



## **ANALYTICAL REPORT**

### **Prepared for:**

**ERM, New England, Inc.  
399 Boylston Street  
Boston, MA 02116**

**Project:           Raytheon  
ETR:               00045058  
Report Date:    11/16/2000**

### **Certificates**

**Massachusetts MA030  
Connecticut PH-0141  
New Hampshire 220699  
Rhode Island 64  
New Jersey 59015  
Maine MA030**

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# CASE NARRATIVE

## Woods Hole Group Environmental Laboratories

ETR: 45058  
Project: Raytheon

All analyses were performed according to Woods Hole Group's documented Standard Operating Procedures (SOPs), 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.

### *Metals*

Samples associated with this data package were filtered through 0.45µm pore size membrane filters upon receipt at the laboratory. Results are reported for dissolved metals analyzed by ICP MS (Method 6020). Hardness was determined by calculation on a digested portion of the total sample.

Sample OF-1 (laboratory ID 45058-01) was digested in duplicate with a high and low matrix spike, preparation blank and LCS. All instrument and batch QC results were within method acceptance criteria except the following:

1. Cadmium: The RPD between the sample result and the serial dilution result was 22.8% and higher than the 10% method acceptance limit. All results are flagged (E) to indicate this QC failure.
2. Calcium: The RPD between the sample result and the serial dilution result was 12.0% and higher than the 10% method acceptance limit. All results are flagged (E) to indicate this QC failure.
3. Lead: The RPD between the sample result and the serial dilution result was 46.4% and higher than the 10% method acceptance limit. All results are flagged (E) to indicate this QC failure.
4. Manganese: The RPD between the sample result and the serial dilution result was 91.3% and higher than the 10% method acceptance limit. All results are flagged (E) to indicate this QC failure.
5. Nickel: The RPD between the sample result and the serial dilution result was 24.4% and higher than the 10% method acceptance limit. All results are flagged (E) to indicate this QC failure.
6. Tin: Recovery of tin from the matrix spike sample was 128.5% and outside of the 75% - 125% method acceptance range indicating that reported results may be overestimated. All sample results were below the method detection limit and are flagged (N) to indicate this QC failure. The LCS recovery was within method acceptance limits.

The enclosed results of analyses are representative of the samples as received by the laboratory. Woods Hole Group 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 Woods Hole Group. To the best of my knowledge, the information contained in this report is accurate and complete.

Approved by:

  
Woods Hole Group Environmental Laboratories

Date: 11-29-00

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# Sample Inventory

## Woods Hole Group Environmental Laboratories

ERM, New England, Inc.  
399 Boylston Street  
Boston, MA 02116

ETR: 00045058  
Project: Raytheon

The samples listed below were submitted to Woods Hole Group Environmental Laboratories, Inc. and were received under chain of custody. Woods Hole Group Environmental Laboratories (WHG) makes no representation or certification as to the method of sample collection, sample identification, or transportation/handling procedures used prior to the receipt of samples by WHG.

<u>Lab ID:</u>	<u>Sample :</u>	<u>Sample Description:</u>	<u>Date / Time Collected</u>	<u>Date / Time Received</u>
0045058-01	OF-1	WATER	10/26/2000 1:03:00 PM	10/27/2000 9:10:00 AM

**Lab Testing:**

Aluminum, Dissolved  
Antimony, Dissolved  
Arsenic, Dissolved  
Barium, Dissolved  
Beryllium, Dissolved  
Cadmium, Dissolved  
Calcium, Dissolved  
Chromium, Dissolved  
Cobalt, Dissolved  
Copper, Dissolved  
Dissolved Organic Carbon  
Filtration Fee  
Hardness - Calculation  
Hexavalent Chromium  
Iron, Dissolved  
Lead, Dissolved  
Magnesium, Dissolved  
Manganese, Dissolved  
Mercury, Dissolved  
Metals Analysis Dissolved  
Nickel, Dissolved  
Potassium, Dissolved  
Selenium, Dissolved  
Silver, Dissolved  
Thallium, Dissolved  
Tin, Dissolved  
Vanadium, Dissolved  
Zinc, Dissolved

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045058-02	T-2-6	WATER	10/26/2000 1:45:00 PM	10/27/2000 9:10:00 AM
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**Lab Testing:**

Aluminum, Dissolved  
Antimony, Dissolved

# Sample Inventory

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ERM, New England, Inc.  
399 Boylston Street  
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ETR: 00045058  
Project: Raytheon

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<u>Lab ID:</u>	<u>Sample :</u>	<u>Sample Description:</u>	<u>Date / Time Collected</u>	<u>Date / Time Received</u>
	Arsenic, Dissolved			
	Barium, Dissolved			
	Beryllium, Dissolved			
	Cadmium, Dissolved			
	Calcium, Dissolved			
	Chromium, Dissolved			
	Cobalt, Dissolved			
	Copper, Dissolved			
	Dissolved Organic Carbon			
	Filtration Fee			
	Hardness - Calculation			
	Hexavalent Chromium			
	Iron, Dissolved			
	Lead, Dissolved			
	Magnesium, Dissolved			
	Manganese, Dissolved			
	Mercury, Dissolved			
	Metals Analysis Dissolved			
	Nickel, Dissolved			
	Potassium, Dissolved			
	Selenium, Dissolved			
	Silver, Dissolved			
	Thallium, Dissolved			
	Tin, Dissolved			
	Vanadium, Dissolved			
	Zinc, Dissolved			
1045058-03	T-3-6	WATER	10/26/2000 1:35:00 PM	10/27/2000 9:10:00 AM

**Lab Testing:**

Aluminum, Dissolved  
Antimony, Dissolved  
Arsenic, Dissolved  
Barium, Dissolved  
Beryllium, Dissolved  
Cadmium, Dissolved  
Calcium, Dissolved

# Sample Inventory

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ERM, New England, Inc.  
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Boston, MA 02116

ETR: 00045058  
Project: Raytheon

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<u>Lab ID:</u>	<u>Sample :</u>	<u>Sample Description:</u>	<u>Date / Time Collected</u>	<u>Date / Time Received</u>
	Chromium, Dissolved			
	Cobalt, Dissolved			
	Copper, Dissolved			
	Dissolved Organic Carbon			
	Filtration Fee			
	Hardness - Calculation			
	Hexavalent Chromium			
	Iron, Dissolved			
	Lead, Dissolved			
	Magnesium, Dissolved			
	Manganese, Dissolved			
	Mercury, Dissolved			
	Metals Analysis Dissolved			
	Nickel, Dissolved			
	Potassium, Dissolved			
	Selenium, Dissolved			
	Silver, Dissolved			
	Thallium, Dissolved			
	Tin, Dissolved			
	Vanadium, Dissolved			
	Zinc, Dissolved			
45058-04	T-5-4	WATER	10/26/2000 2:00:00 PM	10/27/2000 9:10:00 AM

### Lab Testing:

Aluminum, Dissolved  
Antimony, Dissolved  
Arsenic, Dissolved  
Barium, Dissolved  
Beryllium, Dissolved  
Cadmium, Dissolved  
Calcium, Dissolved  
Chromium, Dissolved  
Cobalt, Dissolved  
Copper, Dissolved  
Dissolved Organic Carbon  
Filtration Fee

# Sample Inventory

## Woods Hole Group Environmental Laboratories

ERM, New England, Inc.  
399 Boylston Street  
Boston, MA 02116

ETR: 00045058

Project: Raytheon

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<u>Lab ID:</u>	<u>Sample :</u>	<u>Sample Description:</u>	<u>Date / Time Collected</u>	<u>Date / Time Received</u>
	Hardness - Calculation			
	Hexavalent Chromium			
	Iron, Dissolved			
	Lead, Dissolved			
	Magnesium, Dissolved			
	Manganese, Dissolved			
	Mercury, Dissolved			
	Metals Analysis Dissolved			
	Nickel, Dissolved			
	Potassium, Dissolved			
	Selenium, Dissolved			
	Silver, Dissolved			
	Thallium, Dissolved			
	Tin, Dissolved			
	Vanadium, Dissolved			
	Zinc, Dissolved			
1045058-05	T-14-6	WATER	10/26/2000 2:30:00 PM	10/27/2000 9:10:00 AM

### Lab Testing:

Aluminum, Dissolved  
Antimony, Dissolved  
Arsenic, Dissolved  
Barium, Dissolved  
Beryllium, Dissolved  
Cadmium, Dissolved  
Calcium, Dissolved  
Chromium, Dissolved  
Cobalt, Dissolved  
Copper, Dissolved  
Dissolved Organic Carbon  
Filtration Fee  
Hardness - Calculation  
Hexavalent Chromium  
Iron, Dissolved  
Lead, Dissolved  
Magnesium, Dissolved

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ERM, New England, Inc.  
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Project: Raytheon

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<u>Lab ID:</u>	<u>Sample :</u>	<u>Sample Description:</u>	<u>Date / Time Collected</u>	<u>Date / Time Received</u>
	Manganese, Dissolved			
	Mercury, Dissolved			
	Metals Analysis Dissolved			
	Nickel, Dissolved			
	Potassium, Dissolved			
	Selenium, Dissolved			
	Silver, Dissolved			
	Thallium, Dissolved			
	Tin, Dissolved			
	Vanadium, Dissolved			
	Zinc, Dissolved			
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0045058-06	T-12-1	WATER	10/26/2000 2:45:00 PM	10/27/2000 9:10:00 AM
	<u>Lab Testing:</u>			
	Aluminum, Dissolved			
	Antimony, Dissolved			
	Arsenic, Dissolved			
	Barium, Dissolved			
	Beryllium, Dissolved			
	Cadmium, Dissolved			
	Calcium, Dissolved			
	Chromium, Dissolved			
	Cobalt, Dissolved			
	Copper, Dissolved			
	Dissolved Organic Carbon			
	Filtration Fee			
	Hardness - Calculation			
	Hexavalent Chromium			
	Iron, Dissolved			
	Lead, Dissolved			
	Magnesium, Dissolved			
	Manganese, Dissolved			
	Mercury, Dissolved			
	Metals Analysis Dissolved			
	Nickel, Dissolved			
	Potassium, Dissolved			

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<u>Lab ID:</u>	<u>Sample :</u>	<u>Sample Description:</u>	<u>Date / Time Collected</u>	<u>Date / Time Received</u>
	Selenium, Dissolved			
	Silver, Dissolved			
	Thallium, Dissolved			
	Tin, Dissolved			
	Vanadium, Dissolved			
	Zinc, Dissolved			



# ANALYTICAL REPORT

## Woods Hole Group Environmental Laboratories

ERM, New England, Inc.  
399 Boylston Street  
Boston, MA 02116

ETR: 00045058  
Project: Raytheon

Sample ID: OF-1  
Lab ID: 0045058-01

Matrix: WATER

Date Collected: 10/26/2000

Date Received: 10/27/2000

Parameter	Result	Qualifier	Units	Dilution		Method	Date	Date	Analyst
				Factor	RL		Prepared	Analyzed	
Aluminum, Dissolved	310		µg/L	5	50	6020		11/13/2000	LMV
Antimony, Dissolved	5.0	U	µg/L	5	5.0	6020		11/13/2000	LMV
Arsenic, Dissolved	0.71		µg/L	5	0.50	6020		11/13/2000	LMV
Barium, Dissolved	82		µg/L	5	0.50	6020		11/13/2000	LMV
Beryllium, Dissolved	0.50	U	µg/L	5	0.50	6020		11/13/2000	LMV
Cadmium, Dissolved	0.56		µg/L	5	0.50	6020		11/13/2000	LMV
Calcium, Dissolved	53000		µg/L	5	250	6020		11/13/2000	LMV
Chromium, Dissolved	1.0	U	µg/L	5	1.0	6020		11/13/2000	LMV
Cobalt, Dissolved	1.5		µg/L	5	0.50	6020		11/13/2000	LMV
Copper, Dissolved	90		µg/L	5	0.50	6020		11/13/2000	LMV
Hardness, Total	160000		µg/L	1	5000	2340B	11/13/2000	11/14/2000	LMV
Iron, Dissolved	200		µg/L	5	50	6020		11/14/2000	LMV
Lead, Dissolved	1.8		µg/L	5	0.50	6020		11/13/2000	LMV
Magnesium, Dissolved	11000		µg/L	5	250	6020		11/14/2000	LMV
Manganese, Dissolved	110		µg/L	5	0.50	6020		11/15/2000	LMV
Mercury, Dissolved	0.20	U	µg/L	2	0.20	7470	11/13/2000	11/14/2000	DJL
Nickel, Dissolved	18		µg/L	5	0.50	6020		11/13/2000	LMV
Potassium, Dissolved	69000		µg/L	5	250	6020		11/13/2000	LMV
Selenium, Dissolved	2.5	U	µg/L	5	2.5	6020		11/13/2000	LMV
Silver, Dissolved	0.50	U	µg/L	5	0.50	6020		11/13/2000	LMV
Thallium, Dissolved	0.50	U	µg/L	5	0.50	6020		11/13/2000	LMV
Tin, Dissolved	20	U	µg/L	1	20	282.2		11/13/2000	CLM
Vanadium, Dissolved	2.5	U	µg/L	5	2.5	6020		11/13/2000	LMV
Zinc, Dissolved	360		µg/L	5	2.5	6020		11/13/2000	LMV

Sample ID: T-2-6  
Lab ID: 0045058-02

Matrix: WATER

Date Collected: 10/26/2000

Date Received: 10/27/2000

Parameter	Result	Qualifier	Units	Dilution		Method	Date	Date	Analyst
				Factor	RL		Prepared	Analyzed	
Aluminum, Dissolved	210		µg/L	5	50	6020		11/13/2000	LMV

U = The analyte was analyzed for but not detected at the sample s

N/A = Not Applicable  
RL = Reporting Limit

# ANALYTICAL REPORT

## Woods Hole Group Environmental Laboratories

ERM, New England, Inc.  
399 Boylston Street  
Boston, MA 02116

ETR: 00045058  
Project: Raytheon

Sample ID: T-2-6  
Lab ID: 0045058-02

Matrix: WATER

Date Collected: 10/26/2000  
Date Received: 10/27/2000

Parameter	Result	Qualifier	Units	Dilution		Method	Date	Date	Analyst
				Factor	RL		Prepared	Analyzed	
Antimony, Dissolved	5.0	U	µg/L	5	5.0	6020		11/13/2000	LMV
Arsenic, Dissolved	0.72		µg/L	5	0.50	6020		11/13/2000	LMV
Barium, Dissolved	76		µg/L	5	0.50	6020		11/13/2000	LMV
Beryllium, Dissolved	0.50	U	µg/L	5	0.50	6020		11/13/2000	LMV
Cadmium, Dissolved	0.56		µg/L	5	0.50	6020		11/13/2000	LMV
Calcium, Dissolved	52000		µg/L	5	250	6020		11/13/2000	LMV
Chromium, Dissolved	1.0	U	µg/L	5	1.0	6020		11/13/2000	LMV
Cobalt, Dissolved	1.3		µg/L	5	0.50	6020		11/13/2000	LMV
Copper, Dissolved	80		µg/L	5	0.50	6020		11/13/2000	LMV
Hardness, Total	160000		µg/L	1	5000	2340B	11/13/2000	11/14/2000	LMV
Iron, Dissolved	190		µg/L	5	50	6020		11/14/2000	LMV
Lead, Dissolved	1.6		µg/L	5	0.50	6020		11/13/2000	LMV
Magnesium, Dissolved	11000		µg/L	5	250	6020		11/14/2000	LMV
Manganese, Dissolved	110		µg/L	5	0.50	6020		11/15/2000	LMV
Mercury, Dissolved	0.20	U	µg/L	2	0.20	7470	11/13/2000	11/14/2000	DJL
Nickel, Dissolved	16		µg/L	5	0.50	6020		11/13/2000	LMV
Potassium, Dissolved	67000		µg/L	5	250	6020		11/13/2000	LMV
Selenium, Dissolved	2.5	U	µg/L	5	2.5	6020		11/13/2000	LMV
Silver, Dissolved	0.75		µg/L	5	0.50	6020		11/13/2000	LMV
Thallium, Dissolved	0.50	U	µg/L	5	0.50	6020		11/13/2000	LMV
Tin, Dissolved	20	U	µg/L	1	20	282.2		11/13/2000	CLM
Vanadium, Dissolved	2.5	U	µg/L	5	2.5	6020		11/13/2000	LMV
Zinc, Dissolved	340		µg/L	5	2.5	6020		11/13/2000	LMV

Sample ID: T-3-6  
Lab ID: 0045058-03

Matrix: WATER

Date Collected: 10/26/2000  
Date Received: 10/27/2000

Parameter	Result	Qualifier	Units	Dilution		Method	Date	Date	Analyst
				Factor	RL		Prepared	Analyzed	
Aluminum, Dissolved	130		µg/L	5	50	6020		11/13/2000	LMV
Antimony, Dissolved	5.0	U	µg/L	5	5.0	6020		11/13/2000	LMV

U = The analyte was analyzed for but not detected at the sample s

N/A = Not Applicable  
RL = Reporting Limit

# ANALYTICAL REPORT

## Woods Hole Group Environmental Laboratories

ERM, New England, Inc.  
399 Boylston Street  
Boston, MA 02116

ETR: 00045058  
Project: Raytheon

Sample ID: T-3-6  
Lab ID: 0045058-03

Matrix: WATER

Date Collected: 10/26/2000

Date Received: 10/27/2000

Parameter	Result	Qualifier	Units	Dilution		Method	Date	Date	Analyst
				Factor	RL		Prepared	Analyzed	
Arsenic, Dissolved	0.77		µg/L	5	0.50	6020		11/13/2000	LMV
Barium, Dissolved	74		µg/L	5	0.50	6020		11/13/2000	LMV
Beryllium, Dissolved	0.50	U	µg/L	5	0.50	6020		11/13/2000	LMV
Cadmium, Dissolved	0.54		µg/L	5	0.50	6020		11/13/2000	LMV
Calcium, Dissolved	52000		µg/L	5	250	6020		11/13/2000	LMV
Chromium, Dissolved	1.0	U	µg/L	5	1.0	6020		11/13/2000	LMV
Cobalt, Dissolved	1.2		µg/L	5	0.50	6020		11/13/2000	LMV
Copper, Dissolved	72		µg/L	5	0.50	6020		11/13/2000	LMV
Hardness, Total	160000		µg/L	1	5000	2340B	11/13/2000	11/14/2000	LMV
Iron, Dissolved	170		µg/L	5	50	6020		11/14/2000	LMV
Lead, Dissolved	1.3		µg/L	5	0.50	6020		11/13/2000	LMV
Magnesium, Dissolved	10000		µg/L	5	250	6020		11/14/2000	LMV
Manganese, Dissolved	110		µg/L	5	0.50	6020		11/15/2000	LMV
Mercury, Dissolved	0.20	U	µg/L	2	0.20	7470	11/13/2000	11/14/2000	DJL
Nickel, Dissolved	16		µg/L	5	0.50	6020		11/13/2000	LMV
Potassium, Dissolved	67000		µg/L	5	250	6020		11/13/2000	LMV
Selenium, Dissolved	2.5	U	µg/L	5	2.5	6020		11/13/2000	LMV
Silver, Dissolved	0.50	U	µg/L	5	0.50	6020		11/13/2000	LMV
Thallium, Dissolved	0.50	U	µg/L	5	0.50	6020		11/13/2000	LMV
Tin, Dissolved	20	U	µg/L	1	20	282.2		11/13/2000	CLM
Vanadium, Dissolved	2.5	U	µg/L	5	2.5	6020		11/13/2000	LMV
Zinc, Dissolved	340		µg/L	5	2.5	6020		11/13/2000	LMV

Sample ID: T-5-4  
Lab ID: 0045058-04

Matrix: WATER

Date Collected: 10/26/2000

Date Received: 10/27/2000

Parameter	Result	Qualifier	Units	Dilution		Method	Date	Date	Analyst
				Factor	RL		Prepared	Analyzed	
Aluminum, Dissolved	50	U	µg/L	5	50	6020		11/13/2000	LMV
Antimony, Dissolved	5.0	U	µg/L	5	5.0	6020		11/13/2000	LMV
Arsenic, Dissolved	2.9		µg/L	5	0.50	6020		11/13/2000	LMV

U = The analyte was analyzed for but not detected at the sample s

N/A = Not Applicable  
RL = Reporting Limit

# ANALYTICAL REPORT

Woods Hole Group Environmental Laboratories

ERM, New England, Inc.  
399 Boylston Street  
Boston, MA 02116

ETR: 00045058  
Project: Raytheon

Sample ID: T-5-4  
Lab ID: 0045058-04

Matrix: WATER

Date Collected: 10/26/2000

Date Received: 10/27/2000

Parameter	Result	Qualifier	Units	Dilution		Method	Date	Date	Analyst
				Factor	RL		Prepared	Analyzed	
Barium, Dissolved	29		µg/L	5	0.50	6020		11/13/2000	LMV
Beryllium, Dissolved	0.50	U	µg/L	5	0.50	6020		11/13/2000	LMV
Cadmium, Dissolved	3.7		µg/L	5	0.50	6020		11/13/2000	LMV
Calcium, Dissolved	41000		µg/L	5	250	6020		11/13/2000	LMV
Chromium, Dissolved	15		µg/L	5	1.0	6020		11/13/2000	LMV
Cobalt, Dissolved	4.0		µg/L	5	0.50	6020		11/13/2000	LMV
Copper, Dissolved	310		µg/L	5	0.50	6020		11/13/2000	LMV
Hardness, Total	130000		µg/L	1	5000	2340B	11/13/2000	11/14/2000	LMV
Iron, Dissolved	600		µg/L	5	50	6020		11/14/2000	LMV
Lead, Dissolved	0.50	U	µg/L	5	0.50	6020		11/13/2000	LMV
Magnesium, Dissolved	6500		µg/L	5	250	6020		11/14/2000	LMV
Manganese, Dissolved	1100		µg/L	5	0.50	6020		11/15/2000	LMV
Mercury, Dissolved	0.20	U	µg/L	2	0.20	7470	11/13/2000	11/14/2000	DJL
Nickel, Dissolved	13		µg/L	5	0.50	6020		11/13/2000	LMV
Potassium, Dissolved	3000		µg/L	5	250	6020		11/13/2000	LMV
Selenium, Dissolved	2.5	U	µg/L	5	2.5	6020		11/13/2000	LMV
Silver, Dissolved	0.50	U	µg/L	5	0.50	6020		11/13/2000	LMV
Thallium, Dissolved	0.50	U	µg/L	5	0.50	6020		11/13/2000	LMV
Tin, Dissolved	20	U	µg/L	1	20	282.2		11/13/2000	CLM
Vanadium, Dissolved	2.5	U	µg/L	5	2.5	6020		11/13/2000	LMV
Zinc, Dissolved	190		µg/L	5	2.5	6020		11/13/2000	LMV

Sample ID: T-14-6  
Lab ID: 0045058-05

Matrix: WATER

Date Collected: 10/26/2000

Date Received: 10/27/2000

Parameter	Result	Qualifier	Units	Dilution		Method	Date	Date	Analyst
				Factor	RL		Prepared	Analyzed	
Aluminum, Dissolved	66		µg/L	5	50	6020		11/13/2000	LMV
Antimony, Dissolved	5.0	U	µg/L	5	5.0	6020		11/13/2000	LMV
Arsenic, Dissolved	1.6		µg/L	5	0.50	6020		11/13/2000	LMV
Barium, Dissolved	50		µg/L	5	0.50	6020		11/13/2000	LMV

U = The analyte was analyzed for but not detected at the sample s

N/A = Not Applicable  
RL = Reporting Limit

# ANALYTICAL REPORT

## Woods Hole Group Environmental Laboratories

ERM, New England, Inc.  
399 Boylston Street  
Boston, MA 02116

ETR: 00045058  
Project: Raytheon

Sample ID: T-14-6  
Lab ID: 0045058-05

Matrix: WATER

Date Collected: 10/26/2000  
Date Received: 10/27/2000

Parameter	Result	Qualifier	Units	Dilution		Method	Date	Date	Analyst
				Factor	RL		Prepared	Analyzed	
Beryllium, Dissolved	0.50	U	µg/L	5	0.50	6020		11/13/2000	LMV
Cadmium, Dissolved	1.6		µg/L	5	0.50	6020		11/13/2000	LMV
Calcium, Dissolved	39000		µg/L	5	250	6020		11/13/2000	LMV
Chromium, Dissolved	4.7		µg/L	5	1.0	6020		11/13/2000	LMV
Cobalt, Dissolved	4.7		µg/L	5	0.50	6020		11/13/2000	LMV
Copper, Dissolved	21		µg/L	5	0.50	6020		11/13/2000	LMV
Hardness, Total	120000		µg/L	1	5000	2340B	11/13/2000	11/14/2000	LMV
Iron, Dissolved	580		µg/L	5	50	6020		11/14/2000	LMV
Lead, Dissolved	1.1		µg/L	5	0.50	6020		11/13/2000	LMV
Magnesium, Dissolved	6600		µg/L	5	250	6020		11/14/2000	LMV
Manganese, Dissolved	1000		µg/L	5	0.50	6020		11/15/2000	LMV
Mercury, Dissolved	0.20	U	µg/L	2	0.20	7470	11/13/2000	11/14/2000	DJL
Nickel, Dissolved	8.6		µg/L	5	0.50	6020		11/13/2000	LMV
Potassium, Dissolved	16000		µg/L	5	250	6020		11/13/2000	LMV
Selenium, Dissolved	2.5	U	µg/L	5	2.5	6020		11/13/2000	LMV
Silver, Dissolved	0.50	U	µg/L	5	0.50	6020		11/13/2000	LMV
Thallium, Dissolved	0.50	U	µg/L	5	0.50	6020		11/13/2000	LMV
Tin, Dissolved	20	U	µg/L	1	20	282.2		11/13/2000	CLM
Vanadium, Dissolved	2.5	U	µg/L	5	2.5	6020		11/13/2000	LMV
Zinc, Dissolved	210		µg/L	5	2.5	6020		11/13/2000	LMV

Sample ID: T-12-1  
Lab ID: 0045058-06

Matrix: WATER

Date Collected: 10/26/2000  
Date Received: 10/27/2000

Parameter	Result	Qualifier	Units	Dilution		Method	Date	Date	Analyst
				Factor	RL		Prepared	Analyzed	
Aluminum, Dissolved	50	U	µg/L	5	50	6020		11/13/2000	LMV
Antimony, Dissolved	5.0	U	µg/L	5	5.0	6020		11/13/2000	LMV
Arsenic, Dissolved	2.0		µg/L	5	0.50	6020		11/13/2000	LMV
Barium, Dissolved	44		µg/L	5	0.50	6020		11/13/2000	LMV
Beryllium, Dissolved	0.50	U	µg/L	5	0.50	6020		11/13/2000	LMV

U - The analyte was analyzed for but not detected at the sample s

N/A - Not Applicable  
RL - Reporting Limit

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ERM, New England, Inc.  
399 Boylston Street  
Boston, MA 02116

ETR: 00045058  
Project: Raytheon

Sample ID: T-12-1  
Lab ID: 0045058-06

Matrix: WATER

Date Collected: 10/26/2000  
Date Received: 10/27/2000

Parameter	Result	Qualifier	Units	Dilution		Method	Date	Date	Analyst
				Factor	RL		Prepared	Analyzed	
Cadmium, Dissolved	0.71		µg/L	5	0.50	6020		11/13/2000	LMV
Calcium, Dissolved	40000		µg/L	5	250	6020		11/13/2000	LMV
Chromium, Dissolved	5.4		µg/L	5	1.0	6020		11/13/2000	LMV
Cobalt, Dissolved	2.2		µg/L	5	0.50	6020		11/13/2000	LMV
Copper, Dissolved	39		µg/L	5	0.50	6020		11/13/2000	LMV
Hardness, Total	130000		µg/L	1	5000	2340B	11/13/2000	11/14/2000	LMV
Iron, Dissolved	370		µg/L	5	50	6020		11/14/2000	LMV
Lead, Dissolved	0.54		µg/L	5	0.50	6020		11/13/2000	LMV
Magnesium, Dissolved	7700		µg/L	5	250	6020		11/14/2000	LMV
Manganese, Dissolved	540		µg/L	5	0.50	6020		11/15/2000	LMV
Mercury, Dissolved	0.20	U	µg/L	2	0.20	7470	11/13/2000	11/14/2000	DJL
Nickel, Dissolved	8.0		µg/L	5	0.50	6020		11/13/2000	LMV
Potassium, Dissolved	3100		µg/L	5	250	6020		11/13/2000	LMV
Selenium, Dissolved	2.5	U	µg/L	5	2.5	6020		11/13/2000	LMV
Silver, Dissolved	0.50	U	µg/L	5	0.50	6020		11/13/2000	LMV
Thallium, Dissolved	0.50	U	µg/L	5	0.50	6020		11/13/2000	LMV
Tin, Dissolved	20	U	µg/L	1	20	282.2		11/13/2000	CLM
Vanadium, Dissolved	2.5	U	µg/L	5	2.5	6020		11/13/2000	LMV
Zinc, Dissolved	170		µg/L	5	2.5	6020		11/13/2000	LMV

U = The analyte was analyzed for but not detected at the sample s

N/A = Not Applicable  
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# ANALYTICAL REPORT

## Woods Hole Group Environmental Laboratories

ERM, New England, Inc.  
399 Boylston Street  
Boston, MA 02116

ETR: 00045058  
Project: Raytheon

Sample ID: OF-1  
Lab ID: 0045058-01

Matrix: WATER

Date Collected: 10/26/2000

Date Received: 10/27/2000

<u>Parameter</u>	<u>Result</u>	<u>Qualifier</u>	<u>Units</u>	<u>Dilution Factor</u>	<u>RL</u>	<u>Method</u>	<u>Date Analyzed</u>	<u>Analyst</u>
Dissolved Organic Carbon	6.5		mg/L	1	1.0	EPA	10/28/2000	MAK
Hexavalent Chromium	0.005	U	mg/L	1	0.0053	3500-CR D	10/27/2000	MAK

Sample ID: T-2-6  
Lab ID: 0045058-02

Matrix: WATER

Date Collected: 10/26/2000

Date Received: 10/27/2000

<u>Parameter</u>	<u>Result</u>	<u>Qualifier</u>	<u>Units</u>	<u>Dilution Factor</u>	<u>RL</u>	<u>Method</u>	<u>Date Analyzed</u>	<u>Analyst</u>
Dissolved Organic Carbon	6.2		mg/L	1	1.0	EPA	10/28/2000	MAK
Hexavalent Chromium	0.005	U	mg/L	1	0.0053	3500-CR D	10/27/2000	MAK

Sample ID: T-3-6  
Lab ID: 0045058-03

Matrix: WATER

Date Collected: 10/26/2000

Date Received: 10/27/2000

<u>Parameter</u>	<u>Result</u>	<u>Qualifier</u>	<u>Units</u>	<u>Dilution Factor</u>	<u>RL</u>	<u>Method</u>	<u>Date Analyzed</u>	<u>Analyst</u>
Dissolved Organic Carbon	8.4		mg/L	1	1.0	EPA	10/28/2000	MAK
Hexavalent Chromium	0.005	U	mg/L	1	0.0053	3500-CR D	10/27/2000	MAK

Sample ID: T-5-4  
Lab ID: 0045058-04

Matrix: WATER

Date Collected: 10/26/2000

Date Received: 10/27/2000

<u>Parameter</u>	<u>Result</u>	<u>Qualifier</u>	<u>Units</u>	<u>Dilution Factor</u>	<u>RL</u>	<u>Method</u>	<u>Date Analyzed</u>	<u>Analyst</u>
Dissolved Organic Carbon	11		mg/L	1	1.0	EPA	10/28/2000	MAK
Hexavalent Chromium	0.005	U	mg/L	1	0.0053	3500-CR D	10/27/2000	MAK

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N/A = Not Applicable  
RL = Reporting Limit

# ANALYTICAL REPORT

## Woods Hole Group Environmental Laboratories

ERM, New England, Inc.  
399 Boylston Street  
Boston, MA 02116

ETR: 00045058  
Project: Raytheon

Sample ID: T-14-6  
Lab ID: 0045058-05

Matrix: WATER

Date Collected: 10/26/2000

Date Received: 10/27/2000

<u>Parameter</u>	<u>Result</u>	<u>Qualifier</u>	<u>Units</u>	<u>Dilution</u>		<u>Method</u>	<u>Date</u>	
				<u>Factor</u>	<u>RL</u>		<u>Analyzed</u>	<u>Analyst</u>
Dissolved Organic Carbon	7.1		mg/L	1	1.0	EPA	10/28/2000	MAK
Hexavalent Chromium	0.005	U	mg/L	1	0.0053	3500-CR D	10/27/2000	MAK

Sample ID: T-12-1  
Lab ID: 0045058-06

Matrix: WATER

Date Collected: 10/26/2000

Date Received: 10/27/2000

<u>Parameter</u>	<u>Result</u>	<u>Qualifier</u>	<u>Units</u>	<u>Dilution</u>		<u>Method</u>	<u>Date</u>	
				<u>Factor</u>	<u>RL</u>		<u>Analyzed</u>	<u>Analyst</u>
Dissolved Organic Carbon	5.4		mg/L	1	1.0	EPA	10/28/2000	MAK
Hexavalent Chromium	0.005	U	mg/L	1	0.0053	3500-CR D	10/27/2000	MAK

U - The analyte was analyzed for but not detected at the sample s

N/A - Not Applicable

RL - Reporting Limit



Inorganic Quality Control Summary

Client: ERM, New England, Inc.  
 Project: Raytheon  
 ETR #: 45058

Parameter	sample ID	analysis date	blank (mg/L)	sample result (mg/L)	RPD of duplicates	MS conc added (mg/L)	%recovery matrix spike	LCS conc added (mg/L)	% recovery LCS	qualifier
DOC	45058-13	10/28/2000	<1.0	6.51	0.92	7.14	94	2.95	87	
Hex.Chrom	45034-13	10/27/2000	<0.005	0.11	0	0.4	91	0.0965	96	

**Qualifiers & Notes:**  
 LCS = Laboratory control standard  
 RPD = Relative percent difference  
 B = Reported QC is for associated batch  
 N = See narrative  
 A = Recovery is for method standard in place of matrix spike.

COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

Lab Name: WOODS\_HOLE\_GROUP\_ENVIRONMENTAL Client: \_\_\_\_\_

Lab Code: M-MA030 Case No.: \_\_\_\_\_ SAS No.: \_\_\_\_\_ SDG No.: 45058\_

SOW No.: ILM04.0

Sample No.	Lab Sample ID
OF-1 _____	45058-01 _____
OF-1D _____	45058-01D _____
OF-1HS _____	45058-01HS _____
OF-1LS _____	45058-01LS _____
T-12-1 _____	45058-06 _____
T-14-6 _____	45058-05 _____
T-2-6 _____	45058-02 _____
T-3-6 _____	45058-03 _____
T-5-4 _____	45058-04 _____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Were ICP interelement corrections applied ? Yes/No YES.

Were ICP background corrections applied ? Yes/No YES.  
 If yes - were raw data generated before application of background corrections ? Yes/No NO\_

Comments: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Dr. Leonard C. Ditt Name: Dr. Leonard C. Ditt  
 Date: 11/2/00 Title: Dir. Inorg. Chem.

1  
INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

OF-1

Lab Name: WOODS\_HOLE\_GROUP\_ENVIRONMENTAL

Client: \_\_\_\_\_

Lab Code: M-MA030

Case No.: \_\_\_\_\_

SAS No.: \_\_\_\_\_

SDG No.: 45058\_

Matrix (soil/water): WATER\_

Lab Sample ID: 45058-01\_

Level (low/med): LOW\_

Date Received: 10/27/00

% Solids: \_\_\_\_\_

Concentration Units (ug/L or mg/kg dry weight): UG/L\_

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	312			M
7440-36-0	Antimony	1.0	B		M
7440-38-2	Arsenic	0.71	B		M
7440-39-3	Barium	82.3			M
7440-41-7	Beryllium	0.15	U		M
7440-43-9	Cadmium	0.57	B	E	M
7440-70-2	Calcium	53100		E	M
7440-47-3	Chromium	0.50	U		M
7440-48-4	Cobalt	1.5	B		M
7440-50-8	Copper	90.1			M
7439-89-6	Iron	204	B		M
7439-92-1	Lead	1.8	B	E	M
7439-95-4	Magnesium	10700			M
7439-96-5	Manganese	111	B	E	M
7439-97-6	Mercury	0.042	U		CV
7440-02-0	Nickel	18.0	B	E	M
7440-09-7	Potassium	68900			M
7782-49-2	Selenium	1.4	U		M
7440-22-4	Silver	0.11	B		M
7440-28-0	Thallium	0.30	U		M
7440-31-5	Tin	17.8	U	N	F
7440-62-2	Vanadium	1.4	B		M
7440-66-6	Zinc	361			M

Color Before: \_\_\_\_\_

Clarity Before: \_\_\_\_\_

Texture: \_\_\_\_\_

Color After: \_\_\_\_\_

Clarity After: \_\_\_\_\_

Artifacts: \_\_\_\_\_

Comments:

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1  
INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

T-12-1

Lab Name: WOODS\_HOLE\_GROUP\_ENVIRONMENTAL Client: \_\_\_\_\_

Lab Code: M-MA030 Case No.: \_\_\_\_\_ SAS No.: \_\_\_\_\_ SDG No.: 45058\_

Matrix (soil/water): WATER\_ Lab Sample ID: 45058-06\_

Level (low/med): LOW\_ Date Received: 10/27/00

% Solids: \_\_\_\_\_

Concentration Units (ug/L or mg/kg dry weight): UG/L\_

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	40.3	B		M
7440-36-0	Antimony	0.40	B		M
7440-38-2	Arsenic	2.0	B		M
7440-39-3	Barium	44.0			M
7440-41-7	Beryllium	0.15	U		M
7440-43-9	Cadmium	0.71	B	E	M
7440-70-2	Calcium	40000		E	M
7440-47-3	Chromium	5.5	B		M
7440-48-4	Cobalt	2.2	B		M
7440-50-8	Copper	38.9			M
7439-89-6	Iron	1100			M
7439-92-1	Lead	0.54	B	E	M
7439-95-4	Magnesium	7990			M
7439-96-5	Manganese	539		E	M
7439-97-6	Mercury	0.042	U		CV
7440-02-0	Nickel	8.0	B	E	M
7440-09-7	Potassium	31400			M
7782-49-2	Selenium	1.4	U		M
7440-22-4	Silver	0.18	B		M
7440-28-0	Thallium	0.30	U		M
7440-31-5	Tin	17.8	U	N	F
7440-62-2	Vanadium	0.84	B		M
7440-66-6	Zinc	168			M

Color Before: \_\_\_\_\_ Clarity Before: \_\_\_\_\_ Texture: \_\_\_\_\_

Color After: \_\_\_\_\_ Clarity After: \_\_\_\_\_ Artifacts: \_\_\_\_\_

Comments:

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1  
INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

T-14-6

Lab Name: WOODS\_HOLE\_GROUP\_ENVIRONMENTAL

Client: \_\_\_\_\_

Lab Code: M-MA030

Case No.: \_\_\_\_\_

SAS No.: \_\_\_\_\_

SDG No.: 45058

Matrix (soil/water): WATER\_

Lab Sample ID: 45058-05

Level (low/med): LOW

Date Received: 10/27/00

% Solids: \_\_\_\_\_

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	65.4	B		M
7440-36-0	Antimony	0.54	B		M
7440-38-2	Arsenic	1.6	B		M
7440-39-3	Barium	50.2			M
7440-41-7	Beryllium	0.15	U		M
7440-43-9	Cadmium	1.6		E	M
7440-70-2	Calcium	39100		E	M
7440-47-3	Chromium	4.7	B		M
7440-48-4	Cobalt	4.7	B		M
7440-50-8	Copper	21.4			M
7439-89-6	Iron	1190			M
7439-92-1	Lead	1.1	B	E	M
7439-95-4	Magnesium	6420			M
7439-96-5	Manganese	1040		E	M
7439-97-6	Mercury	0.042	U		CV
7440-02-0	Nickel	8.6	B	E	M
7440-09-7	Potassium	15800			M
7782-49-2	Selenium	1.4	U		M
7440-22-4	Silver	0.15	B		M
7440-28-0	Thallium	0.30	U		M
7440-31-5	Tin	17.8	U	N	F
7440-62-2	Vanadium	1.2	B		M
7440-66-6	Zinc	212			M
	Hardness				

Color Before: \_\_\_\_\_

Clarity Before: \_\_\_\_\_

Texture: \_\_\_\_\_

Color After: \_\_\_\_\_

Clarity After: \_\_\_\_\_

Artifacts: \_\_\_\_\_

Comments:

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1  
INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

T-2-6

Lab Name: WOODS\_HOLE\_GROUP\_ENVIRONMENTAL Client: \_\_\_\_\_

Lab Code: M-MA030 Case No.: \_\_\_\_\_ SAS No.: \_\_\_\_\_ SDG No.: 45058

Matrix (soil/water): WATER Lab Sample ID: 45058-02

Level (low/med): LOW Date Received: 10/27/00

% Solids: \_\_\_\_\_

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	214			M
7440-36-0	Antimony	3.6	B		M
7440-38-2	Arsenic	0.73	B		M
7440-39-3	Barium	76.5			M
7440-41-7	Beryllium	0.15	U		M
7440-43-9	Cadmium	0.56	B	E	M
7440-70-2	Calcium	51600		E	M
7440-47-3	Chromium	0.50	U		M
7440-48-4	Cobalt	1.3	B		M
7440-50-8	Copper	80.5			M
7439-89-6	Iron	191	B		M
7439-92-1	Lead	1.6	B	E	M
7439-95-4	Magnesium	10700			M
7439-96-5	Manganese	109	B	E	M
7439-97-6	Mercury	0.042	U		CV
7440-02-0	Nickel	16.4	B	E	M
7440-09-7	Potassium	67000			M
7782-49-2	Selenium	1.4	U		M
7440-22-4	Silver	0.75			M
7440-28-0	Thallium	0.30	U		M
7440-31-5	Tin	17.8	U	N	F
7440-62-2	Vanadium	0.89	B		M
7440-66-6	Zinc	345			M

Color Before: \_\_\_\_\_ Clarity Before: \_\_\_\_\_ Texture: \_\_\_\_\_

Color After: \_\_\_\_\_ Clarity After: \_\_\_\_\_ Artifacts: \_\_\_\_\_

Comments:  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

1  
INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

T-3-6

Lab Name: WOODS\_HOLE\_GROUP\_ENVIRONMENTAL

Client: \_\_\_\_\_

Lab Code: M-MA030

Case No.: \_\_\_\_\_

SAS No.: \_\_\_\_\_

SDG No.: 45058\_

Matrix (soil/water): WATER\_

Lab Sample ID: 45058-03\_

Level (low/med): LOW\_

Date Received: 10/27/00\_

% Solids: \_\_\_\_\_

Concentration Units (ug/L or mg/kg dry weight): UG/L\_

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	131			M
7440-36-0	Antimony	1.2	B		M
7440-38-2	Arsenic	0.77	B		M
7440-39-3	Barium	73.5			M
7440-41-7	Beryllium	0.15	U		M
7440-43-9	Cadmium	0.55	B	E	M
7440-70-2	Calcium	52200		E	M
7440-47-3	Chromium	0.50	U		M
7440-48-4	Cobalt	1.2	B		M
7440-50-8	Copper	71.5			M
7439-89-6	Iron	173	B		M
7439-92-1	Lead	1.3	B	E	M
7439-95-4	Magnesium	10100			M
7439-96-5	Manganese	106	B	E	M
7439-97-6	Mercury	0.042	U		CV
7440-02-0	Nickel	15.7	B	E	M
7440-09-7	Potassium	66800			M
7782-49-2	Selenium	1.4	U		M
7440-22-4	Silver	0.24	B		M
7440-28-0	Thallium	0.30	U		M
7440-31-5	Tin	17.8	U	N	F
7440-62-2	Vanadium	1.0	B		M
7440-66-6	Zinc	335			M

Color Before: \_\_\_\_\_

Clarity Before: \_\_\_\_\_

Texture: \_\_\_\_\_

Color After: \_\_\_\_\_

Clarity After: \_\_\_\_\_

Artifacts: \_\_\_\_\_

Comments:

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1  
INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

T-5-4

Lab Name: WOODS\_HOLE\_GROUP\_ENVIRONMENTAL

Client: \_\_\_\_\_

Lab Code: M-MA030

Case No.: \_\_\_\_\_

SAS No.: \_\_\_\_\_

SDG No.: 45058\_

Matrix (soil/water): WATER\_

Lab Sample ID: 45058-04\_

Level (low/med): LOW\_

Date Received: 10/27/00\_

% Solids: \_\_\_\_\_

Concentration Units (ug/L or mg/kg dry weight): UG/L\_

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	19.8	B		M
7440-36-0	Antimony	0.68	B		M
7440-38-2	Arsenic	2.9	B		M
7440-39-3	Barium	29.3			M
7440-41-7	Beryllium	0.15	U		M
7440-43-9	Cadmium	3.7		E	M
7440-70-2	Calcium	41200		E	M
7440-47-3	Chromium	15.4	B		M
7440-48-4	Cobalt	4.0	B		M
7440-50-8	Copper	312			M
7439-89-6	Iron	1170			M
7439-92-1	Lead	0.34	B	E	M
7439-95-4	Magnesium	6730			M
7439-96-5	Manganese	1090		E	M
7439-97-6	Mercury	0.042	U		CV
7440-02-0	Nickel	13.4	B	E	M
7440-09-7	Potassium	3020	B		M
7782-49-2	Selenium	1.4	U		M
7440-22-4	Silver	0.40			M
7440-28-0	Thallium	0.30	U		M
7440-31-5	Tin	17.8	U	N	F
7440-62-2	Vanadium	1.4	B		M
7440-66-6	Zinc	193			M

Color Before: \_\_\_\_\_

Clarity Before: \_\_\_\_\_

Texture: \_\_\_\_\_

Color After: \_\_\_\_\_

Clarity After: \_\_\_\_\_

Artifacts: \_\_\_\_\_

Comments:

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2A  
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: WOODS\_HOLE\_GROUP\_ENVIRONMENTAL      Client: \_\_\_\_\_  
 Lab Code: M-MA030 Case No.: \_\_\_\_\_      SAS No.: \_\_\_\_\_      SDG No.: 45058  
 Initial Calibration Source:                      INORGANIC\_VENTURES\_AND\_SPEX  
 Continuing Calibration Source:                INORGANIC\_VENTURES\_AND\_SPEX

Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration					M
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Aluminum	5000.0	5210.53	104.2	5000.0	5364.14	107.3	5518.07	110.4	M
Antimony	50.0	51.56	103.1	50.0	51.43	102.9	51.98	104.0	M
Arsenic	50.0	51.55	103.1	50.0	51.15	102.3	51.51	103.0	M
Barium	50.0	53.69	107.4	50.0	53.35	106.7	52.04	104.1	M
Beryllium	50.0	49.70	99.4	50.0	50.22	100.4	49.61	99.2	M
Cadmium	50.0	51.78	103.6	50.0	51.76	103.5	52.15	104.3	M
Calcium	5000.0	5104.26	102.1	5000.0	5243.77	104.9	5251.79	105.0	M
Chromium	50.0	52.75	105.5	50.0	52.72	105.4	54.26	108.5	M
Cobalt	50.0	53.03	106.1	50.0	52.89	105.8	54.23	108.5	M
Copper	50.0	52.78	105.6	50.0	52.25	104.5	53.09	106.2	M
Iron	5000.0	4641.40	92.8	5000.0	4722.75	94.5	4569.16	91.4	M
Lead	50.0	52.35	104.7	50.0	52.36	104.7	52.11	104.2	M
Magnesium	5000.0	5152.18	103.0	5000.0	5088.08	101.8	5066.80	101.3	M
Manganese	50.0	51.81	103.6	50.0	50.29	100.6	51.30	102.6	M
Mercury	5.0	5.19	103.8	5.0	5.41	108.2	5.37	107.4	CV
Nickel	50.0	51.61	103.2	50.0	51.34	102.7	52.50	105.0	M
Potassium	5500.0	5583.64	101.5	5500.0	5739.45	104.4	5771.93	104.9	M
Selenium	50.0	50.05	100.1	50.0	50.16	100.3	51.19	102.4	M
Silver	50.0	47.44	94.9	50.0	47.11	94.2	46.26	92.5	M
Thallium	50.0	54.42	108.8	50.0	54.19	108.4	54.15	108.3	M
Tin	200.0	191.25	95.6	200.0	208.13	104.1	208.21	104.1	F
Vanadium	50.0	52.97	105.9	50.0	53.21	106.4	54.10	108.2	M
Zinc	50.0	51.81	103.6	50.0	51.56	103.1	52.45	104.9	M

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115.

2A  
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: WOODS\_HOLE\_GROUP\_ENVIRONMENTAL      Client: \_\_\_\_\_  
 Lab Code: M-MA030    Case No.: \_\_\_\_\_      SAS No.: \_\_\_\_\_      SDG No.: 45058  
 Initial Calibration Source: \_\_\_\_\_  
 Continuing Calibration Source:    INORGANIC\_VENTURES\_AND\_SPEX

Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration					M
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Aluminum									
Antimony									
Arsenic									
Barium									
Beryllium									
Cadmium									
Calcium									
Chromium									
Cobalt									
Copper									
Iron				5000.0	4761.71	95.2	4776.27	95.5	M
Lead									
Magnesium				5000.0	5329.98	106.6	5358.41	107.2	M
Manganese									
Mercury									
Nickel									
Potassium									
Selenium									
Silver									
Thallium									
Tin									
Vanadium									
Zinc									

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

2B  
CRDL STANDARD FOR AA AND ICP

Lab Name: WOODS\_HOLE\_GROUP\_ENVIRONMENTAL      Client: \_\_\_\_\_  
 Lab Code: M-MA030      Case No.: \_\_\_\_\_      SAS No.: \_\_\_\_\_      SDG No.: 45058\_  
 AA CRDL Standard Source:      CPI,EM\_SCIENCE  
 ICP CRDL Standard Source:      \_\_\_\_\_

Concentration Units: ug/L

Analyte	CRDL Standard for AA			CRDL Standard for ICP				
	True	Found	%R	Initial True	Initial Found	Initial %R	Final Found	Final %R
Aluminum								
Antimony								
Arsenic								
Barium								
Beryllium								
Cadmium								
Calcium								
Chromium								
Cobalt								
Copper								
Iron								
Lead								
Magnesium								
Manganese								
Mercury								
Nickel								
Potassium								
Selenium								
Silver								
Thallium								
Tin	20.0	18.67	93.4					
Vanadium								
Zinc								

Control Limits: no limits have been established by EPA at this time

3  
BLANKS

Lab Name: WOODS\_HOLE\_GROUP\_ENVIRONMENTAL      Client: \_\_\_\_\_  
 Lab Code: M-MA030      Case No.: \_\_\_\_\_      SAS No.: \_\_\_\_\_      SDG No.: 45058  
 Preparation Blank Matrix (soil/water): WATER  
 Preparation Blank Concentration Units (ug/L or mg/kg): UG/L\_

Analyte	Initial Calib. Blank (ug/L)		Continuing Calibration Blank (ug/L)						Preparation Blank		M
		C	1	C	2	C	3	C		C	
Aluminum	0.50	U	0.50	U	0.50	U			3.404	B	M
Antimony	0.40	B	0.25	B	0.24	B			0.250	U	M
Arsenic	0.05	U	0.05	U	0.05	U			0.268	B	M
Barium	0.01	U	0.01	U	0.01	U			-0.087	B	M
Beryllium	0.03	U	0.03	U	0.03	U			0.150	U	M
Cadmium	0.01	U	0.01	U	0.01	U			0.050	U	M
Calcium	32.10	U	32.10	U	32.10	U			160.500	U	M
Chromium	0.10	U	0.10	U	0.10	U			0.500	U	M
Cobalt	0.01	U	0.01	U	0.01	U			0.050	U	M
Copper	0.02	U	0.02	U	0.02	U			0.100	U	M
Iron	2.20	U	2.20	U	2.20	U	2.20	U	11.000	U	M
Lead	0.01	U	0.01	U	0.01	U			0.148	B	M
Magnesium	0.50	U	0.50	U	0.50	U	0.50	U	2.500	U	M
Manganese	0.05	U	0.05	U	0.05	U			0.250	U	M
Mercury	0.02	U	0.02	U	0.02	U			0.042	U	CV
Nickel	0.02	U	0.02	U	0.02	U			0.100	U	M
Potassium	5.60	U	5.60	U	5.60	U			28.000	U	M
Selenium	0.27	U	0.27	U	0.27	U			1.350	U	M
Silver	0.03	B	0.02	B	0.02	B			0.138	B	M
Thallium	0.06	U	0.06	U	0.06	U			0.300	U	M
Tin	17.80	U	17.80	U	17.80	U			17.800	U	F
Vanadium	0.12	U	0.12	U	0.12	U			2.360	B	M
Zinc	0.34	U	0.34	U	0.34	U			1.700	U	M

3  
BLANKS

Lab Name: WOODS\_HOLE\_GROUP\_ENVIRONMENTAL      Client: \_\_\_\_\_  
 Lab Code: M-MA030      Case No.: \_\_\_\_\_      SAS No.: \_\_\_\_\_      SDG No.: 45058\_  
 Preparation Blank Matrix (soil/water): WATER  
 Preparation Blank Concentration Units (ug/L or mg/kg): UG/L\_

Analyte	Initial Calib. Blank (ug/L)		Continuing Calibration Blank (ug/L)						Preparation Blank		C	M
		C	1	C	2	C	3	C		C		
Aluminum									2.500	U	M	
Antimony									3.234	B	M	
Arsenic									0.250	U	M	
Barium									0.050	U	M	
Beryllium									0.150	U	M	
Cadmium									0.050	U	M	
Calcium									160.500	U	M	
Chromium									0.500	U	M	
Cobalt									0.050	U	M	
Copper									0.100	U	M	
Iron			2.20	U					11.000	U	M	
Lead									0.050	U	M	
Magnesium			0.50	U					14.326	B	M	
Manganese									0.250	U	M	
Mercury									0.042	U	CV	
Nickel									0.100	U	M	
Potassium									28.000	U	M	
Selenium									1.350	U	M	
Silver									0.240	B	M	
Thallium									0.300	U	M	
Tin									17.800	U	F	
Vanadium									1.022	B	M	
Zinc									1.700	U	M	

## ICP INTERFERENCE CHECK SAMPLE

Lab Name: WOODS\_HOLE\_GROUP\_ENVIRONMENTAL Client: \_\_\_\_\_

Lab Code: M-MA030 Case No.: \_\_\_\_\_

SAS No.: \_\_\_\_\_

SDG No.: 45058

ICP ID Number: ICP\_MS\_(IDL)

ICS Source: INORGANIC\_VENTURES

Concentration Units: ug/L

Analyte	True		Initial Found			Final Found		
	Sol. A	Sol. AB	Sol. A	Sol. AB	%R	Sol. A	Sol. AB	%R
Aluminum	50000	50000	52083	50428.8	100.9			
Antimony		20	1	21.4	107.0			
Arsenic		20	7	27.1	135.5			
Barium		20	0	24.2	121.0			
Beryllium		20	0	19.8	99.0			
Cadmium		20	1	21.2	106.0			
Calcium	50000	50000	51752	49888.3	99.8			
Chromium		20	0	20.0	100.0			
Cobalt		20	0	21.2	106.0			
Copper		20	2	20.9	104.5			
Iron	50000	50000	52189	50059.1	100.1			
Lead		20	1	21.0	105.0			
Magnesium	50000	50000	48639	46636.0	93.3			
Manganese		20	0	21.0	105.0			
Mercury								
Nickel		20	2	20.9	104.5			
Potassium	50000	50000	52330	50587.6	101.2			
Selenium		20	-0	20.4	102.0			
Silver		20	0	19.2	96.0			
Thallium		20	0	21.7	108.5			
Tin								
Vanadium		20	6	26.7	133.5			
Zinc		20	2	20.5	102.5			

5A  
SPIKE SAMPLE RECOVERY

SAMPLE NO.

OF-1LS

Lab Name: WOODS\_HOLE\_GROUP\_ENVIRONMENTAL Client: \_\_\_\_\_

Lab Code: M-MA030 Case No.: \_\_\_\_\_ SAS No.: \_\_\_\_\_ SDG No.: 45058

Matrix (soil/water): WATER Level (low/med): LOW

% Solids for Sample: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Aluminum									NR
Antimony	75-125	51.4465		1.0450	B	50.00	100.8		M
Arsenic	75-125	53.5755	B	0.7120	B	50.00	105.7		M
Barium	75-125	134.4970		82.2780		50.00	104.4		M
Beryllium	75-125	51.1685		0.1500	U	50.00	102.3		M
Cadmium	75-125	52.9390		0.5660	B	50.00	104.7		M
Calcium									NR
Chromium	75-125	53.8100	B	0.5000	U	50.00	107.6		M
Cobalt	75-125	56.1285		1.4910	B	50.00	109.3		M
Copper	75-125	140.9260		90.0500		50.00	101.8		M
Iron									NR
Lead	75-125	55.3205		1.8090	B	50.00	107.0		M
Magnesium									NR
Manganese	75-125	158.1505		111.4120	B	50.00	93.5		M
Mercury	75-125	8.3316		0.0420	U	8.00	104.1		CV
Nickel	75-125	68.6815	B	17.9540	B	50.00	101.5		M
Potassium									NR
Selenium	75-125	52.6370		1.3500	U	50.00	105.3		M
Silver	75-125	49.8385		0.1105	B	50.00	99.5		M
Thallium	75-125	56.6610		0.3000	U	50.00	113.3		M
Tin	75-125	534.3662		17.8000	U	416.00	128.5	N	F
Vanadium	75-125	55.0805		1.3760	B	50.00	107.4		M
Zinc									NR

Comments:

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_



Woods Hole Group  
Environmental Laboratories

# Chain-of-Custody Record

375 Paramount Drive  
Raynham, MA 02767

TEL: (508) 822-9300  
FAX: (508) 822-3288

45058

PAGE 1 OF 1

COMPANY INFORMATION		COMPANY'S PROJECT INFORMATION		SHIPPING INFORMATION		VOLUME/CONTAINER TYPE/PRESERVATIVE (NOTE 4)			
Name: <u>ERM</u>		Regulatory Protocol: _____		Carrier: _____		7	1	3	3
Address: <u>399 Baylston St.</u> <u>6th Floor</u> <u>Boston, MA 02116</u>		For the State of: <u>MA</u>		Airbill Number: _____					
Telephone: <u>(617) 267-6377</u>		Project Name: <u>Raynham</u>		Date Shipped: _____		1	1	3	3
Facsimile: <u>(617) 267-6447</u>		Project Number: <u>143.57</u>		Quote #: _____					
Contact Name: <u>Rachel Lory</u>		P.O. #: <u>143.7</u>		Sampler Name(s): <u>Rachel Lory</u> <u>Lindsay Anderson</u>					
TAT — 10 Day <input checked="" type="checkbox"/> 5 Day — 3 Day — 48 Hr — 24 Hr — Other									

WHG LAB #	SAMPLE ID (NOTE 1)	COLLECTION		COMPOSITE GRAB	MATRIX	ANALYSIS/REMARKS (NOTE 2, 3)	NUMBER OF CONTAINERS				
		DATE	TIME								
-1	OF-1	10/26	1303	6ers,	with water	TOC; Dissolved Metal; Hex Chrome	1	1	3		
-2	T-2-6		1345			Hardness	1	1	3		
-3	T-3-6		1335				1	1	3		
-4	T-5-4		1400				1	1	3		
-5	T-14-6		1430				1	1	3		
-6	T-12-1		1445				1	1	3		

Relinquished by: (signature) <u>Rachel Lory</u>	DATE <u>10/26</u>	TIME <u>19:20</u>	Received by: (signature) <u>[Signature]</u>
Relinquished by: (signature) <u>[Signature]</u>	DATE <u>10/27</u>	TIME <u>9:10</u>	Received by: (signature) <u>[Signature]</u>
Relinquished by: (signature)	DATE	TIME	Received for Laboratory by: (signature)

NOTES TO SAMPLER(S): (1) Limit Sample Identification to 6 characters, if possible; (2) Indicate designated Lab Q.C. sample and type (e.g.; MS/MSD/REP) and provide sufficient sample; (3) Field duplicates are separate sample; (4) e.g.; 40ml/glass/H<sub>2</sub>SO<sub>4</sub>.

Notes to Lab: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_