0018760	6			
Total	0.01313802	0.003758	7			

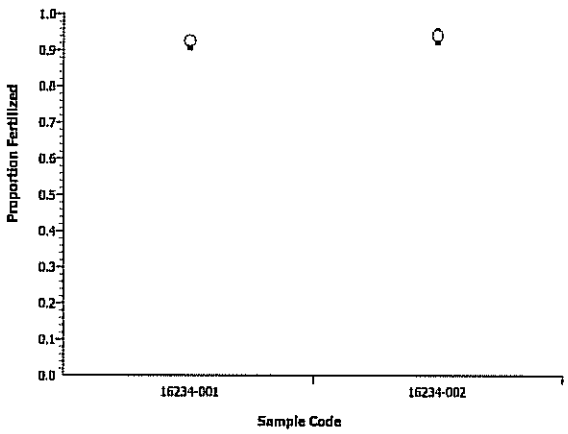
Group Comparisons

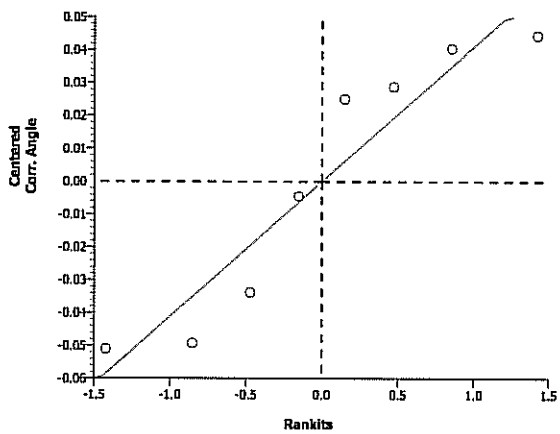
Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
16234-001		16234-002	-1.0016	1.94318	0.8224	0.05951	Non-Significant Effect

Data Summary

		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
16234-001	4	0.92675	0.90000	0.94175	0.01931	1.29831	1.24905	1.32703	0.03605
16234-002	4	0.94103	0.91667	0.96154	0.02311	1.32899	1.27795	1.37340	0.04952

Graphics





CETIS Analysis Detail

Arbacia Sperm Cell Fertilization Test — **EnviroSystems, Inc.**

Test No:	17-8705-3341	**Test Type:**	Fertilization	**Duration:**	80m
Start Date:	12 Sep-07 04:35 PM	**Protocol:**	EPA/821/R-02-014 (2002)	**Species:**	Arbacia punctulata
Ending Date:	12 Sep-07 05:55 PM	**Dil Water:**	Not Applicable	**Source:**	In-House Culture
Setup Date:	12 Sep-07 04:35 PM	**Brine:**	Not Applicable		

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Proportion Fertilized	Comparison	17-8040-2040	17-8040-2040	13 Sep-07 9:26 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Equal Variance t	C > T	Angular (Corrected)				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	4.17689	47.46723	0.27093	Equal Variances
Distribution	Shapiro-Wilk W	0.93882	0.74935	0.56247	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.0335920	0.0335920	1	9.99	0.01956	Significant Effect
Error	0.0201797	0.0033633	6			
Total	0.05377168	0.0369553	7			

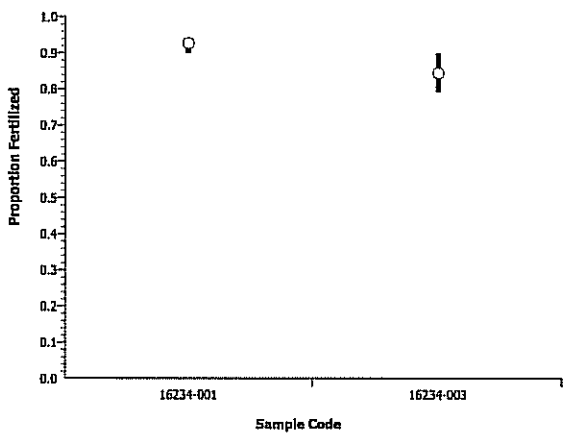
Group Comparisons

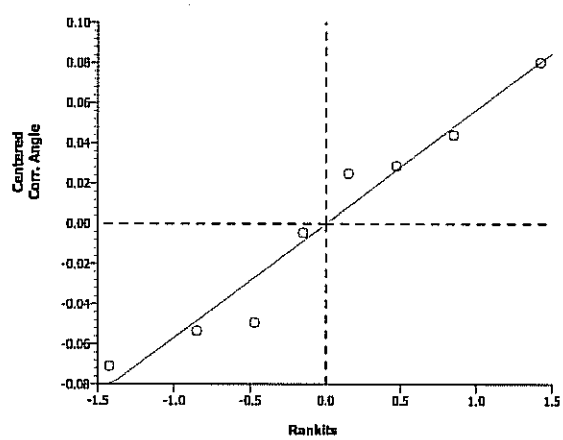
Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
16234-001		16234-003	3.16036	1.94318	0.0098	0.07969	Significant Effect

Data Summary

		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
16234-001	4	0.92675	0.90000	0.94175	0.01931	1.29831	1.24905	1.32703	0.03605
16234-003	4	0.84402	0.79245	0.90000	0.05261	1.16871	1.09778	1.24905	0.07367

Graphics





Saskatchewan Research Council
15 Innovation Boulevard, Saskatoon, SK S7N 2X8
Phone: 306-933-5469

Champia parvula Sexual Reproduction Test Quality Assurance Summary

Client	ESI Ltd.	SRC Sample #	E 565, 566, 567
File #	MM478	Test Initiation Date	Sept 13/07
Analyst	M. Moody	Test Completion Date	Sept 20/07
Sample Identity	0901-001, 0945-002, 1015-003, (all also labeled 091107)		

Test Type: Chronic, Definitive, Single-concentration (100%)
Test Organisms Species: *Champia parvula,* sexually mature male and female branches, in good health, males having sori with spermatia, females having trichogynes.
Test Conditions (additional information on following page)
Method: EPA-821-R-02-014 Method 1009.0, (Third edition, October 2002) static, non-renewal; 2-day effluent exposure followed by 5 to 7 day recovery period in control medium for cystocarp development.
Exposure/Dilution Medium: natural seawater collected at Pacific Environmental Science Centre, North Vancouver, B.C., filtered to 0.2µm and autoclaved before use, adjusted to salinity 30 ppt. and enriched with 10 ml/L Test Nutrient Solution, Table 1 of method cited.
Recovery Medium: natural seawater (same as for exposure medium), enriched with 10 ml/L Culture Nutrient Solution (method section 16.10.1.3).
Reference Toxicant Test
Method: EPA-821-R-02-014, Method 1009.0, static, non-renewal; 2-day exposure followed by 5 to 7 day recovery period in control medium for cystocarp development. See control performance and reference toxicant charts for additional information.
Test conditions: performed under same experimental conditions as effluent sample.
Compound: sodium dodecyl sulphate mg/L

Date of test: Aug 29/07	Historic value, warning limits ±2SD
IC_{50} (95 % CL) mg/L 1.22 (1.08 - 1.30)	1.32 (1.06 - 1.64)

Quality Control Data
Control mortality: no control mortality was observed in any control solution during observation periods.
Mean number of cystocarps per plant counted in this test (must be >10 to be acceptable).

mean control cystocarps per female	19.0
% survival in Control	100

Cystocarp Counts (mean per female branch)

Control, natural seawater	19.0
0901-001 (091107)	20.8
0945-002 (091107)	27.4
1015-003 (091107)	5.5
Signature: [illegible] Date: Nov 1/07	

Saskatchewan Research Council
15 Innovation Boulevard, Saskatoon, SK S7N 2X8
Phone: 306-933-5469

Test Data Summary

Samples SRC# E565, 566, 567

Identification/Type 0901-001, 0945-002, 1015-003, (all also labeled 091107) Analyst Mary Moody

Date/Time Received Sept 12/07 @ 1600 hr Date Shipped Sept 11/07 Temperature Upon Receipt (°C) 3 with ice packs

Test Initiation Date Sept 13/07 Test Completion Date Sept 20/07

Organism Information

Species *Champia parvula* Appearance/Health of *Champia* excellent

Source sexually mature male and female branches, obtained from USEPA, Hatfield Marine Science Center, Newport, Oregon, 1995

Females, Presence of Trichogynes yes Males, Presence of Sori with Spermatia yes

Test Conditions

Test Method EPA-821-R-02-014, Method 1009.0 Dilution/control water Natural Seawater

Test Type Chronic definitive single concentration

Test Vessels (Exposure & Recovery) 270 mL transparent polystyrene cups, transparent polystyrene lids

Exposure Volume / Depth 100 mL / 4.5 cm Recovery Volume / Depth 200 mL / 7.3 cm

Replicates/Conc. 4 No. of organisms (female/male) 5/1

Number and Concentrations of Test Solutions (%v/v) Controls: natural sea water Tests: 100

Chemicals added to control/dilution water Test Nutrients as described in method cited at 10 ml/L, analytical grade

Sample Treatment

D.O. before salinity adjustment (mg/L) see page 3 D.O. at test start (mg/L) see page 3

Aeration (duration/rate) none Filtration none pH Adjustment none

Salinity Adjustment not required, all samples were at salinity of 30 ±2 ppt

Exposure Period (48 h)

Temperature, pH, D.O. and Salinity of test solutions and controls on following page

Photoperiod (L:D h) 16:8 Agitation of tests and controls gentle rotary shaking

Recovery Period (5-7 d)

Aeration gentle aeration supplied

Recovery Medium: natural sea water containing 10 ml/L Culture Nutrients (section 16.10.1.3 of cited method)

Submitted By: MMoody **Date:** Nov 1/07

Saskatchewan Research Council
15 Innovation Boulevard, Saskatoon, SK S7N 2X8
Phone: 306-933-5469

Water Quality Data

Sample Identification 0901-001, 0945-002, 1015-003, (all also labeled 091107) SRC# E 565, 566, 567

INITIAL WATER QUALITY	SAMPLES at test start			TEST MEDIUM	RECOVERY MEDIUM
sample #	0901-001	0945-002	1015-003		
Temperature (°C)	22	22	22	23	23
Dissolved Oxygen (mg/L)	901	8.8	7.3	7.8	7.8
pH	7.03	6.97	6.81	8.6	8.4
Salinity (ppt)	31	31	31	30	30
Description of sample	colorless	colorless	colorless		

Length of Recovery Period (days) 5

Water Quality Data during Exposure Period (0, 24, 48 hr)

Sample	Temperature (°C)			Dissolved Oxygen (mg/L)			pH			Salinity (ppt)		
	0	24	48	0	24	48	0	24	48	0	24	48
Control-NSW*	23	23	23	7.8	7.8	7.9	8.5	8.4	8.4	30	30	30
0901-001	23	23	23	7.8	7.8	7.8	7.5	8.3	8.4	31	31	31
0945-002	23	23	23	7.8	7.8	7.8	7.5	7.9	8.2	31	31	31
1015-003	23	23	23	7.8	7.8	7.8	6.4	8.0	8.3	31	31	31

*Natural Sea Water

Appearance of branches after 48 hours exposure

Condition of female branches	Control NSW	0901-001	0945-002	1015-003
description	normal*	normal	branches slightly paler than control	branches slightly paler than control

* Branches red (no green areas), firm but flexible

Champia (female) Mortality at end of Recovery Period

Condition of female branches	Control NSW	0901-001	0945-002	1015-003
# dead	0	0	0	0
% mortality	0	0	0	0
description	normal*	normal	normal	white with red tips

* Branches red (no green areas), firm but flexible

Initial/Date 7/11/07

Saskatchewan Research Council
15 Innovation Boulevard, Saskatoon, SK S7N 2X8
Phone: 306-933-5469

RECOVERY PERIOD - TEMPERATURE MONITORING (initial daily entries)

Day 0	Day 1	Day 2	Day 3	Day 4	Day 5
23	23	23	23	23	23

Test Data

Sample Identification: 0901-001, 0945-002, 1015-003, (all also labeled 091107) Analyst: Mary Moody SRC#: E 565, 566, 567

Champia Raw Data

Date: Sept 22/07

			Cystocarps per plant					Mean	SD	Group mean and SD	Comments
	Control	NSW	12	23	18	20	40	22.6	10.5	19.0	Healthy red colour
			19	21	20	19	24	20.6	2.1	6.7	Normal growth
			27	13	22	12	15	17.8	6.5		
			10	20	16	16	13				
	SRC#	% V/V									
0901-001	565	100	29	25	26	23	19	24.4	3.7	20.8	Healthy red colour
		100	26	28	28	7	13	20.4	9.8	6.4	Normal growth
		100	19	22	13	18	15	17.4	3.5		
		100	15	20	32	20	18	21.0	6.5		
0912-002	566	100	18	24	11	41	24	23.6	11.1	27.4	Healthy red colour
		100	20	20	38	41	23	28.4	10.3	9.7	Normal growth
		100	36	40	12	40	19	29.4	13.0		
		100	27	33	29	30	21	28.0	4.5		
1015-003	567	100	3	8	8	2	6	5.4	2.8	5.5	Branches white with red tips
		100	8	7	10	11	5	8.2	2.4	3.6	
		100	1	2	3	0	2	1.6	1.1		
		100	2	12	3	8	8	6.6	4.1		

SD: Standard Deviation

Submitted by: M Moody Date: Nov 1/07

CETIS Test Summary

Report Date: 23 Sep-07 10:38 PM
Link: 12-6968-3452

Champia parvula Red Macroalga Sexual Reproduction Test — **Saskatchewan Research Council**

Test No:	09-2886-5307	**Test Type:**	Champia	**Duration:**	7d 0h
Start Date:	14 Sep-07 12:00 PM	**Protocol:**	EPA/600/4-91/003 (1994)	**Species:**	Champia parvula
Ending Date:	21 Sep-07 12:00 PM	**Dil Water:**	Not Applicable	**Source:**	In-House Culture
Setup Date:	14 Sep-07 12:00 PM	**Brine:**	Not Applicable		

Sample No:	07-3947-2649	**Material:**	Surface Water	**Client:**	Battelle Labs
Sample Date:	12 Sep-07 03:00 PM	**Code:**	16234-000	**Project:**	Ecological Risk Assessment
Receive Date:	12 Sep-07 03:00 PM	**Source:**	New Bedford Harbor Dredge Monitorin		
Sample Age:	45h	**Station:**	WQ-TOX-Lab Control		

Sample No:	10-1282-1229	**Material:**	Surface Water	**Client:**	Battelle Labs
Sample Date:	11 Sep-07 09:01 AM	**Code:**	16234-001	**Project:**	Ecological Risk Assessment
Receive Date:	11 Sep-07 04:00 PM	**Source:**	New Bedford Harbor Dredge Monitorin		
Sample Age:	75h	**Station:**	WQ-TOX-001		

Sample No:	06-2367-6386	**Material:**	Surface Water	**Client:**	Battelle Labs
Sample Date:	11 Sep-07 09:45 AM	**Code:**	16234-002	**Project:**	Ecological Risk Assessment
Receive Date:	11 Sep-07 04:00 PM	**Source:**	New Bedford Harbor Dredge Monitorin		
Sample Age:	74h	**Station:**	WQ-TOX-002		

Sample No:	12-6128-6246	**Material:**	Surface Water	**Client:**	Battelle Labs
Sample Date:	11 Sep-07 10:15 AM	**Code:**	16234-003	**Project:**	Ecological Risk Assessment
Receive Date:	11 Sep-07 04:00 PM	**Source:**	New Bedford Harbor Dredge Monitorin		
Sample Age:	74h	**Station:**	WQ-TOX-003		

Mean Cystocarps Summary

Sample Code	Reps	Mean	Minimum	Maximum	SE	SD	CV
16234-000	4	19	15	22.6	1.65731	3.31461	17.45%
16234-001	4	20.8	17.4	24.4	1.43527	2.87054	13.80%
16234-002	4	27.35	23.6	29.4	1.2842	2.5684	9.39%
16234-003	4	5.45	1.6	8.2	1.40564	2.81129	51.58%

Mean Cystocarps Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4
16234-000	22.6	20.6	17.8	15
16234-001	24.4	20.4	17.4	21
16234-002	23.6	28.4	29.4	28
16234-003	5.4	8.2	1.6	6.6

CETIS Analysis Detail

Champia parvula Red Macroalga Sexual Reproduction Test — **Saskatchewan Research Council**

Test No:	09-2886-5307	**Test Type:**	Champia	**Duration:**	7d 0h
Start Date:	14 Sep-07 12:00 PM	**Protocol:**	EPA/600/4-91/003 (1994)	**Species:**	Champia parvula
Ending Date:	21 Sep-07 12:00 PM	**Dil Water:**	Not Applicable	**Source:**	In-House Culture
Setup Date:	14 Sep-07 12:00 PM	**Brine:**	Not Applicable		

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Mean Cystocarps	Comparison	12-6968-3452	12-6968-3452	23 Sep-07 10:38 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Equal Variance t	C > T	Untransformed				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	1.33333	47.46723	0.81873	Equal Variances
Distribution	Shapiro-Wilk W	0.93303	0.74935	0.50867	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	6.48	6.48	1	0.67	0.44303	Non-Significant Effect
Error	57.68	9.613334	6			
Total	64.1600003	16.093334	7			

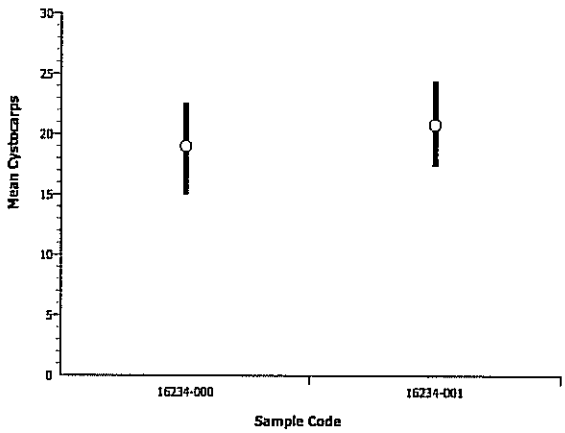
Group Comparisons

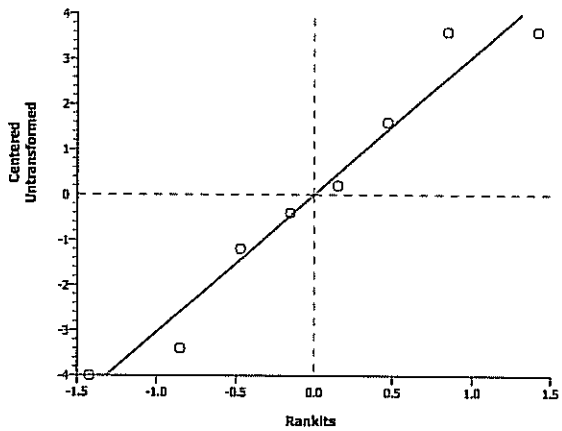
Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
16234-000		16234-001	-0.8210	1.94318	0.7785	4.26025	Non-Significant Effect

Data Summary

		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
16234-000	4	19	15	22.6	3.31461				
16234-001	4	20.8	17.4	24.4	2.87054				

Graphics





CETIS Analysis Detail

Champia parvula Red Macroalga Sexual Reproduction Test — **Saskatchewan Research Council**

Test No:	09-2886-5307	**Test Type:**	Champia	**Duration:**	7d 0h
Start Date:	14 Sep-07 12:00 PM	**Protocol:**	EPA/600/4-91/003 (1994)	**Species:**	Champia parvula
Ending Date:	21 Sep-07 12:00 PM	**Dil Water:**	Not Applicable	**Source:**	In-House Culture
Setup Date:	14 Sep-07 12:00 PM	**Brine:**	Not Applicable		

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Mean Cystocarps	Comparison	12-6968-3452	12-6968-3452	23 Sep-07 10:38 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Equal Variance t	C > T	Untransformed				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	1.66549	47.46723	0.68545	Equal Variances
Distribution	Shapiro-Wilk W	0.91440	0.74935	0.36146	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	139.445	139.445	1	15.86	0.00726	Significant Effect
Error	52.75	8.791667	6			
Total	192.195007	148.23667	7			

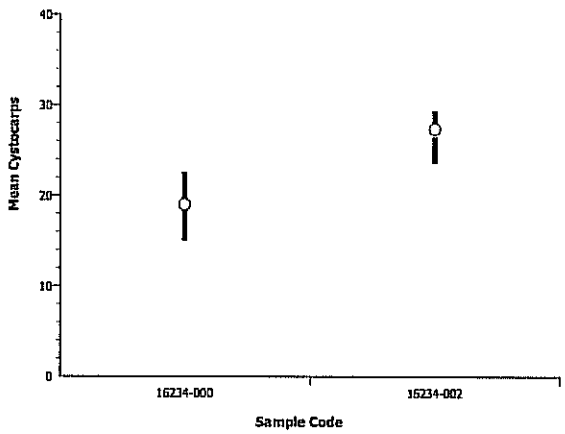
Group Comparisons

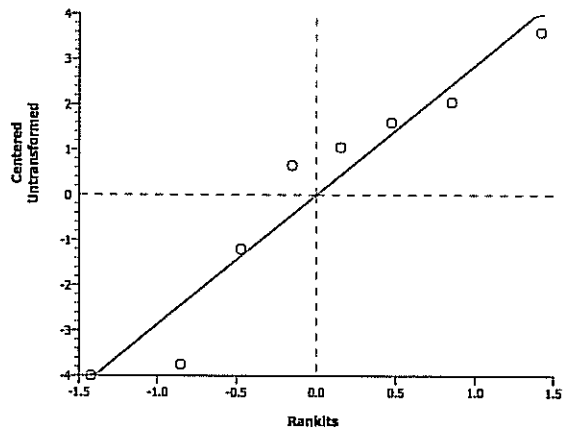
Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
16234-000		16234-002	-3.9826	1.94318	0.9964	4.07412	Non-Significant Effect

Data Summary

		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
16234-000	4	19	15	22.6	3.31461				
16234-002	4	27.35	23.6	29.4	2.5684				

Graphics





CETIS Analysis Detail

Champia parvula Red Macroalga Sexual Reproduction Test — **Saskatchewan Research Council**

Test No:	09-2886-5307	**Test Type:**	Champia	**Duration:**	7d 0h
Start Date:	14 Sep-07 12:00 PM	**Protocol:**	EPA/600/4-91/003 (1994)	**Species:**	Champia parvula
Ending Date:	21 Sep-07 12:00 PM	**Dil Water:**	Not Applicable	**Source:**	In-House Culture
Setup Date:	14 Sep-07 12:00 PM	**Brine:**	Not Applicable		

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Mean Cystocarps	Comparison	12-6968-3452	12-6968-3452	23 Sep-07 10:38 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Equal Variance t	C > T	Untransformed				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	1.39013	47.46723	0.79310	Equal Variances
Distribution	Shapiro-Wilk W	0.92576	0.74935	0.44646	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	367.205	367.205	1	38.88	0.00079	Significant Effect
Error	56.67	9.445	6			
Total	423.874985	376.64999	7			

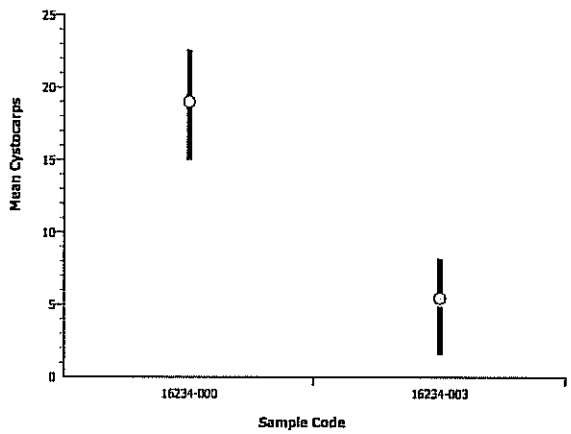
Group Comparisons

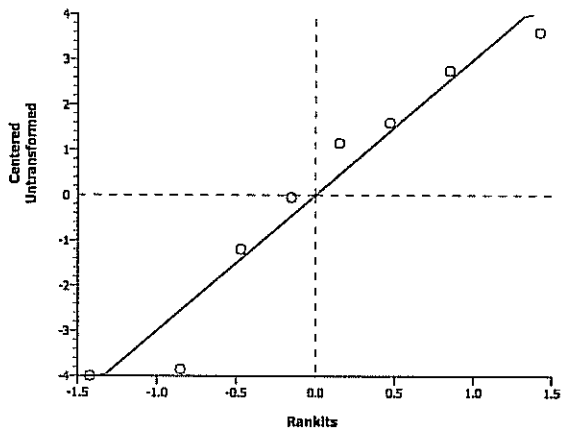
Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
16234-000		16234-003	6.23524	1.94318	0.0004	4.22279	Significant Effect

Data Summary

		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
16234-000	4	19	15	22.6	3.31461				
16234-003	4	5.45	1.6	8.2	2.81129				

Graphics





CETIS Analysis Detail

Champia parvula Red Macroalga Sexual Reproduction Test — **Saskatchewan Research Council**

Test No:	09-2886-5307	**Test Type:**	Champia	**Duration:**	7d 0h
Start Date:	14 Sep-07 12:00 PM	**Protocol:**	EPA/600/4-91/003 (1994)	**Species:**	Champia parvula
Ending Date:	21 Sep-07 12:00 PM	**Dil Water:**	Not Applicable	**Source:**	In-House Culture
Setup Date:	14 Sep-07 12:00 PM	**Brine:**	Not Applicable		

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Mean Cystocarps	Comparison	12-6968-3452	12-6968-3452	23 Sep-07 10:38 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Equal Variance t	C > T	Untransformed				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	1.24912	47.46723	0.85926	Equal Variances
Distribution	Shapiro-Wilk W	0.93485	0.74935	0.52515	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	85.805	85.805	1	11.57	0.01448	Significant Effect
Error	44.51	7.418334	6			
Total	130.314999	93.223334	7			

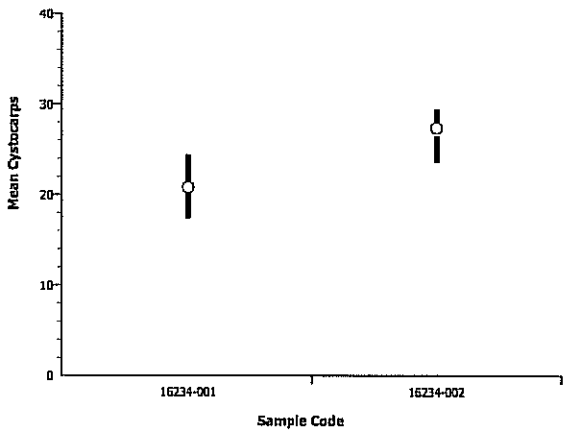
Group Comparisons

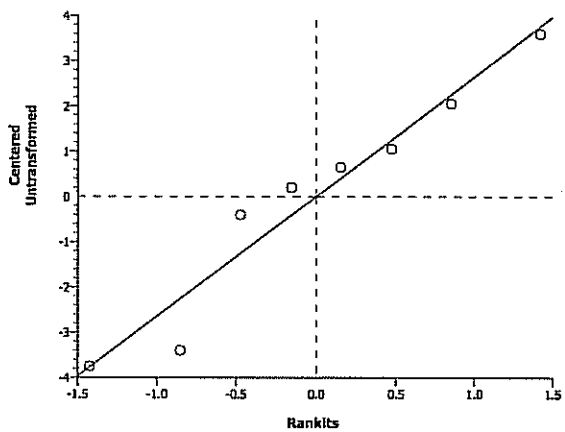
Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
16234-001		16234-002	-3.401	1.94318	0.9928	3.74241	Non-Significant Effect

Data Summary

		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
16234-001	4	20.8	17.4	24.4	2.87054				
16234-002	4	27.35	23.6	29.4	2.5684				

Graphics





Detail

Macroalga Sexual Reproduction Test — **Saskatchewan Research Council**

86-5307	**Test Type:**	Champia	**Duration:**	7d 0h
Sep-07 12:00 PM	**Protocol:**	EPA/600/4-91/003 (1994)	**Species:**	Champia parvula
Sep-07 12:00 PM	**Dil Water:**	Not Applicable	**Source:**	In-House Culture
14 Sep-07 12:00 PM	**Brine:**	Not Applicable		

	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
ocarps	Comparison	12-6968-3452	12-6968-3452	23 Sep-07 10:38 PM	CETISv1.026

	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Variance t	C > T	Untransformed				N/A		

OVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	1.04260	47.46723	0.97345	Equal Variances
Distribution	Shapiro-Wilk W	0.93767	0.74935	0.55147	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	471.245	471.245	1	58.38	0.00026	Significant Effect
Error	48.43	8.071667	6			
Total	519.674995	479.31666	7			

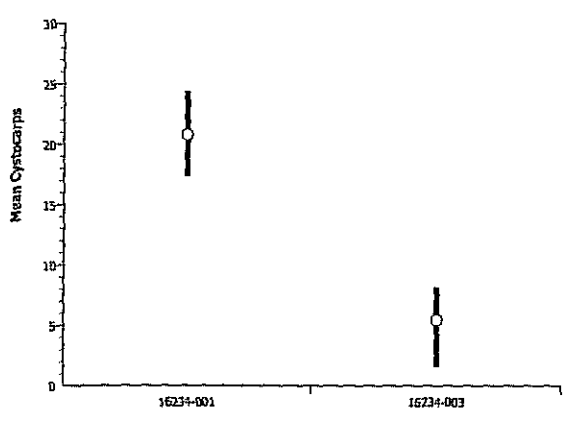
Group Comparisons

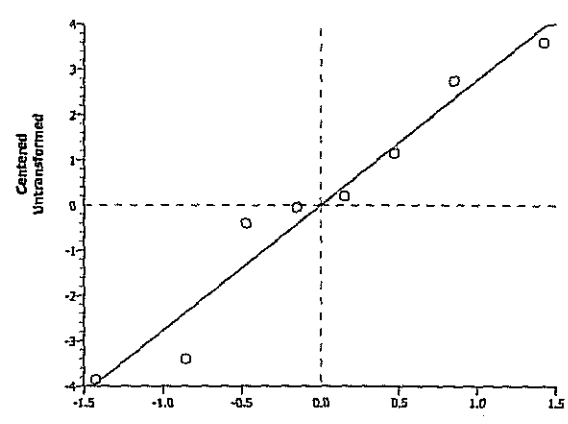
Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
16234-001		16234-003	7.64085	1.94318	0.0001	3.90373	Significant Effect

Data Summary

		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
16234-001	4	20.8	17.4	24.4	2.87054				
16234-003	4	5.45	1.6	8.2	2.81129				

Graphics





SALTWATER ASSAYS

A. bahia, A. punctulata, C. parvula

STUDY: 16234	LOCATION: New Bedford Harbor				
CHEMISTRY	Lab Salt Control 16263	-001	-002	-003	~~-004~~
AMMONIA	-008	-008	-004	-006 (B3)	
AS RECEIVED WATER QUALITIES	Lab Salt Control	-001	-002	-003	-004
SALINITY (ppt)	31	31	31	31	
pH (SU)	7.95	6.96	6.99	6.99	
TRC (mg/L)	<0.05	(B3) ~~<0.5~~ <0.05	<0.05	<0.05	N/A
DO (mg/L)	6.9	5.3	5.1	4.7 (C1)	
S/C (µmhos/cm)	48720	45540	47230	~~47230~~ 47740	
WQ STATION USED	1	1	1	1	
INITIALS	SJ	SJ	SJ	SJ	
A. bahia SALINITY ADJUSTMENT RECORD	Lab Salt Control	-001	-002	-003	-004
SAMPLE (mLs)					
SEA SALT (g)					N/A
DATE:	9/11/07				
TIME:	1600				
INITIALS:	SJ				

Sample ID	ESI Cube ID
-001	-001
-002	-002
-003	-003
~~-004~~	~~-004~~

Americamysis bahia 7 DAY CHRONIC ASSAY
NEW WATER QUALITIES

STUDY:	CLIENT:	LOCATION:	LAB CONTROL:
16234	BATTELLE	NEW BEDFORD	HAMPTON ESTUARY

		NEW DISSOLVED OXYGEN (mg/L)							NEW SALINITY (ppt)						
CONC	REP	0	1	2	3	4	5	6	0	1	2	3	4	5	6
LAB	A	6.6	7.0	6.8	6.5	6.6	6.4	6.6	31	31	30	30	30	30	30
-001	A	5.5	5.5	4.9	5.3	6.5	5.9	6.4	33	28	30	30	30	30	30
-002	A	5.9	6.7	6.1	5.8	6.4	5.8	6.4	33	29	31	31	31	31	31
-003	A	6.9	6.0	6.1	6.5	6.7	6.1	6.5	33	28	31	31	30	30	30
~~-004~~	~~A~~														

		NEW pH (SU)							NEW TEMPERATURE (°C)						
CONC	REP	0	1	2	3	4	5	6	0	1	2	3	4	5	6
LAB	A	7.95	7.79	7.90	7.70	7.76	7.64	7.86	25	25	24	25	25	25	25
-001	A	6.79	6.96	6.89	6.82	6.96	6.94	6.97	25	25	26	25	25	25	25
-002	A	6.94	7.09	7.06	6.98	7.09	7.06	7.08	25	25	25	25	25	25	25
-003	A	7.03	7.05	7.05	6.93	7.00	7.02	7.15	25	25	25	25	25	25	25
~~-004~~	~~A~~								25						
INC TEMP:		25	26	26	26	26	26								
DATE:		9/12	9/13	9/14	9/15	9/16	9/17								
TIME:		1515	1605	1105	1315	1020	1215								
INIT:		AK	PA	LB	RAM	SJ	SJ								

WATER QUALITY METERS USED NEW WATER QUALITIES								
	0	1	2	3	4	5	6	7
Water Quality Station #		26	1	1	1	1	1	N/A
Initials		PA	LB	RAM	SJ	SJ	SJ	
Date	9/12	9/13	9/14	9/15	9/16	9/17	9/18	

Americamysis bahia 7 DAY CHRONIC ASSAY
OLD WATER QUALITIES

STUDY:	CLIENT:	LOCATION:	LAB CONTROL:
16234	BATTELLE	NEW BEDFORD	HAMPTON ESTUARY

OLD SALINITY (ppt)								*	OLD pH (SU)						
Conc	Rep	12	23	34	45	56	67	71	12	23	34	45	56	67	71
Control	A	31	30	30	29	30	31		7.83	7.72	7.74	7.68	7.63	7.83	
-001	A	31	31	31	31	31	31		7.38	7.28	7.44	7.41	7.39	7.59	
-002	A	31	31	31	31	31	31		7.52	7.22	7.54	7.45	7.38	7.64	
-003	A	31	31	31	31	30	31		7.49	7.44	7.62	7.48	7.43	7.61	
-004	A														

OLD TEMPERATURE (°C)								
Conc	Rep	12	23	34	45	56	67	71
Control	A	24	25	26	26	26	25	
-001	A	24	25	26	26	26	25	
-002	A	24	25	26	26	26	25	
-003	A	24	25	26	26	26	25	
-004	A							
INC TEMP:		26	26	26	26	26	26	
DATE:		9/14	9/15	9/16	9/17	9/18	9/19	
TIME:		1030	1215	0935	1140	0955	0830	
INITIALS:		UB	RAM	SJ	SJ	SJ	RAM	

GENERAL NOTES - for additional information refer to SOP #1411 or EPA manual 600/4-91/003

- Test vessels will be 250 mL glass beakers containing a minimum of 150 mL of solution
- 8 replicates per site with 5 organisms each

- Test Temperature: 26±1°C
- Salinity: 25 ±2ppt
- Dissolved Oxygen: >4.3 mg/L

- Photoperiod will be 16 hours light and 8 hours dark.
- Passing criteria require ≥80% survival and average dry weight of ≥0.20 mg/organism in the control vessels.

*no old water qualities taken for day 1

WATER QUALITY METERS USED OLD WATER QUALITIES								
	0	1	2	3	4	5	6	7
Water Quality Station #		2	2	1	1	1	2	1
Initials		UB	UB	RAM	SJ	SJ	SJ	RAM
Date	9/12	9/13/17	9/14/17	9/15	9/16	9/17	9/18	9/19

Americamysis bahia 7 DAY CHRONIC ASSAY
SAMPLE USE RECORD

STUDY: 16234 | CLIENT: BATTELLE - New Bedford

SPECIES: *A. bahia* | TEST: chronic renewal

Sample	Day: 0 Volume Used (mL)	Day: 0 ESI Cube ID	Day: 1 Volume Used (mL)	Day: 1 ESI Cube ID	Day: 2 9/14/07 Volume Used (mL)	Day: 2 ESI Cube ID
Lab Control	1600	n/a	1600	n/a	1200	n/a
-001	↓	-001	↓	-001	↓	-001
-002	↓	-002	↓	-002	↓	-002
-003	↓	-003	↓	-003	↓	-003
~~-004~~	↓	~~-004~~	↓	—	—	—

Day	Date	Time	Init
0	9/12/07	1500	AK
1	9/13	1545	PA
2	9/14	1105	LB
3	9/15	1305	RAM
4	9/16	1015	SJ
5	9/17	1210	SJ
6	9/18	1145	SJ

Sample	Day: 3 Volume Used (mL)	Day: 3 ESI Cube ID	Day: 4 Volume Used (mL)	Day: 4 ESI Cube ID	Day: 5 Volume Used (mL)	Day: 5 ESI Cube ID
Lab Control	1200	n/a	1200	n/a	1200	n/a
-001	↓	-001	↓	-001	↓	-001
-002	↓	-002	↓	-002	↓	-002
-003	↓	-003	↓	-003	↓	-003
-004	—	—	—	—	—	—

Sample	Day: 6 Volume Used (mL)	Day: 6 ESI Cube ID
Lab Control	1200	n/a
-001	↓	-001
-002	↓	-002
-003	↓	-003
-004	—	—

Americamysis bahia 7 DAY CHRONIC ASSAY
SURVIVAL & OLD WATER QUALITIES

STUDY: 16391	CLIENT: Battelle	LOCATION: NEW BEDFORD	LAB CONTROL: HAMPTON ESTUARY	ORGANISM BATCH/LOT#

		NUMBER OF SURVIVORS								OLD DISSOLVED OXYGEN (mg/L)						
SAMPLE	Rep	0	1	2	3	4	5	6	7	1	2	3	4	5	6	7
Lab Control	A	5	5	4	4	4	4	4	4	6.2	6.3	6.1	6.3	6.8	6.0	6.3
	B	5	5	5	5	5	5	5	5	6.0	6.3	6.1	6.2	6.8	5.8	6.3
	C	5	5	5	5	5	5	5	5	5.9	6.3	6.1	6.1	6.7	5.9	6.1
	D	5	5	5	5	5	5	5	5	6.0	6.3	6.0	6.1	6.7	5.8	6.1
	E	5	5	5	5	5	5	5	5	5.9	6.3	6.0	6.2	6.7	5.8	6.2
	F	5	5	5	5	5	5	5	5	6.0	6.3	6.0	6.2	6.6	5.8	6.2
	G	5	5	5	5	5	5	5	5	6.1	6.3	6.0	6.3	6.6	5.9	6.1
	H	5	5	5	5	5	5	5	5	6.2	6.3	6.1	6.0	6.6	5.8	6.2
-001	A	5	5	5	5	5	5	5	5	5.6	6.3	5.9	6.2	6.6	5.7	6.2
	B	5	5	5	5	5	5	5	5	5.4	6.1	5.8	6.1	6.5	5.5	6.1
	C	5	5	5	5	5	5	5	5	5.6	6.1	5.8	6.1	6.6	5.6	6.1
	D	5	5	5	5	5	5	5	5	5.5	6.1	5.7	6.1	6.6	5.7	6.1
	E	5	5	5	5	5	5	5	5	4.9	6.1	5.4	5.9	6.5	5.6	6.0
	F	5	5	5	5	5	5	5	5	5.1	6.0	5.6	5.9	6.4	5.5	5.8
	G	5	5	5	5	5	5	5	5	5.3	5.9	5.6	5.9	6.4	5.6	5.9
	H	5	5	5	5	5	5	5	5	5.5	5.9	5.6	5.9	6.4	5.7	5.8
-002	A	5	5	5	5	5	5	5	5	4.8	6.0	5.7	5.9	6.4	5.7	6.2
	B	5	5	5	5	5	5	5	5	5.7	6.0	5.6	5.9	6.3	5.4	6.0
	C	5	5	5	5	5	5	5	5	5.6	6.0	5.7	5.9	6.3	5.6	5.9
	D	5	5	5	5	5	5	5	5	5.6	6.0	5.7	5.8	6.3	5.6	5.7
	E	5	5	5	5	5	5	5	5	5.6	5.9	5.7	5.8	6.4	5.7	5.9
	F	5	5	5	5	5	5	5	5	5.7	5.6	5.6	5.8	6.3	5.4	5.9
	G	5	5	5	5	4	4	4	4	5.8	5.7	5.6	5.7	6.3	5.6	5.9
	H	5	5	5	5	5	5	5	5	5.9	5.9	5.7	5.7	6.4	5.5	5.9
INC TEMP:		26	26	26	26	26	25	26	26							
DATE:		10/4/07	10/5	10/6	10/7	10/8	10/9	10/10	10/11							
TIME:		1330	1245	0940	0920	1125	1020	1320	1120							
INITIALS:		SJ	AK	RAM	SJ	SJ	RAM	PA	RAM							

Americamysis bahia 7 DAY CHRONIC ASSAY
SURVIVAL & OLD WATER QUALITIES

STUDY: 16391	CLIENT: Battelle	LOCATION: NEW BEDFORD	LAB CONTROL: HAMPTON ESTUARY	ORGANISM BATCH/LOT#

		NUMBER OF SURVIVORS								OLD DISSOLVED OXYGEN (mg/L)						
SAMPLE	Rep	0	1	2	3	4	5	6	7	1	2	3	4	5	6	7
-003	A	5	5	5	5	5	5	5	5	5.7	5.5	5.4	5.7	6.5	5.6	5.6
	B	5	5	5	5	5	5	5	5	5.8	5.6	5.3	5.6	6.4	5.5	5.7
	C	5	5	5	5	5	5	5	5	5.7	5.7	5.3	5.6	6.6	5.5	5.6
	D	5	5	5	5	5	5	5	5	5.5	5.7	5.4	5.5	6.2	5.7	5.7
	E	5	5	5	5	5	5	5	5	5.7	5.8	5.5	5.6	6.3	5.7	5.9
	F	5	5	5	5	5	5	5	5	5.6	5.9	5.3	5.7	6.3	5.4	5.8
	G	5	5	5	5	5	5	5	5	5.7	5.8	5.4	5.7	6.3	5.5	5.8
	H	5	5	5	5	5	5	5	5	5.3	5.8	5.6	5.6	6.5	5.6	5.6
-004	A	5														
	B	5														
	C	5														
	D	5														
	E	5														
	F	5														
	G	5														
	H	5														
INC TEMP:		26		26	26	26	25	26	26							
DATE:		10/4/07		10/6	10/7	10/8	10/9	10/10	10/11							
TIME:		1330		0940	0920	1125	1020	1320	1120							
INITIALS:		SJ		RAM	SJ	SJ	RAM	PA	RAM							

F3 SJ 10/4/07

Americamysis bahia 7 DAY CHRONIC ASSAY
ORGANISM WEIGHTS

CLIENT: BATTELLE - NEW BEDFORD				TEST DATES:				
STUDY #: 16391				SPECIES: *A. bahia*				
CONC	REP	TARE WEIGHT (g)	mg SHRIMP + FOIL (g)	NET WEIGHT (mg)	# SHRIMP DAY 0	MEAN WEIGHT (mg) DAY 0	# SHRIMP DAY 7	MEAN WEIGHT (mg) DAY 7
Lab	A	0.20956	210.63					
	B	0.20876	210.53					
	C	0.21053	212.31					
	D	0.20715	209.27					
	E	0.20767	209.45					
	F	0.20701	208.97					
	G	0.20822	209.83					
	H	0.20780	209.69					
-001	A	0.20771	209.45					
	B	0.20979	211.85					
	C	0.20851	210.79					
	D	0.20908	~~211.26~~ (B)	211.12				
	E	0.20858	210.55					
	F	0.212666	214.93					
	G	0.20754	209.72					
	H	0.20927	211.33					
-002	A	0.20871	211.08					
	B	0.20768	209.76					
	C	0.20699	209.27					
	D	0.20804	210.07					
	E	0.20731	209.22					
	F	0.21024	212.45					
	G	0.20970	211.50					
	H	0.20917	211.74					
DATE		10/11/07	10/12/07					
TIME		1020	1530					
INITIALS		RAM	MAS					

Americamysis bahia 7 DAY CHRONIC ASSAY
ORGANISM WEIGHTS

CLIENT: BATTELLE - NEW BEDFORD	TEST DATES:
STUDY #: 110391	SPECIES: *A. bahia*

CONC	REP	TARE WEIGHT (g)	SHRIMP + FOIL (g)	NET WEIGHT (mg)	# SHRIMP DAY 0	MEAN WEIGHT (mg) DAY 0	# SHRIMP DAY 7	MEAN WEIGHT (mg) DAY 7
-003	A	0.20946	212.04					
	B	0.20799	211.31					
	C	0.20977	212.73					
	D	0.21031	213.21					
	E	0.20951	212.14					
	F	0.20918	212.21					
	G	0.21110	213.86					
	H	0.20807	211.08					
	A							
	B							
	C	Eval	0.03 mg. Check Blank					
	D							
	E							
	F							
	G							
	H							
	A							
	B							
	C							
	D							
	E							
	F							
	G							
	H							
DATE		10/11/07	10/12/07					
TIME		1020	1530					
INITIALS		RAM	KMB					

CETIS Test Summary

Report Date: 12 Oct-07 4:11 PM
Link: 09-2103-8475

Americamysis 7-d Survival, Growth and Fecundity Test — **EnviroSystems, Inc.**

Test No:	11-8903-7394	**Test Type:**	Growth-Survival-Fec (7d)	**Duration:**	6d 21h
Start Date:	04 Oct-07 01:30 PM	**Protocol:**	EPA/821/R-02-014 (2002)	**Species:**	Americamysis bahia
Ending Date:	11 Oct-07 11:20 AM	**Dil Water:**	Not Applicable	**Source:**	ARO - Aquatic Research Organisms, N
Setup Date:	04 Oct-07 01:30 PM	**Brine:**	Not Applicable		

Sample No:	14-3480-7020	**Material:**	Surface Water	**Client:**	Battelle Labs
Sample Date:	04 Oct-07 11:00 AM	**Code:**	13691-000	**Project:**	Ecological Risk Assessment
Receive Date:		**Source:**	New Bedford Harbor Dredge Monitorin		
Sample Age:	2h	**Station:**	WQ-TOX-Lab Control		

Sample No:	07-4978-4743	**Material:**	Surface Water	**Client:**	Battelle Labs
Sample Date:	03 Oct-07 11:00 AM	**Code:**	16391-001	**Project:**	Ecological Risk Assessment
Receive Date:	03 Oct-07 04:00 PM	**Source:**	New Bedford Harbor Dredge Monitorin		
Sample Age:	26h	**Station:**	WQ-TOX-001		

Sample No:	08-9714-4177	**Material:**	Surface Water	**Client:**	Battelle Labs
Sample Date:	03 Oct-07 11:50 AM	**Code:**	16391-002	**Project:**	Ecological Risk Assessment
Receive Date:	03 Oct-07 04:00 PM	**Source:**	New Bedford Harbor Dredge Monitorin		
Sample Age:	26h	**Station:**	WQ-TOX-002		

Sample No:	09-9353-6734	**Material:**	Surface Water	**Client:**	Battelle Labs
Sample Date:	03 Oct-07 12:28 PM	**Code:**	16391-003	**Project:**	Ecological Risk Assessment
Receive Date:	03 Oct-07 04:00 PM	**Source:**	New Bedford Harbor Dredge Monitorin		
Sample Age:	25h	**Station:**	WQ-TOX-003		

7d Proportion Survived Summary

Sample Code	Reps	Mean	Minimum	Maximum	SE	SD	CV
13691-000	8	0.97500	0.80000	1.00000	0.02500	0.07071	7.25%
16391-003	8	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
16391-002	8	0.97500	0.80000	1.00000	0.02500	0.07071	7.25%
16391-001	8	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%

Mean Dry Biomass-mg Summary

Sample Code	Reps	Mean	Minimum	Maximum	SE	SD	CV
13691-000	8	0.35200	0.21400	0.42400	0.02181	0.06169	17.53%
16391-003	8	0.41500	0.34800	0.45600	0.01242	0.03513	8.47%
16391-002	8	0.43125	0.36000	0.51400	0.01782	0.05039	11.69%
16391-001	8	0.57975	0.51600	0.66400	0.01699	0.04804	8.29%

Mean Dry Weight-mg Summary

Sample Code	Reps	Mean	Minimum	Maximum	SE	SD	CV
13691-000	8	0.35869	0.26750	0.42400	0.01602	0.04532	12.64%
16391-003	8	0.41500	0.34800	0.45600	0.01242	0.03513	8.47%
16391-002	8	0.44506	0.36000	0.55250	0.02347	0.06637	14.91%
16391-001	8	0.57975	0.51600	0.66400	0.01699	0.04804	8.29%

CETIS Test Summary

Report Date: 12 Oct-07 4:11 PM
Link: 09-2103-8475

7d Proportion Survived Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
13691-000	0.80000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
16391-003	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
16391-002	1.00000	1.00000	1.00000	1.00000	1.00000	0.80000	1.00000	1.00000
16391-001	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000

Mean Dry Biomass-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
13691-000	0.21400	0.35400	0.35600	0.42400	0.35600	0.39200	0.34200	0.37800
16391-003	0.34800	0.41200	0.45600	0.40800	0.39400	0.45400	0.43600	0.41200
16391-002	0.47400	0.41600	0.45600	0.40600	0.38200	0.44200	0.36000	0.51400
16391-001	0.51600	0.66400	0.59200	0.58000	0.52600	0.60600	0.55200	0.60200

Mean Dry Weight-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
13691-000	0.26750	0.35400	0.35600	0.42400	0.35600	0.39200	0.34200	0.37800
16391-003	0.34800	0.41200	0.45600	0.40800	0.39400	0.45400	0.43600	0.41200
16391-002	0.47400	0.41600	0.45600	0.40600	0.38200	0.55250	0.36000	0.51400
16391-001	0.51600	0.66400	0.59200	0.58000	0.52600	0.60600	0.55200	0.60200

CETIS Analysis Detail

Americamysis 7-d Survival, Growth and Fecundity Test — **EnviroSystems, Inc.**

Test No:	11-8903-7394	**Test Type:**	Growth-Survival-Fec (7d)	**Duration:**	6d 21h
Start Date:	04 Oct-07 01:30 PM	**Protocol:**	EPA/821/R-02-014 (2002)	**Species:**	Americamysis bahia
Ending Date:	11 Oct-07 11:20 AM	**Dil Water:**	Not Applicable	**Source:**	ARO - Aquatic Research Organisms, N
Setup Date:	04 Oct-07 01:30 PM	**Brine:**	Not Applicable		

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
2d Proportion Survived	Comparison	09-2103-8475	09-2103-8475	12 Oct-07 4:18 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Mann-Whitney U	C > T	Angular (Corrected)				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Modified Levene	1.00000	8.86159	0.33428	Equal Variances
Distribution	Shapiro-Wilk W	0.46890	0.84420	0.00000	Non-normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.0035442	0.0035442	1	1.00	0.33428	Non-Significant Effect
Error	0.0496194	0.0035442	14			
Total	0.05316365	0.0070885	15			

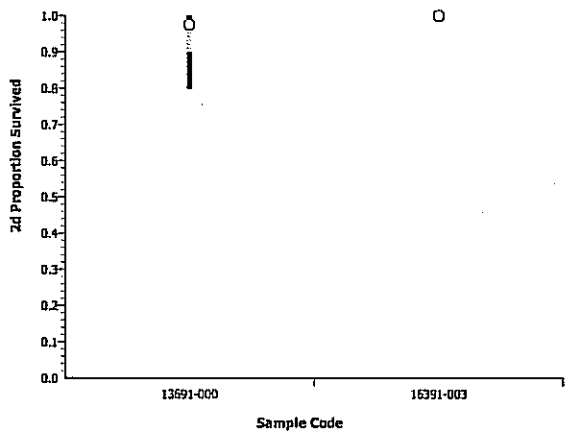
Group Comparisons

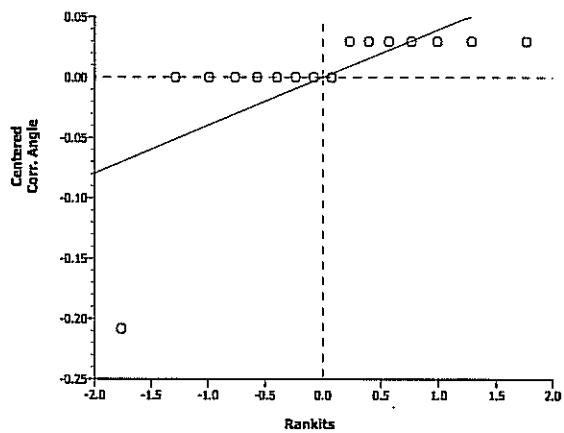
Sample	vs	Sample	Statistic	Critical	P Level	Ties	Decision(0.05)
13691-000		16391-003	28		0.6395	1	Non-Significant Effect

Data Summary

		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
13691-000	8	0.97500	0.80000	1.00000	0.07071	1.31552	1.10715	1.34528	0.08419
16391-003	8	1.00000	1.00000	1.00000	0.00000	1.34528	1.34528	1.34528	0.00019

Graphics





CETIS Analysis Detail

Americamysis 7-d Survival, Growth and Fecundity Test — **EnviroSystems, Inc.**

Test No:	11-8903-7394	**Test Type:**	Growth-Survival-Fec (7d)	**Duration:**	6d 21h
Start Date:	04 Oct-07 01:30 PM	**Protocol:**	EPA/821/R-02-014 (2002)	**Species:**	Americamysis bahia
Ending Date:	11 Oct-07 11:20 AM	**Dil Water:**	Not Applicable	**Source:**	ARO - Aquatic Research Organisms, N
Setup Date:	04 Oct-07 01:30 PM	**Brine:**	Not Applicable		

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
2d Proportion Survived	Comparison	09-2103-8475	09-2103-8475	12 Oct-07 4:18 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Mann-Whitney U	C > T	Angular (Corrected)				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Modified Levene	1.00000	8.86159	0.33428	Equal Variances
Distribution	Shapiro-Wilk W	0.46890	0.84420	0.00000	Non-normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.0035442	0.0035442	1	1.00	0.33428	Non-Significant Effect
Error	0.0496194	0.0035442	14			
Total	0.05316365	0.0070885	15			

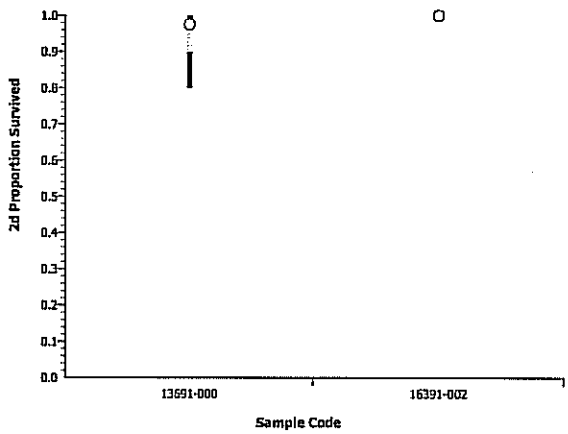
Group Comparisons

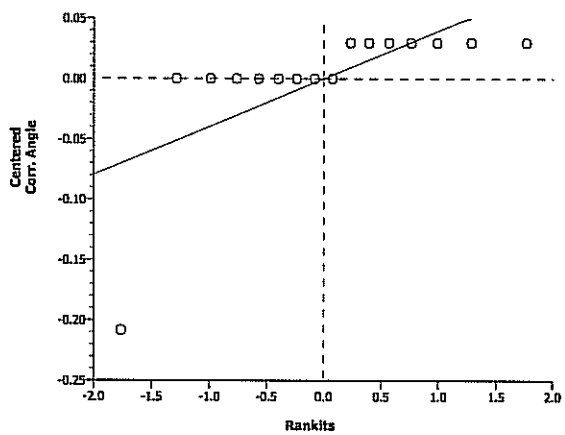
Sample	vs	Sample	Statistic	Critical	P Level	Ties	Decision(0.05)
13691-000		16391-002	28		0.6395	1	Non-Significant Effect

Data Summary

		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
13691-000	8	0.97500	0.80000	1.00000	0.07071	1.31552	1.10715	1.34528	0.08419
16391-002	8	1.00000	1.00000	1.00000	0.00000	1.34528	1.34528	1.34528	0.00019

Graphics





CETIS Analysis Detail

Americamysis 7-d Survival, Growth and Fecundity Test — **EnviroSystems, Inc.**

Test No:	11-8903-7394	**Test Type:**	Growth-Survival-Fec (7d)	**Duration:**	6d 21h
Start Date:	04 Oct-07 01:30 PM	**Protocol:**	EPA/821/R-02-014 (2002)	**Species:**	Americamysis bahia
Ending Date:	11 Oct-07 11:20 AM	**Dil Water:**	Not Applicable	**Source:**	ARO - Aquatic Research Organisms, N
Setup Date:	04 Oct-07 01:30 PM	**Brine:**	Not Applicable		

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
2d Proportion Survived	Comparison	09-2103-8475	09-2103-8475	12 Oct-07 4:18 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Mann-Whitney U	C > T	Angular (Corrected)				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Modified Levene	1.00000	8.86159	0.33428	Equal Variances
Distribution	Shapiro-Wilk W	0.46890	0.84420	0.00000	Non-normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.0035442	0.0035442	1	1.00	0.33428	Non-Significant Effect
Error	0.0496194	0.0035442	14			
Total	0.05316365	0.0070885	15			

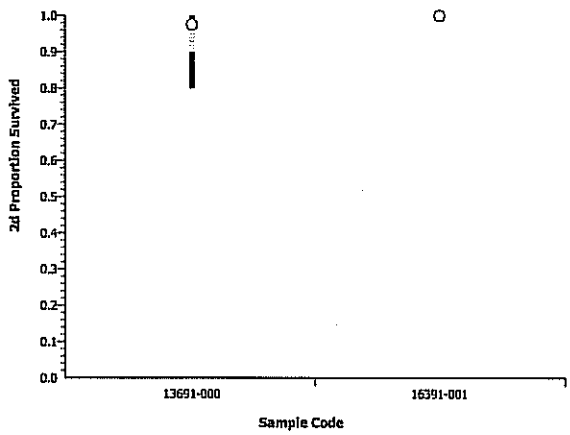
Group Comparisons

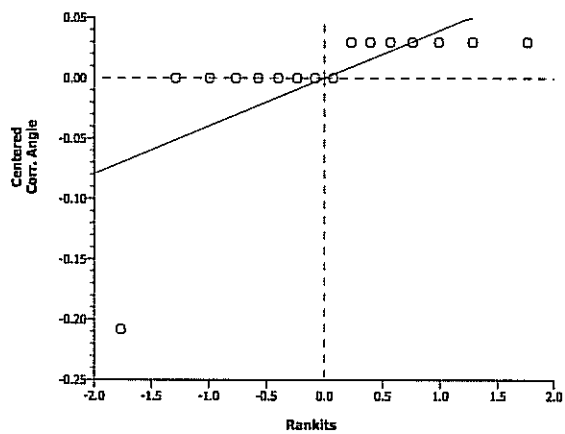
Sample	vs	Sample	Statistic	Critical	P Level	Ties	Decision(0.05)
13691-000		16391-001	28		0.6395	1	Non-Significant Effect

Data Summary

		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
13691-000	8	0.97500	0.80000	1.00000	0.07071	1.31552	1.10715	1.34528	0.08419
16391-001	8	1.00000	1.00000	1.00000	0.00000	1.34528	1.34528	1.34528	0.00019

Graphics





CETIS Analysis Detail

Americamysis 7-d Survival, Growth and Fecundity Test — **EnviroSystems, Inc.**

Test No:	11-8903-7394	**Test Type:**	Growth-Survival-Fec (7d)	**Duration:**	6d 21h
Start Date:	04 Oct-07 01:30 PM	**Protocol:**	EPA/821/R-02-014 (2002)	**Species:**	Americamysis bahia
Ending Date:	11 Oct-07 11:20 AM	**Dil Water:**	Not Applicable	**Source:**	ARO - Aquatic Research Organisms, N
Setup Date:	04 Oct-07 01:30 PM	**Brine:**	Not Applicable		

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
2d Proportion Survived	Comparison	09-2103-8475	09-2103-8475	12 Oct-07 4:18 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Mann-Whitney U	C > T	Angular (Corrected)				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Modified Levene	65535.00000	8.86159	0.00000	Unequal Variances

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0	0	1	65535.0	0.00000	Significant Effect
Error	0	0	14			
Total	0	0	15			

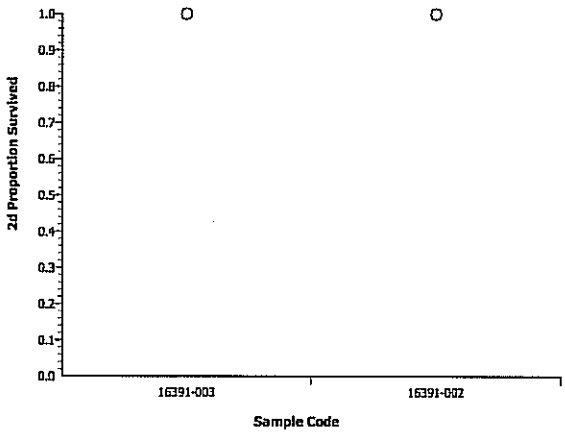
Group Comparisons

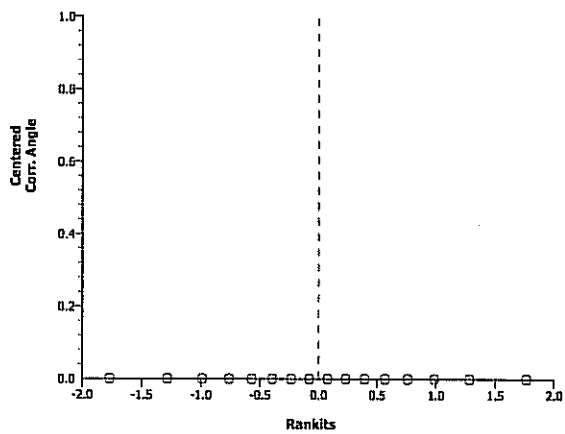
Sample	vs	Sample	Statistic	Critical	P Level	Ties	Decision(0.05)
16391-003		16391-002	32		0.4796	1	Non-Significant Effect

Data Summary

		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
16391-003	8	1.00000	1.00000	1.00000	0.00000	1.34528	1.34528	1.34528	0.00019
16391-002	8	1.00000	1.00000	1.00000	0.00000	1.34528	1.34528	1.34528	0.00019

Graphics





CETIS Analysis Detail

Americamysis 7-d Survival, Growth and Fecundity Test — **EnviroSystems, Inc.**

Test No:	11-8903-7394	**Test Type:**	Growth-Survival-Fec (7d)	**Duration:**	6d 21h
Start Date:	04 Oct-07 01:30 PM	**Protocol:**	EPA/821/R-02-014 (2002)	**Species:**	Americamysis bahia
Ending Date:	11 Oct-07 11:20 AM	**Dil Water:**	Not Applicable	**Source:**	ARO - Aquatic Research Organisms, N
Setup Date:	04 Oct-07 01:30 PM	**Brine:**	Not Applicable		

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
2d Proportion Survived	Comparison	09-2103-8475	09-2103-8475	12 Oct-07 4:18 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Mann-Whitney U	C > T	Angular (Corrected)				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Modified Levene	65535.00000	8.86159	0.00000	Unequal Variances

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0	0	1	65535.0	0.00000	Significant Effect
Error	0	0	14			
Total	0	0	15			

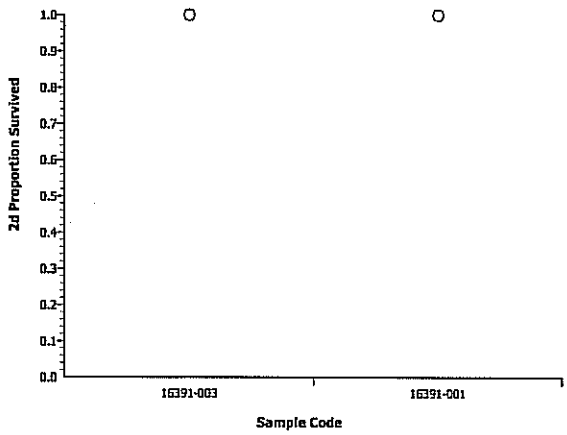
Group Comparisons

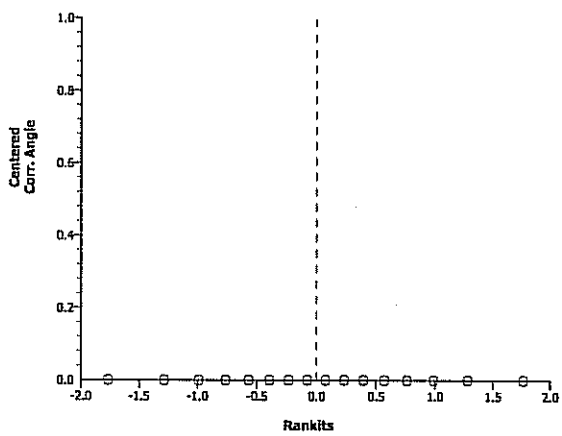
Sample	vs	Sample	Statistic	Critical	P Level	Ties	Decision(0.05)
16391-003		16391-001	32		0.4796	1	Non-Significant Effect

Data Summary

		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
16391-003	8	1.00000	1.00000	1.00000	0.00000	1.34528	1.34528	1.34528	0.00019
16391-001	8	1.00000	1.00000	1.00000	0.00000	1.34528	1.34528	1.34528	0.00019

Graphics





CETIS Analysis Detail

Americamysis 7-d Survival, Growth and Fecundity Test — **EnviroSystems, Inc.**

Test No:	11-8903-7394	**Test Type:**	Growth-Survival-Fec (7d)	**Duration:**	6d 21h
Start Date:	04 Oct-07 01:30 PM	**Protocol:**	EPA/821/R-02-014 (2002)	**Species:**	Americamysis bahia
Ending Date:	11 Oct-07 11:20 AM	**Dil Water:**	Not Applicable	**Source:**	ARO - Aquatic Research Organisms, N
Setup Date:	04 Oct-07 01:30 PM	**Brine:**	Not Applicable		

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
7d Proportion Survived	Comparison	09-2103-8475	09-2103-8475	12 Oct-07 4:04 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Mann-Whitney U	C > T	Angular (Corrected)				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Modified Levene	1.00000	8.86159	0.33428	Equal Variances
Distribution	Shapiro-Wilk W	0.46890	0.84420	0.00000	Non-normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.0035442	0.0035442	1	1.00	0.33428	Non-Significant Effect
Error	0.0496194	0.0035442	14			
Total	0.05316365	0.0070885	15			

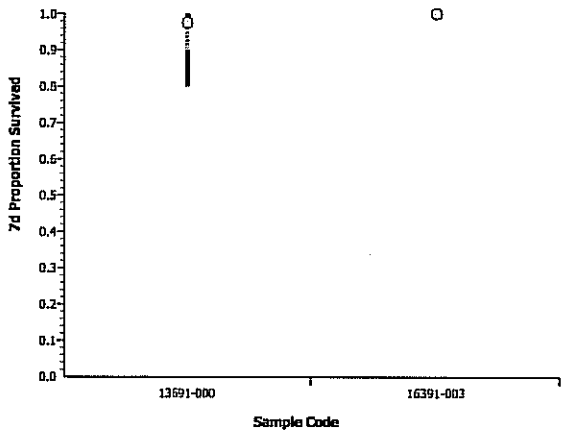
Group Comparisons

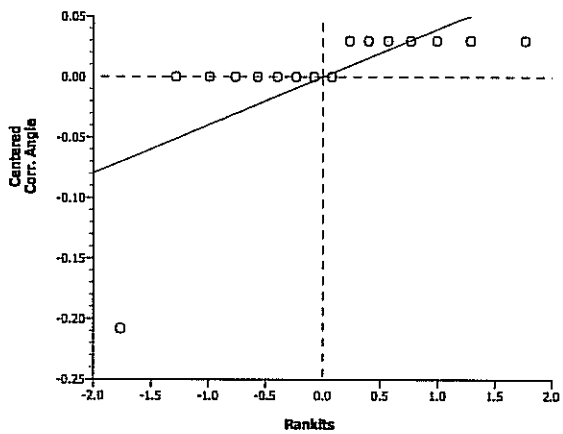
Sample	vs	Sample	Statistic	Critical	P Level	Ties	Decision(0.05)
13691-000		16391-003	28		0.6395	1	Non-Significant Effect

Data Summary

		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
13691-000	8	0.97500	0.80000	1.00000	0.07071	1.31552	1.10715	1.34528	0.08419
16391-003	8	1.00000	1.00000	1.00000	0.00000	1.34528	1.34528	1.34528	0.00019

Graphics





CETIS Analysis Detail

Americamysis 7-d Survival, Growth and Fecundity Test — **EnviroSystems, Inc.**

Test No:	11-8903-7394	**Test Type:**	Growth-Survival-Fec (7d)	**Duration:**	6d 21h
Start Date:	04 Oct-07 01:30 PM	**Protocol:**	EPA/821/R-02-014 (2002)	**Species:**	Americamysis bahia
Ending Date:	11 Oct-07 11:20 AM	**Dil Water:**	Not Applicable	**Source:**	ARO - Aquatic Research Organisms, N
Setup Date:	04 Oct-07 01:30 PM	**Brine:**	Not Applicable		

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
7d Proportion Survived	Comparison	09-2103-8475	09-2103-8475	12 Oct-07 4:04 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Mann-Whitney U	C > T	Angular (Corrected)				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	1.00000	8.88539	1.00000	Equal Variances
Distribution	Shapiro-Wilk W	0.39803	0.84420	0.00000	Non-normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0	0	1	0.00	1.00000	Non-Significant Effect
Error	0.0992388	0.0070885	14			
Total	0.09923882	0.0070885	15			

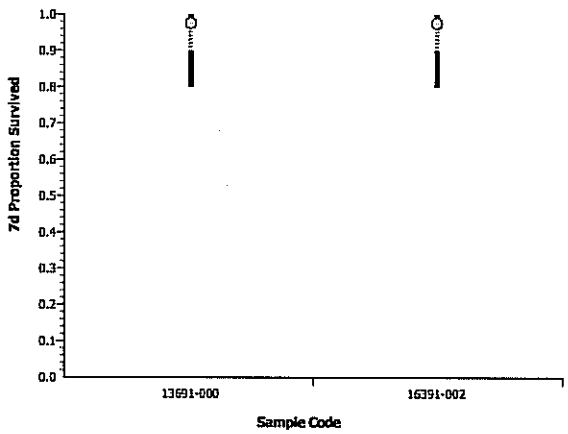
Group Comparisons

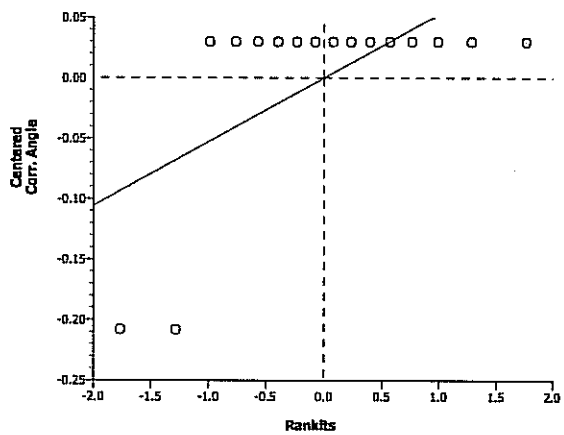
Sample	vs	Sample	Statistic	Critical	P Level	Ties	Decision(0.05)
13691-000		16391-002	32		0.4796	2	Non-Significant Effect

Data Summary

		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
13691-000	8	0.97500	0.80000	1.00000	0.07071	1.31552	1.10715	1.34528	0.08419
16391-002	8	0.97500	0.80000	1.00000	0.07071	1.31552	1.10715	1.34528	0.08419

Graphics





CETIS Analysis Detail

Americamysis 7-d Survival, Growth and Fecundity Test — **EnviroSystems, Inc.**

Test No:	11-8903-7394	**Test Type:**	Growth-Survival-Fec (7d)	**Duration:**	6d 21h
Start Date:	04 Oct-07 01:30 PM	**Protocol:**	EPA/821/R-02-014 (2002)	**Species:**	Americamysis bahia
Ending Date:	11 Oct-07 11:20 AM	**Dil Water:**	Not Applicable	**Source:**	ARO - Aquatic Research Organisms, N
Setup Date:	04 Oct-07 01:30 PM	**Brine:**	Not Applicable		

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
7d Proportion Survived	Comparison	09-2103-8475	09-2103-8475	12 Oct-07 4:04 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Mann-Whitney U	C > T	Angular (Corrected)				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Modified Levene	1.00000	8.86159	0.33428	Equal Variances
Distribution	Shapiro-Wilk W	0.46890	0.84420	0.00000	Non-normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.0035442	0.0035442	1	1.00	0.33428	Non-Significant Effect
Error	0.0496194	0.0035442	14			
Total	0.05316365	0.0070885	15			

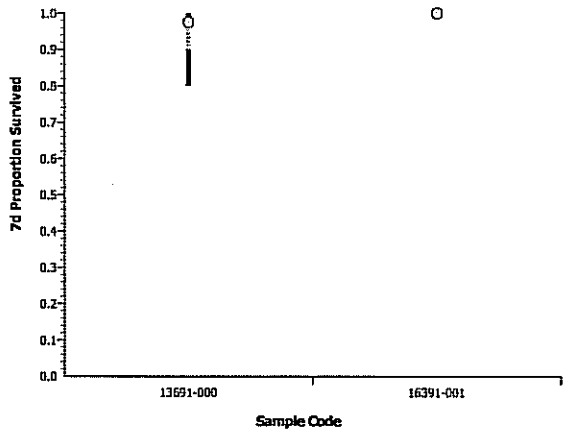
Group Comparisons

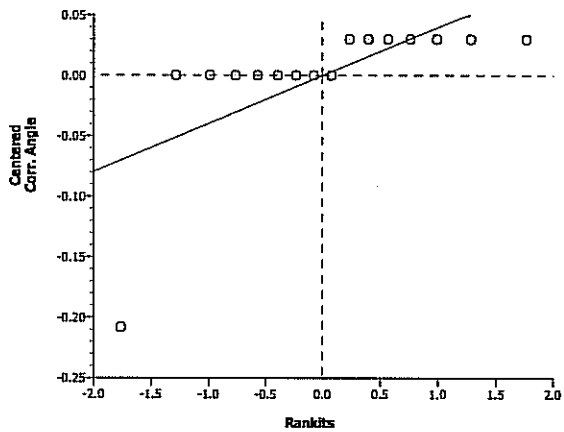
Sample	vs	Sample	Statistic	Critical	P Level	Ties	Decision(0.05)
13691-000		16391-001	28		0.6395	1	Non-Significant Effect

Data Summary

		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
13691-000	8	0.97500	0.80000	1.00000	0.07071	1.31552	1.10715	1.34528	0.08419
16391-001	8	1.00000	1.00000	1.00000	0.00000	1.34528	1.34528	1.34528	0.00019

Graphics





CETIS Analysis Detail

Americamysis 7-d Survival, Growth and Fecundity Test — **EnviroSystems, Inc.**

Test No:	11-8903-7394	**Test Type:**	Growth-Survival-Fec (7d)	**Duration:**	6d 21h
Start Date:	04 Oct-07 01:30 PM	**Protocol:**	EPA/821/R-02-014 (2002)	**Species:**	Americamysis bahia
Ending Date:	11 Oct-07 11:20 AM	**Dil Water:**	Not Applicable	**Source:**	ARO - Aquatic Research Organisms, N
Setup Date:	04 Oct-07 01:30 PM	**Brine:**	Not Applicable		

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
7d Proportion Survived	Comparison	09-2103-8475	09-2103-8475	12 Oct-07 4:04 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Mann-Whitney U	C > T	Angular (Corrected)				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Modified Levene	1.00000	8.86159	0.33428	Equal Variances
Distribution	Shapiro-Wilk W	0.46890	0.84420	0.00000	Non-normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.0035442	0.0035442	1	1.00	0.33428	Non-Significant Effect
Error	0.0496194	0.0035442	14			
Total	0.05316365	0.0070885	15			

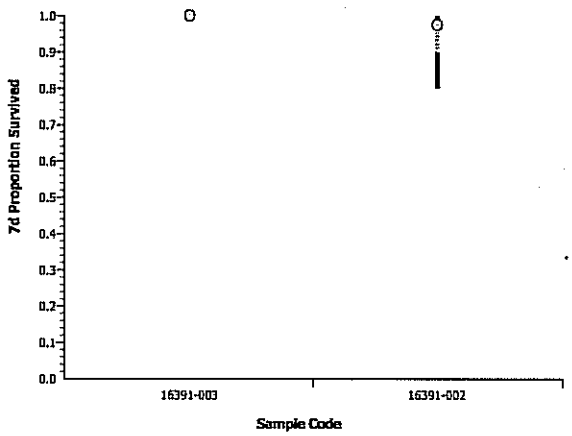
Group Comparisons

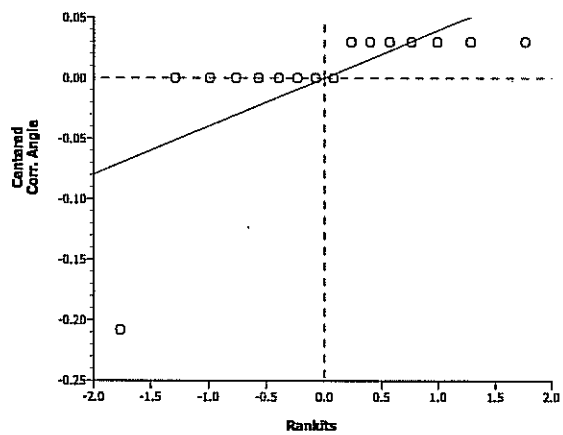
Sample	vs	Sample	Statistic	Critical	P Level	Ties	Decision(0.05)
16391-003		16391-002	36		0.3605	1	Non-Significant Effect

Data Summary

		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
16391-003	8	1.00000	1.00000	1.00000	0.00000	1.34528	1.34528	1.34528	0.00019
16391-002	8	0.97500	0.80000	1.00000	0.07071	1.31552	1.10715	1.34528	0.08419

Graphics





CETIS Analysis Detail

Americamysis 7-d Survival, Growth and Fecundity Test — **EnviroSystems, Inc.**

Test No:	11-8903-7394	**Test Type:**	Growth-Survival-Fec (7d)	**Duration:**	6d 21h
Start Date:	04 Oct-07 01:30 PM	**Protocol:**	EPA/821/R-02-014 (2002)	**Species:**	Americamysis bahia
Ending Date:	11 Oct-07 11:20 AM	**Dil Water:**	Not Applicable	**Source:**	ARO - Aquatic Research Organisms, N
Setup Date:	04 Oct-07 01:30 PM	**Brine:**	Not Applicable		

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
7d Proportion Survived	Comparison	09-2103-8475	09-2103-8475	12 Oct-07 4:04 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Mann-Whitney U	C > T	Angular (Corrected)				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Modified Levene	65535.00000	8.86159	0.00000	Unequal Variances

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0	0	1	65535.0	0.00000	Significant Effect
Error	0	0	14			
Total	0	0	15			

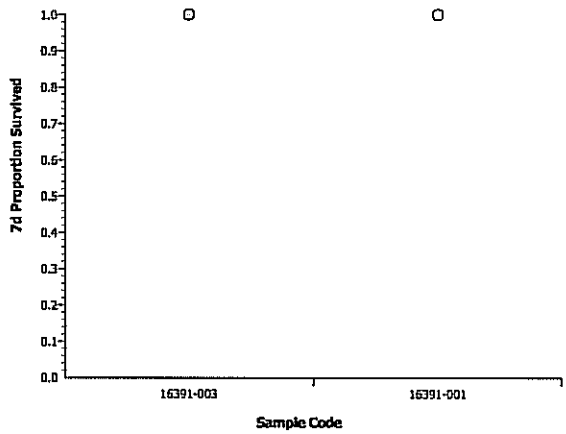
Group Comparisons

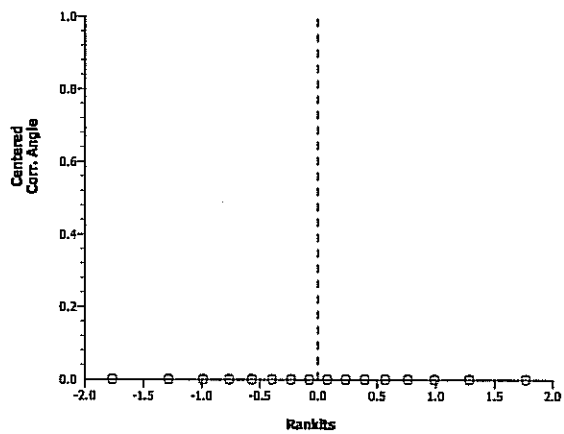
Sample	vs	Sample	Statistic	Critical	P Level	Ties	Decision(0.05)
16391-003		16391-001	32		0.4796	1	Non-Significant Effect

Data Summary

		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
16391-003	8	1.00000	1.00000	1.00000	0.00000	1.34528	1.34528	1.34528	0.00019
16391-001	8	1.00000	1.00000	1.00000	0.00000	1.34528	1.34528	1.34528	0.00019

Graphics





CETIS Analysis Detail

Americamysis 7-d Survival, Growth and Fecundity Test — **EnviroSystems, Inc.**

Test No:	11-8903-7394	**Test Type:**	Growth-Survival-Fec (7d)	**Duration:**	6d 21h
Start Date:	04 Oct-07 01:30 PM	**Protocol:**	EPA/821/R-02-014 (2002)	**Species:**	Americamysis bahia
Ending Date:	11 Oct-07 11:20 AM	**Dil Water:**	Not Applicable	**Source:**	ARO - Aquatic Research Organisms, N
Setup Date:	04 Oct-07 01:30 PM	**Brine:**	Not Applicable		

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Mean Dry Biomass-mg	Comparison	09-2103-8475	09-2103-8475	12 Oct-07 4:10 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Equal Variance t	C > T	Untransformed				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	3.08333	8.88539	0.16052	Equal Variances
Distribution	Shapiro-Wilk W	0.86042	0.84420	0.01837	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.0158760	0.0158760	1	6.30	0.02498	Significant Effect
Error	0.0352800	0.0025200	14			
Total	0.05115604	0.0183960	15			

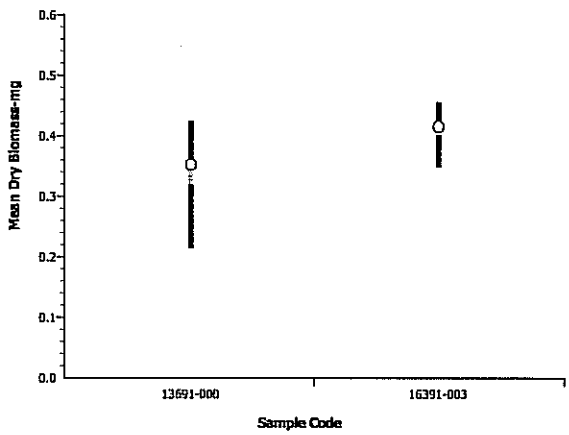
Group Comparisons

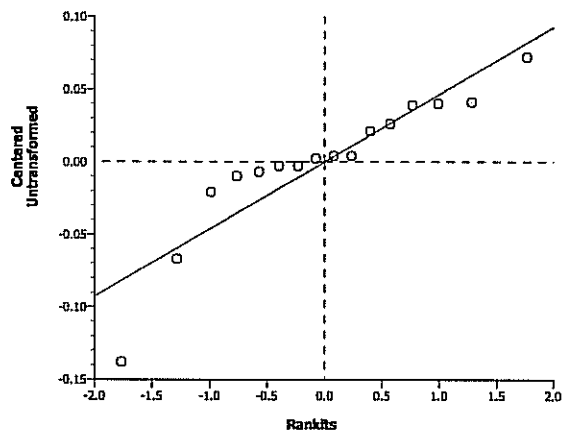
Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
13691-000		16391-003	-2.51	1.76131	0.9875	0.04421	Non-Significant Effect

Data Summary

		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
13691-000	8	0.35200	0.21400	0.42400	0.06169				
16391-003	8	0.41500	0.34800	0.45600	0.03513				

Graphics





CETIS Analysis Detail

Americamysis 7-d Survival, Growth and Fecundity Test — **EnviroSystems, Inc.**

Test No:	11-8903-7394	**Test Type:**	Growth-Survival-Fec (7d)	**Duration:**	6d 21h
Start Date:	04 Oct-07 01:30 PM	**Protocol:**	EPA/821/R-02-014 (2002)	**Species:**	Americamysis bahia
Ending Date:	11 Oct-07 11:20 AM	**Dil Water:**	Not Applicable	**Source:**	ARO - Aquatic Research Organisms, N
Setup Date:	04 Oct-07 01:30 PM	**Brine:**	Not Applicable		

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
7d Proportion Survived	Comparison	09-2103-8475	09-2103-8475	12 Oct-07 4:04 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Mann-Whitney U	C > T	Angular (Corrected)				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	1.00000	8.88539	1.00000	Equal Variances
Distribution	Shapiro-Wilk W	0.39803	0.84420	0.00000	Non-normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0	0	1	0.00	1.00000	Non-Significant Effect
Error	0.0992388	0.0070885	14			
Total	0.09923882	0.0070885	15			

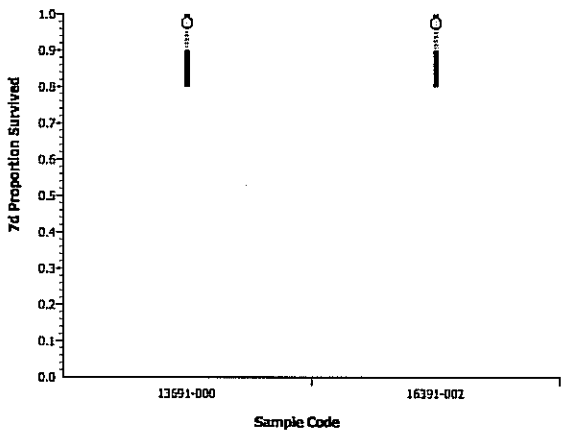
Group Comparisons

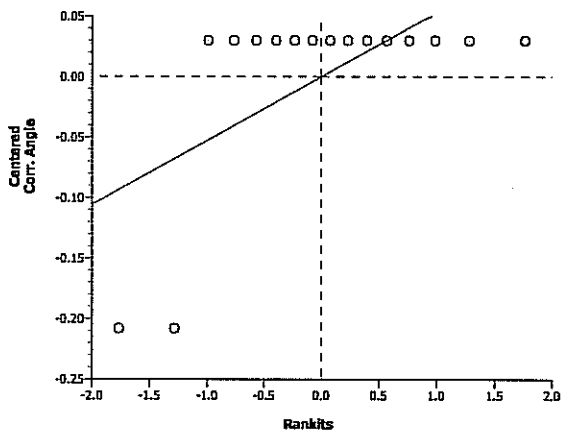
Sample	vs	Sample	Statistic	Critical	P Level	Ties	Decision(0.05)
13691-000		16391-002	32		0.4796	2	Non-Significant Effect

Data Summary

		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
13691-000	8	0.97500	0.80000	1.00000	0.07071	1.31552	1.10715	1.34528	0.08419
16391-002	8	0.97500	0.80000	1.00000	0.07071	1.31552	1.10715	1.34528	0.08419

Graphics





CETIS Analysis Detail

Americamysis 7-d Survival, Growth and Fecundity Test — **EnviroSystems, Inc.**

Test No:	11-8903-7394	**Test Type:**	Growth-Survival-Fec (7d)	**Duration:**	6d 21h
Start Date:	04 Oct-07 01:30 PM	**Protocol:**	EPA/821/R-02-014 (2002)	**Species:**	Americamysis bahia
Ending Date:	11 Oct-07 11:20 AM	**Dil Water:**	Not Applicable	**Source:**	ARO - Aquatic Research Organisms, N
Setup Date:	04 Oct-07 01:30 PM	**Brine:**	Not Applicable		

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Mean Dry Biomass-mg	Comparison	09-2103-8475	09-2103-8475	12 Oct-07 4:10 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Equal Variance t	C > T	Untransformed				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	1.64897	8.88539	0.52520	Equal Variances
Distribution	Shapiro-Wilk W	0.92688	0.84420	0.21502	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.2074802	0.2074802	1	67.87	0.00000	Significant Effect
Error	0.0427956	0.0030568	14			
Total	0.25027578	0.2105370	15			

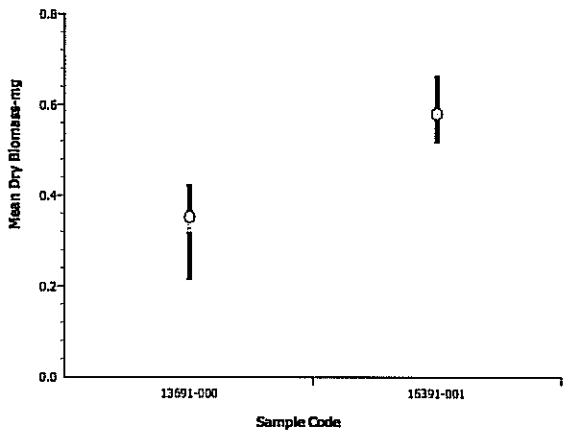
Group Comparisons

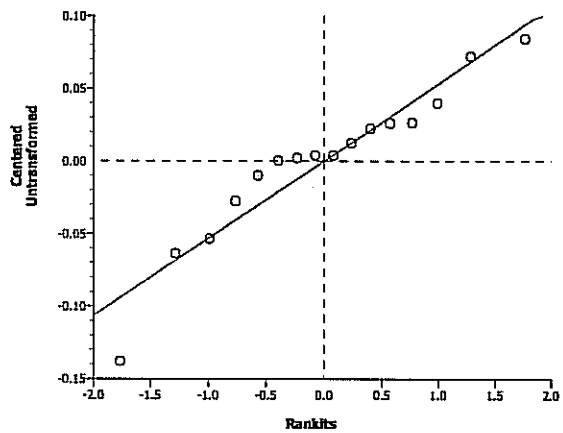
Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
13691-000		16391-001	-8.2386	1.76131	1.0000	0.04869	Non-Significant Effect

Data Summary

		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
13691-000	8	0.35200	0.21400	0.42400	0.06169				
16391-001	8	0.57975	0.51600	0.66400	0.04804				

Graphics





CETIS Analysis Detail

Americamysis 7-d Survival, Growth and Fecundity Test — **EnviroSystems, Inc.**

Test No:	11-8903-7394	**Test Type:**	Growth-Survival-Fec (7d)	**Duration:**	6d 21h
Start Date:	04 Oct-07 01:30 PM	**Protocol:**	EPA/821/R-02-014 (2002)	**Species:**	Americamysis bahia
Ending Date:	11 Oct-07 11:20 AM	**Dil Water:**	Not Applicable	**Source:**	ARO - Aquatic Research Organisms, N
Setup Date:	04 Oct-07 01:30 PM	**Brine:**	Not Applicable		

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Mean Dry Biomass-mg	Comparison	09-2103-8475	09-2103-8475	12 Oct-07 4:10 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Equal Variance t	C > T	Untransformed				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	2.05735	8.88539	0.36196	Equal Variances
Distribution	Shapiro-Wilk W	0.97515	0.84420	0.88372	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.0010563	0.0010563	1	0.56	0.46672	Non-Significant Effect
Error	0.0264155	0.0018868	14			
Total	0.02747174	0.0029431	15			

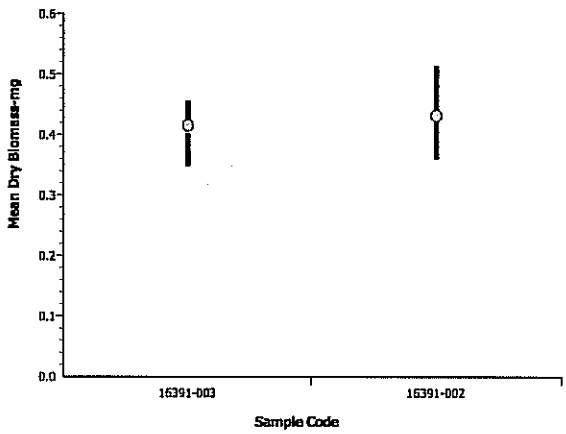
Group Comparisons

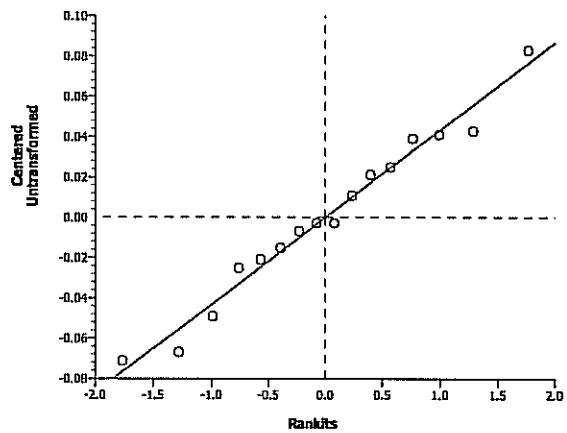
Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
16391-003		16391-002	-0.7482	1.76131	0.7666	0.03825	Non-Significant Effect

Data Summary

		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
16391-003	8	0.41500	0.34800	0.45600	0.03513				
16391-002	8	0.43125	0.36000	0.51400	0.05039				

Graphics





CETIS Analysis Detail

Americamysis 7-d Survival, Growth and Fecundity Test — **EnviroSystems, Inc.**

Test No:	11-8903-7394	**Test Type:**	Growth-Survival-Fec (7d)	**Duration:**	6d 21h
Start Date:	04 Oct-07 01:30 PM	**Protocol:**	EPA/821/R-02-014 (2002)	**Species:**	Americamysis bahia
Ending Date:	11 Oct-07 11:20 AM	**Dil Water:**	Not Applicable	**Source:**	ARO - Aquatic Research Organisms, N
Setup Date:	04 Oct-07 01:30 PM	**Brine:**	Not Applicable		

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Mean Dry Biomass-mg	Comparison	09-2103-8475	09-2103-8475	12 Oct-07 4:10 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Equal Variance t	C > T	Untransformed				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	1.86985	8.88539	0.42787	Equal Variances
Distribution	Shapiro-Wilk W	0.96678	0.84420	0.74945	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.1085702	0.1085702	1	61.30	0.00000	Significant Effect
Error	0.0247955	0.0017711	14			
Total	0.13336574	0.1103413	15			

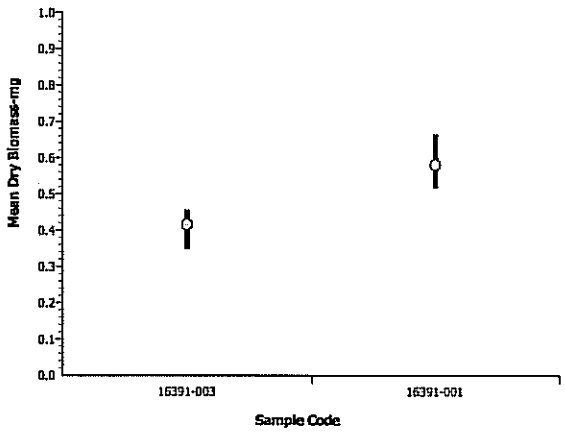
Group Comparisons

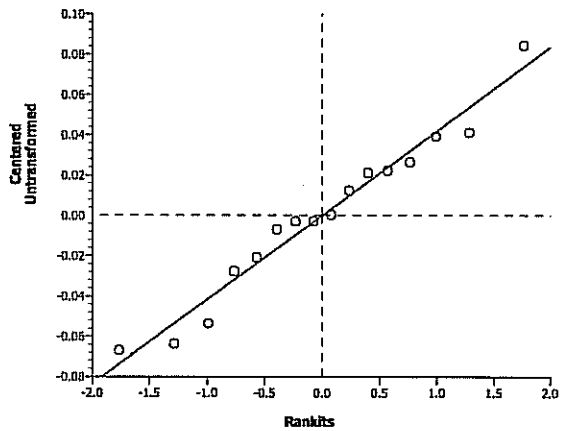
Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
16391-003		16391-001	-7.8295	1.76131	1.0000	0.03706	Non-Significant Effect

Data Summary

		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
16391-003	8	0.41500	0.34800	0.45600	0.03513				
16391-001	8	0.57975	0.51600	0.66400	0.04804				

Graphics





Aquatic Research Organisms

DATA SHEET

Rec 10/4/07

I. Organism History

Species: AMERICAMYSIS BAHIA

Source: Lab reared ✓ Hatchery reared ____ Field collected ____

Hatch date 9-27-07 Receipt date ____

Lot number 092707MS Strain ____

Brood Origination FLORIDA

II. Water Quality

Temperature 25 °C Salinity ≈30 ppt DO —

pH 7.8 Hardness — ppm

III. Culture Conditions

System: RECIRC

Diet: Flake Food ✓ Phytoplankton ____ Trout Chow ✓

Brine Shrimp ✓ Rotifers ____ Other ENCAP. SHRIMP DIET

Prophylactic Treatments: ____

Comments: ____

IV. Shipping Information

Client: EST # of Organisms: 400 +

Carrier: ____ Date Shipped: 10-4-07

Biologist: Mark Mazzuchelli

1 - 800 - 927 - 1650

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

Arbacia punctulata Chronic Fertilization Assay
Water Quality and Gamete Preparation Data

STUDY: 16391	CLIENT: BATTELLE	LOCATION: New Bedford	DATE: 10/4/07 INITIALS: LB

SALINITY ADJUSTMENT RECORD: _____ mL -001 + _____ g SALT

SALINITY ADJUSTMENT RECORD: _____ mL -002 + _____ g SALT

SALINITY ADJUSTMENT RECORD: _____ mL -003 + _____ g SALT

SALINITY ADJUSTMENT RECORD: _____ mL -004 + _____ g SALT

SALINITY ADJUSTED SAMPLE	D.O. (mg/L)	pH (SU)	SPEC COND (µmhos)	TEMP (°C)	SALINITY (ppt)
Lab Control	6.7	(8) 7.92 ~~7.52~~	38400	20	29
-001	7.1	7.52	41300	20	31
-002	7.6	7.67	41600	20	31
-003	7.5	7.72	41600	20	31
~~-004~~					

METERS USED

DO meter # 19 DO probe # 12 pH meter # 1097 pH probe # 50 S/C meter # 330i S/C probe # 330i

SALINITY meter # S/Mill-E

DATE & INITIALS FOR GAMETE PREPARATION: 10/4/07 LB

SPERM DILUTIONS:

HEMACYTOMETER COUNT, E: 110 X 10^4 = SPM SOLUTION E = 1.1×10^6

SPERM CONCENTRATIONS:

SOLUTION E X 40 = SOLUTION A = 4.4×10^7 SPM

SOLUTION E X 20 = SOLUTION B = 2.2×10^7 SPM

SOLUTION E X 5 = SOLUTION C = 5.5×10^6 SPM

FINAL COUNTS:

FINAL SPERM COUNT: 4.4×10^7

FINAL EGG COUNT: 2400

TEST TIMES:

SPERM COLLECTED: 1115

EGGS COLLECTED: 1115

SPERM ADDED: 1140

EGGS ADDED: 1245

FIXATIVE ADDED: 1315

See ESI SOP #1412 for additional information

Arbacia punctulata Chronic Fertilization Assay

SAMPLE USE RECORD

STUDY: 16391	CLIENT: Battelle - New Bedford	
SPECIES: *A. punctulata*		
	Day: 0	
SAMPLE	Volume Used (mL)	ESI Cube ID
Lab Control	100	
-001		-001
-002		-002
-003		-003
~~-004~~	~~CS~~	
INITIALS:	LB	
TIME:	1010	
DATE:	~~0881~~ 10/4/07	

FERTILIZATION COUNTS

STUDY	CLIENT BATTELLE	LOCATION New Bedford		DATE 10/4/07 INITIALS LB
	REPLICATE VIAL			
	1	2	3	4
SAMPLE	FERT/TOTAL	FERT/TOTAL	FERT/TOTAL	FERT/TOTAL
Lab Control	100/111	100/106	100/100	92/104
-001	146/151	98/109	95/102	96/108
-002	90/100	92/101	95/100	108/116
-003	101/106	100/108	99/101	96/100
~~-004~~				

CETIS Test Summary

Report Date: 04 Oct-07 4:09 PM
Link: 10-4800-1516

Arbacia Sperm Cell Fertilization Test — **EnviroSystems, Inc.**

Test No:	04-3470-1502	**Test Type:**	Fertilization	**Duration:**	95m
Start Date:	04 Oct-07 11:40 AM	**Protocol:**	EPA/821/R-02-014 (2002)	**Species:**	Arbacia punctulata
Ending Date:	04 Oct-07 01:15 PM	**Dil Water:**	Not Applicable	**Source:**	In-House Culture
Setup Date:	04 Oct-07 11:40 AM	**Brine:**	Not Applicable		

Sample No:	14-3480-7020	**Material:**	Surface Water	**Client:**	Battelle Labs
Sample Date:	04 Oct-07 11:00 AM	**Code:**	13691-000	**Project:**	Ecological Risk Assessment
Receive Date:		**Source:**	New Bedford Harbor Dredge Monitorin		
Sample Age:	40m	**Station:**	WQ-TOX-Lab Control		
Sample No:	07-4978-4743	**Material:**	Surface Water	**Client:**	Battelle Labs
Sample Date:	03 Oct-07 11:00 AM	**Code:**	16391-001	**Project:**	Ecological Risk Assessment
Receive Date:	03 Oct-07 04:00 PM	**Source:**	New Bedford Harbor Dredge Monitorin		
Sample Age:	25h	**Station:**	WQ-TOX-001		
Sample No:	08-9714-4177	**Material:**	Surface Water	**Client:**	Battelle Labs
Sample Date:	03 Oct-07 11:50 AM	**Code:**	16391-002	**Project:**	Ecological Risk Assessment
Receive Date:	03 Oct-07 04:00 PM	**Source:**	New Bedford Harbor Dredge Monitorin		
Sample Age:	24h	**Station:**	WQ-TOX-002		
Sample No:	09-9353-6734	**Material:**	Surface Water	**Client:**	Battelle Labs
Sample Date:	03 Oct-07 12:28 PM	**Code:**	16391-003	**Project:**	Ecological Risk Assessment
Receive Date:	03 Oct-07 04:00 PM	**Source:**	New Bedford Harbor Dredge Monitorin		
Sample Age:	23h	**Station:**	WQ-TOX-003		

Proportion Fertilized Summary

Sample Code	Reps	Mean	Minimum	Maximum	SE	SD	CV
13691-000	4	0.93223	0.88462	1.00000	0.02577	0.05153	5.53%
16391-003	4	0.95474	0.92593	0.98020	0.01122	0.02243	2.35%
16391-002	4	0.92298	0.90000	0.95000	0.01106	0.02213	2.40%
16391-001	4	0.94679	0.88889	1.00000	0.02385	0.04770	5.04%

Proportion Fertilized Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4
13691-000	0.90090	0.94340	1.00000	0.88462
16391-003	0.95283	0.92593	0.98020	0.96000
16391-002	0.90000	0.91089	0.95000	0.93103
16391-001	0.96689	1.00000	0.93137	0.88889

CETIS Analysis Detail

Arbacia Sperm Cell Fertilization Test — **EnviroSystems, Inc.**

Test No:	04-3470-1502	**Test Type:**	Fertilization	**Duration:**	95m
Start Date:	04 Oct-07 11:40 AM	**Protocol:**	EPA/821/R-02-014 (2002)	**Species:**	Arbacia punctulata
Ending Date:	04 Oct-07 01:15 PM	**Dil Water:**	Not Applicable	**Source:**	In-House Culture
Setup Date:	04 Oct-07 11:40 AM	**Brine:**	Not Applicable		

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Proportion Fertilized	Comparison	10-4800-1516	10-4800-1516	04 Oct-07 4:08 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Equal Variance t	C > T	Angular (Corrected)				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	5.85974	47.46723	0.18049	Equal Variances
Distribution	Shapiro-Wilk W	0.91366	0.74935	0.35640	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.0017984	0.0017984	1	0.17	0.69356	Non-Significant Effect
Error	0.0630851	0.0105142	6			
Total	0.06488351	0.0123126	7			

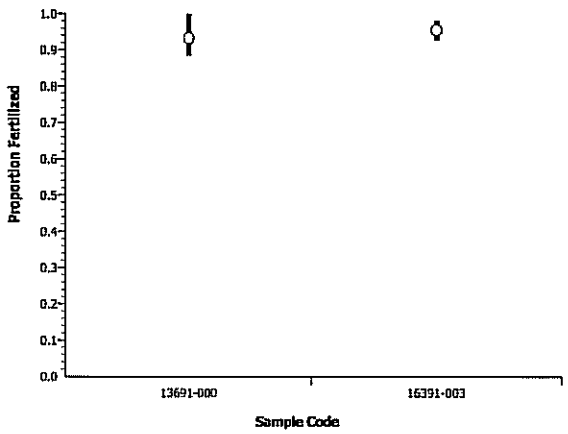
Group Comparisons

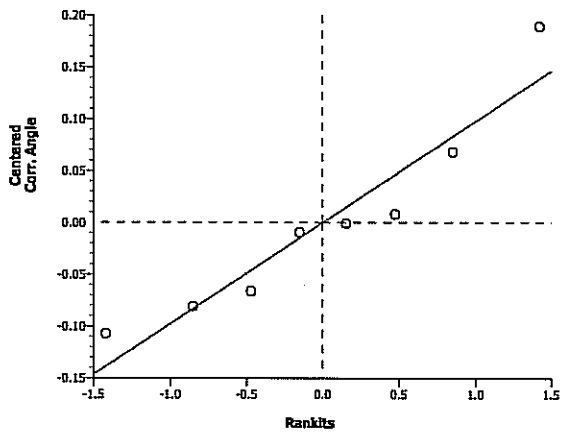
Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
13691-000		16391-003	-0.4136	1.94318	0.6532	0.14089	Non-Significant Effect

Data Summary

		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
13691-000	4	0.93223	0.88462	1.00000	0.05153	1.33153	1.22422	1.52078	0.13403
16391-003	4	0.95474	0.92593	0.98020	0.02243	1.36152	1.29515	1.42961	0.05537

Graphics





CETIS Analysis Detail

Arbacia Sperm Cell Fertilization Test — **EnviroSystems, Inc.**

Test No:	04-3470-1502	**Test Type:**	Fertilization	**Duration:**	95m
Start Date:	04 Oct-07 11:40 AM	**Protocol:**	EPA/821/R-02-014 (2002)	**Species:**	Arbacia punctulata
Ending Date:	04 Oct-07 01:15 PM	**Dil Water:**	Not Applicable	**Source:**	In-House Culture
Setup Date:	04 Oct-07 11:40 AM	**Brine:**	Not Applicable		

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Proportion Fertilized	Comparison	10-4800-1516	10-4800-1516	04 Oct-07 4:08 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Equal Variance t	C > T	Angular (Corrected)				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	9.89345	47.46723	0.09179	Equal Variances
Distribution	Shapiro-Wilk W	0.91570	0.74935	0.37043	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.0031625	0.0031625	1	0.32	0.59224	Non-Significant Effect
Error	0.0593356	0.0098893	6			
Total	0.06249808	0.0130517	7			

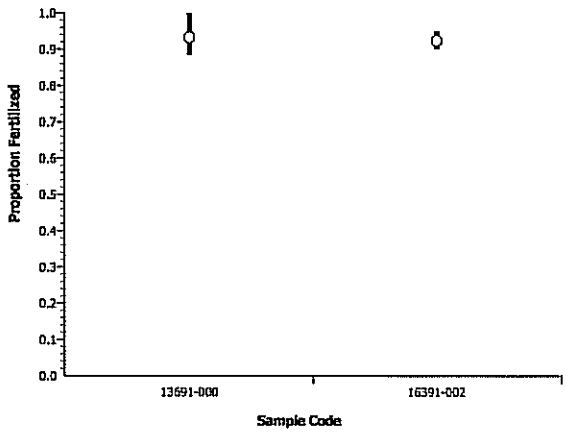
Group Comparisons

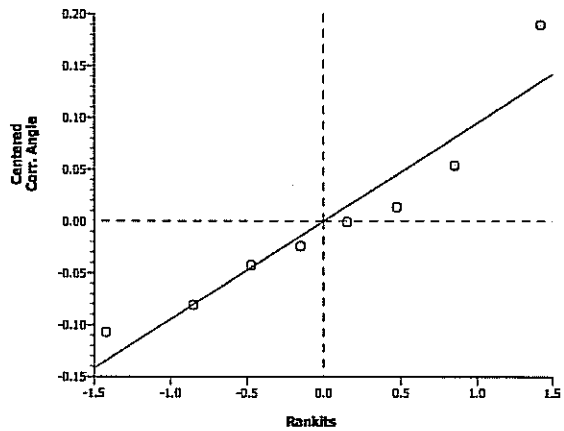
Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
13691-000		16391-002	0.5655	1.94318	0.2961	0.13664	Non-Significant Effect

Data Summary

		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
13691-000	4	0.93223	0.88462	1.00000	0.05153	1.33153	1.22422	1.52078	0.13403
16391-002	4	0.92298	0.90000	0.95000	0.02213	1.29177	1.24905	1.34528	0.04261

Graphics





CETIS Analysis Detail

Arbacia Sperm Cell Fertilization Test — **EnviroSystems, Inc.**

Test No:	04-3470-1502	**Test Type:**	Fertilization	**Duration:**	95m
Start Date:	04 Oct-07 11:40 AM	**Protocol:**	EPA/821/R-02-014 (2002)	**Species:**	Arbacia punctulata
Ending Date:	04 Oct-07 01:15 PM	**Dil Water:**	Not Applicable	**Source:**	In-House Culture
Setup Date:	04 Oct-07 11:40 AM	**Brine:**	Not Applicable		

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Proportion Fertilized	Comparison	10-4800-1516	10-4800-1516	04 Oct-07 4:09 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Equal Variance t	C > T	Angular (Corrected)				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	1.14931	47.46723	0.91162	Equal Variances
Distribution	Shapiro-Wilk W	0.89536	0.74935	0.25001	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.0018383	0.0018383	1	0.11	0.75202	Non-Significant Effect
Error	0.1007766	0.0167961	6			
Total	0.10261487	0.0186344	7			

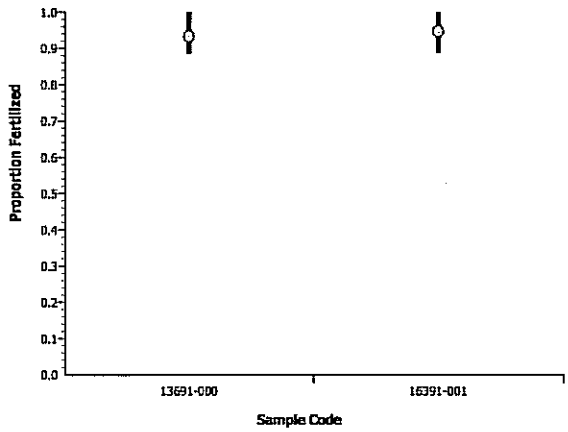
Group Comparisons

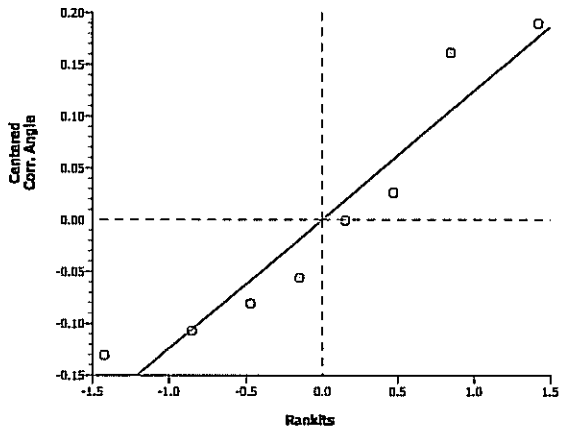
Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
13691-000		16391-001	-0.3308	1.94318	0.6240	0.17807	Non-Significant Effect

Data Summary

		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
13691-000	4	0.93223	0.88462	1.00000	0.05153	1.33153	1.22422	1.52078	0.13403
16391-001	4	0.94679	0.88889	1.00000	0.04770	1.36185	1.23096	1.52289	0.12502

Graphics





CETIS Analysis Detail

Arbacia Sperm Cell Fertilization Test — **EnviroSystems, Inc.**

Test No:	04-3470-1502	**Test Type:**	Fertilization	**Duration:**	95m
Start Date:	04 Oct-07 11:40 AM	**Protocol:**	EPA/821/R-02-014 (2002)	**Species:**	Arbacia punctulata
Ending Date:	04 Oct-07 01:15 PM	**Dil Water:**	Not Applicable	**Source:**	In-House Culture
Setup Date:	04 Oct-07 11:40 AM	**Brine:**	Not Applicable		

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Proportion Fertilized	Comparison	10-4800-1516	10-4800-1516	04 Oct-07 4:09 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Equal Variance t	C > T	Angular (Corrected)				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	1.68838	47.46723	0.67758	Equal Variances
Distribution	Shapiro-Wilk W	0.97238	0.74935	0.90329	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	0.0097305	0.0097305	1	3.99	0.09284	Non-Significant Effect
Error	0.0146433	0.0024406	6			
Total	0.02437385	0.0121711	7			

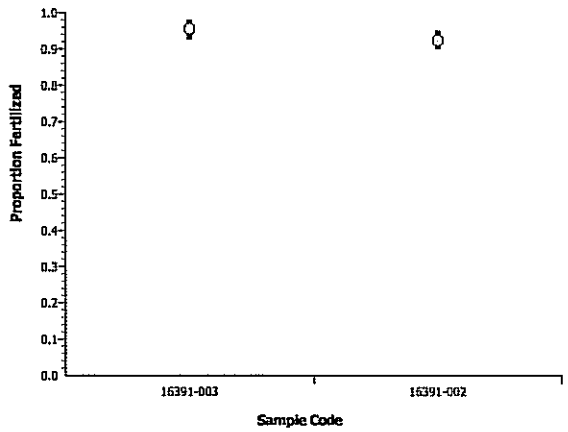
Group Comparisons

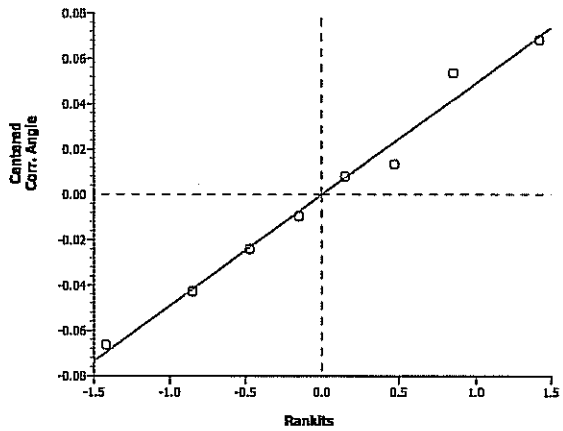
Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
16391-003		16391-002	1.99675	1.94318	0.0464	0.06788	Significant Effect

Data Summary

		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
16391-003	4	0.95474	0.92593	0.98020	0.02243	1.36152	1.29515	1.42961	0.05537
16391-002	4	0.92298	0.90000	0.95000	0.02213	1.29177	1.24905	1.34528	0.04261

Graphics





CETIS Analysis Detail

Arbacia Sperm Cell Fertilization Test — **EnviroSystems, Inc.**

Test No:	04-3470-1502	**Test Type:**	Fertilization	**Duration:**	95m
Start Date:	04 Oct-07 11:40 AM	**Protocol:**	EPA/821/R-02-014 (2002)	**Species:**	Arbacia punctulata
Ending Date:	04 Oct-07 01:15 PM	**Dil Water:**	Not Applicable	**Source:**	In-House Culture
Setup Date:	04 Oct-07 11:40 AM	**Brine:**	Not Applicable		

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Proportion Fertilized	Comparison	10-4800-1516	10-4800-1516	04 Oct-07 4:09 PM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Equal Variance t	C > T	Angular (Corrected)				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	5.09849	47.46723	0.21401	Equal Variances
Distribution	Shapiro-Wilk W	0.98055	0.74935	0.96309	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	2.190E-07	2.190E-07	1	0.00	0.99629	Non-Significant Effect
Error	0.0560843	0.0093474	6			
Total	0.05608453	0.0093476	7			

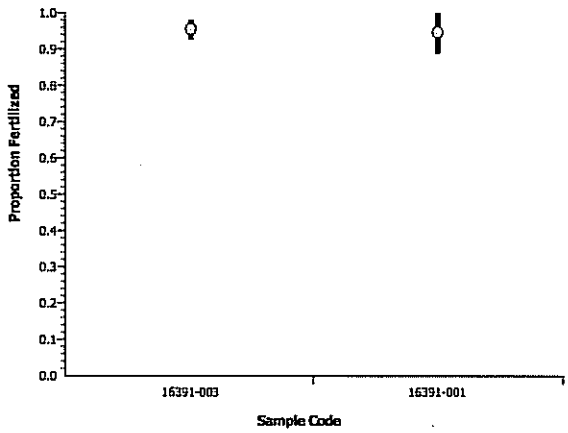
Group Comparisons

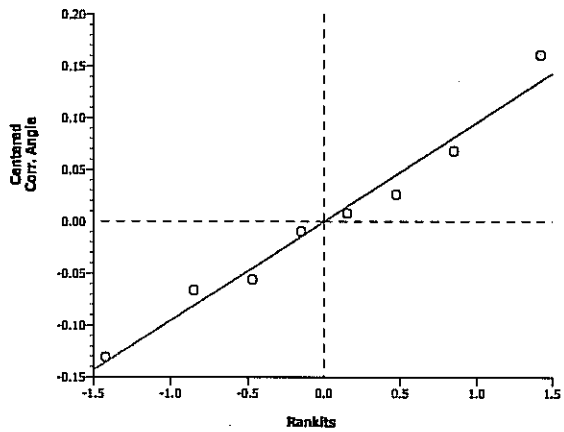
Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
16391-003		16391-001	-0.0048	1.94318	0.5019	0.13284	Non-Significant Effect

Data Summary

		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
16391-003	4	0.95474	0.92593	0.98020	0.02243	1.36152	1.29515	1.42961	0.05537
16391-001	4	0.94679	0.88889	1.00000	0.04770	1.36185	1.23096	1.52289	0.12502

Graphics





Saskatchewan Research Council
15 Innovation Boulevard, Saskatoon, SK S7N 2X8
Phone: 306-933-5469

Champia parvula Sexual Reproduction Test Quality Assurance Summary

Client	ESI Ltd.	SRC Sample #	568, 569, 570
File #	MM478	Test Initiation Date	Oct 9/07
Analyst	M. Moody	Test Completion Date	Oct 16/07
Sample Identity	001, 002, 003 (also labeled Batelle)		

Test Type: Chronic, Definitive, Single-concentration (100%)
Test Organisms Species: *Champia parvula,* sexually mature male and female branches, in good health, males having sori with spermatia, females having trichogynes.
Test Conditions (additional information on following page)
Method: EPA-821-R-02-014 Method 1009.0, (Third edition, October 2002) static, non-renewal; 2-day effluent exposure followed by 5 to 7 day recovery period in control medium for cystocarp development.
Exposure/Dilution Medium: natural seawater collected at Pacific Environmental Science Centre, North Vancouver, B.C., filtered to 0.2µm and autoclaved before use, adjusted to salinity 30 ppt. and enriched with 10 ml/L Test Nutrient Solution, Table 1 of method cited.
Recovery Medium: natural seawater (same as for exposure medium), enriched with 10 ml/L Culture Nutrient Solution (method section 16.10.1.3).
Reference Toxicant Test
Method: EPA-821-R-02-014, Method 1009.0, static, non-renewal; 2-day exposure followed by 5 to 7 day recovery period in control medium for cystocarp development. See control performance and reference toxicant charts for additional information.
Test conditions: performed under same experimental conditions as effluent sample.
Compound: sodium dodecyl sulphate mg/L

Date of test: Oct 17/07	Historic value, warning limits ±2SD
IC_{50} (95 % CL) mg/L 1.17 (1.06 - 1.24)	1.30 (1.06 - 1.61)

Quality Control Data
Control mortality: no control mortality was observed in any control solution during observation periods.
Mean number of cystocarps per plant counted in this test (must be >10 to be acceptable).

mean control cystocarps per female	16.6
% survival in Control	100

Cystocarp Counts (mean per female branch)

Control, natural seawater	16.6
001	0
002	9.7
003	11.4
Signature: M Moody	Date: Nov 1/07

Saskatchewan Research Council
15 Innovation Boulevard, Saskatoon, SK S7N 2X8
Phone: 306-933-5469

Test Data Summary

Samples SRC# 568, 569, 570

Identification/Type 001, 002, 003 (also labeled Batelle) Analyst Mary Moody

Date/Time Received Oct 9/07@ 0800 Date Shipped Oct 4/07 Temperature Upon Receipt (°C) 8 with ice packs

Test Initiation Date Oct 9/07 Test Completion Date Oct 16/07

Organism Information

Species *Champia parvula* Appearance/Health of *Champia* excellent

Source sexually mature male and female branches, obtained from USEPA, Hatfield Marine Science Center, Newport, Oregon, 1995

Females, Presence of Trichogynes yes Males, Presence of Sori with Spermatia yes

Test Conditions

Test Method EPA-821-R-02-014, Method 1009.0 Dilution/control water Natural Seawater

Test Type Chronic definitive single concentration

Test Vessels (Exposure & Recovery) 270 mL transparent polystyrene cups, transparent polystyrene lids

Exposure Volume / Depth 100 mL / 4.5 cm Recovery Volume / Depth 200 mL / 7.3 cm

Replicates/Conc. 4 No. of organisms (female/male) 5/1

Number and Concentrations of Test Solutions (%v/v) Controls: natural sea water Tests: 100

Chemicals added to control/dilution water Test Nutrients as described in method cited at 10 ml/L, analytical grade

Sample Treatment

D.O. before salinity adjustment (mg/L) see page 3 D.O. at test start (mg/L) see page 3

Aeration (duration/rate) none Filtration none pH Adjustment none

Salinity Adjustment not required, all samples were at salinity of 30 ±2 ppt

Exposure Period (48 h)

Temperature, pH, D.O. and Salinity of test solutions and controls on following page

Photoperiod (L:D h) 16:8 Agitation of tests and controls gentle rotary shaking

Recovery Period (5-7 d)

Aeration gentle aeration supplied

Recovery Medium: natural sea water containing 10 ml/L Culture Nutrients (section 16.10.1.3 of cited method)

Submitted By: MMoody **Date:** Nov 1/07

Saskatchewan Research Council
15 Innovation Boulevard, Saskatoon, SK S7N 2X8
Phone: 306-933-5469

Water Quality Data

Sample Identification 001, 002, 003 (also labeled Batelle) SRC# 568, 569, 570

INITIAL WATER QUALITY	SAMPLES at test start			TEST MEDIUM	RECOVERY MEDIUM
sample #	001	002	003		
Temperature (°C)	23	23	23	23	23
Dissolved Oxygen (mg/L)	7.8	7.8	7.8	7.8	7.8
pH	7.32	7.45	7.34	8.17	8.44
Salinity (ppt)	31	31	31	30	30
Description of sample	colorless	colorless	colorless		

Length of Recovery Period (days) 5

Water Quality Data during Exposure Period (0, 24, 48 hr)

Sample	Temperature (°C)			Dissolved Oxygen (mg/L)			pH			Salinity (ppt)		
	0	24	48	0	24	48	0	24	48	0	24	48
Control-NSW*	23	23	23	7.8	8.0	8.0	8.17	8.11	8.10	30	30	30
001	23	23	23	7.8	8.0	8.0	7.28	7.71	7.98	31	31	31
002	23	23	23	7.8	8.0	8.0	7.31	7.67	7.99	31	31	31
003	23	23	23	7.8	8.0	8.0	7.31	7.78	7.95	31	31	31

*Natural Sea Water

Appearance of branches after 48 hours exposure

Condition of female branches	Control NSW	001	002	003
description	normal*	pale and limp	normal	normal

* Branches red (no green areas), firm but flexible

Champia (female) Mortality at end of Recovery Period

Condition of female branches	Control NSW	001	002	003
# dead	0	0	0	0
% mortality	0	0	0	0
description	normal*	white with red tips	normal	normal

* Branches red (no green areas), firm but flexible

Initial/Date [illegible]
Nov 1/07

Saskatchewan Research Council
15 Innovation Boulevard, Saskatoon, SK S7N 2X8
Phone: 306-933-5469

RECOVERY PERIOD - TEMPERATURE MONITORING (initial daily entries)

Day 0	Day 1	Day 2	Day 3	Day 4	Day 5
23	23	23	23	23	23

Test Data

Sample Identification 001, 002, 003 (also labeled Batelle) Analyst Mary Moody SRC# 568, 569, 570

Champia Raw Data

Date Oct 9/07

			Cystocarps per plant					Mean	SD	Group mean and SD	Comments
	Control	NSW	18	10	22	16	23	17.8	5.2	16.6	Healthy red colour
			16	20	18	22	21	19.4	2.4	4.5	Normal growth
			11	9	17	10	15	12.4	3.4		
			22	20	15	15	11	16.6	4.4		
	SRC#	% V/V									
001	568	100	0	0	0	0	0	0.0	0.0	0.0	branches white with red tips
		100	0	0	0	0	0	0.0	0.0	0.0	
		100	0	0	0	0	0	0.0	0.0		
		100	0	0	0	0	0	0.0	0.0		
002	569	100	5	16	6	11	5	8.6	4.8	9.7	Healthy red colour
		100	5	5	6	7	10	6.6	2.1	4.4	Normal growth
		100	12	9	15	11	7	10.8	3.0		
		100	6	11	18	18	10	12.6	5.3		
003	570	100	7	7	5	11	10	8.0	2.4	11.4	Healthy red colour
		100	14	15	5	8	10	10.4	4.2	5.5	Normal growth
		100	15	14	29	15	16	17.8	6.3		
		100	12	6	6	12	11	9.4	3.1		

SD: Standard Deviation

Submitted by: M Moody Date: Nov 1/07

CETIS Test Summary

Report Date: 16 Oct-07 9:32 AM
Link: 04-5941-1906

Champia parvula Red Macroalga Sexual Reproduction Test — **Saskatchewan Research Council**

Test No:	06-7702-5981	**Test Type:**	Champia	**Duration:**	5d 0h
Start Date:	07 Oct-07 12:00 PM	**Protocol:**	EPA/600/4-91/003 (1994)	**Species:**	Champia parvula
Ending Date:	12 Oct-07 12:00 PM	**Dil Water:**	Not Applicable	**Source:**	In-House Culture
Setup Date:	07 Oct-07 12:00 PM	**Brine:**	Not Applicable		

Sample No:	14-3480-7020	**Material:**	Surface Water	**Client:**	Battelle Labs
Sample Date:	04 Oct-07 11:00 AM	**Code:**	13691-000	**Project:**	Ecological Risk Assessment
Receive Date:		**Source:**	New Bedford Harbor Dredge Monitorin		
Sample Age:	73h	**Station:**	WQ-TOX-Lab Control		
Sample No:	07-4978-4743	**Material:**	Surface Water	**Client:**	Battelle Labs
Sample Date:	03 Oct-07 11:00 AM	**Code:**	16391-001	**Project:**	Ecological Risk Assessment
Receive Date:	03 Oct-07 04:00 PM	**Source:**	New Bedford Harbor Dredge Monitorin		
Sample Age:	4d 1h	**Station:**	WQ-TOX-001		
Sample No:	08-9714-4177	**Material:**	Surface Water	**Client:**	Battelle Labs
Sample Date:	03 Oct-07 11:50 AM	**Code:**	16391-002	**Project:**	Ecological Risk Assessment
Receive Date:	03 Oct-07 04:00 PM	**Source:**	New Bedford Harbor Dredge Monitorin		
Sample Age:	4d 0h	**Station:**	WQ-TOX-002		
Sample No:	09-9353-6734	**Material:**	Surface Water	**Client:**	Battelle Labs
Sample Date:	03 Oct-07 12:28 PM	**Code:**	16391-003	**Project:**	Ecological Risk Assessment
Receive Date:	03 Oct-07 04:00 PM	**Source:**	New Bedford Harbor Dredge Monitorin		
Sample Age:	96h	**Station:**	WQ-TOX-003		

Mean Cystocarps Summary

Sample Code	Reps	Mean	Minimum	Maximum	SE	SD	CV
13691-000	4	16.55	12.4	19.4	1.4975	2.995	18.10%
16391-003	4	11.4	8	17.8	2.18937	4.37874	38.41%
16391-002	4	9.65	6.6	12.6	1.3048	2.6096	27.04%
16391-001	4	0	0	0	0	0	0.00%

Mean Cystocarps Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4
13691-000	17.8	19.4	12.4	16.6
16391-003	8	10.4	17.8	9.4
16391-002	8.6	6.6	10.8	12.6
16391-001	0	0	0	0

CETIS Analysis Detail

Champia parvula Red Macroalga Sexual Reproduction Test — **Saskatchewan Research Council**

Test No:	06-7702-5981	**Test Type:**	Champia	**Duration:**	5d 0h
Start Date:	07 Oct-07 12:00 PM	**Protocol:**	EPA/600/4-91/003 (1994)	**Species:**	Champia parvula
Ending Date:	12 Oct-07 12:00 PM	**Dil Water:**	Not Applicable	**Source:**	In-House Culture
Setup Date:	07 Oct-07 12:00 PM	**Brine:**	Not Applicable		

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Mean Cystocarps	Comparison	04-5941-1906	04-5941-1906	16 Oct-07 9:31 AM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Equal Variance t	C > T	Untransformed				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	2.13750	47.46723	0.54871	Equal Variances
Distribution	Shapiro-Wilk W	0.95676	0.74935	0.74701	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	53.045	53.045	1	3.77	0.10023	Non-Significant Effect
Error	84.43	14.07167	6			
Total	137.474998	67.116665	7			

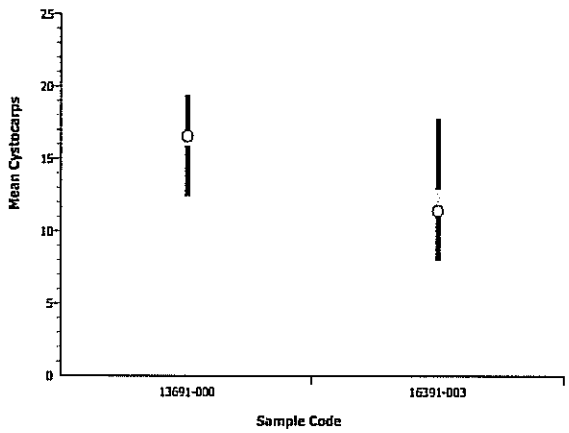
Group Comparisons

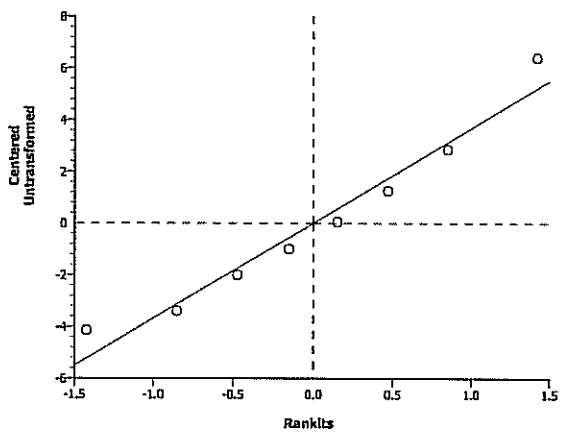
Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
13691-000		16391-003	1.94155	1.94318	0.0501	5.15431	Non-Significant Effect

Data Summary

		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
13691-000	4	16.55	12.4	19.4	2.99499				
16391-003	4	11.4	8	17.8	4.37874				

Graphics





CETIS Analysis Detail

Champia parvula Red Macroalga Sexual Reproduction Test — **Saskatchewan Research Council**

Test No:	06-7702-5981	**Test Type:**	Champia	**Duration:**	5d 0h
Start Date:	07 Oct-07 12:00 PM	**Protocol:**	EPA/600/4-91/003 (1994)	**Species:**	Champia parvula
Ending Date:	12 Oct-07 12:00 PM	**Dil Water:**	Not Applicable	**Source:**	In-House Culture
Setup Date:	07 Oct-07 12:00 PM	**Brine:**	Not Applicable		

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Mean Cystocarps	Comparison	04-5941-1906	04-5941-1906	16 Oct-07 9:31 AM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Equal Variance t	C > T	Untransformed				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	1.31718	47.46723	0.82626	Equal Variances
Distribution	Shapiro-Wilk W	0.92749	0.74935	0.46075	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	95.22	95.22	1	12.07	0.01324	Significant Effect
Error	47.34	7.89	6			
Total	142.560001	103.11000	7			

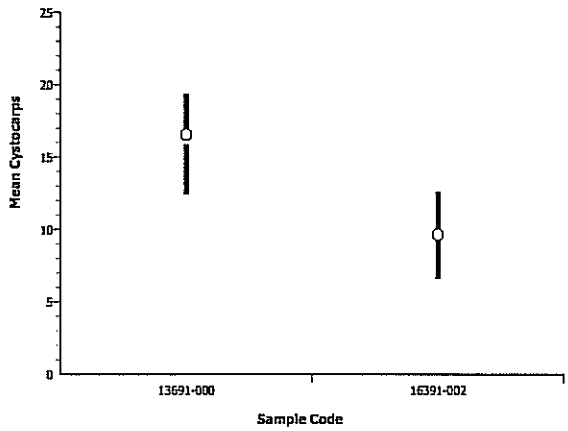
Group Comparisons

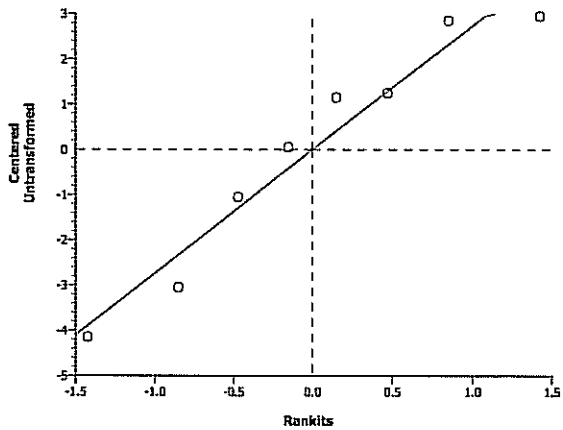
Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
13691-000		16391-002	3.47397	1.94318	0.0066	3.85955	Significant Effect

Data Summary

		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
13691-000	4	16.55	12.4	19.4	2.99499				
16391-002	4	9.65000	6.6	12.6	2.6096				

Graphics





CETIS Analysis Detail

Champia parvula Red Macroalga Sexual Reproduction Test — **Saskatchewan Research Council**

Test No:	06-7702-5981	**Test Type:**	Champia	**Duration:**	5d 0h
Start Date:	07 Oct-07 12:00 PM	**Protocol:**	EPA/600/4-91/003 (1994)	**Species:**	Champia parvula
Ending Date:	12 Oct-07 12:00 PM	**Dil Water:**	Not Applicable	**Source:**	In-House Culture
Setup Date:	07 Oct-07 12:00 PM	**Brine:**	Not Applicable		

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Mean Cystocarps	Comparison	04-5941-1906	04-5941-1906	16 Oct-07 9:31 AM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Equal Variance t	C > T	Untransformed				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Modified Levene	4.27735	13.74502	0.08410	Equal Variances
Distribution	Shapiro-Wilk W	0.80027	0.74935	0.03342	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	547.805	547.805	1	122.14	0.00003	Significant Effect
Error	26.91	4.485	6			
Total	574.714993	552.28999	7			

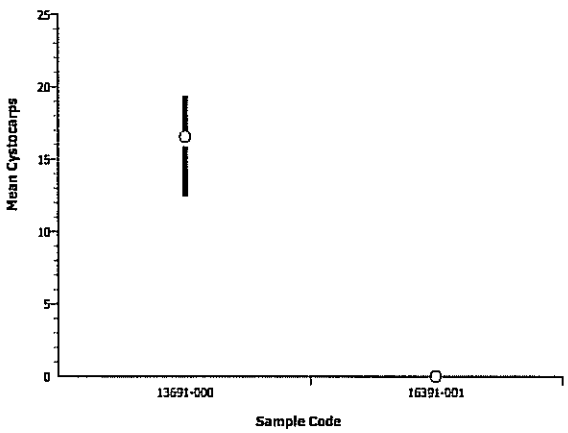
Group Comparisons

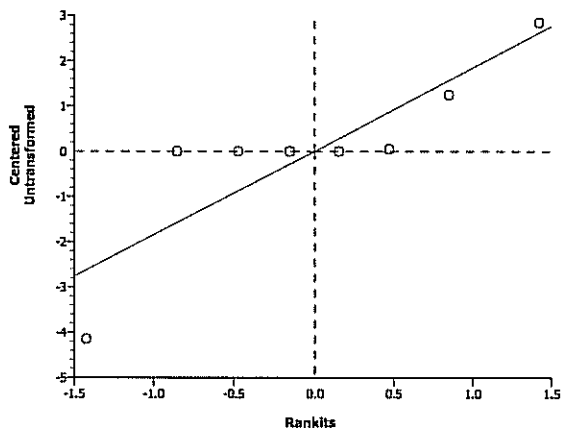
Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
13691-000		16391-001	11.0518	1.94318	0.0000	2.90991	Significant Effect

Data Summary

		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
13691-000	4	16.55	12.4	19.4	2.99499				
16391-001	4	0	0	0	0				

Graphics





CETIS Analysis Detail

Champia parvula Red Macroalga Sexual Reproduction Test — **Saskatchewan Research Council**

Test No:	06-7702-5981	**Test Type:**	Champia	**Duration:**	5d 0h
Start Date:	07 Oct-07 12:00 PM	**Protocol:**	EPA/600/4-91/003 (1994)	**Species:**	Champia parvula
Ending Date:	12 Oct-07 12:00 PM	**Dil Water:**	Not Applicable	**Source:**	In-House Culture
Setup Date:	07 Oct-07 12:00 PM	**Brine:**	Not Applicable		

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Mean Cystocarps	Comparison	04-5941-1906	04-5941-1906	16 Oct-07 9:31 AM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Equal Variance t	C > T	Untransformed				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Variance Ratio	2.81547	47.46723	0.41788	Equal Variances
Distribution	Shapiro-Wilk W	0.90115	0.74935	0.28010	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	6.125	6.125	1	0.47	0.51796	Non-Significant Effect
Error	77.95	12.99167	6			
Total	84.0749969	19.116667	7			

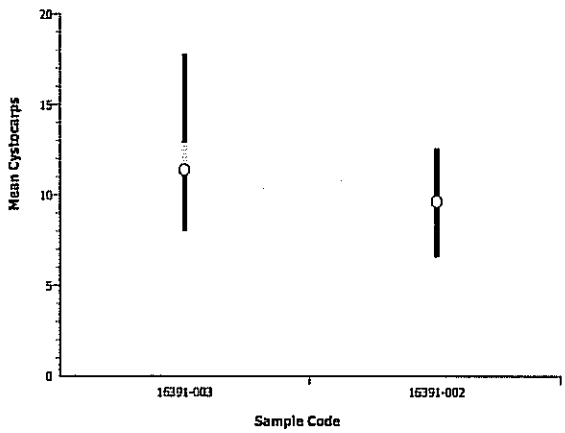
Group Comparisons

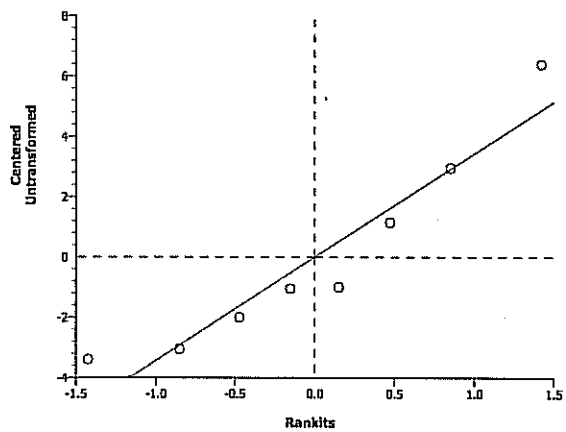
Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
16391-003		16391-002	0.68663	1.94318	0.2590	4.95257	Non-Significant Effect

Data Summary

		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
16391-003	4	11.4	8	17.8	4.37874				
16391-002	4	9.65000	6.6	12.6	2.6096				

Graphics





CETIS Analysis Detail

Champia parvula Red Macroalga Sexual Reproduction Test — **Saskatchewan Research Council**

Test No:	06-7702-5981	**Test Type:**	Champia	**Duration:**	5d 0h
Start Date:	07 Oct-07 12:00 PM	**Protocol:**	EPA/600/4-91/003 (1994)	**Species:**	Champia parvula
Ending Date:	12 Oct-07 12:00 PM	**Dil Water:**	Not Applicable	**Source:**	In-House Culture
Setup Date:	07 Oct-07 12:00 PM	**Brine:**	Not Applicable		

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Mean Cystocarps	Comparison	04-5941-1906	04-5941-1906	16 Oct-07 9:31 AM	CETISv1.026

Method	Alt H	Data Transform	Z	NOEL	LOEL	Toxic Units	ChV	MSDp
Equal Variance t	C > T	Untransformed				N/A		

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P Level	Decision(0.01)
Variances	Modified Levene	2.34154	13.74502	0.17684	Equal Variances
Distribution	Shapiro-Wilk W	0.78932	0.74935	0.02602	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P Level	Decision(0.05)
Between	259.92	259.92	1	27.11	0.00200	Significant Effect
Error	57.52	9.586667	6			
Total	317.440014	269.50668	7			

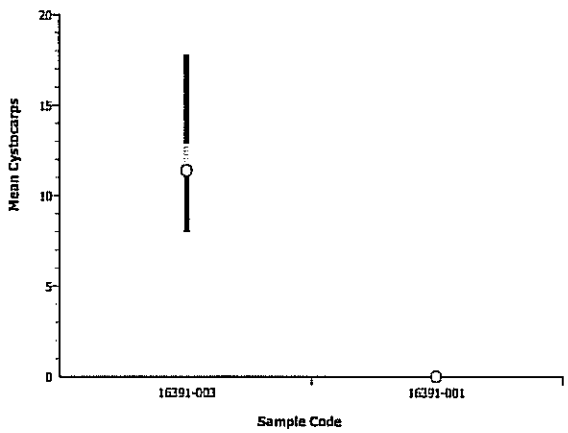
Group Comparisons

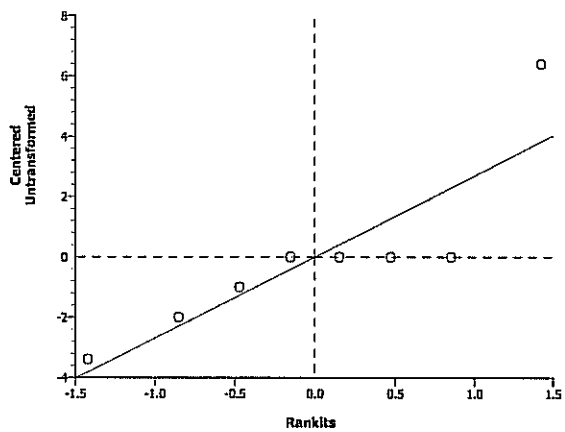
Sample	vs	Sample	Statistic	Critical	P Level	MSD	Decision(0.05)
16391-003		16391-001	5.20698	1.94318	0.0010	4.25434	Significant Effect

Data Summary

		Original Data				Transformed Data			
Sample Code	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
16391-003	4	11.4	8	17.8	4.37874				
16391-001	4	0	0	0	0				

Graphics





SALTWATER ASSAYS

A. bahia, A. punctulata, C. parvula

STUDY: 16391	LOCATION: New Bedford Harbor				
CHEMISTRY	Lab Salt Control	-001	-002	-003	-004
AMMONIA	- 007	- 004	- 005	- 006	
AS RECEIVED WATER QUALITIES	Lab Salt Control	-001	-002	~~(ref.)~~ (E3) RAM 01/14/07 -003	-004
SALINITY (ppt)	31	31	30	31	
pH (SU)	8.00	7.51	7.66	7.72	
TRC (mg/L)	<0.05	<0.05	<0.05	<0.05	
DO (mg/L)	6.6	6.5	6.8	6.8	
S/C (µmhos/cm)	43500	41300	41200	41200	
WQ STATION USED	2	2	2	2	
INITIALS	RAM	RAM	RAM	RAM	
A. bahia SALINITY ADJUSTMENT RECORD	Lab Salt Control	-001	-002	-003	-004
SAMPLE (mLs)					
SEA SALT (g)					
DATE:					
TIME:					
INITIALS:					

Sample ID	ESI Cube ID
-001	-001
-002	-002
-003	-003
-004	-004

Americamysis bahia 7 DAY CHRONIC ASSAY
NEW WATER QUALITIES

STUDY: 16391	CLIENT: BATTELLE	LOCATION: NEW BEDFORD	LAB CONTROL: HAMPTON ESTUARY

		NEW DISSOLVED OXYGEN (mg/L)							NEW SALINITY (ppt)						
CONC	REP	0	1	2	3	4	5	6	0	1	2	3	4	5	6
LAB	A	6.7	5.5	6.7	6.5	6.9	6.6	6.7	29	29	30	29	29	31	31
-001	A	7.0	5.2	6.2	6.6	6.7	6.2	6.3	31	30	30	29	29	30	30
-002	A	7.5	5.2	6.2	6.5	6.7	6.3	6.4	30	30	30	29	29	30	29
-003	A	7.5	5.0	6.4	6.4	6.6	6.3	6.2	30	30	30	29	29	30	29
~~-004~~	~~A~~														

		NEW pH (SU)							NEW TEMPERATURE (°C)						
CONC	REP	0	1	2	3	4	5	6	0	1	2	3	4	5	6
LAB	A	7.85	7.82	7.86	7.82	8.02	7.92	7.94	25	25	26	26	26	26	26
-001	A	7.58	7.48	7.51	7.65	7.62	7.52	7.49	25	25	26	26	26	26	26
-002	A	7.69	7.59	7.60	7.60	7.67	7.58	7.57	25	25	26	26	26	26	26
-003	A	7.73	7.57	7.52	7.50	7.62	7.46	7.52	25	25	26	26	26	26	26
~~-004~~	~~A~~														
INC TEMP:		26	26	26	26	26	26	26							
DATE:		10/4/07	10/5/07	10/6	10/7	10/8	10/9	10/10							
TIME:		1030	1310	0955	0945	1140	1035	1355							
INIT:		RAM	AK	RAM	SJ	SJ	RAM	PA							

WATER QUALITY METERS USED NEW WATER QUALITIES								
	0	1	2	3	4	5	6	7
Water Quality Station #		1	1	1	1	1	1	
Initials		AK	RAM	SJ	SJ	RAM	PA	
Date	10/4/07	10/5/07	10/6	10/7	10/8	10/9	10/10	

Americamysis bahia 7 DAY CHRONIC ASSAY
OLD WATER QUALITIES

STUDY: 16391	CLIENT: BATTELLE	LOCATION: NEW BEDFORD	LAB CONTROL: HAMPTON ESTUARY

OLD SALINITY (ppt)									OLD pH (SU)						
Conc	Rep	1	2	3	4	5	6	7	1	2	3	4	5	6	7
Control	A	25	30	29	29	28	31	31	7.97	7.78	7.90	7.87	7.80	7.91	7.88
-001	A	27	30	29	29	28	30	30	7.81	7.64	7.80	7.80	7.66	7.90	7.73
-002	A	27	30	29	29	31	30	30	7.85	7.70	7.79	7.79	7.71	7.88	7.74
-003	A	27	30	29	29	31	30	30	7.86	7.64	7.75	7.76	7.73	7.79	7.77
~~-004~~	~~A~~														

OLD TEMPERATURE (°C)								
Conc	Rep	1	2	3	4	5	6	7
Control	A	25	26	26	26	25	26	26
-001	A	26	26	26	26	25	26	26
-002	A	26	26	26	26	25	26	26
-003	A	26	26	26	26	25	26	26
~~-004~~	~~A~~							
INC TEMP:		26	26	26	26	25	26	26
DATE:		10/5	10/6	10/7	10/8	10/9	10/10	10/11
TIME:		1230	0925	0920	1100	1000	1305	1110
INITIALS:		AK	RAM	SJ	SJ	RAM	PA	RAM

GENERAL NOTES - for additional information refer to SOP #1411 or EPA manual 600/4-91/003

- Test vessels will be 250 mL glass beakers containing a minimum of 150 mL of solution
- 8 replicates per site with 5 organisms each

- Test Temperature: 26±1°C
- Salinity: 25 ±2ppt
- Dissolved Oxygen: >4.3 mg/L

- Photoperiod will be 16 hours light and 8 hours dark.
- Passing criteria require ≥80% survival and average dry weight of ≥0.20 mg/organism in the control vessels.

WATER QUALITY METERS USED OLD WATER QUALITIES								
	0	1	2	3	4	5	6	7
Water Quality Station #		1	1	1	1	2	1	1
Initials		AK	RAM	SJ	SJ	RAM	PA	RAM
Date	10/4/07	10/5/07	10/6	10/7	10/8	10/9	10/10	10/11

Americamysis bahia 7 DAY CHRONIC ASSAY
SAMPLE USE RECORD

STUDY: 16391 | CLIENT: BATTELLE - New Bedford

SPECIES: *A. bahia* | TEST: chronic renewal

Sample	Day: 0 Volume Used (mL)	Day: 0 ESI Cube ID	Day: 1 Volume Used (mL)	Day: 1 ESI Cube ID	Day: 2 Volume Used (mL)	Day: 2 ESI Cube ID	Day	Date	Time	Init
Lab Control	1,200	n/a	800	n/a	800	n/a	0	10/4/07	1000	RAM
-001	↓	-001	↓	-001	↓	-001	1	10/5	1300	AK
-002	↓	-002	↓	-002	↓	-002	2	10/6	0950	RAM
-003	↓	-003	↓	-003	↓	-003	3	10/7	0940	SJ
~~-004~~	↓		↓				4	10/8	1130	SJ
							5	10/9	1030	RAM
							6	10/10	1325	PA

Sample	Day: 3 Volume Used (mL)	Day: 3 ESI Cube ID	Day: 4 Volume Used (mL)	Day: 4 ESI Cube ID	Day: 5 Volume Used (mL)	Day: 5 ESI Cube ID
Lab Control	800	n/a	800	n/a	800	n/a
-001	↓	-001	↓	-001	↓	-001
-002	↓	-002	↓	-002	↓	-002
-003	↓	-003	↓	-003	↓	-003
~~-004~~						

Sample	Day: 6 Volume Used (mL)	Day: 6 ESI Cube ID
Lab Control	800	n/a
-001	↓	-001
-002	↓	-002
-003	↓	-003
~~-004~~		

ESI

EnviroSystems, Inc.
One Lafayette Road
P.O. Box 778
Hampton, NH 03843-0778
Telephone: 603-926-3345

SAMPLE RECEIPT RECORD

ESI STUDY NUMBER: 16150 **CLIENT:** Batelle

SAMPLE RECEIPT:
DATE: 8/9/07 TIME: 1455 BY: SJ

DELIVERED VIA: ☐ FEDEX ☐ CLIENT ☒ ESI ☐ UPS ☐ OTHER

LOGGED INTO LAB:
DATE: 8/9/07 TIME: 1455 BY: SJ

SAMPLE CONDITION:

CHAIN OF CUSTODY:	☒ YES	☐ NO
CHAIN OF CUSTODY SIGNED:	☒ YES	☐ NO
CHAIN OF CUSTODY COMPLETE:	☒ YES	☐ NO
SAMPLE DATE:	☒ YES	☐ NO
SAMPLE TIME RECORDED:	☒ YES	☐ NO
SAMPLE TYPE IDENTIFIED:	☒ YES	☐ NO
CUSTODY SEAL IN PLACE:	☒ YES	☐ NO
SHIPPING CONTAINER INTACT:	☒ YES	☐ NO

SAMPLE TEMPERATURE (AT ARRIVAL): 6 °C

DOES CLIENT NEED NOTIFICATION OF TEMPERATURE? ☐ YES ☒ NO

SAMPLE ARRIVED ON ICE: ☒ YES ☐ NO

COMMENTS: See COC

16150

Battelle

The Business of Innovation

Chain of Custody

397 Washington Street
Duxbury, MA 02332
Phone: 781-952-5200
Fax: 781-934-2124

Proj. No	Proj. Name
G1606422	New Bedford Harbor

SAMPLERS: Signature

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

DATE	TIME	BATTELLE ID	CLIENT ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	~~OTHER~~ TOX.	ACIDIFIED	PRESERVED	Total Number of Containers
8/9/07	8:40		WQ-TOX-001-080907	MID REF 080907 Reference water 2 NTU								✓			2
	9:15		WQ-TOX-002-080907	13 NTU 080907								↓			↓
	9:30		WQ-TOX-003-080907	20 NTU 080907								↓			↓
	10:05		WQ-TOX-004-080907	55 NTU 080907								↓			✓

Relinquished by:	Date/Time		Received by:	Date/Time	
	8/9/07	11:00	Abulli Jackman	1455	8/9/07
Relinquished by:	Date/Time		Received by:	Date/Time	

Comments:

ORIGINAL

Battelle

The Business of Innovation

Chain of Custody

397 Washington Street
Duxbury, MA 02332
Phone: 781-952-5200
Fax: 781-934-2124

16150

Proj. No	Proj. Name
G6006422	New Bedford Harbor

SAMPLERS: Signature

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

DATE	TIME	BATTELLE ID	CLIENT ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER TOX	ACIDIFIED	PRESERVED	Total Number of Containers
8/9/07	8:40		WQ-TOX-001-080907	MID REF 080907 — Reference water 2 NTU								1			2
	9:15		WQ-TOX-002-080907	13 NTU 080907								1			1
	9:30		WQ-TOX-003-080907	20 NTU 080907								1			1
	10:05		WQ-TOX-004-080907	55 NTU 080907								1			1

Relinquished by:	Date/Time		Received by:	Date/Time	
	8/9/07	11:00	Shelli Jackman	1455	8/9/07
Relinquished by:	Date/Time		Received by:	Date/Time	

Comments:

LAB COPY

ESI

EnviroSystems, Inc.
One Lafayette Road
P.O. Box 778
Hampton, NH 03843-0778
Telephone: 603-926-3345

SAMPLE RECEIPT RECORD

ESI STUDY NUMBER: 16234 **CLIENT:** Battelle

SAMPLE RECEIPT:
DATE: 9/11/07 TIME: 1360 BY: DG

DELIVERED VIA: ☐ FEDEX ☐ CLIENT ☒ ESI ☐ UPS ☐ OTHER

LOGGED INTO LAB:
DATE: 9/11/07 TIME: 1600 BY: SJ

SAMPLE CONDITION:

CHAIN OF CUSTODY:	☒ YES		☐ NO
CHAIN OF CUSTODY SIGNED:	☒ YES		☐ NO
CHAIN OF CUSTODY COMPLETE:	☒ YES		☐ NO
SAMPLE DATE:	☒ YES		☐ NO
SAMPLE TIME RECORDED:	☒ YES		☐ NO
SAMPLE TYPE IDENTIFIED:	☒ YES		☐ NO
CUSTODY SEAL IN PLACE:	☒ YES	☐ NA	☐ NO
SHIPPING CONTAINER INTACT:	☒ YES		☐ NO
SAMPLE TEMPERATURE (AT ARRIVAL): 5 °C			
DOES CLIENT NEED NOTIFICATION OF TEMPERATURE?	☐ YES		☒ NO
SAMPLE ARRIVED ON ICE:	☒ YES		☐ NO

COMMENTS:

16251

Battelle
The Business of Innovation

Chain of Custody

397 Washington Street
Duxbury, MA 02332
Phone: 781-952-5200
Fax: 781-934-2124

Proj. No: G6006422
Proj. Name: New Bedford Harbor

SAMPLERS: Signature

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

DATE	TIME	BATTELLE ID	CLIENT ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	~~OTHER~~ TOX	ACIDIFIED	PRESERVED	Total Number of Containers
9/11/07	9:01	WQ-TOX-001-091107		Reference 4.9 NTU								✓			2
	9:45	WQ-TOX-002-091107		23-29 NTU								✓			2
	10:15	WQ-TOX-003-091107		59-60 NTU								✓			2

Relinquished by:	Date/Time		Received by:	Date/Time	
[signature]	9/11/07	12:00	[signature]	9/11/07	1300
Relinquished by:	Date/Time		Received by:	Date/Time	
			[signature]	9/11/07	1600

Comments:

ORIGINAL

ESI

EnviroSystems, Inc.
One Lafayette Road
P.O. Box 778
Hampton, NH 03843-0778
Telephone: 603-926-3345

SAMPLE RECEIPT RECORD

ESI STUDY NUMBER: 16391 **CLIENT:** Battelle

SAMPLE RECEIPT:
DATE: 10/3/07 TIME: 1432 BY: DG

DELIVERED VIA: ☐ FEDEX ☒ CLIENT ☐ ESI ☐ UPS ☐ OTHER

LOGGED INTO LAB:
DATE: 10/4/07 TIME: 0945 BY: RAM

SAMPLE CONDITION:

CHAIN OF CUSTODY:	☒ YES		☐ NO
CHAIN OF CUSTODY SIGNED:	☒ YES		☐ NO
CHAIN OF CUSTODY COMPLETE:	☒ YES		☐ NO
SAMPLE DATE:	☒ YES		☐ NO
SAMPLE TIME RECORDED:	☒ YES		☐ NO
SAMPLE TYPE IDENTIFIED:	☒ YES		☐ NO
CUSTODY SEAL IN PLACE:	☐ YES	☒ NA	☐ NO
SHIPPING CONTAINER INTACT:	☒ YES		☐ NO

SAMPLE TEMPERATURE (AT ARRIVAL): 6 °C

DOES CLIENT NEED NOTIFICATION OF TEMPERATURE?
☐ YES ☒ NO

SAMPLE ARRIVED ON ICE: ☒ YES ☐ NO

COMMENTS: see COC

Battelle

The Business of Innovation

Chain of Custody

397 Washington Street
Duxbury, MA 02332
Phone: 781-952-5200
Fax: 781-934-2124

16391

Proj. No	Proj. Name
G606422-07WQ	New Bedford Harbor

SAMPLERS: Signature: Michael Walsh

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

DATE	TIME	BATTELLE ID	CLIENT ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	~~OTHER~~ → TOX	ACIDIFIED	~~PRESERVED~~ → Cold	Total Number of Containers
10/3/07	11:00	WQ-TOX-001	-100307	50 ft from Source 65-100 NTU 1 of 2								✓		✓	1
10/3/07	11:00	WQ-TOX-001	-100307	50 ft from Source 65-100 NTU 2 of 2								✓		✓	1
10/3/07	11:50	WQ-TOX-002	-100307	300 ft from Source 13-20 NTU 1 of 2								✓		✓	1
10/3/07	11:50	WQ-TOX-002	-100307	300 ft from Source 13-20 NTU 2 of 2								✓		✓	1
10/3/07	12:28	WQ-TOX-003	-100307	600 ft from Source 11-13 NTU 1 of 2								✓		✓	1
10/3/07	12:28	WQ-TOX-003	-100307	600 ft from Source 11-13 NTU 2 of 2								✓		✓	1

Relinquished by:	Date/Time		Received by:	Date/Time	
Michael Walsh	10/3/2007	1341	Jessica Hardy	10/3/07	1341
Relinquished by: Jessica Hardy	Date/Time 10/3/07	1432	Received by: [signature]	Date/Time 10/3/07	1432

Comments:

ORIGINAL

ESI

EnviroSystems, Inc.
1 Lafayette Road
Hampton, N.H. 03843

Voice: 603-926-3345
FAX: 603-923-3521

ESI Job No:

CHAIN OF CUSTODY DOCUMENTATION

Client: Envirosystems Inc	Contact: Ken Simons	Project Name: NB	Page 1 of 1
Report to: Ken Simons	Address: 1 Lafayette Rd	Project Number: 16391	
Invoice to: Jean Swanson	Address: Hampton, NH 03843	Project Manager: Ken Simons	
Voice: 603-926-3345	Fax: 603-923-3521	email: K.Simons@envirosystems.com	P.O. No: Quote No:

Protocol: RCRA SDWA NPDES USCOE Other

Lab Number (assigned by lab)	Your Field ID: (must agree with container)	Date Sampled	Time Sampled	Sampled By	Grab or com-posit (G/C)	Container Size (ml.)	Container Type (P/G/T)	Field Preser-vation	Matrix S=Solid W=Water	Filter N=Not needed F=Done in field L=Lab to do	Analyses Requested\ Special Instructions:
	001	10/4/07	1030	LB	G	1000mL	P	N	W	N	C. parvula
	002	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓
	003	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓

Relinquished By: Shellie Jackman	Date: 10/4/07 Time: 1415	Received By:	Date: Time:
Relinquished By:	Date: Time:	Received at Lab By:	Date: Time:

Comments:

Sample Delivery Group No: Page of

No: NT 1836

Appendix E

Total Suspended Solids and Turbidity Analytical Data

This page intentionally left blank

ANALYTICAL REPORT

Prepared for:
Battelle
Duxbury Operations
397 Washington Street
Duxbury, MA 02332

Project:	New Bedford Harbor
ETR:	0708096
Report Date:	August 27, 2007

Certifications and Accreditations

Massachusetts M-MA030
Connecticut PH-0141
New Hampshire 2206
Rhode Island LAO00289
New Jersey MA015
Maine MA0030
New York 11627
Louisiana 03090
Florida E87814
Pennsylvania 68-02089
Army Corps of Engineers
Department of the Navy

This report shall not be reproduced except in full, without written approval from the laboratory.

320 Forbes Blvd, Mansfield, MA 02048, (508) 822-9300, Fax (508) 822-3288

CASE NARRATIVE
Alpha Woods Hole Labs

ETR: 0708096
Project: New Bedford Harbor

All analyses were performed according to Alpha Woods Hole Labs quality assurance program and documented Standard Operating Procedures (SOPs). The analytical results contained in this report were performed within holding time, and with appropriate quality control measures, except where noted. A summary of all state and federal accreditations is provided within this report. Blank correction of results is not performed in the laboratory for any parameter. Soil/sediment samples are reported on a dry weight basis unless otherwise noted. Tissue and sediment samples are not certifiable under the NELAC accreditation.

The enclosed results of analyses are representative of the samples as received by the laboratory. Alpha Woods Hole Labs makes no representations or certifications as to the method of sample collection, sample identification, or transporting/handling procedures used prior to the receipt of samples by Alpha Woods Hole Labs. To the best of my knowledge, the information contained in this report is accurate and complete.

Approved by: Nancy a Rose Title: Project Manager Date: 8/27/07

Sample ID Cross Reference

Client: **Battelle**
Project: **New Bedford Harbor**

Lab Code: **MA00030**
ETR: **0708096**

Lab Sample ID	Client Sample ID
0708096-01	WQ-001-080907
0708096-02	WQ-002-080907
0708096-03	WQ-003-080907
0708096-04	WQ-004-080907

Inorganics

Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **WQ-001-080907**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0708096**

Lab ID: **0708096-01**
Date Collected: **08/09/07**
Date Received: **08/09/07**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
TSS - Membrane	**10.5**		1.00	1	08/16/07	mg/L	160.2	JAD
Turbidity - 180.1	**4.60**		0.400	1	08/11/07	NTU	180.1	NAR

N/A - Not Applicable

320 Forbes Blvd, Mansfield, MA 02048, (508) 822-9300, Fax (508) 822-3288

Inorganics

Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **WQ-002-080907**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0708096**

Lab ID: **0708096-02**
Date Collected: **08/09/07**
Date Received: **08/09/07**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
TSS - Membrane	**31.5**		1.00	1	08/16/07	mg/L	160.2	JAD
Turbidity - 180.1	**18.0**		0.400	1	08/11/07	NTU	180.1	NAR

N/A - Not Applicable

320 Forbes Blvd, Mansfield, MA 02048, (508) 822-9300, Fax (508) 822-3288

Inorganics

Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **WQ-003-080907**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0708096**

Lab ID: **0708096-03**
Date Collected: **08/09/07**
Date Received: **08/09/07**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
TSS - Membrane	**40.7**		1.00	1	08/16/07	mg/L	160.2	JAD
Turbidity - 180.1	**24.0**		0.400	1	08/11/07	NTU	180.1	NAR

N/A - Not Applicable

320 Forbes Blvd, Mansfield, MA 02048, (508) 822-9300, Fax (508) 822-3288

Inorganics

Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **WQ-004-080907**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0708096**

Lab ID: **0708096-04**
Date Collected: **08/09/07**
Date Received: **08/09/07**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
TSS - Membrane	**117**		1.00	1	08/16/07	mg/L	160.2	JAD
Turbidity - 180.1	**63.0**		0.400	1	08/11/07	NTU	180.1	NAR

N/A - Not Applicable

320 Forbes Blvd, Mansfield, MA 02048, (508) 822-9300, Fax (508) 822-3288

Blank
Inorganics

Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **Blank**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0708096**

Lab ID: **WW081707B01**
Date Collected: **N/A**
Date Received: **N/A**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
TSS - Membrane	1.00	U	1.00	1	08/16/07	mg/L	160.2	JAD

N/A - Not Applicable
U - The analyte was analyzed for but not detected at the sample specific level reported.

320 Forbes Blvd, Mansfield, MA 02048, (508) 822-9300, Fax (508) 822-3288

Blank
Inorganics

Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **Blank**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0708096**
Lab ID: **WW081407B31**
Date Collected: **N/A**
Date Received: **N/A**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
Turbidity - 180.1	0.400	U	0.400	1	08/11/07	NTU	180.1	NAR

N/A - Not Applicable
U - The analyte was analyzed for but not detected at the sample specific level reported.

320 Forbes Blvd, Mansfield, MA 02048, (508) 822-9300, Fax (508) 822-3288

Laboratory Control Sample
Inorganics

Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **Laboratory Control Sample**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0708096**

Lab ID: **WW081707L01**
Date Collected: **N/A**
Date Received: **N/A**

Parameter	Conc.	% Recovery	% Recovery Limits
TSS - Membrane	489	98	80-120

N/A - Not Applicable

Concentrations reported as calculated values, which includes rounding for significant figures. Percent recoveries and RPD values are calculated from the unrounded results.

08/20/07 19:36

Laboratory Control Sample
Inorganics

Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **Laboratory Control Sample**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0708096**

Lab ID: **WW081407L02**
Date Collected: **N/A**
Date Received: **N/A**

Parameter	Conc.	% Recovery	% Recovery Limits
Turbidity - 180.1	20.0	100	80-120

N/A - Not Applicable

Concentrations reported as calculated values, which includes rounding for significant figures. Percent recoveries and RPD values are calculated from the unrounded results.

08/20/07 19:46

0708096

Battelle
The Business of Innovation

Chain of Custody

397 Washington Street
Duxbury, MA 02332
Phone: 781-952-5200
Fax: 781-934-2124

Proj. No: 606422
Proj. Name: New Bedford Harbor
SAMPLERS: Signature

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

DATE	TIME	BATTELLE ID	CLIENT ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	~~TBT~~ TSS	~~METALS~~ TURBIDITY	OTHER	ACIDIFIED	PRESERVED	Total Number of Containers
8/9/07	8:40		WQ-TSS-001-080907	M1DREF080907 - Reference 2NTU						✓					2
	9:15		WQ-TSS-002-080907	13 NTU 080907											
	9:30		WQ-TSS-003-080907	20 NTU 080907											
	10:05		WQ-TSS-004-080907	55 NTU 080907											
	8:40		WQ-TUR-001-080907	M1DREF080907 - Reference 2NTU							X				2
	9:15		WQ-TUR-002-080907	13NTU 080907											
	~~9~~ 9:30		WQ-TUR-003-080907	20 NTU 080907											
	10:05		WQ-TUR-004-080907	55 NTU 080907											

Relinquished by:	Date/Time		Received by:	Date/Time	
	8/9/07	11:00		8/9/07	1215
Relinquished by:	Date/Time		Received by:	Date/Time	

Comments:

ORIGINAL

Sample Receipt Checklist

Client: BATTELLE		Receipt Date: 8/9/07	
Project: New Bedford Harbor		Log-in Date: 8/10/07	
ETR #: 0708096		Inspection by: NR	Login by: NR

ALL SECTIONS BELOW MUST BE COMPLETED

Were samples shipped? Yes, FedEx / UPS / Other:_____
No, WHG Courier pick-up / (Hand delivered)

Is bill of lading retained? Yes, Tracking #:_____
No, Unavailable / (NA)

Number of coolers received for this project delivery: 2

Indicate cooler temperature upon opening (if multiple coolers, record all temps):

Note: If all coolers are 2-6°C, use one checklist, if NOT, use separate checklists and note all samples received *above* 6°C.

Cooler 1:
Temperature(s) taken from: 3° IR Gun, 3° Temp. Blank, / NA

Were samples received on ice? (Yes) / No

Chain-of-Custody present? (Yes) / No
Complete? (Yes) / No

Custody seals present on Cooler? Yes / (No)
on Bottles? Yes / (No)
Intact? Yes / No / (NA)
Note: Affix custody seals to back of this page.

Were sample containers intact? (Yes) / No If No, list samples: →

Did VOA/VPH waters contain headspace (>5mm)? Yes / No / (NA) If Yes, list samples: →

Were 5035 VOA soils, or VPH soils, *covered* with MeOH? Yes / No / (NA)
If No, list samples: →

Was a sufficient amount of sample received for each test indicated on the COC?
(Yes) / No If No, list samples: →

If chemical preservation is appropriate -
Were samples field preserved? Yes / No / (NA)
☐ C=HCl ☐ M=MeOH ☐ S=H_2SO4
☐ H=NaOH ☐ N=HNO_3 ☐ Other:_____ ☐ U= Unknown

Preservation (pH) verified at lab for *EVERY* bottle? (Not: VOA / VPH / Sulfide)
YES: <2 or >12 (CN) or NO (NA)
If No, why?:

Were samples received within hold time? (Yes) / No If No, list samples: →

Discrepancy between samples rec'd & COC ? Yes / (No) If Yes, list samples: →

Was the Project Manager notified of any other problems? Yes / No / NA

Project Manager Acknowledgement: Nan Date: 8/13/07

Comments / Notes

Sample storage refrigerator #:_____
Sample storage freezer #:_____

Cooler 2: 3°/3° Cooler 3:_____
Cooler 4:_____ Cooler 5:_____
Cooler 6:_____ Cooler 7:_____
More:_____

Chemical preservation OK for ALL samples?
Yes / No / (N/A)
If No, list samples below:

Please use back for any additional notes!

Certificate/Approval Program Summary

Method numbers assume the most recent EPA revisions. For a complete listing of analytes for the referenced methods please contact your Alpha Woods Hole Lab Project Manager or the Quality Assurance Manager.

Connecticut Department of Public Health Certificate/Lab ID : PH-0141 - *Wastewater* (General Chemistry: EPA 120.1, 150.1, 160.1, 160.2, 180.1, 300.0, 310.1, 335.2, 365.2; Metals: 200.8, 245.1; Organics: 608, 624, 625, ETPH) *Solid Waste/Soil* (General Chemistry: 1010, 9010/9014, 9045, 9060; Metals: 6020, 7470, 7471; Organics: 8081, 8082, 8260, 8270, ETPH).

Florida Department of Health Certificate/Lab ID : E87814 - Primary NELAP Accreditation Authority for Air & Emissions. Secondary NELAP Accreditation for Wastwater and Solid & Hazardous Waste. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 180.1, 300.0, 335.2, 365.2, SM2320B, SM2340B, SM2540G, SM4500NH3; Metals: 245.1; Organics: 608, 624, 625). *Solid and Hazardous Waste* (General Chemistry: 9010/9014, 9045, 9050, 9056, 9065, Reactivity 7.3; Metals: 6020, 7470, 7471; Organics: 8081, 8082, 8260, 8270). *Air & Emissions* (Organics: EPA TO-15).

Louisiana Department of Environmental Quality Certificate/Lab ID : 03090 - Primary NELAP Accrediting Authority for Wastewater, Solid & Hazardous Waste. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 180.1, 300.0, 310.1/SM2320B, 335.2, 365.2, 376.2, 9010/9014, 9056, SM2540G; Metals: 200.8, 245.1, 6020; Organics: 608, 624, 625, 8015-DRO/GRO, 8081, 8082, 8260, 8270). *Solid and Hazardous Waste* (General Chemistry: 1010, 1311, 9010/9014, 9040, 9045, 9056, 9060, Reactivity 7.3; Metals: 6020, 7196, 7470, 7471; Organics: 8015-DRO/GRO, 8081, 8082, 8260, 8270).

Maine Department of Human Services Certificate/Lab ID : MA0030 - *Wastewater* (General Chemistry: EPA 120.1/ SM2510B, 160.1/SM2540C, 160.2/SM2540D, 300.0, 310.1/SM2320B, 335.2, 365.2; Metals: EPA 245.1; Organics: 608, 624)

Massachusetts Department of Environmental Protection Certificate/Lab ID: M-MA030 - *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 300.0, 310.1/SM2320B, 335.2, 365.2; Metals: EPA 245.1; Organics: EPA 608, 624).

New Hampshire Department of Environmental Services Certificate/Lab ID: 2206 - Secondary NELAP Accreditation. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 180.1, 300.0, 310.1/SM2320B, 335.2, 365.2, 376.2, SM2540G; Metals: 200.8, 245.4; Organics: 608, 624, 625).

New Jersey Department of Environmental Protection Certificate/Lab ID : MA015 - Secondary NELAP Accreditation. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 180.1, 300.0, 310.1/SM2320B, 335.2, 376.2, 9010/9014, 9056, SM2540G; Metals: 200.8, 245.1 6020; Organics: 608, 624, 625, 8081, 8082, 8260, 8270). *Solid & Hazardous Waste* (General Chemistry: EPA 1010, 1311, 9010/9014, 9040, 9045, 9056, 9060; Metals: 6020, 7196, 7470, 7471; Organics: 8015-DRO/GRO, 8081, 8082, 8260, 8270). *Air & Emissions* (Organics: EPA TO-15).

New York Department of Health Certificate/Lab ID : 11627 - Secondary NELAP Accreditation. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 300.0, 310.1/SM2320B, 365.2, 376.2; Metals: 245.1; Organics: 608, 624, 625). *Solid and Hazardous Waste* (General Chemistry: EPA 1010, 1311; : 245.1; 6020, 7041; Organics: 8081, 8082, 8260, 8270). *Air & Emissions* (Organics: EPA TO-15).

Rhode Island Department of Health Certificate/Lab ID : LAO00289 - Chemistry: *Organic and Inorganic in Non-Poratable Water, Wastewater/Sewage and Soil* (Refer to LADEQ and MADEP certificates for method numbers.)

Pennsylvania Department of Environmental Protection Certificate/Lab ID : 68-02089 - Registered laboratory

U.S. Army Corps of Engineers

Department of the Navy

ANALYTICAL REPORT

Prepared for:
Battelle
Duxbury Operations
397 Washington Street
Duxbury, MA 02332

Project:	New Bedford Harbor
ETR:	0708155
Report Date:	August 27, 2007

Certifications and Accreditations
Massachusetts M-MA030
Connecticut PH-0141
New Hampshire 2206
Rhode Island LAO00289
New Jersey MA015
Maine MA0030
New York 11627
Louisiana 03090
Florida E87814
Pennsylvania 68-02089
Army Corps of Engineers
Department of the Navy

This report shall not be reproduced except in full, without written approval from the laboratory.

320 Forbes Blvd, Mansfield, MA 02048, (508) 822-9300, Fax (508) 822-3288

CASE NARRATIVE
Alpha Woods Hole Labs

ETR: 0708155
Project: New Bedford Harbor

All analyses were performed according to Alpha Woods Hole Labs quality assurance program and documented Standard Operating Procedures (SOPs). The analytical results contained in this report were performed within holding time, and with appropriate quality control measures, except where noted. A summary of all state and federal accreditations is provided within this report. Blank correction of results is not performed in the laboratory for any parameter. Soil/sediment samples are reported on a dry weight basis unless otherwise noted. Tissue and sediment samples are not certifiable under the NELAC accreditation.

The enclosed results of analyses are representative of the samples as received by the laboratory. Alpha Woods Hole Labs makes no representations or certifications as to the method of sample collection, sample identification, or transporting/handling procedures used prior to the receipt of samples by Alpha Woods Hole Labs. To the best of my knowledge, the information contained in this report is accurate and complete.

Approved by: Nancy J. Rose Title: Project Manager Date: 8/27/07

Sample ID Cross Reference

Client: **Battelle**
Project: **New Bedford Harbor**

Lab Code: **MA00030**
ETR: **0708155**

Lab Sample ID	Client Sample ID
0708155-01	WQ-TSS/TUR-001-081607
0708155-02	WQ-TSS/TUR-002-081607
0708155-03	WQ-TSS/TUR-003-081607
0708155-04	WQ-TSS/TUR-004-081607
0708155-05	WQ-TSS/TUR-005-081607

Inorganics

Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **WQ-TSS/TUR-001-081607**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0708155**

Lab ID: **0708155-01**
Date Collected: **08/16/07**
Date Received: **08/16/07**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
TSS - Membrane	**18.7**		1.00	1	08/16/07	mg/L	160.2	JAD
Turbidity - 180.1	**8.65**		0.400	1	08/16/07	NTU	180.1	JAD

N/A - Not Applicable

320 Forbes Blvd, Mansfield, MA 02048, (508) 822-9300, Fax (508) 822-3288

Inorganics

Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **WQ-TSS/TUR-002-081607**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0708155**

Lab ID: **0708155-02**
Date Collected: **08/16/07**
Date Received: **08/16/07**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
TSS - Membrane	**26.0**		1.00	1	08/16/07	mg/L	160.2	JAD
Turbidity - 180.1	**14.7**		0.400	1	08/16/07	NTU	180.1	JAD

N/A - Not Applicable

320 Forbes Blvd, Mansfield, MA 02048, (508) 822-9300, Fax (508) 822-3288

Inorganics

Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **WQ-TSS/TUR-003-081607**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0708155**

Lab ID: **0708155-03**
Date Collected: **08/16/07**
Date Received: **08/16/07**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
TSS - Membrane	**24.5**		1.00	1	08/16/07	mg/L	160.2	JAD
Turbidity - 180.1	**12.4**		0.400	1	08/16/07	NTU	180.1	JAD

N/A - Not Applicable

320 Forbes Blvd, Mansfield, MA 02048, (508) 822-9300, Fax (508) 822-3288

Inorganics

Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **WQ-TSS/TUR-004-081607**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0708155**

Lab ID: **0708155-04**
Date Collected: **08/16/07**
Date Received: **08/16/07**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
TSS - Membrane	**10.5**		1.00	1	08/16/07	mg/L	160.2	JAD
Turbidity - 180.1	**5.14**		0.400	1	08/16/07	NTU	180.1	JAD

N/A - Not Applicable

320 Forbes Blvd, Mansfield, MA 02048, (508) 822-9300, Fax (508) 822-3288

Inorganics

Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **WQ-TSS/TUR-005-081607**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0708155**

Lab ID: **0708155-05**
Date Collected: **08/16/07**
Date Received: **08/16/07**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
TSS - Membrane	1.00	U	1.00	1	08/16/07	mg/L	160.2	JAD
Turbidity - 180.1	0.400	U	0.400	1	08/16/07	NTU	180.1	JAD

N/A - Not Applicable
U - The analyte was analyzed for but not detected at the sample specific level reported.

320 Forbes Blvd, Mansfield, MA 02048, (508) 822-9300, Fax (508) 822-3288

Blank
Inorganics

Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **Blank**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0708155**
Lab ID: **WW081607B23**
Date Collected: **N/A**
Date Received: **N/A**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
Turbidity - 180.1	0.400	U	0.400	1	08/16/07	NTU	180.1	JAD

N/A - Not Applicable
U - The analyte was analyzed for but not detected at the sample specific level reported.

320 Forbes Blvd, Mansfield, MA 02048, (508) 822-9300, Fax (508) 822-3288

Blank
Inorganics

Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **Blank**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0708155**
Lab ID: **WW081707B01**
Date Collected: **N/A**
Date Received: **N/A**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
TSS - Membrane	1.00	U	1.00	1	08/16/07	mg/L	160.2	JAD

N/A - Not Applicable
U - The analyte was analyzed for but not detected at the sample specific level reported.

320 Forbes Blvd, Mansfield, MA 02048, (508) 822-9300, Fax (508) 822-3288

Laboratory Control Sample
Inorganics

Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **Laboratory Control Sample**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0708155**

Lab ID: **WW081607L07**
Date Collected: **N/A**
Date Received: **N/A**

Parameter	Conc.	% Recovery	% Recovery Limits
Turbidity - 180.1	19.9	100	80-120

N/A - Not Applicable

Concentrations reported as calculated values, which includes rounding for significant figures. Percent recoveries and RPD values are calculated from the unrounded results.

08/20/07 19:37

Laboratory Control Sample
Inorganics

Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **Laboratory Control Sample**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0708155**

Lab ID: **WW081707L01**
Date Collected: **N/A**
Date Received: **N/A**

Parameter	Conc.	% Recovery	% Recovery Limits
TSS - Membrane	489	98	80-120

N/A - Not Applicable

Concentrations reported as calculated values, which includes rounding for significant figures. Percent recoveries and RPD values are calculated from the unrounded results.

08/20/07 19:37

0708155

Battelle

The Business of Innovation

Chain of Custody

397 Washington Street
Duxbury, MA 02332
Phone: 781-952-5200
Fax: 781-934-2124

Proj. No: G6006422

Proj. Name: New Bedford Harbor WQ

SAMPLERS: Signature

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

DATE	TIME	BATTELLE ID	CLIENT ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	~~VOA~~ TSS	~~TBT~~ TUR	METALS	OTHER	ACIDIFIED	PRESERVED	Total Number of Containers
8/16/07	11:10	WQ-TSS/TUR-001-081607		WOOD ST BRIDGE REFERENCE					✓	✓					2
	11:40	WQ-TSS/TUR-002-081607		200' from Debris Removal					↓	↓					↓
	12:00	WQ-TSS/TUR-003-081607		Dredge Area G Boundary											
	12:15	WQ-TSS/TUR-004-081607		300' S. of Dredge Area G Boundary											
	11:13	WQ-TSS/TUR-005-081607-EB		Equip Blank											1

Relinquished by:	Date/Time		Received by:	Date/Time	
	8/16/07	13:05		8/16/07	14:00
Relinquished by:	Date/Time		Received by:	Date/Time	

Comments:

ORIGINAL

Sample Receipt Checklist

Client:	BATDUX	**Receipt Date:**	8/16/07
Project:	New Bedford Harbor	**Log-in Date:**	8/16/07
ETR #:	0708155	**Inspection by:** KMR	**Login by:** KMR

ALL SECTIONS BELOW MUST BE COMPLETED

	Comments / Notes
Were samples shipped? Yes, FedEx / UPS / Other:_____ (No,) WHG Courier pick-up / Hand delivered	Sample storage refrigerator #:_____
Is bill of lading retained? Yes, Tracking #:_____ No, Unavailable / (NA)	Sample storage freezer #:_____
Number of coolers received for this project delivery: 1	
Indicate cooler temperature upon opening (if multiple coolers, record all temps): **Note:** If all coolers are 2-6°C, use one checklist, if NOT, use separate checklists and note all samples received *above* 6°C. **Cooler 1:** Temperature(s) taken from: 12 IR Gun, 6 Temp. Blank, / NA Were samples received on ice? (Yes) / No	Cooler 2:_____ Cooler 3:_____ Cooler 4:_____ Cooler 5:_____ Cooler 6:_____ Cooler 7:_____ More:_____
Chain-of-Custody present? (Yes) / No Complete? (Yes) / No	
Custody seals present on Cooler? (Yes) / No on Bottles? Yes / (No) Intact? (Yes) / No / NA *Note: Affix custody seals to back of this page.*	
Were sample containers intact? (Yes) / No If No, list samples: →	
Did VOA/VPH waters contain headspace (>5mm)? Yes / No / (NA) If Yes, list samples: →	
Were 5035 VOA soils, or VPH soils, *covered* with MeOH? Yes / No / (NA) If No, list samples: →	
Was a sufficient amount of sample received for each test indicated on the COC? (Yes) / No If No, list samples: →	
If chemical preservation is appropriate - Were samples field preserved? Yes / No / (NA) ☐C=HCl ☐ M=MeOH ☐ S=H_2SO4 ☐H=NaOH ☐ N=HNO_3 ☐ Other:_____ ☐ U= Unknown	Chemical preservation OK for ALL samples? Yes / No / (N/A) If No, list samples below:
Preservation (pH) verified at lab for *EVERY* bottle? (Not: VOA / VPH / Sulfide) YES: <2 or >12 (CN) or NO (NA) If No, why?:	
Were samples received within hold time? (Yes) / No If No, list samples: →	
Discrepancy between samples rec'd & COC ? Yes / (No) If Yes, list samples: →	
Was the Project Manager notified of any other problems? Yes / No / NA Project Manager Acknowledgement: NARose Date: 8/16/07	*Please use back for any additional notes!*

Alpha Woods Hole Labs
Raynham, Massachusetts

Certificate/Approval Program Summary

Method numbers assume the most recent EPA revisions. For a complete listing of analytes for the referenced methods please contact your Alpha Woods Hole Lab Project Manager or the Quality Assurance Manager.

Connecticut Department of Public Health Certificate/Lab ID : PH-0141 - *Wastewater* (General Chemistry: EPA 120.1, 150.1, 160.1, 160.2, 180.1, 300.0, 310.1, 335.2, 365.2; Metals: 200.8, 245.1; Organics: 608, 624, 625, ETPH) *Solid Waste/Soil* (General Chemistry: 1010, 9010/9014, 9045, 9060; Metals: 6020, 7470, 7471; Organics: 8081, 8082, 8260, 8270, ETPH).

Florida Department of Health Certificate/Lab ID : E87814 - Primary NELAP Accreditation Authority for Air & Emissions. Secondary NELAP Accreditation for Wastwater and Solid & Hazardous Waste. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 180.1, 300.0, 335.2, 365.2, SM2320B, SM2340B, SM2540G, SM4500NH3; Metals: 245.1; Organics: 608, 624, 625). *Solid and Hazardous Waste* (General Chemistry: 9010/9014, 9045, 9050, 9056, 9065, Reactivity 7.3; Metals: 6020, 7470, 7471; Organics: 8081, 8082, 8260, 8270). *Air & Emissions* (Organics: EPA TO-15).

Louisiana Department of Environmental Quality Certificate/Lab ID : 03090 - Primary NELAP Accrediting Authority for Wastewater, Solid & Hazardous Waste. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 180.1, 300.0, 310.1/SM2320B, 335.2, 365.2, 376.2, 9010/9014, 9056, SM2540G; Metals: 200.8, 245.1, 6020; Organics: 608, 624, 625, 8015-DRO/GRO, 8081, 8082, 8260, 8270). *Solid and Hazardous Waste* (General Chemistry: 1010, 1311, 9010/9014, 9040, 9045, 9056, 9060, Reactivity 7.3; Metals: 6020, 7196, 7470, 7471; Organics: 8015-DRO/GRO, 8081, 8082, 8260, 8270).

Maine Department of Human Services Certificate/Lab ID : MA0030 - *Wastewater* (General Chemistry: EPA 120.1/ SM2510B, 160.1/SM2540C, 160.2/SM2540D, 300.0, 310.1/SM2320B, 335.2, 365.2; Metals: EPA 245.1; Organics: 608, 624)

Massachusetts Department of Environmental Protection Certificate/Lab ID: M-MA030 - *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 300.0, 310.1/SM2320B, 335.2, 365.2; Metals: EPA 245.1; Organics: EPA 608, 624).

New Hampshire Department of Environmental Services Certificate/Lab ID: 2206 - Secondary NELAP Accreditation. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 180.1, 300.0, 310.1/SM2320B, 335.2, 365.2, 376.2, SM2540G; Metals: 200.8, 245.4; Organics: 608, 624, 625).

New Jersey Department of Environmental Protection Certificate/Lab ID : MA015 - Secondary NELAP Accreditation. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 180.1, 300.0, 310.1/SM2320B, 335.2, 376.2, 9010/9014, 9056, SM2540G; Metals: 200.8, 245.1 6020; Organics: 608, 624, 625, 8081, 8082, 8260, 8270). *Solid & Hazardous Waste* (General Chemistry: EPA 1010, 1311, 9010/9014, 9040, 9045, 9056, 9060; Metals: 6020, 7196, 7470, 7471; Organics: 8015-DRO/GRO, 8081, 8082, 8260, 8270). *Air & Emissions* (Organics: EPA TO-15).

New York Department of Health Certificate/Lab ID : 11627 - Secondary NELAP Accreditation. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 300.0, 310.1/SM2320B, 365.2, 376.2; Metals: 245.1; Organics: 608, 624, 625). *Solid and Hazardous Waste* (General Chemistry: EPA 1010, 1311; : 245.1; 6020, 7041; Organics: 8081, 8082, 8260, 8270). *Air & Emissions* (Organics: EPA TO-15).

Rhode Island Department of Health Certificate/Lab ID : LAO00289 - Chemistry: *Organic and Inorganic in Non-Poratable Water, Wastewater/Sewage and Soil* (Refer to LADEQ and MADEP certificates for method numbers.)

Pennsylvania Department of Environmental Protection Certificate/Lab ID : 68-02089 - Registered laboratory

U.S. Army Corps of Engineers

Department of the Navy

ANALYTICAL REPORT

Prepared for:
Battelle
Duxbury Operations
397 Washington Street
Duxbury, MA 02332

Project:	New Bedford Harbor
ETR:	0708232
Report Date:	September 17, 2007

Certifications and Accreditations
Massachusetts M-MA030
Connecticut PH-0141
New Hampshire 2206
Rhode Island LAO00289
New Jersey MA015
Maine MA0030
New York 11627
Louisiana 03090
Florida E87814
Pennsylvania 68-02089
Army Corps of Engineers
Department of the Navy

This report shall not be reproduced except in full, without written approval from the laboratory.

320 Forbes Blvd, Mansfield, MA 02048, (508) 822-9300, Fax (508) 822-3288

CASE NARRATIVE
Alpha Woods Hole Labs

ETR: 0708232
Project: New Bedford Harbor

All analyses were performed according to Alpha Woods Hole Labs quality assurance program and documented Standard Operating Procedures (SOPs). The analytical results contained in this report were performed within holding time, and with appropriate quality control measures, except where noted. A summary of all state and federal accreditations is provided within this report. Blank correction of results is not performed in the laboratory for any parameter. Soil/sediment samples are reported on a dry weight basis unless otherwise noted. Tissue and sediment samples are not certifiable under the NELAC accreditation.

The enclosed results of analyses are representative of the samples as received by the laboratory. Alpha Woods Hole Labs makes no representations or certifications as to the method of sample collection, sample identification, or transporting/handling procedures used prior to the receipt of samples by Alpha Woods Hole Labs. To the best of my knowledge, the information contained in this report is accurate and complete.

Approved by: Nancy A Rose Title: _____ Date: _____

Sample ID Cross Reference

Client: **Battelle**
Project: **New Bedford Harbor**

Lab Code: **MA00030**
ETR: **0708232**

Lab Sample ID	Client Sample ID
0708232-01	WQ-TSS/TUR-001-082907
0708232-02	WQ-TSS/TUR-002-082907
0708232-03	WQ-TSS/TUR-003-082907
0708232-04	WQ-TSS/TUR-004-082907
0708232-05	WQ-TSS/TUR-001-082907-DUP

Inorganics

Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **WQ-TSS/TUR-001-082907**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0708232**

Lab ID: **0708232-01**
Date Collected: **08/29/07**
Date Received: **08/29/07**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
TSS - Membrane	**24.0**		1.00	1	09/05/07	mg/L	160.2	JAD
Turbidity - 180.1	**12.1**		0.400	1	08/29/07	NTU	180.1	JAD

N/A - Not Applicable

320 Forbes Blvd, Mansfield, MA 02048, (508) 822-9300, Fax (508) 822-3288

Inorganics

ALPHA WOODS HOLE LABS

Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **WQ-TSS/TUR-002-082907**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0708232**

Lab ID: **0708232-02**
Date Collected: **08/29/07**
Date Received: **08/29/07**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
TSS - Membrane	**57.0**		1.00	1	09/05/07	mg/L	160.2	JAD
Turbidity - 180.1	**32.9**		0.400	1	08/29/07	NTU	180.1	JAD

N/A - Not Applicable

320 Forbes Blvd, Mansfield, MA 02048, (508) 822-9300, Fax (508) 822-3288

Inorganics

ALPHA WOODS HOLE LABS

Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **WQ-TSS/TUR-003-082907**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0708232**

Lab ID: **0708232-03**
Date Collected: **08/29/07**
Date Received: **08/29/07**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
TSS - Membrane	**23.5**		1.00	1	09/05/07	mg/L	160.2	JAD
Turbidity - 180.1	**13.4**		0.400	1	08/29/07	NTU	180.1	JAD

N/A - Not Applicable

320 Forbes Blvd, Mansfield, MA 02048, (508) 822-9300, Fax (508) 822-3288

Inorganics

Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **WQ-TSS/TUR-004-082907**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0708232**

Lab ID: **0708232-04**
Date Collected: **08/29/07**
Date Received: **08/29/07**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
TSS - Membrane	**24.0**		1.00	1	09/05/07	mg/L	160.2	JAD
Turbidity - 180.1	**18.4**		0.400	1	08/29/07	NTU	180.1	JAD

N/A - Not Applicable

320 Forbes Blvd, Mansfield, MA 02048, (508) 822-9300, Fax (508) 822-3288

Inorganics

ALPHA WOODS HOLE LABS

Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **WQ-TSS/TUR-001-082907-DUP**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0708232**

Lab ID: **0708232-05**
Date Collected: **08/29/07**
Date Received: **08/29/07**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
TSS - Membrane	**27.0**		1.00	1	09/05/07	mg/L	160.2	JAD
Turbidity - 180.1	**12.3**		0.400	1	08/29/07	NTU	180.1	JAD

N/A - Not Applicable

320 Forbes Blvd, Mansfield, MA 02048, (508) 822-9300, Fax (508) 822-3288

Blank
Inorganics

Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **Blank**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0708232**

Lab ID: **WW083007B01**
Date Collected: **N/A**
Date Received: **N/A**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
Turbidity - 180.1	0.400	U	0.400	1	08/29/07	NTU	180.1	JAD

N/A - Not Applicable
U - The analyte was analyzed for but not detected at the sample specific level reported.

320 Forbes Blvd, Mansfield, MA 02048, (508) 822-9300, Fax (508) 822-3288

Blank
Inorganics

ALPHA WOODS HOLE LABS

Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **Blank**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0708232**

Lab ID: **WW090507B24**
Date Collected: **N/A**
Date Received: **N/A**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
TSS - Membrane	1.00	U	1.00	1	09/05/07	mg/L	160.2	JAD

N/A - Not Applicable
U - The analyte was analyzed for but not detected at the sample specific level reported.

Laboratory Control Sample
Inorganics

Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **Laboratory Control Sample**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0708232**

Lab ID: **WW083007L01**
Date Collected: **N/A**
Date Received: **N/A**

Parameter	Conc.	% Recovery	% Recovery Limits
Turbidity - 180.1	20.0	100	80-120

N/A - Not Applicable

Concentrations reported as calculated values, which includes rounding for significant figures. Percent recoveries and RPD values are calculated from the unrounded results.

09/14/07 10:13

Laboratory Control Sample
Inorganics

ALPHA WOODS HOLE LABS

Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **Laboratory Control Sample**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0708232**

Lab ID: **WW090507L04**
Date Collected: **N/A**
Date Received: **N/A**

Parameter	Conc.	% Recovery	% Recovery Limits
TSS - Membrane	476	95	80-120

N/A - Not Applicable

Concentrations reported as calculated values, which includes rounding for significant figures. Percent recoveries and RPD values are calculated from the unrounded results.

320 Forbes Blvd, Mansfield, MA 02048, (508) 822-9300, Fax (508) 822-3288

0708232

Battelle

The Business of Innovation

Chain of Custody

397 Washington Street
Duxbury, MA 02332
Phone: 781-952-5200
Fax: 781-934-2124

Proj. No: 9L06422

Proj. Name: New Bedford Harbor WQ

SAMPLERS: Signature: [signature]

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

DATE	TIME	BATTELLE ID	CLIENT ID	SAMPLE DESCRIPTION	~~PCBT~~ TSS	~~PCB~~ TURBIDITY	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER	ACIDIFIED	PRESERVED	Total Number of Containers
8/29/07	10:10	WQ-TSS/TUR-001-082907		WOOD ST REF. AREA 9.1 NTU	✓	✓									2
	10:35	WQ-TSS/TUR-002-082907		AKEAG, 75' from Debris Removal 305 NTU											
	11:00	WQ-TSS/TUR-003-082907		AKEA G, DREDGE BOUNDARY ~17.2 NTU											
	11:21	WQ-TSS/TUR-004-082907		300' from Dredge Boundary 16.7 NTU											
	10:12	WQ-TSS/TUR-001-082907-DUP		Field Dup - WOOD St Ref area 9.1 NTU											

Relinquished by:	Date/Time		Received by:	Date/Time	
[signature]	8/29/07	13:20	[signature]	8/29/07	1425
Relinquished by:	Date/Time		Received by:	Date/Time	

Comments:

ORIGINAL

Certificate/Approval Program Summary

Method numbers assume the most recent EPA revisions. For a complete listing of analytes for the referenced methods please contact your Alpha Woods Hole Lab Project Manager or the Quality Assurance Manager.

Connecticut Department of Public Health Certificate/Lab ID : PH-0141 - *Wastewater* (General Chemistry: EPA 120.1, 150.1, 160.1, 160.2, 180.1, 300.0, 310.1, 335.2, 365.2; Metals: 200.8, 245.1; Organics: 608, 624, 625, ETPH) *Solid Waste/Soil* (General Chemistry: 1010, 9010/9014, 9045, 9060; Metals: 6020, 7470, 7471; Organics: 8081, 8082, 8260, 8270, ETPH).

Florida Department of Health Certificate/Lab ID : E87814 - Primary NELAP Accreditation Authority for Air & Emissions. Secondary NELAP Accreditation for Wastwater and Solid & Hazardous Waste. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 180.1, 300.0, 335.2, 365.2, SM2320B, SM2340B, SM2540G, SM4500NH3; Metals: 245.1; Organics: 608, 624, 625). *Solid and Hazardous Waste* (General Chemistry: 9010/9014, 9045, 9050, 9056, 9065, Reactivity 7.3; Metals: 6020, 7470, 7471; Organics: 8081, 8082, 8260, 8270). *Air & Emissions* (Organics: EPA TO-15).

Louisiana Department of Environmental Quality Certificate/Lab ID : 03090 - Primary NELAP Accrediting Authority for Wastewater, Solid & Hazardous Waste. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 180.1, 300.0, 310.1/SM2320B, 335.2, 365.2, 376.2, 9010/9014, 9056, SM2540G; Metals: 200.8, 245.1, 6020; Organics: 608, 624, 625, 8015-DRO/GRO, 8081, 8082, 8260, 8270). *Solid and Hazardous Waste* (General Chemistry: 1010, 1311, 9010/9014, 9040, 9045, 9056, 9060, Reactivity 7.3; Metals: 6020, 7196, 7470, 7471; Organics: 8015-DRO/GRO, 8081, 8082, 8260, 8270).

Maine Department of Human Services Certificate/Lab ID : MA0030 - *Wastewater* (General Chemistry: EPA 120.1/ SM2510B, 160.1/SM2540C, 160.2/SM2540D, 300.0, 310.1/SM2320B, 335.2, 365.2; Metals: EPA 245.1; Organics: 608, 624)

Massachusetts Department of Environmental Protection Certificate/Lab ID: M-MA030 - *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 300.0, 310.1/SM2320B, 335.2, 365.2; Metals: EPA 245.1; Organics: EPA 608, 624).

New Hampshire Department of Environmental Services Certificate/Lab ID: 2206 - Secondary NELAP Accreditation. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 180.1, 300.0, 310.1/SM2320B, 335.2, 365.2, 376.2, SM2540G; Metals: 200.8, 245.4; Organics: 608, 624, 625).

New Jersey Department of Environmental Protection Certificate/Lab ID : MA015 - Secondary NELAP Accreditation. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 180.1, 300.0, 310.1/SM2320B, 335.2, 376.2, 9010/9014, 9056, SM2540G; Metals: 200.8, 245.1 6020; Organics: 608, 624, 625, 8081, 8082, 8260, 8270). *Solid & Hazardous Waste* (General Chemistry: EPA 1010, 1311, 9010/9014, 9040, 9045, 9056, 9060; Metals: 6020, 7196, 7470, 7471; Organics: 8015-DRO/GRO, 8081, 8082, 8260, 8270). *Air & Emissions* (Organics: EPA TO-15).

New York Department of Health Certificate/Lab ID : 11627 - Secondary NELAP Accreditation. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 300.0, 310.1/SM2320B, 365.2, 376.2; Metals: 245.1; Organics: 608, 624, 625). *Solid and Hazardous Waste* (General Chemistry: EPA 1010, 1311; : 245.1; 6020, 7041; Organics: 8081, 8082, 8260, 8270). *Air & Emissions* (Organics: EPA TO-15).

Rhode Island Department of Health Certificate/Lab ID : LAO00289 - Chemistry: *Organic and Inorganic in Non-Poratable Water, Wastewater/Sewage and Soil* (Refer to LADEQ and MADEP certificates for method numbers.)

Pennsylvania Department of Environmental Protection Certificate/Lab ID : 68-02089 - Registered laboratory

U.S. Army Corps of Engineers

Department of the Navy

ANALYTICAL REPORT

Prepared for:
Battelle
Duxbury Operations
397 Washington Street
Duxbury, MA 02332

Project:	New Bedford Harbor
ETR:	0709042
Report Date:	September 24, 2007

Certifications and Accreditations
Massachusetts M-MA030
Connecticut PH-0141
New Hampshire 2206
Rhode Island LAO00289
New Jersey MA015
Maine MA0030
New York 11627
Louisiana 03090
Florida E87814
Pennsylvania 68-02089
Army Corps of Engineers
Department of the Navy

This report shall not be reproduced except in full, without written approval from the laboratory.

320 Forbes Blvd, Mansfield, MA 02048, (508) 822-9300, Fax (508) 822-3288

CASE NARRATIVE
Alpha Woods Hole Labs

ETR: 0709042
Project: SBPF – Nearshore Turbidity

All analyses were performed according to Alpha Woods Hole Labs quality assurance program and documented Standard Operating Procedures (SOPs). The analytical results contained in this report meet all applicable agency and/or NELAC standards, were performed within holding time, and with appropriate quality control measures, except where noted. Blank correction of results is not performed in the laboratory for any parameter. Soil/sediment samples are reported on a dry weight basis unless otherwise noted. Tissue and sediment samples are not certifiable under the NELAC accreditation.

The enclosed results of analyses are representative of the samples as received by the laboratory. Alpha Woods Hole Labs makes no representations or certifications as to the method of sample collection, sample identification, or transporting/handling procedures used prior to the receipt of samples by Alpha Woods Hole Labs. To the best of my knowledge, the information contained in this report is accurate and complete.

Approved by: Nancy Rose Title: Project Manager Date: 9/24/07

Sample ID Cross Reference

Client: **Battelle**
Project: **New Bedford Harbor**

Lab Code: **MA00030**
ETR: **0709042**

Lab Sample ID	Client Sample ID
0709042-01	WQ-TSS/TUR-001-091107
0709042-02	WQ-TSS/TUR-001-091107
0709042-03	WQ-TSS/TUR-002-091107
0709042-04	WQ-TSS/TUR-003-091107

320 Forbes Blvd, Mansfield, MA 02048, (508) 822-9300, Fax (508) 822-3288

Inorganics

Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **WQ-TSS/TUR-001-091107**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0709042**

Lab ID: **0709042-01**
Date Collected: **09/11/07**
Date Received: **09/11/07**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
TSS - Membrane	**10.3**		1.00	1	09/18/07	mg/L	160.2	JAD
Turbidity - 180.1	**5.91**		0.400	1	09/11/07	NTU	180.1	JAD

N/A - Not Applicable

320 Forbes Blvd, Mansfield, MA 02048, (508) 822-9300, Fax (508) 822-3288

Inorganics

Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **WQ-TSS/TUR-001-091107**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0709042**

Lab ID: **0709042-02**
Date Collected: **09/11/07**
Date Received: **09/11/07**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
TSS - Membrane	**43.8**		1.00	1	09/18/07	mg/L	160.2	JAD
Turbidity - 180.1	**6.04**		0.400	1	09/11/07	NTU	180.1	JAD

N/A - Not Applicable

320 Forbes Blvd, Mansfield, MA 02048, (508) 822-9300, Fax (508) 822-3288

Inorganics

Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **WQ-TSS/TUR-002-091107**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0709042**

Lab ID: **0709042-03**
Date Collected: **09/11/07**
Date Received: **09/11/07**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
TSS - Membrane	**41.0**		1.00	1	09/18/07	mg/L	160.2	JAD
Turbidity - 180.1	**19.2**		0.400	1	09/11/07	NTU	180.1	JAD

N/A - Not Applicable

320 Forbes Blvd, Mansfield, MA 02048, (508) 822-9300, Fax (508) 822-3288

Inorganics

Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **WQ-TSS/TUR-003-091107**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0709042**

Lab ID: **0709042-04**
Date Collected: **09/11/07**
Date Received: **09/11/07**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
TSS - Membrane	**129**		1.00	1	09/18/07	mg/L	160.2	JAD
Turbidity - 180.1	**52.0**		0.400	1	09/11/07	NTU	180.1	JAD

N/A - Not Applicable

320 Forbes Blvd, Mansfield, MA 02048, (508) 822-9300, Fax (508) 822-3288

Blank
Inorganics

Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **Blank**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0709042**
Lab ID: **WW091207B16**
Date Collected: **N/A**
Date Received: **N/A**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
Turbidity - 180.1	0.400	U	0.400	1	09/11/07	NTU	180.1	JAD

N/A - Not Applicable
U - The analyte was analyzed for but not detected at the sample specific level reported.

320 Forbes Blvd, Mansfield, MA 02048, (508) 822-9300, Fax (508) 822-3288

Laboratory Control Sample
Inorganics

Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **Laboratory Control Sample**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0709042**

Lab ID: **WW091207L02**
Date Collected: **N/A**
Date Received: **N/A**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
Turbidity - 180.1	**20.2**	S	0.400	1	09/11/07	NTU	180.1	JAD

N/A - Not Applicable
S - Spike compound.

320 Forbes Blvd, Mansfield, MA 02048, (508) 822-9300, Fax (508) 822-3288

Blank
Inorganics

Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **Blank**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0709042**
Lab ID: **WW091807B20**
Date Collected: **N/A**
Date Received: **N/A**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
TSS - Membrane	1.00	U	1.00	1	09/18/07	mg/L	160.2	JAD

N/A - Not Applicable
U - The analyte was analyzed for but not detected at the sample specific level reported.

320 Forbes Blvd, Mansfield, MA 02048, (508) 822-9300, Fax (508) 822-3288

Laboratory Control Sample
Inorganics

Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **Laboratory Control Sample**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0709042**

Lab ID: **WW091807L04**
Date Collected: **N/A**
Date Received: **N/A**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
TSS - Membrane	**508**	S	1.00	1	09/18/07	mg/L	160.2	JAD

N/A - Not Applicable
S - Spike compound.

320 Forbes Blvd, Mansfield, MA 02048, (508) 822-9300, Fax (508) 822-3288

Laboratory Control Sample
Inorganics

Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **Laboratory Control Sample**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0709042**

Lab ID: **WW091207L02**
Date Collected: **N/A**
Date Received: **N/A**

Parameter	Conc.	% Recovery	% Recovery Limits
Turbidity - 180.1	20.2	101	80-120

N/A - Not Applicable

Concentrations reported as calculated values, which includes rounding for significant figures. Percent recoveries and RPD values are calculated from the unrounded results.

09/21/07 18:21

Laboratory Control Sample
Inorganics

Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **Laboratory Control Sample**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0709042**

Lab ID: **WW091807L04**
Date Collected: **N/A**
Date Received: **N/A**

Parameter	Conc.	% Recovery	% Recovery Limits
TSS - Membrane	508	102	80-120

N/A - Not Applicable

Concentrations reported as calculated values, which includes rounding for significant figures. Percent recoveries and RPD values are calculated from the unrounded results.

09/21/07 18:21

Battelle
The Business of Innovation

Chain of Custody

0709042

397 Washington Street
Duxbury, MA 02332
Phone: 781-952-5200
Fax: 781-934-2124

Proj. No: 96006422
Proj. Name: New Bedford Harbor WQ

SAMPLERS: Signature

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

DATE	TIME	BATTELLE ID	CLIENT ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	~~OTHER~~ TSS/Turb	ACIDIFIED	PRESERVED	Total Number of Containers
9/11/07	~~9:01~~		~~WQ-001~~									✓			
9/11/07	9:01		WQ-TSS/TUR-001-091107	Reference 4.9 NTU								✓			2
"	"		WQ-TSS/TUR-001-091107	" " Field Dup								✓			1
"	9:45		WQ-TSS/TUR-002-091107	23-29 NTU								✓			2
"	10:15		WQ-TSS/TUR-003-091107	59-60 NTU								✓			2

Relinquished by: [signature] — Date/Time: 9/11/07 12:00
Received by: [signature] — Date/Time: 9/11/07 1200

Relinquished by: — Date/Time:
Received by: — Date/Time:

Comments:

ORIGINAL

Sample Receipt Checklist

Client: BATDUX		Receipt Date: 9/11/07	
Project: NB Harbor		Log-in Date:	
ETR #: 0709042		Inspection by: MK	Login by: MK

ALL SECTIONS BELOW MUST BE COMPLETED

	Comments / Notes
Were samples shipped? Yes, FedEx / UPS / Other:____ No, WHG Courier pick-up / (Hand delivered)	Sample storage refrigerator #: F2
Is bill of lading retained? Yes, Tracking #:____ No, Unavailable / (NA)	Sample storage freezer #:____
Number of coolers received for this project delivery: 1	
Indicate cooler temperature upon opening (if multiple coolers, record all temps): **Note:** If all coolers are 2-6°C, use one checklist, if NOT, use separate checklists and note all samples received *above* 6°C. **Cooler 1:** Temperature(s) taken from: 5° IR Gun, ____ Temp. Blank, / NA Were samples received on ice? (Yes) / No	Cooler 2:____ Cooler 3:____ Cooler 4:____ Cooler 5:____ Cooler 6:____ Cooler 7:____ More:____
Chain-of-Custody present? (Yes) / No Complete? (Yes) / No	
Custody seals present on Cooler? Yes / (No) on Bottles? Yes / (No) Intact? Yes / No / (NA) *Note: Affix custody seals to back of this page.*	
Were sample containers intact? (Yes) / No If No, list samples: →	
Did VOA/VPH waters contain headspace (>5mm)? Yes / No / (NA) If Yes, list samples: →	
Were 5035 VOA soils, or VPH soils, *covered* with MeOH? Yes / No / (NA) If No, list samples: →	
Was a sufficient amount of sample received for each test indicated on the COC? (Yes) / No If No, list samples: →	
If chemical preservation is appropriate - Were samples field preserved? Yes / No / (NA) ☐C=HCl ☐ M=MeOH ☐ S=H_2SO4 ☐H=NaOH ☐ N=HNO_3 ☐ Other:____ ☐ U= Unknown	Chemical preservation OK for ALL samples? Yes / No / (N/A) If No, list samples below:
Preservation (pH) verified at lab for *EVERY* bottle? (Not: VOA / VPH / Sulfide) YES: <2 or >12 (CN) or NO (NA) If No, why?:	
Were samples received within hold time? (Yes) No If No, list samples: →	
Discrepancy between samples rec'd & COC ? Yes / (No) If Yes, list samples: →	
Was the Project Manager notified of any other problems? Yes / No / NA Project Manager Acknowledgement: (N/A) Date: 9/11/07	*Please use back for any additional notes!*

Certificate/Approval Program Summary

Method numbers assume the most recent EPA revisions. For a complete listing of analytes for the referenced methods please contact your Alpha Woods Hole Lab Project Manager or the Quality Assurance Manager.

Connecticut Department of Public Health Certificate/Lab ID : PH-0141 - *Wastewater* (General Chemistry: EPA 120.1, 150.1, 160.1, 160.2, 180.1, 300.0, 310.1, 335.2, 365.2; Metals: 200.8, 245.1; Organics: 608, 624, 625, ETPH) *Solid Waste/Soil* (General Chemistry: 1010, 9010/9014, 9045, 9060; Metals: 6020, 7470, 7471; Organics: 8081, 8082, 8260, 8270, ETPH).

Florida Department of Health Certificate/Lab ID : E87814 - Primary NELAP Accreditation Authority for Air & Emissions. Secondary NELAP Accreditation for Wastwater and Solid & Hazardous Waste. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 180.1, 300.0, 335.2, 365.2, SM2320B, SM2340B, SM2540G, SM4500NH3; Metals: 245.1; Organics: 608, 624, 625). *Solid and Hazardous Waste* (General Chemistry: 9010/9014, 9045, 9050, 9056, 9065, Reactivity 7.3; Metals: 6020, 7470, 7471; Organics: 8081, 8082, 8260, 8270). *Air & Emissions* (Organics: EPA TO-15).

Louisiana Department of Environmental Quality Certificate/Lab ID : 03090 - Primary NELAP Accrediting Authority for Wastewater, Solid & Hazardous Waste. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 180.1, 300.0, 310.1/SM2320B, 335.2, 365.2, 376.2, 9010/9014, 9056, SM2540G; Metals: 200.8, 245.1, 6020; Organics: 608, 624, 625, 8015-DRO/GRO, 8081, 8082, 8260, 8270). *Solid and Hazardous Waste* (General Chemistry: 1010, 1311, 9010/9014, 9040, 9045, 9056, 9060, Reactivity 7.3; Metals: 6020, 7196, 7470, 7471; Organics: 8015-DRO/GRO, 8081, 8082, 8260, 8270).

Maine Department of Human Services Certificate/Lab ID : MA0030 - *Wastewater* (General Chemistry: EPA 120.1/ SM2510B, 160.1/SM2540C, 160.2/SM2540D, 300.0, 310.1/SM2320B, 335.2, 365.2; Metals: EPA 245.1; Organics: 608, 624)

Massachusetts Department of Environmental Protection Certificate/Lab ID: M-MA030 - *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 300.0, 310.1/SM2320B, 335.2, 365.2; Metals: EPA 245.1; Organics: EPA 608, 624).

New Hampshire Department of Environmental Services Certificate/Lab ID: 2206 - Secondary NELAP Accreditation. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 180.1, 300.0, 310.1/SM2320B, 335.2, 365.2, 376.2, SM2540G; Metals: 200.8, 245.4; Organics: 608, 624, 625).

New Jersey Department of Environmental Protection Certificate/Lab ID : MA015 - Secondary NELAP Accreditation. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 180.1, 300.0, 310.1/SM2320B, 335.2, 376.2, 9010/9014, 9056, SM2540G; Metals: 200.8, 245.1 6020; Organics: 608, 624, 625, 8081, 8082, 8260, 8270). *Solid & Hazardous Waste* (General Chemistry: EPA 1010, 1311, 9010/9014, 9040, 9045, 9056, 9060; Metals: 6020, 7196, 7470, 7471; Organics: 8015-DRO/GRO, 8081, 8082, 8260, 8270). *Air & Emissions* (Organics: EPA TO-15).

New York Department of Health Certificate/Lab ID : 11627 - Secondary NELAP Accreditation. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 300.0, 310.1/SM2320B, 365.2, 376.2; Metals: 245.1; Organics: 608, 624, 625). *Solid and Hazardous Waste* (General Chemistry: EPA 1010, 1311; : 245.1; 6020, 7041; Organics: 8081, 8082, 8260, 8270). *Air & Emissions* (Organics: EPA TO-15).

Rhode Island Department of Health Certificate/Lab ID : LAO00289 - Chemistry: *Organic and Inorganic in Non-Poratable Water, Wastewater/Sewage and Soil* (Refer to LADEQ and MADEP certificates for method numbers.)

Pennsylvania Department of Environmental Protection Certificate/Lab ID : 68-02089 - Registered laboratory

U.S. Army Corps of Engineers

Department of the Navy

ANALYTICAL REPORT

Prepared for:
Battelle
Duxbury Operations
397 Washington Street
Duxbury, MA 02332

Project:	New Bedford Harbor
ETR:	0709133
Report Date:	October 09, 2007

Certifications and Accreditations

Massachusetts M-MA030
Connecticut PH-0141
New Hampshire 2206
Rhode Island LAO00289
New Jersey MA015
Maine MA0030
New York 11627
Louisiana 03090
Florida E87814
Pennsylvania 68-02089
Army Corps of Engineers
Department of the Navy

This report shall not be reproduced except in full, without written approval from the laboratory.

320 Forbes Blvd, Mansfield, MA 02048, (508) 822-9300, Fax (508) 822-3288

CASE NARRATIVE
Alpha Woods Hole Labs

ETR: 0709133
Project: New Bedford Harbor

All analyses were performed according to Alpha Woods Hole Labs quality assurance program and documented Standard Operating Procedures (SOPs). The analytical results contained in this report were performed within holding time, and with appropriate quality control measures, except where noted. A summary of all state and federal accreditations is provided within this report. Blank correction of results is not performed in the laboratory for any parameter. Soil/sediment samples are reported on a dry weight basis unless otherwise noted. Tissue and sediment samples are not certifiable under the NELAC accreditation.

The enclosed results of analyses are representative of the samples as received by the laboratory. Alpha Woods Hole Labs makes no representations or certifications as to the method of sample collection, sample identification, or transporting/handling procedures used prior to the receipt of samples by Alpha Woods Hole Labs. To the best of my knowledge, the information contained in this report is accurate and complete.

Approved by: Nancy A Rose — Nancy A.Rose | Title: Project Manager — Project Manager | Date: 10/9/07

Sample ID Cross Reference

Client: **Battelle**
Project: **New Bedford Harbor**

Lab Code: **MA00030**
ETR: **0709133**

Lab Sample ID	Client Sample ID
0709133-01	WQ-TSS/TUR-001-092507
0709133-02	WQ-TSS/TUR-002-092507
0709133-03	WQ-TSS/TUR-003-092507
0709133-04	WQ-TSS/TUR-003-092507-DUP

Inorganics

ALPHA WOODS HOLE LABS

Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **WQ-TSS/TUR-001-092507**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0709133**

Lab ID: **0709133-01**
Date Collected: **09/25/07**
Date Received: **09/25/07**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
TSS - Membrane	**188**		1.00	1	09/28/07	mg/L	160.2	JAD
Turbidity - 180.1	**63.8**		0.400	1	09/25/07	NTU	180.1	JAD

N/A - Not Applicable

320 Forbes Blvd, Mansfield, MA 02048, (508) 822-9300, Fax (508) 822-3288

Inorganics

ALPHA WOODS HOLE LABS

Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **WQ-TSS/TUR-002-092507**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0709133**

Lab ID: **0709133-02**
Date Collected: **09/25/07**
Date Received: **09/25/07**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
TSS - Membrane	**227**		1.00	1	09/28/07	mg/L	160.2	JAD
Turbidity - 180.1	**108**		0.400	1	09/25/07	NTU	180.1	JAD

N/A - Not Applicable

10/08/07 19:01

Inorganics

ALPHA WOODS HOLE LABS

Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **WQ-TSS/TUR-003-092507**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0709133**

Lab ID: **0709133-03**
Date Collected: **09/25/07**
Date Received: **09/25/07**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
TSS - Membrane	**27.5**		1.00	1	09/28/07	mg/L	160.2	JAD
Turbidity - 180.1	**13.8**		0.400	1	09/25/07	NTU	180.1	JAD

N/A - Not Applicable

320 Forbes Blvd, Mansfield, MA 02048, (508) 822-9300, Fax (508) 822-3288

Inorganics

ALPHA WOODS HOLE LABS

Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **WQ-TSS/TUR-003-092507-DUP**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0709133**

Lab ID: **0709133-04**
Date Collected: **09/25/07**
Date Received: **09/25/07**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
TSS - Membrane	**34.5**		1.00	1	09/28/07	mg/L	160.2	JAD
Turbidity - 180.1	**12.4**		0.400	1	09/25/07	NTU	180.1	JAD

N/A - Not Applicable

320 Forbes Blvd, Mansfield, MA 02048, (508) 822-9300, Fax (508) 822-3288

Blank
Inorganics

Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **Blank**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0709133**

Lab ID: **WW092807B06**
Date Collected: **N/A**
Date Received: **N/A**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
Turbidity - 180.1	0.400	U	0.400	1	09/25/07	NTU	180.1	JAD

N/A - Not Applicable
U - The analyte was analyzed for but not detected at the sample specific level reported.

320 Forbes Blvd, Mansfield, MA 02048, (508) 822-9300, Fax (508) 822-3288

Blank
Inorganics

Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **Blank**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0709133**

Lab ID: **WW092807B13**
Date Collected: **N/A**
Date Received: **N/A**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
TSS - Membrane	1.00	U	1.00	1	09/28/07	mg/L	160.2	JAD

N/A - Not Applicable
U - The analyte was analyzed for but not detected at the sample specific level reported.

320 Forbes Blvd, Mansfield, MA 02048, (508) 822-9300, Fax (508) 822-3288

Laboratory Control Sample
Inorganics

ALPHA WOODS HOLE LABS

Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **Laboratory Control Sample**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0709133**

Lab ID: **WW092807L01**
Date Collected: **N/A**
Date Received: **N/A**

Parameter	Conc.	% Recovery	% Recovery Limits
Turbidity - 180.1	21.0	105	80-120

N/A - Not Applicable

Concentrations reported as calculated values, which includes rounding for significant figures. Percent recoveries and RPD values are calculated from the unrounded results.

10/08/07 19:02

Laboratory Control Sample
Inorganics

Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **Laboratory Control Sample**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0709133**

Lab ID: **WW092807L02**
Date Collected: **N/A**
Date Received: **N/A**

Parameter	Conc.	% Recovery	% Recovery Limits
TSS - Membrane	501	100	80-120

N/A - Not Applicable

Concentrations reported as calculated values, which includes rounding for significant figures. Percent recoveries and RPD values are calculated from the unrounded results.

10/08/07 19:02

0709133

Battelle

The Business of Innovation

Chain of Custody

397 Washington Street
Duxbury, MA 02332
Phone: 781-952-5200
Fax: 781-934-2124

Proj. No: G606422-07WQ

Proj. Name: New Bedford Harbor

SAMPLERS: Signature: Michael Walsh

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

DATE	TIME	BATTELLE ID	CLIENT ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER TSS/Turbidity	ACIDIFIED	~~PRESERVED~~/ICE	Total Number of Containers
9/25/2007	1137	WQ-TSS/TUR	-001-092507	55-65 NTU								✓		✓	2
9/25/2007	1157	WQ-TSS/TUR	-002-092507	90-100 NTU								✓		✓	2
9/25/2007	1212	WQ-TSS/TUR	-003-092507	10-20 NTU								✓		✓	2
9/25/2007	1212	WQ-TSS/TUR	-003-092507-DUP	10-20 NTU								✓		✓	2

Relinquished by:	Date/Time	Received by:	Date/Time
Michael Walsh	9/25/2007 1330	Jessica Hardy	9/25/07 1330
Jessica Hardy	9/25/07 14:40	[illegible]	9/25/07 1440

Comments:

ORIGINAL

Sample Receipt Checklist

Client: BATDUX	**Receipt Date:** 9/25/07		
Project: NB Harbor	**Log-in Date:**		
ETR #: 0709133	**Inspection by:** W	**Login by:** W	

ALL SECTIONS BELOW MUST BE COMPLETED

Comments / Notes

Were samples shipped? Yes, FedEx / UPS / Other:_____
No, WHG Courier pick-up / Hand delivered

Is bill of lading retained? Yes, Tracking #:_____
No, Unavailable / NA

Number of coolers received for this project delivery: 1

Indicate cooler temperature upon opening (if multiple coolers, record all temps):

Note: If all coolers are 2-6°C, use one checklist, if NOT, use separate checklists and note all samples received *above* 6°C.

Cooler 1:
Temperature(s) taken from: 3° IR Gun, 3° Temp. Blank, / NA

Were samples received on ice? Yes / No

Chain-of-Custody present? Yes / No
Complete? Yes / No

Custody seals present on Cooler? Yes / No
on Bottles? Yes / No
Intact? Yes / No / NA
Note: Affix custody seals to back of this page.

Were sample containers intact? Yes / No If No, list samples: →

Did VOA/VPH waters contain headspace (>5mm)? Yes / No / NA If Yes, list samples: →

Were 5035 VOA soils, or VPH soils, *covered* with MeOH? Yes / No / NA
If No, list samples: →

Was a sufficient amount of sample received for each test indicated on the COC?
Yes / No If No, list samples: →

If chemical preservation is appropriate -
Were samples field preserved? Yes / No / NA
☐ C=HCl ☐ M=MeOH ☐ S=H_2SO4
☐ H=NaOH ☐ N=HNO_3 ☐ Other:_____ ☐ U= Unknown

Preservation (pH) verified at lab for *EVERY* bottle? (Not: VOA / VPH / Sulfide)
YES: <2 or >12 (CN) or NO NA
If No, why?:

Were samples received within hold time? Yes / No If No, list samples: →

Discrepancy between samples rec'd & COC ? Yes / No If Yes, list samples: →

Was the Project Manager notified of any other problems? Yes / No / NA

Project Manager Acknowledgement: Nanaya Rose Date: 9/26/07

Sample storage refrigerator #: C1

Sample storage freezer #:_____

Cooler 2:_____ Cooler 3:_____

Cooler 4:_____ Cooler 5:_____

Cooler 6:_____ Cooler 7:_____

More:_____

Chemical preservation OK for ALL samples?
Yes / No / N/A
If No, list samples below:

Please use back for any additional notes!

Certificate/Approval Program Summary

Method numbers assume the most recent EPA revisions. For a complete listing of analytes for the referenced methods please contact your Alpha Woods Hole Lab Project Manager or the Quality Assurance Manager.

Connecticut Department of Public Health Certificate/Lab ID : PH-0141 - *Wastewater* (General Chemistry: EPA 120.1, 150.1, 160.1, 160.2, 180.1, 300.0, 310.1, 335.2, 365.2; Metals: 200.8, 245.1; Organics: 608, 624, 625, ETPH) *Solid Waste/Soil* (General Chemistry: 1010, 9010/9014, 9045, 9060; Metals: 6020, 7470, 7471; Organics: 8081, 8082, 8260, 8270, ETPH).

Florida Department of Health Certificate/Lab ID : E87814 - Primary NELAP Accreditation Authority for Air & Emissions. Secondary NELAP Accreditation for Wastwater and Solid & Hazardous Waste. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 180.1, 300.0, 335.2, 365.2, SM2320B, SM2340B, SM2540G, SM4500NH3; Metals: 245.1; Organics: 608, 624, 625). *Solid and Hazardous Waste* (General Chemistry: 9010/9014, 9045, 9050, 9056, 9065, Reactivity 7.3; Metals: 6020, 7470, 7471; Organics: 8081, 8082, 8260, 8270). *Air & Emissions* (Organics: EPA TO-15).

Louisiana Department of Environmental Quality Certificate/Lab ID : 03090 - Primary NELAP Accrediting Authority for Wastewater, Solid & Hazardous Waste. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 180.1, 300.0, 310.1/SM2320B, 335.2, 365.2, 376.2, 9010/9014, 9056, SM2540G; Metals: 200.8, 245.1, 6020; Organics: 608, 624, 625, 8015-DRO/GRO, 8081, 8082, 8260, 8270). *Solid and Hazardous Waste* (General Chemistry: 1010, 1311, 9010/9014, 9040, 9045, 9056, 9060, Reactivity 7.3; Metals: 6020, 7196, 7470, 7471; Organics: 8015-DRO/GRO, 8081, 8082, 8260, 8270).

Maine Department of Human Services Certificate/Lab ID : MA0030 - *Wastewater* (General Chemistry: EPA 120.1/ SM2510B, 160.1/SM2540C, 160.2/SM2540D, 300.0, 310.1/SM2320B, 335.2, 365.2; Metals: EPA 245.1; Organics: 608, 624).

Massachusetts Department of Environmental Protection Certificate/Lab ID: M-MA030 - *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 300.0, 310.1/SM2320B, 335.2, 365.2; Metals: EPA 245.1; Organics: EPA 608, 624).

New Hampshire Department of Environmental Services Certificate/Lab ID: 2206 - Secondary NELAP Accreditation. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 180.1, 300.0, 310.1/SM2320B, 335.2, 365.2, 376.2, SM2540G; Metals: 200.8, 245.4; Organics: 608, 624, 625).

New Jersey Department of Environmental Protection Certificate/Lab ID : MA015 - Secondary NELAP Accreditation. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 180.1, 300.0, 310.1/SM2320B, 335.2, 376.2, 9010/9014, 9056, SM2540G; Metals: 200.8, 245.1 6020; Organics: 608, 624, 625, 8081, 8082, 8260, 8270). *Solid & Hazardous Waste* (General Chemistry: EPA 1010, 1311, 9010/9014, 9040, 9045, 9056, 9060; Metals: 6020, 7196, 7470, 7471; Organics: 8015-DRO/GRO, 8081, 8082, 8260, 8270). *Air & Emissions* (Organics: EPA TO-15).

New York Department of Health Certificate/Lab ID : 11627 - Secondary NELAP Accreditation. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 300.0, 310.1/SM2320B, 365.2, 376.2; Metals: 245.1; Organics: 608, 624, 625). *Solid and Hazardous Waste* (General Chemistry: EPA 1010, 1311; : 245.1; 6020, 7041; Organics: 8081, 8082, 8260, 8270). *Air & Emissions* (Organics: EPA TO-15).

Rhode Island Department of Health Certificate/Lab ID : LAO00289 - Chemistry: *Organic and Inorganic in Non-Poratable Water, Wastewater/Sewage and Soil* (Refer to LADEQ and MADEP certificates for method numbers.)

Pennsylvania Department of Environmental Protection Certificate/Lab ID : 68-02089 - Registered laboratory

U.S. Army Corps of Engineers

Department of the Navy

ANALYTICAL REPORT

Prepared for:
Battelle
Duxbury Operations
397 Washington Street
Duxbury, MA 02332

Project:	New Bedford Harbor
ETR:	0710028
Report Date:	October 12, 2007

Certifications and Accreditations
Massachusetts M-MA030
Connecticut PH-0141
New Hampshire 2206
Rhode Island LAO00289
New Jersey MA015
Maine MA0030
New York 11627
Louisiana 03090
Florida E87814
Pennsylvania 68-02089
Army Corps of Engineers
Department of the Navy

This report shall not be reproduced except in full, without written approval from the laboratory.

320 Forbes Blvd, Mansfield, MA 02048, (508) 822-9300, Fax (508) 822-3288

CASE NARRATIVE
Alpha Woods Hole Labs

ETR: 0710028
Project: New Bedford Harbor

All analyses were performed according to Alpha Woods Hole Labs quality assurance program and documented Standard Operating Procedures (SOPs). The analytical results contained in this report were performed within holding time, and with appropriate quality control measures, except where noted. A summary of all state and federal accreditations is provided within this report. Blank correction of results is not performed in the laboratory for any parameter. Soil/sediment samples are reported on a dry weight basis unless otherwise noted. Tissue and sediment samples are not certifiable under the NELAC accreditation.

The enclosed results of analyses are representative of the samples as received by the laboratory. Alpha Woods Hole Labs makes no representations or certifications as to the method of sample collection, sample identification, or transporting/handling procedures used prior to the receipt of samples by Alpha Woods Hole Labs. To the best of my knowledge, the information contained in this report is accurate and complete. For any questions regarding this report, please contact the signatory below at 508-822-9300.

Approved by: Nancy A. Rose Title: Project Manager Date: 10/12/07
Nancy A. Rose

Sample ID Cross Reference

Client: **Battelle**
Project: **New Bedford Harbor**

Lab Code: **MA00030**
ETR: **0710028**

Lab Sample ID	Client Sample ID
0710028-01	WQ-TSS/TURB-001-100307
0710028-02	WQ-TSS/TURB-002-100307
0710028-03	WQ-TSS/TURB-002-100307-DUP
0710028-04	WQ-TSS/TURB-003-100307

Inorganics

ALPHA WOODS HOLE LABS

Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **WQ-TSS/TURB-001-100307**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0710028**

Lab ID: **0710028-01**
Date Collected: **10/03/07**
Date Received: **10/03/07**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
TSS - Membrane	**144**		1.00	1	10/10/07	mg/L	160.2	JAD
Turbidity - 180.1	**71.6**		0.400	1	10/03/07	NTU	180.1	JAD

N/A - Not Applicable

320 Forbes Blvd, Mansfield, MA 02048, (508) 822-9300, Fax (508) 822-3288

Inorganics

ALPHA WOODS HOLE LABS

Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **WQ-TSS/TURB-002-100307**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0710028**

Lab ID: **0710028-02**
Date Collected: **10/03/07**
Date Received: **10/03/07**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
TSS - Membrane	**34.3**		1.00	1	10/10/07	mg/L	160.2	JAD
Turbidity - 180.1	**15.5**		0.400	1	10/03/07	NTU	180.1	JAD

N/A - Not Applicable

320 Forbes Blvd, Mansfield, MA 02048, (508) 822-9300, Fax (508) 822-3288

Inorganics

ALPHA WOODS HOLE LABS

Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **WQ-TSS/TURB-002-100307-DUP**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0710028**

Lab ID: **0710028-03**
Date Collected: **10/03/07**
Date Received: **10/03/07**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
TSS - Membrane	**28.5**		1.00	1	10/10/07	mg/L	160.2	JAD
Turbidity - 180.1	**16.7**		0.400	1	10/03/07	NTU	180.1	JAD

N/A - Not Applicable

320 Forbes Blvd, Mansfield, MA 02048, (508) 822-9300, Fax (508) 822-3288

Inorganics

Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **WQ-TSS/TURB-003-100307**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0710028**

Lab ID: **0710028-04**
Date Collected: **10/03/07**
Date Received: **10/03/07**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
TSS - Membrane	**19.0**		1.00	1	10/10/07	mg/L	160.2	JAD
Turbidity - 180.1	**14.0**		0.400	1	10/03/07	NTU	180.1	JAD

N/A - Not Applicable

320 Forbes Blvd, Mansfield, MA 02048, (508) 822-9300, Fax (508) 822-3288

Blank
Inorganics

Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **Blank**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0710028**

Lab ID: **WW100507B12**
Date Collected: **N/A**
Date Received: **N/A**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
Turbidity - 180.1	0.400	U	0.400	1	10/03/07	NTU	180.1	JAD

N/A - Not Applicable
U - The analyte was analyzed for but not detected at the sample specific level reported.

320 Forbes Blvd, Mansfield, MA 02048, (508) 822-9300, Fax (508) 822-3288

Laboratory Control Sample
Inorganics

Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **Laboratory Control Sample**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0710028**

Lab ID: **WW100507L05**
Date Collected: **N/A**
Date Received: **N/A**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
Turbidity - 180.1	**20.4**	S	0.400	1	10/03/07	NTU	180.1	JAD

N/A - Not Applicable
S - Spike compound.

320 Forbes Blvd, Mansfield, MA 02048, (508) 822-9300, Fax (508) 822-3288

Blank
Inorganics

Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **Blank**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0710028**

Lab ID: **WW101007B46**
Date Collected: **N/A**
Date Received: **N/A**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
TSS - Membrane	1.00	U	1.00	1	10/10/07	mg/L	160.2	JAD

N/A - Not Applicable
U - The analyte was analyzed for but not detected at the sample specific level reported.

320 Forbes Blvd, Mansfield, MA 02048, (508) 822-9300, Fax (508) 822-3288

Laboratory Control Sample
Inorganics

ALPHA WOODS HOLE LABS

Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **Laboratory Control Sample**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0710028**

Lab ID: **WW100507L05**
Date Collected: **N/A**
Date Received: **N/A**

Parameter	Conc.	% Recovery	% Recovery Limits
Turbidity - 180.1	20.4	102	80-120

N/A - Not Applicable

Concentrations reported as calculated values, which includes rounding for significant figures. Percent recoveries and RPD values are calculated from the unrounded results.

10/12/07 08:47

Laboratory Control Sample
Inorganics

Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **Laboratory Control Sample**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0710028**

Lab ID: **WW101007L17**
Date Collected: **N/A**
Date Received: **N/A**

Parameter	Conc.	% Recovery	% Recovery Limits
TSS - Membrane	501	100	80-120

N/A - Not Applicable

Concentrations reported as calculated values, which includes rounding for significant figures. Percent recoveries and RPD values are calculated from the unrounded results.

10/12/07 08:47

Sample Receipt Checklist

Client: BATDUX		**Receipt Date:** 10/3/07	
Project: NB Harbor		**Log-in Date:**	
ETR #: 0710028		**Inspection by:**	**Login by:**

ALL SECTIONS BELOW MUST BE COMPLETED

Comments / Notes

Were samples shipped? Yes, FedEx / UPS / Other:_____
No, WHG Courier pick-up / (Hand delivered)

Is bill of lading retained? Yes, Tracking #:_____
No, Unavailable / (NA)

Number of coolers received for this project delivery: _____

Indicate cooler temperature upon opening (if multiple coolers, record all temps):

Note: If all coolers are 2-6°C, use one checklist, if NOT, use separate checklists and note all samples received *above* 6°C.

Cooler 1:
Temperature(s) taken from: 4° IR Gun, 4° Temp. Blank, / NA

Were samples received on ice? (Yes) / No

Chain-of-Custody present? (Yes) / No
Complete? (Yes) / No

Custody seals present on Cooler? Yes / (No)
on Bottles? Yes / (No)
Intact? Yes / No / (NA)

Note: Affix custody seals to back of this page.

Were sample containers intact? (Yes) / No If No, list samples: →

Did VOA/VPH waters contain headspace (>5mm)? Yes / No / (NA) If Yes, list samples: →

Were 5035 VOA soils, or VPH soils, *covered* with MeOH? Yes / No / (NA)
If No, list samples: →

Was a sufficient amount of sample received for each test indicated on the COC?
(Yes) / No If No, list samples: →

If chemical preservation is appropriate -
Were samples field preserved? Yes / No / (NA)

☐ C=HCl ☐ M=MeOH ☐ S=H_2SO4
☐ H=NaOH ☐ N=HNO_3 ☐ Other:_____ ☐ U= Unknown

Preservation (pH) verified at lab for *EVERY* bottle? (Not: VOA / VPH / Sulfide)
YES: <2 or >12 (CN) or NO (NA)
If No, why?:

Were samples received within hold time? (Yes) / No If No, list samples: →

Discrepancy between samples rec'd & COC ? Yes / (No) If Yes, list samples: →

Was the Project Manager notified of any other problems? Yes / No / NA

Project Manager Acknowledgement: [signature] Date: 10/3/07

Sample storage refrigerator #: C2

Sample storage freezer #:_____

Cooler 2:_____ Cooler 3:_____

Cooler 4:_____ Cooler 5:_____

Cooler 6:_____ Cooler 7:_____

More:_____

Chemical preservation OK for ALL samples?

Yes / No / (N/A)

If No, list samples below:

Please use back for any additional notes!

Battelle

The Business of Innovation

Chain of Custody

07100 28

397 Washington Street
Duxbury, MA 02332
Phone: 781-952-5200
Fax: 781-934-2124

Proj. No: 506422-07WQ

Proj. Name: New Bedford Harbor

SAMPLERS: Signature: Michael Walsh

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

DATE	TIME	BATTELLE ID	CLIENT ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER → TSS/TUR	ACIDIFIED	PRESERVED → Cold	Total Number of Containers
3/07	1100	WQ-TSS/TUR	-001-100307	50' feet from Source 65-100NTU 1of2								✓		✓	1
3/07	1100	WQ-TSS/TUR	-001-100307	50' feet from Source 65-100NTU 2of2								✓		✓	1
3/07	1150	WQ-TSS/TUR	-002-100307	300' feet from source 13-20 NTU 1of2								✓		✓	1
3/07	1150	WQ-TSS/TUR	-002-100307	300 feet from source 13-20 NTU 2of2								✓		✓	1
3/07	1150	WQ-TSS/TUR	-002-100307-DUP	300 feet from Source 13-20NTU 1of2								✓		✓	1
3/07	1150	WQ-TSS/TUR	-002-100307-DUP	300 feet from Source 13-20NTU 2of2								✓		✓	1
3/07	1228	WQ-TSS/TUR	-003-100307	600 feet from Source 11-13 NTU 1of2								✓		✓	1
3/07	1228	WQ-TSS/TUR	-003-100307	600 feet from source 11-13 NTU 2of2								✓		✓	1

Relinquished by:	Date/Time	Received by:	Date/Time
Michael Walsh	10/3/2007 1632	[signature]	10/3/07 1632
Relinquished by:	Date/Time	Received by:	Date/Time

Comments:

ORIGINAL

Certificate/Approval Program Summary

Method numbers assume the most recent EPA revisions. For a complete listing of analytes for the referenced methods please contact your Alpha Woods Hole Lab Project Manager or the Quality Assurance Manager.

Connecticut Department of Public Health Certificate/Lab ID : PH-0141 - *Wastewater* (General Chemistry: EPA 120.1, 150.1, 160.1, 160.2, 180.1, 300.0, 310.1, 335.2, 365.2; Metals: 200.8, 245.1; Organics: 608, 624, 625, ETPH) *Solid Waste/Soil* (General Chemistry: 1010, 9010/9014, 9045, 9060; Metals: 6020, 7470, 7471; Organics: 8081, 8082, 8260, 8270, ETPH).

Florida Department of Health Certificate/Lab ID : E87814 - Primary NELAP Accreditation Authority for Air & Emissions. Secondary NELAP Accreditation for Wastwater and Solid & Hazardous Waste. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 180.1, 300.0, 335.2, 365.2, SM2320B, SM2340B, SM2540G, SM4500NH3; Metals: 245.1; Organics: 608, 624, 625). *Solid and Hazardous Waste* (General Chemistry: 9010/9014, 9045, 9050, 9056, 9065, Reactivity 7.3; Metals: 6020, 7470, 7471; Organics: 8081, 8082, 8260, 8270). *Air & Emissions* (Organics: EPA TO-15).

Louisiana Department of Environmental Quality Certificate/Lab ID : 03090 - Primary NELAP Accrediting Authority for Wastewater, Solid & Hazardous Waste. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 180.1, 300.0, 310.1/SM2320B, 335.2, 365.2, 376.2, 9010/9014, 9056, SM2540G; Metals: 200.8, 245.1, 6020; Organics: 608, 624, 625, 8015-DRO/GRO, 8081, 8082, 8260, 8270). *Solid and Hazardous Waste* (General Chemistry: 1010, 1311, 9010/9014, 9040, 9045, 9056, 9060, Reactivity 7.3; Metals: 6020, 7196, 7470, 7471; Organics: 8015-DRO/GRO, 8081, 8082, 8260, 8270).

Maine Department of Human Services Certificate/Lab ID : MA0030 - *Wastewater* (General Chemistry: EPA 120.1/ SM2510B, 160.1/SM2540C, 160.2/SM2540D, 300.0, 310.1/SM2320B, 335.2, 365.2; Metals: EPA 245.1; Organics: 608, 624).

Massachusetts Department of Environmental Protection Certificate/Lab ID: M-MA030 - *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 300.0, 310.1/SM2320B, 335.2, 365.2; Metals: EPA 245.1; Organics: EPA 608, 624).

New Hampshire Department of Environmental Services Certificate/Lab ID: 2206 - Secondary NELAP Accreditation. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 180.1, 300.0, 310.1/SM2320B, 335.2, 365.2, 376.2, SM2540G; Metals: 200.8, 245.4; Organics: 608, 624, 625).

New Jersey Department of Environmental Protection Certificate/Lab ID : MA015 - Secondary NELAP Accreditation. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 180.1, 300.0, 310.1/SM2320B, 335.2, 376.2, 9010/9014, 9056, SM2540G; Metals: 200.8, 245.1 6020; Organics: 608, 624, 625, 8081, 8082, 8260, 8270). *Solid & Hazardous Waste* (General Chemistry: EPA 1010, 1311, 9010/9014, 9040, 9045, 9056, 9060; Metals: 6020, 7196, 7470, 7471; Organics: 8015-DRO/GRO, 8081, 8082, 8260, 8270). *Air & Emissions* (Organics: EPA TO-15).

New York Department of Health Certificate/Lab ID : 11627 - Secondary NELAP Accreditation. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 300.0, 310.1/SM2320B, 365.2, 376.2; Metals: 245.1; Organics: 608, 624, 625). *Solid and Hazardous Waste* (General Chemistry: EPA 1010, 1311; : 245.1; 6020, 7041; Organics: 8081, 8082, 8260, 8270). *Air & Emissions* (Organics: EPA TO-15).

Rhode Island Department of Health Certificate/Lab ID : LAO00289 - Chemistry: *Organic and Inorganic in Non-Poratable Water, Wastewater/Sewage and Soil* (Refer to LADEQ and MADEP certificates for method numbers.)

Pennsylvania Department of Environmental Protection Certificate/Lab ID : 68-02089 - Registered laboratory

U.S. Army Corps of Engineers

Department of the Navy