Massachusetts Department of Environmental Protection
Bureau of Waste Site Cleanup

BWSC-103

Release Tracking Number
3 - 19482
If assigned by DEP

RELEASE NOTIFICATION & NOTIFICATION RETRACTION FORM

Pursuant to 310 CMR 40.0335 and 310 CMR 40.0371 (Subpart C)

A. RELEASE OR THREAT OF RELEASE LOCATION:

Street: 430 Boston Post Road Location Aid:

City/Town: Wayland ZIP Code: 01778-0000

B. THIS FORM IS BEING USED TO: (check one)

☑ Submit a **Release Notification** (complete all sections of this form).

☐ Submit a **Retraction of a Previously Reported Notification** of a Release or Threat of Release (complete Sections A, B, E, F and G of this form). You **MUST** attach the supporting documentation required by 310 CMR 40.0335.

C. INFORMATION DESCRIBING THE RELEASE OR THREAT OF RELEASE (TOR):

Date and time you obtained knowledge of the Release or TOR. Date: 04/26/00 Time: 4:00 Specify: ☐ AM ☑ PM

The date you obtained knowledge is always required. The time you obtained knowledge is not required if reporting only 120 Day Conditions.

IF KNOWN, record date and time release or TOR occurred. Date: _____ Time: _____ Specify: ☐ AM ☐ PM

☑ Check here if you previously provided an Oral Notification to DEP (2 Hour and 72 Hour Reporting Conditions only).

Provide date and time of Oral Notification. Date: 04/26/00 Time: 4:30 Specify: ☐ AM ☑ PM

Check all Notification Thresholds that apply to the Release or Threat of Release: (for more information see 310 CMR 40.0310 - 40.0315)

2 HOUR REPORTING CONDITIONS

- ☐ Sudden Release
- ☐ Threat of Sudden Release
- ☐ Oil Sheen on Surface Water
- ☐ Poses Imminent Hazard
- ☑ Could Pose Imminent Hazard
- ☐ Release Detected in Private Well
- ☐ Release to Storm Drain
- ☐ Sanitary Sewer Release (Imminent Hazard Only)

72 HOUR REPORTING CONDITIONS

- ☐ Subsurface Non-Aqueous Phase Liquid (NAPL) Equal to or Greater than 1/2 Inch
- ☐ Underground Storage Tank (UST) Release
- ☐ Threat of UST Release
- ☐ Release to Groundwater near Water Supply
- ☐ Release to Groundwater near School or Residence

120 DAY REPORTING CONDITIONS

- ☐ Release of Hazardous Material(s) to Soil or Groundwater Exceeding Reportable Concentration(s)
- ☐ Release of Oil to Soil Exceeding Reportable Concentration(s) and Affecting More than 2 Cubic Yards
- ☐ Release of Oil to Groundwater Exceeding Reportable Concentration(s)
- ☐ Subsurface Non-Aqueous Phase Liquid (NAPL) Equal to or Greater than 1/8 Inch and Less than 1/2 Inch

List below the Oils or Hazardous Materials that exceed their Reportable Concentration or Reportable Quantity by the greatest amount. If necessary, attach a list of additional Oil and Hazardous Material substances subject to reporting.

Name and Quantities of Oils (O) and Hazardous Materials (HM) Released:

O or HM Released	O (check one)	HM (check one)	CAS # (if known)	Amount or Concentration	Units	Reportable Concentrations Exceeded, if Applicable (RCS-1, RCS-2, RCGW-1, RCGW-2)
Refer to Tables 1A and 1B in	☐	☐				
Imminent Hazard Evaluation	☐	☐				
(Appendix B)	☐	☐				

D. ADDITIONAL INVOLVED PARTIES:

☐ Check here if attaching names and addresses of owners of properties affected by the Release or Threat of Release, other than an owner who is submitting this Release Notification (required).

☐ Check here if attaching Licensed Site Professional (LSP) name and address (optional).

You may write in names and addresses on the bottom of the second page of this form.

ERM00014

Massachusetts Department of Environmental Protection
Bureau of Waste Site Cleanup

BWSC-103

Release Tracking Number
3 - 19482
If assigned by DEP

RELEASE NOTIFICATION & NOTIFICATION RETRACTION FORM

Pursuant to 310 CMR 40.0335 and 310 CMR 40.0371 (Subpart C)

E. PERSON REQUIRED TO NOTIFY:

Name of Organization: Raytheon Company

Name of Contact: Ronald C. Slager, Jr. Title: Restoration Project Manager

Street: 1001 Boston Post Road

City/Town: Marlborough State: MA ZIP Code: 01752-0000

Telephone: 508-490-1770 Ext.: _____ FAX: (optional) _____

F. RELATIONSHIP OF PERSON REQUIRED TO NOTIFY TO RELEASE OR THREAT OF RELEASE: (check one)

☑ RP or PRP Specify: ○ Owner ○ Operator ○ Generator ○ Transporter Other RP or PRP: Past operator

☐ Fiduciary, Secured Lender or Municipality with Exempt Status (as defined by M.G.L. c. 21E, s. 2)

☐ Agency or Public Utility on a Right of Way (as defined by M.G.L. c. 21E, s. 5(j))

☐ Any Person Otherwise Required to Notify Specify Relationship: _____

G. CERTIFICATION OF PERSON REQUIRED TO NOTIFY:

I, Ronald C. Slager, Jr., attest under the pains and penalties of perjury (i) that I have personally examined and am familiar with the information contained in this submittal, including any and all documents accompanying this transmittal form, (ii) that, based on my inquiry of those individuals immediately responsible for obtaining the information, the material information contained in this submittal is, to the best of my knowledge and belief, true, accurate and complete, and (iii) that I am fully authorized to make this attestation on behalf of the entity legally responsible for this submittal. I/the person or entity on whose behalf this submittal is made am/is aware that there are significant penalties, including, but not limited to, possible fines and imprisonment, for willfully submitting false, inaccurate, or incomplete information.

By: Ronald C. Slager, Jr. Title: Restoration Project Manager
(signature)

For: Raytheon Company Date: 6-26-00
(print name of person or entity recorded in Section E)

Enter address of the person providing certification, if different from address recorded in Section E:

Street: _____

City/Town: _____ State: _____ ZIP Code: _____

Telephone: _____ Ext.: _____ FAX: (optional) _____

YOU MUST COMPLETE ALL RELEVANT SECTIONS OF THIS FORM OR DEP MAY RETURN THE DOCUMENT AS INCOMPLETE. IF YOU SUBMIT AN INCOMPLETE FORM, YOU MAY BE PENALIZED FOR MISSING A REQUIRED DEADLINE.

ERM00015

FINAL

Raytheon Company

Imminent Hazard Evaluation

Former Raytheon Facility

430 Boston Post Road

Wayland, Massachusetts

26 June 2000

ERM Ref. No. 143.51

Environmental Resources Management
399 Boylston Street, 6th Floor
Boston, Massachusetts 02116

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TABLES

FIGURES (LOCATED IN IRA PLAN)

1.0 INTRODUCTION

1.1 BACKGROUND

In accordance with the requirements of the Massachusetts Contingency Plan (MCP), 310 CMR 40.0480, Environmental Resources Management (ERM) submitted a Phase I-Initial Site Investigation (Phase I) report for the site to the Massachusetts Department of Environmental Protection (DEP or Department) in July 1996 and a Tier Classification filing in January 1997. The Department issued Raytheon a Tier IB Permit, effective 21 May 1997. A Phase II-Comprehensive Site Assessment (Phase II) of the site is currently in progress.

Assessment activities have been ongoing at the site since 1989. Recent results of an on going Phase II - Comprehensive Site Assessment have linked a suspected area of stunted vegetative growth to elevated levels of metals, polychlorinated biphenyls (PCBs) and polynuclear aromatic hydrocarbons (PAHs) in sediments. The reduced stem count of biota in this area indicates that a potential imminent hazard may exist, based on criteria set forth in 310 CMR 40.0955(3). The potential Imminent Hazard Condition was reported to the Northeast Regional Office on 26 April 2000.

Pursuant to 310 CMR 40.0530, re-evaluation of the site Numerical Ranking Score (NRS) indicated the need to file a Major Permit Modification Application in order to upgrade the site tier classification and permit from IB to IA. The Major Permit Modification was submitted to the Department on 26 May 2000.

1.2 PURPOSE AND SCOPE

The purpose of the Imminent Hazard Evaluation is to evaluate actual or likely exposures to human and environmental receptors under current site conditions. The evaluation is based on current uses of the site and the surrounding area and considers a short period of time (generally five years). This Imminent Hazard Evaluation was performed in accordance with 310 CMR 40.0950. The results of the Imminent Hazard Evaluation are used to determine if an Immediate Response Action is required at the site.

The Imminent Hazard Evaluation does not consider potential future uses of the site and is not intended to constitute a full risk characterization.

2.0 SITE CHARACTERIZATION

2.1 SITE DESCRIPTION

The subject site is an approximately 83-acre facility located at 430 Boston Post Road in Wayland, Massachusetts (Figure 1). Raytheon operated the facility under a long term lease from 1955 to 1995. Operations included electronic testing and chemical process research to support Raytheon's in-house prototype manufacturing. Raytheon operations have been terminated, and the facility decommissioned. The facility has since been sold by the owner (CNA) and leased to a new tenant.

2.2 RELEASE DESCRIPTION

The 15-acre wetland on-site has historically received treated wastewater and stormwater discharges from the site. Currently, the wetland receives stormwater as well as treated wastewater effluent from the on-site treatment plant, being operated by the Town of Wayland.

Potential impacts to sediment from PAHs, PCBs and metals were discovered near the former facility storm water outfall in July 1989 by the US Fish & Wildlife Service (USFWS) as part of a study of the Great Meadows National Wildlife Refuge. Subsequent sampling performed by ERM in May 1990 and July 1995 did not confirm the results reported by USFWS.

During Phase II site assessment activities, sampling of wetland sediments was conducted along a series of transects. Sediment sampling results indicated the presence of PCBs and metals in wetland sediments adjacent to the combined outfall.

3.0 EVALUATION OF RISK OF HARM TO HUMAN HEALTH

3.1 SELECTION OF STUDY CHEMICALS

The focus of the human health imminent hazard evaluation is on accessible surface soil/sediment. Therefore, ERM utilized data collected from a depth of 0 to 6 inches below grade. Data collected from greater than 6 inches below grade was excluded from the risk characterization. A summary of the data considered in the risk characterization is provided in Tables 1A and 1B.

An Imminent Hazard Evaluation can be limited to those chemicals that are likely to dominate the risk estimate. Therefore, ERM conducted a screening to eliminate chemicals that are not likely to contribute significantly to risk.

ERM performed the comparison using the MCP Direct Contact S-3 Soil Standards or the MCP S-2 Reportable Concentrations for compounds that lacked a Direct Contact Standard. The maximum concentrations detected in sediment at the site were compared to the screening standards. The screening results are presented in Tables 1A and 1B. In summary, the following compounds were carried forward for evaluation in the human health Imminent Hazard Evaluation:

- Benzo(a)anthracene
- Benzo(a)pyrene
- Benzo(b)fluoranthene
- Benzo(k)fluoranthene
- Chrysene
- Dibenzo(a,h)anthracene
- Ideno(1,2,3-cd)pyrene
- PCBs
- Antimony
- Arsenic
- Chromium
- Chromium, Hexavalent
- Copper
- Lead
- Mercury
- Silver

PCB congener data was used in the risk calculations since it provides a more accurate measure of the PCBs present at the site.

ERM00023

3.2 *TOXICITY VALUES*

Noncarcinogenic toxicity values (Reference Doses) and carcinogenic toxicity values (Cancer Slope Factors) are summarized in Table 2. For simplicity and conservatism, the chronic oral reference dose was used for both chronic and sub-chronic exposures. Toxicity values were obtained from the United States Environmental Protection Agency (US EPA) and DEP. The following sources were used:

- "EPA Region III Risk-Based Concentrations Table", US EPA Region III, 13 April 2000.
- "Background Documentation for the Development of the MCP Numerical Standards," DEP, April 1994.

Relative absorption factors are used to account for differences in the absorption of a substance under the assumed exposure conditions relative to the exposure conditions under experimental conditions. The relative absorption factors for the contaminants of concern are also summarized in Table 2.

3.3 *IDENTIFICATION OF POTENTIAL HUMAN RECEPTORS*

The site consists of a wetland area located between an industrial/commercial facility and the Sudbury River. There are no residential properties bordering the site. Therefore, there are not likely to be any human receptors at the site under current conditions.

Nevertheless, trespassers were evaluated to determine if an Imminent Hazard to human health could exist at the site.

3.4 *IDENTIFICATION OF POTENTIAL EXPOSURE PATHWAYS*

Contamination at the site has been detected in sediments within a wetland area. Based on this, the following exposure pathways were evaluated:

- Incidental ingestion of sediment
- Dermal contact with soil

3.5 IDENTIFICATION OF EXPOSURE POINT CONCENTRATIONS

ERM also evaluated the data to determine if any Hot Spots, as defined in 310 CMR 40.0006, were present at the site. The sampling data indicate that the area of stunted growth that triggered the Imminent Hazard evaluation could be considered a Hot Spot for chromium impacts. However, elevated concentrations of chromium have been detected outside of the area of stunted growth. Similarly, the elevated concentrations of PCBs are primarily found at the discharge point for the outfall pipe.

ERM utilized a conservative approach to calculate the exposure point concentration to take into account the potential for a Hot Spot at the site. As a screening evaluation, ERM utilized the maximum detected concentration in the risk calculations. In addition, ERM utilized a 95% upper confidence limit to provide a more representative estimate of potential risks.

3.6 EXPOSURE ASSUMPTIONS

Exposure assumptions are used as input values for the risk calculations for the exposure scenario. The exposure assumptions for an adult trespasser are summarized in the following table.

Parameter	*Value*	*Units*	*Basis*
Exposure Frequency	26	days/year	Professional judgment
Exposure Period	5	years	310 CMR 40.0953(1)
Average Lifetime	75	years	MA DEP, July 1995 (7-43)
Body Weight	71	kg	MA DEP, July 1995 (B-4) – Male 18 to 25 years old
Skin Area	6,315	cm^2/day	MA DEP, July 1995 (B-7) – Male hands, forearms, lower legs, and feet
Adherence to Skin	0.50	mg/cm	MA DEP, July 1995 (B-12)
Ingestion rate	50	mg/day	MA DEP, July 1995 (B-8)

3.7 IMMINENT HAZARD SUMMARY

The human health risk calculations combine the toxicity values presented in Section 4.0 with the exposure assumptions from Section 6.2. The risk

calculations are shown in Tables 2 and 3. The equations used to calculate cumulative noncarcinogenic risk (Hazard Index) and carcinogenic risk (Excess Lifetime Cancer Risk) are presented on the tables.

The Hazard Index and Excess Lifetime Cancer Risk were compared to the Imminent Hazard criteria to determine if the study chemicals pose an Imminent Hazard:

Exposure Point Concentration	*Cancer Risk*	*Hazard Index*
Maximum	1E-5	4.3
95% Upper Confidence Limit	4E-6	3.6
Imminent Hazard Criteria	*>1E-5*	*>10*

As shown above, the calculated risks are below the Imminent Hazard criteria. PCBs drive the risk estimates in both the case of the cancer and noncancer risks Based on this, an Imminent Hazard to human health does not exist at the site.

ERM00026

4.0 *EVALUATION OF RISK OF HARM TO SAFETY*

The characterization of risk to safety evaluates whether site conditions poses a threat of physical harm or bodily injury. The Risk Characterization only evaluates safety hazards with respect to releases regulated under the MCP (e.g., a staircase without a railing would not be evaluated).

Existing site conditions do not currently pose a threat of physical harm or bodily injury. There are currently no uncontrolled or rusted drums, containers, open pits, or other dangerous structures on site. Site conditions do not pose a threat of fire or explosion. There are no uncontained materials at the site that exhibit characteristics of corrosivity, reactivity, ignitability, or are considered infectious materials.

Pursuant to 310 CMR 40.0960(4), a condition of no significant risk of harm to safety exists at the site.

5.0 *EVALUATION OF RISK OF HARM TO THE ENVIRONMENT*

The risk of harm to the environment is characterized based on the data collected at the site to date. The MCP states that the following conditions constitute an Imminent Hazard to the environment (310 CMR 40.0955(3)):

- Evidence of stressed biota attributable to the release at the disposal site
- Release to the environment of oil or hazardous material that produces immediate or acute adverse impacts to freshwater or saltwater fish populations

Available data indicate that there is an area of stunted vegetation at the site that may be attributable to the release at the disposal site. The growth density of cattails within this area was estimated at 5 stems/square meter versus an average stem density of 50-stems/square meter in the wetland outside of this area. Samples of cattail roots collected from within the area of stunted growth indicated uptake of chromium at concentrations up to 60 ppm.

Therefore, pursuant to 310 CMR 40.0955(3)(a), the area of stunted growth represents a potential Imminent Hazard to the environment.

6.0 CONCLUSIONS

An Imminent Hazard Evaluation was performed to evaluate the risk posed by metals and PCBs in sediment. The results of the evaluation are summarized below:

- Conditions at the disposal site do not pose a potential an Imminent Hazard to human health
- Conditions at the disposal site do not pose a potential an Imminent Hazard to safety
- Conditions at the disposal site pose a potential an Imminent Hazard to the environment

Based on the finding of an Imminent Hazard, an Immediate Response Action will be implemented at the site in accordance with 310 CMR 40.0410

7.0 *LIMITATIONS*

Reasonable care has been exercised in performing the analyses in this Imminent Hazard Evaluation. This Imminent Hazard Evaluation was conducted based on available information concerning concentrations of contaminants in sediment and the assumption regarding the current use of the site.

The conclusions of the Imminent Hazard Evaluation may need to be reviewed if new or changed information becomes available, such as:

- Additional or revised sampling results
- Changes in the current use of the site
- Changes in state or federal polices or procedures regarding published toxicity information

Opinions issued by the Licensed Site Professional (LSP) as part of the project are issued solely for the benefit of Raytheon in connection with satisfying the requirements of the Massachusetts Oil and Hazardous Material Release Prevention and Response Act, M.G.L. c.21E, and the Massachusetts Contingency Plan (MCP), 310 CMR 40.0001 - 40.1500. The LSP opinion is not to be used for any other purpose unless authorized in writing by the LSP and ERM.

LSP opinions issued as part of the project are based solely upon applicable laws and regulations and information known to the LSP at the time of issuance of this document. Under no circumstances shall the LSP opinion be relied upon as a guarantee or an expressed or implied warranty of performance. The LSP exercised that degree of care and skill ordinarily exercised under similar circumstances by other registered LSPs and as required by the LSP program.

8.0 *REFERENCES*

DEP, "Background Documentation for the Development of the MCP Numerical Standards," Bureau of Waste Site Cleanup and Office of Research and Standards, April 1994.

DEP, "Guidance for Disposal Site Risk Characterization and Related Phase II Activities - In Support of the Massachusetts Contingency Plan," Office of Research and Standards, 17 May 1989.

DEP, "Guidance for Disposal Site Risk Characterization In Support of the Massachusetts Contingency Plan," Bureau of Waste Site Cleanup and Office of Research and Standards, BWSC/ORS-95-141, July 1995.

DEP, "Background Documentation for the Development of the MCP Numerical Standards," April 1994.

US EPA Region III, "EPA Region III Risk-Based Concentrations Table", 13 April 2000.

DEP, "Background Documentation for the Development of the MCP Numerical Standards," April 1994.

ERM00031

Table 1A
PCB and Metals Sediment Data
Raytheon - Wayland, Massachusetts

Sample I.D.	T-1-B	T-1-C	T-1-1	T-1-2	T-1-3	T-1-4	T-1-4	T-1-6	T-2-A	T-2-D	T-2-G	T-2-1	T-2-2	T-2-3	T-2-4	T-2-5	T-2-6	T-2-7	T-2-8	T-2-9	T-2-11
Depth	(0-6")	(0-6")	(0-6")	(0-6")	(0-6")	(0-6")	(0-6")	(0-6")	(0-6")	(0-6")	(0-6")	(0-6")	(0-6")	(0-6")	(0-6")	(0-6")	(0-6")	(0-6")	(0-6")	(0-6")	(0-6")
Date Sampled	6-Oct-99	1-Nov-99	6-Oct-99	5-Nov-98	5-Nov-98	6-Oct-99	1-Nov-99	6-Oct-99	6-Oct-99	6-Oct-99	1-Nov-99	5-Nov-98	5-Nov-98	5-Nov-98	5-Nov-98	5-Nov-98	6-Oct-99	6-Oct-99	6-Oct-99	6-Oct-99	1-Nov-99
Comments																					
Polychlorinated Biphenyls (ppb)		NA																			
Aroclor 1254	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NA
Aroclor 1260	-		-	330,000	540,000	72,400	44,400	2,960	21,000	-	-	66,000	110,000	12,000	44,000	35,000	5,280	67,600	10,300	-	
Total PCBs	-		-	330,000	540,000	72,400	44,400	2,960	21,000	-	-	66,000	110,000	12,000	44,000	35,000	5,280	67,600	10,300	-	
Congener Analysis	NA	NA	NA			NA	NA	NA	NA	NA	NA			NA	NA	NA	NA	NA	NA	NA	NA
Polychlorinated Biphenyls (PCBs, ppb, dry)																					
Total PCBs				285,000	249,000							58600	89500								
Metals (ppm)		NA					NA														NA
Aluminum	5,400		3,800	-		4,200		4,500	7,400	9,100	3,500	-	-	-	-	-	5,800	4,000	6,700	6,400	
Antimony	-		-	-	-	8.6		-	14	-	-	-	-	-	-	-	-	54	26	-	
Arsenic	5.8		2.8	-	-	4.7		3	9.9	8.8	3.3	-	-	-	-	-	7.8	12	40	3.4	
Barium	30		17	-	-	66		32	150	41	19	-	-	-	-	-	53	190	350	24	
Beryllium	0.39		0.27	-	-	-		0.31	-	0.8	0.29	-	-	-	-	-	0.34	-	-	0.41	
Cadmium	0.35		0.324	-	-	1.1		0.74	4.2	0.553	0.217	-	-	-	-	-	1.5	13	8.1	0.282	
Calcium	970		880	-	-	1,200		3,400	2,600	1,700	1,200	-	-	-	-	-	1,600	1,500	11,000	700	
Chromium	33		20	614	876	2,700		13	4,300	67	7.4	3,680	125	792	3,760	8,540	120	16,000	8,300	8.0	
Chromium , Hexavalent	-		-	-	-	28		-	-	-	-	-	-	-	-	-	-	440	-	-	
Cobalt	2.4		2.9	-	-	2.6		3.8	3.3	5.9	2.9	-	-	-	-	-	5.2	-	-	3.3	
Copper	39		28	799	755	690		20	2700	93	12	4,040	1,060	1,060	365	4,690	540	6,800	8,100	11	
Iron	6,500		5,800	-	-	8,700		6,100	15,000	7,800	5,800	-	-	-	-	-	13,000	11,000	44,000	5,600	
Lead	22		18	550	608	740		44	710	30	12	1,220	305	450	817	606	290	870	1,200	12	
Magnesium	1,300		1,600	-	-	1,800		1,600	3,200	2,000	1,500	-	-	-	-	-	2,500	1,000	2,600	1,500	
Manganese	110		110	-	-	72		190	230	170	100	-	-	-	-	-	170	62	610	130	
Mercury	-		-	-	-	5.3		-	2.7	-	-	-	-	-	-	-	0.42	6.2	6.5	-	
Nickel	6.8		5.6	-	-	13		6.6	20	12	6.4	-	-	-	-	-	17	11	24	6.1	
Potassium	420		450	-	-	500		620	830	650	520	-	-	-	-	-	720	-	-	570	
Selenium	-		-	-	-	1.5		-	-	-	-	-	-	-	-	-	-	2.8	-	-	
Silver	1.6		1.8	-	-	70		0.237	140	3.4	-	-	-	-	-	-	9.2	190	540	-	
Sodium	54		35	-	-	54		33	300	100	34	-	-	-	-	-	180	95	440	29	
Thallium	-		-	-	-	-		-	-	-	-	-	-	-	-	-	-	3.9	-	-	
Tin	-		-	-	-	-		-	20	-	-	-	-	-	-	-	-	310	310	-	
Vanadium	12		10	-	-	130		12	130	21	10	-	-	-	-	-	43	180	140	12	
Zinc	23		29	-	-	49		61	210	47	27	-	-	-	-	-	260	170	470	23	

Notes:
- = Not Detected

TABLE 1A
PCB and Metals Sediment Data
Raytheon - Wayland, Massachusetts

Sample I.D.	T-3-A	T-3-C	T-3-1	T-3-2	T-3-3	T-3-4	T-3-5	T-3-6	T-3-7	T-3-8	T-3-11	T-3-13	T-4-2	T-4-3	T-4-4	T-4-5	T-5-A	T-5-C	T-5-D	T-5-F	T-5-1	T-5-2
Depth	(0-6")	(0-6")	(0-6")	(0-6")	(0-6")	(0-6")	(0-6")	(0-6")	(0-6")	(0-6")	(0-6")	(0-6")	(0-6")	(0-6")	(0-6")	(0-6")	(0-6")	(0-6")	(0-6")	(0-6")	(0-6")	(0-6")
Date Sampled	1-Nov-99	1-Nov-99	6-Oct-99	5-Nov-98	5-Nov-98	5-Nov-98	5-Nov-98	6-Oct-99	6-Oct-99	6-Oct-99	6-Oct-99	6-Oct-99	5-Nov-98	5-Nov-98	5-Nov-98	5-Nov-98	6-Oct-99	6-Oct-99	1-Nov-99	1-Nov-99	5-Nov-98	5-Nov-98
Comments																						
Polychlorinated Biphenyls (ppb)																						
Aroclor 1254	-	-	-	1,900	3,100	2,600	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3,700
Aroclor 1260	-	-	-	2,400	23,000	10,000	39,000	51,700	11,100	35,100	-	-	31,000	13,000	70,000	41,000	4,770	-	-	-	8,700	13,000
Total PCBs	-	-	-	4,300	26,100	12,600	39,000	51,700	11,100	35,100	-	-	31,000	13,000	70,000	41,000	4,770	-	-	-	8,700	16,700
Congener Analysis	NA	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA
Polychlorinated Biphenyls (PCBs, ppb, dry)							33800															
Total PCBs															63,400							
Metals (ppm)																						
Aluminum	6,200	3,000	16,000	-	-	-	-	14,000	8,600	11,000	23,000	8,900	-	-	-	-	9,800	4,600	8,600	7,700	-	-
Antimony	-	-	-	-	-	-	-	-	-	100	-	-	-	-	-	-	-	-	-	-	-	-
Arsenic	51	2.7	160	-	-	-	-	19	12	25	12	4.4	-	-	-	-	150	25	37	14	-	-
Barium	53	15	89	-	-	-	-	200	63	490	87	39	-	-	-	-	240	69	100	52	-	-
Beryllium	-	0.27	1.3	-	-	-	-	-	0.52	1.1	1.4	0.57	-	-	-	-	-	-	-	0.92	-	-
Cadmium	2.4	-	9.4	-	-	-	-	5.3	2.3	32	2.5	0.42	-	-	-	-	5.7	6.5	3.2	4.8	-	-
Calcium	3,300	830	5,600	-	-	-	-	3,100	2,600	3,700	3,000	1,700	-	-	-	-	4,200	1,600	4,900	3,600	-	-
Chromium	710	12	900	2,680	8,310	1,890	7,350	870	290	37,000	69	13	9,500	3,600	7,860	2,380	4,300	740	580	48	4,140	843
Chromium , Hexavalent	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-
Cobalt	4.7	2.8	8.7	-	-	-	-	6.2	6.5	-	8.8	6.6	-	-	-	-	-	-	6.9	3.2	-	-
Copper	920	14	1,200	1,660	5,150	4,800	5,320	2,600	830	15,000	170	29	5,890	4,510	7,310	2,590	3,300	1,300	780	81	2,860	863
Iron	9,300	5,200	18,000	-	-	-	-	18,000	14,000	40,000	20,000	12,000	-				12,000	4,500	11,000	3,700	-	-
Lead	160	11	260	454	946	308	851	960	440	2,300	330	17	986	526	583	310	580	250	180	58	501	210
Magnesium	2,000	1,300	4,700	-	-	-	-	5,100	3,400	3,800	6,400	3,800	-	-	-	-	2,800	780	2,500	730	-	-
Manganese	350	110	740	-	-	-	-	260	180	160	250	330	-	-	-	-	420	110	220	130	-	-
Mercury	0.70	-	-	-	-	-	-	2.4	1.2	8.0	-	-	-	-	-	-	4.3	2.0	1.6	0.30	-	-
Nickel	14	5.3	34	-	-	-	-	33	22	32	33	11	-	-	-	-	22	12	22	13	-	-
Potassium	530	490	1,100	-	-	-	-	1,100	1,100	-	1,400	980	-	-	-	-	-	-	500	-	-	-
Selenium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Silver	61	-	81	-	-	-	-	220	19	560	1.4	-	-	-	-	-	240	82	49	3.2	-	-
Sodium	260	29	380	-	-	-	-	460	340	210	210	47	-	-	-	-	440	240	270	200	-	-
Thallium	-	-	-	-	-	-	-	-	-	11	-	-	-	-	-	-	-	-	-	-	-	-
Tin	-	-	-	-	-	-	-	-	11	360	-	-	-	-	-	-	73	18	-	-	-	-
Vanadium	53	9.7	97	-	-	-	-	160	65	330	57	21	-	-	-	-	130	45	68	20	-	-
Zinc	140	21	370	-	-	-	-	340	440	390	190	42	-	-	-	-	230	130	150	180	-	-

Notes:
- = Not Detected

Table 1A
PCB and Metals Sediment Data
Raytheon - Wayland, Massachusetts

Sample I.D.	T-5-3	T-5-4	T-5-5	T-5-6	T-5-7	T-5-9	T-5-10	T-5-11	T-5-12	T-6-1	T-6-2	T-6-3	T-6-4	T-6-5	T-6-6	T-7-A	T-7-B	T-7-C	T-7-F	T-7-I	T-7-2	T-7-3
Depth	(0-6")	(0-6")	(0-6")	(0-6")	(0-6")	(0-6")	(0-6")	(0-6")	(0-6")	(0-6")	(0-6")	(0-6")	(0-6")	(0-6")	(0-6")	(0-6")	(0-6")	(0-6")	(0-6")	(0-6")	(0-6")	(0-6")
Date Sampled	5-Nov-98	5-Nov-98	5-Nov-98	6-Oct-99	6-Oct-99	6-Oct-99	6-Oct-99	1-Nov-99	5-Oct-99	6-Nov-98	6-Nov-98	6-Nov-98	6-Nov-98	6-Nov-98	6-Nov-98	5-Oct-99	1-Nov-99	5-Oct-99	2-Nov-99	6-Nov-98	6-Nov-98	6-Nov-98
Comments																						
Polychlorinated Biphenyls (ppb)																						
Aroclor 1254	-	-	-	-	-	-	-	-	-	19,000	12,000	1,800	4,900	-	-	-	-	-	-	10,000	1,800	1,800
Aroclor 1260	61,000	35,000	11,000	20,800	9,800	89,900	11,600	-	-	42,000	44,000	6,500	19,000	4,500	6,000	11,700	2,410	2,660	-	67,000	9,300	6,000
Total PCBs	61,000	35,000	11,000	20,800	9,800	89,900	11,600	-	-	61,000	56,000	8,300	23,900	4,500	6,000	11,700	2,410	2,660	-	77,000	11,100	7,800
Congener Analysis		NA	NA	NA	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Polychlorinated Biphenyls (PCBs, ppb. dry)																						
Total PCBs	42,800									41000												
Metals (ppm)																						
Aluminum	-	-	-	9,100	8,400	5,300	6,700	7,600	10,000	-	-	-	-	-	-	10,000	8,600	7,900	6,200	-	-	-
Antimony	-	-	-	43	38	28	22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Arsenic	-	-	-	23	17	22	18	11	5.6	-	-	-	-	-	-	12	20	25	5.9	-	-	-
Barium	-	-	-	370	350	240	330	39	57	-	-	-	-	-	-	150	82	98	52	-	-	-
Beryllium	-	-	-	-	-	-	-	-	0.72	-	-	-	-	-	-	0.84	1.0	-	0.91	-	-	-
Cadmium	-	-	-	29	14	6.1	1.76	1.03	3.2	-	-	-	-	-	-	5.4	5.9	10	3.7	-	-	-
Calcium	-	-	-	3,300	3,900	2,200	1,700	2,200	2,900	-	-	-	-	-	-	2,800	3,800	3,300	4,200	-	-	-
Chromium	307	197	8,720	29,000	24,000	20,000	16,000	490	110	12,500	5,390	389	2,220	956	3,400	2,400	920	680	52	3,630	1,190	210
Chromium , Hexavalent	-	-	-	-	-	490	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cobalt	-	-	-	-	-	-	-	4.3	3.6	-	-	-	-	-	-	4.0	4.2	4.9	3.4	-	-	-
Copper	880	519	10,400	22,000	14,000	8,400	3,000	380	160	8,230	5,570	444	2,980	2,910	6,880	2,900	1,200	1,000	94	2,070	1,580	233
Iron	-	-	-	16,000	14,000	22,000	24,000	12,000	10,000	-	-	-	-	-	-	7,800	5,400	6,200	3,800	-	-	-
Lead	228	221	1,180	1,700	1,400	1,100	1,200	500	340	981	673	82.7	1,210	290	487	430	180	260	97	668	274	68.6
Magnesium	-	-	-	3,400	3,200	1,600	2,800	2,900	3,000	-	-	-	-	-	-	2,400	960	1,200	540	-	-	-
Manganese	-	-	-	100	140	120	110	150	170	-	-	-	-	-	-	140	190	160	260	-	-	-
Mercury	-	-	-	18	12	12	6.8	0.38	-	-	-	-	-	-	-	3.0	1.3	1.9	0.12	-	-	-
Nickel	-	-	-	29	23	12	16	16	18	-	-	-	-	-	-	20	19	22	12	-	-	-
Potassium	-	-	-	680	-	-	-	520	440	-	-	-	-	-	-	690	-	-	-	-	-	-
Selenium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Silver	-	-	-	430	500	320	490	5.9	3.8	-	-	-	-	-	-	250	57	79	3.1	-	-	-
Sodium	-	-	-	280	270	260	360	120	240	-	-	-	-	-	-	490	340	260	250	-	-	-
Thallium	-	-	-	7.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tin	-	-	-	490	360	560	370	-	-	-	-	-	-	-	-	-	15	-	-	-	-	-
Vanadium	-	-	-	300	190	190	240	46	45	-	-	-	-	-	-	71	41	46	19	-	-	-
Zinc	-	-	-	470	390	130	110	92	110	-	-	-	-	-	-	180	250	280	120	-	-	-

Notes:
- = Not Detected

Table 1A
PCB and Metals Sediment Data
Raytheon - Wayland, Massachusetts

Sample I.D.	T-7-4	T-7-5	T-7-6	T-7-7	T-7-9	T-7-11	T-7-13	T-7-14	T-8-A	T-8-B	T-8-C	T-8-F	T-8-1	T-8-3	T-8-5	T-8-6	T-8-7	T-8-8	T-8-9	T-8-10	T-8-11	T-8-12
Depth	(0-6")	(0-6")	(0-6")	(0-6")	(0-6")	(0-6")	(0-6")	(0-6")	(0-6")	(0-6")	(0-6")	(0-6")	(0-6")	(0-6")	(0-6")	(0-6")	(0-6")	(0-6")	(0-6")	(0-6")	(0-6")	(0-6")
Date Sampled	6-Nov-98	6-Nov-98	5-Oct-99	5-Oct-99	5-Oct-99	5-Oct-99	1-Nov-99	5-Oct-99	5-Oct-99	1-Nov-99	5-Oct-99	1-Nov-99	6-Nov-98	6-Nov-98	6-Nov-98	5-Oct-99	5-Oct-99	1-Nov-99	5-Oct-99	1-Nov-99	5-Oct-99	1-Nov-99
Comments																						
Polychlorinated Biphenyls (ppb)																						
Aroclor 1254	1,700	2,600	-	-	-	-	-	-	3,720	-	-	1,200	-	-	-	4,000	-	-	-	-	-	-
Aroclor 1260	11,000	16,000	9,970	27,600	30,900	9,470	-	-	-	1,050	4,190	-	4,800	5,800	970	-	4,420	2,070	3,020	1,200	9,590	-
Total PCBs	12,700	18,600	9,970	27,600	30,900	9,470	-	-	3,720	1,050	4,190	1,200	4,800	5,800	970	4,000	4,420	2,070	3,020	1,200	9,590	-
Congener Analysis	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA
Polychlorinated Biphenyls (PCBs, ppb, dry)																						
Total PCBs														4,380								
Metals (ppm)																						
Aluminum	-	-	8,200	8,400	6,400	5,200	9,000	5,900	8,500	6,400	7,400	8,700	-	-	-	7,200	6,800	8,600	9,400	9,800	8,400	11,000
Antimony	-	-	-	16	43	-	-	-	-	-	-	-	-	-	-	-	-	27	-	21	-	-
Arsenic	-	-	44	88	17	6.4	5.1	4	11	3.6	7.6	8.9	-	-	-	9.7	17	32	24	17	4.3	6.9
Barium	-	-	140	130	280	160	35	14	110	100	110	100	-	-	-	68	80	120	110	120	75	100
Beryllium	-	-	-	-	-	-	1.1	0.5	-	-	-	1.1	-	-	-	-	-	-	-	-	-	-
Cadmium	-	-	8.3	3.1	7.9	1.58	0.810	-	7.7	4.3	5.2	5.8	-	-	-	6.2	3.4	4.1	5.4	3.7	2.2	2.24
Calcium	-	-	6,400	3,500	3,000	2,300	2,400	620	4,200	5,400	4,500	4,100	-	-	-	3,900	3,800	5,400	4,400	3,300	2,700	3,800
Chromium	2,700	2,730	6,300	9,000	23,000	9,900	26	10	890	450	320	99	312	376	236	830	1,800	6,500	6,700	5,200	2,000	1,800
Chromium , Hexavalent	-	-	-	-	1,600.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	240	-	-
Cobalt	-	-	-	-	-	-	2.5	-	5	6.0	5.1	6.0	-	-	-	-	-	-	-	-	-	-
Copper	2,930	1,720	5,800	6,800	9,600	5,800	30	10	1,100	610	640	160	610	607	329	820	1,500	4,200	4,800	2,800	1,200	640
Iron	-	-	17,000	16,000	12,000	16,000	4,200	7,200	7,800	8,200	6,200	6,400	-	-	-	5,200	9,900	8,400	16,000	11,000	10,000	18,000
Lead	330	312	770	780	1,400	750	82	48	370	240	250	170	164	119	163	340	390	600	750	460	400	540
Magnesium	-	-	3,000	2,800	1,700	2,000	820	500	1,400	1,400	1,400	980	-	-	-	1,100	1,400	2,100	2,400	1,400	1,500	2,800
Manganese	-	-	340	130	120	100	49	27	220	590	300	310	-	-	-	130	150	200	230	180	170	310
Mercury	-	-	7.8	6.5	14	4.1	-	-	3.4	0.26	2.2	2.3	-	-	-	2.9	4	0.73	5.9	2.1	2.5	1.7
Nickel	-	-	36	20	16	12	6.9	4	24	19	20	21	-	-	-	21	22	28	40	17	18	24
Potassium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Selenium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Silver	-	-	120	220	270	240	-	-	54	30	24	5.8	-	-	-	12	34	92	110	200	23	18
Sodium	-	-	430	320	280	380	150	48	350	310	540	410	-	-	-	580	420	450	320	260	190	380
Thallium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tin	-	-	55	54	660	99	-	-	11	20	-	-	-	-	-	19	28	110	81	66	26	29
Vanadium	-	-	120	170	180	150	14	12	63	35	35	28	-	-	-	58	73	120	140	74	53	58
Zinc	-	-	330	140	200	110	33	15	200	200	170	160	-	-	-	200	150	290	220	130	110	150

Notes:
- = Not Detected

Table 1A
PCB and Metals Sediment Data
Raytheon - Wayland, Massachusetts

Sample I.D.	T-8-13	T-8-14	T-9-1	T-9-3	T-9-5	T-10-A	T-10-1	T-10-2	T-10-3	T-10-4	T-10-5	T-10-6	T-10-10	T-10-13	T-10-16	T-11-3	T-12-1	T-12-3	T-13-3	T-14-3	T-3-5	T-3-8
Depth	(0-6")	(0-6")	(0-6")	(0-6")	(0-6")	(0-6")	(0-6")	(0-6")	(0-6")	(0-6")	(0-6")	(0-6")	(0-6")	(0-6")	(0-6")	(0-6")	(0-6")	(0-6")	(0-6")	(0-6")	Plant	Plant
Date Sampled	5-Oct-99	5-Oct-99	6-Nov-98	6-Nov-98	6-Nov-98	1-Nov-99	6-Nov-98	6-Nov-98	6-Nov-98	6-Nov-98	6-Nov-98	1-Nov-99	1-Nov-99	1-Nov-99	1-Nov-99	6-Nov-98	6-Nov-98	6-Nov-98	6-Nov-98	6-Nov-98	1-Nov-99	1-Nov-99
Comments																						
Polychlorinated Biphenyls (ppb)																						
Aroclor 1254	-	-	-	-	1,300	-	-	2,400	-	3,500	-	-	-	-	-	-	-	-	-	-	-	-
Aroclor 1260	-	-	-	-	-	1,170	2,100	13,000	61,000	1,200	2,400	-	2,120	-	-	-	-	1,300	1,900	2,400	728	3,580
Total PCBs	-	-	-	-	1,300	1,170	2,100	15,400	61,000	4,700	2,400	-	2,120	-	-	-	-	1,300	1,900	2,400	728	3,580
Congener Analysis	NA	NA	NA			NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA				NA	NA
Polychlorinated Biphenyls (PCBs, ppb, dry)																						
Total PCBs				170	1,000				1,940									1,030	1,630	2,500		
Metals (ppm)																						
Aluminum	8,000	7,500	-	-	-	7,500	-	-	-	-	-	7,500	8,100	7,000	25,000	-	-	-	-	-	11,000	8,400
Antimony	-	-	-	-	-	-	-	-	-	-	-	-	17	-	-	-	-	-	-	-	6.4	43
Arsenic	4.6	4.7	-	-	-	5.1	-	-	-	-	-	3.9	11	3.5	18	-	-	-	-	-	9.5	84
Barium	41	28	-	-	-	130	-	-	-	-	-	68	100	28	140	-	-	-	-	-	85	350
Beryllium	-	0.67	-	-	-	-	-	-	-	-	-	0.82	-	0.68	1.8	-	-	-	-	-	0.77	-
Cadmium	2.4	0.93	-	-	-	4.4	-	-	-	-	-	3.1	4.4	1.05	3.0	-	-	-	-	-	2.2	7.1
Calcium	1,800	2,600	-	-	-	2,100	-	-	-	-	-	2,700	4,000	1,800	4,300	-	-	-	-	-	1,500	11,000
Chromium	380	52	35.5	14.0	58.1	290	175	850	153	106	362	280	4,200	36	90	8.7	14.1	44.6	234	284	1,300	9,600
Chromium , Hexavalent	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cobalt	3	2.6	-	-	-	8.5	-	-	-	-	-	-	-	-	12	-	-	-	-	-	5.5	-
Copper	320	43	97.8	17.7	89.3	500	231	1,080	363	115	424	250	2,700	28	150	17.4	19.8	95.5	383	422	1,200	6,200
Iron	5,600	8,300	-	-	-	8,100	-	-	-	-	-	3,400	6,000	4,000	24,000	-	-	-	-	-	14,000	57,000
Lead	130	220	100	6.1	137	250	140	227	60.2	141	233	150	510	120	720	3.7	6.8	31	169	226	180	1,300
Magnesium	820	730	-	-	-	1,200	-	-	-	-	-	670	1,600	650	6,200	-	-	-	-	-	3,200	3,500
Manganese	68	53	-	-	-	1,000	-	-	-	-	-	160	220	110	240	-	-	-	-	-	230	870
Mercury	-	0.87	-	-	-	1.6	-	-	-	-	-	0.72	0.92	-	1.3	-	-	-	-	-	0.95	8.7
Nickel	12	8.4	-	-	-	17	-	-	-	-	-	12	24	7.7	35	-	-	-	-	-	16	30
Potassium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	780	-	-	-	-	-	850	-
Selenium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Silver	4.6	1.5	-	-	-	23	-	-	-	-	-	12	160	-	1.35	-	-	-	-	-	76	340
Sodium	180	200	-	-	-	300	-	-	-	-	-	300	380	210	300	-	-	-	-	-	110	560
Thallium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tin	-	-	-	-	-	10	-	-	-	-	-	8.0	54	-	-	-	-	-	-	-	-	150
Vanadium	29	26	-	-	-	32	-	-	-	-	-	25	77	18	82	-	-	-	-	-	59	150
Zinc	87	20	-	-	-	150	-	-	-	-	-	65	160	34	300	-	-	-	-	-	150	370

Notes:
- = Not Detected

Table 1A
PCB and Metals Sediment Data
Raytheon - Wayland, Massachusetts

Sample I.D.	T-5-2	T-7-1	T-9-5	FP-1	FP-2	FP-3	FP-4	FP-5	S-1	S-3	S-5	S-9	S-11	SS-1	SS-2	SS-2D	SS-3	SS-4	GMS-1	GMS-2	GMS-3	GMS-4
Depth	Plant	Plant	Plant	(0-6")	(0-6")	(0-6")	(0-6")	(0-6")														
Date Sampled	11-Jan-99	1-Nov-99	1-Nov-99	9-Nov-98	9-Nov-98	9-Nov-98	9-Nov-98	9-Nov-98	Jul-95	Jul-95	Jul-95	Jul-95	Jul-95	Mar-90	Mar-90	Mar-90	Mar-90	Mar-90	Jul-89	Jul-89	Jul-89	Jul-89
Comments																						
Polychlorinated Biphenyls (ppb)																						
Aroclor 1254	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aroclor 1260	13,600	7,900	1,210	6,600	92,000	-	-	-	-	1,000	1,400.0	-	-	-	-	-	-	-	24,000	98,000	45,000	102,000
Total PCBs	13,600	7,900	1,210	6,600	92,000	-	-	-	-	1,000	1,400	-	-	-	-	-	-	-	24,000	98,000	45,000	102,000
Congener Analysis	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Polychlorinated Biphenyls (PCBs, ppb, dry)																						
Total PCBs					82,300																	
Metals (ppm)									NA	NA	NA	NA	NA									
Aluminum	9,300	9,900	5,500	-	-	-	-	-						-	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	24	-	-	-	-	-	-	-						-	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	23	12	7.7	-	-	-	-	-						-	25	22.9	3.6	10.3	8.4	10.5	12.3	11.1
Barium	240	140	67	-	-	-	-	-						-	NA	NA	NA	NA	NA	NA	NA	NA
Beryllium	-	-	-	-	-	-	-	-						-	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	7.7	2.3	3.4	-	-	-	-	-						-	9.3	8.8	2.1	10.3	3.2	8.1	16	6.5
Calcium	3,300	2,000	4,400	-	-	-	-	-						-	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	5,200	1,300	140	838	6,900	22.6	48.1	92.7						-	167	167	2.3	331	221	1,730	15,100	366
Chromium , Hexavalent	-	-	-	-	-	-	-	-						-	NA	NA	NA	NA	NA	NA	NA	NA
Cobalt	5.5	4.4	5.8	-	-	-	-	-						-	NA	NA	NA	NA	NA	NA	NA	NA
Copper	3,900	3000	280	623	3,080	17.2	92.3	597						-	241	220	264	424	1,440	3,120	9,440	1,960
Iron	19,000	14,000	7,300	-	-	-	-	-						-	NA	NA	NA	NA	NA	NA	NA	NA
Lead	640	640	220	148	1,120	90.2	345	1,210						-	631	528	14.6	621	280	858	1,590	734
Magnesium	3,100	3,100	1,100	-	-	-	-	-						-	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	340	180	270	-	-	-	-	-						-	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	2.8	2.8	1.2	-	-	-	-	-						-	10.26	8.39	-	4.06	0.83	2.37	4.6	3
Nickel	26	20	18	-	-	-	-	-						-	-	44	-	-	NA	NA	NA	NA
Potassium	960	620	-	-	-	-	-	-						-	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	-	-	-	-	-	-	-	-						-	NA	NA	NA	NA	NA	NA	NA	NA
Silver	120	270	9.9	-	-	-	-	-						-	-	-	12.1	9.3	NA	NA	NA	NA
Sodium	340	320	380	-	-	-	-	-						-	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	-	-	-	-	-	-	-	-						-	NA	NA	NA	NA	NA	NA	NA	NA
Tin	52	12	-	-	-	-	-	-						-	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	88	87	42	-	-	-	-	-						-	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	400	140	140	-	-	-	-	-						5	389	273	188	259	NA	NA	NA	NA

Notes:
- = Not Detected

Table 1A
PCB and Metals Sediment Data
Raytheon - Wayland, Massachusetts

Sample I.D.	GMS-5	GMS-6	GMS-7	GMS-8	GMS-9	GMS-10	GMS-11	GMS-12					Screening Value (S-3 or RCS-2)	Exceed Screening Value?
Depth														
Date Sampled	Jul-89	Jul-89	Jul-89	Jul-89	Jul-89	Jul-89	Jul-89	Jul-89						
Comments									MIN	AVG	95% UCL	MAX		
Polychlorinated Biphenyls (ppb)														
Aroclor 1254	-	-	-	-	-	-	-	-	1,200	4,369	6,409	19,000		
Aroclor 1260	117,000	1,800.0	1,800.0	2,800.0	30,400.0	900.0	1,100.0	1,000	728	31,482	45,209	540,000		
Total PCBs	117,000	1,800	1,800	2,800	30,400	900	1,100	1,000	728	31,044	44,272	540,000	2000	yes
Congener Analysis	NA	NA	NA	NA	NA	NA	NA	NA						
Polychlorinated Biphenyls (PCBs, ppb, dry)														
Total PCBs									170	61,617	106,892	285,000	2000	yes
Metals (ppm)														
Aluminum	NA	NA	NA	NA	NA	NA	NA	NA	3,000	8,258	9,183	25,000	NA	-
Antimony	NA		NA	NA	NA	NA	NA	NA	6	31	42	100	40	yes
Arsenic	9.4		22	20	7.3	8.1	22.2	14.4	3	19	25	160	30	yes
Barium	NA		NA	NA	NA	NA	NA	NA	14	121	147	490	5,000	-
Beryllium	NA		NA	NA	NA	NA	NA	NA	0	0.8	1	1.8	3	-
Cadmium	8.9		4.4	6	12	4.4	6.0	3.4	0	5.4	7	32	80	-
Calcium	NA		NA	NA	NA	NA	NA	NA	620	3,232	3,715	11,000	NA	-
Chromium	743		100	253	506	65	96	68	2	3,186	4,214	37,000	5,000	yes
Chromium , Hexavalent	NA		NA	NA	NA	NA	NA	NA	28	483	944	1,600	1,000.0	yes
Cobalt	NA		NA	NA	NA	NA	NA	NA	2	5	6	12	5000	-
Copper	2,360		136	397	1,050	103	185	143	10	2,289	2,872	22,000	10,000	yes
Iron	NA		NA	NA	NA	NA	NA	NA	3,400	12,394	14,783	57,000	NA	-
Lead	960		350	390	260	180	280	300	4	466	538	2,300	600	yes
Magnesium	NA		NA	NA	NA	NA	NA	NA	500	2,169	2,494	6,400	NA	-
Manganese	NA		NA	NA	NA	NA	NA	NA	27	227	273	1,000	NA	-
Mercury	2.93		2.38	3.5	2.19	1	1.52	1.50	0	3.7	5	18	50	-
Nickel	NA		NA	NA	NA	NA	NA	NA	4	19	21	44	700	-
Potassium	NA		NA	NA	NA	NA	NA	NA	420	721	822	1,400	NA	-
Selenium	NA		NA	NA	NA	NA	NA	NA	2	2	3	3	2,500	-
Silver	NA		NA	NA	NA	NA	NA	NA	0	121	161	560	200	yes
Sodium	NA		NA	NA	NA	NA	NA	NA	29	269	305	580	NA	-
Thallium	NA		NA	NA	NA	NA	NA	NA	4	7	11	11	100	-
Tin	NA		NA	NA	NA	NA	NA	NA	8	143	208	660	NA	-
Vanadium	NA		NA	NA	NA	NA	NA	NA	10	81	99	330	2,000	-
Zinc	NA		NA	NA	NA	NA	NA	NA	5	180	209	470	5,000	-

Notes:
- = Not Detected

Table 1B
PAHs, EPH and VPH Sediment Data
Raytheon
Wayland, Massachusetts

Sample I.D. Depth Date Sampled Comments	T-1-B (0-6") 6-Oct-99	T-1-C (0-6") 1-Nov-99	T-1-I (0-6") 6-Oct-99	T-1-K (0-6") 6-Oct-99	T-1-L (0-6") 6-Oct-99	T-2-A (0-6") 6-Oct-99	T-2-D (0-6") 6-Oct-99	T-2-G (0-6") 1-Nov-99	T-2-I (0-6") 6-Oct-99	T-2-J (0-6") 6-Oct-99	T-2-K (0-6") 6-Oct-99	T-2-M (0-6") 1-Nov-99	T-3-A (0-6") 1-Nov-99	T-3-C (0-6") 1-Nov-99	T-3-I (0-6") 6-Oct-99	T-3-S Plant 1-Nov-99	T-3-6 (0-6") 6-Oct-99	T-3-7 (0-6") 6-Oct-99	T-3-8 (0-6") 6-Oct-99	T-3-8 Plant 1-Nov-99	T-5-A (0-6") 6-Oct-99	T-5-D (0-6") 1-Nov-99	T-5-F (0-6") 1-Nov-99	T-5-2 Plant 11-Jan-99	T-5-6 (0-6") 6-Oct-99	T-5-7 (0-6") 6-Oct-99	T-5-10 (0-6") 6-Oct-99	T-5-11 (0-6") 1-Nov-99	T-7-A (0-6") 5-Oct-99
Volatile Petroleum Hydrocarbons (ppb)	NA	NA	NA	NA	NA	-	NA	NA	-	NA	-	NA	NA	NA		NA			NA	NA	NA	NA	NA	NA	-	NA		NA	NA
C_5 - C_8 Aliphatics															-		29,700	-									-		
C_9 - C_{12} Aliphatics															-		75,800	19,000									14,600		
C_9 - C_{10} Aromatics															-		-	5,390									-		
p/m-Xylene															-		-	391									2,270		
o-Xylene															-		-	354									-		
Extractable Petroleum Hydrocarbons (ppb)																NA													
C_9 - C_{18} Aliphatics	-	-	-	264,000	-	310,000	19,400	-	-	1,400,000	654,000	-	43,900	-	-		64,500	42,400	903,000		206,000	-	-	NA	1,300,000	798,000	NA	83,200	316,000
C_{19} - C_{36} Aliphatics	-	-	17,500	2,670,000	13,200	4,730,000	150,000	-	2,100,000	4,750,000	2,300,000	162,000	156,000	17,300	-		1,110,000	824,000	2,590,000		607,000	-	39,400		3,200,000	2,200,000		376,000	1,340,000
C_{11} - C_{22} Aromatics	36,500	202,000	228,000	510,000	104,000	973,000	105,000	13,700	2,210,000	1,390,000	523,000	131,000	65,400	21,600	-		780,000	787,000	924,000		292,000	50,700	50,500		1,860,000	732,000		626,000	388,000
Polynuclear Aromatic Hydrocarbons (ppb)																											NA		
Acenaphthene	-	44	55	680	-	580	-	-	22,000	350	-	56	-	-	-	-	680	1,800	-	150	-	-	-	840	-	-		140	-
Fluoranthene	1,500	13,000	7,100	15,000	1,800	22,000	680	77	180,000	9,800	2,000	7,000	680	270	660	320	52,000	35,000	3,900	3,300	8,300	480	-	22,000	9,700	19,000		15,000	2,800
Napththalene	-	35	-	-	-	-	200	-	6,200	-	-	-	-	-	-	-	-	340	-	-	-	-	-	210	-	-		-	-
Benzo(a)anthracene	770	7,800	3,900	7,200	1,000	9,100	840	32	78,000	4,800	880	2,400	230	99	240	120	18,000	15,000	1,800	1,400	3,000	160	-	8,400	4,000	7,300		6,700	1,100
Benzo(a,e)pyrene	590	5,000	3,200	7,600	1,100	12,000	520	32	80,000	5,700	1,100	3,100	370	130	350	170	32,000	16,000	2,900	2,200	5,100	280	-	9,500	7,100	12,000		8,700	1,600
Benzo(b)fluoranthene	880	7,500	3,900	7,200	950	14,000	520	47	84,000	6,500	1,500	3,800	740	210	490	290	44,000	17,000	3,500	2,400	10,000	560	-	12,000	10,000	17,000		9,500	2,400
Benzo(k)fluoranthene	870	6,500	3,400	7,600	950	12,000	350	41	68,000	5,600	1,200	3,400	530	170	380	250	33,000	15,000	3,100	2,200	7,000	360	-	10,000	8,200	16,000		7,300	1,800
Chrysene	950	8,600	4,000	8,800	1,100	14,000	1,300	50	95,000	6,800	1,400	3,900	630	190	470	280	37,000	19,000	3,300	2,500	8,100	420	-	13,000	8,400	15,000		9,000	2,200
Acenaphthylene	220	1,200	780	-	-	-	-	-	2,300	160	-	-	-	-	-	-	1,000	500	-	140	-	-	-	140	-	-		100	-
Anthracene	150	1,000	500	1,700	200	2,000	-	-	35,000	990	300	420	-	-	-	-	3,300	4,300	-	930	-	-	-	2,400	920	1,400		1,400	-
Benzo(g,h,i)perylene	440	2,600	1,700	5,900	830	11,000	480	25	56,000	4,800	1,400	2,600	400	120	340	190	33,000	12,000	3,100	2,500	6,800	300	-	7,200	7,800	13,000		6,200	1,600
Fluorene	-	29	68	590	-	580	-	-	19,000	290	-	120	-	-	-	-	740	1,600	-	130	-	-	-	890	-	-		250	-
Phenanthrene	150	340	500	8,400	730	11,000	540	28	140,000	4,800	680	3,000	250	85	340	140	18,000	21,000	1,600	1,800	2,700	180	-	12,000	3,900	6,600		6,000	1,200
Dibenzo(a,h)anthracene	180	1,300	760	2,000	270	3,200	160	-	18,000	1,500	350	710	110	37	-	57	8,400	3,800	1,000	620	2,000	-	-	2,100	2,400	3,400		1,700	490
Ideno(1,2,3-cd)pyrene	530	3,400	2,100	6,300	750	11,000	300	26	58,000	4,900	1,300	2,600	420	120	350	200	34,000	12,000	3,100	2,400	6,900	310	-	7,600	7,900	13,000		6,500	1,600
Pyrene	1,500	13,000	6,200	12,000	1,500	18,000	1,200	69	140,000	7,800	1,800	5,400	570	230	590	270	42,000	28,000	3,200	2,800	6,900	400	-	17,000	7,900	15,000		12,000	2,400
Methylnaphthalene, 1-	-	-	-	-	-	-	-	-	4,400	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-
Methylnaphthalene, 2-	-	-	-	-	-	-	-	-	5,700	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-
Perylene	120	980	620	1,500	240	2,400	110	-	16,000	1,100	240	650	-	24	-	-	6,000	3,200	570	460	880	-	-	1,900	1,400	2,200		1,800	-
Biphenyl	-	-	-	-	-	-	-	-	1,600	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-

Notes:
NA - Not Analyzed
Not Detected

PAHs, EPH and VPH Sediment Data
Raytheon
Wayland, Massachusetts

Sample I.D. Depth Date Sampled Comments	T-7-B (0-6") 1-Nov-99	T-7-C (0-6") 5-Oct-99	T-7-F (0-6") 2-Nov-99	T-7-1 Plant 1-Nov-99	T-7-6 (0-6") 5-Oct-99	T-7-7 (0-6") 5-Oct-99	T-7-13 (0-6") 1-Nov-99	T-8-A (0-6") 5-Oct-99	T-8-B (0-6") 1-Nov-99	T-8-6 (0-6") 5-Oct-99	T-8-8 (0-6") 1-Nov-99	T-8-10 (0-6") 1-Nov-99	T-8-12 (0-6") 1-Nov-99	T-9-5 Plant 1-Nov-99	MIN	AVG	95% UCL	MAX	Screening Value (S-3 or RCS-2)	Exceed Screening Value?
Volatile Petroleum Hydrocarbons (ppb)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA						
C_5 - C_8 Aliphatics															29,700	29,700	29,700	29,700	500,000	-
C_9 - C_{12} Aliphatics															14,600	36,467	75,093	75,800	5,000,000	-
C_9 - C_{10} Aromatics															5,390	5,390	5,390	5,390	500,000	-
p/m-Xylene															391	1,331	3,172	2,270	2,500,000	-
o-Xylene															354	354	354	354	2,500,000	-
Extractable Petroleum Hydrocarbons (ppb)				NA			-							NA						
C_9 - C_{18} Aliphatics	85,900	123,000	-		250,000	584,000		-	-	-	147,000	166,000	89,800		19,400	373,814	550,211	1,400,000	5,000,000	-
C_{19} - C_{36} Aliphatics	159,000	788,000	42,400		776,000	1,520,000		495,000	175,000	-	243,000	298,000	273,000		13,200	1,137,393	1,621,573	4,750,000	5,000,000	-
C_{11} - C_{22} Aromatics	61,500	493,000	59,900		304,000	503,000		244,000	234,000	97,100	-	-	86,600		13,700	457,167	637,850	2,210,000	5,000,000	-
Polynuclear Aromatic Hydrocarbons (ppb)																				
Acenaphthene	-	-	-	120	-	-	-	-	-	-	-	-	-	-	44	2,117	5,376	22,000	5,000,000	-
Fluoranthene	1,600	1,900	92	7,900	2,000	1,400	95	2,000	1,900	580	740	780	1,800	770	77	11,144	20,026	180,000	5,000,000	-
Napththalene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	35	1,397	3,752	6,200	2,500,000	-
Benzo(a)anthracene	600	750	-	3,000	830	550	-	740	640	220	290	300	660	250	32	4,951	8,938	78,000	4,000	yes
Benzo(a,e)pyrene	900	1,200	-	4,600	1,200	860	55	1,100	1,100	320	420	480	1,200	390	32	5,804	9,970	80,000	700	yes
Benzo(b)fluoranthene	1,400	2,000	140	7,600	1,900	1,600	73	1,700	1,800	490	860	950	2,700	700	47	6,946	11,413	84,000	4,000	yes
Benzo(k)fluoranthene	1,200	1,600	130	5,400	1,500	1,200	72	1,500	1,200	460	620	750	1,600	490	41	5,681	9,272	68,000	40,000	yes
Chrysene	1,300	1,800	-	6,300	1,700	1,400	72	1,700	1,500	500	760	810	1,800	610	50	7,141	12,063	95,000	40,000	yes
Acenaphthylene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100	654	1,089	2,300	2,500,000	-
Anthracene	-	-	-	400	-	-	-	-	-	-	270	310	-	-	150	2,895	6,241	35,000	5,000,000	-
Benzo(g,h,i)perylene	900	1,300	-	4,600	1,300	1,100	-	1,100	1,100	320	460	600	1,600	380	25	5,053	8,269	56,000	2,500,000	-
Fluorene	-	-	-	110	-	-	-	-	-	-	-	-	-	-	29	1,877	4,684	19,000	5,000,000	-
Phenanthrene	600	670	-	2,700	870	580	-	790	610	280	280	310	700	300	28	6,527	13,580	140,000	2,500,000	-
Dibenzo(a,h)anthracene	290	-	-	1,200	410	340	-	-	330	-	-	180	430	-	37	1,862	3,070	18,000	800	yes
Ideno(1,2,3-cd)pyrene	920	1,300	-	4,800	1,400	1,100	-	1,100	1,100	320	480	610	1,600	390	26	5,198	8,518	58,000	4,000	yes
Pyrene	1,300	1,600	-	6,500	1,700	1,200	91	1,700	1,600	520	640	720	1,600	690	69	9,190	16,277	140,000	5,000,000	-
Methylnaphthalene, 1-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4,400	4,400	#DIV/0!	4,400	-	-
Methylnaphthalene, 2-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5,700	5,700	#DIV/0!	5,700	2,000,000	-
Perylene	160	-	-	840	-	-	-	-	190	-	320	-	210	-	24	1,697	2,923	16,000	-	-
Bipbenyl	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,600	1,600	1,600	1,600	-	-

Notes:
NA= Not Analyzed
- = Not Detected

Table 2
Imminent Hazard Risk Calculations for Trespasser (Maximum)
Raytheon - Wayland, MA

				Exposure Doses				Toxicity Values				Risk			
				Carcinogenic		Noncarcinogenic		Carcinogenic		Noncarcinogenic		Carcinogenic		Noncarcinogenic	
	EPC- Max (mg/kg)	IAF	DAF	Dermal (mg/kg-day)	Ingestion (mg/kg-day)	Dermal (mg/kg-day)	Ingestion (mg/kg-day)	CPF (ingestion) (mg/kg-day)-1		RfD (ingestion) (mg/kg-day)		Dermal (ELCR)	Ingestion (ELCR)	Dermal (HI)	Ingestion (HI)
Benzo(a)anthracene	78	91%	18%	3.02E-06	2.37E-07	4.54E-05	3.56E-06	7.30E-01	E	4.00E-02	M	2.21E-06	1.73E-07	1.13E-03	8.90E-05
Benzo(a)pyrene	80	91%	18%	3.10E-06	2.43E-07	4.65E-05	3.65E-06	7.30E+00	I	4.00E-02	M	2.26E-05	1.78E-06	1.16E-03	9.13E-05
Benzo(b)fluoranthene	84	91%	18%	3.26E-06	2.56E-07	4.89E-05	3.83E-06	7.30E-01	E	4.00E-02	M	2.38E-06	1.87E-07	1.22E-03	9.59E-05
Benzo(k)fluoranthene	68	91%	18%	2.64E-06	2.07E-07	3.96E-05	3.10E-06	7.30E-02	E	4.00E-02	M	1.92E-07	1.51E-08	9.89E-04	7.76E-05
Chrysene	95	91%	18%	3.68E-06	2.89E-07	5.53E-05	4.34E-06	7.30E-03	E	4.00E-02	M	2.69E-08	2.11E-09	1.38E-03	1.08E-04
Dibenzo(a,h)anthracene	18	91%	8%	3.10E-07	5.48E-08	4.65E-06	8.22E-07	7.30E+00	E	4.00E-02	M	2.26E-06	4.00E-07	1.16E-04	2.05E-05
Ideno(1,2,3-cd)pyrene	58	91%	18%	2.25E-06	1.77E-07	3.37E-05	2.65E-06	7.30E-01	E	4.00E-02	M	1.64E-06	1.29E-07	8.43E-04	6.62E-05
PCBs	285	85%	7%	4.1E-06	8.1E-07	6.2E-05	1.2E-05	2.0E+00	I	2.0E-05	M	8.2E-06	1.6E-06	3.1E+00	6.1E-01
Antimony	100	100%	10%	2.2E-06	3.3E-07	3.2E-05	5.0E-06			4.0E-04	I	-	-	8.1E-02	1.3E-02
Arsenic	120	100%	3%	7.8E-07	4.0E-07	1.2E-05	6.0E-06	1.5E+00	I	3.0E-04	I	1.2E-06	6.0E-07	3.9E-02	2.0E-02
Chromium	37000	100%	4%	3.2E-04	1.2E-04	4.8E-03	1.9E-03			1.5E+00	I	-	-	3.2E-03	1.2E-03
Chromium, Hexavalent	1600	100%	9%	3.1E-05	5.4E-06	4.7E-04	8.0E-05			3.0E-03	I	-	-	1.6E-01	2.7E-02
Copper	22000	100%	1%	4.7E-05	7.4E-05	7.1E-04	1.1E-03			4.0E-02	H	-	-	1.8E-02	2.8E-02
Lead	2300	50%	0.6%	3.0E-06	3.8E-06	4.5E-05	5.8E-05			7.5E-04	M	-	-	5.9E-02	7.7E-02
Silver	560	100%	25%	3.0E-05	1.9E-06	4.5E-04	2.8E-05			5.0E-03	I	-	-	9.0E-02	5.6E-03
												9.4E-06	2.2E-06	3.5E+00	7.8E-01
													1E-05		4.3E+00

Carcinogenic Exposure Dose Equations

Dermal =(EPC*DAF*CF*SA*AS*EF*EP)/(BW*AL*CF)
Ingestions =(EPC*IAF*CF*SIR*EF*EP)/(BW*AL*CF)

Noncarcinogenic Exposure Dose Equations

Dermal =(EPC*DAF*CF*SA*AS*EF*EP)/(BW*AP)
Ingestions =(EPC*IAF*CF*SIR*EF*EP)/(BW*AP)

Toxicity Sources

I - IRIS
H - Heast
M - MA DEP
E - EPA-NCEA Provisional Value
DAFs and IAFs based on values used to develop Method 1 soil standards (MA DEP, April 1994).

Acronyms

AL = Averaging Lifetime
AP= Averaging Period
AS = Adherence to Skin
BW= Body Weight
CF = Conversion Factor
DAF = Dermal Absorption Factor
EF = Exposure Frequency
EP = Exposure Period
EPC = Exposure Point Concentration
IAF = Ingestion Absorption Factor
SA = Skin Area
SIR = Soil Ingestion Rate

Table 3
Imminent Hazard Risk Calculations for Trespasser (95% Upper Confidence Limit)
Raytheon - Wayland, MA

				Exposure Doses				Toxicity Values				Risk			
				Carcinogenic		Noncarcinogenic		Carcinogenic		Noncarcinogenic		Carcinogenic		Noncarcinogenic	
	EPC- Max (mg/kg)	IAF	DAF	Dermal (mg/kg-day)	Ingestion (mg/kg-day)	Dermal (mg/kg-day)	Ingestion (mg/kg-day)	CPF (ingestion) (mg/kg-day)-1		RfD (ingestion) (mg/kg-day)		Dermal (ELCR)	Ingestion (ELCR)	Dermal (HI)	Ingestion (HI)
Benzo(a)anthracene	9	91%	18%	3.47E-07	2.72E-08	5.20E-06	4.08E-07	7.30E-01	E	4.00E-02	M	2.53E-07	1.99E-08	1.30E-04	1.02E-05
Benzo(a)pyrene	10	91%	18%	3.87E-07	3.03E-08	5.80E-06	4.55E-07	7.30E+00	I	4.00E-02	M	2.82E-06	2.21E-07	1.45E-04	1.14E-05
Benzo(b)fluoranthene	11	91%	18%	4.43E-07	3.47E-08	6.64E-06	5.21E-07	7.30E-01	E	4.00E-02	M	3.23E-07	2.54E-08	1.66E-04	1.30E-05
Benzo(k)fluoranthene	9	91%	18%	3.60E-07	2.82E-08	5.39E-06	4.23E-07	7.30E-02	E	4.00E-02	M	2.62E-08	2.06E-09	1.35E-04	1.06E-05
Chrysene	12	91%	18%	4.68E-07	3.67E-08	7.02E-06	5.51E-07	7.30E-03	E	4.00E-02	M	3.41E-09	2.68E-10	1.75E-04	1.38E-05
Dibenzo(a,h)anthracene	3	91%	8%	5.29E-08	9.34E-09	7.94E-07	1.40E-07	7.30E+00	E	4.00E-02	M	3.86E-07	6.82E-08	1.98E-05	3.50E-06
Ideno(1,2,3-cd)pyrene	9	91%	18%	3.30E-07	2.59E-08	4.95E-06	3.89E-07	7.30E-01	E	4.00E-02	M	2.41E-07	1.89E-08	1.24E-04	9.72E-06
PCBs	107	85%	7%	1.5E-06	3.0E-07	2.3E-05	4.6E-06	2.0E+00	I	2.0E-05	M	3.1E-06	6.1E-07	1.2E+00	2.3E-01
Antimony	42	100%	10%	9.0E-07	1.4E-07	1.4E-05	2.1E-06			4.0E-04	I	-	-	3.4E-02	5.3E-03
Arsenic	25	100%	3%	1.6E-07	8.4E-08	2.4E-06	1.3E-06	1.5E+00	I	3.0E-04	I	2.4E-07	1.3E-07	8.1E-03	4.2E-03
Chromium	4214	100%	4%	3.6E-05	1.4E-05	5.4E-04	2.1E-04			1.5E+00	I	-	-	3.6E-04	1.4E-04
Chromium, Hexavalent	944	100%	9%	1.8E-05	3.2E-06	2.7E-04	4.7E-05			3.0E-03	I	-	-	9.2E-02	1.6E-02
Copper	2872	100%	1%	6.2E-06	9.6E-06	9.3E-05	1.4E-04			4.0E-02	H	-	-	2.3E-03	3.6E-03
Lead	538	50%	0.6%	7.0E-07	9.0E-07	1.0E-05	1.3E-05			7.5E-04	M	-	-	1.4E-02	1.8E-02
Silver	161	100%	25%	8.7E-06	5.4E-07	1.3E-04	8.1E-06			5.0E-03	I	-	-	2.6E-02	1.6E-03
												3.3E-06	7.3E-07	2.9E+00	7.6E-01
													4E-06		3.6E+00

Carcinogenic Exposure Dose Equations

Dermal =(EPC*DAF*CF*SA*AS*EF*EP)/(BW*AL*CF)

Ingestions =(EPC*IAF*CF*SIR*EF*EP)/(BW*AL*CF)

Noncarcinogenic Exposure Dose Equations

Dermal =(EPC*DAF*CF*SA*AS*EF*EP)/(BW*AP)

Ingestions =(EPC*IAF*CF*SIR*EF*EP)/(BW*AP)

Toxicity Sources

I - IRIS

H - Heast

M - MA DEP

E - EPA-NCEA Provisional Value

DAFs and IAFs based on values used to develop Method 1 soil standards (MA DEP, April 1994).

Acronyms

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IAF = Ingestion Absorption Factor

SA = Skin Area

SIR = Soil Ingestion Rate

Printed: 6/9/00

Massachusetts Department of Environmental Protection
Bureau of Waste Site Cleanup

BWSC-105

IMMEDIATE RESPONSE ACTION (IRA) TRANSMITTAL FORM

Pursuant to 310 CMR 40.0424 - 40.0427 (Subpart D)

Release Tracking Number: 3 - 19482

A. RELEASE OR THREAT OF RELEASE LOCATION:

Release Name: (optional) Former Raytheon Facility

Street: 430 Boston Post Road Location Aid:

City/Town: Wayland ZIP Code: 01778-0000

☑ Check here if a Tier Classification Submittal has been provided to DEP for this Release Tracking Number.

☐ Check here if this location is Adequately Regulated, pursuant to 310 CMR 40.0110-0114.

Specify Program: ☐ CERCLA ☐ HSWA Corrective Action ☐ Solid Waste Management ☐ RCRA State Program (21C Facilities)

Related Release Tracking Numbers That This IRA Addresses: 3-13574, 3-14042, 3-13302

B. THIS FORM IS BEING USED TO: (check all that apply)

☑ Submit an **IRA Plan** (complete Sections A, B, C, D, E, H, I, J and K).

☐ Check here if this IRA Plan is an update or modification of a previously approved written IRA Plan. Date Submitted:

☑ Submit an **Imminent Hazard Evaluation** (complete Sections A, B, C, F, H, I, J and K).

☐ Submit an **IRA Status Report** (complete Sections A, B, C, E, H, I, J and K).

☐ Submit a **Request to Terminate an Active Remedial System and/or Terminate a Continuing Response Action(s) Taken to Address an Imminent Hazard** (complete Sections A, B, C, D, E, H, I, J and K).

☐ Submit an **IRA Completion Statement** (complete Sections A, B, C, D, E, G, H, I, J and K).

You must attach all supporting documentation required for each use of form indicated, including copies of any Legal Notices and Notices to Public Officials required by 310 CMR 40.1400.

C. RELEASE OR THREAT OF RELEASE CONDITIONS THAT WARRANT IRA:

Identify Media and Receptors Affected: (check all that apply) ☐ Air ☐ Groundwater ☑ Surface Water ☑ Sediments ☐ Soil

☑ Wetland ☐ Storm Drain ☐ Paved Surface ☐ Private Well ☐ Public Water Supply ☑ Zone 2 ☐ Residence

☐ School ☐ Unknown ☐ Other Specify:

Identify Conditions That Require IRA, Pursuant to 310 CMR 40.0412: (check all that apply) ☑ 2 Hour Reporting Condition(s)

☐ 72 Hour Reporting Condition(s) ☐ Substantial Release Migration ☐ Other Condition(s)

Describe: Evidence of stressed biota attributable to a historic release at the disposal site.

Identify Oils and Hazardous Materials Released: (check all that apply) ☑ Oils ☐ Chlorinated Solvents ☑ Heavy Metals

☐ Others Specify:

D. DESCRIPTION OF RESPONSE ACTIONS: (check all that apply)

☑ Assessment and/or Monitoring Only

☐ Excavation of Contaminated Soils

☐ Re-use, Recycling or Treatment

○ On Site ○ Off Site Est. Vol.: _____ cubic yards

Describe:

☐ Store ○ On Site ○ Off Site Est. Vol.: _____ cubic yards

☐ Landfill ○ Cover ○ Disposal Est. Vol.: _____ cubic yards

☐ Removal of Drums, Tanks or Containers

Describe:

☐ Deployment of Absorbent or Containment Materials

☐ Temporary Covers or Caps

☐ Bioremediation

☐ Soil Vapor Extraction

☐ Structure Venting System

☐ Product or NAPL Recovery

☐ Groundwater Treatment Systems

☐ Air Sparging

☐ Temporary Water Supplies

SECTION D IS CONTINUED ON THE NEXT PAGE.

ERM00044

D. DESCRIPTION OF RESPONSE ACTIONS (continued):

☐ Removal of Other Contaminated Media

Specify Type and Volume: _____

☐ Temporary Evacuation or Relocation of Residents

☐ Fencing and Sign Posting

☐ Other Response Actions Describe: _____

☐ Check here if this IRA involves the use of Innovative Technologies (DEP is interested in using this information to aid in creating an Innovative Technologies Clearinghouse).

Describe Technologies: _____

E. TRANSPORT OF REMEDIATION WASTE: (if Remediation Waste has been sent to an off-site facility, answer the following questions)

Name of Facility: _____

Town and State: _____

Quantity of Remediation Waste Transported to Date: _____

F. IMMINENT HAZARD EVALUATION SUMMARY: (check one of the following)

☑ Based upon an evaluation, an Imminent Hazard exists in connection with this Release or Threat of Release.

☐ Based upon an evaluation, an Imminent Hazard does not exist in connection with this Release or Threat of Release.

☐ Based upon an evaluation, it is unknown whether an Imminent Hazard exists in connection with this Release or Threat of Release, and further assessment activities will be undertaken.

☐ Based upon an evaluation, it is unknown whether an Imminent Hazard exists in connection with this Release or Threat of Release. However, response actions will address those conditions that could pose an Imminent Hazard.

G. IRA COMPLETION STATEMENT:

☐ Check here if future response actions addressing this Release or Threat of Release will be conducted as part of the Response Actions planned for a Site that has already been Tier Classified under a different Release Tracking Number, or a Site that is identified on the Transition List as described in 310 CMR 40.0600 (i. e., a Transition Site, which includes Sites with approved Waivers). These additional response actions must occur according to the deadlines applicable to the earlier Release Tracking Number (i. e., Site ID Number).

State Release Tracking Number (i. e., Site ID Number) of Tier Classified Site or Transition Site: _____

If any Remediation Waste will be stored, treated, managed, recycled or reused at the site following submission of the IRA Completion Statement, you must submit either a Release Abatement Measure (RAM) Plan or a Phase IV Remedy Implementation Plan, along with the appropriate transmittal form, as an attachment to the IRA Completion Statement.

H. LSP OPINION:

I attest under the pains and penalties of perjury that I have personally examined and am familiar with this transmittal form, including any and all documents accompanying this submittal. In my professional opinion and judgment based upon application of (i) the standard of care in 309 CMR 4.02(1), (ii) the applicable provisions of 309 CMR 4.02(2) and (3), and (iii) the provisions of 309 CMR 4.03(5), to the best of my knowledge, information and belief,

> *if Section B of this form indicates that an **Immediate Response Action Plan** is being submitted,* the response action(s) that is (are) the subject of this submittal (i) has (have) been developed in accordance with the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000, (ii) is (are) appropriate and reasonable to accomplish the purposes of such response action(s) as set forth in the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000 and (iii) complies(y) with the identified provisions of all orders, permits, and approvals identified in this submittal;

> *if Section B of this form indicates that an **Imminent Hazard Evaluation** is being submitted,* this Imminent Hazard Evaluation was developed in accordance with the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000, and the assessment activity(ies) undertaken to support this Imminent Hazard Evaluation complies(y) with the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000;

> *if Section B of this form indicates that an **Immediate Response Status Report** is being submitted,* the response action(s) that is (are) the subject of this submittal (i) is (are) being implemented in accordance with the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000, (ii) is (are) appropriate and reasonable to accomplish the purposes of such response action(s) as set forth in the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000 and (iii) complies(y) with the identified provisions of all orders, permits, and approvals identified in this submittal;

> *if Section B of this form indicates that an **Immediate Response Action Completion Statement** or a **Request to Terminate an Active Remedial System and/or Terminate a Continuing Response Action(s) Taken to Address an Imminent Hazard** is being submitted,* the response action(s) that is (are) the subject of this submittal (i) has (have) been developed and implemented in accordance with the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000, (ii) is (are) appropriate and reasonable to accomplish the purposes of such response action(s) as set forth in the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000 and (iii) complies(y) with the identified provisions of all orders, permits, and approvals identified in this submittal.

SECTION H IS CONTINUED ON THE NEXT PAGE.

ERM00045

Massachusetts Department of Environmental Protection
Bureau of Waste Site Cleanup

BWSC-105

IMMEDIATE RESPONSE ACTION (IRA) TRANSMITTAL FORM

Pursuant to 310 CMR 40.0424 - 40.0427 (Subpart D)

Release Tracking Number: 3 - 19482

H. LSP Opinion (continued):

I am aware that significant penalties may result, including, but not limited to, possible fines and imprisonment, if I submit information which I know to be false, inaccurate or materially incomplete.

☐ Check here if the Response Action(s) on which this opinion is based, if any, are (were) subject to any order(s), permit(s) and/or approval(s) issued by DEP or EPA. If the box is checked, you MUST attach a statement identifying the applicable provisions thereof.

LSP Name: John C. Drobinski LSP #: 2196 Stamp:

Telephone: 617-267-8377 Ext.:

FAX: (optional) 617-267-6447

Signature:

Date: 6/26/00

COMMONWEALTH OF MASSACHUSETTS
JOHN C. DROBINSKI No. 2196
REGISTERED LICENSED SITE PROFESSIONAL

I. PERSON UNDERTAKING IRA:

Name of Organization: Raytheon Company

Name of Contact: Ronald C. Slager, Jr. Title: Restoration Project Manager

Street: 1001 Boston Post Road

City/Town: Marlborough State: MA ZIP Code: 01752-0000

Telephone: 508-490-1770 Ext.: FAX: (optional)

☐ Check here if there has been a change in the person undertaking the IRA.

J. RELATIONSHIP TO RELEASE OR THREAT OF RELEASE OF PERSON UNDERTAKING IRA: (check one)

☑ RP or PRP Specify: ○ Owner ○ Operator ○ Generator ○ Transporter Other RP or PRP: Past Operator

☐ Fiduciary, Secured Lender or Municipality with Exempt Status (as defined by M.G.L. c. 21E, s. 2)

☐ Agency or Public Utility on a Right of Way (as defined by M.G.L. c. 21E, s. 5(j))

☐ Any Other Person Undertaking IRA Specify Relationship:

K. CERTIFICATION OF PERSON UNDERTAKING IRA:

I, Ronald C. Slager, Jr., attest under the pains and penalties of perjury (i) that I have personally examined and am familiar with the information contained in this submittal, including any and all documents accompanying this transmittal form, (ii) that, based on my inquiry of those individuals immediately responsible for obtaining the information, the material information contained in this submittal is, to the best of my knowledge and belief, true, accurate and complete, and (iii) that I am fully authorized to make this attestation on behalf of the entity legally responsible for this submittal. I/the person or entity on whose behalf this submittal is made am/is aware that there are significant penalties, including, but not limited to, possible fines and imprisonment, for willfully submitting false, inaccurate, or incomplete information.

By: Ronald C. Slager (signature) Title: Restoration Project Manager

For: Raytheon Company (print name of person or entity recorded in Section I) Date: 6-26-00

Enter address of the person providing certification, if different from address recorded in Section I:

Street:

City/Town: State: ZIP Code:

Telephone: Ext.: FAX: (optional)

YOU MUST COMPLETE ALL RELEVANT SECTIONS OF THIS FORM OR DEP MAY RETURN THE DOCUMENT AS INCOMPLETE. IF YOU SUBMIT AN INCOMPLETE FORM, YOU MAY BE PENALIZED FOR MISSING A REQUIRED DEADLINE.

ERM00046