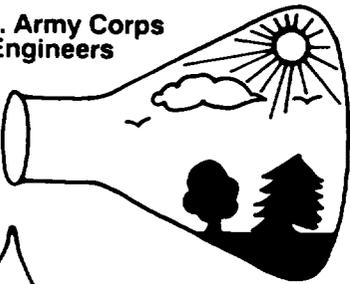




U.S. Army Corps  
of Engineers



ENVIRONMENTAL  
LABORATORY

Hubbardston MA 01452

7.2

Superfund Records Center

SITE: NEW BEDFORD

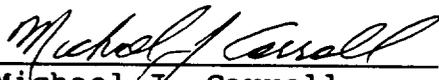
BREAK: 7.2

OTHER: 46727

NEW BEDFORD HARBOR REMEDIATION

U.S. Army Corps of Engineers  
New England Division  
Environmental Laboratory  
Hubbardston, MA 01452

Date: October 6, 1994

  
Michael J. Carroll  
Director  
Environmental Laboratory

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## 1. Case Summary

NEW BEDFORD REMEDIATION

1. Three sediment samples were received for the above project on 14 April 1994. The correct sample containers and sample preservation procedures were followed. Copies of the chain-of-custody records are enclosed for reference, along with a list of the samples collected.

2. The following analyses were performed in-house:

<u>Analysis</u>	<u>EPA Method</u>
<u>Sediment samples</u>	
Silver	1311/6010
Arsenic	1311/6010
Barium	1311/6010
Cadmium	1311/6010
Chromium	1311/6010
Lead	1311/6010
Selenium	1311/6010

3. Our contract laboratory performed the following analysis:

Mercury	245.1
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## 2. Sample Listing

## U.S. ARMY CORPS OF ENGINEERS - ENVIRONMENTAL LABORATORY

## NEW BEDFORD HARBOR REMEDIATION

April 27, 1994

LAB. NO.	SAMPLE IDENTIFICATION	SAMPLE DATE	MATRIX
C-25296	NB1 AREA F & G	04/13/94	SEDIMENT
C-25297	NB2 AREA D	04/13/94	SEDIMENT
C-25298	NB3 AREA C	04/13/94	SEDIMENT
C-25299	TCLP Extract of C-25296	04/13/94	TCLP X
C-25300	TCLP Extract of C-25297	04/13/94	TCLP X
C-25301	TCLP Extract of C-25298	04/13/94	TCLP X

### 3. Laboratory Data

U.S. ARMY CORPS OF ENGINEERS - ENVIRONMENTAL LABORATORY

- TRACE METALS RESULTS *mg/l*

April 29, 1994

Lab#	Field Description	Test	Result	Units	Date Digested	Date Analyzed
C-25299	TCLP Extract of C-25296	Arsenic - Total	< 0.17	ug/mL	04/26/94	04/26/94
		Barium - Total	0.34	ug/mL	04/26/94	04/26/94
		Cadmium - Total	0.14	ug/mL	04/26/94	04/26/94
		Chromium - Total	0.027	ug/mL	04/26/94	04/26/94
		Lead - Total	0.87	ug/mL	04/26/94	04/26/94
		Selenium - Total	J 0.22	ug/mL	04/26/94	04/26/94
		Silver - Total	< 0.014	ug/mL	04/26/94	04/26/94

Reviewed By: *Paul J. Went*, Analyst

Approved By: *[Signature]*, Chief Chemist

U.S. ARMY CORPS OF ENGINEERS - ENVIRONMENTAL LABORATORY

TRACE METALS RESULTS

April 29, 1994

Lab#	Field Description	Test	Result	Units	Date Digested	Date Analyzed
C-25300	TCLP Extract of C-25297	Arsenic - Total	< 0.17	ug/mL	04/26/94	04/26/94
		Barium - Total	0.25	ug/mL	04/26/94	04/26/94
		Cadmium - Total	0.23	ug/mL	04/26/94	04/26/94
		Chromium - Total	0.013	ug/mL	04/26/94	04/26/94
		Lead - Total	0.57	ug/mL	04/26/94	04/26/94
		Selenium - Total	0.29	ug/mL	04/26/94	04/26/94
		Silver - Total	< 0.014	ug/mL	04/26/94	04/26/94

10

Reviewed By: Paul V. Minto, Analyst  
 Approved By: [Signature], Chief Chemist

U.S. ARMY CORPS OF ENGINEERS - ENVIRONMENTAL LABORATORY

- TRACE METALS RESULTS

April 29, 1994

Lab#	Field Description	Test	Result	Units	Date Digested	Date Analyzed
C-25301	TCLP Extract of C-25298	Arsenic - Total	< 0.17	ug/mL	04/26/94	04/26/94
		Barium - Total	0.39	ug/mL	04/26/94	04/26/94
		Cadmium - Total	0.55	ug/mL	04/26/94	04/26/94
		Chromium - Total	0.037	ug/mL	04/26/94	04/26/94
		Lead - Total	0.86	ug/mL	04/26/94	04/26/94
		Selenium - Total	0.30	ug/mL	04/26/94	04/26/94
		Silver - Total	< 0.014	ug/mL	04/26/94	04/26/94

Reviewed By: Paul V. [Signature], Analyst  
 Approved By: [Signature], Chief Chemist

U. S. ARMY CORPS OF ENGINEERS  
NEW ENGLAND DIVISION, ENVIRONMENTAL LABORATORY

=====

PRODUCED ON

04/28/94  
08:47

METHOD BLANK DATA FOR DIGESTION DATE 4/26/94

TRACE METAL RESULTS - WATER (ppm)

PARAMETER	METHOD
Silver	< 0.014
Arsenic	< 0.17
Barium	< 0.0015
Cadmium	< 0.0010
Chromium	< 0.0070
Lead	< 0.21
Selenium	< 0.13

DATE DIGESTED: 4/26/94  
DATE ANALYZED: 4/26/94



U.S. ARMY CORPS OF ENGINEERS - ENVIRONMENTAL LABORATORY

- MERCURY RESULTS

September 29, 1994

Lab#	Field Description	Test	Result	Units	Sample Date	Date Analyzed
C-25299	TCLP Extract of C-25296	Mercury - Total	0.0004	ug/mL	04/13/94	05/02/94
C-25300	TCLP Extract of C-25297	Mercury - Total	0.0003	ug/mL	04/13/94	05/02/94
C-25301	TCLP Extract of C-25298	Mercury - Total	< 0.0002	ug/mL	04/13/94	05/02/94

All of these samples were digested on 05/02/94.

Analyzed By: E3I

Approved By: Mark R. Koenig, Chief Chemist signing for: Bill Saner



#### 4. Quality Assurance Data

TRACE METAL ANALYSIS  
ICAP METALS  
BLANK SPIKE/BLANK SPIKE DUPLICATE  
PRECISION

PARAMETER	BLANK SPIKE RECOVERY (%)	BLANK SPIKE DUPLICATE RECOVERY (%)	RELATIVE PERCENT DEVIATION (RPD)	MAXIMUM ACCEPTABLE RPD	IN OR OUT OF QC LIMITS
4/26/94					
Silver	105	103	2	30	IN
Barium	107	105	2	30	IN
Cadmium	109	108	1	30	IN
Chromium	109	108	1	30	IN
Lead	110	107	2	30	IN

TRACE METAL ANALYSIS  
ICAP METALS  
BLANK SPIKE/BLANK SPIKE DUPLICATE  
ACCURACY

PARAMETER	BLANK SPIKE RESULT	BLANK SPIKE RESULT	SPIKE ADDED	SPIKE RECOVERY	CONTROL LIMITS REC	IN OR OUT OF QC LIMITS
4/26/94						
Silver	1.1	< 0.014	1.0	105	75 - 125	IN
Barium	2.1	< 0.0015	2.0	107	75 - 125	IN
Cadmium	0.54	< 0.0010	0.50	109	75 - 125	IN
Chromium	1.1	< 0.0070	1.0	109	75 - 125	IN
Lead	5.5	< 0.21	5.1	110	75 - 125	IN

TRACE METAL ANALYSIS  
 FURNACE METALS  
 BLANK SPIKE/BLANK SPIKE DUPLICATE  
 PRECISION

PARAMETER	BLANK SPIKE RECOVERY (%)	BLANK SPIKE DUPLICATE RECOVERY (%)	RELATIVE PERCENT DEVIATION (RPD)	MAXIMUM ACCEPTABLE RPD	IN OR OUT OF QC LIMITS
4/26/94					
Arsenic	103	101	2	30	IN
Selenium	107	109	2	30	IN

TRACE METAL ANALYSIS  
 FURNACE METALS  
 BLANK SPIKE/BLANK SPIKE DUPLICATE  
 ACCURACY

PARAMETER	BLANK SPIKE RESULT	BLANK SPIKE RESULT	SPIKE ADDED	SPIKE RECOVERY %	CONTROL LIMITS REC	IN OR OUT OF QC LIMITS
4/26/94						
Arsenic	2.1	< 0.17	2.1	103	75 - 125	IN
Selenium	2.2	< 0.13	2.1	107	75 - 125	IN

Analyzed by Method 6010.

TRACE METAL ANALYSIS  
 SAMPLE NUMBER 25299 - MATRIX SPIKE  
 WATER  
 ACCURACY

PARAMETER	MATRIX SPIKE RESULT	SAMPLE RESULT	SPIKE ADDED	SPIKE RECOVERY %	CONTROL LIMITS REC	IN OR OUT OF QC LIMITS
4/26/94						
Silver	0.93	< 0.014	1.0	93	75 - 125	IN
Arsenic	2.2	< 0.17	2.1	105	75 - 125	IN
Barium	2.3	0.34	2.0	97	75 - 125	IN
Cadmium	0.63	0.14	0.50	98	75 - 125	IN
Chromium	1.0	0.027	1.0	99	75 - 125	IN
Lead	5.8	0.87	5.1	97	75 - 125	IN
Selenium	2.5	J 0.022	2.1	124	75 - 125	IN

TRACE METAL ANALYSIS  
 SAMPLE NUMBER 25300 - MATRIX SPIKE  
 WATER  
 ACCURACY

PARAMETER	MATRIX SPIKE RESULT	SAMPLE RESULT	SPIKE ADDED	SPIKE RECOVERY %	CONTROL LIMITS REC	IN OR OUT OF QC LIMITS
4/26/94						
Silver	0.89	< 0.014	1.0	89	75 - 125	IN
Arsenic	1.9	< 0.17	2.1	94	75 - 125	IN
Barium	2.1	0.25	2.0	95	75 - 125	IN
Cadmium	0.70	0.23	0.50	93	75 - 125	IN
Chromium	0.95	0.013	1.0	94	75 - 125	IN
Lead	5.1	0.57	5.1	90	75 - 125	IN
Selenium	2.0	0.29	2.1	84	75 - 125	IN

WS

TRACE METAL ANALYSIS  
SAMPLE NUMBER 25301 - MATRIX SPIKE  
WATER  
ACCURACY

PARAMETER	MATRIX SPIKE RESULT	SAMPLE RESULT	SPIKE ADDED	SPIKE RECOVERY %	CONTROL LIMITS REC	IN OR OUT OF QC LIMITS
4/26/94						
Silver	0.89	< 0.014	1.0	89	75 - 125	IN
Arsenic	2.0	< 0.17	2.1	97	75 - 125	IN
Barium	2.4	0.39	2.0	99	75 - 125	IN
Cadmium	0.99	0.55	0.50	89	75 - 125	IN
Chromium	0.99	0.037	1.0	96	75 - 125	IN
Lead	5.6	0.86	5.1	94	75 - 125	IN
Selenium	2.6	0.30	2.1	112	75 - 125	IN

## 5. Chain of Custody

**NORMANDEAU ASSOCIATES INC.**

25 Nashua Road, Bedford, New Hampshire 03110-5500  
 Tel. (603) 472-5191 Fax. (603) 472-7052

**CHAIN of CUSTODY**

Project Name: <b>New Bedford Harbor</b>				Project Number: <b>13116.03</b>				Container and Preservative:				
Collected By (print): <b>E. Fel'Otto, P. Whisler</b>												
Sample Number	Station Number and Location	Collection		Matrix	Type	Total Number of Containers <b>Chilled</b>				Remarks	Due Date	
		Date	Time									
<i>25296</i> NB1	Area F + G	4-13-94	1100	comp	SEO	1	8oz				TCLP RCRA Metals	2 wk
<i>25297</i> NB2	Area D	↓	1130	↓	↓	1	↓				↓	↓
<i>25298</i> NB3	Area C	↓	1145	↓	↓	1	↓				↓	↓
Relinquished By (signature): <i>Vanessa A. Barnes</i>					Date: 4/14/94	Time (military): 1234	Received By (signature): <i>Sharon Clark</i>					
Relinquished By (signature):					Date:	Time (military):	Received By (signature):					
Relinquished By (signature):					Date:	Time (military):	Received By (signature):					
Method of Shipment:						Destination: <u>U.S. ARMY CORPS OF ENGINEERS</u> <u>ENVIRONMENTAL LAB</u> <u>HUBBARDSTON, MA 01452</u> <u>508-928-4238</u>						

6. Cooler Receipt Form

CENED-ED-GL-E  
SAMPLE CONTAINER RECEIPT FORM

PROJECT: New Bedford

Container received on 4/14 and inspected on 4/14 by: S Clark

- 1. Shipper (USM, UPS, DHL, FEDEX, P/C, AIR EXP, HAND-DELIVERED)
- 2. Container type (Cooler, box, envelope, etc.) \_\_\_\_\_
- 3. Were custody seals on outside of container? N/A Yes No  
How many & where: 1 over, seal date: 4/14, seal name: J Barnes
- 4. Were custody papers taped to lid inside container? N/A Yes No
- 5. Custody papers properly filled out? (ink, signed, etc.) Yes No
- 6. Was project identifiable from custody papers? Yes No
- 7. Did you sign custody papers in appropriate place? Yes No
- 8. Did you attach shipper's packing form to this form? N/A Yes No
- 9. Packing material (peanuts, vermiculite, bubble wrap, paper, cans, other)
- 10. Was sufficient ice used? Temperature 4 °C upon arrival N/A Yes No
- 11. Were all samples sealed in separate plastic bags? N/A Yes No
- 12. Did all samples arrive in good condition? Yes No
- 13. Sample labels complete? (#, date, analysis, preservation, sign.) Yes No
- 14. Did all sample labels agree with custody papers? Yes No
- 15. Were correct sample containers used for tests indicated? N/A Yes No
- 16. Were correct preservatives used? (TM pH\_\_\_\_, CN- pH\_\_\_\_) N/A Yes No  
(TOC pH\_\_\_\_, NUTRIENT pH\_\_\_\_, TOX pH\_\_\_\_, TPH pH\_\_\_\_, OTHER pH\_\_\_\_)
- 17. Were VOA vials bubble-free (H<sub>2</sub>O) or no headspace (soil)? N/A Yes No
- 18. Was sufficient amount of sample sent in each container? Yes No
- 19. Were air volumes noted for air samples? N/A Yes No
- 20. Were initial weights noted for pre-weighed filters? N/A Yes No

Discrepancies: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

## 7. Quality Assurance Review

Quality Assurance Review  
Project: New Bedford Harbor Remediation  
Date: September 22, 1994

Marine Sediment  
#Samples-3  
#Parameters-3

1. SAMPLE HANDLING. The samples were collected by personnel from Normandeau Associates, Inc. using standardized procedures and the appropriate preservation techniques and sample containers were used. The proper chain of custody procedures were followed except that a representative of the sampling team did not relinquish the samples to the individual who was responsible for them.

*who did they relinquish them to?*

2. LABORATORY ANALYSIS.

a. Holding Times: The maximum holding times involving TCLP extraction and testing were all met.

b. Method Blanks: The method blanks for the TCLP metals were free from contamination.

c. Methodology: Standard EPA methodology was employed for TCLP extraction and analysis.

d. Surrogate Recoveries: N/A.

e. Internal Quality Control: The blank spikes and blank spike duplicates for the metals were all in control for both accuracy and precision. The TCLP matrix spikes were all in control for accuracy.

e. Evaluation of Data: The data appear reasonable and internally consistent.

  
Forrest E. Knowles, Jr.  
Chemist, Geology and Chemistry Section