9-1-2011

Shellfish Tissue Monitoring in Piscataqua Region Estuaries 2010: Final Report

Matthew A. Wood
New Hampshire Department of Environmental Services, Watershed Management Bureau

Philip R. Trowbridge
New Hampshire Department of Environmental Services, Watershed Management Bureau

Shellfish Tissue Monitoring in Piscataqua Region Estuaries 2010

A Final Report to

Piscataqua Region Estuaries Partnership
University of New Hampshire
Durham, New Hampshire

Submitted by

Matthew A. Wood
Philip R. Trowbridge, P.E.
New Hampshire Department of Environmental Services
Watershed Management Bureau
Concord, New Hampshire

September 1, 2011

This project was funded in part by a grant from the Piscataqua Region Estuaries Partnership, as authorized by the U.S. Environmental Protection Agency's National Estuary Program.

Table of Contents

Introduction

Conducted by a committee of Canadian and US government and university scientists, Gulfwatch examines the effects of decades of development and industrialization on the water quality of the Gulf as it relates to human health primarily through assessing contaminant exposure of marine organisms. Gulfwatch scientists collect blue mussels at over 60 US and Canadian sites Gulf-wide, and analyze the organisms' tissue for potentially harmful levels and concentrations of toxins including heavy metals, chlorinated pesticides, polychlorinated biphenyls (PCBs), and polycyclic aromatic hydrocarbons (PAHs).

New Hampshire increased the number of Gulfwatch sampling locations from two sites per year in 1997 to an average of five sites per year from 1998-2010. The increased spatial coverage provides comprehensive information for contaminant concentrations throughout the New Hampshire estuarine waters.

All samples collected for the Gulfwatch monitoring program, from the Canadian provinces as well as the New England states involved, have been sent to the same laboratories for analysis. All of the samples have been analyzed at the same time in the same laboratories in an effort to reduce error and variability. This practice has ensured the consistency that was necessary to allow a region-wide assessment of the health of the Gulf.

During the 2010 sampling season, mussels were collected at six sampling locations in New Hampshire and Maine (MECC, NHHS, NHDP, NHRH, NHPI and NHLH).

Project Goals and Objectives

The goal of this project was to provide data for two PREP indicators of estuarine condition: TOX1 and TOX3. These two indicators report on "Shellfish tissue concentrations relative to FDA standards" and "Trends in shellfish tissue contaminant concentrations", respectively. Both of these indicators depend on data from the Gulfwatch Program. In particular, TOX3 requires annual data at benchmark sites to assess trends. In 2010, PREP supported the collection and analysis of tissue samples from benchmark mussel sites in Hampton-Seabrook Harbor and Dover Point.

Methods

Blue mussel samples for the Gulfwatch Program were collected from six locations on September 14, 2010. The station visits and field data have been documented in an interim report (Appendix A).

All field sampling was conducted as outlined in Sowles et al. (1997). Collection times were set to avoid collecting during or shortly after periods when stormwater runoff and wave resuspension of bottom sediment could result in enhanced uptake and accumulation of sediment in the mussel gut. At each site, mussels were collected from three discrete areas within a segment of the shoreline that was representative of local water quality. Using a ruler to measure

length, a replicate sample of 60 mussels of 50-60 mm shell length was collected from each area. The mussels were cleaned of all sediment, epibiota, and other accretions in clean seawater from the collection site, placed in clean containers, and then transported to the lab in coolers with ice packs. Prior to shucking, mussels were thoroughly rewashed to minimize tissue contamination from any remaining surface debris, and residual seawater was drained from the shells.

A composite sample of mussels from the station was created by combining 12-14 mussels from each of the three replicate samples. Therefore, for each station, there were three replicate samples and one composite sample for a total of four samples.

In the laboratory, individual mussel lengths, widths and heights (as defined by Seed, 1968) were determined to the nearest 0.1 mm using calipers. Using plastic or stainless steel wedges, mussels were shucked directly into appropriately prepared Mason jars for metal and organic analysis, respectively (for details see Sowles et al., 1997). Each sample (20 mussels/sample; 4 samples/station) was capped, labeled and stored at –15 degrees Celsius.

The sets of samples to be analyzed for inorganic contaminants were delivered to the Battelle Marine Sciences Laboratory in Sequim, Washington. The mussels prepared for organic contaminant analysis were archived in 2010 due to funding shortfalls. If funding is provided, these samples will be delivered to the Battelle Laboratory for analysis along with the 2011 samples. Table 1 contains a summary of the trace metal (inorganic) compounds measured in the shellfish tissue. The replicate samples at three of the stations (NHLH, NHPI and NHRH) were not analyzed by the laboratory. These samples were archived following the new protocols of the Gulfwatch Program. Only the composite samples for NHLH, NHPI and NHRH were analyzed by the laboratory. The 2010 samples have only been analyzed for inorganic contaminants. Organic contaminant analysis on the 2010 samples will be conducted along with the 2011 samples and included in the associated report.

The data were quality assured by the laboratory following the procedures in Sowles et al. (1997). In addition, DES conducted five quality assurance tests on the data:
1. Relative percent differences (RPD) were calculated between routine samples and lab duplicates. An acceptance criteria of RPD<25% was used to flag results for additional review.
2. Relative standard deviation (RSD) was calculated for each set of three replicate samples from the mussel stations. The RSD is the standard deviation divided by the mean value. An acceptance criterion of RSD<25% was used to flag results for additional review.
3. The laboratory results for composite samples were compared to the average value from three replicate samples at station MECC, NHDP, and NHHS. An acceptance criterion of RPD<0.25% was used to flag results for additional review.
4. Summary statistics (mean and maximum) of the concentrations for each parameter measured in 2010 were compared to the same statistics for the 1993-2009 dataset. The RPD between the mean value for 2010 and the mean value for 1993-2009 was calculated. The ratio of the maximum value for 2010 and the maximum value for 1993-2009 was calculated. Acceptance criteria of RPD<50% or a ratio of the maximum values <1.5 were used to flag results for additional review.
5. Trend plots for each parameter at each station were generated to identify any outliers or unusual trends.

For all quality assurance tests, censored results were included in the analyses. The results were assigned a value of the reporting detection level. NH Gulfwatch procedures for aggregating congeners, testing for normality, and calculating descriptive statistics were followed (Chase et al., 2001).

Table 1: Target analytes for tissue analysis

METAL
ALUMINUM
CADMIUM
CHROMIUM
COPPER
IRON
LEAD
MERCURY
NICKEL
SILVER
ZINC
PHYSICAL
PERCENT SOLIDS

Results

Quality Assurance Test #1

Laboratory duplicate analyses for metals were performed for NHHS COMP (mussels). Out of ten duplicate pairs, there were 4 (40%) which had RPD values greater than 25%. All of these pairs were considered acceptable because they had RPDs less than 50% and/or had measurements close to or below the method detection level.

Quality Assurance Test #2

The variation within field replicates at each station was evaluated using RSD statistics. At stations MECC, NHDP, and NHHS, three field replicates were collected. Relative standard deviations for each parameter at each of these stations were calculated using the results from these three replicates. Out of 33, there were 8 (24%) combinations of parameter and station that did not meet the RSD <25% acceptance criterion. Five of these combinations were considered acceptable because the RSD was less than 50% and/or the results were near or below the method detection level. The remaining three combinations are shown in the following table.

Station ID	Parameter Type	Parameter	N	Mean (mg/kg-dw)	Stdev (mg/kg -dw)	RSD
NHDP	METAL	IRON	3	364.68	197.47	54%
NHHS	METAL	ALUMINUM	3	295.08	175.29	59%
NHHS	METAL	IRON	3	399.69	227.27	57%

At NHDP, the RSD was high for the iron parameter because the 2N replicate had much higher iron concentrations than the 1N and 3N replicates (588, 292, and 214 mg/kg, respectively).

At NHHS, the RSD was high for the aluminum parameter because the 1N replicate had much higher aluminum concentrations than the 2N and 3N replicates (497, 192, and 196 mg/kg, respectively). The RSD was high for the iron parameter because the 1N replicate had much higher iron concentrations than the 2N and 3N replicates (662, 264, and 273 mg/kg, respectively).

Quality Assurance Test #3

At three sites, MECC, NHDP, and NHHS, a composite sample of the three replicates was also analyzed by the laboratory. The concentration in the composite sample should be equal to the average concentration from the three replicates. To test this assumption, the RPD between the average of the three replicates and the composite concentration was calculated. Out of 33 combinations of parameter and station, there were 2 (6.1%) which did not meet the acceptance criterion of RPD <25%. Both of these combinations were considered acceptable because the RPD was less than 50% and/or the results were close to or below the method detection limit.

Quality Assurance Test #4

The mean and maximum values for each parameter in the 2010 dataset were compared to the same statistics for the 1993-2009 database. If the RPD between the means was greater than 50% or the maximum value in 2010 was more than 50% greater than the maximum value from 1993-2009, the parameter was flagged. There were no parameters that met these criteria in 2010.

Quality Assurance Test #5

The results for each parameter at each station were plotted against year starting in 1993. The 2010 results were visually compared to the 1993-2009 trends to identify outliers or unusual results. There were no issues identified during the analysis.

Quality Assurance Conclusions

The quality assurances tests flagged the following results as suspect:

- Iron in the MECC 2N replicate.
- Iron and aluminum in the NHHS 1N replicate.

The elevated iron and aluminum data in the MECC 2N and NHHS 1N replicate are within acceptable limits. It is feasible to find disagreement between replicates for iron and aluminum as these metals can be found in suspended sediment. Without depuration of the mussels prior to processing it is unknown if these results are indicative of the mussel tissue or the accumulated sediments in the digestive tract of the mussels. Therefore, these data will be considered valid. Adequate explanations were provided for all anomalous results. Therefore, all of the data from the 2010 Gulfwatch sampling in New Hampshire were considered valid.

Quality Assured Data

The laboratory results for the samples are provided in Appendix B. The data from 2010 have been incorporated into the DES Gulfwatch database.

Conclusions and Recommendations

Conclusions about the condition of the estuaries based on these data will be drawn in the next PREP Environmental Indicators Report.

References

Chase, M., S. Jones, P. Hennigar, J Sowles, G. Harding, K. Freeman, P. Wells, C Krahforst, R. Crawford, J. Pederson, and D. Taylor. 2001. *Gulfwatch: Monitoring Spatial and Temporal Patterns of Trace Metal and Organic Contaminants in the Gulf of Maine (1991-1997) with the Blue Mussel, Mytilis edulis L.*

Seed, R., 1968. *Factors influencing shell shape in the mussel* Mytilus edulis. J. Mar. Biol. Ass. U.K. 48: 561-584/

Sowles, J., R. Crawford, P. Hennigar, G. Harding, S. Jones, M.E. Chase, W. Robinson, J. Pederson, K. Coombs, D. Taylor, and K. Freeman, 1997. *Gulfwatch project standard procedures: field and laboratory Gulfwatch implementation period 1993-2001*. Gulf of Maine Council on the Marine Environment, State Planning Office, Augusta, ME.

Appendix A: Sampling Summary Report for 2010

MEMORANDUM

TO: Dr. Stephen Jones, UNH

FROM: Matthew A. Wood, DES

RE: 2010 Gulfwatch Samples

DATE: September 22, 2010

The purpose of this memorandum is to document the sample collection activities for Gulfwatch 2010.

On September 14, 2010, DES managed the collection of mussel samples from 6 sites. These sites are summarized in the following table. In the table, the coordinates for the replicates are listed in the order of replicate number, where applicable. Maps showing the location of each site are provided in Appendix A.

Date / Time	Station	Latitude (Decimal degrees)	Longitude (Decimal degrees)	Water Temperature (deg C)	Water Salinity (ppt)	Personnel
9/14/10 1000	MECC – Clarks Cove, Kittery, ME	43.07748 43.07750 43.07745	-70.72401 -70.72372 -70.72341	16.0	30.3	P. Trowbridge R. Rouillard
9/14/10 1130	NHHS – Hampton/ Seabrook Harbor, Hampton, NH	42.89734 42.89730 42.89725	-70.81647 -70.81641 -70.81623	17.1	306	T. Walsh J. Brochi P. Foss S. Richardson
9/14/10 1220	NHDP – Dover Point, Dover, NH	43.12011 43.11966 43.11961	-70.82722 -70.82695 -70.82712	17.1	30.0	M. Wood K. Edwardson K. Hagenbuch P. Trowbridge R. Rouillard
9/14/10 1000	NHRH – Rye Harbor, Rye, NH	42.99959 42.99957 42.99958	-70.74750 -70.74738 -70.74727	17.2	30.8	T. Walsh J. Brochi P. Foss S. Richardson
9/14/10 0925	NHPI – Pierce Island, Portsmouth, NH	43.07493 43.07487 43.07442	-70.74898 -70.74895 -70.74834	15.4	30.5	M. Wood K. Edwardson K. Hagenbuch J. Spinney
9/14/10 1038	NHLH – Little Harbor, New Castle, NH	43.05821 43.05822 43.05821	-70.71588 -70.71610 -70.71626	16.7	30.3	M. Wood K. Edwardson K. Hagenbuch

Sample collection and processing was conducted following NH Gulfwatch SOPs (Appendix B). Samples were processed and frozen at the UNH Jackson Estuarine Laboratory within 36 hours of collection.

Physical data on the mussels were transferred from hard copy datasheets to Excel spreadsheets. Data entry was checked twice for transcription errors following DES protocols. The physical data for the samples is provided in Appendix C. The original datasheets will be kept on file at DES.

If you have any questions about this report, please contact me at (603) 271-8868 or Matthew.Wood@des.nh.gov

Memorandum
Appendix A

Maps of Sampling Sites

GULFWATCH STATION INFORMATION

GULFWATCH STATION INFORMATION

GULFWATCH STATION INFORMATION

Gulfwatch Station Information

GULFWATCH STATION INFORMATION

GULFWATCH STATION INFORMATION

Memorandum
Appendix B

NH Gulfwatch SOPs

Standard Operating Procedures for Gulfwatch

Revised: 9/25/2009

Mussel Field Collection SOP

1. Navigate to station
2. In the general location of the station, identify 3 replicate mussel bed sites within a 50 m section of shoreline (low intertidal zone).
3. Complete field data sheet including measuring the latitude and longitude of each replicate site with a GPS unit.
4. Measure water temperature and salinity with YSI-30 meter and record values on field data sheet
5. Select the plastic baskets which are labeled with the site name and replicate number (e.g., "NHDP-1" = station NHDP, replicate #1).
6. Collect at least 60 mussels from each replicate site (must be 50-60 mm in length). Use the ruler to measure the mussels. Place the mussels from each replicate site in the correct plastic basket. When a basket is full, it will contain ~60 mussels.
7. Count out exactly 60 mussels from the basket onto a clean surface (spread out a plastic garbage bag), verifying that each mussel is not full of mud by trying to separate the two shells.
8. Return any extra mussels to the intertidal zone at the site
9. Collect wash water in a large basin.
10. Use a brush and the wash water to clean the outside shell of the 60 mussels collected, placing each mussel back into the correct basket after it is cleaned. Do not pour all of the mussels into the cleaning basin. Dunk and clean each mussel separately.
11. Place the baskets of clean mussels upright in the cooler on ice.
12. Verify that field sheet is complete and that the baskets are correctly labeled.
13. Transport cooler to laboratory.

Mussel Measurement SOP

1. Bring the coolers into the laboratory.
2. Set up 3 measuring stations, each with a caliper, the lab data sheets for one station, the mussels from one station.
3. Assign two people to each measuring station.
4. Each team will place 40 mussels from each basket into a tray in rows of 10. The two rows on the left side of the tray will be for metals analysis. The two rows on the right side of the tray will be for organics analysis. Do this for each of the three replicates (The mussels from basket #1 go into tray #1, etc.). Then take 12 mussels from replicate #1, 14 mussels from replicate #2, and 14 mussels from replicate #3 and put them in the "COMP" tray. Randomize the mussels so that some mussels from each replicate are in the metals and organics rows. There should be ~5 left over mussels in the baskets. Leave the extra mussels in the baskets and return the baskets to the cooler.
5. Each team will measure the length, height and width of the mussels in the tray and record the information on the lab data sheet. Be sure to record the measurements of the mussels for metals and organics analysis on the correct sheets (there are separate sheets for metals and organics analysis). The mussels are in the same order in the tray as on the sheet. The top left mussel is number 1. The bottom left is 10. The top right is number 11. The bottom right is 20. The height and width (and later weight) measurements are done for mussels number 11 through 20. Record the length, height and width to the nearest tenth of a millimeter. Do not report values for cells that are filled in with gray.
6. Store trays of mussels in the walk-in refrigerator.

Mussel Shucking SOP - Organics

1. Set up 3 shucking stations for organics analysis. Each station will have two metal knives, a beaker of DI water, a tray of mussels and the corresponding jar (from the jars for organics analysis). One of the scales should be placed on a separate table so that the full jars can be weighed easily.
2. Assign two people to each shucking station and two other people to act as floaters and to help with weighing jars, sealing jars and storing jars.
3. Clean all of the metal knives in solvents. Put out 300 ml of methanol, toluene, and hexane in 500 ml beakers under the fume hood. Swish each metal knife in the 3 solutions (in order) three times. Clean the knives in this way before each new tray of mussels.
4. Open and scrape the meat from the mussels into the jar using the following procedure.
    a. Swish the knife tip in DI water.
    b. Select one of the mussels marked for organics analysis.
    c. Turn the mussel upside down so that the byssus is facing up.
    d. Tear off the byssus.
    e. Insert the tip of knife between the shells where the byssus was formerly and twist the knife to open the shell slightly.
    f. Shake the mussel over the waste bin for 10-20 seconds to remove water from the shell.
    g. Run the knife blade around the mussel between the two shells to cut the adductor muscle and then separate the two shells.
    h. Place the two shells on the table, meat side up.
    i. Scrape the meat out of one of the shells into the jar.
    j. Discard the empty shell into the waste bin.
    k. Scrape the meat from the second shell into the jar.
    l. Discard the empty shell.
    m. Swish the knife in DI water to clean it.
    n. If there are more mussels left on the tray for organics analysis, repeat steps b-m.
5. When all 20 mussels have been shucked, weigh the jar and record the value on the lab data sheet, cover the top with a piece of aluminum foil, screw on the lid, and place the jar in the freezer. Then, clean the knives in the solvents under the hood using the same procedure from Step 3. Get a new tray of mussels and repeat.

Mussel Shucking SOP - Metals

1. Set up 2 shucking stations for metals analysis. Each station will have a scale, a waste bucket, DI water, one acid-washed ceramic knife (or one metal knife) and three acid-washed plastic knives.
2. Assign four people to each station.
3. Clean all of the knives in nitric acid solution. Put out 300 ml of 4 N nitric acid in a 500 ml beaker under the fume hood. Swish each knife in the solution. Clean the knives in this way before each new tray of mussels.
4. Open and scrape the meat from the mussels #11 through #20 into the jar using the following procedure. Mussel #11 will be the mussel at the top of the right hand row for metals analysis. Mussel #20 will be the mussel at the bottom of the right hand row for metals analysis. Each person in the group does a different task. The person with the ceramic knife does steps c-i. Two people with plastic knives do steps j-m. The person with the scale and lab sheets does steps a and o.
    a. Tare the scale, then place the correct jar on the scale.
    b. Swish the knives in DI water.
    c. Select mussel #11 marked for metals analysis.
    d. Turn the mussel upside down so that the byssus is facing up.
    e. Tear off the byssus.
    f. Insert the tip of knife between the shells where the byssus was formerly and twist the knife to open the shell slightly.
    g. Shake the mussel over the waste bin for 10-20 seconds to remove some water from the shell.
    h. Run the knife blade around the mussel between the two shells to cut the adductor muscle and then separate the two shells. If using a metal knife for step f, use a plastic knife for this step.
    i. Place the two shells on the table, meat side up.
    j. Scrape the meat out of one of the shells into the jar.
    k. Discard the empty shell into the waste bin.
    l. Scrape the meat from the second shell into the jar.
    m. Discard the empty shell.
    n. Swish the knives in DI water to clean them.
    o. Record the total weight of the jar and the mussel meat on the lab data sheet in the location for mussel #11.
    p. Repeat steps for mussels #12 through #20. When complete, leave the jar on the scale and go to Step 5.
5. Open and scrape the meat from mussels #1 through #10 into the jar using the same procedure as for Step 4 except: (1) Weight does not need to be recorded after each mussel (step o), only at the end; (2) the person who recorded the weights should use a plastic knife to help with steps j-m.
6. When all 20 mussels from the tray have been shucked, weigh the jar (without the cap) and record the value on the lab data sheet, screw on the lid, and place the jar in the freezer. Then, clean the knives in the nitric acid solution under the hood using the same procedure from Step 3. Get a new tray of mussels and repeat.

Memorandum
Appendix C

Physical Data for Mussels

MECC 2010 (INDIGENOUS MUSSELS) **METALS** *calculated field *Weight of jar and mussel meat

Site	#	Length (mm)	#	Length (mm)	Height (mm)	Width (mm)	Wet weight (g)	Cumulative wet weight (g)*	Jar weight (g)
MECC-1	1	56.7	11	56.2	27.9	22.1	6.392	28.092	21.700
MECC-1	2	57.9	12	56.2	28.5	22.2	11.977	33.677	
MECC-1	3	54.0	13	53.0	27.2	20.9	15.561	37.261	
MECC-1	4	51.4	14	54.2	29.5	22.2	20.515	42.215	
MECC-1	5	53.8	15	55.8	29.1	24.6	24.946	46.646	
MECC-1	6	54.9	16	60.0	29.3	24.5	31.493	53.193	
MECC-1	7	56.1	17	57.3	31.5	21.6	37.470	59.170	
MECC-1	8	54.8	18	54.5	28.6	22.0	42.355	64.055	
MECC-1	9	56.9	19	56.4	28.2	24.4	47.898	69.598	
MECC-1	10	56.6	20	53.3	29.0	23.9	53.034	74.734	
	1-20 total						98.324	120.024	
MECC-2	1	51.8	11	55.4	27.8	23.0	5.029	26.689	21.660
MECC-2	2	52.0	12	52.5	27.1	21.9	9.123	30.783	
MECC-2	3	51.2	13	56.3	29.1	22.8	14.922	36.582	
MECC-2	4	52.0	14	57.1	29.1	22.1	19.022	40.682	
MECC-2	5	57.8	15	56.6	30.3	20.0	23.061	44.721	
MECC-2	6	54.8	16	54.3	26.4	22.9	28.388	50.048	
MECC-2	7	57.2	17	59.6	22.3	24.1	33.340	55.000	
MECC-2	8	50.6	18	58.1	31.3	22.6	37.740	59.400	
MECC-2	9	56.9	19	52.7	29.7	19.6	43.054	64.714	
MECC-2	10	57.0	20	54.0	27.8	23.8	49.394	71.054	
	1-20 total						93.874	115.534	
MECC-3	1	53.2	11	54.7					21.640
MECC-3	2	56.9	12	59.0					
MECC-3	3	52.2	13	58.6					
MECC-3	4	53.4	14	51.7					
MECC-3	5	53.4	15	54.2					
MECC-3	6	51.4	16	51.0					
MECC-3	7	56.5	17	56.2					
MECC-3	8	51.1	18	58.0					
MECC-3	9	54.8	19	54.5					
MECC-3	10	57.0	20	51.0					
	1-20 total						101.658	123.298	
MECC-COMP	1	58.3	11	58.3					21.670
MECC-COMP	2	58.6	12	57.4					
MECC-COMP	3	57.3	13	58.5					
MECC-COMP	4	53.9	14	57.7					
MECC-COMP	5	53.5	15	58.8					
MECC-COMP	6	54.1	16	53.2					
MECC-COMP	7	55.0	17	53.2					
MECC-COMP	8	55.1	18	57.4					
MECC-COMP	9	54.5	19	50.8					
MECC-COMP	10	57.7	20	58.0					
	1-20 total						106.653	128.323	

MECC 2010 (INDIGENOUS MUSSELS) **ORGANICS** *calculated field *Weight of jar and mussel meat

Site	#	Length (mm)		Length (mm)	Height (mm)	Width (mm)	Wet weight (g)	Cumulative wet weight (g)*	Jar weight (g)
MECC-1	1	59.8	11	54.8					130.020
MECC-1	2	52.6	12	54.0					
MECC-1	3	58.8	13	59.2					
MECC-1	4	56.0	14	53.3					
MECC-1	5	52.5	15	53.7					
MECC-1	6	54.1	16	57.7					
MECC-1	7	53.6	17	57.2					
MECC-1	8	54.1	18	57.5					
MECC-1	9	58.8	19	55.6					
MECC-1	10	58.0	20	59.3					
	1-20 total						111.720	241.740	
MECC-2	1	54.2	11	55.7					129.580
MECC-2	2	51.5	12	58.5					
MECC-2	3	50.6	13	50.8					
MECC-2	4	55.8	14	56.4					
MECC-2	5	55.0	15	52.9					
MECC-2	6	53.1	16	57.3					
MECC-2	7	52.9	17	50.3					
MECC-2	8	50.9	18	56.1					
MECC-2	9	56.8	19	51.6					
MECC-2	10	53.9	20	53.4					
	1-20 total						96.819	226.399	
MECC-3	1	51.0	11	55.5					131.100
MECC-3	2	58.9	12	53.5					
MECC-3	3	58.8	13	55.6					
MECC-3	4	53.6	14	54.2					
MECC-3	5	57.3	15	56.4					
MECC-3	6	57.2	16	54.9					
MECC-3	7	57.2	17	55.9					
MECC-3	8	57.8	18	55.7					
MECC-3	9	58.5	19	56.7					
MECC-3	10	52.0	20	57.5					
	1-20 total						125.600	256.700	
MECC-COMP	1	53.8	11	56.6					129.050
MECC-COMP	2	55.6	12	55.7					
MECC-COMP	3	51.0	13	58.6					
MECC-COMP	4	53.7	14	51.0					
MECC-COMP	5	52.6	15	57.5					
MECC-COMP	6	52.8	16	55.6					
MECC-COMP	7	51.3	17	56.4					
MECC-COMP	8	55.7	18	51.7					
MECC-COMP	9	52.8	19	58.5					
MECC-COMP	10	58.8	20	52.2					
	1-20 total						103.001	232.051	

NHDP 2010 (INDIGENOUS MUSSELS)

METALS

*calculated field

*Weight of jar and mussel meat

Site	#	Length (mm)	#	Length (mm)	Height (mm)	Width (mm)	Wet weight (g)	Cumulative wet weight (g)*	Jar weight (g)
NHDP-1	1	52.2	11	52.9	24.5	18.5	4.380	26.070	21.690
NHDP-1	2	51.1	12	57.2	28.0	20.4	9.100	30.790	
NHDP-1	3	54.7	13	56.3	30.2	22.4	14.290	35.980	
NHDP-1	4	51.7	14	53.0	26.5	21.4	19.540	41.230	
NHDP-1	5	51.5	15	52.6	26.2	22.9	24.030	45.720	
NHDP-1	6	55.5	16	57.7	26.9	23.9	29.310	51.000	
NHDP-1	7	57.5	17	54.1	30.1	17.6	33.370	55.060	
NHDP-1	8	50.1	18	53.1	26.7	19.9			
NHDP-1	9	55.3	19	54.9	27.3	20.3	41.670	63.360	
NHDP-1	10	56.9	20	54.5	25.1	23.5	45.810	67.500	
	1-20 total						91.110	112.800	
NHDP-2	1	54.2	11	57.4	26.9	22.4	4.040	25.690	21.650
NHDP-2	2	52.2	12	59.3	28.0	24.6	10.440	32.090	
NHDP-2	3	53.5	13	52.3	26.0	20.3	14.870	36.520	
NHDP-2	4	51.8	14	52.9	24.7	21.7	18.880	40.530	
NHDP-2	5	56.8	15	58.4	30.9	26.6	25.350	47.000	
NHDP-2	6	54.6	16	51.2	25.6	23.6	29.680	51.330	
NHDP-2	7	55.9	17	57.4	26.8	22.6	34.550	56.200	
NHDP-2	8	54.5	18	54.0	25.4	22.1	38.550	60.200	
NHDP-2	9	52.3	19	54.5	27.1	21.3	43.630	65.280	
NHDP-2	10	55.3	20	55.7	25.5	21.2	47.240	68.890	
	1-20 total						96.800	118.450	
NHDP-3	1	52.7	11	55.4					21.660
NHDP-3	2	54.5	12	51.5					
NHDP-3	3	54.3	13	54.5					
NHDP-3	4	53.9	14	55.2					
NHDP-3	5	58.2	15	55.4					
NHDP-3	6	54.1	16	53.6					
NHDP-3	7	57.9	17	50.6					
NHDP-3	8	58.6	18	51.6					
NHDP-3	9	57.1	19	55.0					
NHDP-3	10	50.3	20	50.7					
	1-20 total						94.480	116.140	
NHDP-COMP	1	57.2	11	55.1					21.690
NHDP-COMP	2	50.8	12	58.5					
NHDP-COMP	3	50.0	13	55.6					
NHDP-COMP	4	55.3	14	56.6					
NHDP-COMP	5	54.5	15	54.1					
NHDP-COMP	6	51.7	16	54.1					
NHDP-COMP	7	57.3	17	53.7					
NHDP-COMP	8	52.8	18	53.3					
NHDP-COMP	9	54.9	19	55.6					
NHDP-COMP	10	55.3	20	55.2					
	1-20 total						91.200	112.890	

NHDP 2010 (INDIGENOUS MUSSELS)

ORGANICS

*calculated field

*Weight of jar and mussel meat

Site	#	Length (mm)		Length (mm)	Height (mm)	Width (mm)	Wet weight (g)	Cumulative wet weight (g)*	Jar weight (g)
NHDP-1	1	54.7	11	56.7					128.700
NHDP-1	2	54.1	12	53.8					
NHDP-1	3	57.2	13	50.8					
NHDP-1	4	54.2	14	55.4					
NHDP-1	5	51.2	15	50.5					
NHDP-1	6	52.1	16	56.1					
NHDP-1	7	53.2	17	55.4					
NHDP-1	8	54.9	18	55.2					
NHDP-1	9	52.9	19	55.2					
NHDP-1	10	51.4	20	54.5					
	1-20 total						88.870	217.570	
NHDP-2	1	52.4	11	52.6					129.860
NHDP-2	2	54.9	12	53.4					
NHDP-2	3	52.9	13	59.0					
NHDP-2	4	56.0	14	57.7					
NHDP-2	5	56.7	15	52.5					
NHDP-2	6	57.0	16	60.0					
NHDP-2	7	56.0	17	55.9					
NHDP-2	8	52.4	18	53.0					
NHDP-2	9	54.4	19	55.6					
NHDP-2	10	56.0	20	52.9					
	1-20 total						96.196	226.056	
NHDP-3	1	50.4	11	54.5					128.980
NHDP-3	2	52.9	12	52.7					
NHDP-3	3	54.2	13	56.4					
NHDP-3	4	52.8	14	58.8					
NHDP-3	5	57.0	15	51.9					
NHDP-3	6	52.1	16	52.5					
NHDP-3	7	51.5	17	54.9					
NHDP-3	8	54.5	18	56.1					
NHDP-3	9	54.6	19	53.3					
NHDP-3	10	55.9	20	56.8					
	1-20 total						91.649	220.629	
NHDP-COMP	1	57.8	11	55.2					132.010
NHDP-COMP	2	55.1	12	52.2					
NHDP-COMP	3	58.4	13	53.6					
NHDP-COMP	4	55.9	14	54.5					
NHDP-COMP	5	52.2	15	52.5					
NHDP-COMP	6	53.9	16	58.8					
NHDP-COMP	7	58.8	17	59.6					
NHDP-COMP	8	54.7	18	56.1					
NHDP-COMP	9	55.5	19	54.7					
NHDP-COMP	10	52.1	20	54.6					
	1-20 total						83.344	215.354	

NHHS 2010 (INDIGENOUS MUSSELS)

METALS

*calculated field

*Weight of jar and mussel meat

Site	#	Length (mm)	#	Length (mm)	Height (mm)	Width (mm)	Wet weight (g)	Cumulative wet weight (g)*	Jar weight (g)
NHHS-1	1	48.8	11	51.0	22.9	26.2	6.030	27.700	21.670
NHHS-1	2	50.1	12	54.9	25.8	26.7	12.430	34.100	
NHHS-1	3	50.4	13	51.0	24.4	25.2	19.720	41.390	
NHHS-1	4	50.3	14	46.4	24.3	25.0	24.820	46.490	
NHHS-1	5	50.1	15	49.6	22.9	24.6	30.460	52.130	
NHHS-1	6	47.5	16	47.7	24.5	25.3	35.460	57.130	
NHHS-1	7	49.3	17	49.0	23.2	23.1	40.390	62.060	
NHHS-1	8	48.5	18	48.0	26.9	23.6	46.380	68.050	
NHHS-1	9	53.4	19	52.5	28.0	25.9	52.960	74.630	
NHHS-1	10	50.1	20	49.2	29.8	25.1	57.360	79.030	
	1-20 total						109.170	130.840	
NHHS-2	1	52.5	11	52.3	27.7	28.5	6.720	28.400	21.680
NHHS-2	2	55.3	12	48.5	23.3	27.7	11.480	33.160	
NHHS-2	3	50.7	13	50.4	26.7	27.3	16.940	38.620	
NHHS-2	4	51.2	14	56.4	29.1	29.7	22.940	44.620	
NHHS-2	5	48.5	15	48.1	27.6	24.7	27.500	49.180	
NHHS-2	6	49.2	16	48.3	29.6	22.7	32.450	54.130	
NHHS-2	7	51.9	17	52.4	27.6	24.8	40.260	61.940	
NHHS-2	8	54.0	18	50.0	27.2	25.9	46.110	67.790	
NHHS-2	9	51.3	19	50.8	29.9	24.4	49.850	71.530	
NHHS-2	10	54.4	20	53.9	26.9	26.9	55.900	77.580	
	1-20 total						110.660	132.340	
NHHS-3	1	54.8	11	53.0					21.680
NHHS-3	2	52.7	12	52.0					
NHHS-3	3	50.1	13	52.2					
NHHS-3	4	51.5	14	50.5					
NHHS-3	5	51.5	15	56.8					
NHHS-3	6	52.9	16	49.8					
NHHS-3	7	56.2	17	53.4					
NHHS-3	8	53.0	18	50.7					
NHHS-3	9	52.4	19	49.9					
NHHS-3	10	51.5	20	55.3					
	1-20 total						115.180	136.860	
NHHS-COMP	1	51.7	11	50.5					21.670
NHHS-COMP	2	51.6	12	48.0					
NHHS-COMP	3	50.3	13	56.2					
NHHS-COMP	4	53.0	14	53.0					
NHHS-COMP	5	51.9	15	50.7					
NHHS-COMP	6	49.7	16	53.0					
NHHS-COMP	7	51.4	17	53.7					
NHHS-COMP	8	51.5	18	51.5					
NHHS-COMP	9	52.0	19	52.4					
NHHS-COMP	10	50.6	20	52.2					
	1-20 total						117.800	139.470	

NHHS 2010 (INDIGENOUS MUSSELS)

ORGANICS

*calculated field

*Weight of jar and mussel meat

Site	#	Length (mm)		Length (mm)	Height (mm)	Width (mm)	Wet weight (g)	Cumulative wet weight (g)*	Jar weight (g)
NHHS-1	1	55.1	11	48.3					128.260
NHHS-1	2	52.8	12	48.9					
NHHS-1	3	52.5	13	49.1					
NHHS-1	4	50.8	14	50.7					
NHHS-1	5	56.6	15	49.6					
NHHS-1	6	53.6	16	57.3					
NHHS-1	7	50.3	17	47.6					
NHHS-1	8	48.9	18	48.8					
NHHS-1	9	48.3	19	53.6					
NHHS-1	10	49.6	20	49.2					
	1-20 total						108.648	236.908	
NHHS-2	1	51.9	11	59.6					129.170
NHHS-2	2	50.8	12	55.6					
NHHS-2	3	50.2	13	52.0					
NHHS-2	4	52.5	14	50.3					
NHHS-2	5	51.2	15	50.2					
NHHS-2	6	52.9	16	53.0					
NHHS-2	7	48.3	17	57.5					
NHHS-2	8	49.7	18	54.1					
NHHS-2	9	50.4	19	52.5					
NHHS-2	10	53.0	20	51.0					
	1-20 total						106.972	236.142	
NHHS-3	1	49.2	11	53.9					129.940
NHHS-3	2	48.1	12	50.3					
NHHS-3	3	49.3	13	52.3					
NHHS-3	4	50.0	14	51.1					
NHHS-3	5	50.1	15	50.2					
NHHS-3	6	54.3	16	51.8					
NHHS-3	7	51.0	17	55.2					
NHHS-3	8	49.7	18	51.3					
NHHS-3	9	51.1	19	52.3					
NHHS-3	10	52.7	20	53.5					
	1-20 total						121.450	251.390	
NHHS-COMP	1	49.9	11	51.6					131.960
NHHS-COMP	2	53.2	12	50.2					
NHHS-COMP	3	53.6	13	51.6					
NHHS-COMP	4	51.9	14	53.0					
NHHS-COMP	5	51.9	15	52.4					
NHHS-COMP	6	49.0	16	54.6					
NHHS-COMP	7	52.2	17	49.9					
NHHS-COMP	8	50.4	18	52.5					
NHHS-COMP	9	53.3	19	49.9					
NHHS-COMP	10	51.9	20	47.4					
	1-20 total						111.394	243.354	

NHRH 2010 (INDIGENOUS MUSSELS)

METALS

*calculated field

*Weight of jar and mussel meat

Site	#	Length (mm)	#	Length (mm)	Height (mm)	Width (mm)	Wet weight (g)	Cumulative wet weight (g)*	Jar weight (g)
NHRH-1	1	51.0	11	54.9	31.3	24.1	5.502	27.182	21.680
NHRH-1	2	56.7	12	52.0	27.9	29.0	10.154	31.834	
NHRH-1	3	52.1	13	56.2	31.7	22.8	16.003	37.683	
NHRH-1	4	51.5	14	54.9	31.1	22.5	21.765	43.445	
NHRH-1	5	54.0	15	56.3	30.7	20.3	27.708	49.388	
NHRH-1	6	51.0	16	57.5	33.2	23.6	32.666	54.346	
NHRH-1	7	50.4	17	58.3	26.1	25.0	37.930	59.610	
NHRH-1	8	55.7	18	55.5	30.1	22.2	43.632	65.312	
NHRH-1	9	51.9	19	58.0	31.0	22.0	48.408	70.088	
NHRH-1	10	56.7	20	51.5	39.0	28.8	51.497	73.177	
	1-20 total						91.363	113.043	
NHRH-2	1	54.4	11	54.3	28.0	21.7	3.321	24.981	21.660
NHRH-2	2	56.7	12	54.2	29.2	22.7	7.932	29.592	
NHRH-2	3	57.6	13	57.3	32.6	21.2	12.113	33.773	
NHRH-2	4	59.3	14	54.0	27.8	24.9	18.360	40.020	
NHRH-2	5	53.6	15	55.7	29.1	21.9	24.124	45.784	
NHRH-2	6	57.9	16	56.9	30.5	21.6	28.996	50.656	
NHRH-2	7	55.3	17	56.5	28.9	24.3	33.830	55.490	
NHRH-2	8	59.4	18	53.6	28.4	18.8	37.223	58.883	
NHRH-2	9	54.3	19	55.6	28.3	22.6	41.611	63.271	
NHRH-2	10	58.0	20	55.4	32.4	22.1	47.716	69.376	
	1-20 total						102.165	123.825	
NHRH-3	1	55.6	11	56.6					21.690
NHRH-3	2	57.5	12	57.2					
NHRH-3	3	57.0	13	52.3					
NHRH-3	4	55.9	14	55.7					
NHRH-3	5	57.7	15	55.5					
NHRH-3	6	59.5	16	57.6					
NHRH-3	7	55.3	17	52.6					
NHRH-3	8	53.4	18	59.0					
NHRH-3	9	56.4	19	56.0					
NHRH-3	10	57.5	20	56.3					
	1-20 total						95.735	117.425	
NHRH-COMP	1	52.1	11	55.2					21.710
NHRH-COMP	2	55.8	12	53.1					
NHRH-COMP	3	56.1	13	54.5					
NHRH-COMP	4	56.1	14	53.8					
NHRH-COMP	5	57.3	15	54.7					
NHRH-COMP	6	58.0	16	60.0					
NHRH-COMP	7	51.4	17	56.8					
NHRH-COMP	8	58.2	18	53.1					
NHRH-COMP	9	53.0	19	55.8					
NHRH-COMP	10	54.0	20	50.9					
	1-20 total						89.588	111.298	

NHRH 2010 (INDIGENOUS MUSSELS)

ORGANICS

*calculated field

*Weight of jar and mussel meat

Site	#	Length (mm)		Length (mm)	Height (mm)	Width (mm)	Wet weight (g)	Cumulative wet weight (g)*	Jar weight (g)
NHRH-1	1	55.4	11	50.0					129.700
NHRH-1	2	56.0	12	51.0					
NHRH-1	3	58.2	13	56.2					
NHRH-1	4	55.7	14	56.0					
NHRH-1	5	56.0	15	55.4					
NHRH-1	6	55.5	16	50.9					
NHRH-1	7	53.5	17	60.0					
NHRH-1	8	51.8	18	50.6					
NHRH-1	9	51.0	19	54.2					
NHRH-1	10	54.9	20	52.2					
	1-20 total						90.040	219.740	
NHRH-2	1	58.4	11	59.1					130.270
NHRH-2	2	58.7	12	59.1					
NHRH-2	3	54.1	13	56.4					
NHRH-2	4	55.8	14	58.7					
NHRH-2	5	56.8	15	55.5					
NHRH-2	6	58.8	16	53.1					
NHRH-2	7	55.9	17	58.4					
NHRH-2	8	59.9	18	55.9					
NHRH-2	9	56.7	19	58.9					
NHRH-2	10	60.0	20	58.0					
	1-20 total						115.370	245.640	
NHRH-3	1	56.8	11	56.9					130.470
NHRH-3	2	57.7	12	51.6					
NHRH-3	3	58.4	13	55.9					
NHRH-3	4	59.7	14	52.6					
NHRH-3	5	51.7	15	59.4					
NHRH-3	6	59.1	16	56.4					
NHRH-3	7	53.1	17	54.4					
NHRH-3	8	55.1	18	58.9					
NHRH-3	9	51.4	19	51.4					
NHRH-3	10	60.0	20	57.5					
	1-20 total						98.406	228.876	
NHRH-COMP	1	53.3	11	56.6					131.160
NHRH-COMP	2	57.9	12	54.4					
NHRH-COMP	3	57.7	13	59.2					
NHRH-COMP	4	57.1	14	53.1					
NHRH-COMP	5	60.0	15	53.8					
NHRH-COMP	6	52.3	16	52.9					
NHRH-COMP	7	55.9	17	59.1					
NHRH-COMP	8	58.4	18	55.2					
NHRH-COMP	9	57.1	19	52.7					
NHRH-COMP	10	54.4	20	54.9					
	1-20 total						85.650	216.810	

NHLH 2010 (INDIGENOUS MUSSELS)

METALS

*calculated field

*Weight of jar and mussel meat

Site	#	Length (mm)	#	Length (mm)	Height (mm)	Width (mm)	Wet weight (g)	Cumulative wet weight (g)*	Jar weight (g)
NHLH-1	1	51.7	11	52.6	23.4	28.1	5.294	26.974	21.680
NHLH-1	2	56.3	12	53.9	25.1	27.7	10.542	32.222	
NHLH-1	3	57.7	13	56.3	23.5	30.9	15.879	37.559	
NHLH-1	4	55.1	14	57.3	26.0	32.1	23.475	45.155	
NHLH-1	5	58.1	15	50.8	22.8	25.3	26.747	48.427	
NHLH-1	6	53.9	16	56.1	23.5	27.3	31.132	52.812	
NHLH-1	7	52.8	17	52.3	22.6	29.7	35.695	57.375	
NHLH-1	8	50.6	18	56.4	22.8	30.4	42.179	63.859	
NHLH-1	9	52.8	19	52.3	24.1	27.7	46.269	67.949	
NHLH-1	10	56.1	20	58.7	22.8	27.5	51.778	73.458	
	1-20 total						100.795	122.475	
NHLH-2	1	51.1	11	52.2	22.8	26.3	6.876	28.536	21.660
NHLH-2	2	58.5	12	51.0	25.1	29.0	12.096	33.756	
NHLH-2	3	51.1	13	51.3	22.8	25.6	16.555	38.215	
NHLH-2	4	59.4	14	54.2	21.5	28.5	21.161	42.821	
NHLH-2	5	51.8	15	54.7	24.0	28.7	25.574	47.234	
NHLH-2	6	51.8	16	56.4	23.2	28.0	30.300	51.960	
NHLH-2	7	52.0	17	51.7	24.9	27.0	34.588	56.248	
NHLH-2	8	57.8	18	57.9	26.4	22.2	40.388	62.048	
NHLH-2	9	53.9	19	55.3	24.5	28.6	44.860	66.520	
NHLH-2	10	56.7	20	51.4	21.0	26.4	49.349	71.009	
	1-20 total						98.752	120.412	
NHLH-3	1	52.8	11	53.8					21.680
NHLH-3	2	56.5	12	56.0					
NHLH-3	3	54.5	13	53.5					
NHLH-3	4	54.5	14	58.7					
NHLH-3	5	50.7	15	58.2					
NHLH-3	6	59.4	16	55.3					
NHLH-3	7	52.0	17	53.0					
NHLH-3	8	52.0	18	56.6					
NHLH-3	9	52.8	19	52.2					
NHLH-3	10	57.8	20	59.6					
	1-20 total						97.675	119.355	
NHLH-COMP	1	55.7	11	59.0					21.680
NHLH-COMP	2	58.1	12	55.0					
NHLH-COMP	3	58.6	13	58.6					
NHLH-COMP	4	52.8	14	53.2					
NHLH-COMP	5	54.0	15	58.6					
NHLH-COMP	6	55.5	16	50.9					
NHLH-COMP	7	52.6	17	52.5					
NHLH-COMP	8	54.4	18	52.7					
NHLH-COMP	9	53.4	19	52.3					
NHLH-COMP	10	53.8	20	54.8					
	1-20 total						82.429	104.109	

NHLH 2010 (INDIGENOUS MUSSELS)

ORGANICS

*calculated field

*Weight of jar and mussel meat

Site	#	Length (mm)		Length (mm)	Height (mm)	Width (mm)	Wet weight (g)	Cumulative wet weight (g)*	Jar weight (g)
NHLH-1	1	51.1	11	50.1					128.810
NHLH-1	2	51.8	12	53.3					
NHLH-1	3	58.2	13	54.2					
NHLH-1	4	57.3	14	58.1					
NHLH-1	5	55.7	15	56.5					
NHLH-1	6	54.6	16	51.6					
NHLH-1	7	53.0	17	55.7					
NHLH-1	8	52.4	18	57.4					
NHLH-1	9	57.9	19	51.8					
NHLH-1	10	56.3	20	57.5					
	1-20 total						84.700	213.510	
NHLH-2	1	51.9	11	56.3					128.760
NHLH-2	2	58.4	12	51.2					
NHLH-2	3	59.0	13	53.4					
NHLH-2	4	51.6	14	53.4					
NHLH-2	5	51.7	15	56.2					
NHLH-2	6	50.5	16	54.3					
NHLH-2	7	58.2	17	55.7					
NHLH-2	8	55.2	18	53.9					
NHLH-2	9	51.3	19	53.9					
NHLH-2	10	52.9	20	50.1					
	1-20 total						107.222	235.982	
NHLH-3	1	53.4	11	54.9					129.080
NHLH-3	2	58.8	12	58.6					
NHLH-3	3	59.2	13	56.5					
NHLH-3	4	52.5	14	59.4					
NHLH-3	5	60.0	15	51.1					
NHLH-3	6	57.8	16	58.1					
NHLH-3	7	52.6	17	53.7					
NHLH-3	8	56.7	18	59.3					
NHLH-3	9	55.7	19	56.6					
NHLH-3	10	56.0	20	57.6					
	1-20 total						95.614	224.694	
NHLH-COMP	1	58.3	11	54.5					129.500
NHLH-COMP	2	58.9	12	55.0					
NHLH-COMP	3	51.8	13	52.5					
NHLH-COMP	4	51.1	14	57.9					
NHLH-COMP	5	53.0	15	55.7					
NHLH-COMP	6	57.4	16	55.0					
NHLH-COMP	7	56.2	17	53.7					
NHLH-COMP	8	54.3	18	53.0					
NHLH-COMP	9	55.6	19	54.0					
NHLH-COMP	10	51.8	20	54.6					
	1-20 total						97.820	227.320	

NHPI 2010 (INDIGENOUS MUSSELS)

METALS

*calculated field

*Weight of jar and mussel meat

Site	#	Length (mm)	#	Length (mm)	Height (mm)	Width (mm)	Wet weight (g)	Cumulative wet weight (g)*	Jar weight (g)
NHPI-1	1	53.2	11	54.2	19.8	28.9	4.391	26.071	21.680
NHPI-1	2	52.8	12	54.7	20.6	28.2	9.749	31.429	
NHPI-1	3	55.7	13	56.7	24.2	28.5	16.684	38.364	
NHPI-1	4	54.6	14	55.7	23.6	26.5	21.845	43.525	
NHPI-1	5	52.0	15	56.4	23.6	29.8	28.030	49.710	
NHPI-1	6	58.5	16	53.8	20.5	29.1	32.313	53.993	
NHPI-1	7	57.6	17	57.0	24.2	30.5	38.401	60.081	
NHPI-1	8	57.7	18	53.9	22.1	29.6	44.316	65.996	
NHPI-1	9	54.5	19	55.1	22.5	31.1	50.094	71.774	
NHPI-1	10	57.7	20	55.2	22.1	29.6	54.885	76.565	
	1-20 total						110.140	131.820	
NHPI-2	1	59.8	11	51.0	25.3	29.8	7.260	28.950	21.690
NHPI-2	2	53.8	12	56.1	23.5	28.6	12.878	34.568	
NHPI-2	3	56.0	13	53.5	24.6	27.2	17.353	39.043	
NHPI-2	4	56.0	14	59.4	22.7	28.8	23.381	45.071	
NHPI-2	5	58.4	15	51.8	22.2	29.4	27.366	49.056	
NHPI-2	6	56.5	16	52.3	23.5	28.4	30.821	52.511	
NHPI-2	7	51.6	17	58.6	23.7	33.4	36.621	58.311	
NHPI-2	8	50.7	18	59.1	23.7	28.4	42.041	63.731	
NHPI-2	9	55.5	19	51.8	22.0	27.5	45.771	67.461	
NHPI-2	10	57.2	20	55.8	26.0	28.3	50.863	72.553	
	1-20 total						108.245	129.935	
NHPI-3	1	52.1	11	53.8					21.670
NHPI-3	2	55.0	12	53.9					
NHPI-3	3	55.6	13	52.0					
NHPI-3	4	57.4	14	55.7					
NHPI-3	5	56.6	15	54.7					
NHPI-3	6	56.4	16	52.0					
NHPI-3	7	55.4	17	52.8					
NHPI-3	8	56.4	18	52.2					
NHPI-3	9	56.2	19	56.2					
NHPI-3	10	51.8	20	57.4					
	1-20 total						96.664	118.334	
NHPI-COMP	1	53.4	11	55.7					21.670
NHPI-COMP	2	58.1	12	55.6					
NHPI-COMP	3	56.6	13	56.5					
NHPI-COMP	4	55.0	14	55.3					
NHPI-COMP	5	59.4	15	55.5					
NHPI-COMP	6	53.5	16	55.3					
NHPI-COMP	7	57.5	17	58.2					
NHPI-COMP	8	56.7	18	58.5					
NHPI-COMP	9	58.0	19	56.1					
NHPI-COMP	10	57.4	20	56.3					
	1-20 total						112.965	134.635	

NHPI 2010 (INDIGENOUS MUSSELS)

ORGANICS

*calculated field

*Weight of jar and mussel meat

Site	#	Length (mm)		Length (mm)	Height (mm)	Width (mm)	Wet weight (g)	Cumulative wet weight (g)*	Jar weight (g)
NHPI-1	1	52.5	11	57.0					132.460
NHPI-1	2	54.6	12	57.4					
NHPI-1	3	54.9	13	55.3					
NHPI-1	4	52.4	14	53.8					
NHPI-1	5	59.0	15	58.1					
NHPI-1	6	56.2	16	56.9					
NHPI-1	7	55.5	17	57.7					
NHPI-1	8	54.1	18	55.1					
NHPI-1	9	55.0	19	56.0					
NHPI-1	10	54.1	20	55.8					
	1-20 total						113.012	245.472	
NHPI-2	1	53.7	11	56.8					129.210
NHPI-2	2	58.2	12	59.4					
NHPI-2	3	52.3	13	59.0					
NHPI-2	4	56.7	14	57.0					
NHPI-2	5	58.3	15	51.6					
NHPI-2	6	56.5	16	58.8					
NHPI-2	7	58.3	17	53.4					
NHPI-2	8	59.4	18	54.5					
NHPI-2	9	54.9	19	56.6					
NHPI-2	10	54.2	20	56.7					
	1-20 total						106.289	235.499	
NHPI-3	1	55.6	11	52.4					128.650
NHPI-3	2	56.7	12	52.4					
NHPI-3	3	50.7	13	52.6					
NHPI-3	4	54.0	14	54.9					
NHPI-3	5	56.7	15	51.1					
NHPI-3	6	55.7	16	52.2					
NHPI-3	7	56.0	17	50.3					
NHPI-3	8	53.6	18	57.3					
NHPI-3	9	53.6	19	51.2					
NHPI-3	10	56.5	20	56.7					
	1-20 total						83.370	212.020	
NHPI-COMP	1	56.8	11	51.2					131.390
NHPI-COMP	2	54.0	12	52.7					
NHPI-COMP	3	54.6	13	51.8					
NHPI-COMP	4	56.7	14	55.9					
NHPI-COMP	5	54.3	15	59.9					
NHPI-COMP	6	52.3	16	58.6					
NHPI-COMP	7	57.1	17	52.3					
NHPI-COMP	8	56.1	18	58.8					
NHPI-COMP	9	56.6	19	56.3					
NHPI-COMP	10	57.5	20	57.1					
	1-20 total						111.660	243.050	

NH Gulfwatch 2010 Sample Jar Data Summary

						TARE WEIGHT		TOTAL WEIGHT		TISSUE WEIGHT		LENGTH	
Site	Site #	Jar label	Destination	Funding		ORGANICS	METALS	ORGANICS	METALS	ORGANICS	METALS	MIN	MAX
Indigenous Mussels				Organics	Metals								
Clark Cove	MECC-1	MECC-1N-100914	Lab		GOMC	130.020	21.700	241.740	120.024	111.720	98.324	51.400	60.000
on Seavey I.	MECC-2	MECC-2N-100914	Lab		GOMC	129.580	21.660	226.399	115.534	96.819	93.874	50.300	59.600
in Portsmouth	MECC-3	MECC-3N-100914	Lab		GOMC	131.100	21.640	256.700	123.298	125.600	101.658	51.000	59.000
Harbor, Maine	MECC-COMP	MECC-COMP-100914	Lab		GOMC	129.050	21.670	232.051	128.323	103.001	106.653	50.800	58.800
Hampton-	NHHS-1	NHHS-1N-100914	Lab		PREP	128.260	21.670	236.908	130.840	108.648	109.170	46.400	57.300
Seabrook Harbor	NHHS-2	NHHS-2N-100914	Lab		PREP	129.170	21.680	236.142	132.340	106.972	110.660	48.100	59.600
Hampton,	NHHS-3	NHHS-3N-100914	Lab		PREP	129.940	21.680	251.390	136.860	121.450	115.180	48.100	56.800
New Hampshire	NHHS-COMP	NHHS-COMP-100914	Lab		GOMC	131.960	21.670	243.354	139.470	111.394	117.800	47.400	56.200
Dover Point	NHDP-1	NHDP-1N-100914	Lab		PREP	128.700	21.690	217.570	112.800	88.870	91.110	50.100	57.700
	NHDP-2	NHDP-2N-100914	Lab		PREP	129.860	21.650	226.056	118.450	96.196	96.800	51.200	60.000
Dover	NHDP-3	NHDP-3N-100914	Lab		PREP	128.980	21.660	220.629	116.140	91.649	94.480	50.300	58.800
New Hampshire	NHDP-COMP	NHDP-COMP-100914	Lab		GOMC	132.010	21.690	215.354	112.890	83.344	91.200	50.000	59.600
Rye Harbor	NHRH-1	NHRH-1N-100914	Archive			129.700	21.680	219.740	113.043	90.040	91.363	50.000	60.000
	NHRH-2	NHRH-2N-100914	Archive			130.270	21.660	245.640	123.825	115.370	102.165	53.100	60.000
Rye,	NHRH-3	NHRH-3N-100914	Archive			130.470	21.690	228.876	117.425	98.406	95.735	51.400	60.000
New Hampshire	NHRH-COMP	NHRH-COMP-100914	Lab		GOMC	131.160	21.710	216.810	111.298	85.650	89.588	50.900	60.000
Little Harbor	NHLH-1	NHLH-1N-100914	Archive			128.810	21.680	213.510	122.475	84.700	100.795	50.100	58.700
	NHLH-2	NHLH-2N-100914	Archive			128.760	21.660	235.982	120.412	107.222	98.752	50.100	59.400
New Castle,	NHLH-3	NHLH-3N-100914	Archive			129.080	21.680	224.694	119.355	95.614	97.675	50.700	60.000
New Hampshire	NHLH-COMP	NHLH-COMP-100914	Lab		GOMC	129.500	21.680	227.320	104.109	97.820	82.429	50.900	59.000
Pierce Island	NHPI-1	NHPI-1N-100914	Archive			132.460	21.680	245.472	131.820	113.012	110.140	52.000	59.000
	NHPI-2	NHPI-2N-100914	Archive			129.210	21.690	235.499	129.935	106.289	108.245	50.700	59.800
Portsmouth,	NHPI-3	NHPI-3N-100914	Archive			0.000	21.670	212.020	118.334	212.020	96.664	50.300	57.400
New Hampshire	NHPI-COMP	NHPI-COMP-100914	Lab		GOMC	131.390	21.670	243.050	134.635	111.660	112.965	51.200	59.900
Summary Statistics			# to Lab			Mean	Mean	Mean	Mean	Mean	Mean	Min	Max
Mussels			15			124.560	21.675	231.371	122.235	106.811	100.559	46.400	60.000

Appendix B: NH Gulfwatch Data for 2010

StationID	SampNo	StartDate	Medium	Category	ParmType	Parameter	Result	ResultUnits
MECC	1N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	ALUMINUM	308.70	MG/KG-dw
MECC	1N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	CADMIUM	2.34	MG/KG-dw
MECC	1N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	CHROMIUM	2.30	MG/KG-dw
MECC	1N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	COPPER	8.20	MG/KG-dw
MECC	1N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	IRON	568.40	MG/KG-dw
MECC	1N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	LEAD	3.94	MG/KG-dw
MECC	1N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	MERCURY	0.32	MG/KG-dw
MECC	1N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	NICKEL	1.37	MG/KG-dw
MECC	1N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	SILVER	0.07	MG/KG-dw
MECC	1N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	ZINC	118.66	MG/KG-dw
MECC	1N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	PHYSICAL	PERCENT SOLIDS	12.78	%
MECC	2N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	ALUMINUM	264.31	MG/KG-dw
MECC	2N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	CADMIUM	1.89	MG/KG-dw
MECC	2N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	CHROMIUM	1.88	MG/KG-dw
MECC	2N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	COPPER	7.20	MG/KG-dw
MECC	2N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	IRON	474.58	MG/KG-dw
MECC	2N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	LEAD	2.80	MG/KG-dw
MECC	2N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	MERCURY	0.29	MG/KG-dw
MECC	2N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	NICKEL	1.24	MG/KG-dw
MECC	2N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	SILVER	0.04	MG/KG-dw
MECC	2N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	ZINC	125.74	MG/KG-dw
MECC	2N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	PHYSICAL	PERCENT SOLIDS	14.38	%
MECC	3N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	ALUMINUM	248.67	MG/KG-dw
MECC	3N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	CADMIUM	1.98	MG/KG-dw
MECC	3N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	CHROMIUM	1.64	MG/KG-dw
MECC	3N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	COPPER	7.26	MG/KG-dw
MECC	3N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	IRON	414.65	MG/KG-dw
MECC	3N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	LEAD	2.14	MG/KG-dw
MECC	3N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	MERCURY	0.23	MG/KG-dw
MECC	3N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	NICKEL	1.21	MG/KG-dw
MECC	3N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	SILVER	0.04	MG/KG-dw
MECC	3N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	ZINC	102.16	MG/KG-dw
MECC	3N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	PHYSICAL	PERCENT SOLIDS	13.33	%
MECC	COMP	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	ALUMINUM	302.28	MG/KG-dw
MECC	COMP	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	CADMIUM	2.20	MG/KG-dw
MECC	COMP	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	CHROMIUM	2.06	MG/KG-dw
MECC	COMP	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	COPPER	7.08	MG/KG-dw
MECC	COMP	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	IRON	579.81	MG/KG-dw
MECC	COMP	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	LEAD	3.04	MG/KG-dw
MECC	COMP	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	MERCURY	0.27	MG/KG-dw
MECC	COMP	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	NICKEL	1.63	MG/KG-dw
MECC	COMP	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	SILVER	0.04	MG/KG-dw
MECC	COMP	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	ZINC	123.07	MG/KG-dw
MECC	COMP	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	PHYSICAL	PERCENT SOLIDS	14.36	%
NHDP	1N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	ALUMINUM	189.23	MG/KG-dw
NHDP	1N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	CADMIUM	2.38	MG/KG-dw
NHDP	1N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	CHROMIUM	1.86	MG/KG-dw
NHDP	1N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	COPPER	6.67	MG/KG-dw

StationID	SampNo	StartDate	Medium	Category	ParmType	Parameter	Result	ResultUnits
NHDP	1N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	IRON	291.91	MG/KG-dw
NHDP	1N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	LEAD	1.39	MG/KG-dw
NHDP	1N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	MERCURY	0.26	MG/KG-dw
NHDP	1N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	NICKEL	1.30	MG/KG-dw
NHDP	1N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	SILVER	0.03	MG/KG-dw
NHDP	1N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	ZINC	114.90	MG/KG-dw
NHDP	1N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	PHYSICAL	PERCENT SOLIDS	11.40	%
NHDP	2N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	ALUMINUM	296.22	MG/KG-dw
NHDP	2N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	CADMIUM	2.35	MG/KG-dw
NHDP	2N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	CHROMIUM	2.19	MG/KG-dw
NHDP	2N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	COPPER	6.85	MG/KG-dw
NHDP	2N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	IRON	588.21	MG/KG-dw
NHDP	2N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	LEAD	1.71	MG/KG-dw
NHDP	2N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	MERCURY	0.27	MG/KG-dw
NHDP	2N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	NICKEL	1.37	MG/KG-dw
NHDP	2N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	SILVER	0.04	MG/KG-dw
NHDP	2N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	ZINC	113.28	MG/KG-dw
NHDP	2N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	PHYSICAL	PERCENT SOLIDS	12.09	%
NHDP	3N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	ALUMINUM	114.34	MG/KG-dw
NHDP	3N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	CADMIUM	2.22	MG/KG-dw
NHDP	3N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	CHROMIUM	1.79	MG/KG-dw
NHDP	3N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	COPPER	6.37	MG/KG-dw
NHDP	3N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	IRON	213.92	MG/KG-dw
NHDP	3N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	LEAD	1.30	MG/KG-dw
NHDP	3N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	MERCURY	0.26	MG/KG-dw
NHDP	3N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	NICKEL	1.05	MG/KG-dw
NHDP	3N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	SILVER	0.03	MG/KG-dw
NHDP	3N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	ZINC	98.53	MG/KG-dw
NHDP	3N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	PHYSICAL	PERCENT SOLIDS	11.67	%
NHDP	COMP	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	ALUMINUM	227.51	MG/KG-dw
NHDP	COMP	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	CADMIUM	2.62	MG/KG-dw
NHDP	COMP	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	CHROMIUM	2.23	MG/KG-dw
NHDP	COMP	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	COPPER	7.13	MG/KG-dw
NHDP	COMP	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	IRON	329.45	MG/KG-dw
NHDP	COMP	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	LEAD	1.85	MG/KG-dw
NHDP	COMP	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	MERCURY	0.28	MG/KG-dw
NHDP	COMP	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	NICKEL	1.35	MG/KG-dw
NHDP	COMP	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	SILVER	0.04	MG/KG-dw
NHDP	COMP	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	ZINC	100.78	MG/KG-dw
NHDP	COMP	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	PHYSICAL	PERCENT SOLIDS	11.96	%
NHHS	1N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	ALUMINUM	497.47	MG/KG-dw
NHHS	1N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	CADMIUM	1.96	MG/KG-dw
NHHS	1N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	CHROMIUM	2.19	MG/KG-dw
NHHS	1N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	COPPER	6.48	MG/KG-dw
NHHS	1N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	IRON	662.03	MG/KG-dw
NHHS	1N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	LEAD	2.08	MG/KG-dw
NHHS	1N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	MERCURY	0.13	MG/KG-dw
NHHS	1N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	NICKEL	1.80	MG/KG-dw
NHHS	1N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	SILVER	0.03	MG/KG-dw
NHHS	1N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	ZINC	91.89	MG/KG-dw
NHHS	1N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	PHYSICAL	PERCENT SOLIDS	15.19	%

StationID	SampNo	StartDate	Medium	Category	ParmType	Parameter	Result	ResultUnits
NHHS	2N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	ALUMINUM	191.67	MG/KG-dw
NHHS	2N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	CADMIUM	2.53	MG/KG-dw
NHHS	2N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	CHROMIUM	1.17	MG/KG-dw
NHHS	2N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	COPPER	7.02	MG/KG-dw
NHHS	2N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	IRON	264.41	MG/KG-dw
NHHS	2N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	LEAD	2.07	MG/KG-dw
NHHS	2N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	MERCURY	0.14	MG/KG-dw
NHHS	2N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	NICKEL	1.05	MG/KG-dw
NHHS	2N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	SILVER	0.04	MG/KG-dw
NHHS	2N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	ZINC	109.53	MG/KG-dw
NHHS	2N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	PHYSICAL	PERCENT SOLIDS	14.55	%
NHHS	3N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	ALUMINUM	196.09	MG/KG-dw
NHHS	3N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	CADMIUM	2.60	MG/KG-dw
NHHS	3N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	CHROMIUM	1.07	MG/KG-dw
NHHS	3N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	COPPER	6.31	MG/KG-dw
NHHS	3N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	IRON	272.64	MG/KG-dw
NHHS	3N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	LEAD	1.87	MG/KG-dw
NHHS	3N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	MERCURY	0.11	MG/KG-dw
NHHS	3N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	NICKEL	0.94	MG/KG-dw
NHHS	3N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	SILVER	0.04	MG/KG-dw
NHHS	3N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	ZINC	92.53	MG/KG-dw
NHHS	3N	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	PHYSICAL	PERCENT SOLIDS	13.63	%
NHHS	COMP	09/14/10	MUSSEL TISSUE	LAB DUPLICATE	METAL	ALUMINUM	187.50	MG/KG-dw
NHHS	COMP	09/14/10	MUSSEL TISSUE	LAB DUPLICATE	METAL	CADMIUM	2.21	MG/KG-dw
NHHS	COMP	09/14/10	MUSSEL TISSUE	LAB DUPLICATE	METAL	CHROMIUM	1.06	MG/KG-dw
NHHS	COMP	09/14/10	MUSSEL TISSUE	LAB DUPLICATE	METAL	COPPER	6.26	MG/KG-dw
NHHS	COMP	09/14/10	MUSSEL TISSUE	LAB DUPLICATE	METAL	IRON	278.83	MG/KG-dw
NHHS	COMP	09/14/10	MUSSEL TISSUE	LAB DUPLICATE	METAL	LEAD	2.15	MG/KG-dw
NHHS	COMP	09/14/10	MUSSEL TISSUE	LAB DUPLICATE	METAL	MERCURY	0.12	MG/KG-dw
NHHS	COMP	09/14/10	MUSSEL TISSUE	LAB DUPLICATE	METAL	NICKEL	0.88	MG/KG-dw
NHHS	COMP	09/14/10	MUSSEL TISSUE	LAB DUPLICATE	METAL	SILVER	0.04	MG/KG-dw
NHHS	COMP	09/14/10	MUSSEL TISSUE	LAB DUPLICATE	METAL	ZINC	102.15	MG/KG-dw
NHHS	COMP	09/14/10	MUSSEL TISSUE	LAB DUPLICATE	PHYSICAL	PERCENT SOLIDS	13.40	%
NHHS	COMP	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	ALUMINUM	304.65	MG/KG-dw
NHHS	COMP	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	CADMIUM	2.38	MG/KG-dw
NHHS	COMP	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	CHROMIUM	1.26	MG/KG-dw
NHHS	COMP	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	COPPER	6.75	MG/KG-dw
NHHS	COMP	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	IRON	439.07	MG/KG-dw
NHHS	COMP	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	LEAD	2.22	MG/KG-dw
NHHS	COMP	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	MERCURY	0.13	MG/KG-dw
NHHS	COMP	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	NICKEL	1.13	MG/KG-dw
NHHS	COMP	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	SILVER	0.05	MG/KG-dw
NHHS	COMP	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	ZINC	111.80	MG/KG-dw
NHHS	COMP	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	PHYSICAL	PERCENT SOLIDS	13.40	%
NHLH	COMP	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	ALUMINUM	220.20	MG/KG-dw
NHLH	COMP	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	CADMIUM	2.22	MG/KG-dw
NHLH	COMP	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	CHROMIUM	1.79	MG/KG-dw
NHLH	COMP	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	COPPER	6.54	MG/KG-dw
NHLH	COMP	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	IRON	372.68	MG/KG-dw
NHLH	COMP	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	LEAD	3.07	MG/KG-dw
NHLH	COMP	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	MERCURY	0.30	MG/KG-dw

StationID	SampNo	StartDate	Medium	Category	ParmType	Parameter	Result	ResultUnits
NHLH	COMP	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	NICKEL	1.24	MG/KG-dw
NHLH	COMP	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	SILVER	0.05	MG/KG-dw
NHLH	COMP	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	ZINC	116.92	MG/KG-dw
NHLH	COMP	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	PHYSICAL	PERCENT SOLIDS	14.39	%
NHPI	COMP	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	ALUMINUM	319.36	MG/KG-dw
NHPI	COMP	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	CADMIUM	2.23	MG/KG-dw
NHPI	COMP	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	CHROMIUM	2.13	MG/KG-dw
NHPI	COMP	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	COPPER	6.94	MG/KG-dw
NHPI	COMP	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	IRON	512.52	MG/KG-dw
NHPI	COMP	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	LEAD	3.18	MG/KG-dw
NHPI	COMP	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	MERCURY	0.36	MG/KG-dw
NHPI	COMP	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	NICKEL	1.33	MG/KG-dw
NHPI	COMP	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	SILVER	0.04	MG/KG-dw
NHPI	COMP	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	ZINC	111.68	MG/KG-dw
NHPI	COMP	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	PHYSICAL	PERCENT SOLIDS	12.25	%
NHRH	COMP	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	ALUMINUM	169.88	MG/KG-dw
NHRH	COMP	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	CADMIUM	2.03	MG/KG-dw
NHRH	COMP	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	CHROMIUM	1.59	MG/KG-dw
NHRH	COMP	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	COPPER	10.81	MG/KG-dw
NHRH	COMP	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	IRON	371.65	MG/KG-dw
NHRH	COMP	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	LEAD	2.68	MG/KG-dw
NHRH	COMP	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	MERCURY	0.34	MG/KG-dw
NHRH	COMP	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	NICKEL	2.07	MG/KG-dw
NHRH	COMP	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	SILVER	0.03	MG/KG-dw
NHRH	COMP	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	METAL	ZINC	139.72	MG/KG-dw
NHRH	COMP	09/14/10	MUSSEL TISSUE	ROUTINE SAMPLE	PHYSICAL	PERCENT SOLIDS	13.35	%