Final Report

Inboard Area Focused Feasibility Study Report

BRAC Property
Hamilton Army Airfield

Volume II

Prepared for

U.S. Army Corps of Engineers

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Table A-1
Former Sewage Treatment Plant
Estuarine Receptor Hazard Quotient
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HQ = (95% UCL/Target Concentration) x A/HR (if A/HR exceeds 1, value of 1 is used)

Where

HQ = Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

A = Area of Site, square feet (ft^2) = 51000

HR = Home Range, ft^2, if blank, home range assumed equal to area of site

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		High Marsh				Intertidal Marsh					
			Salt Marsh Harvest Mouse		Pickleweed		Eohaustorius Estuarius (amphipod)		California Clapper Rail		Black Rail	
			Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)			15,000						505,000		215,000	
Metals												
Barium	9.3E+01	U	8.8E+01	1.1E+00	5.0E+02	1.9E-01	1.4E+00	6.8E+01	4.3E+02	2.2E-02	1.4E+02	1.6E-01
Boron	1.8E+01	U	9.6E+00	1.9E+00	5.0E-01	3.7E+01	*	*	8.6E+01	2.1E-02	2.9E+01	1.5E-01
Cadmium	6.0E-01	U	2.6E+01	2.3E-02	4.0E+00	1.5E-01	6.8E-01	8.9E-01	6.3E+00	9.7E-03	2.1E+00	6.9E-02
Chromium	8.4E+01	U	4.0E+04	2.1E-03	2.5E-02	3.3E+03	5.2E+01	1.6E+00	3.1E+01	2.7E-01	1.0E+01	1.9E+00
Copper	4.0E+01	U	4.2E+00	9.6E+00	1.0E+02	4.0E-01	1.9E+01	2.2E+00	1.8E+01	2.3E-01	5.8E+00	1.6E+00
Lead	2.0E+01	U	2.0E+03	9.9E-03	5.0E+01	4.0E-01	3.0E+01	6.7E-01	6.8E+00	3.0E-01	2.3E+00	2.1E+00
Mercury	3.0E-01	U	1.9E+00	1.6E-01	3.0E-01	1.0E+00	1.3E-01	2.3E+00	1.7E+00	1.8E-02	5.5E-01	1.3E-01
Selenium	2.5E-01	U	2.8E+01	8.7E-03	1.0E+00	2.5E-01	2.2E-02	1.1E+01	7.0E-01	3.6E-02	2.3E-01	2.5E-01
Silver	8.9E-01	U	4.5E+02	2.0E-03	2.0E+00	4.4E-01	7.3E-01	1.2E+00	1.2E+03	7.3E-05	4.1E+02	5.2E-04
Thallium	1.0E+00	U	1.6E+00	6.5E-01	1.0E+00	1.0E+00	*	*	*	*	*	*
Tin	1.7E+00	U	2.2E+03	7.5E-04	5.0E+02	3.4E-03	1.2E+02	1.4E-02	7.9E+01	2.2E-03	2.6E+01	1.5E-02
Zinc	9.1E+01	U	4.1E+02	2.2E-01	5.0E+01	1.8E+00	1.2E+02	7.4E-01	1.3E+02	7.3E-02	4.2E+01	5.2E-01
Pesticides and Herbicides												
Alpha-Chlordane	3.7E-02	U	1.9E+02	1.9E-04	*	*	5.0E-04	7.4E+01	1.6E+00	2.4E-03	5.2E-01	1.7E-02
4,4'-DDD	8.1E-02	U	1.3E+02	6.1E-04	*	*	1.2E-03	6.6E+01	3.7E-03	2.2E+00	1.2E-03	1.6E+01
4,4'-DDE	1.1E-02	U	1.7E+02	6.6E-05	*	*	2.1E-03	5.3E+00	1.5E-03	7.3E-01	5.0E-04	5.2E+00
4,4'-DDT	1.7E-02	U	1.6E+02	1.1E-04	1.0E+01	1.7E-03	1.2E-03	1.4E+01	2.0E-02	8.7E-02	6.6E-03	6.1E-01
Dieldrin	9.6E-03	U	1.4E+00	6.9E-03	1.0E+01	9.6E-04	2.0E-05	4.8E+02	2.6E-02	3.8E-02	8.5E-03	2.7E-01

Table A-1
Former Sewage Treatment Plant
Estuarine Receptor Hazard Quotient
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Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		High Marsh				Intertidal Marsh					
			Salt Marsh Harvest Mouse		Pickleweed		Eohaustorius Estuarius (amphipod)		California Clapper Rail		Black Rail	
			Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Pesticides and Herbicides (continued)												
Endosulfan Sulfate	5.9E-03	U	4.6E+00	1.3E-03	*	*	2.9E-03	2.1E+00	5.4E+02	1.1E-06	1.8E+02	7.9E-06
Endrin Aldehyde	2.7E-03	U	3.8E+00	7.0E-04	*	*	5.6E-02	4.8E-02	5.4E-04	5.1E-01	1.8E-04	3.6E+00
Gamma-Chlordane	5.6E-02	U	1.9E+02	2.9E-04	*	*	5.0E-04	1.1E+02	4.1E-01	1.4E-02	1.4E-01	9.7E-02
Heptachlor Epoxide	3.2E-04	M	8.6E+00	3.7E-05	*	*	8.8E-03	3.6E-02	7.6E-01	4.2E-05	2.5E-01	3.0E-04
Petroleum Hydrocarbons												
TPH - Diesel range	5.1E+01	U	2.8E+04	1.8E-03	*	*	1.4E+02	3.6E-01	4.6E+03	1.1E-03	1.5E+03	8.1E-03
Polychlorinated Biphenyl Compounds, Dioxins, and Furans												
Aroclor-1260	3.8E-02	U	1.1E+00	3.6E-02	4.0E+01	9.4E-04	2.2E-02	1.7E+00	9.0E-02	4.2E-02	3.0E-02	3.0E-01
Semivolatile Organic Compounds												
2-Methylnaphthalene	2.8E-02	U	2.0E+03	1.4E-05	*	*	2.0E-02	1.4E+00	*	*	*	*
Anthracene	2.9E-02	U	4.9E+04	5.9E-07	*	*	4.7E-02	6.2E-01	*	*	*	*
Benzo(a)anthracene	1.0E-01	U	1.2E+02	8.8E-04	*	*	7.5E-02	1.4E+00	*	*	*	*
Benzo(a)pyrene	1.2E-01	U	1.5E+02	8.3E-04	1.0E-02	1.2E+01	8.9E-02	1.4E+00	*	*	*	*
Benzo(b)fluoranthene	1.6E-01	U	1.5E+02	1.0E-03	*	*	1.8E+00	8.7E-02	*	*	*	*
Benzo(g,h,i)perylene	4.4E-02	U	1.9E+02	2.3E-04	*	*	7.2E-01	6.1E-02	*	*	*	*
Benzo(k)fluoranthene	1.7E-02	U	1.8E+02	9.2E-05	*	*	1.8E+00	9.3E-03	*	*	*	*
Chrysene	8.4E-02	U	1.2E+02	7.1E-04	*	*	1.1E-01	7.8E-01	*	*	*	*
Dibenz(a,h)anthracene	5.4E-02	U	1.8E+02	3.1E-04	*	*	6.2E-03	8.7E+00	*	*	*	*
Fluoranthene	1.1E-01	U	9.6E+03	1.2E-05	*	*	1.1E-01	9.9E-01	*	*	*	*
Indeno(1,2,3-cd)pyrene	7.5E-02	U	1.7E+02	4.3E-04	*	*	6.9E-01	1.1E-01	*	*	*	*
Phenanthrene	5.0E-02	U	4.9E+01	1.0E-03	*	*	8.7E-02	5.8E-01	*	*	*	*
Pyrene	8.7E-02	U	5.8E+03	1.5E-05	*	*	1.5E-01	5.7E-01	*	*	*	*
Hazard Index				14		3,395		862		4.6		33

Table A-1
Former Sewage Treatment Plant
Estuarine Receptor Hazard Quotient
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Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Subtidal Marsh									
			Bay Shrimp		Salmonid		Northern Anchovy		Double-Crested Cormorant		Algae	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)					950,000		950,000		43,100,000			
Metals												
Barium	9.3E+01	U	5.8E+03	1.6E-02	5.8E+03	8.6E-04	1.8E+05	2.9E-05	4.3E+04	2.6E-06	3.1E+02	3.0E-01
Boron	1.8E+01	U	5.0E+01	3.6E-01	1.5E+04	6.5E-05	1.5E+04	6.5E-05	5.9E+03	3.7E-06	*	*
Cadmium	6.0E-01	U	5.6E+00	1.1E-01	5.6E+00	5.8E-03	1.7E+02	1.9E-04	8.0E+02	8.9E-07	5.6E+00	1.1E-01
Chromium	8.4E+01	U	6.5E+03	1.3E-02	6.5E+03	6.9E-04	2.0E+05	2.3E-05	1.1E+03	9.3E-05	6.5E+03	1.3E-02
Copper	4.0E+01	U	7.6E+01	5.3E-01	7.6E+01	2.8E-02	2.3E+03	9.4E-04	2.8E+03	1.7E-05	7.6E+01	5.3E-01
Lead	2.0E+01	U	2.3E+03	8.8E-03	2.3E+03	4.7E-04	6.9E+04	1.6E-05	3.1E+02	7.8E-05	2.3E+03	8.8E-03
Mercury	3.0E-01	U	4.7E+00	6.4E-02	4.7E+00	3.4E-03	1.4E+02	1.1E-04	1.8E-01	2.0E-03	4.7E+00	6.4E-02
Selenium	2.5E-01	U	1.0E+00	2.4E-01	1.0E+00	1.3E-02	3.1E+01	4.3E-04	4.1E+00	7.2E-05	1.0E+00	2.4E-01
Silver	8.9E-01	U	1.6E-01	5.4E+00	1.6E-01	2.9E-01	4.9E+00	9.7E-03	2.5E+04	4.3E-08	1.6E-01	5.4E+00
Tin	1.7E+00	U	*	*	8.8E+01	1.0E-03	2.7E+03	3.4E-05	1.5E+03	1.3E-06	*	*
Zinc	9.1E+01	U	3.8E+03	2.4E-02	3.8E+03	1.3E-03	1.1E+05	4.3E-05	1.4E+04	7.9E-06	3.8E+03	2.4E-02
Pesticides and Herbicides												
Alpha-Chlordane	3.7E-02	U	6.3E-01	5.9E-02	6.3E-01	3.1E-03	1.9E+01	1.0E-04	1.5E+01	2.9E-06	6.3E-01	5.9E-02
4,4'-DDD	8.1E-02	U	2.5E+00	3.2E-02	2.5E+00	1.7E-03	7.5E+01	5.8E-05	1.3E-01	7.7E-04	2.5E+00	3.2E-02
4,4'-DDE	1.1E-02	U	6.1E+01	1.8E-04	6.1E+01	9.6E-06	1.8E+03	3.2E-07	1.4E-01	9.0E-05	6.1E+01	1.8E-04
4,4'-DDT	1.7E-02	U	2.6E-01	6.7E-02	2.6E-01	3.6E-03	7.7E+00	1.2E-04	3.9E-02	5.3E-04	2.6E-01	6.7E-02
Dieldrin	9.6E-03	U	3.6E-02	2.7E-01	3.6E-02	1.4E-02	1.1E+00	4.7E-04	1.6E-02	7.1E-04	3.6E-02	2.7E-01
Endosulfan Sulfate	5.9E-03	U	9.5E-03	6.2E-01	9.5E-03	3.3E-02	2.9E-01	1.1E-03	1.3E+04	5.3E-10	9.5E-03	6.2E-01
Endrin Aldehyde	2.7E-03	U	2.1E-02	1.3E-01	2.1E-02	6.8E-03	6.4E-01	2.3E-04	1.0E-02	3.1E-04	2.1E-02	1.3E-01
Gamma-Chlordane	5.6E-02	U	1.2E-01	4.6E-01	1.2E-01	2.5E-02	3.6E+00	8.3E-04	2.8E-02	2.4E-03	1.2E-01	4.6E-01
Heptachlor Epoxide	3.2E-04	M	2.9E-02	1.1E-02	2.9E-02	5.9E-04	8.8E-01	2.0E-05	1.3E-02	2.9E-05	2.9E-02	1.1E-02
Petroleum Hydrocarbons												
TPH - Diesel range	5.1E+01	U	8.1E+03	6.4E-03	8.1E+03	3.4E-04	2.4E+05	1.1E-05	3.1E+04	2.0E-06	8.1E+03	6.4E-03

Table A-1
Former Sewage Treatment Plant
Estuarine Receptor Hazard Quotient
(Page 4 of 4)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Subtidal Marsh									
			Bay Shrimp		Salmonid		Northern Anchovy		Double-Crested Cormorant		Algae	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Polychlorinated Biphenyl Compounds, Dioxins, and Furans												
Aroclor-1260	3.8E-02	U	4.5E+00	8.3E-03	4.5E+00	4.4E-04	1.4E+02	1.5E-05	*	*	4.5E+00	8.3E-03
Semivolatile Organic Compounds												
2-Methylnaphthalene	2.8E-02	U	*	*	*	*	*	*	*	*	*	*
Anthracene	2.9E-02	U	*	*	*	*	*	*	*	*	*	*
Benzo(a)anthracene	1.0E-01	U	*	*	*	*	*	*	*	*	*	*
Benzo(a)pyrene	1.2E-01	U	*	*	*	*	*	*	*	*	*	*
Benzo(b)fluoranthene	1.6E-01	U	*	*	*	*	*	*	*	*	*	*
Benzo(g,h,i)perylene	4.4E-02	U	*	*	*	*	*	*	*	*	*	*
Benzo(k)fluoranthene	1.7E-02	U	*	*	*	*	*	*	*	*	*	*
Chrysene	8.4E-02	U	*	*	*	*	*	*	*	*	*	*
Dibenz(a,h)anthracene	5.4E-02	U	*	*	*	*	*	*	*	*	*	*
Fluoranthene	1.1E-01	U	1.8E+01	6.4E-03	1.8E+01	3.4E-04	5.3E+02	1.1E-05	*	*	1.8E+01	6.4E-03
Indeno(1,2,3-cd)pyrene	7.5E-02	U	*	*	*	*	*	*	*	*	*	*
Phenanthrene	5.0E-02	U	*	*	*	*	*	*	*	*	*	*
Pyrene	8.7E-02	U	*	*	*	*	*	*	*	*	*	*
Hazard Index				8.4		0.43		0.015		0.0071		8.4

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

Checked by/Date: _____

Approved by/Date: _____

Table A-2
Former Sewage Treatment Plant
Human Carcinogenic Risk Characterization

Carcinogenic Risk = (95% UCL/Target Concentrations) x 10^{-6}

Where

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration[b]	Risk	Target Concentration	Risk	Target Concentration	Risk
Metals								
Cadmium	6.0E-01	U	1.4E+03	4.3E-10	*	*	*	*
Pesticides								
4,4'-DDD	8.1E-02	U	1.2E+01	6.6E-09	1.2E+01	6.6E-09	1.4E+01	5.6E-09
4,4'-DDE	1.1E-02	U	8.7E+00	1.2E-09	8.7E+00	1.3E-09	5.6E-01	1.9E-08
4,4'-DDT	1.7E-02	U	8.7E+00	2.0E-09	8.7E+00	2.0E-09	3.3E+00	5.2E-09
Alpha-chlordane	3.7E-02	U	2.4E+00	1.6E-08	2.4E+00	1.6E-08	1.9E-01	1.9E-07
Dieldrin	9.6E-03	U	1.4E-01	6.9E-08	1.4E-01	6.9E-08	6.4E-04	1.5E-05
Gamma-chlordane	5.6E-02	U	2.4E+00	2.4E-08	2.4E+00	2.4E-08	1.8E-03	3.1E-05
Heptachlor epoxide	3.2E-04	M	1.7E-01	1.9E-09	1.7E-01	1.9E-09	3.0E-03	1.1E-07
Polychlorinated Biphenyl Compounds, Dioxins, and Furans								
Aroclor-1260	3.8E-02	U	9.8E-01	3.8E-08	9.8E-01	3.8E-08	4.4E-04	8.5E-05
Semivolatile Organic Compounds								
Benzo(a)anthracen	1.0E-01	U	1.7E+00	6.1E-08	1.7E+00	6.1E-08	2.9E+01	3.6E-09
Benzo(a)pyrene	1.2E-01	U	1.7E-01	7.2E-07	1.7E-01	7.2E-07	5.8E+00	2.1E-08
Benzo(b)fluoranthe	1.6E-01	U	1.7E+00	9.2E-08	1.7E+00	9.3E-08	7.0E+01	2.2E-09
Benzo(g,h,i)perylen	4.4E-02	U	*	*	*	*	*	*
Benzo(k)fluoranthe	1.7E-02	U	1.7E+00	9.9E-09	1.7E+00	9.9E-09	5.7E+01	2.9E-10
Chrysene	8.4E-02	U	1.7E+01	5.0E-09	1.7E+01	5.0E-09	4.7E+03	1.8E-11
Dibenz(a,h)anthrac	5.4E-02	U	4.9E-01	1.1E-07	4.9E-01	1.1E-07	6.5E+01	8.4E-10
Indeno(1,2,3-cd)py	7.5E-02	U	1.7E+00	4.4E-08	1.7E+00	4.4E-08	2.0E+02	3.8E-10
Pathway Cumulative Risk				1.2E-06		1.2E-06		1.3E-04

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" Data not available.

Checked by/Date: _____

Approved by/Date: _____

Table A-3
Former Sewage Treatment Plant
Human Noncarcinogenic Health Hazard Characterization
(Page 1 of 2)

HQ = (95% UCL/Target Concentration)

Where

HQ = Noncarcinogenic Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient
Metals								
Barium	9.3E+01	U	2.8E+04	3.4E-03	2.7E+04	3.4E-03	*	*
Boron	2.6E+01	U	3.5E+04	7.5E-04	3.7E+04	7.3E-04	*	*
Cadmium	1.1E+00	U	2.1E+02	5.0E-03	2.1E+02	5.0E-03	2.2E+02	4.8E-03
Chromium	8.3E+01	U	1.0E+05	8.3E-04	1.0E+05	8.3E-04	1.0E+05	8.3E-04
Copper	3.9E+01	U	1.5E+04	2.6E-03	1.5E+04	2.7E-03	1.8E+04	2.2E-03
Lead	2.0E+01	U	6.6E+02	3.0E-02	6.6E+02	3.0E-02	*	*
Mercury	4.1E-01	U	1.2E+02	3.3E-03	1.2E+02	3.3E-03	3.6E+02	1.1E-03
Selenium	2.5E-01	U	2.0E+03	1.2E-04	2.0E+03	1.2E-04	1.0E+03	2.4E-04
Silver	4.5E+00	U	2.0E+03	2.2E-03	2.0E+03	2.2E-03	4.4E+03	1.0E-03
Thallium	1.0E+00	U	3.7E+01	2.8E-02	3.7E+01	2.8E-02	2.0E+03	5.1E-04
Tin	2.2E+00	U	1.0E+05	2.2E-05	1.0E+05	2.2E-05	1.0E+05	2.2E-05
Zinc	8.9E+01	U	1.0E+05	8.9E-04	9.2E+04	9.7E-04	1.0E+05	8.9E-04
Pesticides and Herbicides								
4,4'-DDT	6.3E-02	U	1.9E+02	3.2E-04	1.9E+02	3.2E-04	2.4E+02	2.6E-04
Alpha-chlordane	4.4E-02	M	1.9E+02	2.3E-04	1.9E+02	2.3E-04	4.9E+01	8.9E-04
Dieldrin	3.1E-02	U	1.6E+01	1.9E-03	1.6E+01	1.9E-03	2.2E-01	1.4E-01
Endosulfan sulfate	1.8E-02	M	2.0E+03	9.1E-06	2.0E+03	9.1E-06	*	*
Endrin aldehyde	1.0E-02	M	9.9E+01	1.0E-04	9.9E+01	1.0E-04	1.3E+00	7.4E-03
Gamma-chlordane	6.6E-02	M	1.9E+02	3.5E-04	1.9E+02	3.5E-04	4.6E-01	1.4E-01
Heptachlor epoxide	3.2E-04	M	4.3E+00	7.5E-05	4.3E+00	7.5E-05	2.2E-01	1.5E-03
Petroleum Hydrocarbons								

Table A-3
Former Sewage Treatment Plant
Human Noncarcinogenic Health Hazard Characterization
(Page 2 of 2)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient
TPH - Diesel range	2.3E+02	U	1.0E+05	2.3E-03	1.0E+05	2.3E-03	*	*
Polychlorinated Biphenyl Compounds, Dioxins, and Furans								
Aroclor-1260	1.9E-01	U	6.1E+00	3.2E-02	6.1E+00	3.2E-02	7.6E-03	2.5E+01
Semivolatile Organic Compounds								
2-Methylnaphthalene	4.4E-02	U	6.1E+03	7.1E-06	6.1E+03	7.1E-06	2.8E+03	1.6E-05
Anthracene	1.3E-01	M	8.5E+04	1.5E-06	7.8E+04	1.7E-06	1.0E+05	1.3E-06
Benzo(g,h,i)perylene	4.6E-02	M	9.2E+03	5.0E-06	9.1E+03	5.1E-06	1.0E+05	4.6E-07
Fluoranthene	6.2E-01	U	1.2E+04	5.1E-05	1.2E+04	5.2E-05	7.7E+04	8.1E-06
Phenanthrene	3.5E-01	U	9.8E+03	3.5E-05	1.2E+04	2.8E-05	1.0E+05	3.5E-06
Pyrene	5.1E-01	U	9.2E+03	5.6E-05	1.2E+04	4.2E-05	4.6E+04	1.1E-05
Cumulative Pathway Hazard Index				0.114		0.115		26

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".
[b] "*" data not available

Checked by/Date: _____
Approved by/Date: _____

Table A-4
Building 15/Revetment 18
Estuarine Receptor Hazard Quotient
(Page 1 of 2)

HQ = (95% UCL/Target Concentration) x A/HR (if A/HR exceeds 1, value of 1 is used)

Where

HQ = Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

A = Area of Site, square feet (ft^2) = 60,000

HR = Home Range, ft^2, if blank, home range assumed equal to area of site

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		High Marsh				Intertidal Marsh					
			Salt Marsh Harvest Mouse		Pickleweed		Estuarius (amphipod)		California Clapper Rail		Black Rail	
			Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)			15,000						505,000		215,000	
Metals												
Molybdenum	6.0E-01	M	6.0E+00	1.0E-01	2.0E+00	3.0E-01	4.8E+00	1.3E-01	1.8E+02	4.0E-04	5.9E+01	2.8E-03
Petroleum Hydrocarbons												
TPH - Diesel range	1.5E+01	U	2.8E+04	5.5E-04	*	*	1.4E+02	1.1E-01	4.6E+03	4.0E-04	1.5E+03	2.9E-03
Hazard Index				0.10		0.30		0.23		0.00081		0.0057

Table A-4
Building 15/Revetment 18
Estuarine Receptor Hazard Quotient
(Page 2 of 2)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Subtidal Marsh									
			Bay Shrimp		Salmonid		Northern Anchovy		Double-Crested Cormorant		Algae	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)					950,000		950,000		43,100,000			
Metals												
Molybdenum	6.0E-01	M	1.7E+01	3.6E-02	4.9E-02	7.8E-01	1.5E+00	2.6E-02	4.8E+03	1.8E-07	1.7E+01	3.6E-02
Petroleum Hydrocarbons												
TPH - Diesel range	1.5E+01	U	8.1E+03	1.9E-03	8.1E+03	1.2E-04	2.4E+05	4.0E-06	3.1E+04	7.0E-07	8.1E+03	1.9E-03
Hazard Index				0.038		0.78		0.026		0.00000088		0.038

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

Checked by/Date: _____

Approved by/Date: _____

Table A-5
Building 15/Revetment 18
Human Noncarcinogenic Health Hazard Characterization

HQ = (95% UCL/Target Concentration)

Where

HQ = Noncarcinogenic Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient
Metals								
Molybdenum	6.0E-01	M	2.0E+03	2.9E-04	2.0E+03	2.9E-04	*	*
Petroleum Hydrocarbons								
TPH - Diesel range	1.5E+01	U	1.0E+05	1.5E-04	1.0E+05	1.5E-04	*	*
Cumulative Pathway Hazard Index				0.00045		0.00045		*

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

Checked by/Date: _____

Approved by/Date: _____

Table A-6
Building 20
Estuarine Receptor Hazard Quotient
(Page 1 of 2)

HQ = (95% UCL/Target Concentration) x A/HR (if A/HR exceeds 1, value of 1 is used)

Where

HQ = Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

A = Area of Site, square feet (ft^2) = 15,000

HR = Home Range, ft^2, if blank, home range assumed equal to area of site

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		High Marsh				Intertidal Marsh					
			Salt Marsh Harvest Mouse		Pickleweed		Estuarius (amphipod)		California Clapper Rail		Black Rail	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)			15,000						505,000		215,000	
Metals												
Beryllium	6.7E-01	U	9.9E+02	6.7E-04	1.0E+01	6.7E-02	3.6E-01	1.9E+00	*	*	*	*
Zinc	8.9E+01	U	4.1E+02	2.2E-01	5.0E+01	1.8E+00	1.2E+02	7.2E-01	1.3E+02	2.1E-02	4.2E+01	1.5E-01
Volatile Organic Compounds												
Toluene	1.1E-03	U	2.5E+03	0.00	2.0E+02	5.5E-06	5.7E-01	1.9E-03	*	*	*	*
Hazard Index				0.22		1.9		2.6		0.021		0.15

Table A-6
Building 20
Estuarine Receptor Hazard Quotient
(Page 2 of 2)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Subtidal Marsh									
			Bay Shrimp		Salmonid		Northern Anchovy		Double-Crested Cormorant		Algae	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)					950,000		950,000		43,100,000			
Metals												
Beryllium	6.7E-01	U	*	*	1.3E+01	8.1E-04	3.9E+02	2.7E-05	*	*	*	*
Zinc	8.9E+01	U	3.8E+03	2.4E-02	3.8E+03	3.7E-04	1.1E+05	1.2E-05	1.4E+04	2.3E-06	3.8E+03	2.4E-02
Volatile Organic Compounds												
Toluene	1.1E-03	U	1.9E+00	5.8E-04	1.9E+00	9.2E-06	5.7E+01	3.1E-07	*	*	1.9E+00	5.8E-04
Hazard Index				0.024		0.0012		0.000040		0.0000023		0.024

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

Checked by/Date: _____

Approved by/Date: _____

Table A-7
Building 20
Human Carcinogenic Risk Characterization

Carcinogenic Risk = (95% UCL/Target Concentrations) x 10^{-6}

Where

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration[b]	Risk	Target Concentration	Risk	Target Concentration	Risk
Metals								
Beryllium	6.7E-01	U	2.5E+03	2.6E-10	*	*	*	*
Pathway Cumulative Risk				2.6E-10		*		*

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" Data not available.

Checked by: _____

Approved by: _____

Table A-8
Building 20
Human Noncarcinogenic Health Hazard Characterization

HQ = (95% UCL/Target Concentration)

Where

HQ = Noncarcinogenic Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Metals								
Beryllium	6.7E-01	U	8.0E+02	8.3E-04	8.2E+02	8.1E-04	4.0E+03	1.7E-04
Zinc	8.9E+01	U	1.0E+05	8.9E-04	9.2E+04	9.7E-04	1.0E+05	8.9E-04
Volatile Organic Compounds								
Toluene	1.1E-03	U	6.2E+04	1.8E-08	7.2E+04	1.5E-08	3.1E+03	3.5E-07
Cumulative Pathway Hazard Index				0.0017		0.0018		0.0011

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

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Approved by/Date: _____

Table A-9
Building 26
Estuarine Receptor Hazard Quotient
(Page 1 of 2)

HQ = (95% UCL/Target Concentration) x A/HR (if A/HR exceeds 1, value of 1 is used)

Where

HQ = Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

A = Area of Site, square feet (ft^2) = 10000

HR = Home Range, ft^2, if blank, home range assumed equal to area of site

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		High Marsh				Intertidal Marsh					
			Salt Marsh Harvest Mouse		Pickleweed		Estuarius (amphipod)		California Clapper Rail		Black Rail	
			Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)			15,000						505,000		215,000	
Petroleum Hydrocarbons												
TPH - Diesel range	2.5E+02	U	2.8E+04	6.0E-03	*	*	1.4E+02	1.8E+00	4.6E+03	1.1E-03	1.5E+03	7.8E-03
Volatile Organic Compounds												
Toluene	1.0E-03	U	2.5E+03	2.6E-07	2.0E+02	5.0E-06	5.7E-01	1.8E-03	*	*	*	*
Hazard Index				0.0060		0.0000050		1.8		0.0011		0.0078

Table A-9
Building 26
Estuarine Receptor Hazard Quotient
(Page 2 of 2)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Subtidal Marsh									
			Bay Shrimp		Salmonid		Northern Anchovy		Double-Crested Cormorant		Algae	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)					950,000		950,000		43,100,000			
Petroleum Hydrocarbons												
TPH - Diesel range	2.5E+02	U	8.1E+03	3.1E-02	8.1E+03	3.3E-04	2.4E+05	1.1E-05	3.1E+04	1.9E-06	8.1E+03	3.1E-02
Volatile Organic Compounds												
Toluene	1.0E-03	U	1.9E+00	5.3E-04	1.9E+00	5.5E-06	5.7E+01	1.8E-07	*	*	1.9E+00	5.3E-04
Hazard Index				0.032		0.00034		0.000011		0.0000019		0.032

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

Checked by/Date: _____

Approved by/Date: _____

Table A-10
Building 26
Human Noncarcinogenic Health Hazard Characterization

HQ = (95% UCL/Target Concentration)

Where

HQ = Noncarcinogenic Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient
Petroleum Hydrocarbons								
TPH - Diesel range	2.5E+02	U	1.0E+05	2.5E-03	1.0E+05	2.5E-03	*	*
Volatile Organic Compounds								
Toluene	1.0E-03	U	6.2E+04	1.6E-08	7.2E+04	1.4E-08	3.1E+03	3.2E-07
Cumulative Pathway Hazard Index				0.0025		0.0025		0.00000032

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

Checked by/Date: _____

Approved by/Date: _____

Table A-11
Building 35/39
Estuarine Receptor Hazard Quotient
(Page 1 of 4)

HQ = (95% UCL/Target Concentration) x A/HR (if A/HR exceeds 1, value of 1 is used)

Where

HQ = Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

A = Area of Site, square feet (ft^2) = 50000

HR = Home Range, ft^2, if blank, home range assumed equal to area of site

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		High Marsh				Intertidal Marsh					
			Salt Marsh Harvest Mouse		Pickleweed		Eohaustorius Estuarius (amphipod)		California Clapper Rail		Black Rail	
			Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)			15,000						505,000		215,000	
Metals												
Cadmium	1.2E+00	U	2.6E+01	4.5E-02	4.0E+00	2.9E-01	6.8E-01	1.7E+00	6.3E+00	1.8E-02	2.1E+00	1.3E-01
Chromium	1.0E+02	U	4.0E+04	2.5E-03	2.5E-02	4.0E+03	5.2E+01	1.9E+00	3.1E+01	3.2E-01	1.0E+01	2.3E+00
Zinc	8.6E+01	U	4.1E+02	2.1E-01	5.0E+01	1.7E+00	1.2E+02	6.9E-01	1.3E+02	6.7E-02	4.2E+01	4.8E-01
Pesticides and Herbicides												
Alpha-BHC	1.4E-03	U	2.2E+00	6.2E-04	*	*	6.0E-03	2.3E-01	2.3E+00	6.1E-05	7.6E-01	4.3E-04
Beta-BHC	1.3E-03	U	2.2E+00	5.8E-04	*	*	5.0E-03	2.6E-01	3.1E-01	4.2E-04	1.0E-01	3.0E-03
4,4'-DDD	2.0E-01	U	1.3E+02	1.5E-03	*	*	1.2E-03	1.7E+02	3.7E-03	5.4E+00	1.2E-03	3.8E+01
4,4'-DDE	6.0E-02	U	1.7E+02	3.6E-04	*	*	2.1E-03	2.9E+01	1.5E-03	3.9E+00	5.0E-04	2.8E+01
4,4'-DDT	4.1E-01	U	1.6E+02	2.6E-03	1.0E+01	4.1E-02	1.2E-03	3.4E+02	2.0E-02	2.0E+00	6.6E-03	1.4E+01
Endrin	8.9E-04	M	3.8E+00	2.3E-04	*	*	5.6E-02	1.6E-02	5.4E-04	1.6E-01	1.8E-04	1.2E+00
Gamma-Chlordane	4.9E-04	M	1.9E+02	2.6E-06	*	*	5.0E-04	9.8E-01	4.1E-01	1.2E-04	1.4E-01	8.4E-04
Heptachlor	1.7E-03	U	*	*	*	*	1.5E-01	1.1E-02	5.2E-03	3.2E-02	1.7E-03	2.3E-01
Heptachlor Epoxide	2.5E-04	M	8.6E+00	2.9E-05	*	*	8.8E-03	2.8E-02	7.6E-01	3.2E-05	2.5E-01	2.3E-04
Methoxychlor	1.1E-02	M	2.2E+03	5.1E-06	*	*	9.0E-02	1.2E-01	*	*	*	*

Table A-11
Building 35/39
Estuarine Receptor Hazard Quotient
(Page 2 of 4)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		High Marsh				Intertidal Marsh					
			Salt Marsh Harvest Mouse		Pickleweed		Eohaustorius Estuarius (amphipod)		California Clapper Rail		Black Rail	
			Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Petroleum Hydrocarbons												
TPH - Diesel range	5.4E+01	U	2.8E+04	1.9E-03	*	*	1.4E+02	3.8E-01	4.6E+03	1.2E-03	1.5E+03	8.3E-03
Semivolatile Organic Compounds												
2-Methylnaphthalene	6.3E-02	U	2.0E+03	3.2E-05	*	*	2.0E-02	3.1E+00	*	*	*	*
Anthracene	1.6E-02	U	4.9E+04	3.2E-07	*	*	4.7E-02	3.4E-01	*	*	*	*
Benzo(a)anthracene	6.9E-02	U	1.2E+02	5.9E-04	*	*	7.5E-02	9.2E-01	*	*	*	*
Benzo(a)pyrene	1.4E-01	U	1.5E+02	9.6E-04	1.0E-02	1.4E+01	8.9E-02	1.6E+00	*	*	*	*
Benzo(b)fluoranthene	8.2E-02	U	1.5E+02	5.4E-04	*	*	1.8E+00	4.6E-02	*	*	*	*
Benzo(g,h,i)perylene	1.7E-01	U	1.9E+02	8.9E-04	*	*	7.2E-01	2.4E-01	*	*	*	*
Benzo(k)fluoranthene	7.0E-02	U	1.8E+02	3.8E-04	*	*	1.8E+00	3.9E-02	*	*	*	*
Chrysene	9.2E-02	U	1.2E+02	7.9E-04	*	*	1.1E-01	8.6E-01	*	*	*	*
Dibenz(a,h)anthracene	4.3E-02	U	1.8E+02	2.4E-04	*	*	6.2E-03	6.8E+00	*	*	*	*
Fluoranthene	1.1E-01	U	9.6E+03	1.1E-05	*	*	1.1E-01	9.4E-01	*	*	*	*
Fluorene	2.0E-02	U	3.9E+03	5.0E-06	*	``	1.9E-02	1.0E+00	4.6E+03	4.3E-07	1.5E+03	3.1E-06
Indeno(1,2,3-cd)pyrene	7.5E-02	U	1.7E+02	4.3E-04	*	*	6.9E-01	1.1E-01	*	*	*	*
Phenanthrene	3.9E-02	U	4.9E+01	7.9E-04	*	*	8.7E-02	4.5E-01	*	*	*	*
Pyrene	1.1E-01	U	5.8E+03	2.0E-05	*	*	1.5E-01	7.5E-01	*	*	*	*
Hazard Index				0.27		4,058		560		12		85

Table A-11
Building 35/39
Estuarine Receptor Hazard Quotient
(Page 3 of 4)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Subtidal Marsh									
			Bay Shrimp		Salmonid		Northern Anchovy		Double-Crested Cormorant		Algae	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)					950,000		950,000		43,100,000			
Metals												
Cadmium	1.2E+00	U	5.6E+00	2.1E-01	5.6E+00	1.1E-02	1.7E+02	3.7E-04	8.0E+02	1.7E-06	5.6E+00	2.1E-01
Chromium	1.0E+02	U	6.5E+03	1.5E-02	6.5E+03	8.2E-04	2.0E+05	2.7E-05	1.1E+03	1.1E-04	6.5E+03	1.5E-02
Zinc	8.6E+01	U	3.8E+03	2.3E-02	3.8E+03	1.2E-03	1.1E+05	4.0E-05	1.4E+04	7.3E-06	3.8E+03	2.3E-02
Pesticides and Herbicides												
Alpha-BHC	1.4E-03	U	7.9E+02	1.8E-06	7.9E+02	9.4E-08	2.4E+04	3.1E-09	3.2E+00	5.1E-07	7.9E+02	1.8E-06
Beta-BHC	1.3E-03	U	*	*	*	*	*	*	3.2E+00	4.7E-07	*	*
4,4'-DDD	2.0E-01	U	2.5E+00	8.1E-02	2.5E+00	4.3E-03	7.5E+01	1.4E-04	1.3E-01	1.9E-03	2.5E+00	8.1E-02
4,4'-DDE	6.0E-02	U	6.1E+01	9.8E-04	6.1E+01	5.2E-05	1.8E+03	1.7E-06	1.4E-01	4.9E-04	6.1E+01	9.8E-04
4,4'-DDT	4.1E-01	U	2.6E-01	1.6E+00	2.6E-01	8.3E-02	7.7E+00	2.8E-03	3.9E-02	1.2E-02	2.6E-01	1.6E+00
Endrin	8.9E-04	M	2.1E-02	4.1E-02	2.1E-02	2.2E-03	6.4E-01	7.3E-05	1.0E-02	9.9E-05	2.1E-02	4.1E-02
Gamma-Chlordane	4.9E-04	M	1.2E-01	4.1E-03	1.2E-01	2.1E-04	3.6E+00	7.1E-06	2.8E-02	2.1E-05	1.2E-01	4.1E-03
Heptachlor	1.7E-03	U	1.2E-01	1.4E-02	1.2E-01	7.6E-04	1.5E-01	5.9E-04	1.0E-01	2.0E-05	1.2E-01	1.4E-02
Heptachlor Epoxide	2.5E-04	M	2.9E-02	8.5E-03	2.9E-02	4.5E-04	8.8E-01	1.5E-05	1.3E-02	2.2E-05	2.9E-02	8.5E-03
Methoxychlor	1.1E-02	M	3.0E-01	3.7E-02	3.0E-01	1.9E-03	9.0E+00	6.4E-05	*	*	3.0E-01	3.7E-02

Table A-11
Building 35/39
Estuarine Receptor Hazard Quotient
(Page 4 of 4)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Subtidal Marsh									
			Bay Shrimp		Salmonid		Northern Anchovy		Double-Crested Cormorant		Algae	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Petroleum Hydrocarbons												
TPH - Diesel range	5.4E+01	U	8.1E+03	6.7E-03	8.1E+03	3.5E-04	2.4E+05	1.2E-05	3.1E+04	2.1E-06	8.1E+03	6.7E-03
Semivolatile Organic Compounds												
2-Methylnaphthalene	6.3E-02	U	*	*	*	*	*	*	*	*	*	*
Anthracene	1.6E-02	U	*	*	*	*	*	*	*	*	*	*
Benzo(a)anthracene	6.9E-02	U	*	*	*	*	*	*	*	*	*	*
Benzo(a)pyrene	1.4E-01	U	*	*	*	*	*	*	*	*	*	*
Benzo(b)fluoranthene	8.2E-02	U	*	*	*	*	*	*	*	*	*	*
Benzo(g,h,i)perylene	1.7E-01	U	*	*	*	*	*	*	*	*	*	*
Benzo(k)fluoranthene	7.0E-02	U	*	*	*	*	*	*	*	*	*	*
Chrysene	9.2E-02	U	*	*	*	*	*	*	*	*	*	*
Dibenz(a,h)anthracene	4.3E-02	U	*	*	*	*	*	*	*	*	*	*
Fluoranthene	1.1E-01	U	1.8E+01	6.0E-03	1.8E+01	3.2E-04	5.3E+02	1.1E-05	*	*	1.8E+01	6.0E-03
Fluorene	2.0E-02	U	*	*	*	*	*	*	3.1E+03	7.4E-09	*	*
Indeno(1,2,3-cd)pyrene	7.5E-02	U	*	*	*	*	*	*	*	*	*	*
Phenanthrene	3.9E-02	U	*	*	*	*	*	*	*	*	*	*
Pyrene	1.1E-01	U	*	*	*	*	*	*	*	*	*	*
Hazard Index				2.0		0.11		0.0041		0.015		2.0

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

Checked by/Date: _____

Approved by/Date: _____

Table A-12
Building 35/39
Human Carcinogenic Risk Characterization
(Page 1 of 2)

Carcinogenic Risk = (95% UCL/Target Concentrations) x 10^{-6}

Where

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration[b]	Risk	Target Concentration	Risk	Target Concentration	Risk
Metals								
Cadmium	1.2E+00	U	1.4E+03	8.2E-10	*	*	*	*
Pesticides								
Alpha-BHC	1.4E-03	U	4.5E-01	3.1E-09	4.5E-01	3.1E-09	3.5E-02	4.0E-08
Beta-BHC	1.3E-03	U	1.6E+00	8.2E-10	1.6E+00	8.3E-10	1.2E-01	1.0E-08
4,4'-DDD	2.0E-01	U	1.2E+01	1.6E-08	1.2E+01	1.6E-08	1.4E+01	1.4E-08
4,4'-DDE	6.0E-02	U	8.7E+00	6.9E-09	8.7E+00	6.9E-09	5.6E-01	1.1E-07
4,4'-DDT	4.1E-01	U	8.7E+00	4.6E-08	8.7E+00	4.7E-08	3.3E+00	1.2E-07
Gamma-Chlordane	4.9E-04	M	2.4E+00	2.1E-10	2.4E+00	2.1E-10	1.8E-03	2.8E-07
Heptachlor	1.7E-03	U	1.7E-01	9.9E-09	1.7E-01	9.9E-09	3.0E-03	5.6E-07
Heptachlor epoxide	2.5E-04	M	1.7E-01	1.4E-09	1.7E-01	1.5E-09	3.0E-03	8.3E-08

Table A-12
Building 35/39
Human Carcinogenic Risk Characterization
(Page 2 of 2)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration[b]	Risk	Target Concentration	Risk	Target Concentration	Risk
Semivolatile Organic Compounds								
2,4,6-Trichlorophenol	1.0E+01	M	3.2E+01	3.1E-07	3.2E+01	3.1E-07	4.8E+01	2.1E-07
Benzo(a)anthracene	7.5E-02	U	1.7E+00	4.4E-08	1.7E+00	4.4E-08	2.9E+01	2.6E-09
Benzo(a)pyrene	1.4E-01	U	1.7E-01	8.4E-07	1.7E-01	8.4E-07	5.8E+00	2.4E-08
Benzo(b)fluoranthene	8.2E-02	U	1.7E+00	4.9E-08	1.7E+00	4.9E-08	7.0E+01	1.2E-09
Benzo(k)fluoranthene	7.0E-02	U	1.7E+00	4.1E-08	1.7E+00	4.1E-08	5.7E+01	1.2E-09
Chrysene	1.5E-01	U	1.7E+01	8.9E-09	1.7E+01	8.9E-09	4.7E+03	3.2E-11
Dibenz(a,h)anthracene	4.3E-02	U	4.9E-01	8.6E-08	4.9E-01	8.6E-08	6.5E+01	6.6E-10
Indeno(1,2,3-cd)pyrene	7.5E-02	U	1.7E+00	4.5E-08	1.7E+00	4.5E-08	2.0E+02	3.8E-10
Pathway Cumulative Risk				1.5E-06		1.5E-06		1.5E-06

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" Data not available.

Checked by: _____

Approved by: _____

Table A-13
Building 35/39
Human Noncarcinogenic Health Hazard Characterization
(Page 1 of 2)

HQ = (95% UCL/Target Concentration)

Where

HQ = Noncarcinogenic Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient
Metals								
Cadmium	1.2E+00	U	2.1E+02	5.5E-03	2.1E+02	5.6E-03	2.2E+02	5.3E-03
Chromium	1.0E+02	U	1.0E+05	1.0E-03	1.0E+05	1.0E-03	1.0E+05	1.0E-03
Zinc	8.6E+01	U	1.0E+05	8.6E-04	9.2E+04	9.4E-04	1.0E+05	8.6E-04
Pesticides and Herbicides								
4,4'-DDT	4.1E-01	U	1.9E+02	2.1E-03	1.9E+02	2.1E-03	2.4E+02	1.7E-03
alpha-BHC	1.4E-03	U	1.1E+02	1.2E-05	1.1E+02	1.2E-05	2.9E+01	4.9E-05
beta-BHC	1.3E-03	U	1.1E+02	1.1E-05	1.1E+02	1.1E-05	2.9E+01	4.5E-05
Endrin	8.9E-04	M	9.9E+01	9.0E-06	9.9E+01	9.0E-06	1.3E+00	6.6E-04
Gamma-chlordane	4.9E-04	M	1.9E+02	2.6E-06	1.9E+02	2.6E-06	4.6E-01	1.1E-03
Heptachlor	1.7E-03	U	4.3E+00	4.0E-04	4.3E+00	4.0E-04	2.2E-01	7.8E-03
Heptachlor epoxide	2.5E-04	M	4.3E+00	5.8E-05	4.3E+00	5.8E-05	2.2E-01	1.1E-03
Methoxychlor	1.1E-02	M	1.6E+03	6.7E-06	1.6E+03	6.7E-06	2.0E+02	5.6E-05
Petroleum Hydrocarbons								
TPH - Diesel range	5.4E+01	U	1.0E+05	5.4E-04	1.0E+05	5.4E-04	*	*
Semivolatile Organic Compounds								
2-Methylnaphthalene	6.3E-02	U	6.1E+03	1.0E-05	6.1E+03	1.0E-05	2.8E+03	2.3E-05
Anthracene	1.6E-02	U	8.5E+04	1.9E-07	7.8E+04	2.0E-07	1.0E+05	1.6E-07
Benzo(g,h,i)perylene	1.7E-01	U	9.2E+03	1.9E-05	9.1E+03	1.9E-05	1.0E+05	1.7E-06
Fluoranthene	2.5E-01	U	1.2E+04	2.0E-05	1.2E+04	2.1E-05	7.7E+04	3.2E-06

Table A-13
Building 35/39
Human Noncarcinogenic Health Hazard Characterization
(Page 2 of 2)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient
Fluorene	2.0E-02	U	1.2E+04	1.6E-06	1.2E+04	1.6E-06	1.8E+04	1.1E-06
Phenanthrene	3.3E+00	U	9.8E+03	3.4E-04	1.2E+04	2.7E-04	1.0E+05	3.3E-05
Pyrene	1.3E-01	U	9.2E+03	1.4E-05	1.2E+04	1.0E-05	4.6E+04	2.8E-06
Volatile Organic Compounds								
Toluene	1.1E-01	U	6.2E+04	1.8E-06	7.2E+04	1.6E-06	3.1E+03	3.6E-05
Cumulative Pathway Hazard Index				0.011		0.011		0.020

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".
[b] "*" data not available

Checked by/Date: _____
Approved by/Date: _____

Table A-14
Building 41
Estuarine Receptor Hazard Quotient
(Page 1 of 2)

HQ = (95% UCL/Target Concentration) x A/HR (if A/HR exceeds 1, value of 1 is used)

Where

HQ = Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

A = Area of Site, square feet (ft^2) = 15000

HR = Home Range, ft^2, if blank, home range assumed equal to area of site

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		High Marsh				Intertidal Marsh					
			Salt Marsh Harvest Mouse		Pickleweed		Estuarius (amphipod)		California Clapper Rail		Black Rail	
			Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)			15,000						505,000		215,000	
Petroleum Hydrocarbons												
TPH - Diesel range	4.0E+02	U	2.8E+04	1.4E-02	*	*	1.4E+02	2.8E+00	4.6E+03	2.6E-03	1.5E+03	1.8E-02
Semivolatile Organic Compounds												
2-Methylnaphthalene	4.4E-01	U	2.0E+03	2.2E-04	*	*	2.0E-02	2.2E+01	*	*	*	*
Acenaphthene	8.5E-01	U	3.9E+03	2.2E-04	6.3E-01	1.4E+00	6.7E-03	1.3E+02	6.7E+03	3.7E-06	2.2E+03	2.6E-05
Benzo(a)pyrene	4.9E-02	U	1.5E+02	3.4E-04	1.0E-02	4.9E+00	8.9E-02	5.6E-01	*	*	*	*
Chrysene	3.1E-02	U	1.2E+02	2.6E-04	*	*	1.1E-01	2.9E-01	*	*	*	*
Fluoranthene	6.8E-01	U	9.6E+03	7.1E-05	*	*	1.1E-01	6.0E+00	*	*	*	*
Fluorene	6.9E-01	U	3.9E+03	1.7E-04	*	*	1.9E-02	3.6E+01	4.6E+03	4.5E-06	1.5E+03	3.2E-05
Naphthalene	4.7E+00	U	7.9E+02	6.0E-03	2.5E+00	1.9E+00	3.5E-02	1.4E+02	*	*	*	*
Phenanthrene	2.3E+00	U	4.9E+01	4.6E-02	*	*	8.7E-02	2.6E+01	*	*	*	*
Pyrene	4.5E-01	U	5.8E+03	7.9E-05	*	*	1.5E-01	3.0E+00	*	*	*	*
Volatile Organic Compounds												
Toluene	7.3E-02	U	2.5E+03	2.9E-05	2.0E+02	3.7E-04	5.7E-01	1.3E-01	*	*	*	*
Hazard Index				0.068		8.2		360		0.0026		0.019

Table A-14
Building 41
Estuarine Receptor Hazard Quotient
(Page 2 of 2)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Subtidal Marsh									
			Bay Shrimp		Salmonid		Northern Anchovy		Double-Crested Cormorant		Algae	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)					950,000		950,000		43,100,000			
Petroleum Hydrocarbons												
TPH - Diesel range	4.0E+02	U	8.1E+03	5.0E-02	8.1E+03	7.8E-04	2.4E+05	2.6E-05	3.1E+04	4.6E-06	8.1E+03	5.0E-02
Semivolatile Organic Compounds												
2-Methylnaphthalene	4.4E-01	U	*	*	*	*	*	*	*	*	*	*
Acenaphthene	8.5E-01	U	6.9E+00	1.2E-01	6.9E+00	2.0E-03	2.1E+02	6.5E-05	3.6E+03	8.3E-08	6.9E+00	1.2E-01
Benzo(a)pyrene	4.9E-02	U	*	*	*	*	*	*	*	*	*	*
Chrysene	3.1E-02	U	*	*	*	*	*	*	*	*	*	*
Fluoranthene	6.8E-01	U	1.8E+01	3.9E-02	1.8E+01	6.1E-04	5.3E+02	2.0E-05	*	*	1.8E+01	3.9E-02
Fluorene	6.9E-01	U	*	*	*	*	*	*	3.1E+03	7.6E-08	*	*
Naphthalene	4.7E+00	U	4.7E+00	1.0E+00	4.7E+00	1.6E-02	1.4E+02	5.3E-04	*	*	4.7E+00	1.0E+00
Phenanthrene	2.3E+00	U	*	*	*	*	*	*	*	*	*	*
Pyrene	4.5E-01	U	*	*	*	*	*	*	*	*	*	*
Volatile Organic Compounds												
Toluene	7.3E-02	U	1.9E+00	3.9E-02	1.9E+00	6.1E-04	5.7E+01	2.0E-05	*	*	1.9E+00	3.9E-02
Hazard Index				1.3		0.020		0.00066		0.0000047		1.3

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

Checked by/Date: _____

Approved by/Date: _____

Table A-15
Building 41
Human Carcinogenic Risk Characterization

Carcinogenic Risk = (95% UCL/Target Concentrations) x 10^{-6}

Where

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration[b]	Risk	Target Concentration	Risk	Target Concentration	Risk
Semivolatile Organic Compounds								
Benzo(a)pyrene	4.9E-02	U	1.7E-01	2.9E-07	1.7E-01	2.9E-07	5.8E+00	8.5E-09
Chrysene	3.1E-02	U	1.7E+01	1.8E-09	1.7E+01	1.8E-09	4.7E+03	6.5E-12
Pathway Cumulative Risk				2.9E-07		2.9E-07		8.5E-09

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" Data not available.

Checked by: _____

Approved by: _____

Table A-16
Building 41
Human Noncarcinogenic Health Hazard Characterization

HQ = (95% UCL/Target Concentration)

Where

HQ = Noncarcinogenic Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient
Petroleum Hydrocarbons								
TPH - Diesel range	4.0E+02	U	1.0E+05	4.0E-03	1.0E+05	4.0E-03	*	*
Semivolatile Organic Compounds								
2-Methylnaphthalene	4.4E-01	U	6.1E+03	7.1E-05	6.1E+03	7.2E-05	2.8E+03	1.6E-04
Acenaphthene	8.5E-01	U	1.8E+04	4.7E-05	1.8E+04	4.8E-05	3.0E+04	2.8E-05
Fluoranthene	6.8E-01	U	1.2E+04	5.6E-05	1.2E+04	5.6E-05	7.7E+04	8.9E-06
Fluorene	6.9E-01	U	1.2E+04	5.6E-05	1.2E+04	5.7E-05	1.8E+04	3.9E-05
Naphthalene	4.7E+00	U	6.1E+03	7.7E-04	8.3E+03	5.7E-04	1.6E+04	3.0E-04
Phenanthrene	2.3E+00	U	9.8E+03	2.3E-04	1.2E+04	1.8E-04	1.0E+05	2.3E-05
Pyrene	4.5E-01	U	9.2E+03	4.9E-05	1.2E+04	3.7E-05	4.6E+04	9.9E-06
Volatile Organic Compounds								
Toluene	7.3E-02	U	6.2E+04	1.2E-06	7.2E+04	1.0E-06	3.1E+03	2.3E-05
Cumulative Pathway Hazard Index				0.0053		0.0050		0.00059

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

Checked by/Date: _____

Approved by/Date: _____

Table A-17
Building 82/87/92/94
Estuarine Receptor Hazard Quotient
(Page 1 of 2)

HQ = (95% UCL/Target Concentration) x A/HR (if A/HR exceeds 1, value of 1 is used)

Where

HQ = Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

A = Area of Site, square feet (ft^2) = 230000

HR = Home Range, ft^2, if blank, home range assumed equal to area of site

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		High Marsh				Intertidal Marsh					
			Salt Marsh Harvest Mouse		Pickleweed		Estuarius (amphipod)		California Clapper Rail		Black Rail	
			Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)			15,000						505,000		215,000	
Metals												
Barium	2.5E+02	U	8.8E+01	2.8E+00	5.0E+02	4.9E-01	1.4E+00	1.8E+02	4.3E+02	2.6E-01	1.4E+02	1.7E+00
Beryllium	1.3E+00	U	9.9E+02	1.3E-03	1.0E+01	1.3E-01	3.6E-01	3.7E+00	*	*	*	*
Boron	3.0E+01	U	9.6E+00	3.1E+00	5.0E-01	6.0E+01	*	*	8.6E+01	1.6E-01	2.9E+01	1.0E+00
Chromium	7.7E+01	U	4.0E+04	1.9E-03	2.5E-02	3.1E+03	5.2E+01	1.5E+00	3.1E+01	1.1E+00	1.0E+01	7.5E+00
Zinc	6.9E+01	U	4.1E+02	1.7E-01	5.0E+01	1.4E+00	1.2E+02	5.6E-01	1.3E+02	2.5E-01	4.2E+01	1.7E+00
Petroleum Hydrocarbons												
TPH - Diesel range	1.1E+01	U	2.8E+04	4.1E-04	*	*	1.4E+02	7.9E-02	4.6E+03	1.1E-03	1.5E+03	7.5E-03
TPH - Gasoline range	7.5E-01	U	9.5E+03	7.9E-05	*	*	1.2E+01	6.2E-02	*	*	*	*
Polychlorinated Biphenyl Compounds, Dioxins, and Furans												
Aroclor-1260	1.4E-02	U	*	*	4.0E+01	3.4E-04	2.2E-02	6.4E-01	9.0E-02	7.0E-02	3.0E-02	4.6E-01
Hazard Index				6.1		3,156		187		1.9		12

Table A-17
Building 82/87/92/94
Estuarine Receptor Hazard Quotient
(Page 2 of 2)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Subtidal Marsh									
			Bay Shrimp		Salmonid		Northern Anchovy		Double-Crested Cormorant		Algae	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)					950,000		950,000		43,100,000			
Metals												
Barium	2.5E+02	U	5.8E+03	4.2E-02	5.8E+03	1.0E-02	1.8E+05	3.4E-04	4.3E+04	3.1E-05	3.1E+02	8.0E-01
Beryllium	1.3E+00	U	*	*	1.3E+01	2.5E-02	3.9E+02	8.3E-04	*	*	*	*
Boron	3.0E+01	U	5.0E+01	5.9E-01	1.5E+04	4.8E-04	1.5E+04	4.8E-04	5.9E+03	2.7E-05	*	*
Chromium	7.7E+01	U	6.5E+03	1.2E-02	6.5E+03	2.9E-03	2.0E+05	9.6E-05	1.1E+03	3.9E-04	6.5E+03	1.2E-02
Zinc	6.9E+01	U	3.8E+03	1.8E-02	3.8E+03	4.4E-03	1.1E+05	1.5E-04	1.4E+04	2.7E-05	3.8E+03	1.8E-02
Petroleum Hydrocarbons												
TPH - Diesel range	1.1E+01	U	8.1E+03	1.4E-03	8.1E+03	3.4E-04	2.4E+05	1.1E-05	3.1E+04	2.0E-06	8.1E+03	1.4E-03
TPH - Gasoline range	7.5E-01	U	4.4E+02	1.7E-03	4.4E+02	4.1E-04	1.3E+04	1.4E-05	*	*	4.4E+02	1.7E-03
Polychlorinated Biphenyl Compounds, Dioxins, and Furans												
Aroclor-1260	1.4E-02	U	4.5E+00	3.0E-03	4.5E+00	7.3E-04	1.4E+02	2.4E-05	*	*	4.5E+00	3.0E-03
Hazard Index				0.67		0.044		0.0019		0.00048		0.84

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

Checked by/Date: _____

Approved by/Date: _____

Table A-18
Building 82/87/92/94
Freshwater Receptor Hazard Quotient

HQ = (95% UCL/Target Concentration) x A/HR (if A/HR exceeds 1, value of 1 is used)

Where

HQ = Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

A = Area of Site, square feet (ft^2) = 230,000

HR = Home Range, ft^2, if blank, home range assumed equal to area of site

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Snipe		Algae		Sediment Invertebrate		Mosquitofish		Great Blue Heron	
			Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)			970,000						700,000		43,100,000	
Metals												
Barium	2.5E+02	U	1.1E+03	5.1E-02	1.4E+00	1.8E+02	6.7E+01	3.7E+00	1.4E+00	5.9E+01	4.9E+04	2.7E-05
Beryllium	1.3E+00	U	*	*	3.7E-02	3.6E+01	3.6E-01	3.7E+00	3.7E-02	1.2E+01	*	*
Boron	3.0E+01	U	1.6E+02	4.4E-02	*	*	1.9E+00	1.6E+01	*	*	7.1E+03	2.3E-05
Chromium	7.7E+01	U	2.8E+01	6.4E-01	1.4E+03	5.5E-02	3.6E+01	2.1E+00	1.4E+03	1.8E-02	1.3E+03	3.3E-04
Zinc	6.9E+01	U	3.7E+02	4.4E-02	1.7E+03	4.1E-02	9.8E+02	7.1E-02	1.7E+03	1.4E-02	9.9E+03	3.7E-05
Petroleum Hydrocarbons												
TPH - Diesel range	1.1E+01	U	2.7E+03	9.9E-04	2.4E+03	4.7E-03	1.4E+02	7.9E-02	2.4E+03	1.6E-03	6.9E+03	8.8E-06
TPH - Gasoline range	7.5E-01	U	*	*	1.3E+02	5.7E-03	1.2E+01	6.2E-02	1.3E+02	1.9E-03	*	*
Polychlorinated Biphenyl Compounds, Dioxins, and Furans												
Aroclor-1260	1.4E-02	U	3.5E-02	9.3E-02	6.4E-01	2.2E-02	3.2E-02	4.3E-01	6.4E-01	7.1E-03	3.1E-03	2.4E-02
Hazard Index				0.88		217		26		71		0.024

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

Checked by/Date: _____

Approved by/Date: _____

Table A-19
Building 82/87/92/94
Human Carcinogenic Risk Characterization

Carcinogenic Risk = (95% UCL/Target Concentrations) x 10^{-6}

Where

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration[b]	Risk	Target Concentration	Risk	Target Concentration	Risk
Metals								
Beryllium	1.3E+00	U	2.5E+03	5.3E-10	*	*	*	*
Polychlorinated Biphenyl Compounds, Dioxins, and Furans								
Aroclor-1260	1.4E-02	U	9.8E-01	1.4E-08	9.8E-01	1.4E-08	4.4E-04	3.1E-05
Pathway Cumulative Risk				1.4E-08		1.4E-08		3.1E-05

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" Data not available.

Checked by: _____

Approved by: _____

Table A-20
Building 82/87/92/94
Human Noncarcinogenic Health Hazard Characterization

HQ = (95% UCL/Target Concentration)

Where

HQ = Noncarcinogenic Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient
Metals								
Barium	2.5E+02	U	2.8E+04	9.0E-03	2.7E+04	9.1E-03	*	*
Beryllium	1.3E+00	U	8.0E+02	1.7E-03	8.2E+02	1.6E-03	4.0E+03	3.4E-04
Boron	3.0E+01	U	3.5E+04	8.5E-04	3.7E+04	8.2E-04	*	*
Chromium	7.7E+01	U	1.0E+05	7.7E-04	1.0E+05	7.7E-04	1.0E+05	7.7E-04
Zinc	6.9E+01	U	1.0E+05	6.9E-04	9.2E+04	7.6E-04	1.0E+05	6.9E-04
Petroleum Hydrocarbons								
TPH - Diesel range	1.1E+01	U	1.0E+05	1.1E-04	1.0E+05	1.1E-04	*	*
TPH - Gasoline range	7.5E-01	U	1.0E+05	7.5E-06	1.0E+05	7.5E-06	*	*
Polychlorinated Biphenyl Compounds, Dioxins, and Furans								
Aroclor-1260	1.4E-02	U	6.1E+00	2.3E-03	6.1E+00	2.3E-03	7.6E-03	1.8E+00
Cumulative Pathway Hazard Index				0.015		0.015		1.8

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

Checked by/Date: _____

Approved by/Date: _____

Table A-21
Building 84/90
Estuarine Receptor Hazard Quotient
(Page 1 of 2)

HQ = (95% UCL/Target Concentration) x A/HR (if A/HR exceeds 1, value of 1 is used)

Where

HQ = Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

A = Area of Site, square feet (ft^2) = 120000

HR = Home Range, ft^2, if blank, home range assumed equal to area of site

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		High Marsh				Intertidal Marsh					
			Salt Marsh Harvest Mouse		Pickleweed		Estuarius (amphipod)		California Clapper Rail		Black Rail	
			Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)			15,000						505,000		215,000	
Metals												
Cadmium	5.9E-01	U	2.6E+01	2.3E-02	4.0E+00	1.5E-01	6.8E-01	8.8E-01	6.3E+00	2.2E-02	2.1E+00	1.6E-01
Selenium	3.5E-01	U	2.8E+01	1.2E-02	1.0E+00	3.5E-01	2.2E-02	1.6E+01	7.0E-01	1.2E-01	2.3E-01	8.4E-01
Tin	1.0E+00	U	2.2E+03	4.6E-04	5.0E+02	2.0E-03	1.2E+02	8.2E-03	7.9E+01	3.1E-03	2.6E+01	2.2E-02
Zinc	9.1E+01	U	4.1E+02	2.2E-01	5.0E+01	1.8E+00	1.2E+02	7.3E-01	1.3E+02	1.7E-01	4.2E+01	1.2E+00
Petroleum Hydrocarbons												
TPH - Diesel range	1.5E+01	U	2.8E+04	5.5E-04	*	*	1.4E+02	1.1E-01	4.6E+03	8.0E-04	1.5E+03	5.6E-03
Polychlorinated Biphenyl Compounds, Dioxins, and Furans												
Aroclor-1260	1.6E-02	U	*	*	4.0E+01	4.0E-04	2.2E-02	7.5E-01	9.0E-02	4.3E-02	3.0E-02	3.0E-01
Semivolatile Organic Compounds												
Benzo(a)anthracene	3.6E-02	U	1.2E+02	3.0E-04	*	*	7.5E-02	4.8E-01	*	*	*	*
Benzo(a)pyrene	3.5E-02	U	1.5E+02	2.4E-04	1.0E-02	3.5E+00	8.9E-02	4.0E-01	*	*	*	*
Benzo(b)fluoranthene	1.1E-01	U	1.5E+02	7.1E-04	*	*	1.8E+00	6.0E-02	*	*	*	*
Chrysene	3.8E-02	U	1.2E+02	3.2E-04	*	*	1.1E-01	3.5E-01	*	*	*	*
Fluoranthene	6.3E-02	U	9.6E+03	6.5E-06	*	*	1.1E-01	5.5E-01	*	*	*	*
Indeno(1,2,3-cd)pyrene	3.3E-02	U	1.7E+02	1.9E-04	*	*	6.9E-01	4.8E-02	*	*	*	*
Phenanthrene	4.6E-02	U	4.9E+01	9.5E-04	*	*	8.7E-02	5.3E-01	*	*	*	*
Pyrene	6.3E-02	U	5.8E+03	1.1E-05	*	*	1.5E-01	4.1E-01	*	*	*	*
Hazard Index				0.26		5.8		21		0.36		2.5

Table A-21
Building 84/90
Estuarine Receptor Hazard Quotient
(Page 2 of 2)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Subtidal Marsh									
			Bay Shrimp		Salmonid		Northern Anchovy		Double-Crested Cormorant		Algae	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)					950,000		950,000		43,100,000			
Metals												
Cadmium	5.9E-01	U	5.6E+00	1.1E-01	5.6E+00	1.3E-02	1.7E+02	4.5E-04	8.0E+02	2.1E-06	5.6E+00	1.1E-01
Selenium	3.5E-01	U	1.0E+00	3.4E-01	1.0E+00	4.3E-02	3.1E+01	1.4E-03	4.1E+00	2.4E-04	1.0E+00	3.4E-01
Tin	1.0E+00	U	*	*	8.8E+01	1.5E-03	2.7E+03	4.9E-05	1.5E+03	1.9E-06	*	*
Zinc	9.1E+01	U	3.8E+03	2.4E-02	3.8E+03	3.0E-03	1.1E+05	1.0E-04	1.4E+04	1.9E-05	3.8E+03	2.4E-02
Petroleum Hydrocarbons												
TPH - Diesel range	1.5E+01	U	8.1E+03	1.9E-03	8.1E+03	2.4E-04	2.4E+05	8.0E-06	3.1E+04	1.4E-06	8.1E+03	1.9E-03
Polychlorinated Biphenyl Compounds, Dioxins, and Furans												
Aroclor-1260	1.6E-02	U	4.5E+00	3.5E-03	4.5E+00	4.5E-04	1.4E+02	1.5E-05	*	*	4.5E+00	3.5E-03
Semivolatile Organic Compounds												
Benzo(a)anthracene	3.6E-02	U	*	*	*	*	*	*	*	*	*	*
Benzo(a)pyrene	3.5E-02	U	*	*	*	*	*	*	*	*	*	*
Benzo(b)fluoranthene	1.1E-01	U	*	*	*	*	*	*	*	*	*	*
Chrysene	3.8E-02	U	*	*	*	*	*	*	*	*	*	*
Fluoranthene	6.3E-02	U	1.8E+01	3.6E-03	1.8E+01	4.5E-04	5.3E+02	1.5E-05	*	*	1.8E+01	3.6E-03
Indeno(1,2,3-cd)pyrene	3.3E-02	U	*	*	*	*	*	*	*	*	*	*
Phenanthrene	4.6E-02	U	*	*	*	*	*	*	*	*	*	*
Pyrene	6.3E-02	U	*	*	*	*	*	*	*	*	*	*
Hazard Index				0.48		0.062		0.0021		0.00026		0.48

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

Checked by/Date: _____

Approved by/Date: _____

Table A-22
Building 84/90
Human Carcinogenic Risk Characterization

Carcinogenic Risk = (95% UCL/Target Concentrations) x 10^{-6}

Where

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration[b]	Risk	Target Concentration	Risk	Target Concentration	Risk
Metals								
Cadmium	5.9E-01	U	1.4E+03	4.2E-10	*	*	*	*
Polychlorinated Biphenyl Compounds, Dioxins, and Furans								
Aroclor-1260	1.6E-02	U	9.8E-01	1.6E-08	9.8E-01	1.6E-08	4.4E-04	3.6E-05
Semivolatile Organic Compounds								
Benzo(a)anthracene	3.6E-02	U	1.7E+00	2.1E-08	1.7E+00	2.1E-08	2.9E+01	1.2E-09
Benzo(a)pyrene	3.5E-02	U	1.7E-01	2.1E-07	1.7E-01	2.1E-07	5.8E+00	6.1E-09
Benzo(b)fluoranthene	1.1E-01	U	1.7E+00	6.4E-08	1.7E+00	6.4E-08	7.0E+01	1.5E-09
Chrysene	3.8E-02	U	1.7E+01	2.2E-09	1.7E+01	2.2E-09	4.7E+03	8.0E-12
Indeno(1,2,3-cd)pyrene	3.3E-02	U	1.7E+00	2.0E-08	1.7E+00	2.0E-08	2.0E+02	1.7E-10
Pathway Cumulative Risk				3.3E-07		3.3E-07		3.6E-05

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" Data not available.

Checked by/Date: _____

Approved by/Date: _____

Table A-23
Building 84/90
Human Noncarcinogenic Health Hazard Characterization

HQ = (95% UCL/Target Concentration)

Where

HQ = Noncarcinogenic Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient
Metals								
Cadmium	5.9E-01	U	2.1E+02	2.8E-03	2.1E+02	2.8E-03	2.2E+02	2.7E-03
Selenium	3.5E-01	U	2.0E+03	1.7E-04	2.0E+03	1.7E-04	1.0E+03	3.4E-04
Tin	1.0E+00	U	1.0E+05	1.0E-05	1.0E+05	1.0E-05	1.0E+05	1.0E-05
Zinc	9.1E+01	U	1.0E+05	9.1E-04	9.2E+04	9.9E-04	1.0E+05	9.1E-04
Petroleum Hydrocarbons								
TPH - Diesel range	1.5E+01	U	1.0E+05	1.5E-04	1.0E+05	1.5E-04	*	*
Polychlorinated Biphenyl Compounds, Dioxins, and Furans								
Aroclor-1260	1.6E-02	U	6.1E+00	2.7E-03	6.1E+00	2.7E-03	7.6E-03	2.1E+00
Semivolatile Organic Compounds								
Fluoranthene	6.3E-02	U	1.2E+04	5.1E-06	1.2E+04	5.2E-06	7.7E+04	8.2E-07
Phenanthrene	4.6E-02	U	9.8E+03	4.7E-06	1.2E+04	3.8E-06	1.0E+05	4.6E-07
Pyrene	6.3E-02	U	9.2E+03	6.8E-06	1.2E+04	5.1E-06	4.6E+04	1.4E-06
Cumulative Pathway Hazard Index				0.0067		0.0068		2.1

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

Checked by/Date: _____

Approved by/Date: _____

Table A-24
Building 86
Estuarine Receptor Hazard Quotient
(Page 1 of 4)

HQ = (95% UCL/Target Concentration) x A/HR (if A/HR exceeds 1, value of 1 is used)

Where

HQ = Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

A = Area of Site, square feet (ft^2) = 530000

HR = Home Range, ft^2, if blank, home range assumed equal to area of site

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		High Marsh				Intertidal Marsh					
			Salt Marsh Harvest Mouse		Pickleweed		Estuarius (amphipod)		California Clapper Rail		Black Rail	
			Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)			15,000						505,000		215,000	
Metals												
Barium	1.5E+02	U	8.8E+01	1.7E+00	5.0E+02	3.0E-01	1.4E+00	1.1E+02	4.3E+02	3.5E-01	1.4E+02	1.1E+00
Beryllium	1.1E+00	U	9.9E+02	1.1E-03	1.0E+01	1.1E-01	3.6E-01	3.0E+00	*	*	*	*
Boron	2.8E+01	U	9.6E+00	3.0E+00	5.0E-01	5.7E+01	*	*	8.6E+01	3.3E-01	2.9E+01	9.9E-01
Cadmium	4.3E+00	U	2.6E+01	1.7E-01	4.0E+00	1.1E+00	6.8E-01	6.3E+00	6.3E+00	6.8E-01	2.1E+00	2.1E+00
Chromium	1.1E+02	U	4.0E+04	2.8E-03	2.5E-02	4.6E+03	5.2E+01	2.2E+00	3.1E+01	3.7E+00	1.0E+01	1.1E+01
Cobalt	1.8E+01	U	1.6E+01	1.1E+00	2.0E+01	9.0E-01	2.0E+01	9.1E-01	*	*	*	*
Copper	4.0E+01	U	4.2E+00	9.5E+00	1.0E+02	4.0E-01	1.9E+01	2.1E+00	1.8E+01	2.3E+00	5.8E+00	6.9E+00
Lead	4.6E+01	U	2.0E+03	2.3E-02	5.0E+01	9.2E-01	3.0E+01	1.5E+00	6.8E+00	6.8E+00	2.3E+00	2.0E+01
Manganese	5.5E+02	U	2.9E+02	1.9E+00	5.0E+02	1.1E+00	4.6E-01	1.2E+03	1.2E+04	4.4E-02	4.1E+03	1.3E-01
Nickel	9.0E+01	U	3.8E+01	2.4E+00	3.0E+01	3.0E+00	1.6E+01	5.7E+00	4.6E+02	2.0E-01	1.5E+02	6.0E-01
Silver	6.1E-01	U	4.5E+02	1.4E-03	2.0E+00	3.1E-01	7.3E-01	8.3E-01	1.2E+03	5.0E-04	4.1E+02	1.5E-03
Tin	2.8E+00	U	2.2E+03	1.2E-03	5.0E+02	5.5E-03	1.2E+02	2.2E-02	7.9E+01	3.5E-02	2.6E+01	1.1E-01
Zinc	9.8E+01	U	4.1E+02	2.4E-01	5.0E+01	2.0E+00	1.2E+02	7.9E-01	1.3E+02	7.7E-01	4.2E+01	2.3E+00
Petroleum Hydrocarbons												
TPH - Diesel range	1.6E+02	U	2.8E+04	5.9E-03	*	*	1.4E+02	1.1E+00	4.6E+03	3.6E-02	1.5E+03	1.1E-01
TPH - Gasoline range	1.7E+01	U	9.5E+03	1.8E-03	*	*	1.2E+01	1.4E+00	*	*	*	*
Semivolatile Organic Compounds												
2-Methylnaphthalene	2.6E-02	U	2.0E+03	1.3E-05	*	*	2.0E-02	1.3E+00	*	*	*	*
Acenaphthene	1.2E-01	U	3.9E+03	3.2E-05	6.3E-01	2.0E-01	6.7E-03	1.9E+01	6.7E+03	1.8E-05	2.2E+03	5.6E-05

Table A-24
Building 86
Estuarine Receptor Hazard Quotient
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Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		High Marsh				Intertidal Marsh					
			Salt Marsh Harvest Mouse		Pickleweed		Estuarius (amphipod)		California Clapper Rail		Black Rail	
			Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Semivolatile Organic Compounds (continued)												
Anthracene	3.0E-01	U	4.9E+04	6.2E-06	*	*	4.7E-02	6.5E+00	*	*	*	*
Benzo(a)anthracene	2.2E+00	U	1.2E+02	1.9E-02	*	*	7.5E-02	3.0E+01	*	*	*	*
Benzo(a)pyrene	1.9E+00	U	1.5E+02	1.3E-02	1.0E-02	1.9E+02	8.9E-02	2.1E+01	*	*	*	*
Benzo(b)fluoranthene	3.0E+00	U	1.5E+02	1.9E-02	*	*	1.8E+00	1.6E+00	*	*	*	*
Chrysene	1.7E+00	U	1.2E+02	1.5E-02	*	*	1.1E-01	1.6E+01	*	*	*	*
Fluoranthene	2.0E+00	U	9.6E+03	2.1E-04	*	*	1.1E-01	1.8E+01	*	*	*	*
Phenanthrene	8.0E-01	U	4.9E+01	1.6E-02	*	*	8.7E-02	9.2E+00	*	*	*	*
Pyrene	2.5E+00	U	5.8E+03	4.3E-04	*	*	1.5E-01	1.6E+01	*	*	*	*
Volatile Organic Compounds												
Chloroform	1.4E-01	U	7.5E+01	1.8E-03	*	*	1.9E+00	7.3E-02	*	*	*	*
Methylene chloride	8.6E-01	U	2.0E+02	4.2E-03	*	*	1.3E+00	6.6E-01	*	*	*	*
Toluene	2.6E-02	U	2.5E+03	1.0E-05	2.0E+02	1.3E-04	5.7E-01	4.5E-02	*	*	*	*
Hazard Index				20		4,830		1,472		15		46

Table A-24
Building 86
Estuarine Receptor Hazard Quotient
(Page 3 of 4)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Subtidal Marsh									
			Bay Shrimp		Salmonid		Northern Anchovy		Double-Crested Cormorant		Algae	
			Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)					950,000		950,000		43,100,000			
Metals												
Barium	1.5E+02	U	5.8E+03	2.6E-02	5.8E+03	1.5E-02	1.8E+05	4.8E-04	4.3E+04	4.4E-05	3.1E+02	4.9E-01
Beryllium	1.1E+00	U	*	*	1.3E+01	4.5E-02	3.9E+02	1.5E-03	*	*	*	*
Boron	2.8E+01	U	5.0E+01	5.6E-01	1.5E+04	1.1E-03	1.5E+04	1.1E-03	5.9E+03	5.9E-05	*	*
Cadmium	4.3E+00	U	5.6E+00	7.7E-01	5.6E+00	4.3E-01	1.7E+02	1.4E-02	8.0E+02	6.5E-05	5.6E+00	7.7E-01
Chromium	1.1E+02	U	6.5E+03	1.8E-02	6.5E+03	9.8E-03	2.0E+05	3.3E-04	1.1E+03	1.3E-03	6.5E+03	1.8E-02
Cobalt	1.8E+01	U	1.8E+03	1.0E-02	2.0E+04	5.0E-04	6.0E+05	1.7E-05	*	*	7.4E+01	2.4E-01
Copper	4.0E+01	U	7.6E+01	5.2E-01	7.6E+01	2.9E-01	2.3E+03	9.8E-03	2.8E+03	1.8E-04	7.6E+01	5.2E-01
Lead	4.6E+01	U	2.3E+03	2.0E-02	2.3E+03	1.1E-02	6.9E+04	3.7E-04	3.1E+02	1.9E-03	2.3E+03	2.0E-02
Manganese	5.5E+02	U	7.3E+04	7.6E-03	2.0E+04	1.5E-02	6.1E+05	5.0E-04	1.3E+06	5.0E-06	5.5E+02	1.0E+00
Nickel	9.0E+01	U	2.5E+02	3.6E-01	2.5E+02	2.0E-01	7.6E+03	6.6E-03	1.9E+04	5.7E-05	2.5E+02	3.6E-01
Silver	6.1E-01	U	1.6E-01	3.7E+00	1.6E-01	2.1E+00	4.9E+00	6.9E-02	2.5E+04	3.1E-07	1.6E-01	3.7E+00
Tin	2.8E+00	U	*	*	8.8E+01	1.7E-02	2.7E+03	5.8E-04	1.5E+03	2.3E-05	*	*
Zinc	9.8E+01	U	3.8E+03	2.6E-02	3.8E+03	1.4E-02	1.1E+05	4.8E-04	1.4E+04	8.8E-05	3.8E+03	2.6E-02
Petroleum Hydrocarbons												
TPH - Diesel range	1.6E+02	U	8.1E+03	2.0E-02	8.1E+03	1.1E-02	2.4E+05	3.8E-04	3.1E+04	6.6E-05	8.1E+03	2.0E-02
TPH - Gasoline range	1.7E+01	U	4.4E+02	3.9E-02	4.4E+02	2.2E-02	1.3E+04	7.2E-04	*	*	4.4E+02	3.9E-02
Semivolatile Organic Compounds												
2-Methylnaphthalene	2.6E-02	U	*	*	*	*	*	*	*	*	*	*
Acenaphthene	1.2E-01	U	6.9E+00	1.8E-02	6.9E+00	1.0E-02	2.1E+02	3.4E-04	3.6E+03	4.3E-07	6.9E+00	1.8E-02
Anthracene	3.0E-01	U	*	*	*	*	*	*	*	*	*	*
Benzo(a)anthracene	2.2E+00	U	*	*	*	*	*	*	*	*	*	*
Benzo(a)pyrene	1.9E+00	U	*	*	*	*	*	*	*	*	*	*
Benzo(b)fluoranthene	3.0E+00	U	*	*	*	*	*	*	*	*	*	*
Chrysene	1.7E+00	U	*	*	*	*	*	*	*	*	*	*
Fluoranthene	2.0E+00	U	1.8E+01	1.2E-01	1.8E+01	6.5E-02	5.3E+02	2.2E-03	*	*	1.8E+01	1.2E-01
Phenanthrene	8.0E-01	U	*	*	*	*	*	*	*	*	*	*
Pyrene	2.5E+00	U	*	*	*	*	*	*	*	*	*	*

Table A-24
Building 86
Estuarine Receptor Hazard Quotient
(Page 4 of 4)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Subtidal Marsh									
			Bay Shrimp		Salmonid		Northern Anchovy		Double-Crested Cormorant		Algae	
			Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Volatile Organic Compounds												
Chloroform	1.4E-01	U	6.3E+00	2.2E-02	6.3E+00	1.2E-02	1.9E+02	4.0E-04	*	*	6.3E+00	2.2E-02
Methylene chloride	8.6E-01	U	4.3E+00	2.0E-01	4.3E+00	1.1E-01	1.3E+02	3.7E-03	*	*	4.3E+00	2.0E-01
Toluene	2.6E-02	U	1.9E+00	1.4E-02	1.9E+00	7.6E-03	5.7E+01	2.5E-04	*	*	1.9E+00	1.4E-02
Hazard Index				6.5		3.4		0.11		0.0038		7.6

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

Checked by/Date: _____

Approved by/Date: _____

Table A-25
Building 86
Human Carcinogenic Risk Characterization

Carcinogenic Risk = (95% UCL/Target Concentrations) x 10^{-6}

Where

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration[b]	Risk	Target Concentration	Risk	Target Concentration	Risk
Metals								
Beryllium	1.1E+00	U	2.5E+03	4.2E-10	*	*	*	*
Cadmium	4.3E+00	U	1.4E+03	3.0E-09	*	*	*	*
Nickel	9.0E+01	U	2.3E+04	3.9E-09	*	*	*	*
Semivolatile Organic Compounds								
Benzo(a)anthracene	2.2E+00	U	1.7E+00	1.3E-06	1.7E+00	1.3E-06	2.9E+01	7.6E-08
Benzo(a)pyrene	1.9E+00	U	1.7E-01	1.1E-05	1.7E-01	1.1E-05	5.8E+00	3.2E-07
Benzo(b)fluoranthene	3.0E+00	U	1.7E+00	1.7E-06	1.7E+00	1.7E-06	7.0E+01	4.2E-08
Chrysene	1.7E+00	U	1.7E+01	1.0E-07	1.7E+01	1.0E-07	4.7E+03	3.7E-10
Volatile Organic Compounds								
Chloroform	1.4E-01	U	7.2E+01	1.9E-09	7.2E+01	1.9E-09	4.4E+01	3.1E-09
Methylene Chloride	8.6E-01	U	1.6E+02	5.4E-09	1.6E+02	5.4E-09	5.3E+01	1.6E-08
Pathway Cumulative Risk				1.4E-05		1.4E-05		4.6E-07

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" Data not available.

Checked by/Date: _____

Approved by/Date: _____

Table A-26
Building 86
Human Noncarcinogenic Health Hazard Characterization
(Page 1 of 2)

HQ = (95% UCL/Target Concentration)

Where

HQ = Noncarcinogenic Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient
Metals								
Barium	1.5E+02	U	2.8E+04	5.5E-03	2.7E+04	5.6E-03	*	*
Beryllium	1.1E+00	U	8.0E+02	1.3E-03	8.2E+02	1.3E-03	4.0E+03	2.7E-04
Boron	2.8E+01	U	3.5E+04	8.0E-04	3.7E+04	7.7E-04	*	*
Cadmium	4.3E+00	U	2.1E+02	2.0E-02	2.1E+02	2.0E-02	2.2E+02	2.0E-02
Chromium	1.1E+02	U	1.0E+05	1.1E-03	1.0E+05	1.1E-03	1.0E+05	1.1E-03
Cobalt	1.8E+01	U	2.5E+04	7.3E-04	2.3E+04	7.7E-04	1.0E+05	1.8E-04
Copper	4.0E+01	U	1.5E+04	2.6E-03	1.5E+04	2.7E-03	1.8E+04	2.3E-03
Lead	4.6E+01	U	6.6E+02	6.9E-02	6.6E+02	6.9E-02	*	*
Manganese	5.5E+02	U	8.6E+03	6.4E-02	9.7E+03	5.7E-02	2.4E+04	2.3E-02
Nickel	9.0E+01	U	8.2E+03	1.1E-02	8.1E+03	1.1E-02	1.0E+05	9.0E-04
Silver	6.1E-01	U	2.0E+03	3.0E-04	2.0E+03	3.0E-04	4.4E+03	1.4E-04
Tin	2.8E+00	U	1.0E+05	2.8E-05	1.0E+05	2.8E-05	1.0E+05	2.8E-05
Zinc	9.8E+01	U	1.0E+05	9.8E-04	9.2E+04	1.1E-03	1.0E+05	9.8E-04

Table A-26
Building 86
Human Noncarcinogenic Health Hazard Characterization
(Page 2 of 2)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient
Petroleum Hydrocarbons								
TPH - Diesel range	1.6E+02	U	1.0E+05	1.6E-03	1.0E+05	1.6E-03	*	*
TPH - Gasoline range	1.7E+01	U	1.0E+05	1.7E-04	1.0E+05	1.7E-04	*	*
Semivolatile Organic Compounds								
2-Methylnaphthalene	2.6E-02	U	6.1E+03	4.3E-06	6.1E+03	4.3E-06	2.8E+03	9.6E-06
Acenaphthene	1.2E-01	U	1.8E+04	6.9E-06	1.8E+04	7.0E-06	3.0E+04	4.1E-06
Anthracene	3.0E-01	U	8.5E+04	3.6E-06	7.8E+04	3.9E-06	1.0E+05	3.0E-06
Fluoranthene	2.0E+00	U	1.2E+04	1.7E-04	1.2E+04	1.7E-04	7.7E+04	2.7E-05
Phenanthrene	8.0E-01	U	9.8E+03	8.2E-05	1.2E+04	6.5E-05	1.0E+05	8.0E-06
Pyrene	2.5E+00	U	9.2E+03	2.7E-04	1.2E+04	2.0E-04	4.6E+04	5.4E-05
Volatile Organic Compounds								
Chloroform	1.4E-01	U	3.3E+03	4.2E-05	3.3E+03	4.2E-05	5.9E+03	2.3E-05
Methylene chloride	8.6E-01	U	1.9E+04	4.4E-05	1.9E+04	4.5E-05	1.9E+04	4.5E-05
Toluene	2.6E-02	U	6.2E+04	4.2E-07	7.2E+04	3.6E-07	3.1E+03	8.2E-06
Cumulative Pathway Hazard Index[c]				0.18		0.17		0.049

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".
[b] "*" data not available
[c] Lead is a special case metal (i.e., the target concentration was calculated using the California Department of Toxic Substances Control LEADSPREAD model), however for calculation of the cumulative pathway hazard index, lead is assumed to be a non-carcinogen.

Checked by/Date: _____
Approved by/Date: _____

Table A-27
Perimeter Drainage Ditch Unlined Section
Estuarine Receptor Hazard Quotient
(Page 1 of 4)

HQ = (95% UCL/Target Concentration) x A/HR (if A/HR exceeds 1, value of 1 is used)

Where

HQ = Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

A = Area of Site, square feet (ft^2) = 72000

HR = Home Range, ft^2, if blank, home range assumed equal to area of site

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		High Marsh				Intertidal Marsh					
			Salt Marsh Harvest Mouse		Pickleweed		Eohaustorius Estuarius (amphipod)		California Clapper Rail		Black Rail	
			Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)			15,000						505,000		215,000	
Metals												
Beryllium	1.6E+00	U	9.9E+02	1.6E-03	1.0E+01	1.6E-01	3.6E-01	4.4E+00	*	*	*	*
Cadmium	2.0E+00	U	2.6E+01	7.8E-02	4.0E+00	5.0E-01	6.8E-01	3.0E+00	6.3E+00	4.6E-02	2.1E+00	3.2E-01
Copper	3.7E+01	U	4.2E+00	8.7E+00	1.0E+02	3.7E-01	1.9E+01	2.0E+00	1.8E+01	3.0E-01	5.8E+00	2.1E+00
Nickel	9.6E+01	U	3.8E+01	2.5E+00	3.0E+01	3.2E+00	1.6E+01	6.0E+00	4.6E+02	3.0E-02	1.5E+02	2.1E-01
Selenium	1.1E+00	U	2.8E+01	4.0E-02	1.0E+00	1.1E+00	2.2E-02	5.3E+01	7.0E-01	2.3E-01	2.3E-01	1.6E+00
Zinc	1.0E+02	U	4.1E+02	2.5E-01	5.0E+01	2.0E+00	1.2E+02	8.2E-01	1.3E+02	1.2E-01	4.2E+01	8.2E-01
Pesticides and Herbicides												
4,4'-DDD	1.0E+00	U	1.3E+02	7.6E-03	*	*	1.2E-03	8.2E+02	3.7E-03	3.8E+01	1.2E-03	2.7E+02
4,4'-DDE	1.4E-01	U	1.7E+02	8.6E-04	*	*	2.1E-03	6.9E+01	1.5E-03	1.3E+01	5.0E-04	9.5E+01
4,4'-DDT	8.0E-01	U	1.6E+02	5.1E-03	1.0E+01	8.0E-02	1.2E-03	6.8E+02	2.0E-02	5.7E+00	6.6E-03	4.1E+01
Dieldrin	1.9E-02	M	1.4E+00	1.4E-02	1.0E+01	1.9E-03	2.0E-05	9.5E+02	2.6E-02	1.1E-01	8.5E-03	7.4E-01
Petroleum Hydrocarbons												
TPH - Diesel range	2.3E+02	U	2.8E+04	8.4E-03	*	*	1.4E+02	1.6E+00	4.6E+03	7.3E-03	1.5E+03	5.2E-02
Polychlorinated Biphenyl Compounds, Dioxins, and Furans												
1,2,3,4,6,7,8-HeptaCDD	5.2E-08	M	2.4E-02	2.2E-06	*	*	*	*	4.8E-01	1.6E-08	1.6E-01	1.1E-07
OctaCDD	8.6E-08	M	2.4E+00	3.5E-08	*	*	*	*	6.8E+00	1.8E-09	2.3E+00	1.3E-08
OctaCDF	2.6E-08	M	2.5E+00	1.1E-08	*	*	*	*	6.2E+00	6.0E-10	2.1E+00	4.2E-09

Table A-27
Perimeter Drainage Ditch Unlined Section
Estuarine Receptor Hazard Quotient
(Page 2 of 4)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		High Marsh				Intertidal Marsh					
			Salt Marsh Harvest Mouse		Pickleweed		Eohaustorius Estuarius (amphipod)		California Clapper Rail		Black Rail	
			Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Total TCDD TEQ[c]				2.2E-06						1.8E-08		1.3E-07
Semivolatile Organic Compounds												
Benzo(b)fluoranthene	2.5E-01	M	1.5E+02	1.6E-03	*	*	1.8E+00	1.4E-01	*	*	*	*
Chrysene	2.3E-01	M	1.2E+02	2.0E-03	*	*	1.1E-01	2.1E+00	*	*	*	*
Fluoranthene	1.5E-01	M	9.6E+03	1.6E-05	*	*	1.1E-01	1.3E+00	*	*	*	*
Pyrene	1.9E-01	M	5.8E+03	3.3E-05	*	*	1.5E-01	1.2E+00	*	*	*	*
Hazard Index				12		7.5		2,593		58		415

Table A-27
Perimeter Drainage Ditch Unlined Section
Estuarine Receptor Hazard Quotient
(Page 3 of 4)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Subtidal Marsh									
			Bay Shrimp		Salmonid		Northern Anchovy		Double-Crested Cormorant		Algae	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)					950,000		950,000		43,100,000			
Metals												
Beryllium	1.6E+00	U	*	*	1.3E+01	9.2E-03	3.9E+02	3.1E-04	*	*	*	*
Cadmium	2.0E+00	U	5.6E+00	3.6E-01	5.6E+00	2.7E-02	1.7E+02	9.1E-04	8.0E+02	4.2E-06	5.6E+00	3.6E-01
Copper	3.7E+01	U	7.6E+01	4.8E-01	7.6E+01	3.6E-02	2.3E+03	1.2E-03	2.8E+03	2.2E-05	7.6E+01	4.8E-01
Nickel	9.6E+01	U	2.5E+02	3.8E-01	2.5E+02	2.9E-02	7.6E+03	9.5E-04	1.9E+04	8.2E-06	2.5E+02	3.8E-01
Selenium	1.1E+00	U	1.0E+00	1.1E+00	1.0E+00	8.5E-02	3.1E+01	2.8E-03	4.1E+00	4.7E-04	1.0E+00	1.1E+00
Zinc	1.0E+02	U	3.8E+03	2.7E-02	3.8E+03	2.0E-03	1.1E+05	6.8E-05	1.4E+04	1.3E-05	3.8E+03	2.7E-02
Pesticides and Herbicides												
4,4'-DDD	1.0E+00	U	2.5E+00	4.0E-01	2.5E+00	3.0E-02	7.5E+01	1.0E-03	1.3E-01	1.3E-02	2.5E+00	4.0E-01
4,4'-DDE	1.4E-01	U	6.1E+01	2.3E-03	6.1E+01	1.8E-04	1.8E+03	5.9E-06	1.4E-01	1.7E-03	6.1E+01	2.3E-03
4,4'-DDT	8.0E-01	U	2.6E-01	3.1E+00	2.6E-01	2.4E-01	7.7E+00	7.9E-03	3.9E-02	3.5E-02	2.6E-01	3.1E+00
Dieldrin	1.9E-02	M	3.6E-02	5.2E-01	3.6E-02	4.0E-02	1.1E+00	1.3E-03	1.6E-02	2.0E-03	3.6E-02	5.2E-01
Petroleum Hydrocarbons												
TPH - Diesel range	2.3E+02	U	8.1E+03	2.9E-02	8.1E+03	2.2E-03	2.4E+05	7.3E-05	3.1E+04	1.3E-05	8.1E+03	2.9E-02
Polychlorinated Biphenyl Compounds, Dioxins, and Furans												
1,2,3,4,6,7,8-HeptaCDD	5.2E-08	M	*	*	*	*	*	*	1.4E+01	6.1E-12	*	*
OctaCDD	8.6E-08	M	*	*	*	*	*	*	1.5E+02	9.3E-13	*	*
OctaCDF	2.6E-08	M	*	*	*	*	*	*	1.5E+02	2.8E-13	*	*
Total TCDD TEQ[c]										7.3E-12		

Table A-27
Perimeter Drainage Ditch Unlined Section
Estuarine Receptor Hazard Quotient
(Page 4 of 4)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Subtidal Marsh									
			Bay Shrimp		Salmonid		Northern Anchovy		Double-Crested Cormorant		Algae	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Semivolatile Organic Compounds												
Benzo(b)fluoranthene	2.5E-01	M	*	*	*	*	*	*	*	*	*	*
Chrysene	2.3E-01	M	*	*	*	*	*	*	*	*	*	*
Fluoranthene	1.5E-01	M	1.8E+01	8.6E-03	1.8E+01	6.5E-04	5.3E+02	2.2E-05	*	*	1.8E+01	8.6E-03
Pyrene	1.9E-01	M	*	*	*	*	*	*	*	*	*	*
Hazard Index				6.5		0.50		0.017		0.052		6.5

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

[c] TEQ = toxicity equivalency; this row represents a summation of the hazard quotient of the dioxin congeners, this value is not included in the hazard index.

Checked by/Date: _____

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Table A-28
Perimeter Drainage Ditch Unlined Section
Freshwater Receptor Hazard Quotient
(Page 1 of 2)

HQ = (95% UCL/Target Concentration) x A/HR (if A/HR exceeds 1, value of 1 is used)

Where

HQ = Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

A = Area of Site, square feet (ft^2) = 72,000

HR = Home Range, ft^2, if blank, home range assumed equal to area of site

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Snipe		Algae		Sediment Invertebrate		Mosquitofish		Great Blue Heron	
			Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)			970,000						700,000		43,100,000	
Metals												
Beryllium	1.3E+00	U	*	*	3.7E-02	3.4E+01	3.6E-01	3.6E+00	3.7E-02	3.5E+00	*	*
Cadmium	5.8E-01	U	4.0E+01	1.1E-03	4.0E-01	1.5E+00	5.8E-01	1.0E+00	4.0E-01	1.5E-01	3.1E+01	3.2E-05
Copper	3.7E+01	U	7.5E+01	3.7E-02	6.7E+01	5.6E-01	2.8E+01	1.3E+00	6.7E+01	5.7E-02	3.3E+03	1.9E-05
Nickel	9.7E+01	U	5.2E+02	1.4E-02	4.8E+02	2.0E-01	1.8E+01	5.4E+00	4.8E+02	2.1E-02	2.3E+04	7.0E-06
Selenium	3.9E-01	U	1.3E+00	2.3E-02	2.2E-02	1.8E+01	2.2E-02	1.8E+01	2.2E-02	1.9E+00	4.3E-01	1.5E-03
Zinc	1.0E+02	U	3.7E+02	2.0E-02	1.7E+03	6.1E-02	9.8E+02	1.0E-01	1.7E+03	6.2E-03	9.9E+03	1.7E-05
Pesticides and Herbicides												
4,4'-DDD	5.2E-01	U	2.4E-03	1.6E+01	1.9E-01	2.7E+00	3.5E-03	1.5E+02	1.9E-01	2.8E-01	4.6E-03	1.9E-01
4,4'-DDE	9.2E-02	U	2.9E-03	2.4E+00	1.4E+03	6.7E-05	1.4E-03	6.5E+01	1.4E+03	6.9E-06	4.7E-03	3.2E-02
4,4'-DDT	6.2E-01	U	7.2E-03	6.4E+00	7.7E-02	8.0E+00	7.0E-03	8.8E+01	7.7E-02	8.2E-01	2.2E-03	4.7E-01
Dieldrin	7.9E-03	U	1.7E-02	3.5E-02	3.2E-01	2.5E-02	2.0E-03	4.0E+00	3.2E-01	2.5E-03	1.5E-02	8.7E-04
Petroleum Hydrocarbons												
TPH - Diesel range	5.8E+01	U	2.7E+03	1.6E-03	2.4E+03	2.4E-02	1.4E+02	4.0E-01	2.4E+03	2.5E-03	6.9E+03	1.4E-05
Polychlorinated Biphenyl Compounds, Dioxins, and Furans												
1,2,3,4,6,7,8-Hepta	2.8E-08	U	2.8E-01	7.5E-09	*	*	*	*	*	*	1.8E+01	2.6E-12
OctaCDD	4.4E-07	U	3.8E+00	8.6E-09	*	*	*	*	*	*	1.8E+02	4.0E-12
OctaCDF	1.6E-08	U	3.5E+00	3.4E-10	*	*	*	*	*	*	1.8E+02	1.4E-13
Total TCDD TEQ[c]				1.6E-08								6.7E-12

Table A-28
Perimeter Drainage Ditch Unlined Section
Freshwater Receptor Hazard Quotient
(Page 2 of 2)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Snipe		Algae		Sediment Invertebrate		Mosquitofish		Great Blue Heron	
			Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Semivolatile Organic Compounds												
Benzo(b)fluoranthe	4.6E-02	U	*	*	*	*	3.2E-02	1.4E+00	*	*	*	*
Chrysene	4.3E-02	U	*	*	*	*	2.7E-02	1.6E+00	*	*	*	*
Fluoranthene	3.6E-02	U	*	*	1.3E+02	2.7E-04	3.1E-02	1.1E+00	1.3E+02	2.8E-05	*	*
Pyrene	4.0E-02	U	*	*	*	*	4.4E-02	8.9E-01	*	*	*	*
Hazard Index				25		66		337		6.7		0.69

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

[c] TEQ = toxicity equivalency; this row represents a summation of the hazard quotient of the dioxin congeners, this value is not included in the hazard index.

Checked by/Date: _____

Approved by/Date: _____

Table A-29
Perimeter Drainage Ditch Unlined Section
Human Carcinogenic Risk Characterization

Carcinogenic Risk = (95% UCL/Target Concentrations) x 10^{-6}

Where

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration[b]	Risk	Target Concentration	Risk	Target Concentration	Risk
Metals								
Beryllium	1.6E+00	U	2.5E+03	6.3E-10	*	*	*	*
Cadmium	2.0E+00	U	1.4E+03	1.4E-09	*	*	*	*
Nickel	9.6E+01	U	2.3E+04	4.1E-09	*	*	*	*
Pesticides								
4,4'-DDD	1.0E+00	U	1.2E+01	8.1E-08	1.2E+01	8.1E-08	1.4E+01	6.9E-08
4,4'-DDE	1.4E-01	U	8.7E+00	1.6E-08	8.7E+00	1.6E-08	5.6E-01	2.5E-07
4,4'-DDT	8.0E-01	U	8.7E+00	9.2E-08	8.7E+00	9.2E-08	3.3E+00	2.4E-07
Dieldrin	1.9E-02	M	1.4E-01	1.4E-07	1.4E-01	1.4E-07	6.4E-04	3.0E-05
Polychlorinated Biphenyl Compounds, Dioxins, and Furans								
1,2,3,4,6,7,8-Hepta	5.2E-08	M	2.0E-03	2.6E-11	2.0E-03	2.6E-11	4.6E-01	1.1E-13
OctaCDD	8.6E-08	M	2.0E-02	4.3E-12	2.0E-02	4.4E-12	5.8E+01	1.5E-15
OctaCDF	2.6E-08	M	2.0E-02	1.3E-12	2.0E-02	1.3E-12	4.6E+01	5.7E-16
Semivolatile Organic Compounds								
Benzo(b)fluoranthe	2.5E-01	M	1.7E+00	1.5E-07	1.7E+00	1.5E-07	7.0E+01	3.6E-09
Chrysene	2.3E-01	M	1.7E+01	1.4E-08	1.7E+01	1.4E-08	4.7E+03	4.9E-11
Pathway Cumulative Risk				4.9E-07		4.9E-07		3.0E-05

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" Data not available.

Checked by/Date: _____

Approved by/Date: _____

Table A-30
Perimeter Drainage Ditch Unlined Section
Human Noncarcinogenic Health Hazard Characterization

HQ = (95% UCL/Target Concentration)

Where

HQ = Noncarcinogenic Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient
Metals								
Beryllium	1.6E+00	U	8.0E+02	2.0E-03	8.2E+02	1.9E-03	4.0E+03	4.0E-04
Cadmium	2.0E+00	U	2.1E+02	9.6E-03	2.1E+02	9.6E-03	2.2E+02	9.2E-03
Copper	3.7E+01	U	1.5E+04	2.4E-03	1.5E+04	2.5E-03	1.8E+04	2.1E-03
Nickel	9.6E+01	U	8.2E+03	1.2E-02	8.1E+03	1.2E-02	1.0E+05	9.6E-04
Selenium	1.1E+00	U	2.0E+03	5.5E-04	2.0E+03	5.6E-04	1.0E+03	1.1E-03
Zinc	1.0E+02	U	1.0E+05	1.0E-03	9.2E+04	1.1E-03	1.0E+05	1.0E-03
Pesticides and Herbicides								
4,4'-DDT	8.0E-01	U	1.9E+02	4.1E-03	1.9E+02	4.1E-03	2.4E+02	3.4E-03
Dieldrin	1.9E-02	M	1.6E+01	1.2E-03	1.6E+01	1.2E-03	2.2E-01	8.7E-02
Petroleum Hydrocarbons								
TPH - Diesel rang	2.3E+02	U	1.0E+05	2.3E-03	1.0E+05	2.3E-03	*	*
Semivolatile Organic Compounds								
Fluoranthene	1.5E-01	M	1.2E+04	1.2E-05	1.2E+04	1.2E-05	7.7E+04	2.0E-06
Pyrene	1.9E-01	M	9.2E+03	2.1E-05	1.2E+04	1.5E-05	4.6E+04	4.1E-06
Cumulative Pathway Hazard Index				0.035		0.035		0.10

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

Checked by/Date: _____

Approved by/Date: _____

Table A-31
Perimeter Drainage Ditch Spoils Pile A
Estuarine Receptor Hazard Quotient
(Page 1 of 2)

HQ = (95% UCL/Target Concentration) x A/HR (if A/HR exceeds 1, value of 1 is used)

Where

HQ = Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

A = Area of Site, square feet (ft^2) = 240

HR = Home Range, ft^2, if blank, home range assumed equal to area of site

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		High Marsh				Intertidal Marsh					
			Salt Marsh Harvest Mouse		Pickleweed		Estuarius (amphipod)		California Clapper Rail		Black Rail	
			Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)			15,000						505,000		215,000	
Metals												
Beryllium	1.9E+00	M	9.9E+02	3.1E-05	1.0E+01	1.9E-01	3.6E-01	5.3E+00	*	*	*	*
Zinc	1.6E+02	M	4.1E+02	6.4E-03	5.0E+01	3.3E+00	1.2E+02	1.3E+00	1.3E+02	6.2E-04	4.2E+01	4.4E-03
Pesticides and Herbicides												
4,4'-DDE	3.3E-02	M	1.7E+02	3.2E-06	*	*	2.1E-03	1.6E+01	1.5E-03	1.0E-02	5.0E-04	7.4E-02
4,4'-DDT	2.5E-01	M	1.6E+02	2.6E-05	1.0E+01	2.5E-02	1.2E-03	2.1E+02	2.0E-02	5.9E-03	6.6E-03	4.2E-02
Petroleum Hydrocarbons												
TPH - Diesel range	2.6E+01	M	2.8E+04	1.5E-05	*	*	1.4E+02	1.8E-01	4.6E+03	2.7E-06	1.5E+03	1.9E-05
Hazard Index				0.0064		3.5		233		0.017		0.12

Table A-31
Perimeter Drainage Ditch Spoils Pile A
Estuarine Receptor Hazard Quotient
(Page 2 of 2)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Subtidal Marsh									
			Bay Shrimp		Salmonid		Northern Anchovy		Double-Crested Cormorant		Algae	
			Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)					950,000		950,000		43,100,000			
Metals												
Beryllium	1.9E+00	M	*	*	1.3E+01	3.7E-05	3.9E+02	1.2E-06	*	*	*	*
Zinc	1.6E+02	M	3.8E+03	4.3E-02	3.8E+03	1.1E-05	1.1E+05	3.7E-07	1.4E+04	6.7E-08	3.8E+03	4.3E-02
Pesticides and Herbicides												
4,4'-DDE	3.3E-02	M	6.1E+01	5.4E-04	6.1E+01	1.4E-07	1.8E+03	4.5E-09	1.4E-01	1.3E-06	6.1E+01	5.4E-04
4,4'-DDT	2.5E-01	M	2.6E-01	9.7E-01	2.6E-01	2.5E-04	7.7E+00	8.2E-06	3.9E-02	3.6E-05	2.6E-01	9.7E-01
Petroleum Hydrocarbons												
TPH - Diesel range	2.6E+01	M	8.1E+03	3.2E-03	8.1E+03	8.2E-07	2.4E+05	2.7E-08	3.1E+04	4.7E-09	8.1E+03	3.2E-03
Hazard Index				1.0		0.00029		0.0000098		0.000038		1.0

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

Checked by/Date: _____

Approved by/Date: _____

Table A-32
Perimeter Drainage Ditch Spoils Pile A
Freshwater Receptor Hazard Quotient

HQ = (95% UCL/Target Concentration) x A/HR (if A/HR exceeds 1, value of 1 is used)

Where

HQ = Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

A = Area of Site, square feet (ft^2) = 240

HR = Home Range, ft^2, if blank, home range assumed equal to area of site

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Snipe		Algae		Sediment Invertebrate		Mosquitofish		Great Blue Heron	
			Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)			970,000						700,000		43,100,000	
Metals												
Beryllium	1.9E+00	M	*	*	3.7E-02	5.1E+01	3.6E-01	5.3E+00	3.7E-02	1.8E-02	*	*
Zinc	1.6E+02	M	3.7E+02	1.1E-04	1.7E+03	9.8E-02	9.8E+02	1.7E-01	1.7E+03	3.3E-05	9.9E+03	9.2E-08
Pesticides and Herbicides												
4,4'-DDE	3.3E-02	M	2.9E-03	2.8E-03	1.4E+03	2.4E-05	1.4E-03	2.3E+01	1.4E+03	8.2E-09	4.7E-03	3.9E-05
4,4'-DDT	2.5E-01	M	7.2E-03	8.6E-03	7.7E-02	3.2E+00	7.0E-03	3.6E+01	7.7E-02	1.1E-03	2.2E-03	6.4E-04
Petroleum Hydrocarbons												
TPH - Diesel range	2.6E+01	M	2.7E+03	2.4E-06	2.4E+03	1.1E-02	1.4E+02	1.8E-01	2.4E+03	3.7E-06	6.9E+03	2.1E-08
Hazard Index				0.012		55		65		0.019		0.00068

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

Checked by/Date: _____

Approved by/Date: _____

Table A-33
Perimeter Drainage Ditch Spoils Pile A
Human Carcinogenic Risk Characterization

Carcinogenic Risk = (95% UCL/Target Concentrations) x 10^{-6}

Where

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg),

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration	Risk	Target Concentration[b]	Risk	Target Concentration	Risk
Metals								
Beryllium	1.9E+00	M	2.5E+03	7.5E-10	*	*	*	*
Pesticides								
4,4'-DDE	3.3E-02	M	8.7E+00	3.8E-09	8.7E+00	3.8E-09	5.6E-01	5.9E-08
4,4'-DDT	2.5E-01	M	8.7E+00	2.9E-08	8.7E+00	2.9E-08	3.3E+00	7.6E-08
Pathway Cumulative Risk				3.3E-08		3.2E-08		1.3E-07

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M". Checked by/Date: _____

[b] "*" Data not available. Approved by/Date: _____

Table A-34
Perimeter Drainage Ditch Spoils Pile A
Human Noncarcinogenic Health Hazard Characterization

HQ = (95% UCL/Target Concentration)

Where

HQ = Noncarcinogenic Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient
Metals								
Beryllium	1.9E+00	M	8.0E+02	2.4E-03	8.2E+02	2.3E-03	4.0E+03	4.8E-04
Zinc	1.6E+02	M	1.0E+05	1.6E-03	9.2E+04	1.8E-03	1.0E+05	1.6E-03
Pesticides and Herbicides								
4,4'-DDT	2.5E-01	M	1.9E+02	1.3E-03	1.9E+02	1.3E-03	2.4E+02	1.0E-03
Petroleum Hydrocarbons								
TPH - Diesel range	2.6E+01	M	1.0E+05	2.6E-04	1.0E+05	2.6E-04	*	*
Cumulative Pathway Hazard Index				0.0056		0.0057		0.0032

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

Checked by/Date: _____

Approved by/Date: _____

Table A-35
Perimeter Drainage Ditch Spoils Pile B
Estuarine Receptor Hazard Quotient
(Page 1 of 2)

HQ = (95% UCL/Target Concentration) x A/HR (if A/HR exceeds 1, value of 1 is used)

Where

HQ = Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

A = Area of Site, square feet (ft^2) = 21,068

HR = Home Range, ft^2, if blank, home range assumed equal to area of site

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		High Marsh				Intertidal Marsh					
			Salt Marsh Harvest Mouse		Pickleweed		Estuarius (amphipod)		California Clapper Rail		Black Rail	
			Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)			15,000						505,000		215,000	
Metals												
Antimony	1.1E+00	U	2.8E+00	3.9E-01	5.0E+00	2.2E-01	2.0E+00	5.5E-01	*	*	*	*
Cadmium	3.9E+00	U	2.6E+01	1.5E-01	4.0E+00	9.8E-01	6.8E-01	5.8E+00	6.3E+00	2.6E-02	2.1E+00	1.9E-01
Copper	1.3E+02	U	4.2E+00	3.2E+01	1.0E+02	1.3E+00	1.9E+01	7.2E+00	1.8E+01	3.2E-01	5.8E+00	2.3E+00
Mercury	1.1E+00	U	1.9E+00	6.0E-01	3.0E-01	3.7E+00	1.3E-01	8.6E+00	1.7E+00	2.8E-02	5.5E-01	2.0E-01
Silver	1.1E+00	M	4.5E+02	2.4E-03	2.0E+00	5.4E-01	7.3E-01	1.5E+00	1.2E+03	3.6E-05	4.1E+02	2.6E-04
Zinc	3.5E+02	U	4.1E+02	8.5E-01	5.0E+01	7.0E+00	1.2E+02	2.8E+00	1.3E+02	1.2E-01	4.2E+01	8.2E-01
Pesticides and Herbicides												
4,4'-DDD	2.0E-03	M	1.3E+02	1.5E-05	*	*	1.2E-03	1.6E+00	3.7E-03	2.2E-02	1.2E-03	1.6E-01
4,4'-DDE	1.0E-03	M	1.7E+02	6.0E-06	*	*	2.1E-03	4.8E-01	1.5E-03	2.8E-02	5.0E-04	2.0E-01
4,4'-DDT	9.4E-03	U	1.6E+02	6.0E-05	1.0E+01	9.4E-04	1.2E-03	7.9E+00	2.0E-02	2.0E-02	6.6E-03	1.4E-01
Endrin Aldehyde	2.0E-03	M	3.8E+00	5.2E-04	*	*	5.6E-02	3.6E-02	5.4E-04	1.6E-01	1.8E-04	1.1E+00
Endrin Ketone	5.0E-04	M	3.8E+00	1.3E-04	*	*	5.6E-02	8.9E-03	5.4E-04	3.9E-02	1.8E-04	2.8E-01
Petroleum Hydrocarbons												
TPH - Diesel range	2.5E+01	U	2.8E+04	9.0E-04	*	*	1.4E+02	1.7E-01	4.6E+03	2.3E-04	1.5E+03	1.6E-03
Semivolatile Organic Compounds												
Chrysene	3.8E-02	U	1.2E+02	3.2E-04	*	*	1.1E-01	3.5E-01	*	*	*	*
Hazard Index				34		14		37		0.75		5.3

Table A-35
Perimeter Drainage Ditch Spoils Pile B
Estuarine Receptor Hazard Quotient
(Page 2 of 2)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Subtidal Marsh									
			Bay Shrimp		Salmonid		Northern Anchovy		Double-Crested Cormorant		Algae	
			Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)					950,000		950,000		43,100,000			
Metals												
Antimony	1.1E+00	U	*	*	*	*	*	*	*	*	*	*
Cadmium	3.9E+00	U	5.6E+00	7.0E-01	5.6E+00	1.6E-02	1.7E+02	5.2E-04	8.0E+02	2.4E-06	5.6E+00	7.0E-01
Copper	1.3E+02	U	7.6E+01	1.8E+00	7.6E+01	3.9E-02	2.3E+03	1.3E-03	2.8E+03	2.4E-05	7.6E+01	1.8E+00
Mercury	1.1E+00	U	4.7E+00	2.4E-01	4.7E+00	5.3E-03	1.4E+02	1.8E-04	1.8E-01	3.0E-03	4.7E+00	2.4E-01
Silver	1.1E+00	M	1.6E-01	6.5E+00	1.6E-01	1.4E-01	4.9E+00	4.8E-03	2.5E+04	2.1E-08	1.6E-01	6.5E+00
Zinc	3.5E+02	U	3.8E+03	9.3E-02	3.8E+03	2.1E-03	1.1E+05	6.8E-05	1.4E+04	1.3E-05	3.8E+03	9.3E-02
Pesticides and Herbicides												
4,4'-DDD	2.0E-03	M	2.5E+00	8.0E-04	2.5E+00	1.8E-05	7.5E+01	5.9E-07	1.3E-01	7.8E-06	2.5E+00	8.0E-04
4,4'-DDE	1.0E-03	M	6.1E+01	1.6E-05	6.1E+01	3.6E-07	1.8E+03	1.2E-08	1.4E-01	3.4E-06	6.1E+01	1.6E-05
4,4'-DDT	9.4E-03	U	2.6E-01	3.7E-02	2.6E-01	8.1E-04	7.7E+00	2.7E-05	3.9E-02	1.2E-04	2.6E-01	3.7E-02
Endrin Aldehyde	2.0E-03	M	2.1E-02	9.3E-02	2.1E-02	2.1E-03	6.4E-01	6.9E-05	1.0E-02	9.4E-05	2.1E-02	9.3E-02
Endrin Ketone	5.0E-04	M	2.1E-02	2.3E-02	2.1E-02	5.2E-04	6.4E-01	1.7E-05	1.0E-02	2.3E-05	2.1E-02	2.3E-02
Petroleum Hydrocarbons												
TPH - Diesel range	2.5E+01	U	8.1E+03	3.1E-03	8.1E+03	6.9E-05	2.4E+05	2.3E-06	3.1E+04	4.0E-07	8.1E+03	3.1E-03
Semivolatile Organic Compounds												
Chrysene	3.8E-02	U	*	*	*	*	*	*	*	*	*	*
Hazard Index				9.4		0.21		0.0070		0.0033		9.4

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".
[b] "*" data not available

Checked by/Date: _____
Approved by/Date: _____

Table A-36
Perimeter Drainage Ditch Spoils Pile B
Freshwater Receptor Hazard Quotient

HQ = (95% UCL/Target Concentration) x A/HR (if A/HR exceeds 1, value of 1 is used)

Where

HQ = Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

A = Area of Site, square feet (ft^2) = 21,068

HR = Home Range, ft^2, if blank, home range assumed equal to area of site

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Snipe		Algae		Sediment Invertebrate		Mosquitofish		Great Blue Heron	
			Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)			970,000						700,000		43,100,000	
Metals												
Antimony	1.1E+00	U	*	*	3.2E-01	3.5E+00	2.9E+00	3.8E-01	3.2E-01	1.0E-01	*	*
Cadmium	3.9E+00	U	4.0E+01	2.2E-03	4.0E-01	9.9E+00	5.8E-01	6.7E+00	4.0E-01	3.0E-01	3.1E+01	6.2E-05
Copper	1.3E+02	U	7.5E+01	3.9E-02	6.7E+01	2.0E+00	2.8E+01	4.8E+00	6.7E+01	6.1E-02	3.3E+03	2.0E-05
Mercury	1.1E+00	U	6.3E-03	3.8E+00	1.2E+00	9.7E-01	1.7E-01	6.4E+00	1.2E+00	2.9E-02	8.1E-02	6.8E-03
Silver	1.1E+00	M	6.5E+02	3.6E-05	8.8E-02	1.2E+01	4.5E+00	2.4E-01	8.8E-02	3.6E-01	2.3E+04	2.3E-08
Zinc	3.5E+02	U	3.7E+02	2.0E-02	1.7E+03	2.1E-01	9.8E+02	3.6E-01	1.7E+03	6.3E-03	9.9E+03	1.7E-05
Pesticides and Herbicides												
4,4'-DDD	2.0E-03	M	2.4E-03	1.8E-02	1.9E-01	1.0E-02	3.5E-03	5.6E-01	1.9E-01	3.1E-04	4.6E-03	2.1E-04
4,4'-DDE	1.0E-03	M	2.9E-03	7.5E-03	1.4E+03	7.3E-07	1.4E-03	7.0E-01	1.4E+03	2.2E-08	4.7E-03	1.0E-04
4,4'-DDT	9.4E-03	U	7.2E-03	2.8E-02	7.7E-02	1.2E-01	7.0E-03	1.3E+00	7.7E-02	3.7E-03	2.2E-03	2.1E-03
Endrin Aldehyde	2.0E-03	M	3.5E-04	1.2E-01	1.0E-01	2.0E-02	2.7E-03	7.5E-01	1.0E-01	6.0E-04	2.2E-01	4.5E-06
Endrin Ketone	5.0E-04	M	3.5E-04	3.1E-02	1.0E-01	5.0E-03	2.7E-03	1.9E-01	1.0E-01	1.5E-04	2.2E-01	1.1E-06
Petroleum Hydrocarbons												
TPH - Diesel range	2.5E+01	U	2.7E+03	2.0E-04	2.4E+03	1.0E-02	1.4E+02	1.7E-01	2.4E+03	3.1E-04	6.9E+03	1.8E-06
Semivolatile Organic Compounds												
Chrysene	3.8E-02	U	*	*	*	*	2.7E-02	1.4E+00	*	*	*	*
Hazard Index				4.1		29		24		0.87		0.0093

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

Checked by/Date: _____

Approved by/Date: _____

Table A-37
Perimeter Drainage Ditch Spoils Pile B
Human Carcinogenic Risk Characterization

Carcinogenic Risk = (95% UCL/Target Concentrations) x 10^{-6}

Where

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg),

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration	Risk	Target Concentration[b]	Risk	Target Concentration	Risk
Metals								
Cadmium	3.9E+00	U	1.4E+03	2.8E-09	*	*	*	*
Pesticides								
4,4'-DDD	2.0E-03	M	1.2E+01	1.6E-10	1.2E+01	1.6E-10	1.4E+01	1.4E-10
4,4'-DDE	1.0E-03	M	8.7E+00	1.1E-10	8.7E+00	1.1E-10	5.6E-01	1.8E-09
4,4'-DDT	9.4E-03	U	8.7E+00	1.1E-09	8.7E+00	1.1E-09	3.3E+00	2.9E-09
Semivolatile Organic Compounds								
Chrysene	3.8E-02	U	1.7E+01	2.2E-09	1.7E+01	2.2E-09	4.7E+03	7.9E-12
Pathway Cumulative Risk				6.3E-09		3.6E-09		4.8E-09

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M". Checked by/Date: _____

[b] "*" Data not available. Approved by/Date: _____

Table A-38
Perimeter Drainage Ditch Spoils Pile B
Human Noncarcinogenic Health Hazard Characterization

HQ = (95% UCL/Target Concentration)

Where

HQ = Noncarcinogenic Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient
Metals								
Antimony	1.1E+00	U	1.6E+02	6.7E-03	1.6E+02	6.8E-03	*	*
Cadmium	3.9E+00	U	2.1E+02	1.9E-02	2.1E+02	1.9E-02	2.2E+02	1.8E-02
Copper	1.3E+02	U	1.5E+04	8.9E-03	1.5E+04	9.1E-03	1.8E+04	7.7E-03
Mercury	1.1E+00	U	1.2E+02	9.1E-03	1.2E+02	9.1E-03	3.6E+02	3.1E-03
Silver	1.1E+00	M	2.0E+03	5.2E-04	2.0E+03	5.2E-04	4.4E+03	2.4E-04
Zinc	3.5E+02	U	1.0E+05	3.5E-03	9.2E+04	3.8E-03	1.0E+05	3.5E-03
Pesticides and Herbicides								
4,4'-DDT	9.4E-03	U	1.9E+02	4.8E-05	1.9E+02	4.8E-05	2.4E+02	3.9E-05
Endrin Aldehyde	2.0E-03	M	9.9E+01	2.0E-05	9.9E+01	2.0E-05	1.3E+00	1.5E-03
Endrin Ketone	5.0E-04	M	9.9E+01	5.1E-06	9.9E+01	5.1E-06	1.3E+00	3.7E-04
Petroleum Hydrocarbons								
TPH - Diesel range	2.5E+01	U	1.0E+05	2.5E-04	1.0E+05	2.5E-04	*	*
Cumulative Pathway Hazard Index				0.048		0.048		0.034

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

Checked by/Date: _____

Approved by/Date: _____

Table A-39
Perimeter Drainage Ditch Spoils Pile C
Estuarine Receptor Hazard Quotient
(Page 1 of 2)

HQ = (95% UCL/Target Concentration) x A/HR (if A/HR exceeds 1, value of 1 is used)

Where

HQ = Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

A = Area of Site, square feet (ft^2) = 300

HR = Home Range, ft^2, if blank, home range assumed equal to area of site

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		High Marsh				Intertidal Marsh					
			Salt Marsh Harvest Mouse		Pickleweed		Estuarius (amphipod)		California Clapper Rail		Black Rail	
			Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)			15,000						505,000		215,000	
Pesticides and Herbicides												
4,4'-DDD	1.0E-03	M	1.3E+02	1.5E-07	*	*	1.2E-03	8.2E-01	3.7E-03	1.6E-04	1.2E-03	1.1E-03
4,4'-DDE	1.1E-02	M	1.7E+02	1.3E-06	*	*	2.1E-03	5.3E+00	1.5E-03	4.3E-03	5.0E-04	3.1E-02
4,4'-DDT	2.7E-02	M	1.6E+02	3.4E-06	1.0E+01	2.7E-03	1.2E-03	2.3E+01	2.0E-02	8.0E-04	6.6E-03	5.7E-03
Hazard Index				0.0000049		0.0027		29		0.0053		0.038

Table A-39
Perimeter Drainage Ditch Spoils Pile C
Estuarine Receptor Hazard Quotient
(Page 2 of 2)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Subtidal Marsh									
			Bay Shrimp		Salmonid		Northern Anchovy		Double-Crested Cormorant		Algae	
			Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)					950,000		950,000		43,100,000			
Pesticides and Herbicides												
4,4'-DDD	1.0E-03	M	2.5E+00	4.0E-04	2.5E+00	1.3E-07	7.5E+01	4.2E-09	1.3E-01	5.6E-08	2.5E+00	4.0E-04
4,4'-DDE	1.1E-02	M	6.1E+01	1.8E-04	6.1E+01	5.7E-08	1.8E+03	1.9E-09	1.4E-01	5.4E-07	6.1E+01	1.8E-04
4,4'-DDT	2.7E-02	M	2.6E-01	1.1E-01	2.6E-01	3.3E-05	7.7E+00	1.1E-06	3.9E-02	4.9E-06	2.6E-01	1.1E-01
Hazard Index				0.11		0.000033		0.0000011		0.0000055		0.11

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

Checked by/Date: _____

Approved by/Date: _____

Table A-40
Perimeter Drainage Ditch Spoil Piles C
Freshwater Receptor Hazard Quotient

HQ = (95% UCL/Target Concentration) x A/HR (if A/HR exceeds 1, value of 1 is used)

Where

HQ = Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

A = Area of Site, square feet (ft^2) = 300

HR = Home Range, ft^2, if blank, home range assumed equal to area of site

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Snipe		Algae		Sediment Invertebrate		Mosquitofish		Great Blue Heron	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)			970,000						700,000		43,100,000	
Pesticides and Herbicides												
4,4'-DDD	1.0E-03	M	2.4E-03	1.3E-04	1.9E-01	5.2E-03	3.5E-03	2.8E-01	1.9E-01	2.2E-06	4.6E-03	1.5E-06
4,4'-DDE	1.1E-02	M	2.9E-03	1.2E-03	1.4E+03	8.0E-06	1.4E-03	7.7E+00	1.4E+03	3.4E-09	4.7E-03	1.6E-05
4,4'-DDT	2.7E-02	M	7.2E-03	1.2E-03	7.7E-02	3.5E-01	7.0E-03	3.9E+00	7.7E-02	1.5E-04	2.2E-03	8.6E-05
Hazard Index				0.0025		0.36		12		0.00015		0.00010398

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

Checked by/Date: _____

Approved by/Date: _____

Table A-41
Perimeter Drainage Ditch Spoils Pile C
Human Carcinogenic Risk Characterization

Carcinogenic Risk = (95% UCL/Target Concentrations) x 10^{-6}

Where

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg),

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration	Risk	Target Concentration	Risk	Target Concentration	Risk
Pesticides								
4,4'-DDD	1.0E-03	M	1.2E+01	8.1E-11	1.2E+01	8.1E-11	1.4E+01	6.9E-11
4,4'-DDE	1.1E-02	M	8.7E+00	1.3E-09	8.7E+00	1.3E-09	5.6E-01	2.0E-08
4,4'-DDT	2.7E-02	M	8.7E+00	3.1E-09	8.7E+00	3.1E-09	3.3E+00	8.2E-09
Pathway Cumulative Risk				4.4E-09		4.4E-09		2.8E-08

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M". Checked by/Date: _____

Approved by/Date: _____

Table A-42
Perimeter Drainage Ditch Spoils Pile C
Human Noncarcinogenic Health Hazard Characterization

HQ = (95% UCL/Target Concentration)

Where

HQ = Noncarcinogenic Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Pesticides and Herbicides								
4,4'-DDT	2.7E-02	M	1.9E+02	1.4E-04	1.9E+02	1.4E-04	2.4E+02	1.1E-04
Cumulative Pathway Hazard Index				0.00014		0.00014		0.00011

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

Checked by/Date: _____

Approved by/Date: _____

Table A-43
Perimeter Drainage Ditch Spoils Pile D
Estuarine Receptor Hazard Quotient
(Page 1 of 2)

HQ = (95% UCL/Target Concentration) x A/HR (if A/HR exceeds 1, value of 1 is used)

Where

HQ = Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

A = Area of Site, square feet (ft^2) = 600

HR = Home Range, ft^2, if blank, home range assumed equal to area of site

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		High Marsh				Intertidal Marsh					
			Salt Marsh Harvest Mouse		Pickleweed		Estuarius (amphipod)		California Clapper Rail		Black Rail	
			Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)			15,000						505,000		215,000	
Pesticides and Herbicides												
4,4'-DDE	4.9E-02	M	1.7E+02	1.2E-05	*	*	2.1E-03	2.4E+01	1.5E-03	3.9E-02	5.0E-04	2.7E-01
4,4'-DDT	8.0E-02	M	1.6E+02	2.0E-05	1.0E+01	8.0E-03	1.2E-03	6.7E+01	2.0E-02	4.7E-03	6.6E-03	3.4E-02
Hazard Index				0.000032		0.0080		91		0.043		0.31

Table A-43
Perimeter Drainage Ditch Spoils Pile D
Estuarine Receptor Hazard Quotient
(Page 2 of 2)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Subtidal Marsh									
			Bay Shrimp		Salmonid		Northern Anchovy		Double-Crested Cormorant		Algae	
			Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)					950,000		950,000		43,100,000			
Pesticides and Herbicides												
4,4'-DDE	4.9E-02	M	6.1E+01	8.0E-04	6.1E+01	5.1E-07	1.8E+03	1.7E-08	1.4E-01	4.8E-06	6.1E+01	8.0E-04
4,4'-DDT	8.0E-02	M	2.6E-01	3.1E-01	2.6E-01	2.0E-04	7.7E+00	6.6E-06	3.9E-02	2.9E-05	2.6E-01	3.1E-01
Hazard Index				0.31		0.00020		0.0000066		0.000034		0.31

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

Checked by/Date: _____

Approved by/Date: _____

Table A-44
Perimeter Drainage Ditch Spoils Pile D
Freshwater Receptor Hazard Quotient

HQ = (95% UCL/Target Concentration) x A/HR (if A/HR exceeds 1, value of 1 is used)

Where

HQ = Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

A = Area of Site, square feet (ft^2) = 600

HR = Home Range, ft^2, if blank, home range assumed equal to area of site

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Snipe		Algae		Sediment Invertebrate		Mosquitofish		Great Blue Heron	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)			970,000						700,000		43,100,000	
Pesticides and Herbicides												
4,4'-DDE	4.9E-02	M	2.9E-03	1.1E-02	1.4E+03	3.6E-05	1.4E-03	3.5E+01	1.4E+03	3.1E-08	4.7E-03	1.4E-04
4,4'-DDT	8.0E-02	M	7.2E-03	6.9E-03	7.7E-02	1.0E+00	7.0E-03	1.1E+01	7.7E-02	8.9E-04	2.2E-03	5.1E-04
Hazard Index				0.017		1.0		46		0.00089		0.0006556

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

Checked by/Date: _____

Approved by/Date: _____

Table A-45
Perimeter Drainage Ditch Spoils Pile D
Human Carcinogenic Risk Characterization

Carcinogenic Risk = (95% UCL/Target Concentrations) x 10^{-6}

Where

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg),

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration	Risk	Target Concentration	Risk	Target Concentration	Risk
Pesticides								
4,4'-DDE	4.9E-02	M	8.7E+00	5.6E-09	8.7E+00	5.6E-09	5.6E-01	8.7E-08
4,4'-DDT	8.0E-02	M	8.7E+00	9.2E-09	8.7E+00	9.2E-09	3.3E+00	2.4E-08
Pathway Cumulative Risk				1.5E-08		1.5E-08		1.1E-07

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M". Checked by/Date: _____

Approved by/Date: _____

Table A-46
Perimeter Drainage Ditch Spoils Pile D
Human Noncarcinogenic Health Hazard Characterization

HQ = (95% UCL/Target Concentration)

Where

HQ = Noncarcinogenic Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Pesticides and Herbicides								
4,4'-DDT	8.0E-02	M	1.9E+02	4.1E-04	1.9E+02	4.1E-04	2.4E+02	3.3E-04
Cumulative Pathway Hazard Index				0.00041		0.00041		0.00033

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

Checked by/Date: _____

Approved by/Date: _____

Table A-47
Perimeter Drainage Ditch Spoils Pile E
Estuarine Receptor Hazard Quotient
(Page 1 of 2)

HQ = (95% UCL/Target Concentration) x A/HR (if A/HR exceeds 1, value of 1 is used)

Where

HQ = Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

A = Area of Site, square feet (ft^2) = 9,810

HR = Home Range, ft^2, if blank, home range assumed equal to area of site

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		High Marsh				Intertidal Marsh					
			Salt Marsh Harvest Mouse		Pickleweed		Estuarius (amphipod)		California Clapper Rail		Black Rail	
			Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)			15,000						505,000		215,000	
Pesticides and Herbicides												
4,4'-DDE	8.1E-03	M	1.7E+02	3.2E-05	*	*	2.1E-03	3.9E+00	1.5E-03	1.0E-01	5.0E-04	7.4E-01
4,4'-DDT	2.0E-02	U	1.6E+02	8.2E-05	1.0E+01	2.0E-03	1.2E-03	1.7E+01	2.0E-02	1.9E-02	6.6E-03	1.4E-01
Hazard Index				0.00011		0.0020		20		0.12		0.88

Table A-47
Perimeter Drainage Ditch Spoils Pile E
Estuarine Receptor Hazard Quotient
(Page 2 of 2)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Subtidal Marsh									
			Bay Shrimp		Salmonid		Northern Anchovy		Double-Crested Cormorant		Algae	
			Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)					950,000		950,000		43,100,000			
Pesticides and Herbicides												
4,4'-DDE	8.1E-03	M	6.1E+01	1.3E-04	6.1E+01	1.4E-06	1.8E+03	4.6E-08	1.4E-01	1.3E-05	6.1E+01	1.3E-04
4,4'-DDT	2.0E-02	U	2.6E-01	7.7E-02	2.6E-01	7.9E-04	7.7E+00	2.6E-05	3.9E-02	1.2E-04	2.6E-01	7.7E-02
Hazard Index				0.077		0.00079		0.000026		0.00013		0.077

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

Checked by/Date: _____

Approved by/Date: _____

Table A-48
Perimeter Drainage Ditch Spoils Pile E
Freshwater Receptor Hazard Quotient

HQ = (95% UCL/Target Concentration) x A/HR (if A/HR exceeds 1, value of 1 is used)

Where

HQ = Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

A = Area of Site, square feet (ft^2) = 9,810

HR = Home Range, ft^2, if blank, home range assumed equal to area of site

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Snipe		Algae		Sediment Invertebrate		Mosquitofish		Great Blue Heron	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)			970,000						700,000		43,100,000	
Pesticides and Herbicides												
4,4'-DDE	8.1E-03	M	2.9E-03	2.8E-02	1.4E+03	5.9E-06	1.4E-03	5.7E+00	1.4E+03	8.3E-08	4.7E-03	3.9E-04
4,4'-DDT	2.0E-02	U	7.2E-03	2.8E-02	7.7E-02	2.6E-01	7.0E-03	2.8E+00	7.7E-02	3.6E-03	2.2E-03	2.1E-03
Hazard Index				0.056		0.26		9		0.0036		0.002448

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

Checked by/Date: _____

Approved by/Date: _____

Table A-49
Perimeter Drainage Ditch Spoils Pile E
Human Carcinogenic Risk Characterization

Carcinogenic Risk = (95% UCL/Target Concentrations) x 10^{-6}

Where

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg),

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration	Risk	Target Concentration	Risk	Target Concentration	Risk
Pesticides								
4,4'-DDE	8.1E-03	M	8.7E+00	9.3E-10	8.7E+00	9.3E-10	5.6E-01	1.4E-08
4,4'-DDT	2.0E-02	U	8.7E+00	2.3E-09	8.7E+00	2.3E-09	3.3E+00	6.0E-09
Pathway Cumulative Risk				3.2E-09		3.2E-09		2.0E-08

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M". Checked by/Date: _____

Approved by/Date: _____

Table A-50
Perimeter Drainage Ditch Spoils Pile E
Human Noncarcinogenic Health Hazard Characterization

HQ = (95% UCL/Target Concentration)

Where

HQ = Noncarcinogenic Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Pesticides and Herbicides								
4,4'-DDT	2.0E-02	U	1.9E+02	1.0E-04	1.9E+02	1.0E-04	2.4E+02	8.2E-05
Cumulative Pathway Hazard Index				0.00010		0.00010		0.000082

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

Checked by/Date: _____

Approved by/Date: _____

Table A-51
Perimeter Drainage Ditch Spoils Pile F
Estuarine Receptor Hazard Quotient
(Page 1 of 4)

HQ = (95% UCL/Target Concentration) x A/HR (if A/HR exceeds 1, value of 1 is used)

Where

HQ = Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

A = Area of Site, square feet (ft^2) = 26,000

HR = Home Range, ft^2, if blank, home range assumed equal to area of site

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		High Marsh				Intertidal Marsh					
			Salt Marsh Harvest Mouse		Pickleweed		Estuarius (amphipod)		California Clapper Rail		Black Rail	
			Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)			15,000						505,000		215,000	
Metals												
Arsenic	3.0E+01	M	1.4E+01	2.1E+00	1.0E+01	3.0E+00	7.2E+00	4.1E+00	1.3E+02	1.2E-02	4.3E+01	8.3E-02
Beryllium	4.8E+00	M	9.9E+02	4.8E-03	1.0E+01	4.8E-01	3.6E-01	1.3E+01	*	*	*	*
Cadmium	2.3E+00	M	2.6E+01	8.9E-02	4.0E+00	5.8E-01	6.8E-01	3.4E+00	6.3E+00	1.9E-02	2.1E+00	1.3E-01
Cobalt	6.1E+01	M	1.6E+01	3.9E+00	2.0E+01	3.1E+00	2.0E+01	3.1E+00	*	*	*	*
Lead	1.1E+02	M	2.0E+03	5.4E-02	5.0E+01	2.2E+00	3.0E+01	3.6E+00	6.8E+00	8.3E-01	2.3E+00	5.8E+00
Manganese	1.9E+03	M	2.9E+02	6.4E+00	5.0E+02	3.7E+00	4.6E-01	4.1E+03	1.2E+04	7.7E-03	4.1E+03	5.5E-02
Nickel	2.0E+02	M	3.8E+01	5.2E+00	3.0E+01	6.6E+00	1.6E+01	1.2E+01	4.6E+02	2.2E-02	1.5E+02	1.6E-01
Zinc	2.2E+02	M	4.1E+02	5.4E-01	5.0E+01	4.5E+00	1.2E+02	1.8E+00	1.3E+02	9.1E-02	4.2E+01	6.5E-01
Pesticides and Herbicides												
4,4'-DDD	1.8E-01	M	1.3E+02	1.4E-03	*	*	1.2E-03	1.5E+02	3.7E-03	2.5E+00	1.2E-03	1.8E+01
4,4'-DDE	1.6E-01	M	1.7E+02	9.6E-04	*	*	2.1E-03	7.7E+01	1.5E-03	5.5E+00	5.0E-04	3.9E+01
4,4'-DDT	4.0E-01	M	1.6E+02	2.6E-03	1.0E+01	4.0E-02	1.2E-03	3.4E+02	2.0E-02	1.0E+00	6.6E-03	7.3E+00
Semivolatile Organic Compounds												
Acenaphthene	2.5E+00	M	3.9E+03	6.5E-04	6.3E-01	4.0E+00	6.7E-03	3.7E+02	6.7E+03	1.9E-05	2.2E+03	1.3E-04
Anthracene	8.5E-01	M	4.9E+04	1.7E-05	*	*	4.7E-02	1.8E+01	*	*	*	*
Benzo(a)anthracene	3.0E+00	M	1.2E+02	2.6E-02	*	*	7.5E-02	4.0E+01	*	*	*	*
Benzo(a)pyrene	3.0E+00	M	1.5E+02	2.0E-02	1.0E-02	3.0E+02	8.9E-02	3.4E+01	*	*	*	*
Benzo(b)fluoranthene	6.5E+00	M	1.5E+02	4.3E-02	*	*	1.8E+00	3.6E+00	*	*	*	*
Benzo(g,h,i)perylene	1.2E+00	M	1.9E+02	6.3E-03	*	*	7.2E-01	1.7E+00	*	*	*	*

Table A-51
Perimeter Drainage Ditch Spoils Pile F
Estuarine Receptor Hazard Quotient
(Page 2 of 4)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		High Marsh				Intertidal Marsh					
			Salt Marsh Harvest Mouse		Pickleweed		Estuarius (amphipod)		California Clapper Rail		Black Rail	
			Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Semivolatile Organic Compounds (continued)												
Bis(2-ethylhexyl)phthalate	1.7E+00	M	2.3E+02	7.5E-03	*	*	1.8E-01	9.3E+00	8.8E+01	9.9E-04	2.9E+01	7.0E-03
Chrysene	3.1E+00	M	1.2E+02	2.6E-02	*	*	1.1E-01	2.9E+01	*	*	*	*
Dibenzofuran	1.2E+00	M	3.0E+02	4.0E-03	*	*	1.1E-01	1.1E+01	*	*	*	*
Fluoranthene	5.7E+00	M	9.6E+03	5.9E-04	*	*	1.1E-01	5.1E+01	*	*	*	*
Fluorene	1.8E+00	M	3.9E+03	4.6E-04	*	*	1.9E-02	9.5E+01	4.6E+03	2.0E-05	1.5E+03	1.4E-04
Indeno(1,2,3-cd)pyrene	1.4E+00	M	1.7E+02	8.0E-03	*	*	6.9E-01	2.0E+00	*	*	*	*
Phenanthrene	6.4E+00	M	4.9E+01	1.3E-01	*	*	8.7E-02	7.4E+01	*	*	*	*
Pyrene	5.7E+00	M	5.8E+03	9.9E-04	*	*	1.5E-01	3.7E+01	*	*	*	*
Hazard Index				19		328		5,445		10		71

Table A-51
Perimeter Drainage Ditch Spoils Pile F
Estuarine Receptor Hazard Quotient
(Page 3 of 4)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Subtidal Marsh									
			Bay Shrimp		Salmonid		Northern Anchovy		Double-Crested Cormorant		Algae	
			Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)					950,000		950,000		43,100,000			
Metals												
Arsenic	3.0E+01	M	1.7E+02	1.8E-01	1.7E+02	4.8E-03	5.0E+03	1.6E-04	1.0E+04	1.8E-06	1.7E+02	1.8E-01
Beryllium	4.8E+00	M	*	*	1.3E+01	1.0E-02	3.9E+02	3.4E-04	*	*	*	*
Cadmium	2.3E+00	M	5.6E+00	4.1E-01	5.6E+00	1.1E-02	1.7E+02	3.8E-04	8.0E+02	1.7E-06	5.6E+00	4.1E-01
Cobalt	6.1E+01	M	1.8E+03	3.4E-02	2.0E+04	8.4E-05	6.0E+05	2.8E-06	*	*	7.4E+01	8.2E-01
Lead	1.1E+02	M	2.3E+03	4.7E-02	2.3E+03	1.3E-03	6.9E+04	4.3E-05	3.1E+02	2.2E-04	2.3E+03	4.7E-02
Manganese	1.9E+03	M	7.3E+04	2.6E-02	2.0E+04	2.5E-03	6.1E+05	8.4E-05	1.3E+06	8.4E-07	5.5E+02	3.4E+00
Nickel	2.0E+02	M	2.5E+02	7.8E-01	2.5E+02	2.1E-02	7.6E+03	7.1E-04	1.9E+04	6.1E-06	2.5E+02	7.8E-01
Zinc	2.2E+02	M	3.8E+03	5.9E-02	3.8E+03	1.6E-03	1.1E+05	5.4E-05	1.4E+04	9.9E-06	3.8E+03	5.9E-02
Pesticides and Herbicides												
4,4'-DDD	1.8E-01	M	2.5E+00	7.2E-02	2.5E+00	2.0E-03	7.5E+01	6.6E-05	1.3E-01	8.7E-04	2.5E+00	7.2E-02
4,4'-DDE	1.6E-01	M	6.1E+01	2.6E-03	6.1E+01	7.2E-05	1.8E+03	2.4E-06	1.4E-01	6.8E-04	6.1E+01	2.6E-03
4,4'-DDT	4.0E-01	M	2.6E-01	1.6E+00	2.6E-01	4.3E-02	7.7E+00	1.4E-03	3.9E-02	6.3E-03	2.6E-01	1.6E+00
Semivolatile Organic Compounds												
Acenaphthene	2.5E+00	M	6.9E+00	3.6E-01	6.9E+00	1.0E-02	2.1E+02	3.3E-04	3.6E+03	4.2E-07	6.9E+00	3.6E-01
Anthracene	8.5E-01	M	*	*	*	*	*	*	*	*	*	*
Benzo(a)anthracene	3.0E+00	M	*	*	*	*	*	*	*	*	*	*
Benzo(a)pyrene	3.0E+00	M	*	*	*	*	*	*	*	*	*	*
Benzo(b)fluoranthene	6.5E+00	M	*	*	*	*	*	*	*	*	*	*
Benzo(g,h,i)perylene	1.2E+00	M	*	*	*	*	*	*	*	*	*	*
Bis(2-ethylhexyl)phthalate	1.7E+00	M	*	*	*	*	*	*	1.8E+03	5.8E-07	*	*
Chrysene	3.1E+00	M	*	*	*	*	*	*	*	*	*	*
Dibenzofuran	1.2E+00	M	4.2E+01	2.9E-02	2.3E+01	1.4E-03	6.8E+02	4.8E-05	*	*	4.7E+01	2.5E-02
Fluoranthene	5.7E+00	M	1.8E+01	3.2E-01	1.8E+01	8.9E-03	5.3E+02	3.0E-04	*	*	1.8E+01	3.2E-01

Table A-51
Perimeter Drainage Ditch Spoils Pile F
Estuarine Receptor Hazard Quotient
(Page 4 of 4)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Subtidal Marsh									
			Bay Shrimp		Salmonid		Northern Anchovy		Double-Crested Cormorant		Algae	
			Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Fluorene	1.8E+00	M	*	*	*	*	*	*	3.1E+03	3.5E-07	*	*
Semivolatile Organic Compounds (continued)												
Indeno(1,2,3-cd)pyrene	1.4E+00	M	*	*	*	*	*	*	*	*	*	*
Phenanthrene	6.4E+00	M	*	*	*	*	*	*	*	*	*	*
Pyrene	5.7E+00	M	*	*	*	*	*	*	*	*	*	*
Hazard Index				3.9		0.12		0.0039		0.0080		8.1

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

Checked by/Date: _____

Approved by/Date: _____

Table A-52
Perimeter Drainage Ditch Spoils Pile F
Freshwater Receptor Hazard Quotient
(Page 1 of 2)

HQ = (95% UCL/Target Concentration) x A/HR (if A/HR exceeds 1, value of 1 is used)

Where

HQ = Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

A = Area of Site, square feet (ft^2) = 26,000

HR = Home Range, ft^2, if blank, home range assumed equal to area of site

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Snipe		Algae		Sediment Invertebrate		Mosquitofish		Great Blue Heron	
			Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)			970,000						700,000		43,100,000	
Metals												
Arsenic	3.0E+01	M	2.7E+02	2.9E-03	2.1E+02	1.4E-01	5.9E+00	5.0E+00	2.1E+02	5.2E-03	1.2E+04	1.5E-06
Beryllium	4.8E+00	M	*	*	3.7E-02	1.3E+02	3.6E-01	1.3E+01	3.7E-02	4.8E+00	*	*
Cadmium	2.3E+00	M	4.0E+01	1.6E-03	4.0E-01	5.8E+00	5.8E-01	3.9E+00	4.0E-01	2.2E-01	3.1E+01	4.5E-05
Cobalt	6.1E+01	M	*	*	6.6E+02	9.3E-02	6.6E+02	9.3E-02	6.6E+02	3.4E-03	*	*
Lead	1.1E+02	M	8.2E+00	3.6E-01	2.1E+02	5.1E-01	3.5E+01	3.1E+00	2.1E+02	1.9E-02	3.6E+02	1.8E-04
Manganese	1.9E+03	M	3.7E+04	1.3E-03	1.6E+02	1.1E+01	6.3E+02	3.0E+00	6.6E+03	1.1E-02	1.7E+06	6.8E-07
Nickel	2.0E+02	M	5.2E+02	1.0E-02	4.8E+02	4.1E-01	1.8E+01	1.1E+01	4.8E+02	1.5E-02	2.3E+04	5.2E-06
Zinc	2.2E+02	M	3.7E+02	1.6E-02	1.7E+03	1.3E-01	9.8E+02	2.3E-01	1.7E+03	5.0E-03	9.9E+03	1.4E-05
Pesticides and Herbicides												
4,4'-DDD	1.8E-01	M	2.4E-03	2.0E+00	1.9E-01	9.4E-01	3.5E-03	5.1E+01	1.9E-01	3.5E-02	4.6E-03	2.4E-02
4,4'-DDE	1.6E-01	M	2.9E-03	1.5E+00	1.4E+03	1.2E-04	1.4E-03	1.1E+02	1.4E+03	4.3E-06	4.7E-03	2.0E-02
4,4'-DDT	4.0E-01	M	7.2E-03	1.5E+00	7.7E-02	5.2E+00	7.0E-03	5.7E+01	7.7E-02	1.9E-01	2.2E-03	1.1E-01
Semivolatile Organic Compounds												
Acenaphthene	2.5E+00	M	3.8E+03	1.7E-05	3.6E+00	6.9E-01	6.2E-01	4.0E+00	3.6E+00	2.6E-02	1.4E+02	1.0E-05
Anthracene	8.5E-01	M	*	*	6.1E-01	1.4E+00	1.0E-02	8.5E+01	1.5E+01	2.1E-03	*	*
Benzo(a)anthracene	3.0E+00	M	*	*	*	*	1.6E-02	1.9E+02	*	*	*	*
Benzo(a)pyrene	3.0E+00	M	*	*	4.2E-01	7.1E+00	3.2E-02	9.3E+01	4.2E-01	2.7E-01	*	*

Table A-52
Perimeter Drainage Ditch Spoils Pile F
Freshwater Receptor Hazard Quotient
(Page 2 of 2)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Snipe		Algae		Sediment Invertebrate		Mosquitofish		Great Blue Heron	
			Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Benzo(b)fluoranthene	6.5E+00	M	*	*	*	*	3.2E-02	2.0E+02	*	*	*	*
Semivolatile Organic Compounds (continued)												
Benzo(g,h,i)perylene	1.2E+00	M	*	*	*	*	3.2E-02	3.7E+01	*	*	*	*
Bis(2-ethylhexyl)phtha	1.7E+00	M	4.8E+01	9.5E-04	1.4E+02	1.2E-02	7.5E-01	2.3E+00	1.4E+02	4.6E-04	1.6E+03	6.3E-07
Chrysene	3.1E+00	M	*	*	*	*	2.7E-02	1.2E+02	*	*	*	*
Dibenzofuran	1.2E+00	M	*	*	1.4E+01	8.5E-02	2.0E+00	6.0E-01	6.7E+00	6.6E-03	*	*
Fluoranthene	5.7E+00	M	*	*	1.3E+02	4.4E-02	3.1E-02	1.8E+02	1.3E+02	1.6E-03	*	*
Fluorene	1.8E+00	M	2.7E+03	1.8E-05	5.0E+00	3.6E-01	1.0E-02	1.8E+02	5.0E+00	1.3E-02	6.2E+02	1.8E-06
Indeno(1,2,3-cd)pyren	1.4E+00	M	*	*	*	*	1.7E-02	8.1E+01	*	*	*	*
Phenanthrene	6.4E+00	M	*	*	*	*	1.9E-02	3.4E+02	*	*	*	*
Pyrene	5.7E+00	M	*	*	*	*	4.4E-02	1.3E+02	*	*	*	*
Hazard Index				5.4		164		1,901		5.6		0.15506

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

Checked by/Date: _____

Approved by/Date: _____

Table A-53
Perimeter Drainage Ditch Spoils Pile F
Human Carcinogenic Risk Characterization

Carcinogenic Risk = (95% UCL/Target Concentrations) x 10^{-6}

Where

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration	Risk	Target Concentration[b]	Risk	Target Concentration	Risk
Metals								
Arsenic	3.0E+01	M	2.0E+00	1.5E-05	2.0E+00	1.5E-05	4.1E+00	7.2E-06
Beryllium	4.8E+00	M	2.5E+03	1.9E-09	*	*	*	*
Cadmium	2.3E+00	M	1.4E+03	1.6E-09	*	*	*	*
Nickel	2.0E+02	M	2.3E+04	8.5E-09	*	*	*	*
Pesticides								
4,4'-DDD	1.8E-01	M	1.2E+01	1.5E-08	1.2E+01	1.5E-08	1.4E+01	1.2E-08
4,4'-DDE	1.6E-01	M	8.7E+00	1.8E-08	8.7E+00	1.8E-08	5.6E-01	2.8E-07
4,4'-DDT	4.0E-01	M	8.7E+00	4.6E-08	8.7E+00	4.6E-08	3.3E+00	1.2E-07
Semivolatile Organic Compounds								
Benzo(a)anthracene	3.0E+00	M	1.7E+00	1.8E-06	1.7E+00	1.8E-06	2.9E+01	1.0E-07
Benzo(a)pyrene	3.0E+00	M	1.7E-01	1.8E-05	1.7E-01	1.8E-05	5.8E+00	5.1E-07
Benzo(b)fluoranthene	6.5E+00	M	1.7E+00	3.8E-06	1.7E+00	3.9E-06	7.0E+01	9.3E-08
Bis(2-ethylhexyl)phthalate	1.7E+00	M	1.4E+02	1.2E-08	1.4E+02	1.2E-08	1.0E+05	1.7E-11
Chrysene	3.1E+00	M	1.7E+01	1.8E-07	1.7E+01	1.8E-07	4.7E+03	6.6E-10
Indeno(1,2,3-cd)pyrene	1.4E+00	M	1.7E+00	8.3E-07	1.7E+00	8.3E-07	2.0E+02	7.1E-09
Pathway Cumulative Risk				3.9E-05		3.9E-05		8.4E-06

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" Data not available.

Checked by/Date: _____

Approved by/Date: _____

Table A-54
Perimeter Drainage Ditch Spoils Pile F
Human Noncarcinogenic Health Hazard Characterization
(Page 1 of 2)

HQ = (95% UCL/Target Concentration)

Where

HQ = Noncarcinogenic Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg), dry weig

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient
Metals								
Arsenic	3.0E+01	M	1.2E+02	2.5E-01	1.2E+02	2.5E-01	7.9E+02	3.7E-02
Beryllium	4.8E+00	M	8.0E+02	6.0E-03	8.2E+02	5.9E-03	4.0E+03	1.2E-03
Cadmium	2.3E+00	M	2.1E+02	1.1E-02	2.1E+02	1.1E-02	2.2E+02	1.1E-02
Cobalt	6.1E+01	M	2.5E+04	2.5E-03	2.3E+04	2.6E-03	1.0E+05	6.1E-04
Lead	1.1E+02	M	6.6E+02	1.6E-01	6.6E+02	1.6E-01	*	*
Manganese	1.9E+03	M	8.6E+03	2.2E-01	9.7E+03	1.9E-01	2.4E+04	7.8E-02
Nickel	2.0E+02	M	8.2E+03	2.4E-02	8.1E+03	2.5E-02	1.0E+05	2.0E-03
Zinc	2.2E+02	M	1.0E+05	2.2E-03	9.2E+04	2.4E-03	1.0E+05	2.2E-03

Table A-54
Perimeter Drainage Ditch Spoils Pile F
Human Noncarcinogenic Health Hazard Characterization
(Page 2 of 2)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient
Pesticides and Herbicides								
4,4'-DDT	4.0E-01	M	1.9E+02	2.1E-03	1.9E+02	2.1E-03	2.4E+02	1.7E-03
Semivolatile Organic Compounds								
Acenaphthene	2.5E+00	M	1.8E+04	1.4E-04	1.8E+04	1.4E-04	3.0E+04	8.2E-05
Anthracene	8.5E-01	M	8.5E+04	1.0E-05	7.8E+04	1.1E-05	1.0E+05	8.5E-06
Benzo(g,h,i)perylene	1.2E+00	M	9.2E+03	1.3E-04	9.1E+03	1.3E-04	1.0E+05	1.2E-05
Bis(2-ethylhexyl)phthalat	1.7E+00	M	6.1E+03	2.8E-04	6.1E+03	2.8E-04	1.0E+05	1.7E-05
Dibenzofuran	1.2E+00	M	1.2E+03	9.7E-04	1.2E+03	9.7E-04	2.2E+03	5.4E-04
Fluoranthene	5.7E+00	M	1.2E+04	4.7E-04	1.2E+04	4.7E-04	7.7E+04	7.4E-05
Fluorene	1.8E+00	M	1.2E+04	1.5E-04	1.2E+04	1.5E-04	1.8E+04	1.0E-04
Phenanthrene	6.4E+00	M	9.8E+03	6.5E-04	1.2E+04	5.2E-04	1.0E+05	6.4E-05
Pyrene	5.7E+00	M	9.2E+03	6.2E-04	1.2E+04	4.6E-04	4.6E+04	1.2E-04
Cumulative Pathway Hazard Index[c]				0.69		0.66		0.13

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

[c] Lead is a special case metal (i.e., the target concentration was calculated using the California Department of Toxic Substances Control LEADSPREAD model), however for calculation of the cumulative pathway hazard index, lead is assumed to be a non-carcinogen.

Checked by/Date: _____

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Table A-55
Perimeter Drainage Ditch Spoils Pile G
Estuarine Receptor Hazard Quotient
(Page 1 of 2)

HQ = (95% UCL/Target Concentration) x A/HR (if A/HR exceeds 1, value of 1 is used)

Where

HQ = Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

A = Area of Site, square feet (ft^2) = 5208

HR = Home Range, ft^2, if blank, home range assumed equal to area of site

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		High Marsh				Intertidal Marsh					
			Salt Marsh Harvest Mouse		Pickleweed		Estuarius (amphipod)		California Clapper Rail		Black Rail	
			Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)			15,000						505,000		215,000	
Pesticides and Herbicides												
4,4'-DDE	6.1E-02	M	1.7E+02	1.3E-04	*	*	2.1E-03	2.9E+01	1.5E-03	4.2E-01	5.0E-04	3.0E+00
4,4'-DDT	1.5E-01	M	1.6E+02	3.3E-04	1.0E+01	1.5E-02	1.2E-03	1.3E+02	2.0E-02	7.7E-02	6.6E-03	5.5E-01
Hazard Index				0.00046		0.015		156		0.49		3.5

Table A-55
Perimeter Drainage Ditch Spoils Pile G
Estuarine Receptor Hazard Quotient
(Page 2 of 2)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Subtidal Marsh									
			Bay Shrimp		Salmonid		Northern Anchovy		Double-Crested Cormorant		Algae	
			Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)					950,000		950,000		43,100,000			
Pesticides and Herbicides												
4,4'-DDE	6.1E-02	M	6.1E+01	1.0E-03	6.1E+01	5.5E-06	1.8E+03	1.8E-07	1.4E-01	5.2E-05	6.1E+01	1.0E-03
4,4'-DDT	1.5E-01	M	2.6E-01	5.8E-01	2.6E-01	3.2E-03	7.7E+00	1.1E-04	3.9E-02	4.7E-04	2.6E-01	5.8E-01
Hazard Index				0.58		0.0032		0.00011		0.00052		0.58

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

Checked by/Date: _____

Approved by/Date: _____

Table A-56
Perimeter Drainage Ditch Spoils Pile G
Freshwater Receptor Hazard Quotient

HQ = (95% UCL/Target Concentration) x A/HR (if A/HR exceeds 1, value of 1 is used)

Where

HQ = Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

A = Area of Site, square feet (ft^2) = 5,208

HR = Home Range, ft^2, if blank, home range assumed equal to area of site

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Snipe		Algae		Sediment Invertebrate		Mosquitofish		Great Blue Heron	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)			970,000						700,000		43,100,000	
Pesticides and Herbicides												
4,4'-DDE	6.1E-02	M	2.9E-03	1.1E-01	1.4E+03	4.4E-05	1.4E-03	4.3E+01	1.4E+03	3.3E-07	4.7E-03	1.6E-03
4,4'-DDT	1.5E-01	M	7.2E-03	1.1E-01	7.7E-02	1.9E+00	7.0E-03	2.1E+01	7.7E-02	1.4E-02	2.2E-03	8.3E-03
Hazard Index				0.23		1.9		64		0.014		0.009880

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

Checked by/Date: _____

Approved by/Date: _____

Table A-57
Perimeter Drainage Ditch Spoils Pile G
Human Carcinogenic Risk Characterization

Carcinogenic Risk = (95% UCL/Target Concentrations) x 10^{-6}

Where

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg),

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration	Risk	Target Concentration	Risk	Target Concentration	Risk
Pesticides								
4,4'-DDE	6.1E-02	M	8.7E+00	7.0E-09	8.7E+00	7.0E-09	5.6E-01	1.1E-07
4,4'-DDT	1.5E-01	M	8.7E+00	1.7E-08	8.7E+00	1.7E-08	3.3E+00	4.6E-08
Pathway Cumulative Risk				2.4E-08		2.4E-08		1.5E-07

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M". Checked by/Date: _____

Approved by/Date: _____

Table A-58
Perimeter Drainage Ditch Spoils Pile G
Human Noncarcinogenic Health Hazard Characterization

HQ = (95% UCL/Target Concentration)

Where

HQ = Noncarcinogenic Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg), dry weig

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Pesticides and Herbicides								
4,4'-DDT	1.5E-01	M	1.9E+02	7.7E-04	1.9E+02	7.7E-04	2.4E+02	6.3E-04
Cumulative Pathway Hazard Index[b]				0.00077		0.00077		0.00063

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

Checked by/Date: _____

Approved by/Date: _____

Table A-59
Perimeter Drainage Ditch Spoils Pile H
Estuarine Receptor Hazard Quotient
(Page 1 of 2)

HQ = (95% UCL/Target Concentration) x A/HR (if A/HR exceeds 1, value of 1 is used)

Where

HQ = Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

A = Area of Site, square feet (ft^2) = 5,216

HR = Home Range, ft^2, if blank, home range assumed equal to area of site

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		High Marsh				Intertidal Marsh					
			Salt Marsh Harvest Mouse		Pickleweed		Eohaustorius Estuarius (amphipod)		California Clapper Rail		Black Rail	
			Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)			15,000						505,000		215,000	
Pesticides and Herbicides												
4,4'-DDE	1.0E-03	M	1.7E+02	2.1E-06	*	*	2.1E-03	4.8E-01	1.5E-03	6.8E-03	5.0E-04	4.9E-02
4,4'-DDT	4.0E-03	M	1.6E+02	8.9E-06	1.0E+01	4.0E-04	1.2E-03	3.4E+00	2.0E-02	2.1E-03	6.6E-03	1.5E-02
Petroleum Hydrocarbons												
TPH - Diesel range	6.3E+01	U	2.8E+04	7.8E-04	*	*	1.4E+02	4.3E-01	4.6E+03	1.4E-04	1.5E+03	1.0E-03
Semivolatile Organic Compounds												
Benzo(a)pyrene	1.0E-01	M	1.5E+02	2.4E-04	1.0E-02	1.0E+01	8.9E-02	1.1E+00	*	*	*	*
Hazard Index				0.0010		10		5.4		0.0090		0.064

Table A-59
Perimeter Drainage Ditch Spoils Pile H
Estuarine Receptor Hazard Quotient
(Page 2 of 2)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Subtidal Marsh									
			Bay Shrimp		Salmonid		Northern Anchovy		Double-Crested Cormorant		Algae	
			Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)					950,000		950,000		43,100,000			
Aluminum	#N/A	##	*	0.0E+00	*	0.0E+00	*	0.0E+00	*	0.0E+00	*	0.0E+00
Pesticides and Herbicides												
4,4'-DDE	1.0E-03	M	6.1E+01	1.6E-05	6.1E+01	9.0E-08	1.8E+03	3.0E-09	1.4E-01	8.5E-07	6.1E+01	1.6E-05
4,4'-DDT	4.0E-03	M	2.6E-01	1.6E-02	2.6E-01	8.5E-05	7.7E+00	2.8E-06	3.9E-02	1.3E-05	2.6E-01	1.6E-02
Petroleum Hydrocarbons												
TPH - Diesel range	6.3E+01	U	8.1E+03	7.8E-03	8.1E+03	4.3E-05	2.4E+05	1.4E-06	3.1E+04	2.5E-07	8.1E+03	7.8E-03
Semivolatile Organic Compounds												
Benzo(a)pyrene	1.0E-01	M	*	*	*	*	*	*	*	*	*	*
Hazard Index				0.023		0.00013		0.0000043		0.000014		0.023

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

Checked by/Date: _____

Approved by/Date: _____

Table A-60
Perimeter Drainage Ditch Spoils Pile H
Freshwater Receptor Hazard Quotient

HQ = (95% UCL/Target Concentration) x A/HR (if A/HR exceeds 1, value of 1 is used)

Where

HQ = Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

A = Area of Site, square feet (ft^2) = 5,216

HR = Home Range, ft^2, if blank, home range assumed equal to area of site

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Snipe		Algae		Sediment Invertebrate		Mosquitofish		Great Blue Heron	
			Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)			970,000						700,000		43,100,000	
Pesticides and Herbicides												
4,4'-DDE	1.0E-03	M	2.9E-03	1.9E-03	1.4E+03	7.3E-07	1.4E-03	7.0E-01	1.4E+03	5.4E-09	4.7E-03	2.6E-05
4,4'-DDT	4.0E-03	M	7.2E-03	3.0E-03	7.7E-02	5.2E-02	7.0E-03	5.7E-01	7.7E-02	3.9E-04	2.2E-03	2.2E-04
Petroleum Hydrocarbons												
TPH - Diesel range	6.3E+01	U	2.7E+03	1.2E-04	2.4E+03	2.6E-02	1.4E+02	4.3E-01	2.4E+03	1.9E-04	6.9E+03	1.1E-06
Hazard Index				0.0050		0.32		4.8		0.0024		0.0002489

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

Checked by/Date: _____

Approved by/Date: _____

Table A-61
Perimeter Drainage Ditch Spoils Pile H
Human Carcinogenic Risk Characterization

Carcinogenic Risk = (95% UCL/Target Concentrations) x 10^{-6}

Where

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg),

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration	Risk	Target Concentration	Risk	Target Concentration	Risk
Pesticides								
4,4'-DDE	1.0E-03	M	8.7E+00	1.1E-10	8.7E+00	1.1E-10	5.6E-01	1.8E-09
4,4'-DDT	4.0E-03	M	8.7E+00	4.6E-10	8.7E+00	4.6E-10	3.3E+00	1.2E-09
Semivolatile Organic Compounds								
Benzo(a)pyrene	1.0E-01	M	1.7E-01	5.9E-07	1.7E-01	5.9E-07	5.8E+00	1.7E-08
Pathway Cumulative Risk				5.9E-07		5.9E-07		2.0E-08

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M". Checked by/Date: _____

Approved by/Date: _____

Table A-62
Perimeter Drainage Ditch Spoils Pile H
Human Noncarcinogenic Health Hazard Characterization

HQ = (95% UCL/Target Concentration)

Where

HQ = Noncarcinogenic Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg), dry weig

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient
Pesticides and Herbicides								
4,4'-DDT	4.0E-03	M	1.9E+02	2.1E-05	1.9E+02	2.1E-05	2.4E+02	1.7E-05
Petroleum Hydrocarbons								
TPH - Diesel range	6.3E+01	U	1.0E+05	6.3E-04	1.0E+05	6.3E-04	*	*
Cumulative Pathway Hazard Index[c]				0.00065		0.00065		0.000017

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

Checked by/Date: _____

Approved by/Date: _____

Table A-63
Perimeter Drainage Ditch Spoils Pile I
Estuarine Receptor Hazard Quotient
(Page 1 of 2)

HQ = (95% UCL/Target Concentration) x A/HR (if A/HR exceeds 1, value of 1 is used)

Where

HQ = Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

A = Area of Site, square feet (ft^2) = 4,560

HR = Home Range, ft^2, if blank, home range assumed equal to area of site

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		High Marsh				Intertidal Marsh					
			Salt Marsh Harvest Mouse		Pickleweed		Estuarius (amphipod)		California Clapper Rail		Black Rail	
			Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)			15,000						505,000		215,000	
Metals												
Beryllium	1.1E+00	M	9.9E+02	3.4E-04	1.0E+01	1.1E-01	3.6E-01	3.1E+00	*	*	*	*
Pesticides and Herbicides												
4,4'-DDE	1.4E-02	M	1.7E+02	2.6E-05	*	*	2.1E-03	6.8E+00	1.5E-03	8.4E-02	5.0E-04	5.9E-01
4,4'-DDT	3.9E-02	M	1.6E+02	7.6E-05	1.0E+01	3.9E-03	1.2E-03	3.3E+01	2.0E-02	1.8E-02	6.6E-03	1.2E-01
Semivolatile Organic Compounds												
Benzo(a)pyrene	8.4E-02	M	1.5E+02	1.7E-04	1.0E-02	8.4E+00	8.9E-02	9.5E-01	*	*	*	*
Chrysene	9.0E-02	M	1.2E+02	2.3E-04	*	*	1.1E-01	8.4E-01	*	*	*	*
Hazard Index				0.00084		8.5		44		0.10		0.72

Table A-63
Perimeter Drainage Ditch Spoils Pile I
Estuarine Receptor Hazard Quotient
(Page 2 of 2)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Subtidal Marsh									
			Bay Shrimp		Salmonid		Northern Anchovy		Double-Crested Cormorant		Algae	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)					950,000		950,000		43,100,000			
Metals												
Beryllium	1.1E+00	M	*	*	1.3E+01	4.0E-04	3.9E+02	1.3E-05	*	*	*	*
Pesticides and Herbicides												
4,4'-DDE	1.4E-02	M	6.1E+01	2.3E-04	6.1E+01	1.1E-06	1.8E+03	3.7E-08	1.4E-01	1.0E-05	6.1E+01	2.3E-04
4,4'-DDT	3.9E-02	M	2.6E-01	1.5E-01	2.6E-01	7.3E-04	7.7E+00	2.4E-05	3.9E-02	1.1E-04	2.6E-01	1.5E-01
Semivolatile Organic Compounds												
Benzo(a)pyrene	8.4E-02	M	*	*	*	*	*	*	*	*	*	*
Chrysene	9.0E-02	M	*	*	*	*	*	*	*	*	*	*
Hazard Index				0.15		0.0011		0.000038		0.00012		0.15

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

Checked by/Date: _____

Approved by/Date: _____

Table A-64
Perimeter Drainage Ditch Spoils Pile I
Freshwater Receptor Hazard Quotient

HQ = (95% UCL/Target Concentration) x A/HR (if A/HR exceeds 1, value of 1 is used)

Where

HQ = Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

A = Area of Site, square feet (ft^2) = 4,560

HR = Home Range, ft^2, if blank, home range assumed equal to area of site

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Snipe		Algae		Sediment Invertebrate		Mosquitofish		Great Blue Heron	
			Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)			970,000						700,000		43,100,000	
Metals												
Beryllium	1.1E+00	M	*	*	3.7E-02	3.0E+01	3.6E-01	3.1E+00	3.7E-02	1.9E-01	*	*
Pesticides and Herbicides												
4,4'-DDE	1.4E-02	M	2.9E-03	2.3E-02	1.4E+03	1.0E-05	1.4E-03	9.9E+00	1.4E+03	6.6E-08	4.7E-03	3.1E-04
4,4'-DDT	3.9E-02	M	7.2E-03	2.6E-02	7.7E-02	5.1E-01	7.0E-03	5.6E+00	7.7E-02	3.3E-03	2.2E-03	1.9E-03
Hazard Index				0.048		30.4		24		0.198		0.002207

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

Checked by/Date: _____

Approved by/Date: _____

Table A-65
Perimeter Drainage Ditch Spoils Pile I
Human Carcinogenic Risk Characterization

Carcinogenic Risk = (95% UCL/Target Concentrations) x 10^{-6}

Where

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg),

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration	Risk	Target Concentration[b]	Risk	Target Concentration	Risk
Metals								
Beryllium	1.1E+00	M	2.5E+03	4.3E-10	*	*	*	*
Pesticides								
4,4'-DDE	1.4E-02	M	8.7E+00	1.6E-09	8.7E+00	1.6E-09	5.6E-01	2.5E-08
4,4'-DDT	3.9E-02	M	8.7E+00	4.5E-09	8.7E+00	4.5E-09	3.3E+00	1.2E-08
Semivolatile Organic Compounds								
Benzo(a)pyrene	8.4E-02	M	1.7E-01	5.0E-07	1.7E-01	5.0E-07	5.8E+00	1.4E-08
Chrysene	9.0E-02	M	1.7E+01	5.3E-09	1.7E+01	5.3E-09	4.7E+03	1.9E-11
Pathway Cumulative Risk				5.1E-07		5.1E-07		5.1E-08

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M". Checked by/Date: _____

[b] "*" Data not available. Approved by/Date: _____

Table A-66
Perimeter Drainage Ditch Spoils Pile I
Human Noncarcinogenic Health Hazard Characterization

HQ = (95% UCL/Target Concentration)

Where

HQ = Noncarcinogenic Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient
Metals								
Beryllium	1.1E+00	M	8.0E+02	1.4E-03	8.2E+02	1.3E-03	4.0E+03	2.8E-04
Pesticides and Herbicides								
4,4'-DDT	3.9E-02	M	1.9E+02	2.0E-04	1.9E+02	2.0E-04	2.4E+02	1.6E-04
Cumulative Pathway Hazard Index[c]				0.0016		0.0015		0.00044

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

Checked by/Date: _____

Approved by/Date: _____

Table A-67
Perimeter Drainage Ditch Spoils Pile J
Estuarine Receptor Hazard Quotient
(Page 1 of 2)

HQ = (95% UCL/Target Concentration) x A/HR (if A/HR exceeds 1, value of 1 is used)

Where

HQ = Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

A = Area of Site, square feet (ft^2) = 240

HR = Home Range, ft^2, if blank, home range assumed equal to area of site

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		High Marsh				Intertidal Marsh					
			Salt Marsh Harvest Mouse		Pickleweed		Estuarius (amphipod)		California Clapper Rail		Black Rail	
			Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)			15,000						505,000		215,000	
Metals												
Lead	6.1E+01	M	2.0E+03	4.8E-04	5.0E+01	1.2E+00	3.0E+01	2.0E+00	6.8E+00	4.3E-03	2.3E+00	3.0E-02
Pesticides and Herbicides												
4,4'-DDD	5.0E-03	M	1.3E+02	6.0E-07	*	*	1.2E-03	4.1E+00	3.7E-03	6.4E-04	1.2E-03	4.5E-03
4,4'-DDE	2.6E-02	M	1.7E+02	2.5E-06	*	*	2.1E-03	1.3E+01	1.5E-03	8.2E-03	5.0E-04	5.8E-02
4,4'-DDT	8.6E-02	M	1.6E+02	8.8E-06	1.0E+01	8.6E-03	1.2E-03	7.2E+01	2.0E-02	2.0E-03	6.6E-03	1.4E-02
Semivolatile Organic Compounds												
Benzo(a)pyrene	7.0E-02	M	1.5E+02	7.6E-06	1.0E-02	7.0E+00	8.9E-02	7.9E-01	*	*	*	*
Benzo(g,h,i)perylene	6.0E-02	M	1.9E+02	5.0E-06	*	*	7.2E-01	8.3E-02	*	*	*	*
Indeno(1,2,3-cd)pyrene	6.0E-02	M	1.7E+02	5.5E-06	*	*	6.9E-01	8.7E-02	*	*	*	*
Pyrene	6.0E-02	M	5.8E+03	1.7E-07	*	*	1.5E-01	3.9E-01	*	*	*	*
Hazard Index				0.00051		8.2		92		0.015		0.11

Table A-67
Perimeter Drainage Ditch Spoils Pile J
Estuarine Receptor Hazard Quotient
(Page 2 of 2)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Subtidal Marsh									
			Bay Shrimp		Salmonid		Northern Anchovy		Double-Crested Cormorant		Algae	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)					950,000		950,000		43,100,000			
Metals												
Lead	6.1E+01	M	2.3E+03	2.6E-02	2.3E+03	6.7E-06	6.9E+04	2.2E-07	3.1E+02	1.1E-06	2.3E+03	2.6E-02
Pesticides and Herbicides												
4,4'-DDD	5.0E-03	M	2.5E+00	2.0E-03	2.5E+00	5.1E-07	7.5E+01	1.7E-08	1.3E-01	2.2E-07	2.5E+00	2.0E-03
4,4'-DDE	2.6E-02	M	6.1E+01	4.3E-04	6.1E+01	1.1E-07	1.8E+03	3.6E-09	1.4E-01	1.0E-06	6.1E+01	4.3E-04
4,4'-DDT	8.6E-02	M	2.6E-01	3.3E-01	2.6E-01	8.5E-05	7.7E+00	2.8E-06	3.9E-02	1.2E-05	2.6E-01	3.3E-01
Semivolatile Organic Compounds												
Benzo(a)pyrene	7.0E-02	M	*	*	*	*	*	*	*	*	*	*
Benzo(g,h,i)perylene	6.0E-02	M	*	*	*	*	*	*	*	*	*	*
Indeno(1,2,3-cd)pyrene	6.0E-02	M	*	*	*	*	*	*	*	*	*	*
Pyrene	6.0E-02	M	*	*	*	*	*	*	*	*	*	*
Hazard Index				0.36		0.000092		0.00018		0.000015		0.36

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

Checked by/Date: _____

Approved by/Date: _____

Table A-68
Perimeter Drainage Ditch Spoils Pile J
Freshwater Receptor Hazard Quotient

HQ = (95% UCL/Target Concentration) x A/HR (if A/HR exceeds 1, value of 1 is used)

Where

HQ = Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

A = Area of Site, square feet (ft^2) = 240

HR = Home Range, ft^2, if blank, home range assumed equal to area of site

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Snipe		Algae		Sediment Invertebrate		Mosquitofish		Great Blue Heron	
			Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)			970,000						700,000		43,100,000	
Pesticides and Herbicides												
4,4'-DDD	5.0E-03	M	2.4E-03	5.1E-04	1.9E-01	2.6E-02	3.5E-03	1.4E+00	1.9E-01	8.9E-06	4.6E-03	6.1E-06
4,4'-DDE	2.6E-02	M	2.9E-03	2.2E-03	1.4E+03	1.9E-05	1.4E-03	1.8E+01	1.4E+03	6.5E-09	4.7E-03	3.1E-05
4,4'-DDT	8.6E-02	M	7.2E-03	3.0E-03	7.7E-02	1.1E+00	7.0E-03	1.2E+01	7.7E-02	3.8E-04	2.2E-03	2.2E-04
Semivolatile Organic Compounds												
Benzo(a)pyrene	7.0E-02	M	*	*	4.2E-01	1.7E-01	3.2E-02	2.2E+00	4.2E-01	5.7E-05	*	*
Benzo(g,h,i)perylene	6.0E-02	M	*	*	*	*	3.2E-02	1.9E+00	*	*	*	*
Indeno(1,2,3-cd)pyren	6.0E-02	M	*	*	*	*	1.7E-02	3.5E+00	*	*	*	*
Pyrene	6.0E-02	M	*	*	*	*	4.4E-02	1.4E+00	*	*	*	*
Hazard Index				0.0075		1.6		43		0.00055		0.0002575

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

Checked by/Date: _____

Approved by/Date: _____

Table A-69
Perimeter Drainage Ditch Spoils Pile J
Human Carcinogenic Risk Characterization

Carcinogenic Risk = (95% UCL/Target Concentrations) x 10^{-6}

Where

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg), d

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration	Risk	Target Concentration	Risk	Target Concentration	Risk
Pesticides								
4,4'-DDD	5.0E-03	M	1.2E+01	4.0E-10	1.2E+01	4.0E-10	1.4E+01	3.5E-10
4,4'-DDE	2.6E-02	M	8.7E+00	3.0E-09	8.7E+00	3.0E-09	5.6E-01	4.6E-08
4,4'-DDT	8.6E-02	M	8.7E+00	9.8E-09	8.7E+00	9.9E-09	3.3E+00	2.6E-08
Semivolatile Organic Compounds								
Benzo(a)pyrene	7.0E-02	M	1.7E-01	4.1E-07	1.7E-01	4.1E-07	5.8E+00	1.2E-08
Indeno(1,2,3-cd)pyren	6.0E-02	M	1.7E+00	3.5E-08	1.7E+00	3.6E-08	2.0E+02	3.0E-10
Pathway Cumulative Risk				4.6E-07		4.6E-07		8.5E-08

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M". Checked by/Date: _____

Approved by/Date: _____

Table A-70
Perimeter Drainage Ditch Spoils Pile J
Human Noncarcinogenic Health Hazard Characterization

HQ = (95% UCL/Target Concentration)

Where

HQ = Noncarcinogenic Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Metals								
Lead	6.1E+01	M	6.6E+02	9.2E-02	6.6E+02	9.2E-02	*	*
Pesticides and Herbicides								
4,4'-DDT	8.6E-02	M	1.9E+02	4.4E-04	1.9E+02	4.4E-04	2.4E+02	3.6E-04
Semivolatile Organic Compounds								
Benzo(g,h,i)perylene	6.0E-02	M	9.2E+03	6.5E-06	9.1E+03	6.6E-06	1.0E+05	6.0E-07
Pyrene	6.0E-02	M	9.2E+03	6.5E-06	1.2E+04	4.9E-06	4.6E+04	1.3E-06
Cumulative Pathway Hazard Index				0.092		0.092		0.00036

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

Checked by/Date: _____

Approved by/Date: _____

Table A-71
Perimeter Drainage Ditch Spoils Pile K
Estuarine Receptor Hazard Quotient
(Page 1 of 2)

HQ = (95% UCL/Target Concentration) x A/HR (if A/HR exceeds 1, value of 1 is used)

Where

HQ = Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

A = Area of Site, square feet (ft^2) = 1,155 ft^2

HR = Home Range, ft^2, if blank, home range assumed equal to area of site

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		High Marsh				Intertidal Marsh					
			Salt Marsh Harvest Mouse		Pickleweed		Estuarius (amphipod)		California Clapper Rail		Black Rail	
			Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)			15,000						505,000		215,000	
Metals												
Lead	3.5E+01	M	2.0E+03	1.3E-03	5.0E+01	7.0E-01	3.0E+01	1.2E+00	6.8E+00	1.2E-02	2.3E+00	8.4E-02
Zinc	9.8E+01	M	4.1E+02	1.8E-02	5.0E+01	2.0E+00	1.2E+02	7.9E-01	1.3E+02	1.8E-03	4.2E+01	1.3E-02
Pesticides and Herbicides												
4,4'-DDE	2.8E-02	M	1.7E+02	1.3E-05	*	*	2.1E-03	1.4E+01	1.5E-03	4.2E-02	5.0E-04	3.0E-01
4,4'-DDT	1.5E-01	M	1.6E+02	7.4E-05	1.0E+01	1.5E-02	1.2E-03	1.3E+02	2.0E-02	1.7E-02	6.6E-03	1.2E-01
Hazard Index				0.020		2.7		142		0.073		0.52

Table A-71
Perimeter Drainage Ditch Spoils Pile K
Estuarine Receptor Hazard Quotient
(Page 2 of 2)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Subtidal Marsh									
			Bay Shrimp		Salmonid		Northern Anchovy		Double-Crested Cormorant		Algae	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)					950,000		950,000		43,100,000			
Metals												
Lead	3.5E+01	M	2.3E+03	1.5E-02	2.3E+03	1.9E-05	6.9E+04	6.2E-07	3.1E+02	3.1E-06	2.3E+03	1.5E-02
Zinc	9.8E+01	M	3.8E+03	2.6E-02	3.8E+03	3.1E-05	1.1E+05	1.0E-06	1.4E+04	1.9E-07	3.8E+03	2.6E-02
Pesticides and Herbicides												
4,4'-DDE	2.8E-02	M	6.1E+01	4.6E-04	6.1E+01	5.6E-07	1.8E+03	1.9E-08	1.4E-01	5.3E-06	6.1E+01	4.6E-04
4,4'-DDT	1.5E-01	M	2.6E-01	5.8E-01	2.6E-01	7.1E-04	7.7E+00	2.4E-05	3.9E-02	1.0E-04	2.6E-01	5.8E-01
Hazard Index				0.63		0.00076		0.000025		0.00011		0.63

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

Checked by/Date: _____

Approved by/Date: _____

Table A-72
Perimeter Drainage Ditch Spoils Pile K
Freshwater Receptor Hazard Quotient

HQ = (95% UCL/Target Concentration) x A/HR (if A/HR exceeds 1, value of 1 is used)

Where

HQ = Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

A = Area of Site, square feet (ft^2) = 1,155

HR = Home Range, ft^2, if blank, home range assumed equal to area of site

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Snipe		Algae		Sediment Invertebrate		Mosquitofish		Great Blue Heron	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)			970,000						700,000		43,100,000	
Metals												
Lead	3.5E+01	M	8.2E+00	5.1E-03	2.1E+02	1.7E-01	3.5E+01	1.0E+00	2.1E+02	2.7E-04	3.6E+02	2.6E-06
Pesticides and Herbicides												
4,4'-DDE	2.8E-02	M	2.9E-03	1.2E-02	1.4E+03	2.0E-05	1.4E-03	2.0E+01	1.4E+03	3.4E-08	4.7E-03	1.6E-04
4,4'-DDT	1.5E-01	M	7.2E-03	2.5E-02	7.7E-02	1.9E+00	7.0E-03	2.1E+01	7.7E-02	3.2E-03	2.2E-03	1.8E-03
Hazard Index				0.042		2.2		42		0.0036		0.002007

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

Checked by/Date: _____

Approved by/Date: _____

Table A-73
Perimeter Drainage Ditch Spoils Pile K
Human Carcinogenic Risk Characterization

Carcinogenic Risk = (95% UCL/Target Concentrations) x 10^{-6}

Where

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg), d

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration	Risk	Target Concentration	Risk	Target Concentration	Risk
Pesticides								
4,4'-DDE	2.8E-02	M	8.7E+00	3.2E-09	8.7E+00	3.2E-09	5.6E-01	5.0E-08
4,4'-DDT	1.5E-01	M	8.7E+00	1.7E-08	8.7E+00	1.7E-08	3.3E+00	4.6E-08
Pathway Cumulative Risk				2.0E-08		2.0E-08		9.5E-08

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M". Checked by/Date: _____

Approved by/Date: _____

Table A-74
Perimeter Drainage Ditch Spoils Pile K
Human Noncarcinogenic Health Hazard Characterization

HQ = (95% UCL/Target Concentration)

Where

HQ = Noncarcinogenic Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient
Metals								
Lead	3.5E+01	M	6.6E+02	5.3E-02	6.6E+02	5.3E-02	*	*
Zinc	9.8E+01	M	1.0E+05	9.8E-04	9.2E+04	1.1E-03	1.0E+05	9.8E-04
Pesticides and Herbicides								
4,4'-DDT	1.5E-01	M	1.9E+02	7.7E-04	1.9E+02	7.7E-04	2.4E+02	6.3E-04
Cumulative Pathway Hazard Index[c]				0.055		0.055		0.0016

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

[c] Lead is a special case metal (i.e., the target concentration was calculated using the California Department of Toxic Substances Control LEADSPREAD model), however for calculation of the cumulative pathway hazard index, lead is assumed to be a non-carcinogen.

Checked by/Date: _____

Approved by/Date: _____

Table A-75
Perimeter Drainage Ditch Spoils Pile L
Estuarine Receptor Hazard Quotient
(Page 1 of 2)

HQ = (95% UCL/Target Concentration) x A/HR (if A/HR exceeds 1, value of 1 is used)

Where

HQ = Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

A = Area of Site, square feet (ft^2) = 100

HR = Home Range, ft^2, if blank, home range assumed equal to area of site

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		High Marsh				Intertidal Marsh					
			Salt Marsh Harvest Mouse		Pickleweed		Estuarius (amphipod)		California Clapper Rail		Black Rail	
			Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)			15,000						505,000		215,000	
Metals												
Barium	2.2E+02	M	8.8E+01	1.7E-02	5.0E+02	4.4E-01	1.4E+00	1.6E+02	4.3E+02	1.0E-04	1.4E+02	7.3E-04
Cobalt	5.7E+01	M	1.6E+01	2.4E-02	2.0E+01	2.8E+00	2.0E+01	2.9E+00	*	*	*	*
Lead	7.7E+01	M	2.0E+03	2.5E-04	5.0E+01	1.5E+00	3.0E+01	2.6E+00	6.8E+00	2.3E-03	2.3E+00	1.6E-02
Zinc	1.6E+02	M	4.1E+02	2.7E-03	5.0E+01	3.3E+00	1.2E+02	1.3E+00	1.3E+02	2.6E-04	4.2E+01	1.8E-03
Pesticides and Herbicides												
4,4'-DDE	5.1E-03	M	1.7E+02	2.0E-07	*	*	2.1E-03	2.5E+00	1.5E-03	6.7E-04	5.0E-04	4.7E-03
4,4'-DDT	2.0E-02	M	1.6E+02	8.5E-07	1.0E+01	2.0E-03	1.2E-03	1.7E+01	2.0E-02	2.0E-04	6.6E-03	1.4E-03
Hazard Index				0.044		8.1		189		0.0035		0.025

Table A-75
Perimeter Drainage Ditch Spoils Pile L
Estuarine Receptor Hazard Quotient
(Page 2 of 2)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Subtidal Marsh									
			Bay Shrimp		Salmonid		Northern Anchovy		Double-Crested Cormorant		Algae	
			Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)					950,000		950,000		43,100,000			
Metals												
Barium	2.2E+02	M	5.8E+03	3.8E-02	5.8E+03	4.0E-06	1.8E+05	1.3E-07	4.3E+04	1.2E-08	3.1E+02	7.2E-01
Cobalt	5.7E+01	M	1.8E+03	3.1E-02	2.0E+04	3.0E-07	6.0E+05	9.9E-09	*	*	7.4E+01	7.6E-01
Lead	7.7E+01	M	2.3E+03	3.4E-02	2.3E+03	3.6E-06	6.9E+04	1.2E-07	3.1E+02	5.9E-07	2.3E+03	3.4E-02
Zinc	1.6E+02	M	3.8E+03	4.3E-02	3.8E+03	4.6E-06	1.1E+05	1.5E-07	1.4E+04	2.8E-08	3.8E+03	4.3E-02
Pesticides and Herbicides												
4,4'-DDE	5.1E-03	M	6.1E+01	8.3E-05	6.1E+01	8.8E-09	1.8E+03	2.9E-10	1.4E-01	8.3E-08	6.1E+01	8.3E-05
4,4'-DDT	2.0E-02	M	2.6E-01	7.8E-02	2.6E-01	8.2E-06	7.7E+00	2.7E-07	3.9E-02	1.2E-06	2.6E-01	7.8E-02
Hazard Index				0.22		0.000021		0.00000069		0.0000019		1.6

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

Checked by/Date: _____

Approved by/Date: _____

Table A-76
Perimeter Drainage Ditch Spoils Pile L
Human Carcinogenic Risk Characterization

Carcinogenic Risk = (95% UCL/Target Concentrations) x 10^{-6}

Where

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg),

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration[b]	Risk	Target Concentration	Risk	Target Concentration	Risk
Pesticides								
4,4'-DDE	5.1E-03	M	8.7E+00	5.8E-10	8.7E+00	5.9E-10	5.6E-01	9.0E-09
4,4'-DDT	2.0E-02	M	8.7E+00	2.3E-09	8.7E+00	2.3E-09	3.3E+00	6.1E-09
Pathway Cumulative Risk				2.9E-09		2.9E-09		1.5E-08

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M". Checked by/Date: _____

[b] "*" Data not available. Approved by/Date: _____

Table A-77
Perimeter Drainage Ditch Spoils Pile L
Human Noncarcinogenic Health Hazard Characterization

HQ = (95% UCL/Target Concentration)

Where

HQ = Noncarcinogenic Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration[c]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Metals								
Barium	2.2E+02	M	2.8E+04	8.1E-03	2.7E+04	8.2E-03	*	*
Cobalt	5.7E+01	M	2.5E+04	2.3E-03	2.3E+04	2.4E-03	1.0E+05	5.7E-04
Lead	7.7E+01	M	6.6E+02	1.2E-01	6.6E+02	1.2E-01	*	*
Zinc	1.6E+02	M	1.0E+05	1.6E-03	9.2E+04	1.8E-03	1.0E+05	1.6E-03
Cumulative Pathway Hazard Index				0.13		0.13		0.0023

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

Checked by/Date: _____

Approved by/Date: _____

Table A-78
Perimeter Drainage Ditch Spoils Pile M
Estuarine Receptor Hazard Quotient
(Page 1 of 2)

HQ = (95% UCL/Target Concentration) x A/HR (if A/HR exceeds 1, value of 1 is used)

Where

HQ = Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

A = Area of Site, square feet (ft^2) = 4,795

HR = Home Range, ft^2, if blank, home range assumed equal to area of site

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		High Marsh				Intertidal Marsh					
			Salt Marsh Harvest Mouse		Pickleweed		Estuarius (amphipod)		California Clapper Rail		Black Rail	
			Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)			15,000						505,000		215,000	
Pesticides and Herbicides												
4,4'-DDE	1.2E-02	M	1.7E+02	2.3E-05	*	*	2.1E-03	5.8E+00	1.5E-03	7.5E-02	5.0E-04	5.4E-01
4,4'-DDT	2.6E-02	M	1.6E+02	5.3E-05	1.0E+01	2.6E-03	1.2E-03	2.2E+01	2.0E-02	1.2E-02	6.6E-03	8.7E-02
Hazard Index				0.000076		0.0026		28		0.088		0.62

Table A-78
Perimeter Drainage Ditch Spoils Pile M
Estuarine Receptor Hazard Quotient
(Page 2 of 2)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Subtidal Marsh									
			Bay Shrimp		Salmonid		Northern Anchovy		Double-Crested Cormorant		Algae	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)					950,000		950,000		43,100,000			
Pesticides and Herbicides												
4,4'-DDE	1.2E-02	M	6.1E+01	2.0E-04	6.1E+01	9.9E-07	1.8E+03	3.3E-08	1.4E-01	9.4E-06	6.1E+01	2.0E-04
4,4'-DDT	2.6E-02	M	2.6E-01	1.0E-01	2.6E-01	5.1E-04	7.7E+00	1.7E-05	3.9E-02	7.5E-05	2.6E-01	1.0E-01
Hazard Index				0.10		0.00051		0.000017		0.000084		0.10

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

Checked by/Date: _____

Approved by/Date: _____

Table A-79
Perimeter Drainage Ditch Spoils Pile M
Freshwater Receptor Hazard Quotient

HQ = (95% UCL/Target Concentration) x A/HR (if A/HR exceeds 1, value of 1 is used)

Where

HQ = Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

A = Area of Site, square feet (ft^2) = 4,795

HR = Home Range, ft^2, if blank, home range assumed equal to area of site

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Snipe		Algae		Sediment Invertebrate		Mosquitofish		Great Blue Heron	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)			970,000						700,000		43,100,000	
Pesticides and Herbicides												
4,4'-DDE	1.2E-02	M	2.9E-03	2.1E-02	1.4E+03	8.7E-06	1.4E-03	8.5E+00	1.4E+03	6.0E-08	4.7E-03	2.8E-04
4,4'-DDT	2.6E-02	M	7.2E-03	1.8E-02	7.7E-02	3.4E-01	7.0E-03	3.7E+00	7.7E-02	2.3E-03	2.2E-03	1.3E-03
Hazard Index				0.038		0.34		12		0.0023		0.0016

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

Checked by/Date: _____

Approved by/Date: _____

Table A-80
Perimeter Drainage Ditch Spoils Pile M
Human Carcinogenic Risk Characterization

Carcinogenic Risk = (95% UCL/Target Concentrations) x 10^{-6}

Where

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg), c

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration	Risk	Target Concentration	Risk	Target Concentration	Risk
Pesticides								
4,4'-DDE	1.2E-02	M	8.7E+00	1.4E-09	8.7E+00	1.4E-09	5.6E-01	2.1E-08
4,4'-DDT	2.6E-02	M	8.7E+00	3.0E-09	8.7E+00	3.0E-09	3.3E+00	7.9E-09
Pathway Cumulative Risk				4.4E-09		4.4E-09		2.9E-08

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M". Checked by/Date: _____

Approved by/Date: _____

Table A-81
Perimeter Drainage Ditch Spoils Pile M
Human Noncarcinogenic Health Hazard Characterization

HQ = (95% UCL/Target Concentration)

Where

HQ = Noncarcinogenic Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Pesticides and Herbicides								
4,4'-DDT	2.6E-02	M	1.9E+02	1.3E-04	1.9E+02	1.3E-04	2.4E+02	1.1E-04
Cumulative Pathway Hazard Index[b]				0.00013		0.00013		0.00011

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

Checked by/Date: _____

Approved by/Date: _____

Table A-82
Perimeter Drainage Ditch Spoils Pile N
Estuarine Receptor Hazard Quotient
(Page 1 of 2)

HQ = (95% UCL/Target Concentration) x A/HR (if A/HR exceeds 1, value of 1 is used)

Where

HQ = Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

A = Area of Site, square feet (ft^2) = 12,000

HR = Home Range, ft^2, if blank, home range assumed equal to area of site

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		High Marsh				Intertidal Marsh					
			Salt Marsh Harvest Mouse		Pickleweed		Estuarius (amphipod)		California Clapper Rail		Black Rail	
			Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)			15,000						505,000		215,000	
Metals												
Lead	5.8E+01	M	2.0E+03	2.3E-02	5.0E+01	1.2E+00	3.0E+01	1.9E+00	6.8E+00	2.0E-01	2.3E+00	1.4E+00
Pesticides and Herbicides												
4,4'-DDE	1.1E-02	M	1.7E+02	5.3E-05	*	*	2.1E-03	5.3E+00	1.5E-03	1.7E-01	5.0E-04	1.2E+00
4,4'-DDT	7.7E-02	M	1.6E+02	3.9E-04	1.0E+01	7.7E-03	1.2E-03	6.5E+01	2.0E-02	9.1E-02	6.6E-03	6.5E-01
Petroleum Hydrocarbons												
TPH - Diesel range	5.7E+01	M	2.8E+04	1.6E-03	*	*	1.4E+02	4.0E-01	4.6E+03	3.0E-04	1.5E+03	2.1E-03
Hazard Index				0.025		1.2		72		0.47		3.3

Table A-82
Perimeter Drainage Ditch Spoils Pile N
Estuarine Receptor Hazard Quotient
(Page 2 of 2)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Subtidal Marsh									
			Bay Shrimp		Salmonid		Northern Anchovy		Double-Crested Cormorant		Algae	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)					950,000		950,000		43,100,000			
Metals												
Lead	5.8E+01	M	2.3E+03	2.5E-02	2.3E+03	3.2E-04	6.9E+04	1.1E-05	3.1E+02	5.2E-05	2.3E+03	2.5E-02
Pesticides and Herbicides												
4,4'-DDE	1.1E-02	M	6.1E+01	1.8E-04	6.1E+01	2.3E-06	1.8E+03	7.6E-08	1.4E-01	2.1E-05	6.1E+01	1.8E-04
4,4'-DDT	7.7E-02	M	2.6E-01	3.0E-01	2.6E-01	3.8E-03	7.7E+00	1.3E-04	3.9E-02	5.6E-04	2.6E-01	3.0E-01
Petroleum Hydrocarbons												
TPH - Diesel range	5.7E+01	M	8.1E+03	7.1E-03	8.1E+03	8.9E-05	2.4E+05	3.0E-06	3.1E+04	5.2E-07	8.1E+03	7.1E-03
Hazard Index				0.33		0.0042		0.00014		0.00063		0.33

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "+" data not available

Checked by/Date: _____

Approved by/Date: _____

Table A-83
Perimeter Drainage Ditch Spoils Pile N
Freshwater Receptor Hazard Quotient

HQ = (95% UCL/Target Concentration) x A/HR (if A/HR exceeds 1, value of 1 is used)

Where

HQ = Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

A = Area of Site, square feet (ft^2) = 12,000

HR = Home Range, ft^2, if blank, home range assumed equal to area of site

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Snipe		Algae		Sediment Invertebrate		Mosquitofish		Great Blue Heron	
			Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)			970,000						700,000		43,100,000	
Metals												
Lead	5.8E+01	M	8.2E+00	8.7E-02	2.1E+02	2.7E-01	3.5E+01	1.6E+00	2.1E+02	4.6E-03	3.6E+02	4.5E-05
Pesticides and Herbicides												
4,4'-DDE	1.1E-02	M	2.9E-03	4.7E-02	1.4E+03	8.0E-06	1.4E-03	7.7E+00	1.4E+03	1.4E-07	4.7E-03	6.5E-04
4,4'-DDT	7.7E-02	M	7.2E-03	1.3E-01	7.7E-02	1.0E+00	7.0E-03	1.1E+01	7.7E-02	1.7E-02	2.2E-03	9.8E-03
Petroleum Hydrocarbons												
TPH - Diesel range	5.7E+01	M	2.7E+03	2.6E-04	2.4E+03	2.4E-02	1.4E+02	4.0E-01	2.4E+03	4.0E-04	6.9E+03	2.3E-06
Hazard Index				0.27		1.3		21		0.022		0.011

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

Checked by/Date: _____

Approved by/Date: _____

Table A-84
Perimeter Drainage Ditch Spoils Pile N
Human Carcinogenic Risk Characterization

Carcinogenic Risk = (95% UCL/Target Concentrations) x 10^{-6}

Where

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg),

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration	Risk	Target Concentration	Risk	Target Concentration	Risk
Pesticides								
4,4'-DDE	1.1E-02	M	8.7E+00	1.3E-09	8.7E+00	1.3E-09	5.6E-01	2.0E-08
4,4'-DDT	7.7E-02	M	8.7E+00	8.8E-09	8.7E+00	8.8E-09	3.3E+00	2.3E-08
Pathway Cumulative Risk				1.0E-08		1.0E-08		4.3E-08

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M". Checked by/Date: _____

Approved by/Date: _____

Table A-84
Perimeter Drainage Ditch Spoils Pile N
Human Carcinogenic Risk Characterization

Carcinogenic Risk = (95% UCL/Target Concentrations) x 10^{-6}

Where

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg),

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration	Risk	Target Concentration	Risk	Target Concentration	Risk
Pesticides								
4,4'-DDE	1.1E-02	M	8.7E+00	1.3E-09	8.7E+00	1.3E-09	5.6E-01	2.0E-08
4,4'-DDT	7.7E-02	M	8.7E+00	8.8E-09	8.7E+00	8.8E-09	3.3E+00	2.3E-08
Pathway Cumulative Risk				1.0E-08		1.0E-08		4.3E-08

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M". Checked by/Date: _____

Approved by/Date: _____

Table A-85
Perimeter Drainage Ditch Spoils Pile N
Human Noncarcinogenic Health Hazard Characterization

HQ = (95% UCL/Target Concentration)

Where

HQ = Noncarcinogenic Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient
Metals								
Lead	5.8E+01	M	6.6E+02	8.7E-02	6.6E+02	8.7E-02	*	*
Pesticides and Herbicides								
4,4'-DDT	7.7E-02	M	1.9E+02	4.0E-04	1.9E+02	4.0E-04	2.4E+02	3.2E-04
Petroleum Hydrocarbons								
TPH - Diesel range	5.7E+01	M	1.0E+05	5.7E-04	1.0E+05	5.7E-04	*	*
Cumulative Pathway Hazard Index[c]				0.088		0.088		0.00032

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

[c] Lead is a special case metal (i.e., the target concentration was calculated using the California Department of Toxic Substances Control LEADSPREAD model), however for calculation of the cumulative pathway hazard index, lead is assumed to be a non-carcinogen.

Checked by/Date: _____

Approved by/Date: _____

Table A-86
East Levee Generator/Tank Pads
Estuarine Receptor Hazard Quotient
(Page 1 of 2)

HQ = (95% UCL/Target Concentration) x A/HR (if A/HR exceeds 1, value of 1 is used)

Where

HQ = Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

A = Area of Site, square feet (ft^2) = 10000

HR = Home Range, ft^2, if blank, home range assumed equal to area of site

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		High Marsh				Intertidal Marsh					
			Salt Marsh Harvest Mouse		Pickleweed		Eohaustorius Estuarius (amphipod)		California Clapper Rail		Black Rail	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)			15,000						505,000		215,000	
Metals												
Copper	4.7E+01	U	4.2E+00	7.4E+00	1.0E+02	4.7E-01	1.9E+01	2.5E+00	1.8E+01	5.3E-02	5.8E+00	3.7E-01
Lead	2.2E+01	U	2.0E+03	7.1E-03	5.0E+01	4.4E-01	3.0E+01	7.2E-01	6.8E+00	6.3E-02	2.3E+00	4.5E-01
Hazard Index				7.4		0.90		3.2		0.12		0.82

Table A-86
East Levee Generator/Tank Pads
Estuarine Receptor Hazard Quotient
(Page 2 of 2)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Subtidal Marsh									
			Bay Shrimp		Salmonid		Northern Anchovy		Double-Crested Cormorant		Algae	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)					950,000		950,000		43,100,000			
Metals												
Copper	4.7E+01	U	7.6E+01	6.1E-01	7.6E+01	6.5E-03	2.3E+03	2.2E-04	2.8E+03	3.9E-06	7.6E+01	6.1E-01
Lead	2.2E+01	U	2.3E+03	9.5E-03	2.3E+03	1.0E-04	6.9E+04	3.3E-06	3.1E+02	1.7E-05	2.3E+03	9.5E-03
Hazard Index				0.62		0.0066		0.00022		0.000020		0.62

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

Checked by/Date: _____

Approved by/Date: _____

Table A-87
East Levee Generator/Tank Pads
Human Noncarcinogenic Health Hazard Characterization

HQ = (95% UCL/Target Concentration)

Where

HQ = Noncarcinogenic Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Metals								
Copper	4.6E+01	U	1.5E+04	3.0E-03	1.5E+04	3.1E-03	1.8E+04	2.6E-03
Lead	2.2E+01	U	6.6E+02	3.3E-02	6.6E+02	3.3E-02	*	*
Cumulative Pathway Hazard Index				0.036		0.036		0.0026

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

Checked by/Date: _____

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Table A-88
Onshore Fuel Line - 54-Inch Drain Line Segments
Estuarine Receptor Hazard Quotient
(Page 1 of 2)

HQ = (95% UCL/Target Concentration) x A/HR (if A/HR exceeds 1, value of 1 is used)

Where

HQ = Hazard Quotient, unitless
UCL = Upper Confidence Limit on the Mean, milligrams per kilogram (mg/kg), dry weight
Target Concentration = Target Concentration, mg/kg, dry weight
A = Area of Site, square feet (ft^2) = 120000
HR = Home Range, ft^2, if blank, home range assumed equal to area of site

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		High Marsh				Intertidal Marsh					
			Salt Marsh Harvest Mouse		Pickleweed		Eohaustorius Estuarius (amphipod)		California Clapper Rail		Black Rail	
			Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)			15,000						505,000		215,000	
Metals												
Lead	2.3E+01	U	2.0E+03	1.1E-02	5.0E+01	4.7E-01	3.0E+01	7.7E-01	6.8E+00	8.2E-01	2.3E+00	5.8E+00
Petroleum Hydrocarbons												
TPH - Gasoline range	1.5E+02	U	9.5E+03	1.6E-02	*	*	1.2E+01	1.2E+01	*	*	*	*
TPH - Motor oil range	8.0E+01	M	2.8E+04	2.8E-03	*	*	1.4E+02	5.6E-01	*	*	*	*
Hazard Index				0.030		0.47		13.8		0.82		5.8

Table A-88
Onshore Fuel Line - 54-Inch Drain Line Segments
Estuarine Receptor Hazard Quotient
(Page 2 of 2)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Subtidal Marsh									
			Bay Shrimp		Salmonid		Northern Anchovy		Double-Crested Cormorant		Algae	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)					950,000		950,000		43,100,000			
Metals												
Lead	2.3E+01	U	2.3E+03	1.0E-02	2.3E+03	1.3E-03	6.9E+04	4.3E-05	3.1E+02	2.1E-04	2.3E+03	1.0E-02
Petroleum Hydrocarbons												
TPH - Gasoline range	1.5E+02	U	4.4E+02	3.4E-01	4.4E+02	4.3E-02	1.3E+04	1.4E-03	*	*	4.4E+02	3.4E-01
TPH - Motor oil range	8.0E+01	M	1.1E+04	7.5E-03	1.1E+04	9.5E-04	3.2E+05	3.2E-05	*	*	1.1E+04	7.5E-03
Hazard Index				0.36		0.045		0.00150		0.00021		0.36

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

Checked by/Date: _____

Approved by/Date: _____

Table A-89
Onshore Fuel Line - 54-Inch Drain Line Segments
Human Noncarcinogenic Health Hazard Characterization

HQ = (95% UCL/Target Concentration)

Where

HQ = Noncarcinogenic Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient
Metals								
Lead	2.3E+01	U	6.6E+02	3.5E-02	6.6E+02	3.5E-02	*	*
Petroleum Hydrocarbons								
TPH - Gasoline ra	1.5E+02	U	1.0E+05	1.5E-03	1.0E+05	1.5E-03	*	*
TPH - Motor oil ra	8.0E+01	M	1.0E+05	8.0E-04	1.0E+05	8.0E-04	*	*
Cumulative Pathway Hazard Index[c]				0.038		0.038		*

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

[c] Lead is a special case metal (i.e., the target concentration was calculated using the California Department of Toxic Substances Control LEADSPREAD model), however for calculation of the cumulative pathway hazard index, lead is assumed to be a non-carcinogen.

Checked by/Date: _____

Approved by/Date: _____

Table A-90
Onshore Fuel Line Hangar Segment
Estuarine Receptor Hazard Quotient
(Page 1 of 4)

HQ = (95% UCL/Target Concentration) x A/HR (if A/HR exceeds 1, value of 1 is used)

Where

HQ = Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

A = Area of Site, square feet (ft^2) = 360,000

HR = Home Range, ft^2, if blank, home range assumed equal to area of site

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		High Marsh				Intertidal Marsh					
			Salt Marsh Harvest Mouse		Pickleweed		Eohaustorius Estuarius (amphipod)		California Clapper Rail		Black Rail	
			Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)			15,000						505,000		215,000	
Metals												
Lead	2.9E+01	U	2.0E+03	1.4E-02	5.0E+01	5.8E-01	3.0E+01	9.6E-01	6.8E+00	3.0E+00	2.3E+00	1.3E+01
Petroleum Hydrocarbons												
TPH - Aviation fuel (JP4)	3.2E+02	U	9.5E+03	3.4E-02	*	*	1.2E+01	2.7E+01	*	*	*	*
TPH - Diesel range	4.1E+02	U	2.8E+04	1.5E-02	*	*	1.4E+02	2.9E+00	4.6E+03	6.5E-02	1.5E+03	2.7E-01
TPH - Gasoline range	4.6E+02	U	9.5E+03	4.9E-02	*	*	1.2E+01	3.8E+01	*	*	*	*
TPH - Motor oil range	2.6E+02	U	2.8E+04	9.3E-03	*	*	1.4E+02	1.8E+00	*	*	*	*
Semivolatile Organic Compounds												
Acenaphthene	1.0E+00	U	3.9E+03	2.7E-04	6.3E-01	1.7E+00	6.7E-03	1.5E+02	6.7E+03	1.1E-04	2.2E+03	4.6E-04
Anthracene	6.3E-01	U	4.9E+04	1.3E-05	*	*	4.7E-02	1.3E+01	*	*	*	*
Benzo(a)anthracene	7.7E+00	U	1.2E+02	6.5E-02	*	*	7.5E-02	1.0E+02	*	*	*	*
Benzo(a)pyrene	5.1E+00	U	1.5E+02	3.5E-02	1.0E-02	5.1E+02	8.9E-02	5.8E+01	*	*	*	*
Benzo(b)fluoranthene	8.5E+00	U	1.5E+02	5.6E-02	*	*	1.8E+00	4.7E+00	*	*	*	*
Benzo(g,h,i)perylene	5.1E-01	M	1.9E+02	2.7E-03	*	*	7.2E-01	7.1E-01	*	*	*	*
Benzo(k)fluoranthene	3.2E-01	U	1.8E+02	1.8E-03	*	*	1.8E+00	1.8E-01	*	*	*	*
Chrysene	3.6E+00	U	1.2E+02	3.1E-02	*	*	1.1E-01	3.3E+01	*	*	*	*
Dibenz(a,h)anthracene	3.3E+00	U	1.8E+02	1.9E-02	*	*	6.2E-03	5.2E+02	*	*	*	*
Fluoranthene	6.6E+00	U	9.6E+03	6.8E-04	*	*	1.1E-01	5.8E+01	*	*	*	*
Fluorene	1.7E+00	U	3.9E+03	4.3E-04	*	*	1.9E-02	8.9E+01	4.6E+03	2.6E-04	1.5E+03	1.1E-03

Table A-90
Onshore Fuel Line Hangar Segment
Estuarine Receptor Hazard Quotient
(Page 2 of 4)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		High Marsh				Intertidal Marsh					
			Salt Marsh Harvest Mouse		Pickleweed		Eohaustorius Estuarius (amphipod)		California Clapper Rail		Black Rail	
			Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Indeno(1,2,3-cd)pyrene	4.6E+00	U	1.7E+02	2.6E-02	*	*	6.9E-01	6.6E+00	*	*	*	*
Semivolatile Organic Compounds (continued)												
Naphthalene	2.4E+00	U	7.9E+02	3.0E-03	2.5E+00	9.5E-01	3.5E-02	6.9E+01	*	*	*	*
Phenanthrene	1.5E-01	U	4.9E+01	3.1E-03	*	*	8.7E-02	1.7E+00	*	*	*	*
Pyrene	5.4E+00	U	5.8E+03	9.3E-04	*	*	1.5E-01	3.5E+01	*	*	*	*
Volatile Organic Compounds												
Benzene	1.7E-01	U	2.6E+00	6.7E-02	*	*	3.9E-01	4.4E-01	*	*	*	*
Ethylbenzene	3.3E+00	U	9.2E+01	3.6E-02	*	*	4.0E-03	8.2E+02	*	*	*	*
Toluene	9.0E-02	U	2.5E+03	3.6E-05	2.0E+02	4.5E-04	5.7E-01	1.6E-01	*	*	*	*
Xylenes (total)	4.1E+00	U	8.7E+03	4.7E-04	2.5E+01	1.6E-01	4.0E-02	1.0E+02	1.1E+04	2.7E-04	3.5E+03	1.2E-03
Hazard Index				0.467		515		2,143		3.1		13

Table A-90
Onshore Fuel Line Hangar Segment
Estuarine Receptor Hazard Quotient
(Page 3 of 4)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Subtidal Marsh									
			Bay Shrimp		Salmonid		Northern Anchovy		Double-Crested Cormorant		Algae	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)					950,000		950,000		43,100,000			
Metals												
Lead	2.9E+01	U	2.3E+03	1.3E-02	2.3E+03	4.8E-03	6.9E+04	1.6E-04	3.1E+02	7.9E-04	2.3E+03	1.3E-02
Petroleum Hydrocarbons												
TPH - Aviation fuel (JP4)	3.2E+02	U	4.4E+02	7.3E-01	4.4E+02	2.8E-01	1.3E+04	9.2E-03	*	*	4.4E+02	7.3E-01
TPH - Diesel range	4.1E+02	U	8.1E+03	5.1E-02	8.1E+03	1.9E-02	2.4E+05	6.5E-04	3.1E+04	1.1E-04	8.1E+03	5.1E-02
TPH - Gasoline range	4.6E+02	U	4.4E+02	1.0E+00	4.4E+02	4.0E-01	1.3E+04	1.3E-02	*	*	4.4E+02	1.0E+00
TPH - Motor oil range	2.6E+02	U	1.1E+04	2.5E-02	1.1E+04	9.4E-03	3.2E+05	3.1E-04	*	*	1.1E+04	2.5E-02
Semivolatile Organic Compounds												
Acenaphthene	1.0E+00	U	6.9E+00	1.5E-01	6.9E+00	5.7E-02	2.1E+02	1.9E-03	3.6E+03	2.4E-06	6.9E+00	1.5E-01
Anthracene	6.3E-01	U	*	*	*	*	*	*	*	*	*	*
Benzo(a)anthracene	7.7E+00	U	*	*	*	*	*	*	*	*	*	*
Benzo(a)pyrene	5.1E+00	U	*	*	*	*	*	*	*	*	*	*
Benzo(b)fluoranthene	8.5E+00	U	*	*	*	*	*	*	*	*	*	*
Benzo(g,h,i)perylene	5.1E-01	M	*	*	*	*	*	*	*	*	*	*
Benzo(k)fluoranthene	3.2E-01	U	*	*	*	*	*	*	*	*	*	*
Chrysene	3.6E+00	U	*	*	*	*	*	*	*	*	*	*
Dibenz(a,h)anthracene	3.3E+00	U	*	*	*	*	*	*	*	*	*	*
Fluoranthene	6.6E+00	U	1.8E+01	3.7E-01	1.8E+01	1.4E-01	5.3E+02	4.7E-03	*	*	1.8E+01	3.7E-01
Fluorene	1.7E+00	U	*	*	*	*	*	*	3.1E+03	4.5E-06	*	*
Indeno(1,2,3-cd)pyrene	4.6E+00	U	*	*	*	*	*	*	*	*	*	*
Naphthalene	2.4E+00	U	4.7E+00	5.1E-01	4.7E+00	1.9E-01	1.4E+02	6.4E-03	*	*	4.7E+00	5.1E-01
Phenanthrene	1.5E-01	U	*	*	*	*	*	*	*	*	*	*
Pyrene	5.4E+00	U	*	*	*	*	*	*	*	*	*	*

Table A-90
Onshore Fuel Line Hangar Segment
Estuarine Receptor Hazard Quotient
(Page 4 of 4)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Subtidal Marsh									
			Bay Shrimp		Salmonid		Northern Anchovy		Double-Crested Cormorant		Algae	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Volatile Organic Compounds												
Benzene	1.7E-01	U	1.3E+00	1.3E-01	1.3E+00	5.0E-02	3.9E+01	1.7E-03	*	*	1.3E+00	1.3E-01
Ethylbenzene	3.3E+00	U	5.2E-01	6.4E+00	5.2E-01	2.4E+00	1.6E+01	8.0E-02	*	*	5.2E-01	6.4E+00
Toluene	9.0E-02	U	1.9E+00	4.7E-02	1.9E+00	1.8E-02	5.7E+01	6.0E-04	*	*	1.9E+00	4.7E-02
Xylenes (total)	4.1E+00	U	3.3E+00	1.2E+00	4.0E+01	3.9E-02	1.2E+03	1.3E-03	2.1E+05	1.6E-07	4.5E+02	9.1E-03
Hazard Index				10.7		3.61		0.120		0.00091		9.4

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

Checked by/Date: _____

Approved by/Date: _____

Table A-91
Onshore Fuel Line - Hangar Segment
Human Carcinogenic Risk Characterization

Carcinogic Risk = (95% UCL/Target Concentrations) x 10^{-6}

Where

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration[b]	Risk	Target Concentration	Risk	Target Concentration	Risk
Semivolatile Organic Compounds								
Benzo(a)anthracen	7.7E+00	U	1.7E+00	4.5E-06	1.7E+00	4.5E-06	2.9E+01	2.6E-07
Benzo(a)pyrene	5.1E+00	U	1.7E-01	3.0E-05	1.7E-01	3.0E-05	5.8E+00	8.8E-07
Benzo(b)fluoranthe	8.5E+00	U	1.7E+00	5.0E-06	1.7E+00	5.0E-06	7.0E+01	1.2E-07
Benzo(g,h,i)peryle	5.1E-01	M	*	*	*	*	*	*
Benzo(k)fluoranthe	3.2E-01	U	1.7E+00	1.9E-07	1.7E+00	1.9E-07	5.7E+01	5.7E-09
Chrysene	3.6E+00	U	1.7E+01	2.1E-07	1.7E+01	2.1E-07	4.7E+03	7.6E-10
Dibenz(a,h)anthrac	3.3E+00	U	4.9E-01	6.6E-06	4.9E-01	6.6E-06	6.5E+01	5.0E-08
Indeno(1,2,3-cd)py	4.6E+00	U	1.7E+00	2.7E-06	1.7E+00	2.7E-06	2.0E+02	2.3E-08
Volatile Organic Compounds								
Benzene	1.7E-01	U	2.2E+01	7.7E-09	2.2E+01	7.7E-09	1.0E+01	1.7E-08
Pathway Cumulative Risk				5.0E-05		5.0E-05		1.4E-06

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" Data not available.

Checked by/Date: _____

Approved by/Date: _____

Table A-92
Onshore Fuel Line - Hangar Segment
Human Noncarcinogenic Health Hazard Characterization
(Page 1 of 2)

HQ = (95% UCL/Target Concentration)

Where

HQ = Noncarcinogenic Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient
Metals								
Lead	2.9E+01	U	6.6E+02	4.4E-02	6.6E+02	4.4E-02	*	*
Petroleum Hydrocarbons								
TPH - Aviation fue	3.2E+02	U	1.0E+05	3.2E-03	1.0E+05	3.2E-03	*	*
TPH - Diesel rang	4.1E+02	U	1.0E+05	4.1E-03	1.0E+05	4.1E-03	*	*
TPH - Gasoline ra	4.6E+02	U	1.0E+05	4.6E-03	1.0E+05	4.6E-03	*	*
TPH - Motor oil ra	2.6E+02	U	1.0E+05	2.6E-03	1.0E+05	2.6E-03	*	*
Semivolatile Organic Compounds								
Acenaphthene	1.0E+00	U	1.8E+04	5.7E-05	1.8E+04	5.8E-05	3.0E+04	3.4E-05
Anthracene	6.3E-01	U	8.5E+04	7.4E-06	7.8E+04	8.0E-06	1.0E+05	6.3E-06
Benzo(g,h,i)peryle	5.1E-01	M	9.2E+03	5.6E-05	9.1E+03	5.6E-05	1.0E+05	5.1E-06
Fluoranthene	6.6E+00	U	1.2E+04	5.4E-04	1.2E+04	5.4E-04	7.7E+04	8.6E-05
Fluorene	1.7E+00	U	1.2E+04	1.4E-04	1.2E+04	1.4E-04	1.8E+04	9.5E-05
Naphthalene	2.4E+00	U	6.1E+03	3.9E-04	8.3E+03	2.9E-04	1.6E+04	1.5E-04
Phenanthrene	1.5E-01	U	9.8E+03	1.5E-05	1.2E+04	1.2E-05	1.0E+05	1.5E-06
Pyrene	5.4E+00	U	9.2E+03	5.8E-04	1.2E+04	4.3E-04	4.6E+04	1.2E-04

Table A-92
Onshore Fuel Line - Hangar Segment
Human Noncarcinogenic Health Hazard Characterization
(Page 2 of 2)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient
Volatile Organic Compounds								
Benzene	1.7E-01	U	9.9E+02	1.7E-04	9.8E+02	1.7E-04	1.3E+03	1.3E-04
Ethylbenzene	3.3E+00	U	3.2E+04	1.0E-04	3.2E+04	1.0E-04	6.2E+04	5.3E-05
Toluene	9.0E-02	U	6.2E+04	1.5E-06	7.2E+04	1.2E-06	3.1E+03	2.9E-05
Xylenes (total)	4.1E+00	U	1.0E+05	4.1E-05	1.0E+05	4.1E-05	*	*
Cumulative Pathway Hazard Index[c]				0.060		0.060		0.00070

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

[c] Lead is a special case metal (i.e., the target concentration was calculated using the California Department of Toxic Substances Control LEADSPREAD model), however for calculation of the cumulative pathway hazard index, lead is assumed to be a non-carcinogen.

Checked by/Date: _____

Approved by/Date: _____

Table A-93
Onshore Fuel Line Northern Segment
Estuarine Receptor Hazard Quotient
(Page 1 of 4)

HQ = (95% UCL/Target Concentration) x A/HR (if A/HR exceeds 1, value of 1 is used)

Where

HQ = Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

A = Area of Site, square feet (ft^2) = 123000

HR = Home Range, ft^2, if blank, home range assumed equal to area of site

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		High Marsh				Intertidal Marsh					
			Salt Marsh Harvest Mouse		Pickleweed		Eohaustorius Estuarius (amphipod)		California Clapper Rail		Black Rail	
			Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)			15,000						505,000		215,000	
Petroleum Hydrocarbons												
TPH - Diesel range	2.2E+02	U	2.8E+04	7.8E-03	*	*	1.4E+02	1.5E+00	4.6E+03	1.2E-02	1.5E+03	8.3E-02
TPH - Gasoline range	8.7E+01	U	9.5E+03	9.1E-03	*	*	1.2E+01	7.2E+00	*	*	*	*
TPH - Motor oil range	4.5E+02	U	2.8E+04	1.6E-02	*	*	1.4E+02	3.1E+00	*	*	*	*
Semivolatile Organic Compounds												
2-Methylnaphthalene	4.3E-01	M	2.0E+03	2.2E-04	*	*	2.0E-02	2.1E+01	*	*	*	*
Benzo(a)anthracene	4.0E-03	M	1.2E+02	3.4E-05	*	*	7.5E-02	5.3E-02	*	*	*	*
Benzo(a)pyrene	2.1E-02	U	1.5E+02	1.5E-04	1.0E-02	2.1E+00	8.9E-02	2.4E-01	*	*	*	*
Benzo(b)fluoranthene	7.0E-03	M	1.5E+02	4.6E-05	*	*	1.8E+00	3.9E-03	*	*	*	*
Benzo(g,h,i)perylene	5.0E-03	M	1.9E+02	2.6E-05	*	*	7.2E-01	6.9E-03	*	*	*	*
Benzo(k)fluoranthene	5.0E-03	M	1.8E+02	2.7E-05	*	*	1.8E+00	2.8E-03	*	*	*	*
Chrysene	7.0E-03	M	1.2E+02	6.0E-05	*	*	1.1E-01	6.5E-02	*	*	*	*

Table A-93
Onshore Fuel Line Northern Segment
Estuarine Receptor Hazard Quotient
(Page 2 of 4)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		High Marsh				Intertidal Marsh					
			Salt Marsh Harvest Mouse		Pickleweed		Eohaustorius Estuarius (amphipod)		California Clapper Rail		Black Rail	
			Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Semivolatile Organic Compounds (continued)												
Fluoranthene	8.0E-03	M	9.6E+03	8.3E-07	*	*	1.1E-01	7.1E-02	*	*	*	*
Indeno(1,2,3-cd)pyrene	5.0E-03	M	1.7E+02	2.9E-05	*	*	6.9E-01	7.2E-03	*	*	*	*
Phenanthrene	6.9E-02	U	4.9E+01	1.4E-03	*	*	8.7E-02	7.9E-01	*	*	*	*
Pyrene	9.0E-03	M	5.8E+03	1.6E-06	*	*	1.5E-01	5.9E-02	*	*	*	*
Volatile Organic Compounds												
Benzene	1.0E-03	U	2.6E+00	3.9E-04	*	*	3.9E-01	2.5E-03	*	*	*	*
Ethylbenzene	3.3E-03	U	9.2E+01	3.6E-05	*	*	4.0E-03	8.3E-01	*	*	*	*
Toluene	2.2E-03	U	2.5E+03	8.7E-07	2.0E+02	1.1E-05	5.7E-01	3.9E-03	*	*	*	*
Xylenes (total)	2.7E-03	U	8.7E+03	3.1E-07	2.5E+01	1.1E-04	4.0E-02	6.8E-02	1.1E+04	6.2E-08	3.5E+03	4.4E-07
Hazard Index				0.0353		2.1		35.3		0.0117		0.0829

Table A-93
Onshore Fuel Line Northern Segment
Estuarine Receptor Hazard Quotient
(Page 3 of 4)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Subtidal Marsh									
			Bay Shrimp		Salmonid		Northern Anchovy		Double-Crested Cormorant		Algae	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)					950,000		950,000		43,100,000			
Petroleum Hydrocarbons												
TPH - Diesel range	2.2E+02	U	8.1E+03	2.7E-02	8.1E+03	3.5E-03	2.4E+05	1.2E-04	3.1E+04	2.0E-05	8.1E+03	2.7E-02
TPH - Gasoline range	8.7E+01	U	4.4E+02	2.0E-01	4.4E+02	2.5E-02	1.3E+04	8.5E-04	*	*	4.4E+02	2.0E-01
TPH - Motor oil range	4.5E+02	U	1.1E+04	4.2E-02	1.1E+04	5.4E-03	3.2E+05	1.8E-04	*	*	1.1E+04	4.2E-02
Semivolatile Organic Compounds												
2-Methylnaphthalene	4.3E-01	M	*	*	*	*	*	*	*	*	*	*
Benzo(a)anthracene	4.0E-03	M	*	*	*	*	*	*	*	*	*	*
Benzo(a)pyrene	2.1E-02	U	*	*	*	*	*	*	*	*	*	*
Benzo(b)fluoranthene	7.0E-03	M	*	*	*	*	*	*	*	*	*	*
Benzo(g,h,i)perylene	5.0E-03	M	*	*	*	*	*	*	*	*	*	*
Benzo(k)fluoranthene	5.0E-03	M	*	*	*	*	*	*	*	*	*	*
Chrysene	7.0E-03	M	*	*	*	*	*	*	*	*	*	*
Fluoranthene	8.0E-03	M	1.8E+01	4.6E-04	1.8E+01	5.9E-05	5.3E+02	2.0E-06	*	*	1.8E+01	4.6E-04
Indeno(1,2,3-cd)pyrene	5.0E-03	M	*	*	*	*	*	*	*	*	*	*
Phenanthrene	6.9E-02	U	*	*	*	*	*	*	*	*	*	*
Pyrene	9.0E-03	M	*	*	*	*	*	*	*	*	*	*

Table A-93
Onshore Fuel Line Northern Segment
Estuarine Receptor Hazard Quotient
(Page 4 of 4)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Subtidal Marsh									
			Bay Shrimp		Salmonid		Northern Anchovy		Double-Crested Cormorant		Algae	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Volatile Organic Compounds												
Benzene	1.0E-03	U	1.3E+00	7.6E-04	1.3E+00	9.9E-05	3.9E+01	3.3E-06	*	*	1.3E+00	7.6E-04
Ethylbenzene	3.3E-03	U	5.2E-01	6.4E-03	5.2E-01	8.3E-04	1.6E+01	2.8E-05	*	*	5.2E-01	6.4E-03
Toluene	2.2E-03	U	1.9E+00	1.2E-03	1.9E+00	1.5E-04	5.7E+01	5.0E-06	*	*	1.9E+00	1.2E-03
Xylenes (total)	2.7E-03	U	3.3E+00	8.2E-04	4.0E+01	8.8E-06	1.2E+03	2.9E-07	2.1E+05	3.7E-11	4.5E+02	6.0E-06
Hazard Index				0.276		0.0356		0.00119		0.0000205		0.275

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

Checked by/Date: _____

Approved by/Date: _____

Table A-94
Onshore Fuel Line Northern Segment
Human Carcinogenic Risk Characterization

Carcinogenic Risk = (95% UCL/Target Concentrations) x 10^{-6}

Where

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration[b]	Risk	Target Concentration	Risk	Target Concentration	Risk
Semivolatile Organic Compounds								
Benzo(a)anthracen	4.0E-03	M	1.7E+00	2.4E-09	1.7E+00	2.4E-09	2.9E+01	1.4E-10
Benzo(a)pyrene	2.1E-02	U	1.7E-01	1.3E-07	1.7E-01	1.3E-07	5.8E+00	3.7E-09
Benzo(b)fluoranthe	7.0E-03	M	1.7E+00	4.1E-09	1.7E+00	4.1E-09	7.0E+01	1.0E-10
Benzo(k)fluoranthe	5.0E-03	M	1.7E+00	3.0E-09	1.7E+00	3.0E-09	5.7E+01	8.8E-11
Chrysene	7.0E-03	M	1.7E+01	4.1E-10	1.7E+01	4.1E-10	4.7E+03	1.5E-12
Indeno(1,2,3-cd)py	5.0E-03	M	1.7E+00	3.0E-09	1.7E+00	3.0E-09	2.0E+02	2.5E-11
Volatile Organic Compounds								
Benzene	1.0E-03	U	2.2E+01	4.5E-11	2.2E+01	4.5E-11	1.0E+01	9.7E-11
Pathway Cumulative Risk				1.4E-07		1.4E-07		4.1E-09

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" Data not available.

Checked by/Date: _____

Approved by/Date: _____

Table A-95
Onshore Fuel Line Northern Segment
Human Noncarcinogenic Health Hazard Characterization

HQ = (95% UCL/Target Concentration)

Where

HQ = Noncarcinogenic Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient
Petroleum Hydrocarbons								
TPH - Diesel rang	2.2E+02	U	1.0E+05	2.2E-03	1.0E+05	2.2E-03	*	*
TPH - Gasoline ra	8.7E+01	U	1.0E+05	8.7E-04	1.0E+05	8.7E-04	*	*
TPH - Motor oil ra	4.5E+02	U	1.0E+05	4.5E-03	1.0E+05	4.5E-03	*	*
Semivolatile Organic Compounds								
2-Methylnaphthale	4.3E-01	M	6.1E+03	7.0E-05	6.1E+03	7.0E-05	2.8E+03	1.6E-04
Benzo(g,h,i)peryle	5.0E-03	M	9.2E+03	5.4E-07	9.1E+03	5.5E-07	1.0E+05	5.0E-08
Fluoranthene	8.0E-03	M	1.2E+04	6.6E-07	1.2E+04	6.6E-07	7.7E+04	1.0E-07
Phenanthrene	6.9E-02	U	9.8E+03	7.0E-06	1.2E+04	5.6E-06	1.0E+05	6.9E-07
Pyrene	9.0E-03	M	9.2E+03	9.8E-07	1.2E+04	7.3E-07	4.6E+04	2.0E-07
Volatile Organic Compounds								
Benzene	1.0E-03	U	9.9E+02	1.0E-06	9.8E+02	1.0E-06	1.3E+03	7.5E-07
Ethylbenzene	3.3E-03	U	3.2E+04	1.0E-07	3.2E+04	1.0E-07	6.2E+04	5.3E-08
Toluene	2.2E-03	U	6.2E+04	3.6E-08	7.2E+04	3.0E-08	3.1E+03	7.0E-07
Xylenes (total)	2.7E-03	U	1.0E+05	2.7E-08	1.0E+05	2.7E-08	*	*
Cumulative Pathway Hazard Index				0.0076		0.0076		0.00016

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

Checked by/Date: _____

Approved by/Date: _____

Table A-96
Northwest Runway Area
Estuarine Receptor Hazard Quotient
(Page 1 of 4)

HQ = (95% UCL/Target Concentration) x A/HR (if A/HR exceeds 1, value of 1 is used)

Where

HQ = Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

A = Area of Site, square feet (ft^2) = 44000

HR = Home Range, ft^2, if blank, home range assumed equal to area of site

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		High Marsh				Intertidal Marsh					
			Salt Marsh Harvest Mouse		Pickleweed		Eohaustorius Estuarius (amphipod)		California Clapper Rail		Black Rail	
			Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)			15,000						505,000		215,000	
Metals												
Arsenic	7.7E+00	U	1.4E+01	5.5E-01	1.0E+01	7.7E-01	7.2E+00	1.1E+00	1.3E+02	5.2E-03	4.3E+01	3.7E-02
Beryllium	1.4E+00	U	9.9E+02	1.4E-03	1.0E+01	1.4E-01	3.6E-01	4.0E+00	*	*	*	*
Boron	2.0E+01	U	9.6E+00	2.1E+00	5.0E-01	4.1E+01	*	*	8.6E+01	2.1E-02	2.9E+01	1.5E-01
Chromium	6.7E+01	U	4.0E+04	1.7E-03	2.5E-02	2.7E+03	5.2E+01	1.3E+00	3.1E+01	1.9E-01	1.0E+01	1.3E+00
Copper	3.3E+01	U	4.2E+00	7.9E+00	1.0E+02	3.3E-01	1.9E+01	1.8E+00	1.8E+01	1.7E-01	5.8E+00	1.2E+00
Mercury	5.7E-01	U	1.9E+00	3.1E-01	3.0E-01	1.9E+00	1.3E-01	4.4E+00	1.7E+00	3.0E-02	5.5E-01	2.1E-01
Molybdenum	6.3E-01	M	6.0E+00	1.0E-01	2.0E+00	3.2E-01	4.8E+00	1.3E-01	1.8E+02	3.1E-04	5.9E+01	2.2E-03
Nickel	5.7E+01	U	3.8E+01	1.5E+00	3.0E+01	1.9E+00	1.6E+01	3.6E+00	4.6E+02	1.1E-02	1.5E+02	7.7E-02
Selenium	2.9E-01	U	2.8E+01	1.0E-02	1.0E+00	2.9E-01	2.2E-02	1.3E+01	7.0E-01	3.6E-02	2.3E-01	2.6E-01
Zinc	7.7E+01	U	4.1E+02	1.9E-01	5.0E+01	1.5E+00	1.2E+02	6.2E-01	1.3E+02	5.3E-02	4.2E+01	3.8E-01
Pesticides and Herbicides												
4,4'-DDE	9.5E-02	M	1.7E+02	5.7E-04	*	*	2.1E-03	4.6E+01	1.5E-03	5.5E+00	5.0E-04	3.9E+01
4,4'-DDT	1.5E-01	M	1.6E+02	9.6E-04	1.0E+01	1.5E-02	1.2E-03	1.3E+02	2.0E-02	6.5E-01	6.6E-03	4.6E+00
Dalapon	5.4E-03	M	*	*	*	*	1.3E-02	4.1E-01	*	*	*	*
2-Sec-butyl-4,6-dinitrophe	4.1E-03	M	2.0E+00	2.1E-03	*	*	*	*	*	*	*	*

Table A-96
Northwest Runway Area
Estuarine Receptor Hazard Quotient
(Page 2 of 4)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		High Marsh				Intertidal Marsh					
			Salt Marsh Harvest Mouse		Pickleweed		Eohaustorius Estuarius (amphipod)		California Clapper Rail		Black Rail	
			Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Petroleum Hydrocarbons												
TPH - Diesel range	1.5E+01	M	2.8E+04	5.4E-04	*	*	1.4E+02	1.0E-01	4.6E+03	2.9E-04	1.5E+03	2.0E-03
TPH - Motor oil range	1.4E+01	M	2.8E+04	5.0E-04	*	*	1.4E+02	9.7E-02	*	*	*	*
Semivolatile Organic Compounds												
Benzo(a)anthracene	8.1E-02	M	1.2E+02	6.9E-04	*	*	7.5E-02	1.1E+00	*	*	*	*
Benzo(a)pyrene	9.8E-02	M	1.5E+02	6.6E-04	1.0E-02	9.8E+00	8.9E-02	1.1E+00	*	*	*	*
Benzo(b)fluoranthene	9.9E-02	M	1.5E+02	6.5E-04	*	*	1.8E+00	5.5E-02	*	*	*	*
Benzo(k)fluoranthene	8.6E-02	M	1.8E+02	4.7E-04	*	*	1.8E+00	4.8E-02	*	*	*	*
Chrysene	1.0E-01	M	1.2E+02	8.5E-04	*	*	1.1E-01	9.3E-01	*	*	*	*
Dibenz(a,h)anthracene	2.1E-02	U	1.8E+02	1.2E-04	*	*	6.2E-03	3.4E+00	*	*	*	*
Fluoranthene	1.0E-01	M	9.6E+03	1.0E-05	*	*	1.1E-01	8.9E-01	*	*	*	*
Indeno(1,2,3-cd)pyrene	3.1E-02	U	1.7E+02	1.8E-04	*	*	6.9E-01	4.4E-02	*	*	*	*
Phenanthrene	3.2E-02	M	4.9E+01	6.5E-04	*	*	8.7E-02	3.7E-01	*	*	*	*
Pyrene	1.1E-01	M	5.8E+03	1.9E-05	*	*	1.5E-01	7.2E-01	*	*	*	*
Hazard Index				21		2,745		211		6.6		47

Table A-96
Northwest Runway Area
Estuarine Receptor Hazard Quotient
(Page 3 of 4)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Subtidal Marsh									
			Bay Shrimp		Salmonid		Northern Anchovy		Double-Crested Cormorant		Algae	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)					950,000		950,000		43,100,000			
Metals												
Arsenic	7.7E+00	U	1.7E+02	4.6E-02	1.7E+02	2.1E-03	5.0E+03	7.1E-05	1.0E+04	7.8E-07	1.7E+02	4.6E-02
Beryllium	1.4E+00	U	*	*	1.3E+01	5.0E-03	3.9E+02	1.7E-04	*	*	*	*
Boron	2.0E+01	U	5.0E+01	4.0E-01	1.5E+04	6.3E-05	1.5E+04	6.3E-05	5.9E+03	3.5E-06	*	*
Chromium	6.7E+01	U	6.5E+03	1.0E-02	6.5E+03	4.7E-04	2.0E+05	1.6E-05	1.1E+03	6.4E-05	6.5E+03	1.0E-02
Copper	3.3E+01	U	7.6E+01	4.4E-01	7.6E+01	2.0E-02	2.3E+03	6.7E-04	2.8E+03	1.2E-05	7.6E+01	4.4E-01
Mercury	5.7E-01	U	4.7E+00	1.2E-01	4.7E+00	5.6E-03	1.4E+02	1.9E-04	1.8E-01	3.3E-03	4.7E+00	1.2E-01
Molybdenum	6.3E-01	M	1.7E+01	3.8E-02	4.9E-02	6.0E-01	1.5E+00	2.0E-02	4.8E+03	1.4E-07	1.7E+01	3.8E-02
Nickel	5.7E+01	U	2.5E+02	2.2E-01	2.5E+02	1.0E-02	7.6E+03	3.4E-04	1.9E+04	3.0E-06	2.5E+02	2.2E-01
Selenium	2.9E-01	U	1.0E+00	2.8E-01	1.0E+00	1.3E-02	3.1E+01	4.4E-04	4.1E+00	7.3E-05	1.0E+00	2.8E-01
Zinc	7.7E+01	U	3.8E+03	2.0E-02	3.8E+03	9.5E-04	1.1E+05	3.2E-05	1.4E+04	5.8E-06	3.8E+03	2.0E-02
Pesticides and Herbicides												
4,4'-DDE	9.5E-02	M	6.1E+01	1.6E-03	6.1E+01	7.2E-05	1.8E+03	2.4E-06	1.4E-01	6.8E-04	6.1E+01	1.6E-03
4,4'-DDT	1.5E-01	M	2.6E-01	5.8E-01	2.6E-01	2.7E-02	7.7E+00	9.0E-04	3.9E-02	4.0E-03	2.6E-01	5.8E-01
Dalapon	5.4E-03	M	4.0E-02	1.4E-01	4.0E-02	6.3E-03	1.2E+00	2.1E-04	*	*	4.4E-02	1.2E-01
2-Sec-butyl-4,6-dinitrophe	4.1E-03	M	*	*	*	*	*	*	*	*	*	*
Petroleum Hydrocarbons												
TPH - Diesel range	1.5E+01	M	8.1E+03	1.9E-03	8.1E+03	8.6E-05	2.4E+05	2.9E-06	3.1E+04	5.0E-07	8.1E+03	1.9E-03
TPH - Motor oil range	1.4E+01	M	1.1E+04	1.3E-03	1.1E+04	6.1E-05	3.2E+05	2.0E-06	*	*	1.1E+04	1.3E-03

Table A-96
Northwest Runway Area
Estuarine Receptor Hazard Quotient
(Page 4 of 4)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Subtidal Marsh									
			Bay Shrimp		Salmonid		Northern Anchovy		Double-Crested Cormorant		Algae	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Semivolatile Organic Compounds												
Benzo(a)anthracene	8.1E-02	M	*	*	*	*	*	*	*	*	*	*
Benzo(a)pyrene	9.8E-02	M	*	*	*	*	*	*	*	*	*	*
Benzo(b)fluoranthene	9.9E-02	M	*	*	*	*	*	*	*	*	*	*
Benzo(k)fluoranthene	8.6E-02	M	*	*	*	*	*	*	*	*	*	*
Chrysene	1.0E-01	M	*	*	*	*	*	*	*	*	*	*
Dibenz(a,h)anthracene	2.1E-02	U	*	*	*	*	*	*	*	*	*	*
Fluoranthene	1.0E-01	M	1.8E+01	5.7E-03	1.8E+01	2.6E-04	5.3E+02	8.8E-06	*	*	1.8E+01	5.7E-03
Indeno(1,2,3-cd)pyrene	3.1E-02	U	*	*	*	*	*	*	*	*	*	*
Phenanthrene	3.2E-02	M	*	*	*	*	*	*	*	*	*	*
Pyrene	1.1E-01	M	*	*	*	*	*	*	*	*	*	*
Hazard Index				2.4		0.70		0.023		0.0081		2.0

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

Checked by/Date: _____

Approved by/Date: _____

Table A-97
Northwest Runway Area
Human Carcinogenic Risk Characterization

Carcinogenic Risk = (95% UCL/Target Concentrations) x 10^{-6}

Where

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration[b]	Risk	Target Concentration	Risk	Target Concentration	Risk
Metals								
Arsenic	7.7E+00	U	2.0E+00	3.9E-06	2.0E+00	3.9E-06	4.1E+00	1.9E-06
Beryllium	1.4E+00	U	2.5E+03	5.6E-10	*	*	*	*
Nickel	5.7E+01	U	2.3E+04	2.4E-09	*	*	*	*
Pesticides								
4,4'-DDE	9.5E-02	M	8.7E+00	1.1E-08	8.7E+00	1.1E-08	5.6E-01	1.7E-07
4,4'-DDT	1.5E-01	M	8.7E+00	1.7E-08	8.7E+00	1.7E-08	3.3E+00	4.6E-08
Semivolatile Organic Compounds								
Benzo(a)anthracen	8.1E-02	M	1.7E+00	4.8E-08	1.7E+00	4.8E-08	2.9E+01	2.8E-09
Benzo(a)pyrene	9.8E-02	M	1.7E-01	5.8E-07	1.7E-01	5.8E-07	5.8E+00	1.7E-08
Benzo(b)fluoranthe	9.9E-02	M	1.7E+00	5.9E-08	1.7E+00	5.9E-08	7.0E+01	1.4E-09
Benzo(k)fluoranthe	8.6E-02	M	1.7E+00	5.1E-08	1.7E+00	5.1E-08	5.7E+01	1.5E-09
Chrysene	1.0E-01	M	1.7E+01	5.9E-09	1.7E+01	5.9E-09	4.7E+03	2.1E-11
Dibenz(a,h)anthrac	2.1E-02	U	4.9E-01	4.2E-08	4.9E-01	4.2E-08	6.5E+01	3.2E-10
Indeno(1,2,3-cd)py	3.1E-02	U	1.7E+00	1.8E-08	1.7E+00	1.8E-08	2.0E+02	1.5E-10
Pathway Cumulative Risk				4.7E-06		4.7E-06		2.1E-06

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" Data not available.

Checked by/Date: _____

Approved by/Date: _____

Table A-98
Northwest Runway Area
Human Noncarcinogenic Health Hazard Characterization

HQ = (95% UCL/Target Concentration)

Where

HQ = Noncarcinogenic Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient
Metals								
Arsenic	7.7E+00	U	1.2E+02	6.6E-02	1.2E+02	6.6E-02	7.9E+02	9.7E-03
Beryllium	1.4E+00	U	8.0E+02	1.8E-03	8.2E+02	1.7E-03	4.0E+03	3.6E-04
Boron	2.0E+01	U	3.5E+04	5.8E-04	3.7E+04	5.6E-04	*	*
Chromium	6.7E+01	U	1.0E+05	6.7E-04	1.0E+05	6.7E-04	1.0E+05	6.7E-04
Copper	3.3E+01	U	1.5E+04	2.2E-03	1.5E+04	2.3E-03	1.8E+04	1.9E-03
Mercury	5.7E-01	U	1.2E+02	4.7E-03	1.2E+02	4.6E-03	3.6E+02	1.6E-03
Molybdenum	6.3E-01	M	2.0E+03	3.1E-04	2.0E+03	3.1E-04	*	*
Nickel	5.7E+01	U	8.2E+03	6.9E-03	8.1E+03	7.0E-03	1.0E+05	5.7E-04
Selenium	2.9E-01	U	2.0E+03	1.4E-04	2.0E+03	1.4E-04	1.0E+03	2.9E-04
Zinc	7.7E+01	U	1.0E+05	7.7E-04	9.2E+04	8.4E-04	1.0E+05	7.7E-04
Pesticides and Herbicides								
Dalapon	5.4E-03	M	9.8E+03	5.5E-07	6.1E+03	8.9E-07	*	*
4,4'-DDT	1.5E-01	M	1.9E+02	7.7E-04	1.9E+02	7.7E-04	2.4E+02	6.3E-04
Petroleum Hydrocarbons								
TPH - Diesel range	1.5E+01	M	1.0E+05	1.5E-04	1.0E+05	1.5E-04	*	*
TPH - Motor oil range	1.4E+01	M	1.0E+05	1.4E-04	1.0E+05	1.4E-04	*	*
Semivolatile Organic Compounds								
Fluoranthene	1.0E-01	M	1.2E+04	8.2E-06	1.2E+04	8.3E-06	7.7E+04	1.3E-06
Phenanthrene	3.2E-02	M	9.8E+03	3.3E-06	1.2E+04	2.6E-06	1.0E+05	3.2E-07
Pyrene	1.1E-01	M	9.2E+03	1.2E-05	1.2E+04	8.9E-06	4.6E+04	2.4E-06
Cumulative Pathway Hazard Index				0.43		0.43		0.023

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

Checked by/Date: _____

Approved by/Date: _____

Table A-99
Tarmac East of Outparcel A-5
Estuarine Receptor Hazard Quotient
(Page 1 of 2)

HQ = (95% UCL/Target Concentration) x A/HR (if A/HR exceeds 1, value of 1 is used)

Where

HQ = Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

A = Area of Site, square feet (ft^2) = 150000

HR = Home Range, ft^2, if blank, home range assumed equal to area of site

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		High Marsh				Intertidal Marsh					
			Salt Marsh Harvest Mouse		Pickleweed		Eohaustorius Estuarius (amphipod)		California Clapper Rail		Black Rail	
			Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)			15,000						505,000		215,000	
Petroleum Hydrocarbons												
TPH - Gasoline range	2.1E+00	M	9.5E+03	2.2E-04	*	*	1.2E+01	1.8E-01	*	*	*	*
Semivolatile Organic Compounds												
Fluoranthene	1.5E-01	M	9.6E+03	1.6E-05	*	*	1.1E-01	1.3E+00	*	*	*	*
Phenanthrene	1.7E-01	M	4.9E+01	3.5E-03	*	*	8.7E-02	2.0E+00	*	*	*	*
Pyrene	1.4E-01	M	5.8E+03	2.4E-05	*	*	1.5E-01	9.2E-01	*	*	*	*
Hazard Index				0.0037		*		4.4		*		*

Table A-99
Tarmac East of Outparcel A-5
Estuarine Receptor Hazard Quotient
(Page 2 of 2)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Subtidal Marsh									
			Bay Shrimp		Salmonid		Northern Anchovy		Double-Crested Cormorant		Algae	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)					950,000		950,000		43,100,000			
Petroleum Hydrocarbons												
TPH - Gasoline range	2.1E+00	M	4.4E+02	4.8E-03	4.4E+02	7.5E-04	1.3E+04	2.5E-05	*	*	4.4E+02	4.8E-03
Semivolatile Organic Compounds												
Fluoranthene	1.5E-01	M	1.8E+01	8.6E-03	1.8E+01	1.4E-03	5.3E+02	4.5E-05	*	*	1.8E+01	8.6E-03
Phenanthrene	1.7E-01	M	*	*	*	*	*	*	*	*	*	*
Pyrene	1.4E-01	M	*	*	*	*	*	*	*	*	*	*
Hazard Index				0.0133		0.0021		0.000070		*		0.0133

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

Checked by/Date: _____

Approved by/Date: _____

Table A-100
Tarmac East of Outparcel A-5
Human Noncarcinogenic Health Hazard Characterization

HQ = (95% UCL/Target Concentration)

Where

HQ = Noncarcinogenic Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient
Petroleum Hydrocarbons								
TPH - Gasoline ra	2.1E+00	M	1.0E+05	2.1E-05	1.0E+05	2.1E-05	*	*
Semivolatile Organic Compounds								
Fluoranthene	1.5E-01	M	1.2E+04	1.2E-05	1.2E+04	1.2E-05	7.7E+04	2.0E-06
Phenanthrene	1.7E-01	M	9.8E+03	1.7E-05	1.2E+04	1.4E-05	1.0E+05	1.7E-06
Pyrene	1.4E-01	M	9.2E+03	1.5E-05	1.2E+04	1.1E-05	4.6E+04	3.0E-06
Cumulative Pathway Hazard Index				0.000066		0.000059		0.0000067

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

Checked by/Date: _____

Approved by/Date: _____

Table A-101
Revetment 1
Estuarine Receptor Hazard Quotient
(Page 1 of 4)

HQ = (95% UCL/Target Concentration) x A/HR (if A/HR exceeds 1, value of 1 is used)

Where

HQ = Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

A = Area of Site, square feet (ft^2) = 22500

HR = Home Range, ft^2, if blank, home range assumed equal to area of site

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		High Marsh				Intertidal Marsh					
			Salt Marsh Harvest Mouse		Pickleweed		Eohaustorius Estuarius (amphipod)		California Clapper Rail		Black Rail	
			Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)			15,000						505,000		215,000	
Metals												
Barium	2.1E+02	U	8.8E+01	2.4E+00	5.0E+02	4.3E-01	1.4E+00	1.6E+02	4.3E+02	2.2E-02	1.4E+02	1.6E-01
Cadmium	1.8E+00	M	2.6E+01	7.0E-02	4.0E+00	4.5E-01	6.8E-01	2.7E+00	6.3E+00	1.3E-02	2.1E+00	9.1E-02
Lead	7.0E+01	M	2.0E+03	3.5E-02	5.0E+01	1.4E+00	3.0E+01	2.3E+00	6.8E+00	4.6E-01	2.3E+00	3.3E+00
Molybdenum	9.0E-01	M	6.0E+00	1.5E-01	2.0E+00	4.5E-01	4.8E+00	1.9E-01	1.8E+02	2.3E-04	5.9E+01	1.6E-03
Selenium	6.2E-01	M	2.8E+01	2.2E-02	1.0E+00	6.2E-01	2.2E-02	2.9E+01	7.0E-01	3.9E-02	2.3E-01	2.8E-01
Silver	3.1E-01	M	4.5E+02	6.9E-04	2.0E+00	1.6E-01	7.3E-01	4.2E-01	1.2E+03	1.1E-05	4.1E+02	7.9E-05
Petroleum Hydrocarbons												
TPH - Diesel range	2.0E+01	U	2.8E+04	7.1E-04	*	*	1.4E+02	1.4E-01	4.6E+03	1.9E-04	1.5E+03	1.4E-03
TPH - Gasoline range	5.0E+00	U	9.5E+03	5.3E-04	*	*	1.2E+01	4.2E-01	*	*	*	*
Semivolatile Organic Compounds												
2-Methylnaphthalene	3.6E-02	U	2.0E+03	1.8E-05	*	*	2.0E-02	1.8E+00	*	*	*	*
Acenaphthene	1.3E-01	U	3.9E+03	3.3E-05	6.3E-01	2.1E-01	6.7E-03	1.9E+01	6.7E+03	8.5E-07	2.2E+03	6.0E-06
Anthracene	1.5E-01	U	4.9E+04	3.1E-06	*	*	4.7E-02	3.3E+00	*	*	*	*
Benzo(a)anthracene	3.8E-01	U	1.2E+02	3.3E-03	*	*	7.5E-02	5.1E+00	*	*	*	*

Table A-101
Revetment 1
Estuarine Receptor Hazard Quotient
(Page 2 of 4)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		High Marsh				Intertidal Marsh					
			Salt Marsh Harvest Mouse		Pickleweed		Eohaustorius Estuarius (amphipod)		California Clapper Rail		Black Rail	
			Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Benzo(a)pyrene	3.8E-01	U	1.5E+02	2.6E-03	1.0E-02	3.8E+01	8.9E-02	4.3E+00	*	*	*	*
Benzo(b)fluoranthene	3.1E-01	U	1.5E+02	2.1E-03	*	*	1.8E+00	1.7E-01	*	*	*	*
Benzo(k)fluoranthene	3.5E-01	U	1.8E+02	1.9E-03	*	*	1.8E+00	2.0E-01	*	*	*	*
Chrysene	4.0E-01	U	1.2E+02	3.4E-03	*	*	1.1E-01	3.7E+00	*	*	*	*
Semivolatile Organic Compounds (continued)												
Dibenz(a,h)anthracene	1.1E-01	U	1.8E+02	6.5E-04	*	*	6.2E-03	1.8E+01	*	*	*	*
Fluoranthene	9.4E-01	U	9.6E+03	9.7E-05	*	*	1.1E-01	8.3E+00	*	*	*	*
Fluorene	1.2E-01	U	3.9E+03	3.1E-05	*	*	1.9E-02	6.3E+00	4.6E+03	1.2E-06	1.5E+03	8.3E-06
Indeno(1,2,3-cd)pyrene	2.2E-01	U	1.7E+02	1.3E-03	*	*	6.9E-01	3.2E-01	*	*	*	*
Phenanthrene	8.2E-01	U	4.9E+01	1.7E-02	*	*	8.7E-02	9.4E+00	*	*	*	*
Pyrene	6.6E-01	U	5.8E+03	1.1E-04	*	*	1.5E-01	4.4E+00	*	*	*	*
Volatile Organic Compounds												
Acetone	1.1E-02	U	2.2E+00	4.8E-03	*	*	2.6E-02	4.2E-01	5.7E-01	8.4E-04	1.9E-01	5.9E-03
Methylene chloride	1.4E-02	M	2.0E+02	6.9E-05	*	*	1.3E+00	1.1E-02	*	*	*	*
Hazard Index				2.8		42		277		0.54		3.8

Table A-101
Revetment 1
Estuarine Receptor Hazard Quotient
(Page 3 of 4)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Subtidal Marsh									
			Bay Shrimp		Salmonid		Northern Anchovy		Double-Crested Cormorant		Algae	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)					950,000		950,000		43,100,000			
Metals												
Barium	2.1E+02	U	5.8E+03	3.7E-02	5.8E+03	8.7E-04	1.8E+05	2.9E-05	4.3E+04	2.6E-06	3.1E+02	7.0E-01
Cadmium	1.8E+00	M	5.6E+00	3.2E-01	5.6E+00	7.6E-03	1.7E+02	2.5E-04	8.0E+02	1.2E-06	5.6E+00	3.2E-01
Lead	7.0E+01	M	2.3E+03	3.1E-02	2.3E+03	7.2E-04	6.9E+04	2.4E-05	3.1E+02	1.2E-04	2.3E+03	3.1E-02
Molybdenum	9.0E-01	M	1.7E+01	5.4E-02	4.9E-02	4.4E-01	1.5E+00	1.5E-02	4.8E+03	9.9E-08	1.7E+01	5.4E-02
Selenium	6.2E-01	M	1.0E+00	6.1E-01	1.0E+00	1.4E-02	3.1E+01	4.8E-04	4.1E+00	8.0E-05	1.0E+00	6.1E-01
Silver	3.1E-01	M	1.6E-01	1.9E+00	1.6E-01	4.5E-02	4.9E+00	1.5E-03	2.5E+04	6.6E-09	1.6E-01	1.9E+00
Petroleum Hydrocarbons												
TPH - Diesel range	2.0E+01	U	8.1E+03	2.5E-03	8.1E+03	5.8E-05	2.4E+05	1.9E-06	3.1E+04	3.4E-07	8.1E+03	2.5E-03
TPH - Gasoline range	5.0E+00	U	4.4E+02	1.1E-02	4.4E+02	2.7E-04	1.3E+04	9.0E-06	*	*	4.4E+02	1.1E-02
Semivolatile Organic Compounds												
2-Methylnaphthalene	3.6E-02	U	*	*	*	*	*	*	*	*	*	*
Acenaphthene	1.3E-01	U	6.9E+00	1.9E-02	6.9E+00	4.4E-04	2.1E+02	1.5E-05	3.6E+03	1.9E-08	6.9E+00	1.9E-02
Anthracene	1.5E-01	U	*	*	*	*	*	*	*	*	*	*
Benzo(a)anthracene	3.8E-01	U	*	*	*	*	*	*	*	*	*	*
Benzo(a)pyrene	3.8E-01	U	*	*	*	*	*	*	*	*	*	*
Benzo(b)fluoranthene	3.1E-01	U	*	*	*	*	*	*	*	*	*	*
Benzo(k)fluoranthene	3.5E-01	U	*	*	*	*	*	*	*	*	*	*
Chrysene	4.0E-01	U	*	*	*	*	*	*	*	*	*	*

Table A-101
Revetment 1
Estuarine Receptor Hazard Quotient
(Page 4 of 4)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Subtidal Marsh									
			Bay Shrimp		Salmonid		Northern Anchovy		Double-Crested Cormorant		Algae	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Semivolatile Organic Compounds (continued)												
Dibenz(a,h)anthracene	1.1E-01	U	*	*	*	*	*	*	*	*	*	*
Fluoranthene	9.4E-01	U	1.8E+01	5.3E-02	1.8E+01	1.3E-03	5.3E+02	4.2E-05	*	*	1.8E+01	5.3E-02
Fluorene	1.2E-01	U	*	*	*	*	*	*	3.1E+03	2.0E-08	*	*
Indeno(1,2,3-cd)pyrene	2.2E-01	U	*	*	*	*	*	*	*	*	*	*
Phenanthrene	8.2E-01	U	*	*	*	*	*	*	*	*	*	*
Pyrene	6.6E-01	U	*	*	*	*	*	*	*	*	*	*
Volatile Organic Compounds												
Acetone	1.1E-02	U	1.2E+00	8.9E-03	3.6E+00	7.2E-05	1.1E+02	2.4E-06	1.1E+01	5.2E-07	1.4E+00	7.5E-03
Methylene chloride	1.4E-02	M	4.3E+00	3.2E-03	4.3E+00	7.6E-05	1.3E+02	2.5E-06	*	*	4.3E+00	3.2E-03
Hazard Index				3.0		0.51		0.017		0.00020		3.7

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

Checked by/Date: _____

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Table A-102
Revetment 1
Human Carcinogenic Risk Characterization

Carcinogenic Risk = (95% UCL/Target Concentrations) x 10^{-6}

Where

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg), dry weig

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration[b]	Risk	Target Concentration	Risk	Target Concentration	Risk
Metals								
Cadmium	1.8E+00	M	1.4E+03	1.3E-09	*	*	*	*
Semivolatile Organic Compounds								
Benzo(a)anthracene	3.8E-01	U	1.7E+00	2.3E-07	1.7E+00	2.3E-07	2.9E+01	1.3E-08
Benzo(a)pyrene	3.8E-01	U	1.7E-01	2.2E-06	1.7E-01	2.2E-06	5.8E+00	6.5E-08
Benzo(b)fluoranthene	3.1E-01	U	1.7E+00	1.9E-07	1.7E+00	1.9E-07	7.0E+01	4.5E-09
Benzo(k)fluoranthene	3.5E-01	U	1.7E+00	2.1E-07	1.7E+00	2.1E-07	5.7E+01	6.2E-09
Chrysene	4.0E-01	U	1.7E+01	2.4E-08	1.7E+01	2.4E-08	4.7E+03	8.5E-11
Dibenz(a,h)anthracene	1.1E-01	U	4.9E-01	2.3E-07	4.9E-01	2.3E-07	6.5E+01	1.8E-09
Indeno(1,2,3-cd)pyrene	2.2E-01	U	1.7E+00	1.3E-07	1.7E+00	1.3E-07	2.0E+02	1.1E-09
Volatile Organic Compounds								
Methylene Chloride	1.4E-02	M	1.6E+02	8.7E-11	1.6E+02	8.8E-11	5.3E+01	2.7E-10
Pathway Cumulative Risk				3.2E-06		3.2E-06		9.2E-08

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" Data not available.

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Table A-103
Revetment 1
Human Noncarcinogenic Health Hazard Characterization
(Page 1 of 2)

HQ = (95% UCL/Target Concentration)

Where

HQ = Noncarcinogenic Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient
Metals								
Barium	2.1E+02	U	2.8E+04	7.8E-03	2.7E+04	7.9E-03	*	*
Cadmium	1.8E+00	M	2.1E+02	8.6E-03	2.1E+02	8.6E-03	2.2E+02	8.3E-03
Lead	7.0E+01	M	6.6E+02	1.1E-01	6.6E+02	1.1E-01	*	*
Molybdenum	9.0E-01	M	2.0E+03	4.4E-04	2.0E+03	4.4E-04	*	*
Selenium	6.2E-01	M	2.0E+03	3.0E-04	2.0E+03	3.0E-04	1.0E+03	6.1E-04
Silver	3.1E-01	M	2.0E+03	1.5E-04	2.0E+03	1.5E-04	4.4E+03	7.0E-05
Petroleum Hydrocarbons								
TPH - Diesel range	2.0E+01	U	1.0E+05	2.0E-04	1.0E+05	2.0E-04	*	*
TPH - Gasoline range	5.0E+00	U	1.0E+05	5.0E-05	1.0E+05	5.0E-05	*	*
Semivolatile Organic Compounds								
2-Methylnaphthalene	3.6E-02	U	6.1E+03	5.8E-06	6.1E+03	5.9E-06	2.8E+03	1.3E-05
Acenaphthene	1.3E-01	U	1.8E+04	7.1E-06	1.8E+04	7.2E-06	3.0E+04	4.2E-06
Anthracene	1.5E-01	U	8.5E+04	1.8E-06	7.8E+04	2.0E-06	1.0E+05	1.5E-06
Fluoranthene	9.4E-01	U	1.2E+04	7.7E-05	1.2E+04	7.8E-05	7.7E+04	1.2E-05
Fluorene	1.2E-01	U	1.2E+04	9.9E-06	1.2E+04	1.0E-05	1.8E+04	6.8E-06
Phenanthrene	8.2E-01	U	9.8E+03	8.3E-05	1.2E+04	6.6E-05	1.0E+05	8.2E-06
Pyrene	6.6E-01	U	9.2E+03	7.2E-05	1.2E+04	5.4E-05	4.6E+04	1.4E-05

Table A-103
Revetment 1
Human Noncarcinogenic Health Hazard Characterization
(Page 2 of 2)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient
Volatile Organic Compounds								
Acetone	1.1E-02	U	3.2E+04	3.4E-07	2.1E+01	5.0E-04	1.8E+01	6.0E-04
Methylene chloride	1.4E-02	M	1.9E+04	7.2E-07	1.9E+04	7.4E-07	1.9E+04	7.4E-07
Cumulative Pathway Hazard Index[c]				0.12		0.12		0.0096

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

[c] Lead is a special case metal (i.e., the target concentration was calculated using the California Department of Toxic Substances Control LEADSPREAD model), however for calculation of the cumulative pathway hazard index, lead is assumed to be a non-carcinogen.

Checked by/Date: _____

Approved by/Date: _____

Table A-104
Revetment 2
Estuarine Receptor Hazard Quotient
(Page 1 of 4)

HQ = (95% UCL/Target Concentration) x A/HR (if A/HR exceeds 1, value of 1 is used)

Where

HQ = Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

A = Area of Site, square feet (ft^2) = 22500

HR = Home Range, ft^2, if blank, home range assumed equal to area of site

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		High Marsh				Intertidal Marsh					
			Salt Marsh Harvest Mouse		Pickleweed		Eohaustorius Estuarius (amphipod)		California Clapper Rail		Black Rail	
			Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)			15,000						505,000		215,000	
Metals												
Cadmium	3.1E+00	M	2.6E+01	1.2E-01	4.0E+00	7.8E-01	6.8E-01	4.6E+00	6.3E+00	2.2E-02	2.1E+00	1.6E-01
Lead	1.7E+02	U	2.0E+03	8.6E-02	5.0E+01	3.5E+00	3.0E+01	5.7E+00	6.8E+00	1.1E+00	2.3E+00	8.1E+00
Molybdenum	5.5E-01	U	6.0E+00	9.2E-02	2.0E+00	2.8E-01	4.8E+00	1.2E-01	1.8E+02	1.4E-04	5.9E+01	9.9E-04
Selenium	6.2E-01	U	2.8E+01	2.2E-02	1.0E+00	6.2E-01	2.2E-02	2.9E+01	7.0E-01	4.0E-02	2.3E-01	2.8E-01
Petroleum Hydrocarbons												
TPH - Diesel range	1.4E+01	M	2.8E+04	5.0E-04	*	*	1.4E+02	9.7E-02	4.6E+03	1.4E-04	1.5E+03	9.7E-04
TPH - Gasoline range	6.7E+00	U	9.5E+03	7.0E-04	*	*	1.2E+01	5.5E-01	*	*	*	*
Semivolatile Organic Compounds												
Acenaphthene	2.0E-02	M	3.9E+03	5.2E-06	6.3E-01	3.2E-02	6.7E-03	3.0E+00	6.7E+03	1.3E-07	2.2E+03	9.3E-07
Anthracene	2.3E-02	M	4.9E+04	4.7E-07	*	*	4.7E-02	4.9E-01	*	*	*	*
Benzo(a)anthracene	1.6E-01	U	1.2E+02	1.3E-03	*	*	7.5E-02	2.1E+00	*	*	*	*
Benzo(a)pyrene	1.7E-01	U	1.5E+02	1.2E-03	1.0E-02	1.7E+01	8.9E-02	1.9E+00	*	*	*	*
Benzo(b)fluoranthene	2.1E-01	U	1.5E+02	1.4E-03	*	*	1.8E+00	1.2E-01	*	*	*	*
Benzo(k)fluoranthene	1.9E-01	U	1.8E+02	1.0E-03	*	*	1.8E+00	1.0E-01	*	*	*	*
Chrysene	2.1E-01	U	1.2E+02	1.8E-03	*	*	1.1E-01	2.0E+00	*	*	*	*
Dibenz(a,h)anthracene	6.4E-02	U	1.8E+02	3.7E-04	*	*	6.2E-03	1.0E+01	*	*	*	*

Table A-104
Revetment 2
Estuarine Receptor Hazard Quotient
(Page 2 of 4)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		High Marsh				Intertidal Marsh					
			Salt Marsh Harvest Mouse		Pickleweed		Eohaustorius Estuarius (amphipod)		California Clapper Rail		Black Rail	
			Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Semivolatile Organic Compounds (continued)												
Fluoranthene	3.9E-01	U	9.6E+03	4.0E-05	*	*	1.1E-01	3.4E+00	*	*	*	*
Fluorene	2.0E-02	M	3.9E+03	5.1E-06	*	*	1.9E-02	1.1E+00	4.6E+03	2.0E-07	1.5E+03	1.4E-06
Indeno(1,2,3-cd)pyrene	1.3E-01	U	1.7E+02	7.4E-04	*	*	6.9E-01	1.9E-01	*	*	*	*
Phenanthrene	2.2E-01	U	4.9E+01	4.5E-03	*	*	8.7E-02	2.5E+00	*	*	*	*
Pyrene	2.8E-01	U	5.8E+03	4.8E-05	*	*	1.5E-01	1.8E+00	*	*	*	*
Volatile Organic Compounds												
Acetone	3.2E-02	U	2.2E+00	1.4E-02	*	*	2.6E-02	1.2E+00	5.7E-01	2.5E-03	1.9E-01	1.7E-02
Methylene chloride	9.0E-03	M	2.0E+02	4.4E-05	*	*	1.3E+00	6.9E-03	*	*	*	*
Hazard Index				0.35		22		70		1.2		8.5

Table A-104
Revetment 2
Estuarine Receptor Hazard Quotient
(Page 3 of 4)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Subtidal Marsh									
			Bay Shrimp		Salmonid		Northern Anchovy		Double-Crested Cormorant		Algae	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)					950,000		950,000		43,100,000			
Metals												
Cadmium	3.1E+00	M	5.6E+00	5.6E-01	5.6E+00	1.3E-02	1.7E+02	4.4E-04	8.0E+02	2.0E-06	5.6E+00	5.6E-01
Lead	1.7E+02	U	2.3E+03	7.6E-02	2.3E+03	1.8E-03	6.9E+04	6.0E-05	3.1E+02	3.0E-04	2.3E+03	7.6E-02
Molybdenum	5.5E-01	U	1.7E+01	3.3E-02	4.9E-02	2.7E-01	1.5E+00	9.0E-03	4.8E+03	6.1E-08	1.7E+01	3.3E-02
Selenium	6.2E-01	U	1.0E+00	6.1E-01	1.0E+00	1.5E-02	3.1E+01	4.8E-04	4.1E+00	8.0E-05	1.0E+00	6.1E-01
Petroleum Hydrocarbons												
TPH - Diesel range	1.4E+01	M	8.1E+03	1.7E-03	8.1E+03	4.1E-05	2.4E+05	1.4E-06	3.1E+04	2.4E-07	8.1E+03	1.7E-03
TPH - Gasoline range	6.7E+00	U	4.4E+02	1.5E-02	4.4E+02	3.6E-04	1.3E+04	1.2E-05	*	*	4.4E+02	1.5E-02
Semivolatile Organic Compounds												
Acenaphthene	2.0E-02	M	6.9E+00	2.9E-03	6.9E+00	6.9E-05	2.1E+02	2.3E-06	3.6E+03	2.9E-09	6.9E+00	2.9E-03
Anthracene	2.3E-02	M	*	*	*	*	*	*	*	*	*	*
Benzo(a)anthracene	1.6E-01	U	*	*	*	*	*	*	*	*	*	*
Benzo(a)pyrene	1.7E-01	U	*	*	*	*	*	*	*	*	*	*
Benzo(b)fluoranthene	2.1E-01	U	*	*	*	*	*	*	*	*	*	*
Benzo(k)fluoranthene	1.9E-01	U	*	*	*	*	*	*	*	*	*	*
Chrysene	2.1E-01	U	*	*	*	*	*	*	*	*	*	*
Dibenz(a,h)anthracene	6.4E-02	U	*	*	*	*	*	*	*	*	*	*
Fluoranthene	3.9E-01	U	1.8E+01	2.2E-02	1.8E+01	5.2E-04	5.3E+02	1.7E-05	*	*	1.8E+01	2.2E-02
Fluorene	2.0E-02	M	*	*	*	*	*	*	3.1E+03	3.4E-09	*	*
Indeno(1,2,3-cd)pyrene	1.3E-01	U	*	*	*	*	*	*	*	*	*	*
Phenanthrene	2.2E-01	U	*	*	*	*	*	*	*	*	*	*
Pyrene	2.8E-01	U	*	*	*	*	*	*	*	*	*	*

Table A-104
Revetment 2
Estuarine Receptor Hazard Quotient
(Page 4 of 4)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Subtidal Marsh									
			Bay Shrimp		Salmonid		Northern Anchovy		Double-Crested Cormorant		Algae	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Volatile Organic Compounds												
Acetone	3.2E-02	U	1.2E+00	2.6E-02	3.6E+00	2.1E-04	1.1E+02	7.0E-06	1.1E+01	1.5E-06	1.4E+00	2.2E-02
Methylene chloride	9.0E-03	M	4.3E+00	2.1E-03	4.3E+00	4.9E-05	1.3E+02	1.6E-06	*	*	4.3E+00	2.1E-03
Hazard Index				1.3		0.30		0.010		0.00038		1.3

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

Checked by/Date: _____

Approved by/Date: _____

Table A-105
Revetment 2
Human Carcinogenic Risk Characterization

Carcinogenic Risk = (95% UCL/Target Concentrations) x 10^{-6}

Where

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration[b]	Risk	Target Concentration	Risk	Target Concentration	Risk
Metals								
Cadmium	3.1E+00	M	1.4E+03	2.2E-09	*	*	*	*
Semivolatile Organic Compounds								
Benzo(a)anthracene	1.6E-01	U	1.7E+00	9.2E-08	1.7E+00	9.2E-08	2.9E+01	5.4E-09
Benzo(a)pyrene	1.7E-01	U	1.7E-01	1.0E-06	1.7E-01	1.0E-06	5.8E+00	3.0E-08
Benzo(b)fluoranthene	2.1E-01	U	1.7E+00	1.3E-07	1.7E+00	1.3E-07	7.0E+01	3.1E-09
Benzo(k)fluoranthene	1.9E-01	U	1.7E+00	1.1E-07	1.7E+00	1.1E-07	5.7E+01	3.3E-09
Chrysene	2.1E-01	U	1.7E+01	1.3E-08	1.7E+01	1.3E-08	4.7E+03	4.5E-11
Dibenz(a,h)anthracene	6.4E-02	U	4.9E-01	1.3E-07	4.9E-01	1.3E-07	6.5E+01	9.9E-10
Indeno(1,2,3-cd)pyrene	1.3E-01	U	1.7E+00	7.6E-08	1.7E+00	7.6E-08	2.0E+02	6.5E-10
Volatile Organic Compounds								
Methylene Chloride	9.0E-03	M	1.6E+02	5.6E-11	1.6E+02	5.7E-11	5.3E+01	1.7E-10
Pathway Cumulative Risk				1.6E-06		1.6E-06		4.3E-08

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" Data not available.

Checked by/Date: _____

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Table A-106
Revetment 2
Human Noncarcinogenic Health Hazard Characterization
(Page 1 of 2)

HQ = (95% UCL/Target Concentration)

Where

HQ = Noncarcinogenic Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient
Metals								
Cadmium	3.1E+00	M	2.1E+02	1.5E-02	2.1E+02	1.5E-02	2.2E+02	1.4E-02
Lead	1.7E+02	U	6.6E+02	2.6E-01	6.6E+02	2.6E-01	*	*
Molybdenum	5.5E-01	U	2.0E+03	2.7E-04	2.0E+03	2.7E-04	*	*
Selenium	6.2E-01	U	2.0E+03	3.0E-04	2.0E+03	3.1E-04	1.0E+03	6.1E-04
Petroleum Hydrocarbons								
TPH - Diesel range	1.4E+01	M	1.0E+05	1.4E-04	1.0E+05	1.4E-04	*	*
TPH - Gasoline range	6.7E+00	U	1.0E+05	6.7E-05	1.0E+05	6.7E-05	*	*
Semivolatile Organic Compounds								
Acenaphthene	2.0E-02	M	1.8E+04	1.1E-06	1.8E+04	1.1E-06	3.0E+04	6.6E-07
Anthracene	2.3E-02	M	8.5E+04	2.7E-07	7.8E+04	2.9E-07	1.0E+05	2.3E-07
Fluoranthene	3.9E-01	U	1.2E+04	3.2E-05	1.2E+04	3.2E-05	7.7E+04	5.1E-06
Fluorene	2.0E-02	M	1.2E+04	1.6E-06	1.2E+04	1.7E-06	1.8E+04	1.1E-06
Phenanthrene	2.2E-01	U	9.8E+03	2.3E-05	1.2E+04	1.8E-05	1.0E+05	2.2E-06
Pyrene	2.8E-01	U	9.2E+03	3.0E-05	1.2E+04	2.2E-05	4.6E+04	6.0E-06

Table A-106
Revetment 2
Human Noncarcinogenic Health Hazard Characterization
(Page 2 of 2)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient
Volatile Organic Compounds								
Acetone	3.2E-02	U	3.2E+04	9.9E-07	2.1E+01	1.5E-03	1.8E+01	1.8E-03
Methylene chloride	9.0E-03	M	1.9E+04	4.6E-07	1.9E+04	4.7E-07	1.9E+04	4.7E-07
Cumulative Pathway Hazard Index[c]				0.28		0.28		0.017

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".
[b] "*" data not available
[c] Lead is a special case metal (i.e., the target concentration was calculated using the California Department of Toxic Substances Control LEADSPREAD model), however for calculation of the cumulative pathway hazard index, lead is assumed to be a non-carcinogen.

Checked by/Date: _____
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Table A-107
Revetment 3
Estuarine Receptor Hazard Quotient
(Page 1 of 2)

HQ = (95% UCL/Target Concentration) x A/HR (if A/HR exceeds 1, value of 1 is used)

Where

HQ = Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

A = Area of Site, square feet (ft^2) = 22500

HR = Home Range, ft^2, if blank, home range assumed equal to area of site

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		High Marsh				Intertidal Marsh					
			Salt Marsh Harvest Mouse		Pickleweed		Eohaustorius Estuarius (amphipod)		California Clapper Rail		Black Rail	
			Target Concentration[b]	Hazard Quotient	Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)			15,000						505,000		215,000	
Metals												
Barium	4.8E+02	M	8.8E+01	5.5E+00	5.0E+02	9.6E-01	1.4E+00	3.5E+02	4.3E+02	5.0E-02	1.4E+02	3.5E-01
Copper	8.8E+01	M	4.2E+00	2.1E+01	1.0E+02	8.8E-01	1.9E+01	4.7E+00	1.8E+01	2.2E-01	5.8E+00	1.6E+00
Manganese	1.9E+03	M	2.9E+02	6.3E+00	5.0E+02	3.7E+00	4.6E-01	4.0E+03	1.2E+04	6.6E-03	4.1E+03	4.7E-02
Molybdenum	7.6E-01	M	6.0E+00	1.3E-01	2.0E+00	3.8E-01	4.8E+00	1.6E-01	1.8E+02	1.9E-04	5.9E+01	1.4E-03
Petroleum Hydrocarbons												
TPH - Gasoline range	3.2E+00	M	9.5E+03	3.4E-04	*	*	1.2E+01	2.7E-01	*	*	*	*
Hazard Index				33		5.9		4378		0.28		2.0

Table A-107
Revetment 3
Estuarine Receptor Hazard Quotient
(Page 2 of 2)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Subtidal Marsh									
			Bay Shrimp		Salmonid		Northern Anchovy		Double-Crested Cormorant		Algae	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)					950,000		950,000		43,100,000			
Metals												
Barium	4.8E+02	M	5.8E+03	8.2E-02	5.8E+03	1.9E-03	1.8E+05	6.5E-05	4.3E+04	5.9E-06	3.1E+02	1.6E+00
Copper	8.8E+01	M	7.6E+01	1.2E+00	7.6E+01	2.7E-02	2.3E+03	9.1E-04	2.8E+03	1.7E-05	7.6E+01	1.2E+00
Manganese	1.9E+03	M	7.3E+04	2.5E-02	2.0E+04	2.2E-03	6.1E+05	7.2E-05	1.3E+06	7.2E-07	5.5E+02	3.4E+00
Molybdenum	7.6E-01	M	1.7E+01	4.6E-02	4.9E-02	3.7E-01	1.5E+00	1.2E-02	4.8E+03	8.3E-08	1.7E+01	4.6E-02
Petroleum Hydrocarbons												
TPH - Gasoline range	3.2E+00	M	4.4E+02	7.3E-03	4.4E+02	1.7E-04	1.3E+04	5.7E-06	*	*	4.4E+02	7.3E-03
Hazard Index				1.3		0.40		0.013		0.000023		6.2

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

Checked by/Date: _____

Approved by/Date: _____

Table A-108
Revetment 3
Human Noncarcinogenic Health Hazard Characterization

HQ = (95% UCL/Target Concentration)

Where

HQ = Noncarcinogenic Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient
Metals								
Barium	4.8E+02	M	2.8E+04	1.7E-02	2.7E+04	1.8E-02	*	*
Copper	8.8E+01	M	1.5E+04	5.8E-03	1.5E+04	6.0E-03	1.8E+04	5.0E-03
Manganese	1.9E+03	M	8.6E+03	2.1E-01	9.7E+03	1.9E-01	2.4E+04	7.7E-02
Molybdenum	7.6E-01	M	2.0E+03	3.7E-04	2.0E+03	3.7E-04	*	*
Petroleum Hydrocarbons								
TPH - Gasoline range	3.2E+00	M	1.0E+05	3.2E-05	1.0E+05	3.2E-05	*	*
Cumulative Pathway Hazard Index				0.24		0.22		0.082

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

Checked by/Date: _____

Approved by/Date: _____

Table A-109
Revetment 4
Estuarine Receptor Hazard Quotient
(Page 1 of 4)

HQ = (95% UCL/Target Concentration) x A/HR (if A/HR exceeds 1, value of 1 is used)

Where

HQ = Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

A = Area of Site, square feet (ft^2) = 22500

HR = Home Range, ft^2, if blank, home range assumed equal to area of site

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		High Marsh				Intertidal Marsh					
			Salt Marsh Harvest Mouse		Pickleweed		Eohaustorius Estuarius (amphipod)		California Clapper Rail		Black Rail	
			Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)			15,000						505,000		215,000	
Metals												
Cadmium	2.6E+00	U	2.6E+01	1.0E-01	4.0E+00	6.6E-01	6.8E-01	3.9E+00	6.3E+00	1.9E-02	2.1E+00	1.3E-01
Lead	7.0E+01	U	2.0E+03	3.4E-02	5.0E+01	1.4E+00	3.0E+01	2.3E+00	6.8E+00	4.6E-01	2.3E+00	3.2E+00
Molybdenum	2.9E+00	U	6.0E+00	4.9E-01	2.0E+00	1.5E+00	4.8E+00	6.1E-01	1.8E+02	7.4E-04	5.9E+01	5.2E-03
Selenium	4.0E-01	U	2.8E+01	1.4E-02	1.0E+00	4.0E-01	2.2E-02	1.9E+01	7.0E-01	2.6E-02	2.3E-01	1.8E-01
Silver	2.8E-01	U	4.5E+02	6.2E-04	2.0E+00	1.4E-01	7.3E-01	3.8E-01	1.2E+03	1.0E-05	4.1E+02	7.2E-05
Petroleum Hydrocarbons												
TPH - Gasoline range	4.6E+00	U	9.5E+03	4.8E-04	*	*	1.2E+01	3.8E-01	*	*	*	*
Semivolatile Organic Compounds												
2-Methylnaphthalene	6.3E-02	U	2.0E+03	3.2E-05	*	*	2.0E-02	3.1E+00	*	*	*	*
Acenaphthene	1.1E-01	U	3.9E+03	2.9E-05	6.3E-01	1.8E-01	6.7E-03	1.7E+01	6.7E+03	7.4E-07	2.2E+03	5.2E-06
Anthracene	6.8E-02	U	4.9E+04	1.4E-06	*	*	4.7E-02	1.5E+00	*	*	*	*
Benzo(a)anthracene	1.5E-01	U	1.2E+02	1.3E-03	*	*	7.5E-02	2.1E+00	*	*	*	*
Benzo(a)pyrene	1.3E-01	U	1.5E+02	8.8E-04	1.0E-02	1.3E+01	8.9E-02	1.5E+00	*	*	*	*
Benzo(b)fluoranthene	1.4E-01	U	1.5E+02	9.0E-04	*	*	1.8E+00	7.6E-02	*	*	*	*
Benzo(k)fluoranthene	1.2E-01	U	1.8E+02	6.6E-04	*	*	1.8E+00	6.7E-02	*	*	*	*
Chrysene	1.6E-01	U	1.2E+02	1.4E-03	*	*	1.1E-01	1.5E+00	*	*	*	*

Table A-109
Revetment 4
Estuarine Receptor Hazard Quotient
(Page 2 of 4)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		High Marsh				Intertidal Marsh					
			Salt Marsh Harvest Mouse		Pickleweed		Eohaustorius Estuarius (amphipod)		California Clapper Rail		Black Rail	
			Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Semivolatile Organic Compounds (continued)												
Dibenz(a,h)anthracene	4.2E-02	U	1.8E+02	2.4E-04	*	*	6.2E-03	6.8E+00	*	*	*	*
Fluoranthene	4.4E-01	U	9.6E+03	4.5E-05	*	*	1.1E-01	3.9E+00	*	*	*	*
Fluorene	9.5E-02	U	3.9E+03	2.4E-05	*	*	1.9E-02	5.0E+00	4.6E+03	9.3E-07	1.5E+03	6.6E-06
Indeno(1,2,3-cd)pyrene	7.5E-02	U	1.7E+02	4.3E-04	*	*	6.9E-01	1.1E-01	*	*	*	*
Naphthalene	5.8E-02	U	7.9E+02	7.4E-05	2.5E+00	2.3E-02	3.5E-02	1.7E+00	*	*	*	*
Phenanthrene	5.3E-01	U	4.9E+01	1.1E-02	*	*	8.7E-02	6.1E+00	*	*	*	*
Pyrene	3.1E-01	U	5.8E+03	5.3E-05	*	*	1.5E-01	2.0E+00	*	*	*	*
Volatile Organic Compounds												
Acetone	2.9E-02	U	2.2E+00	1.3E-02	*	*	2.6E-02	1.1E+00	5.7E-01	2.3E-03	1.9E-01	1.6E-02
Carbon Disulfide	2.0E-03	M	*	*	*	*	1.1E-02	1.9E-01	*	*	*	*
Hazard Index				0.67		17		80		0.50		3.6

Table A-109
Revetment 4
Estuarine Receptor Hazard Quotient
(Page 3 of 4)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Subtidal Marsh									
			Bay Shrimp		Salmonid		Northern Anchovy		Double-Crested Cormorant		Algae	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)					950,000		950,000		43,100,000			
Metals												
Cadmium	2.6E+00	U	5.6E+00	4.7E-01	5.6E+00	1.1E-02	1.7E+02	3.7E-04	8.0E+02	1.7E-06	5.6E+00	4.7E-01
Lead	7.0E+01	U	2.3E+03	3.0E-02	2.3E+03	7.2E-04	6.9E+04	2.4E-05	3.1E+02	1.2E-04	2.3E+03	3.0E-02
Molybdenum	2.9E+00	U	1.7E+01	1.8E-01	4.9E-02	1.4E+00	1.5E+00	4.7E-02	4.8E+03	3.2E-07	1.7E+01	1.8E-01
Selenium	4.0E-01	U	1.0E+00	4.0E-01	1.0E+00	9.4E-03	3.1E+01	3.1E-04	4.1E+00	5.2E-05	1.0E+00	4.0E-01
Silver	2.8E-01	U	1.6E-01	1.7E+00	1.6E-01	4.0E-02	4.9E+00	1.3E-03	2.5E+04	5.9E-09	1.6E-01	1.7E+00
Petroleum Hydrocarbons												
TPH - Gasoline range	4.6E+00	U	4.4E+02	1.0E-02	4.4E+02	2.5E-04	1.3E+04	8.2E-06	*	*	4.4E+02	1.0E-02
Semivolatile Organic Compounds												
2-Methylnaphthalene	6.3E-02	U	*	*	*	*	*	*	*	*	*	*
Acenaphthene	1.1E-01	U	6.9E+00	1.6E-02	6.9E+00	3.9E-04	2.1E+02	1.3E-05	3.6E+03	1.6E-08	6.9E+00	1.6E-02
Anthracene	6.8E-02	U	*	*	*	*	*	*	*	*	*	*
Benzo(a)anthracene	1.5E-01	U	*	*	*	*	*	*	*	*	*	*
Benzo(a)pyrene	1.3E-01	U	*	*	*	*	*	*	*	*	*	*
Benzo(b)fluoranthene	1.4E-01	U	*	*	*	*	*	*	*	*	*	*
Benzo(k)fluoranthene	1.2E-01	U	*	*	*	*	*	*	*	*	*	*
Chrysene	1.6E-01	U	*	*	*	*	*	*	*	*	*	*
Dibenz(a,h)anthracene	4.2E-02	U	*	*	*	*	*	*	*	*	*	*
Fluoranthene	4.4E-01	U	1.8E+01	2.5E-02	1.8E+01	5.9E-04	5.3E+02	2.0E-05	*	*	1.8E+01	2.5E-02
Fluorene	9.5E-02	U	*	*	*	*	*	*	3.1E+03	1.6E-08	*	*
Indeno(1,2,3-cd)pyrene	7.5E-02	U	*	*	*	*	*	*	*	*	*	*
Naphthalene	5.8E-02	U	4.7E+00	1.2E-02	4.7E+00	2.9E-04	1.4E+02	9.8E-06	*	*	4.7E+00	1.2E-02
Phenanthrene	5.3E-01	U	*	*	*	*	*	*	*	*	*	*
Pyrene	3.1E-01	U	*	*	*	*	*	*	*	*	*	*
Volatile Organic Compounds												

Table A-109
Revetment 4
Estuarine Receptor Hazard Quotient
(Page 4 of 4)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Subtidal Marsh									
			Bay Shrimp		Salmonid		Northern Anchovy		Double-Crested Cormorant		Algae	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Acetone	2.9E-02	U	1.2E+00	2.4E-02	3.6E+00	1.9E-04	1.1E+02	6.4E-06	1.1E+01	1.4E-06	1.4E+00	2.0E-02
Carbon Disulfide	2.0E-03	M	*	*	*	*	1.1E-02	1.9E-01	*	*	*	*
Hazard Index				2.9		1.5		0.24		0.00017		2.9

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

Checked by/Date: _____

Approved by/Date: _____

Table A-110
Revetment 4
Human Carcinogenic Risk Characterization

Carcinogenic Risk = (95% UCL/Target Concentrations) x 10^{-6}

Where

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration[b]	Risk	Target Concentration	Risk	Target Concentration	Risk
Metals								
Cadmium	2.6E+00	U	1.4E+03	1.9E-09	*	*	*	*
Semivolatile Organic Compounds								
Benzo(a)anthracene	1.5E-01	U	1.7E+00	9.1E-08	1.7E+00	9.2E-08	2.9E+01	5.3E-09
Benzo(a)pyrene	1.3E-01	U	1.7E-01	7.6E-07	1.7E-01	7.6E-07	5.8E+00	2.2E-08
Benzo(b)fluoranthene	1.4E-01	U	1.7E+00	8.1E-08	1.7E+00	8.1E-08	7.0E+01	2.0E-09
Benzo(k)fluoranthene	1.2E-01	U	1.7E+00	7.1E-08	1.7E+00	7.2E-08	5.7E+01	2.1E-09
Chrysene	1.6E-01	U	1.7E+01	9.7E-09	1.7E+01	9.7E-09	4.7E+03	3.5E-11
Dibenz(a,h)anthracene	4.2E-02	U	4.9E-01	8.6E-08	4.9E-01	8.6E-08	6.5E+01	6.5E-10
Indeno(1,2,3-cd)pyrene	7.5E-02	U	1.7E+00	4.4E-08	1.7E+00	4.4E-08	2.0E+02	3.8E-10
Pathway Cumulative Risk				1.1E-06		1.1E-06		3.3E-08

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" Data not available.

Checked by/Date: _____

Approved by/Date: _____

Table A-111
Revetment 4
Human Noncarcinogenic Health Hazard Characterization
(Page 1 of 2)

HQ = (95% UCL/Target Concentration)

Where

HQ = Noncarcinogenic Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient
Metals								
Cadmium	2.6E+00	U	2.1E+02	1.3E-02	2.1E+02	1.3E-02	2.2E+02	1.2E-02
Lead	7.0E+01	U	6.6E+02	1.1E-01	6.6E+02	1.1E-01	*	*
Molybdenum	2.9E+00	U	2.0E+03	1.4E-03	2.0E+03	1.4E-03	*	*
Selenium	4.0E-01	U	2.0E+03	2.0E-04	2.0E+03	2.0E-04	1.0E+03	4.0E-04
Silver	2.8E-01	U	2.0E+03	1.4E-04	2.0E+03	1.4E-04	4.4E+03	6.3E-05
Petroleum Hydrocarbons								
TPH - Gasoline range	4.6E+00	U	1.0E+05	4.6E-05	1.0E+05	4.6E-05	*	*
Semivolatile Organic Compounds								
2-Methylnaphthalene	6.3E-02	U	6.1E+03	1.0E-05	6.1E+03	1.0E-05	2.8E+03	2.3E-05
Acenaphthene	1.1E-01	U	1.8E+04	6.1E-06	1.8E+04	6.3E-06	3.0E+04	3.7E-06
Anthracene	6.8E-02	U	8.5E+04	8.1E-07	7.8E+04	8.7E-07	1.0E+05	6.8E-07
Fluoranthene	4.4E-01	U	1.2E+04	3.6E-05	1.2E+04	3.6E-05	7.7E+04	5.7E-06
Fluorene	9.5E-02	U	1.2E+04	7.8E-06	1.2E+04	7.9E-06	1.8E+04	5.4E-06
Naphthalene	5.8E-02	U	6.1E+03	9.5E-06	8.3E+03	7.0E-06	1.6E+04	3.7E-06
Phenanthrene	5.3E-01	U	9.8E+03	5.4E-05	1.2E+04	4.3E-05	1.0E+05	5.3E-06
Pyrene	3.1E-01	U	9.2E+03	3.4E-05	1.2E+04	2.5E-05	4.6E+04	6.7E-06

Table A-111
Revetment 4
Human Noncarcinogenic Health Hazard Characterization
(Page 2 of 2)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient
Volatile Organic Compounds								
Acetone	2.9E-02	U	3.2E+04	9.1E-07	2.1E+01	1.4E-03	1.8E+01	1.6E-03
Carbon Disulfide	2.0E-03	M	3.2E+04	6.3E-08	3.1E+04	6.5E-08	2.8E+04	7.2E-08
Cumulative Pathway Hazard Index[c]				0.12		0.12		0.014

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".
[b] "*" data not available
[c] Lead is a special case metal (i.e., the target concentration was calculated using the California Department of Toxic Substances Control LEADSPREAD model), however for calculation of the cumulative pathway hazard index, lead is assumed to be a non-carcinogen.

Checked by/Date: _____
Approved by/Date: _____

Table A-112
Revetment 5
Estuarine Receptor Hazard Quotient
(Page 1 of 2)

HQ = (95% UCL/Target Concentration) x A/HR (if A/HR exceeds 1, value of 1 is used)

Where

HQ = Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

A = Area of Site, square feet (ft^2) = 22,500

HR = Home Range, ft^2, if blank, home range assumed equal to area of site

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		High Marsh				Intertidal Marsh					
			Salt Marsh Harvest Mouse		Pickleweed		Eohaustorius Estuarius (amphipod)		California Clapper Rail		Black Rail	
			Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)			15,000						505,000		215,000	
Petroleum Hydrocarbons												
TPH - Gasoline range	4.5E+00	M	9.5E+03	4.7E-04	*	*	1.2E+01	3.8E-01	*	*	*	*
Volatile Organic Compounds												
Acetone	3.8E-02	M	2.2E+00	1.7E-02	*	*	2.6E-02	1.5E+00	5.7E-01	2.9E-03	1.9E-01	2.1E-02
Carbon Disulfide	3.0E-03	M	*	*	*	*	1.1E-02	2.8E-01	*	*	*	*
Methyl ethyl ketone	4.0E-03	M	3.8E+01	1.0E-04	*	*	1.1E-01	3.6E-02	*	*	*	*
Hazard Index				0.018		*		2.2		0.0029		0.021

Table A-112
Revetment 5
Estuarine Receptor Hazard Quotient
(Page 2 of 2)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Subtidal Marsh									
			Bay Shrimp		Salmonid		Northern Anchovy		Double-Crested Cormorant		Algae	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)					950,000		950,000		43,100,000			
Petroleum Hydrocarbons												
TPH - Gasoline range	4.5E+00	M	4.4E+02	1.0E-02	4.4E+02	2.4E-04	1.3E+04	8.1E-06	*	*	4.4E+02	1.0E-02
Volatile Organic Compounds												
Acetone	3.8E-02	M	1.2E+00	3.1E-02	3.6E+00	2.5E-04	1.1E+02	8.4E-06	1.1E+01	1.8E-06	1.4E+00	2.6E-02
Carbon Disulfide	3.0E-03	M	*	*	*	*	1.1E-02	2.8E-01	*	*	*	*
Methyl ethyl ketone	4.0E-03	M	3.7E+00	1.1E-03	7.6E-01	1.2E-04	2.3E+01	4.1E-06	*	*	2.3E+01	1.7E-04
Hazard Index				0.043		0.00062		0.28		0.0000018		0.037

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

Checked by/Date: _____

Approved by/Date: _____

Table A-113
Revetment 5
Human Noncarcinogenic Health Hazard Characterization

HQ = (95% UCL/Target Concentration)

Where

HQ = Noncarcinogenic Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient
Petroleum Hydrocarbons								
TPH - Gasoline range	4.5E+00	M	1.0E+05	4.5E-05	1.0E+05	4.5E-05	*	*
Volatile Organic Compounds								
Acetone	3.8E-02	M	3.2E+04	1.2E-06	2.1E+01	1.8E-03	1.8E+01	2.1E-03
Carbon Disulfide	3.0E-03	M	3.2E+04	9.4E-08	3.1E+04	9.7E-08	2.8E+04	1.1E-07
Methyl ethyl ketone	4.0E-03	M	1.0E+05	4.0E-08	1.0E+05	4.0E-08	3.4E+04	1.2E-07
Cumulative Pathway Hazard Index				0.000046		0.0018		0.0021

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

Checked by/Date: _____

Approved by/Date: _____

Table A-114
Revetment 6
Estuarine Receptor Hazard Quotient
(Page 1 of 2)

HQ = (95% UCL/Target Concentration) x A/HR (if A/HR exceeds 1, value of 1 is used)

Where

HQ = Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

A = Area of Site, square feet (ft^2) = 40000

HR = Home Range, ft^2, if blank, home range assumed equal to area of site

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		High Marsh				Intertidal Marsh					
			Salt Marsh Harvest Mouse		Pickleweed		Eohaustorius Estuarius (amphipod)		California Clapper Rail		Black Rail	
			Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)			15,000						505,000		215,000	
Metals												
Cadmium	8.0E-01	M	2.6E+01	3.1E-02	4.0E+00	2.0E-01	6.8E-01	1.2E+00	6.3E+00	1.0E-02	2.1E+00	7.2E-02
Petroleum Hydrocarbons												
TPH - Diesel range	1.1E+02	U	2.8E+04	4.1E-03	*	*	1.4E+02	8.0E-01	4.6E+03	2.0E-03	1.5E+03	1.4E-02
TPH - Gasoline range	3.9E+02	U	9.5E+03	4.1E-02	*	*	1.2E+01	3.2E+01	*	*	*	*
Semivolatile Organic Compounds												
2-Methylnaphthalene	9.4E-02	U	2.0E+03	4.8E-05	*	*	2.0E-02	4.7E+00	*	*	*	*
Acenaphthene	2.1E-02	U	3.9E+03	5.5E-06	6.3E-01	3.4E-02	6.7E-03	3.2E+00	6.7E+03	2.5E-07	2.2E+03	1.8E-06
Bis(2-ethylhexyl)phthalate	7.0E-01	U	2.3E+02	3.1E-03	*	*	1.8E-01	3.8E+00	8.8E+01	6.3E-04	2.9E+01	4.4E-03
Chrysene	1.8E-02	U	1.2E+02	1.5E-04	*	*	1.1E-01	1.6E-01	*	*	*	*
Fluorene	2.8E-02	M	3.9E+03	7.1E-06	*	*	1.9E-02	1.5E+00	4.6E+03	4.9E-07	1.5E+03	3.4E-06
Naphthalene	1.3E-01	U	7.9E+02	1.6E-04	2.5E+00	5.2E-02	3.5E-02	3.7E+00	*	*	*	*
Volatile Organic Compounds												
Acetone	1.3E-02	U	2.2E+00	5.9E-03	*	*	2.6E-02	5.1E-01	5.7E-01	1.8E-03	1.9E-01	1.3E-02
Carbon Disulfide	5.3E-03	U	*	*	*	*	1.1E-02	5.0E-01	*	*	*	*
Toluene	8.6E-02	U	2.5E+03	3.4E-05	2.0E+02	4.3E-04	5.7E-01	1.5E-01	*	*	*	*
Hazard Index				0.085		0.29		53		0.015		0.10

Table A-114
Revetment 6
Estuarine Receptor Hazard Quotient
(Page 2 of 2)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Subtidal Marsh									
			Bay Shrimp		Salmonid		Northern Anchovy		Double-Crested Cormorant		Algae	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)					950,000		950,000		43,100,000			
Metals												
Cadmium	8.0E-01	M	5.6E+00	1.4E-01	5.6E+00	6.0E-03	1.7E+02	2.0E-04	8.0E+02	9.2E-07	5.6E+00	1.4E-01
Petroleum Hydrocarbons												
TPH - Diesel range	1.1E+02	U	8.1E+03	1.4E-02	8.1E+03	6.0E-04	2.4E+05	2.0E-05	3.1E+04	3.5E-06	8.1E+03	1.4E-02
TPH - Gasoline range	3.9E+02	U	4.4E+02	8.8E-01	4.4E+02	3.7E-02	1.3E+04	1.2E-03	*	*	4.4E+02	8.8E-01
Semivolatile Organic Compounds												
2-Methylnaphthalene	9.4E-02	U	*	*	*	*	*	*	*	*	*	*
Acenaphthene	2.1E-02	U	6.9E+00	3.1E-03	6.9E+00	1.3E-04	2.1E+02	4.4E-06	3.6E+03	5.6E-09	6.9E+00	3.1E-03
Bis(2-ethylhexyl)phthalate	7.0E-01	U	*	*	*	*	*	*	1.8E+03	3.7E-07	*	*
Chrysene	1.8E-02	U	*	*	*	*	*	*	*	*	*	*
Fluorene	2.8E-02	M	*	*	*	*	*	*	3.1E+03	8.3E-09	*	*
Naphthalene	1.3E-01	U	4.7E+00	2.8E-02	4.7E+00	1.2E-03	1.4E+02	3.9E-05	*	*	4.7E+00	2.8E-02
Volatile Organic Compounds												
Acetone	1.3E-02	U	1.2E+00	1.1E-02	3.6E+00	1.6E-04	1.1E+02	5.2E-06	1.1E+01	1.1E-06	1.4E+00	9.2E-03
Carbon Disulfide	5.3E-03	U	*	*	*	*	1.1E-02	5.0E-01	*	*	*	*
Toluene	8.6E-02	U	1.9E+00	4.5E-02	1.9E+00	1.9E-03	5.7E+01	6.4E-05	*	*	1.9E+00	4.5E-02
Hazard Index				1.1		0.047		0.50		0.0000059		1.1

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

Checked by/Date: _____

Approved by/Date: _____

Table A-115
Revetment 6
Human Carcinogenic Risk Characterization

Carcinogenic Risk = (95% UCL/Target Concentrations) x 10^{-6}

Where

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration[b]	Risk	Target Concentration	Risk	Target Concentration	Risk
Metals								
Cadmium	8.0E-01	M	1.4E+03	5.6E-10	*	*	*	*
Semivolatile Organic Compounds								
Bis(2-ethylhexyl)phthalate	7.0E-01	U	1.4E+02	4.8E-09	1.4E+02	4.8E-09	1.0E+05	7.0E-12
Chrysene	1.8E-02	U	1.7E+01	1.0E-09	1.7E+01	1.0E-09	4.7E+03	3.7E-12
Volatile Organic Compounds								
Pathway Cumulative Risk				6.4E-09		5.9E-09		1.1E-11

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" Data not available.

Checked by/Date: _____

Approved by/Date: _____

Table A-116
Revetment 6
Human Noncarcinogenic Health Hazard Characterization

HQ = (95% UCL/Target Concentration)

Where

HQ = Noncarcinogenic Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient
Metals								
Cadmium	8.0E-01	M	2.1E+02	3.8E-03	2.1E+02	3.8E-03	2.2E+02	3.7E-03
Petroleum Hydrocarbons								
TPH - Diesel range	1.1E+02	U	1.0E+05	1.1E-03	1.0E+05	1.1E-03	*	*
TPH - Gasoline range	3.9E+02	U	1.0E+05	3.9E-03	1.0E+05	3.9E-03	*	*
Semivolatile Organic Compounds								
2-Methylnaphthalene	9.4E-02	U	6.1E+03	1.5E-05	6.1E+03	1.5E-05	2.8E+03	3.4E-05
Acenaphthene	2.1E-02	U	1.8E+04	1.2E-06	1.8E+04	1.2E-06	3.0E+04	7.0E-07
Bis(2-ethylhexyl)phthalat	7.0E-01	U	6.1E+03	1.1E-04	6.1E+03	1.1E-04	1.0E+05	7.0E-06
Fluorene	2.8E-02	M	1.2E+04	2.3E-06	1.2E+04	2.3E-06	1.8E+04	1.6E-06
Naphthalene	1.3E-01	U	6.1E+03	2.1E-05	8.3E+03	1.6E-05	1.6E+04	8.1E-06
Volatile Organic Compounds								
Acetone	1.3E-02	U	3.2E+04	4.2E-07	2.1E+01	6.2E-04	1.8E+01	7.4E-04
Carbon Disulfide	5.3E-03	U	3.2E+04	1.7E-07	3.1E+04	1.7E-07	2.8E+04	1.9E-07
Toluene	8.6E-02	U	6.2E+04	1.4E-06	7.2E+04	1.2E-06	3.1E+03	2.7E-05
Cumulative Pathway Hazard Index				0.0090		0.0096		0.0045

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

Checked by/Date: _____

Approved by/Date: _____

Table A-117
Revetment 7
Estuarine Receptor Hazard Quotient
(Page 1 of 4)

HQ = (95% UCL/Target Concentration) x A/HR (if A/HR exceeds 1, value of 1 is used)

Where

HQ = Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

A = Area of Site, square feet (ft^2) = 22500

HR = Home Range, ft^2, if blank, home range assumed equal to area of site

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		High Marsh				Intertidal Marsh					
			Salt Marsh Harvest Mouse		Pickleweed		Eohaustorius Estuarius (amphipod)		California Clapper Rail		Black Rail	
			Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)			15,000						505,000		215,000	
Metals												
Cadmium	1.2E+00	M	2.6E+01	4.6E-02	4.0E+00	3.0E-01	6.8E-01	1.8E+00	6.3E+00	8.5E-03	2.1E+00	6.0E-02
Lead	5.6E+01	M	2.0E+03	2.7E-02	5.0E+01	1.1E+00	3.0E+01	1.8E+00	6.8E+00	3.6E-01	2.3E+00	2.6E+00
Molybdenum	7.8E-01	M	6.0E+00	1.3E-01	2.0E+00	3.9E-01	4.8E+00	1.6E-01	1.8E+02	2.0E-04	5.9E+01	1.4E-03
Selenium	4.1E-01	U	2.8E+01	1.4E-02	1.0E+00	4.1E-01	2.2E-02	1.9E+01	7.0E-01	2.6E-02	2.3E-01	1.8E-01
Petroleum Hydrocarbons												
TPH - Diesel range	3.9E+01	U	2.8E+04	1.4E-03	*	*	1.4E+02	2.7E-01	4.6E+03	3.8E-04	1.5E+03	2.7E-03
Semivolatile Organic Compounds												
2-Methylnaphthalene	8.8E-02	U	2.0E+03	4.5E-05	*	*	2.0E-02	4.4E+00	*	*	*	*
Acenaphthene	2.6E-01	U	3.9E+03	6.8E-05	6.3E-01	4.2E-01	6.7E-03	3.9E+01	6.7E+03	1.7E-06	2.2E+03	1.2E-05
Anthracene	1.9E-01	U	4.9E+04	3.9E-06	*	*	4.7E-02	4.1E+00	*	*	*	*
Benzo(a)anthracene	5.6E-01	M	1.2E+02	4.8E-03	*	*	7.5E-02	7.5E+00	*	*	*	*
Benzo(a)pyrene	4.9E-01	M	1.5E+02	3.3E-03	1.0E-02	4.9E+01	8.9E-02	5.5E+00	*	*	*	*
Benzo(b)fluoranthene	5.4E-01	M	1.5E+02	3.6E-03	*	*	1.8E+00	3.0E-01	*	*	*	*
Benzo(k)fluoranthene	4.1E-01	M	1.8E+02	2.2E-03	*	*	1.8E+00	2.3E-01	*	*	*	*
Chrysene	6.1E-01	M	1.2E+02	5.2E-03	*	*	1.1E-01	5.7E+00	*	*	*	*
Dibenz(a,h)anthracene	1.3E-01	M	1.8E+02	7.4E-04	*	*	6.2E-03	2.1E+01	*	*	*	*
Fluoranthene	1.5E+00	M	9.6E+03	1.6E-04	*	*	1.1E-01	1.3E+01	*	*	*	*

Table A-117
Revetment 7
Estuarine Receptor Hazard Quotient
(Page 2 of 4)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		High Marsh				Intertidal Marsh					
			Salt Marsh Harvest Mouse		Pickleweed		Eohaustorius Estuarius (amphipod)		California Clapper Rail		Black Rail	
			Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Semivolatile Organic Compounds (continued)												
Fluorene	2.2E-01	U	3.9E+03	5.7E-05	*	*	1.9E-02	1.2E+01	4.6E+03	2.2E-06	1.5E+03	1.5E-05
Indeno(1,2,3-cd)pyrene	2.5E-01	M	1.7E+02	1.4E-03	*	*	6.9E-01	3.6E-01	*	*	*	*
Naphthalene	6.3E-02	M	7.9E+02	8.0E-05	2.5E+00	2.5E-02	3.5E-02	1.8E+00	*	*	*	*
Phenanthrene	1.5E+00	U	4.9E+01	3.0E-02	*	*	8.7E-02	1.7E+01	*	*	*	*
Pyrene	1.0E+00	M	5.8E+03	1.7E-04	*	*	1.5E-01	6.6E+00	*	*	*	*
Volatile Organic Compounds												
Acetone	9.0E-03	U	2.2E+00	4.0E-03	*	*	2.6E-02	3.5E-01	5.7E-01	7.0E-04	1.9E-01	5.0E-03
Hazard Index				0.27		52		162		0.40		2.8

Table A-117
Revetment 7
Estuarine Receptor Hazard Quotient
(Page 3 of 4)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Subtidal Marsh									
			Bay Shrimp		Salmonid		Northern Anchovy		Double-Crested Cormorant		Algae	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)					950,000		950,000		43,100,000			
Metals												
Cadmium	1.2E+00	M	5.6E+00	2.2E-01	5.6E+00	5.1E-03	1.7E+02	1.7E-04	8.0E+02	7.8E-07	5.6E+00	2.2E-01
Lead	5.6E+01	M	2.3E+03	2.4E-02	2.3E+03	5.7E-04	6.9E+04	1.9E-05	3.1E+02	9.5E-05	2.3E+03	2.4E-02
Molybdenum	7.8E-01	M	1.7E+01	4.7E-02	4.9E-02	3.8E-01	1.5E+00	1.3E-02	4.8E+03	8.6E-08	1.7E+01	4.7E-02
Selenium	4.1E-01	U	1.0E+00	4.0E-01	1.0E+00	9.5E-03	3.1E+01	3.2E-04	4.1E+00	5.2E-05	1.0E+00	4.0E-01
Petroleum Hydrocarbons												
TPH - Diesel range	3.9E+01	U	8.1E+03	4.9E-03	8.1E+03	1.2E-04	2.4E+05	3.8E-06	3.1E+04	6.7E-07	8.1E+03	4.9E-03
Semivolatile Organic Compounds												
2-Methylnaphthalene	8.8E-02	U	*	*	*	*	*	*	*	*	*	*
Acenaphthene	2.6E-01	U	6.9E+00	3.8E-02	6.9E+00	9.0E-04	2.1E+02	3.0E-05	3.6E+03	3.8E-08	6.9E+00	3.8E-02
Anthracene	1.9E-01	U	*	*	*	*	*	*	*	*	*	*
Benzo(a)anthracene	5.6E-01	M	*	*	*	*	*	*	*	*	*	*
Benzo(a)pyrene	4.9E-01	M	*	*	*	*	*	*	*	*	*	*
Benzo(b)fluoranthene	5.4E-01	M	*	*	*	*	*	*	*	*	*	*
Benzo(k)fluoranthene	4.1E-01	M	*	*	*	*	*	*	*	*	*	*
Chrysene	6.1E-01	M	*	*	*	*	*	*	*	*	*	*
Dibenz(a,h)anthracene	1.3E-01	M	*	*	*	*	*	*	*	*	*	*
Fluoranthene	1.5E+00	M	1.8E+01	8.6E-02	1.8E+01	2.0E-03	5.3E+02	6.8E-05	*	*	1.8E+01	8.6E-02
Fluorene	2.2E-01	U	*	*	*	*	*	*	3.1E+03	3.7E-08	*	*
Indeno(1,2,3-cd)pyrene	2.5E-01	M	*	*	*	*	*	*	*	*	*	*
Naphthalene	6.3E-02	M	4.7E+00	1.3E-02	4.7E+00	3.2E-04	1.4E+02	1.1E-05	*	*	4.7E+00	1.3E-02
Phenanthrene	1.5E+00	U	*	*	*	*	*	*	*	*	*	*
Pyrene	1.0E+00	M	*	*	*	*	*	*	*	*	*	*

Table A-117
Revetment 7
Estuarine Receptor Hazard Quotient
(Page 4 of 4)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Subtidal Marsh									
			Bay Shrimp		Salmonid		Northern Anchovy		Double-Crested Cormorant		Algae	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Volatile Organic Compounds												
Acetone	9.0E-03	U	1.2E+00	7.4E-03	3.6E+00	6.0E-05	1.1E+02	2.0E-06	1.1E+01	4.4E-07	1.4E+00	6.3E-03
Hazard Index				0.84		0.40		0.013		0.00015		0.84

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

Checked by/Date: _____

Approved by/Date: _____

Table A-118
Revetment 7
Human Carcinogenic Risk Characterization

Carcinogenic Risk = (95% UCL/Target Concentrations) x 10^{-6}

Where

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration[b]	Risk	Target Concentration	Risk	Target Concentration	Risk
Metals								
Cadmium	1.2E+00	M	1.4E+03	8.5E-10	*	*	*	*
Semivolatile Organic Compounds								
Benzo(a)anthracene	5.6E-01	M	1.7E+00	3.3E-07	1.7E+00	3.3E-07	2.9E+01	1.9E-08
Benzo(a)pyrene	4.9E-01	M	1.7E-01	2.9E-06	1.7E-01	2.9E-06	5.8E+00	8.4E-08
Benzo(b)fluoranthene	5.4E-01	M	1.7E+00	3.2E-07	1.7E+00	3.2E-07	7.0E+01	7.7E-09
Benzo(k)fluoranthene	4.1E-01	M	1.7E+00	2.4E-07	1.7E+00	2.4E-07	5.7E+01	7.2E-09
Chrysene	6.1E-01	M	1.7E+01	3.6E-08	1.7E+01	3.6E-08	4.7E+03	1.3E-10
Dibenz(a,h)anthracene	1.3E-01	M	4.9E-01	2.6E-07	4.9E-01	2.6E-07	6.5E+01	2.0E-09
Indeno(1,2,3-cd)pyrene	2.5E-01	M	1.7E+00	1.5E-07	1.7E+00	1.5E-07	2.0E+02	1.3E-09
Pathway Cumulative Risk				4.2E-06		4.2E-06		1.2E-07

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" Data not available.

Checked by/Date: _____

Approved by/Date: _____

Table A-119
Revetment 7
Human Noncarcinogenic Health Hazard Characterization
(Page 1 of 2)

HQ = (95% UCL/Target Concentration)

Where

HQ = Noncarcinogenic Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient
Metals								
Cadmium	1.2E+00	M	2.1E+02	5.7E-03	2.1E+02	5.7E-03	2.2E+02	5.5E-03
Lead	5.6E+01	M	6.6E+02	8.4E-02	6.6E+02	8.4E-02	*	*
Molybdenum	7.8E-01	M	2.0E+03	3.8E-04	2.0E+03	3.8E-04	*	*
Selenium	4.1E-01	U	2.0E+03	2.0E-04	2.0E+03	2.0E-04	1.0E+03	4.0E-04
Petroleum Hydrocarbons								
TPH - Diesel range	3.9E+01	U	1.0E+05	3.9E-04	1.0E+05	3.9E-04	*	*
Semivolatile Organic Compounds								
2-Methylnaphthalene	8.8E-02	U	6.1E+03	1.4E-05	6.1E+03	1.4E-05	2.8E+03	3.2E-05
Acenaphthene	2.6E-01	U	1.8E+04	1.4E-05	1.8E+04	1.5E-05	3.0E+04	8.6E-06
Anthracene	1.9E-01	U	8.5E+04	2.3E-06	7.8E+04	2.5E-06	1.0E+05	1.9E-06
Fluoranthene	1.5E+00	M	1.2E+04	1.2E-04	1.2E+04	1.2E-04	7.7E+04	2.0E-05
Fluorene	2.2E-01	U	1.2E+04	1.8E-05	1.2E+04	1.9E-05	1.8E+04	1.3E-05
Naphthalene	6.3E-02	M	6.1E+03	1.0E-05	8.3E+03	7.6E-06	1.6E+04	4.0E-06
Phenanthrene	1.5E+00	U	9.8E+03	1.5E-04	1.2E+04	1.2E-04	1.0E+05	1.5E-05
Pyrene	1.0E+00	M	9.2E+03	1.1E-04	1.2E+04	8.1E-05	4.6E+04	2.2E-05

Table A-119
Revetment 7
Human Noncarcinogenic Health Hazard Characterization
(Page 2 of 2)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient
Volatile Organic Compounds								
Acetone	9.0E-03	U	3.2E+04	2.8E-07	2.1E+01	4.2E-04	1.8E+01	5.0E-04
Cumulative Pathway Hazard Index[c]				0.091		0.091		0.0065

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".
[b] "*" data not available
[c] Lead is a special case metal (i.e., the target concentration was calculated using the California Department of Toxic Substances Control LEADSPREAD model), however for calculation of the cumulative pathway hazard index, lead is assumed to be a non-carcinogen.

Checked by/Date: _____
Approved by/Date: _____

Table A-120
Revetment 8
Estuarine Receptor Hazard Quotient
(Page 1 of 2)

HQ = (95% UCL/Target Concentration) x A/HR (if A/HR exceeds 1, value of 1 is used)

Where

HQ = Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

A = Area of Site, square feet (ft^2) = 22500

HR = Home Range, ft^2, if blank, home range assumed equal to area of site

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		High Marsh				Intertidal Marsh					
			Salt Marsh Harvest Mouse		Pickleweed		Eohaustorius Estuarius (amphipod)		California Clapper Rail		Black Rail	
			Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)			15,000						505,000		215,000	
Metals												
Copper	6.1E+01	M	4.2E+00	1.4E+01	1.0E+02	6.1E-01	1.9E+01	3.3E+00	1.8E+01	1.5E-01	5.8E+00	1.1E+00
Molybdenum	4.8E-01	M	6.0E+00	8.0E-02	2.0E+00	2.4E-01	4.8E+00	1.0E-01	1.8E+02	1.2E-04	5.9E+01	8.5E-04
Petroleum Hydrocarbons												
TPH - Diesel range	8.3E+01	M	2.8E+04	3.0E-03	*	*	1.4E+02	5.8E-01	4.6E+03	8.1E-04	1.5E+03	5.8E-03
TPH - Gasoline range	1.1E+01	M	9.5E+03	1.2E-03	*	*	1.2E+01	9.2E-01	*	*	*	*
Volatile Organic Compounds												
Acetone	4.2E+00	M	2.2E+00	1.9E+00	*	*	2.6E-02	1.6E+02	5.7E-01	3.3E-01	1.9E-01	2.3E+00
Hazard Index				16		0.85		167		0.48		3.4

Table A-120
Revetment 8
Estuarine Receptor Hazard Quotient
(Page 2 of 2)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Subtidal Marsh									
			Bay Shrimp		Salmonid		Northern Anchovy		Double-Crested Cormorant		Algae	
			Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)					950,000		950,000		43,100,000			
Metals												
Copper	6.1E+01	M	7.6E+01	8.0E-01	7.6E+01	1.9E-02	2.3E+03	6.3E-04	2.8E+03	1.1E-05	7.6E+01	8.0E-01
Molybdenum	4.8E-01	M	1.7E+01	2.9E-02	4.9E-02	2.3E-01	1.5E+00	7.8E-03	4.8E+03	5.3E-08	1.7E+01	2.9E-02
Petroleum Hydrocarbons												
TPH - Diesel range	8.3E+01	M	8.1E+03	1.0E-02	8.1E+03	2.4E-04	2.4E+05	8.1E-06	3.1E+04	1.4E-06	8.1E+03	1.0E-02
TPH - Gasoline range	1.1E+01	M	4.4E+02	2.5E-02	4.4E+02	5.9E-04	1.3E+04	2.0E-05	*	*	4.4E+02	2.5E-02
Volatile Organic Compounds												
Acetone	4.2E+00	M	1.2E+00	3.5E+00	3.6E+00	2.8E-02	1.1E+02	9.3E-04	1.1E+01	2.0E-04	1.4E+00	2.9E+00
Hazard Index				4.3		0.28		0.0094		0.00022		3.8

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

Checked by/Date: _____

Approved by/Date: _____

Table A-121
Revetment 8
Human Noncarcinogenic Health Hazard Characterization

HQ = (95% UCL/Target Concentration)

Where

HQ = Noncarcinogenic Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient
Metals								
Copper	6.1E+01	M	1.5E+04	4.0E-03	1.5E+04	4.1E-03	1.8E+04	3.5E-03
Molybdenum	4.8E-01	M	2.0E+03	2.3E-04	2.0E+03	2.4E-04	*	*
Petroleum Hydrocarbons								
TPH - Diesel range	8.3E+01	M	1.0E+05	8.3E-04	1.0E+05	8.3E-04	*	*
TPH - Gasoline range	1.1E+01	M	1.0E+05	1.1E-04	1.0E+05	1.1E-04	*	*
Volatile Organic Compounds								
Acetone	4.2E+00	M	3.2E+04	1.3E-04	2.1E+01	2.0E-01	1.8E+01	2.3E-01
Cumulative Pathway Hazard Index				0.0053		0.20		0.24

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

Checked by/Date: _____

Approved by/Date: _____

Table A-122
Revetment 9
Estuarine Receptor Hazard Quotient
(Page 1 of 2)

HQ = (95% UCL/Target Concentration) x A/HR (if A/HR exceeds 1, value of 1 is used)

Where

HQ = Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

A = Area of Site, square feet (ft^2) = 22500

HR = Home Range, ft^2, if blank, home range assumed equal to area of site

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		High Marsh				Intertidal Marsh					
			Salt Marsh Harvest Mouse		Pickleweed		Eohaustorius Estuarius (amphipod)		California Clapper Rail		Black Rail	
			Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)			15,000						505,000		215,000	
Metals												
Beryllium	8.7E-01	U	9.9E+02	8.8E-04	1.0E+01	8.7E-02	3.6E-01	2.4E+00	*	*	*	*
Cadmium	6.3E-01	U	2.6E+01	2.4E-02	4.0E+00	1.6E-01	6.8E-01	9.3E-01	6.3E+00	4.5E-03	2.1E+00	3.2E-02
Cobalt	1.8E+01	U	1.6E+01	1.1E+00	2.0E+01	8.8E-01	2.0E+01	8.9E-01	*	*	*	*
Copper	5.1E+01	U	4.2E+00	1.2E+01	1.0E+02	5.1E-01	1.9E+01	2.7E+00	1.8E+01	1.3E-01	5.8E+00	9.1E-01
Lead	3.0E+01	U	2.0E+03	1.5E-02	5.0E+01	5.9E-01	3.0E+01	9.8E-01	6.8E+00	1.9E-01	2.3E+00	1.4E+00
Manganese	7.2E+02	U	2.9E+02	2.5E+00	5.0E+02	1.4E+00	4.6E-01	1.6E+03	1.2E+04	2.6E-03	4.1E+03	1.8E-02
Nickel	9.0E+01	U	3.8E+01	2.4E+00	3.0E+01	3.0E+00	1.6E+01	5.7E+00	4.6E+02	8.8E-03	1.5E+02	6.3E-02
Hazard Index				18		8.4		1579		0.37		2.6

Table A-122
Revetment 9
Estuarine Receptor Hazard Quotient
(Page 2 of 2)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Subtidal Marsh									
			Bay Shrimp		Salmonid		Northern Anchovy		Double-Crested Cormorant		Algae	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)					950,000		950,000		43,100,000			
Metals												
Beryllium	8.7E-01	U	*	*	1.3E+01	1.6E-03	3.9E+02	5.3E-05	*	*	*	*
Cadmium	6.3E-01	U	5.6E+00	1.1E-01	5.6E+00	2.7E-03	1.7E+02	8.9E-05	8.0E+02	4.1E-07	5.6E+00	1.1E-01
Cobalt	1.8E+01	U	1.8E+03	9.7E-03	2.0E+04	2.1E-05	6.0E+05	6.9E-07	*	*	7.4E+01	2.4E-01
Copper	5.1E+01	U	7.6E+01	6.6E-01	7.6E+01	1.6E-02	2.3E+03	5.2E-04	2.8E+03	9.5E-06	7.6E+01	6.6E-01
Lead	3.0E+01	U	2.3E+03	1.3E-02	2.3E+03	3.1E-04	6.9E+04	1.0E-05	3.1E+02	5.1E-05	2.3E+03	1.3E-02
Manganese	7.2E+02	U	7.3E+04	9.9E-03	2.0E+04	8.4E-04	6.1E+05	2.8E-05	1.3E+06	2.8E-07	5.5E+02	1.3E+00
Nickel	9.0E+01	U	2.5E+02	3.6E-01	2.5E+02	8.4E-03	7.6E+03	2.8E-04	1.9E+04	2.4E-06	2.5E+02	3.6E-01
Zinc	8.8E+01	U	3.8E+03	2.3E-02	3.8E+03	5.5E-04	1.1E+05	1.8E-05	1.4E+04	3.4E-06	3.8E+03	2.3E-02
Hazard Index				1.2		0.030		0.0010		0.000067		2.7

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

Checked by/Date: _____

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Table A-123
Revetment 9
Human Carcinogenic Risk Characterization

Carcinogenic Risk = (95% UCL/Target Concentrations) x 10^{-6}

Where

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration[b]	Risk	Target Concentration	Risk	Target Concentration	Risk
Metals								
Beryllium	8.7E-01	U	2.5E+03	3.4E-10	*	*	*	*
Cadmium	6.3E-01	U	1.4E+03	4.4E-10	*	*	*	*
Nickel	9.0E+01	U	2.3E+04	3.9E-09	*	*	*	*
Pathway Cumulative Risk				4.7E-09		*		*

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" Data not available.

Checked by/Date: _____

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Table A-124
Revetment 9
Human Noncarcinogenic Health Hazard Characterization

HQ = (95% UCL/Target Concentration)

Where

HQ = Noncarcinogenic Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient
Metals								
Beryllium	8.7E-01	U	8.0E+02	1.1E-03	8.2E+02	1.1E-03	4.0E+03	2.2E-04
Cadmium	6.3E-01	U	2.1E+02	3.0E-03	2.1E+02	3.0E-03	2.2E+02	2.9E-03
Cobalt	1.8E+01	U	2.5E+04	7.1E-04	2.3E+04	7.5E-04	1.0E+05	1.8E-04
Copper	5.1E+01	U	1.5E+04	3.3E-03	1.5E+04	3.4E-03	1.8E+04	2.9E-03
Lead	3.0E+01	U	6.6E+02	4.5E-02	6.6E+02	4.5E-02	*	*
Manganese	7.2E+02	U	8.6E+03	8.4E-02	9.7E+03	7.5E-02	2.4E+04	3.0E-02
Nickel	9.0E+01	U	8.2E+03	1.1E-02	8.1E+03	1.1E-02	1.0E+05	9.0E-04
Zinc	8.8E+01	U	1.0E+05	8.8E-04	9.2E+04	9.6E-04	1.0E+05	8.8E-04
Cumulative Pathway Hazard Index[c]				0.15		0.14		0.038

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

[c] Lead is a special case metal (i.e., the target concentration was calculated using the California Department of Toxic Substances Control LEADSPREAD model), however for calculation of the cumulative pathway hazard index, lead is assumed to be a non-carcinogen.

Checked by/Date: _____

Approved by/Date: _____

Table A-125
Revetment 10
Estuarine Receptor Hazard Quotient
(Page 1 of 4)

HQ = (95% UCL/Target Concentration) x A/HR (if A/HR exceeds 1, value of 1 is used)

Where

HQ = Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

A = Area of Site, square feet (ft^2) = 40000

HR = Home Range, ft^2, if blank, home range assumed equal to area of site

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		High Marsh				Intertidal Marsh					
			Salt Marsh Harvest Mouse		Pickleweed		Eohaustorius Estuarius (amphipod)		California Clapper Rail		Black Rail	
			Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)			15,000						505,000		215,000	
Metals												
Antimony	8.0E-01	U	2.8E+00	2.8E-01	5.0E+00	1.6E-01	2.0E+00	4.0E-01	*	*	*	*
Cadmium	3.8E-01	U	2.6E+01	1.5E-02	4.0E+00	9.5E-02	6.8E-01	5.6E-01	6.3E+00	4.8E-03	2.1E+00	3.4E-02
Copper	3.6E+01	U	4.2E+00	8.6E+00	1.0E+02	3.6E-01	1.9E+01	1.9E+00	1.8E+01	1.6E-01	5.8E+00	1.2E+00
Selenium	3.3E-01	U	2.8E+01	1.2E-02	1.0E+00	3.3E-01	2.2E-02	1.5E+01	7.0E-01	3.7E-02	2.3E-01	2.7E-01
Petroleum Hydrocarbons												
TPH - Diesel range	6.9E+00	U	2.8E+04	2.5E-04	*	*	1.4E+02	4.8E-02	4.6E+03	1.2E-04	1.5E+03	8.5E-04
Polychlorinated Biphenyl Compounds, Dioxins, and Furans												
1,2,3,6,7,8-HexaCDD	4.9E-09	U	2.4E-03	2.1E-06	*	*	*	*	3.5E-02	1.1E-08	1.2E-02	8.0E-08
1,2,3,4,6,7,8-HeptaCDD	2.4E-08	U	2.4E-02	9.9E-07	*	*	*	*	4.8E-01	4.0E-09	1.6E-01	2.8E-08
OctaCDD	1.0E-07	U	2.4E+00	4.2E-08	*	*	*	*	6.8E+00	1.2E-09	2.3E+00	8.4E-09
1,2,3,4,6,7,8-HeptaCDF	4.1E-09	U	2.4E-02	1.7E-07	*	*	*	*	6.8E-02	4.7E-09	2.3E-02	3.3E-08
Total TCDD TEQ[c]				3.3E-06						2.1E-08		1.5E-07
Semivolatile Organic Compounds												
Benzo(b)fluoranthene	2.4E-02	U	1.5E+02	1.6E-04	*	*	1.8E+00	1.3E-02	*	*	*	*
Bis(2-ethylhexyl)phthalate	6.6E-01	U	2.3E+02	2.9E-03	*	*	1.8E-01	3.6E+00	8.8E+01	5.9E-04	2.9E+01	4.2E-03
Di-n-butyl phthalate	1.6E+00	U	3.5E+03	4.7E-04	2.0E+02	8.2E-03	3.5E+00	4.7E-01	2.2E-01	5.8E-01	7.3E-02	4.1E+00
Pyrene	2.3E-02	U	5.8E+03	4.0E-06	*	*	1.5E-01	1.5E-01	*	*	*	*
Volatile Organic Compounds												

Table A-125
Revetment 10
Estuarine Receptor Hazard Quotient
(Page 2 of 4)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		High Marsh				Intertidal Marsh					
			Salt Marsh Harvest Mouse		Pickleweed		Eohaustorius Estuarius (amphipod)		California Clapper Rail		Black Rail	
			Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Acetone	7.3E-01	U	2.2E+00	3.2E-01	*	*	2.6E-02	2.8E+01	5.7E-01	1.0E-01	1.9E-01	7.1E-01
Methyl ethyl ketone	1.3E-01	U	3.8E+01	3.4E-03	*	*	1.1E-01	1.2E+00	*	*	*	*
Methylene chloride	1.9E+00	U	2.0E+02	9.2E-03	*	*	1.3E+00	1.4E+00	*	*	*	*
Toluene	4.8E-02	U	2.5E+03	1.9E-05	2.0E+02	2.4E-04	5.7E-01	8.3E-02	*	*	*	*
Trichlorofluoromethane	2.1E-02	U	2.2E+02	9.6E-05	*	*	*	*	*	*	*	*
Hazard Index				9.3		0.96		53		0.89		6.3

Table A-125
Revetment 10
Estuarine Receptor Hazard Quotient
(Page 3 of 4)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Subtidal Marsh									
			Bay Shrimp		Salmonid		Northern Anchovy		Double-Crested Cormorant		Algae	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)					950,000		950,000		43,100,000			
Metals												
Antimony	8.0E-01	U	*	*	*	*	*	*	*	*	*	*
Cadmium	3.8E-01	U	5.6E+00	6.8E-02	5.6E+00	2.9E-03	1.7E+02	9.5E-05	8.0E+02	4.4E-07	5.6E+00	6.8E-02
Copper	3.6E+01	U	7.6E+01	4.7E-01	7.6E+01	2.0E-02	2.3E+03	6.6E-04	2.8E+03	1.2E-05	7.6E+01	4.7E-01
Selenium	3.3E-01	U	1.0E+00	3.2E-01	1.0E+00	1.4E-02	3.1E+01	4.6E-04	4.1E+00	7.5E-05	1.0E+00	3.2E-01
Petroleum Hydrocarbons												
TPH - Diesel range	6.9E+00	U	8.1E+03	8.6E-04	8.1E+03	3.6E-05	2.4E+05	1.2E-06	3.1E+04	2.1E-07	8.1E+03	8.6E-04
Polychlorinated Biphenyl Compounds, Dioxins, and Furans												
1,2,3,6,7,8-HexaCDD	4.9E-09	U	*	*	*	*	*	*	1.1E+00	4.3E-12	*	*
1,2,3,4,6,7,8-HeptaCDD	2.4E-08	U	*	*	*	*	*	*	1.4E+01	1.6E-12	*	*
OctaCDD	1.0E-07	U	*	*	*	*	*	*	1.5E+02	6.2E-13	*	*
1,2,3,4,6,7,8-HeptaCDF	4.1E-09	U	*	*	*	*	*	*	1.5E+00	2.5E-12	*	*
Total TCDD TEQ[c]										9.0E-12		
Semivolatile Organic Compounds												
Benzo(b)fluoranthene	2.4E-02	U	*	*	*	*	*	*	*	*	*	*
Bis(2-ethylhexyl)phthalate	6.6E-01	U	*	*	*	*	*	*	1.8E+03	3.5E-07	*	*
Di-n-butyl phthalate	1.6E+00	U	1.2E+01	1.4E-01	1.2E+01	6.0E-03	3.5E+02	2.0E-04	3.9E+00	3.9E-04	1.2E+01	1.4E-01
Pyrene	2.3E-02	U	*	*	*	*	*	*	*	*	*	*

Table A-125
Revetment 10
Estuarine Receptor Hazard Quotient
(Page 4 of 4)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Subtidal Marsh									
			Bay Shrimp		Salmonid		Northern Anchovy		Double-Crested Cormorant		Algae	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Volatile Organic Compounds												
Acetone	7.3E-01	U	1.2E+00	6.0E-01	3.6E+00	8.5E-03	1.1E+02	2.8E-04	1.1E+01	6.2E-05	1.4E+00	5.0E-01
Methyl ethyl ketone	1.3E-01	U	3.7E+00	3.5E-02	7.6E-01	7.2E-03	2.3E+01	2.4E-04	*	*	2.3E+01	5.7E-03
Methylene chloride	1.9E+00	U	4.3E+00	4.3E-01	4.3E+00	1.8E-02	1.3E+02	6.1E-04	*	*	4.3E+00	4.3E-01
Toluene	4.8E-02	U	1.9E+00	2.5E-02	1.9E+00	1.1E-03	5.7E+01	3.5E-05	*	*	1.9E+00	2.5E-02
Trichlorofluoromethane	2.1E-02	U	*	*	*	*	*	*	*	*	*	*
Hazard Index				2.1		0.077		0.0026		0.00054		2.0

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

[c] TEQ = toxicity equivalency; this row represents a summation of the hazard quotient of the dioxin congeners, this value is not included in the hazard index.

Checked by/Date: _____

Approved by/Date: _____

Table A-126
Revetment 10
Human Carcinogenic Risk Characterization

Carcinogenic Risk = (95% UCL/Target Concentrations) x 10^{-6}

Where

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration[b]	Risk	Target Concentration	Risk	Target Concentration	Risk
Metals								
Cadmium	3.8E-01	U	1.4E+03	2.7E-10	*	*	*	*
Polychlorinated Biphenyl Compounds, Dioxins, and Furans								
1,2,3,6,7,8-HexaCDD	4.9E-09	U	2.0E-04	2.5E-11	2.0E-04	2.5E-11	9.2E-03	5.4E-13
1,2,3,4,6,7,8-HeptaCDD	2.4E-08	U	2.0E-03	1.2E-11	2.0E-03	1.2E-11	4.6E-01	5.2E-14
OctaCDD	1.0E-07	U	2.0E-02	5.2E-12	2.0E-02	5.2E-12	5.8E+01	1.8E-15
1,2,3,4,6,7,8-HeptaCDF	4.1E-09	U	2.0E-03	2.1E-12	2.0E-03	2.1E-12	1.5E+00	2.8E-15
Semivolatile Organic Compounds								
Benzo(b)fluoranthene	2.4E-02	U	1.7E+00	1.4E-08	1.7E+00	1.4E-08	7.0E+01	3.4E-10
Bis(2-ethylhexyl)phthalate	6.6E-01	U	1.4E+02	4.5E-09	1.4E+02	4.6E-09	1.0E+05	6.6E-12
Volatile Organic Compounds								
Methylene Chloride	1.9E+00	U	1.6E+02	1.2E-08	1.6E+02	1.2E-08	5.3E+01	3.6E-08
Pathway Cumulative Risk				3.1E-08		3.1E-08		3.6E-08

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" Data not available.

Checked by/Date: _____

Approved by/Date: _____

Table A-127
Revetment 10
Human Noncarcinogenic Health Hazard Characterization

HQ = (95% UCL/Target Concentration)

Where

HQ = Noncarcinogenic Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient
Metals								
Antimony	8.0E-01	U	1.6E+02	4.9E-03	1.6E+02	5.0E-03	*	*
Cadmium	3.8E-01	U	2.1E+02	1.8E-03	2.1E+02	1.8E-03	2.2E+02	1.7E-03
Copper	3.6E+01	U	1.5E+04	2.4E-03	1.5E+04	2.5E-03	1.8E+04	2.1E-03
Selenium	3.3E-01	U	2.0E+03	1.6E-04	2.0E+03	1.6E-04	1.0E+03	3.3E-04
Petroleum Hydrocarbons								
TPH - Diesel range	6.9E+00	U	1.0E+05	6.9E-05	1.0E+05	6.9E-05	*	*
Semivolatile Organic Compounds								
Bis(2-ethylhexyl)phthalat	6.6E-01	U	6.1E+03	1.1E-04	6.1E+03	1.1E-04	1.0E+05	6.6E-06
Di-n-butyl phthalate	1.6E+00	U	3.2E+04	5.1E-05	3.1E+04	5.3E-05	6.1E+04	2.7E-05
Pyrene	2.3E-02	U	9.2E+03	2.5E-06	1.2E+04	1.9E-06	4.6E+04	5.1E-07
Volatile Organic Compounds								
Acetone	7.3E-01	U	3.2E+04	2.3E-05	2.1E+01	3.4E-02	1.8E+01	4.0E-02
Methyl ethyl ketone	1.3E-01	U	1.0E+05	1.3E-06	1.0E+05	1.3E-06	3.4E+04	3.8E-06
Methylene chloride	1.9E+00	U	1.9E+04	9.7E-05	1.9E+04	9.9E-05	1.9E+04	9.9E-05
Toluene	4.8E-02	U	6.2E+04	7.7E-07	7.2E+04	6.6E-07	3.1E+03	1.5E-05
Trichlorofluoromethane	2.1E-02	U	9.0E+04	2.4E-07	1.0E+05	2.1E-07	*	*
Cumulative Pathway Hazard Index				0.0096		0.044		0.045

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

Checked by/Date: _____

Approved by/Date: _____

Table A-128
Revetment 11
Estuarine Receptor Hazard Quotient
(Page 1 of 2)

HQ = (95% UCL/Target Concentration) x A/HR (if A/HR exceeds 1, value of 1 is used)

Where

HQ = Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

A = Area of Site, square feet (ft^2) = 22500

HR = Home Range, ft^2, if blank, home range assumed equal to area of site

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		High Marsh				Intertidal Marsh					
			Salt Marsh Harvest Mouse		Pickleweed		Eohaustorius Estuarius (amphipod)		California Clapper Rail		Black Rail	
			Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)			15,000						505,000		215,000	
Metals												
Beryllium	8.0E-01	U	9.9E+02	8.1E-04	1.0E+01	8.0E-02	3.6E-01	2.2E+00	*	*	*	*
Cadmium	1.1E+00	U	2.6E+01	4.3E-02	4.0E+00	2.8E-01	6.8E-01	1.6E+00	6.3E+00	7.9E-03	2.1E+00	5.6E-02
Copper	7.4E+01	U	4.2E+00	1.8E+01	1.0E+02	7.4E-01	1.9E+01	4.0E+00	1.8E+01	1.9E-01	5.8E+00	1.3E+00
Lead	3.4E+01	U	2.0E+03	1.7E-02	5.0E+01	6.9E-01	3.0E+01	1.1E+00	6.8E+00	2.3E-01	2.3E+00	1.6E+00
Zinc	1.0E+02	U	4.1E+02	2.4E-01	5.0E+01	2.0E+00	1.2E+02	8.1E-01	1.3E+02	3.6E-02	4.2E+01	2.5E-01
Petroleum Hydrocarbons												
TPH - Diesel range	6.1E+00	U	2.8E+04	2.2E-04	*	*	1.4E+02	4.2E-02	4.6E+03	6.0E-05	1.5E+03	4.2E-04
Hazard Index				18		3.8		9.8		0.46		3.2

Table A-128
Revetment 11
Estuarine Receptor Hazard Quotient
(Page 2 of 2)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Subtidal Marsh									
			Bay Shrimp		Salmonid		Northern Anchovy		Double-Crested Cormorant		Algae	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)					950,000		950,000		43,100,000			
Metals												
Beryllium	8.0E-01	U	*	*	1.3E+01	1.5E-03	3.9E+02	4.9E-05	*	*	*	*
Cadmium	1.1E+00	U	5.6E+00	2.0E-01	5.6E+00	4.7E-03	1.7E+02	1.6E-04	8.0E+02	7.2E-07	5.6E+00	2.0E-01
Copper	7.4E+01	U	7.6E+01	9.7E-01	7.6E+01	2.3E-02	2.3E+03	7.7E-04	2.8E+03	1.4E-05	7.6E+01	9.7E-01
Lead	3.4E+01	U	2.3E+03	1.5E-02	2.3E+03	3.6E-04	6.9E+04	1.2E-05	3.1E+02	5.9E-05	2.3E+03	1.5E-02
Zinc	1.0E+02	U	3.8E+03	2.7E-02	3.8E+03	6.3E-04	1.1E+05	2.1E-05	1.4E+04	3.9E-06	3.8E+03	2.7E-02
Petroleum Hydrocarbons												
TPH - Diesel range	6.1E+00	U	8.1E+03	7.6E-04	8.1E+03	1.8E-05	2.4E+05	6.0E-07	3.1E+04	1.0E-07	8.1E+03	7.6E-04
Hazard Index				1.2		0.030		0.0010		0.000078		1.2

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

Checked by/Date: _____

Approved by/Date: _____

Table A-129
Revetment 11
Human Carcinogenic Risk Characterization

Carcinogenic Risk = (95% UCL/Target Concentrations) x 10^{-6}

Where

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration[b]	Risk	Target Concentration	Risk	Target Concentration	Risk
Metals								
Beryllium	8.0E-01	U	2.5E+03	3.2E-10	*	*	*	*
Cadmium	1.1E+00	U	1.4E+03	7.8E-10	*	*	*	*
Pathway Cumulative Risk				1.1E-09		*		*

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" Data not available.

Checked by/Date: _____

Approved by/Date: _____

Table A-130
Revetment 11
Human Noncarcinogenic Health Hazard Characterization

HQ = (95% UCL/Target Concentration)

Where

HQ = Noncarcinogenic Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient
Metals								
Beryllium	8.0E-01	U	8.0E+02	1.0E-03	8.2E+02	9.8E-04	4.0E+03	2.0E-04
Cadmium	1.1E+00	U	2.1E+02	5.3E-03	2.1E+02	5.3E-03	2.2E+02	5.1E-03
Copper	7.4E+01	U	1.5E+04	4.9E-03	1.5E+04	5.0E-03	1.8E+04	4.2E-03
Lead	3.4E+01	U	6.6E+02	5.2E-02	6.6E+02	5.2E-02	*	*
Zinc	1.0E+02	U	1.0E+05	1.0E-03	9.2E+04	1.1E-03	1.0E+05	1.0E-03
Petroleum Hydrocarbons								
TPH - Diesel range	6.1E+00	U	1.0E+05	6.1E-05	1.0E+05	6.1E-05	*	*
Cumulative Pathway Hazard Index				0.064		0.064		0.011

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

Checked by/Date: _____

Approved by/Date: _____

Table A-131
Revetment 12
Estuarine Receptor Hazard Quotient
(Page 1 of 2)

HQ = (95% UCL/Target Concentration) x A/HR (if A/HR exceeds 1, value of 1 is used)

Where

HQ = Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

A = Area of Site, square feet (ft^2) = 22500

HR = Home Range, ft^2, if blank, home range assumed equal to area of site

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		High Marsh				Intertidal Marsh					
			Salt Marsh Harvest Mouse		Pickleweed		Eohaustorius Estuarius (amphipod)		California Clapper Rail		Black Rail	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)			15,000						505,000		215,000	
Metals												
Cadmium	4.2E-01	U	2.6E+01	1.6E-02	4.0E+00	1.0E-01	6.8E-01	6.2E-01	6.3E+00	3.0E-03	2.1E+00	2.1E-02
Copper	9.0E+01	U	4.2E+00	2.1E+01	1.0E+02	9.0E-01	1.9E+01	4.8E+00	1.8E+01	2.3E-01	5.8E+00	1.6E+00
Zinc	7.8E+01	U	4.1E+02	1.9E-01	5.0E+01	1.6E+00	1.2E+02	6.3E-01	1.3E+02	2.7E-02	4.2E+01	1.9E-01
Hazard Index				22		2.6		6.1		0.26		1.8

Table A-131
Revetment 12
Estuarine Receptor Hazard Quotient
(Page 2 of 2)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Subtidal Marsh									
			Bay Shrimp		Salmonid		Northern Anchovy		Double-Crested Cormorant		Algae	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)					950,000		950,000		43,100,000			
Metals												
Cadmium	4.2E-01	U	5.6E+00	7.5E-02	5.6E+00	1.8E-03	1.7E+02	5.9E-05	8.0E+02	2.7E-07	5.6E+00	7.5E-02
Copper	9.0E+01	U	7.6E+01	1.2E+00	7.6E+01	2.8E-02	2.3E+03	9.3E-04	2.8E+03	1.7E-05	7.6E+01	1.2E+00
Zinc	7.8E+01	U	3.8E+03	2.1E-02	3.8E+03	4.9E-04	1.1E+05	1.6E-05	1.4E+04	3.0E-06	3.8E+03	2.1E-02
Hazard Index				1.3		0.030		0.0010		0.000020		1.3

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

Checked by/Date: _____

Approved by/Date: _____

Table A-132
Revetment 12
Human Carcinogenic Risk Characterization

Carcinogenic Risk = (95% UCL/Target Concentrations) x 10^{-6}

Where

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration[b]	Risk	Target Concentration	Risk	Target Concentration	Risk
Metals								
Cadmium	4.2E-01	U	1.4E+03	2.9E-10	*	*	*	*
Pathway Cumulative Risk				2.9E-10		*		*

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" Data not available.

Checked by/Date: _____

Approved by/Date: _____

Table A-133
Revetment 12
Human Noncarcinogenic Health Hazard Characterization

HQ = (95% UCL/Target Concentration)

Where

HQ = Noncarcinogenic Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Metals								
Cadmium	4.2E-01	U	2.1E+02	2.0E-03	2.1E+02	2.0E-03	2.2E+02	1.9E-03
Copper	9.0E+01	U	1.5E+04	6.0E-03	1.5E+04	6.1E-03	1.8E+04	5.1E-03
Zinc	7.8E+01	U	1.0E+05	7.8E-04	9.2E+04	8.5E-04	1.0E+05	7.8E-04
Cumulative Pathway Hazard Index				0.0087		0.0090		0.0078

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

Checked by/Date: _____

Approved by/Date: _____

Table A-134
Revetment 13
Estuarine Receptor Hazard Quotient
(Page 1 of 4)

HQ = (95% UCL/Target Concentration) x A/HR (if A/HR exceeds 1, value of 1 is used)

Where

HQ = Hazard Quotient, unitless
UCL = Upper Confidence Limit on the Mean, milligrams per kilogram (mg/kg), dry weight
Target Concentration = Target Concentration, mg/kg, dry weight
A = Area of Site, square feet (ft^2) = 22500
HR = Home Range, ft^2, if blank, home range assumed equal to area of site

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		High Marsh				Intertidal Marsh					
			Salt Marsh Harvest Mouse		Pickleweed		Eohaustorius Estuarius (amphipod)		California Clapper Rail		Black Rail	
			Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)			15,000						505,000		215,000	
Metals												
Cadmium	3.7E+00	U	2.6E+01	1.4E-01	4.0E+00	9.2E-01	6.8E-01	5.5E+00	6.3E+00	2.6E-02	2.1E+00	1.9E-01
Lead	9.6E+01	U	2.0E+03	4.7E-02	5.0E+01	1.9E+00	3.0E+01	3.2E+00	6.8E+00	6.3E-01	2.3E+00	4.5E+00
Petroleum Hydrocarbons												
TPH - Diesel range	2.0E+01	U	2.8E+04	7.3E-04	*	*	1.4E+02	1.4E-01	4.6E+03	2.0E-04	1.5E+03	1.4E-03
TPH - Gasoline range	4.5E+00	U	9.5E+03	4.7E-04	*	*	1.2E+01	3.7E-01	*	*	*	*
Semivolatile Organic Compounds												
Acenaphthene	3.7E-02	U	3.9E+03	9.5E-06	6.3E-01	5.9E-02	6.7E-03	5.5E+00	6.7E+03	2.4E-07	2.2E+03	1.7E-06
Anthracene	8.7E-02	U	4.9E+04	1.8E-06	*	*	4.7E-02	1.9E+00	*	*	*	*
Benzo(a)anthracene	6.8E-01	M	1.2E+02	5.8E-03	*	*	7.5E-02	9.1E+00	*	*	*	*
Benzo(a)pyrene	7.4E-01	M	1.5E+02	5.0E-03	1.0E-02	7.4E+01	8.9E-02	8.3E+00	*	*	*	*
Benzo(b)fluoranthene	1.0E+00	M	1.5E+02	6.6E-03	*	*	1.8E+00	5.6E-01	*	*	*	*
Benzo(k)fluoranthene	5.1E-01	M	1.8E+02	2.8E-03	*	*	1.8E+00	2.8E-01	*	*	*	*
Chrysene	7.0E-01	M	1.2E+02	6.0E-03	*	*	1.1E-01	6.5E+00	*	*	*	*
Dibenz(a,h)anthracene	1.8E-01	M	1.8E+02	1.0E-03	*	*	6.2E-03	2.9E+01	*	*	*	*
Fluoranthene	1.1E+00	M	9.6E+03	1.1E-04	*	*	1.1E-01	9.8E+00	*	*	*	*
Fluorene	3.5E-02	U	3.9E+03	8.9E-06	*	*	1.9E-02	1.8E+00	4.6E+03	3.4E-07	1.5E+03	2.4E-06
Indeno(1,2,3-cd)pyrene	3.5E-01	M	1.7E+02	2.0E-03	*	*	6.9E-01	5.1E-01	*	*	*	*
Phenanthrene	4.4E-01	M	4.9E+01	9.0E-03	*	*	8.7E-02	5.1E+00	*	*	*	*

Table A-134
Revetment 13
Estuarine Receptor Hazard Quotient
(Page 2 of 4)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		High Marsh				Intertidal Marsh					
			Salt Marsh Harvest Mouse		Pickleweed		Eohaustorius Estuarius (amphipod)		California Clapper Rail		Black Rail	
			Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Pyrene	9.6E-01	M	5.8E+03	1.7E-04	*	*	1.5E-01	6.3E+00	*	*	*	*
Volatile Organic Compounds												
Acetone	2.7E-02	U	2.2E+00	1.2E-02	*	*	2.6E-02	1.1E+00	5.7E-01	2.1E-03	1.9E-01	1.5E-02
Methylene chloride	4.5E-03	U	2.0E+02	2.2E-05	*	*	1.3E+00	3.5E-03	*	*	*	*
Hazard Index				0.24		77		95		0.66		4.7

Table A-134
Revetment 13
Estuarine Receptor Hazard Quotient
(Page 3 of 4)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Subtidal Marsh									
			Bay Shrimp		Salmonid		Northern Anchovy		Double-Crested Cormorant		Algae	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)					950,000		950,000		43,100,000			
Metals												
Cadmium	3.7E+00	U	5.6E+00	6.6E-01	5.6E+00	1.6E-02	1.7E+02	5.2E-04	8.0E+02	2.4E-06	5.6E+00	6.6E-01
Lead	9.6E+01	U	2.3E+03	4.2E-02	2.3E+03	9.9E-04	6.9E+04	3.3E-05	3.1E+02	1.6E-04	2.3E+03	4.2E-02
Petroleum Hydrocarbons												
TPH - Diesel range	2.0E+01	U	8.1E+03	2.5E-03	8.1E+03	6.0E-05	2.4E+05	2.0E-06	3.1E+04	3.5E-07	8.1E+03	2.5E-03
TPH - Gasoline range	4.5E+00	U	4.4E+02	1.0E-02	4.4E+02	2.4E-04	1.3E+04	8.1E-06	*	*	4.4E+02	1.0E-02
Semivolatile Organic Compounds												
Acenaphthene	3.7E-02	U	6.9E+00	5.3E-03	6.9E+00	1.3E-04	2.1E+02	4.2E-06	3.6E+03	5.4E-09	6.9E+00	5.3E-03
Anthracene	8.7E-02	U	*	*	*	*	*	*	*	*	*	*
Benzo(a)anthracene	6.8E-01	M	*	*	*	*	*	*	*	*	*	*
Benzo(a)pyrene	7.4E-01	M	*	*	*	*	*	*	*	*	*	*
Benzo(b)fluoranthene	1.0E+00	M	*	*	*	*	*	*	*	*	*	*
Benzo(k)fluoranthene	5.1E-01	M	*	*	*	*	*	*	*	*	*	*
Chrysene	7.0E-01	M	*	*	*	*	*	*	*	*	*	*
Dibenz(a,h)anthracene	1.8E-01	M	*	*	*	*	*	*	*	*	*	*
Fluoranthene	1.1E+00	M	1.8E+01	6.3E-02	1.8E+01	1.5E-03	5.3E+02	5.0E-05	*	*	1.8E+01	6.3E-02
Fluorene	3.5E-02	U	*	*	*	*	*	*	3.1E+03	5.9E-09	*	*
Indeno(1,2,3-cd)pyrene	3.5E-01	M	*	*	*	*	*	*	*	*	*	*
Phenanthrene	4.4E-01	M	*	*	*	*	*	*	*	*	*	*
Pyrene	9.6E-01	M	*	*	*	*	*	*	*	*	*	*

Table A-134
Revetment 13
Estuarine Receptor Hazard Quotient
(Page 4 of 4)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Subtidal Marsh									
			Bay Shrimp		Salmonid		Northern Anchovy		Double-Crested Cormorant		Algae	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Volatile Organic Compounds												
Acetone	2.7E-02	U	1.2E+00	2.3E-02	3.6E+00	1.8E-04	1.1E+02	6.0E-06	1.1E+01	1.3E-06	1.4E+00	1.9E-02
Methylene chloride	4.5E-03	U	4.3E+00	1.0E-03	4.3E+00	2.5E-05	1.3E+02	8.2E-07	*	*	4.3E+00	1.0E-03
Hazard Index				0.81		0.019		0.00063		0.00017		0.81

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

Checked by/Date: _____

Approved by/Date: _____

Table A-135
Revetment 13
Human Carcinogenic Risk Characterization

Carcinogic Risk = (95% UCL/Target Concentrations) x 10^{-6}

Where

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration[b]	Risk	Target Concentration	Risk	Target Concentration	Risk
Metals								
Cadmium	3.7E+00	U	1.4E+03	2.6E-09	*	*	*	*
Semivolatile Organic Compounds								
Benzo(a)anthracene	6.8E-01	M	1.7E+00	4.0E-07	1.7E+00	4.0E-07	2.9E+01	2.3E-08
Benzo(a)pyrene	7.4E-01	M	1.7E-01	4.4E-06	1.7E-01	4.4E-06	5.8E+00	1.3E-07
Benzo(b)fluoranthene	1.0E+00	M	1.7E+00	5.9E-07	1.7E+00	5.9E-07	7.0E+01	1.4E-08
Benzo(k)fluoranthene	5.1E-01	M	1.7E+00	3.0E-07	1.7E+00	3.0E-07	5.7E+01	9.0E-09
Chrysene	7.0E-01	M	1.7E+01	4.1E-08	1.7E+01	4.1E-08	4.7E+03	1.5E-10
Dibenz(a,h)anthracene	1.8E-01	M	4.9E-01	3.6E-07	4.9E-01	3.6E-07	6.5E+01	2.8E-09
Indeno(1,2,3-cd)pyrene	3.5E-01	M	1.7E+00	2.1E-07	1.7E+00	2.1E-07	2.0E+02	1.8E-09
Volatile Organic Compounds								
Methylene Chloride	4.5E-03	U	1.6E+02	2.8E-11	1.6E+02	2.8E-11	5.3E+01	8.5E-11
Pathway Cumulative Risk				6.3E-06		6.3E-06		1.8E-07

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" Data not available.

Checked by/Date: _____

Approved by/Date: _____

Table A-136
Revetment 13
Human Noncarcinogenic Health Hazard Characterization
(Page 1 of 2)

HQ = (95% UCL/Target Concentration)

Where

HQ = Noncarcinogenic Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient
Metals								
Cadmium	3.7E+00	U	2.1E+02	1.8E-02	2.1E+02	1.8E-02	2.2E+02	1.7E-02
Lead	9.6E+01	U	6.6E+02	1.5E-01	6.6E+02	1.5E-01	*	*
Petroleum Hydrocarbons								
TPH - Diesel range	2.0E+01	U	1.0E+05	2.0E-04	1.0E+05	2.0E-04	*	*
TPH - Gasoline range	4.5E+00	U	1.0E+05	4.5E-05	1.0E+05	4.5E-05	*	*
Semivolatile Organic Compounds								
Acenaphthene	3.7E-02	U	1.8E+04	2.0E-06	1.8E+04	2.0E-06	3.0E+04	1.2E-06
Anthracene	8.7E-02	U	8.5E+04	1.0E-06	7.8E+04	1.1E-06	1.0E+05	8.7E-07
Fluoranthene	1.1E+00	M	1.2E+04	9.0E-05	1.2E+04	9.1E-05	7.7E+04	1.4E-05
Fluorene	3.5E-02	U	1.2E+04	2.9E-06	1.2E+04	2.9E-06	1.8E+04	2.0E-06
Phenanthrene	4.4E-01	M	9.8E+03	4.5E-05	1.2E+04	3.6E-05	1.0E+05	4.4E-06
Pyrene	9.6E-01	M	9.2E+03	1.0E-04	1.2E+04	7.8E-05	4.6E+04	2.1E-05

Table A-136
Revetment 13
Human Noncarcinogenic Health Hazard Characterization
(Page 2 of 2)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient
Volatile Organic Compounds								
Acetone	2.7E-02	U	3.2E+04	8.6E-07	2.1E+01	1.3E-03	1.8E+01	1.5E-03
Methylene chloride	4.5E-03	U	1.9E+04	2.3E-07	1.9E+04	2.4E-07	1.9E+04	2.4E-07
Cumulative Pathway Hazard Index[c]				0.16		0.16		0.019

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

[c] Lead is a special case metal (i.e., the target concentration was calculated using the California Department of Toxic Substances Control LEADSPREAD model), however for calculation of the cumulative pathway hazard index, lead is assumed to be a non-carcinogen.

Checked by/Date: _____

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Table A-137
Revetment 14
Estuarine Receptor Hazard Quotient
(Page 1 of 2)

HQ = (95% UCL/Target Concentration) x A/HR (if A/HR exceeds 1, value of 1 is used)

Where

HQ = Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

A = Area of Site, square feet (ft^2) = 22500

HR = Home Range, ft^2, if blank, home range assumed equal to area of site

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		High Marsh				Intertidal Marsh					
			Salt Marsh Harvest Mouse		Pickleweed		Eohaustorius Estuarius (amphipod)		California Clapper Rail		Black Rail	
			Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)			15,000						505,000		215,000	
Metals												
Copper	5.7E+01	M	4.2E+00	1.3E+01	1.0E+02	5.7E-01	1.9E+01	3.0E+00	1.8E+01	1.4E-01	5.8E+00	1.0E+00
Molybdenum	1.2E+01	M	6.0E+00	1.9E+00	2.0E+00	5.9E+00	4.8E+00	2.4E+00	1.8E+02	2.9E-03	5.9E+01	2.1E-02
Petroleum Hydrocarbons												
TPH - Diesel range	1.6E+02	M	2.8E+04	5.7E-03	*	*	1.4E+02	1.1E+00	4.6E+03	1.6E-03	1.5E+03	1.1E-02
Volatile Organic Compounds												
Acetone	1.3E-02	M	2.2E+00	5.8E-03	*	*	2.6E-02	5.0E-01	5.7E-01	1.0E-03	1.9E-01	7.2E-03
Hazard Index				15		6.4		7.1		0.15		1.1

Table A-137
Revetment 14
Estuarine Receptor Hazard Quotient
(Page 2 of 2)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Subtidal Marsh									
			Bay Shrimp		Salmonid		Northern Anchovy		Double-Crested Cormorant		Algae	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)					950,000		950,000		43,100,000			
Metals												
Copper	5.7E+01	M	7.6E+01	7.4E-01	7.6E+01	1.8E-02	2.3E+03	5.9E-04	2.8E+03	1.1E-05	7.6E+01	7.4E-01
Molybdenum	1.2E+01	M	1.7E+01	7.0E-01	4.9E-02	5.7E+00	1.5E+00	1.9E-01	4.8E+03	1.3E-06	1.7E+01	7.0E-01
Petroleum Hydrocarbons												
TPH - Diesel range	1.6E+02	M	8.1E+03	2.0E-02	8.1E+03	4.7E-04	2.4E+05	1.6E-05	3.1E+04	2.7E-06	8.1E+03	2.0E-02
Volatile Organic Compounds												
Acetone	1.3E-02	M	1.2E+00	1.1E-02	3.6E+00	8.6E-05	1.1E+02	2.9E-06	1.1E+01	6.3E-07	1.4E+00	9.0E-03
Hazard Index				1.5		5.7		0.19		0.000015		1.5

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

Checked by/Date: _____

Approved by/Date: _____

Table A-138
Revetment 14
Human Noncarcinogenic Health Hazard Characterization

HQ = (95% UCL/Target Concentration)

Where

HQ = Noncarcinogenic Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient
Metals								
Copper	5.7E+01	M	1.5E+04	3.7E-03	1.5E+04	3.9E-03	1.8E+04	3.2E-03
Molybdenum	1.2E+01	M	2.0E+03	5.7E-03	2.0E+03	5.7E-03	*	*
Petroleum Hydrocarbons								
TPH - Diesel range	1.6E+02	M	1.0E+05	1.6E-03	1.0E+05	1.6E-03	*	*
Volatile Organic Compounds								
Acetone	1.3E-02	M	3.2E+04	4.1E-07	2.1E+01	6.1E-04	1.8E+01	7.2E-04
Cumulative Pathway Hazard Index				0.011		0.012		0.0040

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

Checked by/Date: _____

Approved by/Date: _____

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Revetment 15
Estuarine Receptor Hazard Quotient
(Page 1 of 4)

HQ = (95% UCL/Target Concentration) x A/HR (if A/HR exceeds 1, value of 1 is used)

Where

HQ = Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

A = Area of Site, square feet (ft^2) = 22500

HR = Home Range, ft^2, if blank, home range assumed equal to area of site

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		High Marsh				Intertidal Marsh					
			Salt Marsh Harvest Mouse		Pickleweed		Eohaustorius Estuarius (amphipod)		California Clapper Rail		Black Rail	
			Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)			15,000						505,000		215,000	
Metals												
Cadmium	1.4E+00	U	2.6E+01	5.4E-02	4.0E+00	3.5E-01	6.8E-01	2.1E+00	6.3E+00	1.0E-02	2.1E+00	7.1E-02
Lead	4.5E+01	U	2.0E+03	2.2E-02	5.0E+01	9.1E-01	3.0E+01	1.5E+00	6.8E+00	3.0E-01	2.3E+00	2.1E+00
Molybdenum	4.4E-01	U	6.0E+00	7.3E-02	2.0E+00	2.2E-01	4.8E+00	9.1E-02	1.8E+02	1.1E-04	5.9E+01	7.8E-04
Petroleum Hydrocarbons												
TPH - Diesel range	1.4E+01	M	2.8E+04	5.0E-04	*	*	1.4E+02	9.7E-02	4.6E+03	1.4E-04	1.5E+03	9.7E-04
Semivolatile Organic Compounds												
Benzo(a)anthracene	2.7E-02	U	1.2E+02	2.3E-04	*	*	7.5E-02	3.6E-01	*	*	*	*
Benzo(a)pyrene	2.9E-02	U	1.5E+02	1.9E-04	1.0E-02	2.9E+00	8.9E-02	3.2E-01	*	*	*	*
Benzo(b)fluoranthene	3.8E-02	U	1.5E+02	2.5E-04	*	*	1.8E+00	2.1E-02	*	*	*	*
Benzo(k)fluoranthene	2.5E-02	U	1.8E+02	1.4E-04	*	*	1.8E+00	1.4E-02	*	*	*	*
Chrysene	3.4E-02	U	1.2E+02	2.9E-04	*	*	1.1E-01	3.1E-01	*	*	*	*
Fluoranthene	6.1E-02	U	9.6E+03	6.3E-06	*	*	1.1E-01	5.4E-01	*	*	*	*
Phenanthrene	3.8E-02	U	4.9E+01	7.7E-04	*	*	8.7E-02	4.3E-01	*	*	*	*
Pyrene	5.4E-02	U	5.8E+03	9.3E-06	*	*	1.5E-01	3.5E-01	*	*	*	*

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Revetment 15
Estuarine Receptor Hazard Quotient
(Page 2 of 4)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		High Marsh				Intertidal Marsh					
			Salt Marsh Harvest Mouse		Pickleweed		Eohaustorius Estuarius (amphipod)		California Clapper Rail		Black Rail	
			Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Volatile Organic Compounds												
Acetone	2.8E-02	U	2.2E+00	1.2E-02	*	*	2.6E-02	1.1E+00	5.7E-01	2.2E-03	1.9E-01	1.5E-02
Toluene	6.0E-03	M	2.5E+03	2.4E-06	2.0E+02	3.0E-05	5.7E-01	1.1E-02	*	*	*	*
Hazard Index				0.16		4.3		7.2		0.31		2.2

Table A-139
Revetment 15
Estuarine Receptor Hazard Quotient
(Page 3 of 4)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Subtidal Marsh									
			Bay Shrimp		Salmonid		Northern Anchovy		Double-Crested Cormorant		Algae	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)					950,000		950,000		43,100,000			
Metals												
Cadmium	1.4E+00	U	5.6E+00	2.5E-01	5.6E+00	6.0E-03	1.7E+02	2.0E-04	8.0E+02	9.1E-07	5.6E+00	2.5E-01
Lead	4.5E+01	U	2.3E+03	2.0E-02	2.3E+03	4.7E-04	6.9E+04	1.6E-05	3.1E+02	7.8E-05	2.3E+03	2.0E-02
Molybdenum	4.4E-01	U	1.7E+01	2.6E-02	4.9E-02	2.1E-01	1.5E+00	7.1E-03	4.8E+03	4.8E-08	1.7E+01	2.6E-02
Petroleum Hydrocarbons												
TPH - Diesel range	1.4E+01	M	8.1E+03	1.7E-03	8.1E+03	4.1E-05	2.4E+05	1.4E-06	3.1E+04	2.4E-07	8.1E+03	1.7E-03
Semivolatile Organic Compounds												
Benzo(a)anthracene	2.7E-02	U	*	*	*	*	*	*	*	*	*	*
Benzo(a)pyrene	2.9E-02	U	*	*	*	*	*	*	*	*	*	*
Benzo(b)fluoranthene	3.8E-02	U	*	*	*	*	*	*	*	*	*	*
Benzo(k)fluoranthene	2.5E-02	U	*	*	*	*	*	*	*	*	*	*
Chrysene	3.4E-02	U	*	*	*	*	*	*	*	*	*	*
Fluoranthene	6.1E-02	U	1.8E+01	3.5E-03	1.8E+01	8.2E-05	5.3E+02	2.7E-06	*	*	1.8E+01	3.5E-03
Phenanthrene	3.8E-02	U	*	*	*	*	*	*	*	*	*	*
Pyrene	5.4E-02	U	*	*	*	*	*	*	*	*	*	*

Table A-139
Revetment 15
Estuarine Receptor Hazard Quotient
(Page 4 of 4)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Subtidal Marsh									
			Bay Shrimp		Salmonid		Northern Anchovy		Double-Crested Cormorant		Algae	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Volatile Organic Compounds												
Acetone	2.8E-02	U	1.2E+00	2.3E-02	3.6E+00	1.9E-04	1.1E+02	6.2E-06	1.1E+01	1.4E-06	1.4E+00	1.9E-02
Toluene	6.0E-03	M	1.9E+00	3.2E-03	1.9E+00	7.5E-05	5.7E+01	2.5E-06	*	*	1.9E+00	3.2E-03
Hazard Index				0.33		0.22		0.0073		0.000080		0.33

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

Checked by/Date: _____

Approved by/Date: _____

Table A-140
Revetment 15
Human Carcinogenic Risk Characterization

Carcinogenic Risk = (95% UCL/Target Concentrations) x 10^{-6}

Where

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration[b]	Risk	Target Concentration	Risk	Target Concentration	Risk
Metals								
Cadmium	1.4E+00	U	1.4E+03	9.9E-10	*	*	*	*
Semivolatile Organic Compounds								
Benzo(a)anthracene	2.7E-02	U	1.7E+00	1.6E-08	1.7E+00	1.6E-08	2.9E+01	9.2E-10
Benzo(a)pyrene	2.9E-02	U	1.7E-01	1.7E-07	1.7E-01	1.7E-07	5.8E+00	4.9E-09
Benzo(b)fluoranthene	3.8E-02	U	1.7E+00	2.2E-08	1.7E+00	2.2E-08	7.0E+01	5.4E-10
Benzo(k)fluoranthene	2.5E-02	U	1.7E+00	1.5E-08	1.7E+00	1.5E-08	5.7E+01	4.4E-10
Chrysene	3.4E-02	U	1.7E+01	2.0E-09	1.7E+01	2.0E-09	4.7E+03	7.1E-12
Pathway Cumulative Risk				2.2E-07		2.2E-07		6.8E-09

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" Data not available.

Checked by/Date: _____

Approved by/Date: _____

Table A-141
Revetment 15
Human Noncarcinogenic Health Hazard Characterization

HQ = (95% UCL/Target Concentration)

Where

HQ = Noncarcinogenic Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient
Metals								
Cadmium	1.4E+00	U	2.1E+02	6.7E-03	2.1E+02	6.7E-03	2.2E+02	6.4E-03
Lead	4.5E+01	U	6.6E+02	6.9E-02	6.6E+02	6.9E-02	*	*
Molybdenum	4.4E-01	U	2.0E+03	2.1E-04	2.0E+03	2.1E-04	*	*
Petroleum Hydrocarbons								
TPH - Diesel range	1.4E+01	M	1.0E+05	1.4E-04	1.0E+05	1.4E-04	*	*
Semivolatile Organic Compounds								
Fluoranthene	6.1E-02	U	1.2E+04	5.0E-06	1.2E+04	5.0E-06	7.7E+04	7.9E-07
Phenanthrene	3.8E-02	U	9.8E+03	3.8E-06	1.2E+04	3.0E-06	1.0E+05	3.8E-07
Pyrene	5.4E-02	U	9.2E+03	5.8E-06	1.2E+04	4.3E-06	4.6E+04	1.2E-06
Volatile Organic Compounds								
Acetone	2.8E-02	U	3.2E+04	8.8E-07	2.1E+01	1.3E-03	1.8E+01	1.6E-03
Toluene	6.0E-03	M	6.2E+04	9.7E-08	7.2E+04	8.3E-08	3.1E+03	1.9E-06
Cumulative Pathway Hazard Index[c]				0.076		0.077		0.0080

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

[c] Lead is a special case metal (i.e., the target concentration was calculated using the California Department of Toxic Substances Control LEADSPREAD model), however for calculation of the cumulative pathway hazard index, lead is assumed to be a non-carcinogen.

Checked by/Date: _____

Approved by/Date: _____

Table A-142
Revetment 16
Estuarine Receptor Hazard Quotient
(Page 1 of 2)

HQ = (95% UCL/Target Concentration) x A/HR (if A/HR exceeds 1, value of 1 is used)

Where

HQ = Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

A = Area of Site, square feet (ft^2) = 22,500

HR = Home Range, ft^2, if blank, home range assumed equal to area of site

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		High Marsh				Intertidal Marsh					
			Salt Marsh Harvest Mouse		Pickleweed		Eohaustorius Estuarius (amphipod)		California Clapper Rail		Black Rail	
			Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)			15,000						505,000		215,000	
Metals												
Barium	4.1E+02	M	8.8E+01	4.6E+00	5.0E+02	8.1E-01	1.4E+00	3.0E+02	4.3E+02	4.2E-02	1.4E+02	3.0E-01
Copper	6.3E+01	M	4.2E+00	1.5E+01	1.0E+02	6.3E-01	1.9E+01	3.4E+00	1.8E+01	1.6E-01	5.8E+00	1.1E+00
Molybdenum	7.3E-01	M	6.0E+00	1.2E-01	2.0E+00	3.7E-01	4.8E+00	1.5E-01	1.8E+02	1.8E-04	5.9E+01	1.3E-03
Volatile Organic Compounds												
Acetone	1.9E-02	M	2.2E+00	8.5E-03	*	*	2.6E-02	7.3E-01	5.7E-01	1.5E-03	1.9E-01	1.0E-02
Hazard Index				20		1.8		302		0.20		1.4

Table A-142
Revetment 16
Estuarine Receptor Hazard Quotient
(Page 2 of 2)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Subtidal Marsh									
			Bay Shrimp		Salmonid		Northern Anchovy		Double-Crested Cormorant		Algae	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)					950,000		950,000		43,100,000			
Metals												
Barium	4.1E+02	M	5.8E+03	7.0E-02	5.8E+03	1.6E-03	1.8E+05	5.5E-05	4.3E+04	5.0E-06	3.1E+02	1.3E+00
Copper	6.3E+01	M	7.6E+01	8.3E-01	7.6E+01	2.0E-02	2.3E+03	6.5E-04	2.8E+03	1.2E-05	7.6E+01	8.3E-01
Molybdenum	7.3E-01	M	1.7E+01	4.4E-02	4.9E-02	3.6E-01	1.5E+00	1.2E-02	4.8E+03	8.0E-08	1.7E+01	4.4E-02
Volatile Organic Compounds												
Acetone	1.9E-02	M	1.2E+00	1.6E-02	3.6E+00	1.3E-04	1.1E+02	4.2E-06	1.1E+01	9.2E-07	1.4E+00	1.3E-02
Hazard Index				0.96		0.38		0.013		0.000018		2.2

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

Checked by/Date: _____

Approved by/Date: _____

Table A-143
Revetment 16
Human Noncarcinogenic Health Hazard Characterization

HQ = (95% UCL/Target Concentration)

Where

HQ = Noncarcinogenic Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient
Metals								
Barium	4.1E+02	M	2.8E+04	1.5E-02	2.7E+04	1.5E-02	*	*
Copper	6.3E+01	M	1.5E+04	4.2E-03	1.5E+04	4.3E-03	1.8E+04	3.6E-03
Molybdenum	7.3E-01	M	2.0E+03	3.6E-04	2.0E+03	3.6E-04	*	*
Volatile Organic Compounds								
Acetone	1.9E-02	M	3.2E+04	6.0E-07	2.1E+01	8.9E-04	1.8E+01	1.1E-03
Cumulative Pathway Hazard Index				0.019		0.021		0.0047

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

Checked by/Date: _____

Approved by/Date: _____

Table A-144
Revetment 17
Estuarine Receptor Hazard Quotient
(Page 1 of 2)

HQ = (95% UCL/Target Concentration) x A/HR (if A/HR exceeds 1, value of 1 is used)

Where

HQ = Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

A = Area of Site, square feet (ft^2) = 22,500

HR = Home Range, ft^2, if blank, home range assumed equal to area of site

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		High Marsh				Intertidal Marsh					
			Salt Marsh Harvest Mouse		Pickleweed		Eohaustorius Estuarius (amphipod)		California Clapper Rail		Black Rail	
			Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)			15,000						505,000		215,000	
Metals												
Copper	5.1E+01	M	4.2E+00	1.2E+01	1.0E+02	5.1E-01	1.9E+01	2.7E+00	1.8E+01	1.3E-01	5.8E+00	9.1E-01
Molybdenum	7.2E-01	M	6.0E+00	1.2E-01	2.0E+00	3.6E-01	4.8E+00	1.5E-01	1.8E+02	1.8E-04	5.9E+01	1.3E-03
Petroleum Hydrocarbons												
TPH - Diesel range	1.7E+01	M	2.8E+04	6.1E-04	*	*	1.4E+02	1.2E-01	4.6E+03	1.7E-04	1.5E+03	1.2E-03
TPH - Gasoline range	4.4E+00	M	9.5E+03	4.6E-04	*	*	1.2E+01	3.7E-01	*	*	*	*
Hazard Index				12		0.87		3.3		0.13		0.91

Table A-144
Revetment 17
Estuarine Receptor Hazard Quotient
(Page 2 of 2)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Subtidal Marsh									
			Bay Shrimp		Salmonid		Northern Anchovy		Double-Crested Cormorant		Algae	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)					950,000		950,000		43,100,000			
Metals												
Copper	5.1E+01	M	7.6E+01	6.6E-01	7.6E+01	1.6E-02	2.3E+03	5.2E-04	2.8E+03	9.5E-06	7.6E+01	6.6E-01
Molybdenum	7.2E-01	M	1.7E+01	4.3E-02	4.9E-02	3.5E-01	1.5E+00	1.2E-02	4.8E+03	7.9E-08	1.7E+01	4.3E-02
Petroleum Hydrocarbons												
TPH - Diesel range	1.7E+01	M	8.1E+03	2.1E-03	8.1E+03	5.0E-05	2.4E+05	1.7E-06	3.1E+04	2.9E-07	8.1E+03	2.1E-03
TPH - Gasoline range	4.4E+00	M	4.4E+02	1.0E-02	4.4E+02	2.4E-04	1.3E+04	7.9E-06	*	*	4.4E+02	1.0E-02
Hazard Index				0.72		0.37		0.012		0.0000098		0.72

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

Checked by/Date: _____

Approved by/Date: _____

Table A-145
Revetment 17
Human Noncarcinogenic Health Hazard Characterization

HQ = (95% UCL/Target Concentration)

Where

HQ = Noncarcinogenic Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient
Metals								
Copper	5.1E+01	M	1.5E+04	3.3E-03	1.5E+04	3.4E-03	1.8E+04	2.9E-03
Molybdenum	7.2E-01	M	2.0E+03	3.5E-04	2.0E+03	3.5E-04	*	*
Petroleum Hydrocarbons								
TPH - Diesel range	1.7E+01	M	1.0E+05	1.7E-04	1.0E+05	1.7E-04	*	*
TPH - Gasoline range	4.4E+00	M	1.0E+05	4.4E-05	1.0E+05	4.4E-05	*	*
Cumulative Pathway Hazard Index				0.0039		0.0040		0.0029

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

Checked by/Date: _____

Approved by/Date: _____

Table A-146
Revetment 19
Estuarine Receptor Hazard Quotient
(Page 1 of 4)

HQ = (95% UCL/Target Concentration) x A/HR (if A/HR exceeds 1, value of 1 is used)

Where

HQ = Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

A = Area of Site, square feet (ft^2) = 22500

HR = Home Range, ft^2, if blank, home range assumed equal to area of site

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		High Marsh				Intertidal Marsh					
			Salt Marsh Harvest Mouse		Pickleweed		Eohaustorius Estuarius (amphipod)		California Clapper Rail		Black Rail	
			Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)			15,000						505,000		215,000	
Metals												
Barium	3.5E+02	U	8.8E+01	4.0E+00	5.0E+02	6.9E-01	1.4E+00	2.5E+02	4.3E+02	3.6E-02	1.4E+02	2.6E-01
Cadmium	1.7E+00	M	2.6E+01	6.6E-02	4.0E+00	4.3E-01	6.8E-01	2.5E+00	6.3E+00	1.2E-02	2.1E+00	8.6E-02
Copper	7.5E+01	U	4.2E+00	1.8E+01	1.0E+02	7.5E-01	1.9E+01	4.0E+00	1.8E+01	1.9E-01	5.8E+00	1.3E+00
Lead	7.8E+01	U	2.0E+03	3.9E-02	5.0E+01	1.6E+00	3.0E+01	2.6E+00	6.8E+00	5.1E-01	2.3E+00	3.6E+00
Molybdenum	1.4E+00	U	6.0E+00	2.3E-01	2.0E+00	6.8E-01	4.8E+00	2.9E-01	1.8E+02	3.4E-04	5.9E+01	2.4E-03
Petroleum Hydrocarbons												
TPH - Diesel range	2.3E+02	U	2.8E+04	8.2E-03	*	*	1.4E+02	1.6E+00	4.6E+03	2.2E-03	1.5E+03	1.6E-02
TPH - Gasoline range	4.9E+02	U	9.5E+03	5.1E-02	*	*	1.2E+01	4.1E+01	*	*	*	*
Semivolatile Organic Compounds												
2-Methylnaphthalene	1.1E-01	U	2.0E+03	5.4E-05	*	*	2.0E-02	5.2E+00	*	*	*	*
Acenaphthene	2.9E-01	U	3.9E+03	7.4E-05	6.3E-01	4.6E-01	6.7E-03	4.3E+01	6.7E+03	1.9E-06	2.2E+03	1.3E-05
Anthracene	2.0E-01	U	4.9E+04	4.1E-06	*	*	4.7E-02	4.3E+00	*	*	*	*
Benzo(a)anthracene	8.5E-01	U	1.2E+02	7.2E-03	*	*	7.5E-02	1.1E+01	*	*	*	*
Benzo(a)pyrene	7.6E-01	U	1.5E+02	5.1E-03	1.0E-02	7.6E+01	8.9E-02	8.5E+00	*	*	*	*
Benzo(b)fluoranthene	9.3E-01	U	1.5E+02	6.1E-03	*	*	1.8E+00	5.2E-01	*	*	*	*
Benzo(k)fluoranthene	6.5E-01	U	1.8E+02	3.5E-03	*	*	1.8E+00	3.6E-01	*	*	*	*
Chrysene	9.3E-01	U	1.2E+02	7.9E-03	*	*	1.1E-01	8.7E+00	*	*	*	*
Dibenz(a,h)anthracene	1.7E-01	U	1.8E+02	9.7E-04	*	*	6.2E-03	2.7E+01	*	*	*	*
Fluoranthene	1.9E+00	U	9.6E+03	2.0E-04	*	*	1.1E-01	1.7E+01	*	*	*	*

Table A-146
Revetment 19
Estuarine Receptor Hazard Quotient
(Page 2 of 4)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		High Marsh				Intertidal Marsh					
			Salt Marsh Harvest Mouse		Pickleweed		Eohaustorius Estuarius (amphipod)		California Clapper Rail		Black Rail	
			Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Fluorene	2.2E-01	U	3.9E+03	5.6E-05	*	*	1.9E-02	1.2E+01	4.6E+03	2.1E-06	1.5E+03	1.5E-05
Semivolatile Organic Compounds (continued)												
Indeno(1,2,3-cd)pyrene	2.8E-01	U	1.7E+02	1.6E-03	*	*	6.9E-01	4.0E-01	*	*	*	*
Naphthalene	3.2E-02	M	7.9E+02	4.0E-05	2.5E+00	1.3E-02	3.5E-02	9.3E-01	*	*	*	*
Phenanthrene	1.7E+00	U	4.9E+01	3.5E-02	*	*	8.7E-02	2.0E+01	*	*	*	*
Pyrene	1.6E+00	U	5.8E+03	2.8E-04	*	*	1.5E-01	1.1E+01	*	*	*	*
Volatile Organic Compounds												
Acetone	1.7E-01	U	2.2E+00	7.6E-02	*	*	2.6E-02	6.6E+00	5.7E-01	1.3E-02	1.9E-01	9.3E-02
Carbon disulfide	3.0E-03	M	*	*	*	*	1.1E-02	2.8E-01	*	*	*	*
Methyl ethyl ketone	2.1E-02	M	3.8E+01	5.5E-04	*	*	1.1E-01	1.9E-01	*	*	*	*
Methylene chloride	8.0E-03	M	2.0E+02	3.9E-05	*	*	1.3E+00	6.1E-03	*	*	*	*
Trichlorofluoromethane	2.0E-03	M	2.2E+02	9.1E-06	*	*	*	*	*	*	*	*
Hazard Index				22		80		482		0.77		5.4

Table A-146
Revetment 19
Estuarine Receptor Hazard Quotient
(Page 3 of 4)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Subtidal Marsh									
			Bay Shrimp		Salmonid		Northern Anchovy		Double-Crested Cormorant		Algae	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)					950,000		950,000		43,100,000			
Metals												
Barium	3.5E+02	U	5.8E+03	5.9E-02	5.8E+03	1.4E-03	1.8E+05	4.7E-05	4.3E+04	4.3E-06	3.1E+02	1.1E+00
Cadmium	1.7E+00	M	5.6E+00	3.0E-01	5.6E+00	7.2E-03	1.7E+02	2.4E-04	8.0E+02	1.1E-06	5.6E+00	3.0E-01
Copper	7.5E+01	U	7.6E+01	9.8E-01	7.6E+01	2.3E-02	2.3E+03	7.7E-04	2.8E+03	1.4E-05	7.6E+01	9.8E-01
Lead	7.8E+01	U	2.3E+03	3.4E-02	2.3E+03	8.1E-04	6.9E+04	2.7E-05	3.1E+02	1.3E-04	2.3E+03	3.4E-02
Molybdenum	1.4E+00	U	1.7E+01	8.2E-02	4.9E-02	6.7E-01	1.5E+00	2.2E-02	4.8E+03	1.5E-07	1.7E+01	8.2E-02
Petroleum Hydrocarbons												
TPH - Diesel range	2.3E+02	U	8.1E+03	2.8E-02	8.1E+03	6.7E-04	2.4E+05	2.2E-05	3.1E+04	3.9E-06	8.1E+03	2.8E-02
TPH - Gasoline range	4.9E+02	U	4.4E+02	1.1E+00	4.4E+02	2.6E-02	1.3E+04	8.7E-04	*	*	4.4E+02	1.1E+00
Semivolatile Organic Compounds												
2-Methylnaphthalene	1.1E-01	U	*	*	*	*	*	*	*	*	*	*
Acenaphthene	2.9E-01	U	6.9E+00	4.2E-02	6.9E+00	9.8E-04	2.1E+02	3.3E-05	3.6E+03	4.2E-08	6.9E+00	4.2E-02
Anthracene	2.0E-01	U	*	*	*	*	*	*	*	*	*	*
Benzo(a)anthracene	8.5E-01	U	*	*	*	*	*	*	*	*	*	*
Benzo(a)pyrene	7.6E-01	U	*	*	*	*	*	*	*	*	*	*
Benzo(b)fluoranthene	9.3E-01	U	*	*	*	*	*	*	*	*	*	*
Benzo(k)fluoranthene	6.5E-01	U	*	*	*	*	*	*	*	*	*	*
Chrysene	9.3E-01	U	*	*	*	*	*	*	*	*	*	*
Dibenz(a,h)anthracene	1.7E-01	U	*	*	*	*	*	*	*	*	*	*
Fluoranthene	1.9E+00	U	1.8E+01	1.1E-01	1.8E+01	2.6E-03	5.3E+02	8.8E-05	*	*	1.8E+01	1.1E-01
Fluorene	2.2E-01	U	*	*	*	*	*	*	3.1E+03	3.7E-08	*	*
Indeno(1,2,3-cd)pyrene	2.8E-01	U	*	*	*	*	*	*	*	*	*	*
Naphthalene	3.2E-02	M	4.7E+00	6.8E-03	4.7E+00	1.6E-04	1.4E+02	5.4E-06	*	*	4.7E+00	6.8E-03
Phenanthrene	1.7E+00	U	*	*	*	*	*	*	*	*	*	*
Pyrene	1.6E+00	U	*	*	*	*	*	*	*	*	*	*
Volatile Organic Compounds												

Table A-146
Revetment 19
Estuarine Receptor Hazard Quotient
(Page 4 of 4)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Subtidal Marsh									
			Bay Shrimp		Salmonid		Northern Anchovy		Double-Crested Cormorant		Algae	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Acetone	1.7E-01	U	1.2E+00	1.4E-01	3.6E+00	1.1E-03	1.1E+02	3.7E-05	1.1E+01	8.2E-06	1.4E+00	1.2E-01
Carbon disulfide	3.0E-03	M	2.0E-02	1.5E-01	6.1E-01	1.2E-04	1.8E+01	3.9E-06	*	*	3.1E-02	9.5E-02
Methyl ethyl ketone	2.1E-02	M	3.7E+00	5.7E-03	7.6E-01	6.5E-04	2.3E+01	2.2E-05	*	*	2.3E+01	9.2E-04
Methylene chloride	8.0E-03	M	4.3E+00	1.8E-03	4.3E+00	4.4E-05	1.3E+02	1.5E-06	*	*	4.3E+00	1.8E-03
Trichlorofluoromethane	2.0E-03	M	*	*	*	*	*	*	*	*	*	*
Hazard Index				3.1		0.73		0.024		0.00017		4.0

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

Checked by/Date: _____

Approved by/Date: _____

Table A-147
Revetment 19
Human Carcinogenic Risk Characterization

Carcinogenic Risk = (95% UCL/Target Concentrations) x 10^{-6}

Where

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration[b]	Risk	Target Concentration	Risk	Target Concentration	Risk
Metals								
Cadmium	1.7E+00	M	1.4E+03	1.2E-09	*	*	*	*
Semivolatile Organic Compounds								
Benzo(a)anthracene	8.5E-01	U	1.7E+00	5.0E-07	1.7E+00	5.0E-07	2.9E+01	2.9E-08
Benzo(a)pyrene	7.6E-01	U	1.7E-01	4.5E-06	1.7E-01	4.5E-06	5.8E+00	1.3E-07
Benzo(b)fluoranthene	9.3E-01	U	1.7E+00	5.5E-07	1.7E+00	5.5E-07	7.0E+01	1.3E-08
Benzo(k)fluoranthene	6.5E-01	U	1.7E+00	3.8E-07	1.7E+00	3.8E-07	5.7E+01	1.1E-08
Chrysene	9.3E-01	U	1.7E+01	5.5E-08	1.7E+01	5.5E-08	4.7E+03	2.0E-10
Dibenz(a,h)anthracene	1.7E-01	U	4.9E-01	3.5E-07	4.9E-01	3.5E-07	6.5E+01	2.6E-09
Indeno(1,2,3-cd)pyrene	2.8E-01	U	1.7E+00	1.6E-07	1.7E+00	1.6E-07	2.0E+02	1.4E-09
Volatile Organic Compounds								
Methylene Chloride	8.0E-03	M	1.6E+02	5.0E-11	1.6E+02	5.0E-11	5.3E+01	1.5E-10
Pathway Cumulative Risk				6.5E-06		6.5E-06		1.9E-07

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" Data not available.

Checked by/Date: _____

Approved by/Date: _____

Table A-148
Revetment 19
Human Noncarcinogenic Health Hazard Characterization
(Page 1 of 2)

HQ = (95% UCL/Target Concentration)

Where

HQ = Noncarcinogenic Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient
Metals								
Barium	3.5E+02	U	2.8E+04	1.3E-02	2.7E+04	1.3E-02	*	*
Cadmium	1.7E+00	M	2.1E+02	8.1E-03	2.1E+02	8.1E-03	2.2E+02	7.8E-03
Copper	7.5E+01	U	1.5E+04	4.9E-03	1.5E+04	5.1E-03	1.8E+04	4.3E-03
Lead	7.8E+01	U	6.6E+02	1.2E-01	6.6E+02	1.2E-01	*	*
Molybdenum	1.4E+00	U	2.0E+03	6.7E-04	2.0E+03	6.7E-04	*	*
Petroleum Hydrocarbons								
TPH - Diesel range	2.3E+02	U	1.0E+05	2.3E-03	1.0E+05	2.3E-03	*	*
TPH - Gasoline range	4.9E+02	U	1.0E+05	4.9E-03	1.0E+05	4.9E-03	*	*
Semivolatile Organic Compounds								
2-Methylnaphthalene	1.1E-01	U	6.1E+03	1.7E-05	6.1E+03	1.7E-05	2.8E+03	3.8E-05
Acenaphthene	2.9E-01	U	1.8E+04	1.6E-05	1.8E+04	1.6E-05	3.0E+04	9.4E-06
Anthracene	2.0E-01	U	8.5E+04	2.4E-06	7.8E+04	2.6E-06	1.0E+05	2.0E-06
Fluoranthene	1.9E+00	U	1.2E+04	1.6E-04	1.2E+04	1.6E-04	7.7E+04	2.5E-05
Fluorene	2.2E-01	U	1.2E+04	1.8E-05	1.2E+04	1.8E-05	1.8E+04	1.2E-05
Naphthalene	3.2E-02	M	6.1E+03	5.2E-06	8.3E+03	3.9E-06	1.6E+04	2.0E-06
Phenanthrene	1.7E+00	U	9.8E+03	1.7E-04	1.2E+04	1.4E-04	1.0E+05	1.7E-05
Pyrene	1.6E+00	U	9.2E+03	1.8E-04	1.2E+04	1.3E-04	4.6E+04	3.5E-05

Table A-148
Revetment 19
Human Noncarcinogenic Health Hazard Characterization
(Page 2 of 2)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient
Volatile Organic Compounds								
Acetone	1.7E-01	U	3.2E+04	5.3E-06	2.1E+01	7.9E-03	1.8E+01	9.4E-03
Carbon disulfide	3.0E-03	M	3.2E+04	9.4E-08	3.1E+04	9.7E-08	2.8E+04	1.1E-07
Methyl ethyl ketone	2.1E-02	M	1.0E+05	2.1E-07	1.0E+05	2.1E-07	3.4E+04	6.1E-07
Methylene chloride	8.0E-03	M	1.9E+04	4.1E-07	1.9E+04	4.2E-07	1.9E+04	4.2E-07
Trichlorofluoromethane	2.0E-03	M	9.0E+04	2.2E-08	1.0E+05	2.0E-08	*	*
Cumulative Pathway Hazard Index[c]				0.15		0.16		0.022

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".
[b] "*" data not available
[c] Lead is a special case metal (i.e., the target concentration was calculated using the California Department of Toxic Substances Control LEADSPREAD model), however for calculation of the cumulative pathway hazard index, lead is assumed to be a non-carcinogen.

Checked by/Date: _____
Approved by/Date: _____

Table A-149
Revetment 20
Estuarine Receptor Hazard Quotient
(Page 1 of 2)

HQ = (95% UCL/Target Concentration) x A/HR (if A/HR exceeds 1, value of 1 is used)

Where

HQ = Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

A = Area of Site, square feet (ft^2) = 22500

HR = Home Range, ft^2, if blank, home range assumed equal to area of site

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		High Marsh				Intertidal Marsh					
			Salt Marsh Harvest Mouse		Pickleweed		Eohaustorius Estuarius (amphipod)		California Clapper Rail		Black Rail	
			Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)			15,000						505,000		215,000	
Metals												
Cadmium	1.5E+00	M	2.6E+01	5.8E-02	4.0E+00	3.8E-01	6.8E-01	2.2E+00	6.3E+00	1.1E-02	2.1E+00	7.6E-02
Lead	2.5E+01	U	2.0E+03	1.2E-02	5.0E+01	5.0E-01	3.0E+01	8.3E-01	6.8E+00	1.7E-01	2.3E+00	1.2E+00
Petroleum Hydrocarbons												
TPH - Gasoline range	3.7E+00	M	9.5E+03	3.9E-04	*	*	1.2E+01	3.1E-01	*	*	*	*
Semivolatile Organic Compounds												
Benzo(a)anthracene	2.4E-01	M	1.2E+02	2.0E-03	*	*	7.5E-02	3.2E+00	*	*	*	*
Chrysene	2.7E-01	M	1.2E+02	2.3E-03	*	*	1.1E-01	2.5E+00	*	*	*	*
Fluoranthene	4.8E-01	M	9.6E+03	5.0E-05	*	*	1.1E-01	4.3E+00	*	*	*	*
Phenanthrene	4.4E-01	M	4.9E+01	9.0E-03	*	*	8.7E-02	5.1E+00	*	*	*	*
Pyrene	7.8E-01	M	5.8E+03	1.3E-04	*	*	1.5E-01	5.1E+00	*	*	*	*
Hazard Index				0.084		0.88		24		0.18		1.2

Table A-149
Revetment 20
Estuarine Receptor Hazard Quotient
(Page 2 of 2)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Subtidal Marsh									
			Bay Shrimp		Salmonid		Northern Anchovy		Double-Crested Cormorant		Algae	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)					950,000		950,000		43,100,000			
Metals												
Cadmium	1.5E+00	M	5.6E+00	2.7E-01	5.6E+00	6.4E-03	1.7E+02	2.1E-04	8.0E+02	9.8E-07	5.6E+00	2.7E-01
Lead	2.5E+01	U	2.3E+03	1.1E-02	2.3E+03	2.6E-04	6.9E+04	8.7E-06	3.1E+02	4.3E-05	2.3E+03	1.1E-02
Petroleum Hydrocarbons												
TPH - Gasoline range	3.7E+00	M	4.4E+02	8.4E-03	4.4E+02	2.0E-04	1.3E+04	6.6E-06	*	*	4.4E+02	8.4E-03
Semivolatile Organic Compounds												
Benzo(a)anthracene	2.4E-01	M	*	*	*	*	*	*	*	*	*	*
Chrysene	2.7E-01	M	*	*	*	*	*	*	*	*	*	*
Fluoranthene	4.8E-01	M	1.8E+01	2.7E-02	1.8E+01	6.5E-04	5.3E+02	2.2E-05	*	*	1.8E+01	2.7E-02
Phenanthrene	4.4E-01	M	*	*	*	*	*	*	*	*	*	*
Pyrene	7.8E-01	M	*	*	*	*	*	*	*	*	*	*
Hazard Index				0.32		0.0075		0.00025		0.000044		0.32

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

Checked by/Date: _____

Approved by/Date: _____

Table A-150
Revetment 20
Human Carcinogenic Risk Characterization

Carcinogenic Risk = (95% UCL/Target Concentrations) x 10^{-6}

Where

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration[b]	Risk	Target Concentration	Risk	Target Concentration	Risk
Metals								
Cadmium	1.5E+00	M	1.4E+03	1.1E-09	*	*	*	*
Semivolatile Organic Compounds								
Benzo(a)anthracene	2.4E-01	M	1.7E+00	1.4E-07	1.7E+00	1.4E-07	2.9E+01	8.3E-09
Chrysene	2.7E-01	M	1.7E+01	1.6E-08	1.7E+01	1.6E-08	4.7E+03	5.7E-11
Pathway Cumulative Risk				1.6E-07		1.6E-07		8.3E-09

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" Data not available.

Checked by/Date: _____

Approved by/Date: _____

Table A-151
Revetment 20
Human Noncarcinogenic Health Hazard Characterization

HQ = (95% UCL/Target Concentration)

Where

HQ = Noncarcinogenic Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient
Metals								
Cadmium	1.5E+00	M	2.1E+02	7.1E-03	2.1E+02	7.1E-03	2.2E+02	6.9E-03
Lead	2.5E+01	U	6.6E+02	3.8E-02	6.6E+02	3.8E-02	*	*
Petroleum Hydrocarbons								
TPH - Gasoline range	3.7E+00	M	1.0E+05	3.7E-05	1.0E+05	3.7E-05	*	*
Semivolatile Organic Compounds								
Fluoranthene	4.8E-01	M	1.2E+04	3.9E-05	1.2E+04	4.0E-05	7.7E+04	6.3E-06
Phenanthrene	4.4E-01	M	9.8E+03	4.5E-05	1.2E+04	3.6E-05	1.0E+05	4.4E-06
Pyrene	7.8E-01	M	9.2E+03	8.5E-05	1.2E+04	6.3E-05	4.6E+04	1.7E-05
Cumulative Pathway Hazard Index				0.045		0.045		0.0069

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

Checked by/Date: _____

Approved by/Date: _____

Table A-152
Revetment 21
Estuarine Receptor Hazard Quotient
(Page 1 of 2)

HQ = (95% UCL/Target Concentration) x A/HR (if A/HR exceeds 1, value of 1 is used)

Where

HQ = Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

A = Area of Site, square feet (ft^2) = 22500

HR = Home Range, ft^2, if blank, home range assumed equal to area of site

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		High Marsh				Intertidal Marsh					
			Salt Marsh Harvest Mouse		Pickleweed		Eohaustorius Estuarius (amphipod)		California Clapper Rail		Black Rail	
			Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)			15,000						505,000		215,000	
Metals												
Copper	7.0E+01	M	4.2E+00	1.7E+01	1.0E+02	7.0E-01	1.9E+01	3.8E+00	1.8E+01	1.8E-01	5.8E+00	1.3E+00
Vanadium	1.3E+02	M	7.8E+01	1.7E+00	2.0E+00	6.6E+01	2.7E+01	4.9E+00	7.0E+01	8.3E-02	2.3E+01	5.9E-01
Petroleum Hydrocarbons												
TPH - Diesel range	3.1E+02	M	2.8E+04	1.1E-02	*	*	1.4E+02	2.2E+00	4.6E+03	3.0E-03	1.5E+03	2.1E-02
TPH - Gasoline range	2.3E+02	M	9.5E+03	2.4E-02	*	*	1.2E+01	1.9E+01	*	*	*	*
Semivolatile Organic Compounds												
2-Methylnaphthalene	3.9E-01	M	2.0E+03	2.0E-04	*	*	2.0E-02	1.9E+01	*	*	*	*
Fluorene	3.0E-02	M	3.9E+03	7.6E-06	*	*	1.9E-02	1.6E+00	4.6E+03	2.9E-07	1.5E+03	2.1E-06
Volatile Organic Compounds												
Carbon disulfide	5.0E-03	M	*	*	*	*	1.1E-02	4.7E-01	*	*	*	*
Hazard Index				18		66		51		0.26		1.9

Table A-152
Revetment 21
Estuarine Receptor Hazard Quotient
(Page 2 of 2)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Subtidal Marsh									
			Bay Shrimp		Salmonid		Northern Anchovy		Double-Crested Cormorant		Algae	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)					950,000		950,000		43,100,000			
Metals												
Copper	7.0E+01	M	7.6E+01	9.2E-01	7.6E+01	2.2E-02	2.3E+03	7.3E-04	2.8E+03	1.3E-05	7.6E+01	9.2E-01
Vanadium	1.3E+02	M	2.3E+03	5.6E-02	4.7E+00	6.6E-01	1.4E+02	2.2E-02	2.5E+03	2.7E-05	2.3E+04	5.6E-03
Petroleum Hydrocarbons												
TPH - Diesel range	3.1E+02	M	8.1E+03	3.8E-02	8.1E+03	9.1E-04	2.4E+05	3.0E-05	3.1E+04	5.3E-06	8.1E+03	3.8E-02
TPH - Gasoline range	2.3E+02	M	4.4E+02	5.2E-01	4.4E+02	1.2E-02	1.3E+04	4.1E-04	*	*	4.4E+02	5.2E-01
Semivolatile Organic Compounds												
2-Methylnaphthalene	3.9E-01	M	*	*	*	*	*	*	*	*	*	*
Fluorene	3.0E-02	M	*	*	*	*	*	*	3.1E+03	5.0E-09	*	*
Volatile Organic Compounds												
Carbon disulfide	5.0E-03	M	2.0E-02	2.6E-01	6.1E-01	2.0E-04	1.8E+01	6.5E-06	*	*	3.1E-02	1.6E-01
Hazard Index				1.8		0.70		0.023		0.000046		1.6

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

Checked by/Date: _____

Approved by/Date: _____

Table A-153
Revetment 21
Human Noncarcinogenic Health Hazard Characterization

HQ = (95% UCL/Target Concentration)

Where

HQ = Noncarcinogenic Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient
Metals								
Copper	7.0E+01	M	1.5E+04	4.6E-03	1.5E+04	4.8E-03	1.8E+04	4.0E-03
Vanadium	1.3E+02	M	2.9E+03	4.6E-02	2.9E+03	4.6E-02	*	*
Petroleum Hydrocarbons								
TPH - Diesel range	3.1E+02	M	1.0E+05	3.1E-03	1.0E+05	3.1E-03	*	*
TPH - Gasoline range	2.3E+02	M	1.0E+05	2.3E-03	1.0E+05	2.3E-03	*	*
Semivolatile Organic Compounds								
2-Methylnaphthalene	3.9E-01	M	6.1E+03	6.3E-05	6.1E+03	6.4E-05	2.8E+03	1.4E-04
Fluorene	3.0E-02	M	1.2E+04	2.5E-06	1.2E+04	2.5E-06	1.8E+04	1.7E-06
Volatile Organic Compounds								
Carbon disulfide	5.0E-03	M	3.2E+04	1.6E-07	3.1E+04	1.6E-07	2.8E+04	1.8E-07
Cumulative Pathway Hazard Index				0.056		0.056		0.0041

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

Checked by/Date: _____

Approved by/Date: _____

Table A-154
Revetment 22
Estuarine Receptor Hazard Quotient
(Page 1 of 2)

HQ = (95% UCL/Target Concentration) x A/HR (if A/HR exceeds 1, value of 1 is used)

Where

HQ = Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

A = Area of Site, square feet (ft^2) = 22,500

HR = Home Range, ft^2, if blank, home range assumed equal to area of site

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		High Marsh				Intertidal Marsh					
			Salt Marsh Harvest Mouse		Pickleweed		Eohaustorius Estuarius (amphipod)		California Clapper Rail		Black Rail	
			Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)			15,000						505,000		215,000	
Petroleum Hydrocarbons												
TPH - Diesel range	8.8E+02	M	2.8E+04	3.2E-02	*	*	1.4E+02	6.1E+00	4.6E+03	8.6E-03	1.5E+03	6.1E-02
TPH - Gasoline range	2.0E+02	M	9.5E+03	2.1E-02	*	*	1.2E+01	1.7E+01	*	*	*	*
Semivolatile Organic Compounds												
2-Methylnaphthalene	5.1E-01	M	2.0E+03	2.6E-04	*	*	2.0E-02	2.5E+01	*	*	*	*
Acenaphthene	3.6E-02	M	3.9E+03	9.3E-06	6.3E-01	5.8E-02	6.7E-03	5.4E+00	6.7E+03	2.4E-07	2.2E+03	1.7E-06
Fluorene	4.0E-02	M	3.9E+03	1.0E-05	*	*	1.9E-02	2.1E+00	4.6E+03	3.9E-07	1.5E+03	2.8E-06
Volatile Organic Compounds												
Acetone	2.5E-01	M	2.2E+00	1.1E-01	*	*	2.6E-02	9.7E+00	5.7E-01	1.9E-02	1.9E-01	1.4E-01
Hazard Index				0.16		0.058		65		0.028		0.20

Table A-154
Revetment 22
Estuarine Receptor Hazard Quotient
(Page 2 of 2)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Subtidal Marsh									
			Bay Shrimp		Salmonid		Northern Anchovy		Double-Crested Cormorant		Algae	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)					950,000		950,000		43,100,000			
Petroleum Hydrocarbons												
TPH - Diesel range	8.8E+02	M	8.1E+03	1.1E-01	8.1E+03	2.6E-03	2.4E+05	8.6E-05	3.1E+04	1.5E-05	8.1E+03	1.1E-01
TPH - Gasoline range	2.0E+02	M	4.4E+02	4.5E-01	4.4E+02	1.1E-02	1.3E+04	3.6E-04	*	*	4.4E+02	4.5E-01
Semivolatile Organic Compounds												
2-Methylnaphthalene	5.1E-01	M	*	*	*	*	*	*	*	*	*	*
Acenaphthene	3.6E-02	M	6.9E+00	5.2E-03	6.9E+00	1.2E-04	2.1E+02	4.1E-06	3.6E+03	5.3E-09	6.9E+00	5.2E-03
Fluorene	4.0E-02	M	*	*	*	*	*	*	3.1E+03	6.7E-09	*	*
Volatile Organic Compounds												
Acetone	2.5E-01	M	1.2E+00	2.1E-01	3.6E+00	1.7E-03	1.1E+02	5.5E-05	1.1E+01	1.2E-05	1.4E+00	1.7E-01
Hazard Index				0.78		0.015		0.00050		0.000027		0.74

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

Checked by/Date: _____

Approved by/Date: _____

Table A-155
Revetment 22
Human Noncarcinogenic Health Hazard Characterization

HQ = (95% UCL/Target Concentration)

Where

HQ = Noncarcinogenic Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient
Petroleum Hydrocarbons								
TPH - Diesel range	8.8E+02	M	1.0E+05	8.8E-03	1.0E+05	8.8E-03	*	*
TPH - Gasoline range	2.0E+02	M	1.0E+05	2.0E-03	1.0E+05	2.0E-03	*	*
Semivolatile Organic Compounds								
2-Methylnaphthalene	5.1E-01	M	6.1E+03	8.3E-05	6.1E+03	8.4E-05	2.8E+03	1.8E-04
Acenaphthene	3.6E-02	M	1.8E+04	2.0E-06	1.8E+04	2.0E-06	3.0E+04	1.2E-06
Fluorene	4.0E-02	M	1.2E+04	3.3E-06	1.2E+04	3.3E-06	1.8E+04	2.3E-06
Volatile Organic Compounds								
Acetone	2.5E-01	M	3.2E+04	7.8E-06	2.1E+01	1.2E-02	1.8E+01	1.4E-02
Cumulative Pathway Hazard Index				0.011		0.023		0.014

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

Checked by/Date: _____

Approved by/Date: _____

Table A-156
Revetment 23
Estuarine Receptor Hazard Quotient
(Page 1 of 2)

HQ = (95% UCL/Target Concentration) x A/HR (if A/HR exceeds 1, value of 1 is used)

Where

HQ = Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

A = Area of Site, square feet (ft^2) = 22500

HR = Home Range, ft^2, if blank, home range assumed equal to area of site

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		High Marsh				Intertidal Marsh					
			Salt Marsh Harvest Mouse		Pickleweed		Eohaustorius Estuarius (amphipod)		California Clapper Rail		Black Rail	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)			15,000						505,000		215,000	
Metals												
Copper	7.1E+01	U	4.2E+00	1.7E+01	1.0E+02	7.1E-01	1.9E+01	3.8E+00	1.8E+01	1.8E-01	5.8E+00	1.3E+00
Lead	2.4E+01	U	2.0E+03	1.2E-02	5.0E+01	4.8E-01	3.0E+01	7.9E-01	6.8E+00	1.6E-01	2.3E+00	1.1E+00
Zinc	9.9E+01	U	4.1E+02	2.4E-01	5.0E+01	2.0E+00	1.2E+02	8.0E-01	1.3E+02	3.5E-02	4.2E+01	2.5E-01
Hazard Index				17		3.2		5.4		0.37		2.6

Table A-156
Revetment 23
Estuarine Receptor Hazard Quotient
(Page 2 of 2)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Subtidal Marsh									
			Bay Shrimp		Salmonid		Northern Anchovy		Double-Crested Cormorant		Algae	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)					950,000		950,000		43,100,000			
Metals												
Copper	7.1E+01	U	7.6E+01	9.3E-01	7.6E+01	2.2E-02	2.3E+03	7.4E-04	2.8E+03	1.3E-05	7.6E+01	9.3E-01
Lead	2.4E+01	U	2.3E+03	1.0E-02	2.3E+03	2.5E-04	6.9E+04	8.2E-06	3.1E+02	4.1E-05	2.3E+03	1.0E-02
Zinc	9.9E+01	U	3.8E+03	2.6E-02	3.8E+03	6.2E-04	1.1E+05	2.1E-05	1.4E+04	3.8E-06	3.8E+03	2.6E-02
Hazard Index				0.97		0.023		0.00076		0.000058		0.97

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

Checked by/Date: _____

Approved by/Date: _____

Table A-157
Revetment 23
Human Noncarcinogenic Health Hazard Characterization

HQ = (95% UCL/Target Concentration)

Where

HQ = Noncarcinogenic Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Metals								
Copper	7.1E+01	U	1.5E+04	4.7E-03	1.5E+04	4.8E-03	1.8E+04	4.1E-03
Lead	2.4E+01	U	6.6E+02	3.6E-02	6.6E+02	3.6E-02	*	*
Zinc	9.9E+01	U	1.0E+05	9.9E-04	9.2E+04	1.1E-03	1.0E+05	9.9E-04
Cumulative Pathway Hazard Index				0.042		0.042		0.0050

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

Checked by/Date: _____

Approved by/Date: _____

Table A-158
Revetment 24
Estuarine Receptor Hazard Quotient
(Page 1 of 4)

HQ = (95% UCL/Target Concentration) x A/HR (if A/HR exceeds 1, value of 1 is used)

Where

HQ = Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

A = Area of Site, square feet (ft^2) = 22500

HR = Home Range, ft^2, if blank, home range assumed equal to area of site

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		High Marsh				Intertidal Marsh					
			Salt Marsh Harvest Mouse		Pickleweed		Eohaustorius Estuarius (amphipod)		California Clapper Rail		Black Rail	
			Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)			15,000						505,000		215,000	
Metals												
Molybdenum	5.0E-01	M	6.0E+00	8.3E-02	2.0E+00	2.5E-01	4.8E+00	1.0E-01	1.8E+02	1.3E-04	5.9E+01	8.9E-04
Polychlorinated Biphenyl Compounds, Dioxins, and Furans												
1,2,3,6,7,8-HexaCDD	7.8E-10	M	2.4E-03	3.3E-07	*	*	*	*	3.5E-02	1.0E-09	1.2E-02	7.1E-09
OctaCDD	3.5E-09	M	2.4E+00	1.4E-09	*	*	*	*	6.8E+00	2.3E-11	2.3E+00	1.6E-10
1,2,3,7,8,9-HexaCDD	9.9E-10	M	2.4E-03	4.2E-07	*	*	*	*	1.2E-03	3.8E-08	3.9E-04	2.7E-07
Total HexaCDD	1.8E-09	M	*	*	*	*	*	*	*	*	*	*
Total TCDD TEQ[c]				7.5E-07						3.9E-08		2.8E-07
Semivolatile Organic Compounds												
Benzo(a)anthracene	8.7E-02	M	1.2E+02	7.4E-04	*	*	7.5E-02	1.2E+00	*	*	*	*
Benzo(a)pyrene	8.1E-02	M	1.5E+02	5.5E-04	1.0E-02	8.1E+00	8.9E-02	9.1E-01	*	*	*	*
Benzo(b)fluoranthene	9.0E-02	M	1.5E+02	5.9E-04	*	*	1.8E+00	5.0E-02	*	*	*	*
Benzo(k)fluoranthene	7.9E-02	M	1.8E+02	4.3E-04	*	*	1.8E+00	4.4E-02	*	*	*	*

Table A-158
Revetment 24
Estuarine Receptor Hazard Quotient
(Page 2 of 4)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		High Marsh				Intertidal Marsh					
			Salt Marsh Harvest Mouse		Pickleweed		Eohaustorius Estuarius (amphipod)		California Clapper Rail		Black Rail	
			Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Semivolatile Organic Compounds (continued)												
Chrysene	1.0E-01	M	1.2E+02	8.5E-04	*	*	1.1E-01	9.3E-01	*	*	*	*
Dibenz(a,h)anthracene	2.7E-02	M	1.8E+02	1.5E-04	*	*	6.2E-03	4.3E+00	*	*	*	*
Fluoranthene	2.2E-01	M	9.6E+03	2.3E-05	*	*	1.1E-01	2.0E+00	*	*	*	*
Indeno(1,2,3-cd)pyrene	4.8E-02	M	1.7E+02	2.8E-04	*	*	6.9E-01	7.0E-02	*	*	*	*
Phenanthrene	1.6E-01	M	4.9E+01	3.3E-03	*	*	8.7E-02	1.8E+00	*	*	*	*
Pyrene	1.6E-01	M	5.8E+03	2.8E-05	*	*	1.5E-01	1.0E+00	*	*	*	*
Volatile Organic Compounds												
Acetone	2.7E-02	M	2.2E+00	1.2E-02	*	*	2.6E-02	1.0E+00	5.7E-01	2.1E-03	1.9E-01	1.5E-02
Hazard Index				0.10		8.4		13		0.0022		0.016

Table A-158
Revetment 24
Estuarine Receptor Hazard Quotient
(Page 3 of 4)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Subtidal Marsh									
			Bay Shrimp		Salmonid		Northern Anchovy		Double-Crested Cormorant		Algae	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)					950,000		950,000		43,100,000			
Metals												
Molybdenum	5.0E-01	M	1.7E+01	3.0E-02	4.9E-02	2.4E-01	1.5E+00	8.1E-03	4.8E+03	5.5E-08	1.7E+01	3.0E-02
Polychlorinated Biphenyl Compounds, Dioxins, and Furans												
1,2,3,6,7,8-HexaCDD	7.8E-10	M	*	*	*	*	*	*	1.1E+00	3.8E-13	*	*
OctaCDD	3.5E-09	M	*	*	*	*	*	*	1.5E+02	1.2E-14	*	*
1,2,3,7,8,9-HexaCDD	9.9E-10	M	*	*	*	*	*	*	1.6E-01	3.3E-12	*	*
Total HexaCDD	1.8E-09	M	*	*	*	*	*	*	*	*	*	*
Total TCDD TEQ[c]										3.7E-12		
Semivolatile Organic Compounds												
Benzo(a)anthracene	8.7E-02	M	*	*	*	*	*	*	*	*	*	*
Benzo(a)pyrene	8.1E-02	M	*	*	*	*	*	*	*	*	*	*
Benzo(b)fluoranthene	9.0E-02	M	*	*	*	*	*	*	*	*	*	*
Benzo(k)fluoranthene	7.9E-02	M	*	*	*	*	*	*	*	*	*	*
Chrysene	1.0E-01	M	*	*	*	*	*	*	*	*	*	*

Table A-158
Revetment 24
Estuarine Receptor Hazard Quotient
(Page 4 of 4)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Subtidal Marsh									
			Bay Shrimp		Salmonid		Northern Anchovy		Double-Crested Cormorant		Algae	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Semivolatile Organic Compounds (continued)												
Dibenz(a,h)anthracene	2.7E-02	M	*	*	*	*	*	*	*	*	*	*
Fluoranthene	2.2E-01	M	1.8E+01	1.3E-02	1.8E+01	3.0E-04	5.3E+02	9.9E-06	*	*	1.8E+01	1.3E-02
Indeno(1,2,3-cd)pyrene	4.8E-02	M	*	*	*	*	*	*	*	*	*	*
Phenanthrene	1.6E-01	M	*	*	*	*	*	*	*	*	*	*
Pyrene	1.6E-01	M	*	*	*	*	*	*	*	*	*	*
Volatile Organic Compounds												
Acetone	2.7E-02	M	1.2E+00	2.2E-02	3.6E+00	1.8E-04	1.1E+02	6.0E-06	1.1E+01	1.3E-06	1.4E+00	1.9E-02
Hazard Index				0.065		0.24		0.0081		0.0000014		0.061

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

[c] TEQ = toxicity equivalency; this row represents a summation of the hazard quotient of the dioxin congeners, this value is not included in the hazard index.

Checked by/Date: _____

Approved by/Date: _____

Table A-159
Revetment 24
Human Carcinogenic Risk Characterization

Carcinogenic Risk = (95% UCL/Target Concentrations) x 10^{-6}

Where

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration[b]	Risk	Target Concentration	Risk	Target Concentration	Risk
Polychlorinated Biphenyl Compounds, Dioxins, and Furans								
1,2,3,6,7,8-HexaCDD	7.8E-10	M	2.0E-04	3.9E-12	2.0E-04	3.9E-12	9.2E-03	8.5E-14
1,2,3,7,8,9-HexaCDD	9.9E-10	M	2.0E-04	5.0E-12	2.0E-04	5.0E-12	1.7E-02	6.0E-14
OctaCDD	3.5E-09	M	2.0E-02	1.8E-13	2.0E-02	1.8E-13	5.8E+01	6.0E-17
Semivolatile Organic Compounds								
Benzo(a)anthracene	8.7E-02	M	1.7E+00	5.1E-08	1.7E+00	5.2E-08	2.9E+01	3.0E-09
Benzo(a)pyrene	8.1E-02	M	1.7E-01	4.8E-07	1.7E-01	4.8E-07	5.8E+00	1.4E-08
Benzo(b)fluoranthene	9.0E-02	M	1.7E+00	5.3E-08	1.7E+00	5.3E-08	7.0E+01	1.3E-09
Benzo(k)fluoranthene	7.9E-02	M	1.7E+00	4.7E-08	1.7E+00	4.7E-08	5.7E+01	1.4E-09
Chrysene	1.0E-01	M	1.7E+01	5.9E-09	1.7E+01	5.9E-09	4.7E+03	2.1E-11
Dibenz(a,h)anthracene	2.7E-02	M	4.9E-01	5.5E-08	4.9E-01	5.5E-08	6.5E+01	4.2E-10
Indeno(1,2,3-cd)pyrene	4.8E-02	M	1.7E+00	2.8E-08	1.7E+00	2.8E-08	2.0E+02	2.4E-10
Pathway Cumulative Risk				7.2E-07		7.2E-07		2.0E-08

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" Data not available.

Checked by/Date: _____

Approved by/Date: _____

Table A-160
Revetment 24
Human Noncarcinogenic Health Hazard Characterization

HQ = (95% UCL/Target Concentration)

Where

HQ = Noncarcinogenic Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient
Metals								
Molybdenum	5.0E-01	M	2.0E+03	2.4E-04	2.0E+03	2.4E-04	*	*
Semivolatile Organic Compounds								
Fluoranthene	2.2E-01	M	1.2E+04	1.8E-05	1.2E+04	1.8E-05	7.7E+04	2.9E-06
Phenanthrene	1.6E-01	M	9.8E+03	1.6E-05	1.2E+04	1.3E-05	1.0E+05	1.6E-06
Pyrene	1.6E-01	M	9.2E+03	1.7E-05	1.2E+04	1.3E-05	4.6E+04	3.5E-06
Volatile Organic Compounds								
Acetone	2.7E-02	M	3.2E+04	8.5E-07	2.1E+01	1.3E-03	1.8E+01	1.5E-03
Cumulative Pathway Hazard Index				0.00030		0.0016		0.0015

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

Checked by/Date: _____

Approved by/Date: _____

Table A-161
Revetment 25
Estuarine Receptor Hazard Quotient
(Page 1 of 4)

HQ = (95% UCL/Target Concentration) x A/HR (if A/HR exceeds 1, value of 1 is used)

Where

HQ = Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

A = Area of Site, square feet (ft^2) = 22,500

HR = Home Range, ft^2, if blank, home range assumed equal to area of site

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		High Marsh				Intertidal Marsh					
			Salt Marsh Harvest Mouse		Pickleweed		Eohaustorius Estuarius (amphipod)		California Clapper Rail		Black Rail	
			Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)			15,000						505,000		215,000	
Metals												
Barium	2.4E+02	M	8.8E+01	2.7E+00	5.0E+02	4.8E-01	1.4E+00	1.7E+02	4.3E+02	2.5E-02	4.3E+02	5.8E-02
Molybdenum	6.3E-01	M	6.0E+00	1.0E-01	2.0E+00	3.2E-01	4.8E+00	1.3E-01	1.8E+02	1.6E-04	1.8E+02	3.7E-04
Petroleum Hydrocarbons												
TPH - Diesel range	3.3E+02	M	2.8E+04	1.2E-02	*	*	1.4E+02	2.3E+00	4.6E+03	3.2E-03	4.6E+03	7.6E-03
Polychlorinated Biphenyl Compounds, Dioxins, and Furans												
1,2,3,6,7,8-HexaCDD	2.9E-09	M	2.4E-03	1.2E-06	*	*	*	*	3.5E-02	3.7E-09	3.5E-02	8.8E-09
1,2,3,7,8,9-HexaCDD	1.5E-09	M	2.4E-03	6.3E-07	*	*	*	*	1.2E-03	5.7E-08	1.2E-03	1.3E-07
1,2,3,4,6,7,8-HeptaCDD	1.2E-08	M	2.4E-02	5.0E-07	*	*	*	*	4.8E-01	1.1E-09	4.8E-01	2.6E-09
OctaCDD	1.6E-07	M	2.4E+00	6.5E-08	*	*	*	*	6.8E+00	1.0E-09	6.8E+00	2.4E-09
1,2,3,4,6,7,8-HeptaCDF	5.6E-09	M	2.4E-02	2.3E-07	*	*	*	*	6.8E-02	3.6E-09	6.8E-02	8.6E-09
OctaCDF	3.6E-09	M	2.5E+00	1.5E-09	*	*	*	*	6.2E+00	2.6E-11	6.2E+00	6.1E-11
Total heptaCDD	2.9E-08	M	*	*	*	*	*	*	*	*	*	*
Total heptaCDF	1.3E-08	M	*	*	*	*	*	*	*	*	*	*
Total hexaCDD	2.4E-08	M	*	*	*	*	*	*	*	*	*	*
Total hexaCDF	5.9E-09	M	*	*	*	*	*	*	*	*	*	*
Total TCDF	8.4E-10	M	*	*	*	*	*	*	*	*	*	*

Table A-161
Revetment 25
Estuarine Receptor Hazard Quotient
(Page 2 of 4)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		High Marsh				Intertidal Marsh					
			Salt Marsh Harvest Mouse		Pickleweed		Eohaustorius Estuarius (amphipod)		California Clapper Rail		Black Rail	
			Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Total TCDD TEQ[c]				2.7E-06						6.7E-08		1.6E-07
Semivolatile Organic Compounds												
Phenanthrene	7.8E-02	M	4.9E+01	1.6E-03	*	*	8.7E-02	9.0E-01	*	*	*	*
Volatile Organic Compounds												
Acetone	3.7E-02	M	2.2E+00	1.7E-02	*	*	2.6E-02	1.4E+00	5.7E-01	2.9E-03	5.7E-01	6.7E-03
Carbon disulfide	3.0E-03	M	*	*	*	*	1.1E-02	2.8E-01	*	*	*	*
Hazard Index				2.8		0.79		179		0.031		0.073

Table A-161
Revetment 25
Estuarine Receptor Hazard Quotient
(Page 3 of 4)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Subtidal Marsh									
			Bay Shrimp		Salmonid		Northern Anchovy		Double-Crested Cormorant		Algae	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)					950,000		950,000		43,100,000			
Metals												
Barium	2.4E+02	M	5.8E+03	4.1E-02	5.8E+03	9.7E-04	1.8E+05	3.2E-05	4.3E+04	2.9E-06	3.1E+02	7.8E-01
Molybdenum	6.3E-01	M	1.7E+01	3.8E-02	4.9E-02	3.1E-01	1.5E+00	1.0E-02	4.8E+03	6.9E-08	1.7E+01	3.8E-02
Petroleum Hydrocarbons												
TPH - Diesel range	3.3E+02	M	8.1E+03	4.1E-02	8.1E+03	9.7E-04	2.4E+05	3.2E-05	3.1E+04	5.6E-06	8.1E+03	4.1E-02
Polychlorinated Biphenyl Compounds, Dioxins, and Furans												
1,2,3,6,7,8-HexaCDD	2.9E-09	M	*	*	*	*	*	*	1.1E+00	1.4E-12	*	*
1,2,3,7,8,9-HexaCDD	1.5E-09	M	*	*	*	*	*	*	1.6E-01	5.0E-12	*	*
1,2,3,4,6,7,8-HeptaCDD	1.2E-08	M	*	*	*	*	*	*	1.4E+01	4.4E-13	*	*
OctaCDD	1.6E-07	M	*	*	*	*	*	*	1.5E+02	5.4E-13	*	*
1,2,3,4,6,7,8-HeptaCDF	5.6E-09	M	*	*	*	*	*	*	1.5E+00	1.9E-12	*	*
OctaCDF	3.6E-09	M	*	*	*	*	*	*	1.5E+02	1.2E-14	*	*
Total heptaCDD	2.9E-08	M	*	*	*	*	*	*	*	*	*	*
Total heptaCDF	1.3E-08	M	*	*	*	*	*	*	*	*	*	*
Total hexaCDD	2.4E-08	M	*	*	*	*	*	*	*	*	*	*
Total hexaCDF	5.9E-09	M	*	*	*	*	*	*	*	*	*	*
Total TCDF	8.4E-10	M	*	*	*	*	*	*	*	*	*	*
Total TCDD TEQ[c]									*	9.4E-12		

Table A-161
Revetment 25
Estuarine Receptor Hazard Quotient
(Page 4 of 4)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Subtidal Marsh									
			Bay Shrimp		Salmonid		Northern Anchovy		Double-Crested Cormorant		Algae	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Semivolatile Organic Compounds												
Phenanthrene	7.8E-02	M	*	*	*	*	*	*	*	*	*	*
Volatile Organic Compounds												
Acetone	3.7E-02	M	1.2E+00	3.1E-02	3.6E+00	2.5E-04	1.1E+02	8.2E-06	1.1E+01	1.8E-06	1.4E+00	2.6E-02
Carbon disulfide	3.0E-03	M	2.0E-02	1.5E-01	6.1E-01	1.2E-04	1.8E+01	3.9E-06	*	*	3.1E-02	9.5E-02
Hazard Index				0.30		0.31		0.010		0.000010		0.98

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

[c] TEQ = toxicity equivalency; this row represents a summation of the hazard quotient of the dioxin congeners, this value is not included in the hazard index.

Checked by/Date: _____

Approved by/Date: _____

Table A-162
Revetment 25
Human Carcinogenic Risk Characterization

Carcinogenic Risk = (95% UCL/Target Concentrations) x 10^{-6}

Where

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration[b]	Risk	Target Concentration	Risk	Target Concentration	Risk
Polychlorinated Biphenyl Compounds, Dioxins, and Furans								
1,2,3,6,7,8-HexaCDD	2.9E-09	M	2.0E-04	1.5E-11	2.0E-04	1.5E-11	9.2E-03	3.2E-13
1,2,3,7,8,9-HexaCDD	1.5E-09	M	2.0E-04	7.6E-12	2.0E-04	7.6E-12	1.7E-02	9.1E-14
1,2,3,4,6,7,8-HeptaCDD	1.2E-08	M	2.0E-03	6.1E-12	2.0E-03	6.1E-12	4.6E-01	2.6E-14
OctaCDD	1.6E-07	M	2.0E-02	8.1E-12	2.0E-02	8.1E-12	5.8E+01	2.8E-15
1,2,3,4,6,7,8-HeptaCDF	5.6E-09	M	2.0E-03	2.8E-12	2.0E-03	2.8E-12	1.5E+00	3.8E-15
OctaCDF	3.6E-09	M	2.0E-02	1.8E-13	2.0E-02	1.8E-13	4.6E+01	7.9E-17
Pathway Cumulative Risk				3.9E-11		3.9E-11		4.4E-13

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" Data not available.

Checked by/Date: _____

Approved by/Date: _____

Table A-163
Revetment 25
Human Noncarcinogenic Health Hazard Characterization

HQ = (95% UCL/Target Concentration)

Where

HQ = Noncarcinogenic Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Metals								
Barium	2.4E+02	M	2.8E+04	8.6E-03	2.7E+04	8.8E-03	*	*
Molybdenum	6.3E-01	M	2.0E+03	3.1E-04	2.0E+03	3.1E-04	*	*
Petroleum Hydrocarbons								
TPH - Diesel range	3.3E+02	M	1.0E+05	3.3E-03	1.0E+05	3.3E-03	*	*
Semivolatile Organic Compounds								
Phenanthrene	7.8E-02	M	9.8E+03	8.0E-06	1.2E+04	6.3E-06	1.0E+05	7.8E-07
Volatile Organic Compounds								
Acetone	3.7E-02	M	3.2E+04	1.2E-06	2.1E+01	1.7E-03	1.8E+01	2.1E-03
Carbon disulfide	3.0E-03	M	3.2E+04	9.4E-08	3.1E+04	9.7E-08	2.8E+04	1.1E-07
Cumulative Pathway Hazard Index				0.012		0.014		0.0021

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

Checked by/Date: _____

Approved by/Date: _____

Table A-164
Revetment 26
Estuarine Receptor Hazard Quotient
(Page 1 of 2)

HQ = (95% UCL/Target Concentration) x A/HR (if A/HR exceeds 1, value of 1 is used)

Where

HQ = Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

A = Area of Site, square feet (ft^2) = 22500

HR = Home Range, ft^2, if blank, home range assumed equal to area of site

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		High Marsh				Intertidal Marsh					
			Salt Marsh Harvest Mouse		Pickleweed		Eohaustorius Estuarius (amphipod)		California Clapper Rail		Black Rail	
			Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)			15,000						505,000		215,000	
Metals												
Barium	3.8E+02	M	8.8E+01	4.3E+00	5.0E+02	7.6E-01	1.4E+00	2.8E+02	4.3E+02	3.9E-02	1.4E+02	2.8E-01
Boron	5.8E+01	M	9.6E+00	6.1E+00	5.0E-01	1.2E+02	*	*	8.6E+01	3.0E-02	2.9E+01	2.1E-01
Copper	6.0E+01	M	4.2E+00	1.4E+01	1.0E+02	6.0E-01	1.9E+01	3.2E+00	1.8E+01	1.5E-01	5.8E+00	1.1E+00
Manganese	1.1E+03	M	2.9E+02	3.9E+00	5.0E+02	2.3E+00	4.6E-01	2.5E+03	1.2E+04	4.0E-03	4.1E+03	2.9E-02
Molybdenum	8.9E-01	M	6.0E+00	1.5E-01	2.0E+00	4.5E-01	4.8E+00	1.9E-01	1.8E+02	2.2E-04	5.9E+01	1.6E-03
Petroleum Hydrocarbons												
TPH - Diesel range	2.9E+02	M	2.8E+04	1.0E-02	*	*	1.4E+02	2.0E+00	4.6E+03	2.8E-03	1.5E+03	2.0E-02
TPH - Gasoline range	6.0E+01	M	9.5E+03	6.3E-03	*	*	1.2E+01	5.0E+00	*	*	*	*
Volatile Organic Compounds												
Acetone	5.7E-02	M	2.2E+00	2.5E-02	*	*	2.6E-02	2.2E+00	5.7E-01	4.4E-03	1.9E-01	3.1E-02
Carbon disulfide	3.0E-03	M	*	*	*	*	1.1E-02	2.8E-01	*	*	*	*
Hazard Index				29		121		2747		0.23		1.7

Table A-164
Revetment 26
Estuarine Receptor Hazard Quotient
(Page 2 of 2)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Subtidal Marsh									
			Bay Shrimp		Salmonid		Northern Anchovy		Double-Crested Cormorant		Algae	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)					950,000		950,000		43,100,000			
Metals												
Barium	3.8E+02	M	5.8E+03	6.5E-02	5.8E+03	1.5E-03	1.8E+05	5.1E-05	4.3E+04	4.7E-06	3.1E+02	1.2E+00
Boron	5.8E+01	M	5.0E+01	1.2E+00	1.5E+04	9.2E-05	1.5E+04	9.2E-05	5.9E+03	5.1E-06	*	*
Copper	6.0E+01	M	7.6E+01	7.9E-01	7.6E+01	1.9E-02	2.3E+03	6.2E-04	2.8E+03	1.1E-05	7.6E+01	7.9E-01
Manganese	1.1E+03	M	7.3E+04	1.6E-02	2.0E+04	1.3E-03	6.1E+05	4.4E-05	1.3E+06	4.4E-07	5.5E+02	2.1E+00
Molybdenum	8.9E-01	M	1.7E+01	5.3E-02	4.9E-02	4.3E-01	1.5E+00	1.4E-02	4.8E+03	9.8E-08	1.7E+01	5.3E-02
Petroleum Hydrocarbons												
TPH - Diesel range	2.9E+02	M	8.1E+03	3.6E-02	8.1E+03	8.5E-04	2.4E+05	2.8E-05	3.1E+04	5.0E-06	8.1E+03	3.6E-02
TPH - Gasoline range	6.0E+01	M	4.4E+02	1.4E-01	4.4E+02	3.2E-03	1.3E+04	1.1E-04	*	*	4.4E+02	1.4E-01
Volatile Organic Compounds												
Acetone	5.7E-02	M	1.2E+00	4.7E-02	3.6E+00	3.8E-04	1.1E+02	1.3E-05	1.1E+01	2.8E-06	1.4E+00	4.0E-02
Carbon disulfide	3.0E-03	M	2.0E-02	1.5E-01	6.1E-01	1.2E-04	1.8E+01	3.9E-06	*	*	3.1E-02	9.5E-02
Hazard Index				2.5		0.46		0.015		0.000029		4.5

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

Checked by/Date: _____

Approved by/Date: _____

Table A-165
Revetment 26
Human Noncarcinogenic Health Hazard Characterization

HQ = (95% UCL/Target Concentration)

Where

HQ = Noncarcinogenic Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient
Metals								
Barium	3.8E+02	M	2.8E+04	1.4E-02	2.7E+04	1.4E-02	*	*
Boron	5.8E+01	M	3.5E+04	1.7E-03	3.7E+04	1.6E-03	*	*
Copper	6.0E+01	M	1.5E+04	4.0E-03	1.5E+04	4.1E-03	1.8E+04	3.4E-03
Manganese	1.1E+03	M	8.6E+03	1.3E-01	9.7E+03	1.2E-01	2.4E+04	4.7E-02
Molybdenum	8.9E-01	M	2.0E+03	4.3E-04	2.0E+03	4.4E-04	*	*
Petroleum Hydrocarbons								
TPH - Diesel range	2.9E+02	M	1.0E+05	2.9E-03	1.0E+05	2.9E-03	*	*
TPH - Gasoline range	6.0E+01	M	1.0E+05	6.0E-04	1.0E+05	6.0E-04	*	*
Volatile Organic Compounds								
Acetone	5.7E-02	M	3.2E+04	1.8E-06	2.1E+01	2.7E-03	1.8E+01	3.2E-03
Carbon disulfide	3.0E-03	M	3.2E+04	9.4E-08	3.1E+04	9.7E-08	2.8E+04	1.1E-07
Cumulative Pathway Hazard Index				0.15		0.14		0.054

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

Checked by/Date: _____

Approved by/Date: _____

Table A-166
Revetment 27
Estuarine Receptor Hazard Quotient
(Page 1 of 2)

HQ = (95% UCL/Target Concentration) x A/HR (if A/HR exceeds 1, value of 1 is used)

Where

HQ = Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

A = Area of Site, square feet (ft^2) = 22,500

HR = Home Range, ft^2, if blank, home range assumed equal to area of site

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		High Marsh				Intertidal Marsh					
			Salt Marsh Harvest Mouse		Pickleweed		Eohaustorius Estuarius (amphipod)		California Clapper Rail		Black Rail	
			Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)			15,000						505,000		215,000	
Metals												
Lead	3.1E+01	U	2.0E+03	1.5E-02	5.0E+01	6.1E-01	3.0E+01	1.0E+00	6.8E+00	2.0E-01	2.3E+00	1.4E+00
Semivolatile Organic Compounds												
Fluoranthene	2.3E-01	U	9.6E+03	2.4E-05	*	*	1.1E-01	2.0E+00	*	*	*	*
Phenanthrene	1.8E-01	M	4.9E+01	3.7E-03	*	*	8.7E-02	2.1E+00	*	*	*	*
Pyrene	5.0E-01	U	5.8E+03	8.6E-05	*	*	1.5E-01	3.3E+00	*	*	*	*
Volatile Organic Compounds												
Acetone	3.5E-02	M	2.2E+00	1.6E-02	*	*	2.6E-02	1.4E+00	5.7E-01	2.7E-03	1.9E-01	1.9E-02
Methyl ethyl ketone	2.0E-03	M	3.8E+01	5.2E-05	*	*	1.1E-01	1.8E-02	*	*	*	*
Hazard Index				0.035		0.61		9.8		0.20		1.4

Table A-166
Revetment 27
Estuarine Receptor Hazard Quotient
(Page 2 of 2)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Subtidal Marsh									
			Bay Shrimp		Salmonid		Northern Anchovy		Double-Crested Cormorant		Algae	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)					950,000		950,000		43,100,000			
Metals												
Lead	3.1E+01	U	2.3E+03	1.3E-02	2.3E+03	3.2E-04	6.9E+04	1.1E-05	3.1E+02	5.2E-05	2.3E+03	1.3E-02
Semivolatile Organic Compounds												
Fluoranthene	2.3E-01	U	1.8E+01	1.3E-02	1.8E+01	3.1E-04	5.3E+02	1.0E-05	*	*	1.8E+01	1.3E-02
Phenanthrene	1.8E-01	M	*	*	*	*	*	*	*	*	*	*
Pyrene	5.0E-01	U	*	*	*	*	*	*	*	*	*	*
Volatile Organic Compounds												
Acetone	3.5E-02	M	1.2E+00	2.9E-02	3.6E+00	2.3E-04	1.1E+02	7.7E-06	1.1E+01	1.7E-06	1.4E+00	2.4E-02
Methyl ethyl ketone	2.0E-03	M	3.7E+00	5.4E-04	7.6E-01	6.2E-05	2.3E+01	2.1E-06	*	*	2.3E+01	8.7E-05
Hazard Index				0.056		0.00092		0.000031		0.000054		0.051

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

Checked by/Date: _____

Approved by/Date: _____

Table A-167
Revetment 27
Human Noncarcinogenic Health Hazard Characterization

HQ = (95% UCL/Target Concentration)

Where

HQ = Noncarcinogenic Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient
Metals								
Lead	3.1E+01	U	6.6E+02	4.6E-02	6.6E+02	4.6E-02	*	*
Semivolatile Organic Compounds								
Fluoranthene	2.3E-01	U	1.2E+04	1.9E-05	1.2E+04	1.9E-05	7.7E+04	3.0E-06
Phenanthrene	1.8E-01	M	9.8E+03	1.8E-05	1.2E+04	1.5E-05	1.0E+05	1.8E-06
Pyrene	5.0E-01	U	9.2E+03	5.4E-05	1.2E+04	4.0E-05	4.6E+04	1.1E-05
Volatile Organic Compounds								
Acetone	3.5E-02	M	3.2E+04	1.1E-06	2.1E+01	1.6E-03	1.8E+01	1.9E-03
Methyl ethyl ketone	2.0E-03	M	1.0E+05	2.0E-08	1.0E+05	2.0E-08	3.4E+04	5.8E-08
Cumulative Pathway Hazard Index[c]				0.046		0.048		0.0020

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

[c] Lead is a special case metal (i.e., the target concentration was calculated using the California Department of Toxic Substances Control LEADSPREAD model), however for calculation of the cumulative pathway hazard index, lead is assumed to be a non-carcinogen.

Checked by/Date: _____

Approved by/Date: _____

Table A-168
Revetment 28
Estuarine Receptor Hazard Quotient
(Page 1 of 2)

HQ = (95% UCL/Target Concentration) x A/HR (if A/HR exceeds 1, value of 1 is used)

Where

HQ = Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

A = Area of Site, square feet (ft^2) = 22500

HR = Home Range, ft^2, if blank, home range assumed equal to area of site

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		High Marsh				Intertidal Marsh					
			Salt Marsh Harvest Mouse		Pickleweed		Eohaustorius Estuarius (amphipod)		California Clapper Rail		Black Rail	
			Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)			15,000						505,000		215,000	
Petroleum Hydrocarbons												
TPH - Diesel range	2.2E+01	M	2.8E+04	7.9E-04	*	*	1.4E+02	1.5E-01	4.6E+03	2.2E-04	1.5E+03	1.5E-03
Hazard Index				0.00079		*		0.15		0.00022		0.0015

Table A-168
Revetment 28
Estuarine Receptor Hazard Quotient
(Page 2 of 2)

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Subtidal Marsh									
			Bay Shrimp		Salmonid		Northern Anchovy		Double-Crested Cormorant		Algae	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient
Home Range (ft^2)					950,000		950,000		43,100,000			
Petroleum Hydrocarbons												
TPH - Diesel range	2.2E+01	M	8.1E+03	2.7E-03	8.1E+03	6.5E-05	2.4E+05	2.2E-06	3.1E+04	3.8E-07	8.1E+03	2.7E-03
Hazard Index				0.0027		0.000065		0.0000022		0.00000038		0.0027

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

Checked by/Date: _____

Approved by/Date: _____

Table A-169
Revetment 28
Human Noncarcinogenic Health Hazard Characterization

HQ = (95% UCL/Target Concentration)

Where

HQ = Noncarcinogenic Hazard Quotient, unitless

UCL = Upper Confidence Limit on the Mean Concentration, milligrams per kilogram (mg/kg), dry weight

Target Concentration = Target Concentration, mg/kg, dry weight

Chemical	Soil/Sediment Concentration (Site 95% UCL or Maximum Concentration[a])		Grassland Recreation		Marsh Recreation		Recreational Fishing	
			Target Concentration	Hazard Quotient	Target Concentration	Hazard Quotient	Target Concentration[b]	Hazard Quotient
Petroleum Hydrocarbons								
TPH - Diesel range	2.2E+01	M	1.0E+05	2.2E-04	1.0E+05	2.2E-04	*	*
Cumulative Pathway Hazard Index				0.00022		0.00022		*

[a] Site 95% UCL is indicated by "U"; maximum concentrations are indicated by "M".

[b] "*" data not available

Checked by/Date: _____

Approved by/Date: _____

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Footnotes, Abbreviations, and Qualifiers

The following abbreviations and qualifiers are for Tables B-1 through B-17.

Footnotes and Abbreviations

Bold Result	Result exceeds the comparison value for the individual analyte.
--	No result used in the Focused Feasibility Study. The sample may not have been analyzed for the analyte shown, or the result may have been removed during the non-detect outlier evaluation for the *Human Health and Ecological Risk Assessment, BRAC Property, Hamilton Army Airfield, Novato, California* (IT, 2001a).
	Shaded results indicate samples that were re-included into the database to assist in determining risk, but the actual sample location has been excavated during the interim removal actions.
BTEX	Benzene, toluene, ethylbenzene and xylenes
4,4'-DDD	dichlorodiphenyldichloroethylene
4,4'-DDE	dichlorodiphenyldichloroethane
4,4'-DDT	dichlorodiphenyltrichloroethane
ft	foot or feet below ground surface
mg/kg	milligram per kilogram
PCBs	polychlorinated biphenyls

Validation Qualifiers

U	The analyte was tested for, but was not detected (the value shown is the detection limit for the sample).
J	The result is estimated and the numeric value is approximate
J+	The result is estimated and the numeric value is approximate with a high bias.
J-	The result is estimated and the numeric value is approximate with a low bias.
UJ	The material was analyzed for, but was not detected. The quantitation limit is an estimated value.

APPENDIX B

Area and Volume Calculations

Excavation areas and volumes are calculated for the Inboard Area sites that require action (see FFS section 1.10). The calculations are based on several general assumptions. These assumptions include, but are not limited to the following:

- Areas requiring action are defined by sample locations where COC concentrations are greater than their comparator values
- Individual sample locations have an excavation area of 10 feet by 10 feet
- Depth of the excavation is only as deep as the depth of the deepest sample location
- Confirmation samples
  - Bottom samples: Excavations will not exceed original excavation boundaries, they will only include additional depth
  - Sidewall samples: Excavations will be a step-out 5 feet from sidewall (a minimum of 5 feet to each side of sample), to the depth of the sample
- Sample locations that are proximal to sample locations that passed the screening process, will be excavated to midway between the two locations.

All COCs that were greater than their comparator values are plotted on Figures B-1 through B-17. The perimeters of the excavations are based on proximity of samples to each other, previous excavations, and purpose of original samples. The depths of the excavations are based on the deepest sample that identified a comparator value greater than its comparator value.

Each site has been evaluated individually and the above assumptions were applied, as applicable, to each circumstance to provide a reliable and reasonable estimate of the volume of soil that would need to be removed from the site (Alternative 3 or 4) or the area that would be subject to institutional controls (Alternative 2). Table B-18 presents a summary of the areas and volumes estimated for the Inboard sites.

Appendix B Tables

Table B-1
Former Sewage Treatment Plant Data
Focused Feasibility Study
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Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth						
		HB-3447 11/09/99 FSTP-CS-001 4 ft	HB-3448 11/09/99 FSTP-CS-002 3.5 ft	HB-3449 11/09/99 FSTP-DS-002 3.5 ft	HB-3450 11/09/99 FSTP-CS-003 4 ft	HB-3452 11/09/99 FSTP-CS-004 3 ft	HB-4379 04/14/97 SB-FSTP-015 6.5 ft	HB-4380 04/14/97 SB-FSTP-015 11.5 ft
		Metals (mg/kg)						
BARIUM	190	110	--	68.6	49.1	63.9	114	76.5
BORON	36.9	12.2 J	13.7 J	--	15.9	15.6	9.7 J+	21.5 J+
CHROMIUM	112	76.6	90.6	--	79.5	78.7	54.6	112
COPPER	68.1	43.4	--	47.6	28.3	42.5	26.3	45.6
LEAD	43.2	33.4	19.8	--	11	30.1	39.5	15.8
MERCURY	0.43	**1.48 J+**	--	0.428 J+	0.097 J+	**0.686 J+**	0.28	0.30
SELENIUM	0.64	<0.453 U	--	0.28 J	0.218 J	0.241 J	--	--
SILVER	1	**6.93**	**1.01 J**	--	0.787 J	0.992 J	<0.69 U	<0.87 U
ZINC	158	**244**	--	71.3	78.6	**161**	**159**	82.7
		Pesticides (mg/kg)						
ALPHA-CHLORDANE		**0.044**	--	<0.0024 U	0.0014 J	<0.0023 UJ	--	--
GAMMA-CHLORDANE		**0.066**	**0.00094 J-**	--	**0.0043**	<0.0023 UJ	--	--
4,4'-DDD	0.007 (Total DDTs)	**0.22**	0.0038 J-	--	**0.012**	0.03 J-	<0.14 UJ	<0.17 UJ
4,4'-DDE		**0.1**	0.0015 J-	--	0.0033 J	0.004 J-	0.0051 J-	0.004 J-
4,4'-DDT		**0.18**	--	<0.0047 U	**0.0098**	0.0027 J-	0.0031 J-	<0.0026 UJ
DIELDRIN	0.00072	**0.034 J**	--	*<0.0047 U*	*0.00093 J*	*<0.0045 UJ*	--	--
ENDRIN ALDEHYDE	0.0215	0.01 J	--	<0.0047 U	0.0007 J	<0.0045 UJ	<0.0042 UJ	<0.0052 UJ
ENDOSULFAN SULFATE	0.00286	**0.018 J**	--	*<0.0047 U*	0.0011 J	*<0.0045 UJ*	*<0.0097 UJ*	*<0.012 UJ*
		Polychlorinated Biphenyls (PCBs) (mg/kg)						
AROCLOR-1260		0.24	<0.018 U	--	0.022	<0.017 U	<0.028 UJ	<0.035 UJ
		Semivolatile Organic Compounds (mg/kg)						
2-METHYLNAPHTHALENE	0.07	*<0.087 U*	--	--	--	*<0.091 U*	<0.046 U	<0.057 U
BENZO(A)ANTHRACENE	0.412	.016	--	<0.0096 U	<0.01 U	0.022	<0.046 U	<0.057 U
BENZO(A)PYRENE	0.43	.032	--	0.0082 J	0.0036 J	0.033	<0.046 U	<0.057 U
DIBENZ(A,H)ANTHRACENE	0.0634	<0.017 U	<0.019 U	--	<0.019 U	<0.018 U	<0.046 U	<0.057 U

Table B-1
Former Sewage Treatment Plant Data
Focused Feasibility Study
Hamilton Army Airfield
Novato, California
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Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth						
		HB-4381 04/14/97 SB-FSTP-014 2 ft	HB-4382 04/14/97 SB-FSTP-014 6 ft	HB-4383 04/14/97 SB-FSTP-014 7 ft	HB-4384 04/14/97 SB-FSTP-014 10.5 ft	HB-4389 04/15/97 SB-FSTP-012 6 ft	HB-4391 04/15/97 SB-FSTP-012 12 ft	HB-4394 04/15/97 SB-FSTP-009 10.5 ft
		Metals (mg/kg)						
BARIUM	190	155	55.3	--	44.4	57.4	66.6	45.6
BORON	36.9	7.6 J+	14.9 J+	--	30.4 J+	18.0	**41.6**	28.1
CHROMIUM	112	50.7	92.4	--	92.6	86.1 J+	**128 J+**	87.8 J+
COPPER	68.1	21.2	40.4	--	43.8	42.8	48.3	33.1
LEAD	43.2	**128**	--	42.1	12.3	10.9	12.7	8.7
MERCURY	0.43	0.38	--	0.40	<0.14 U	0.24	<0.15 U	<0.14 U
SELENIUM	0.64	--	--	--	--	--	--	--
SILVER	1	<0.66 U	--	0.81	<0.92 U	<0.74 U	<0.97 U	<0.94 U
ZINC	158	103	--	93.9	90.9	68.0	116	78.8
		Pesticides (mg/kg)						
ALPHA-CHLORDANE		--	--	--	--	--	--	--
GAMMA-CHLORDANE		--	--	--	--	--	--	--
4,4'-DDD	0.007 (Total DDTs)	<0.13 UJ	--	<0.14 UJ	<0.18 UJ	<0.15 UJ	<0.19 UJ	<0.19 UJ
4,4'-DDE		0.0034 J-	--	<0.0028 UJ	<0.0037 U	<0.003 UJ	<0.0039 UJ	<0.0038 UJ
4,4'-DDT		0.0027 J-	--	0.0039 J-	<0.0027 U	<0.0022 UJ	<0.0029 UJ	<0.0028 UJ
DIELDRIN	0.00072	--	--	--	--	--	--	--
ENDRIN ALDEHYDE	0.0215	<0.004 UJ	--	<0.0042 UJ	<0.0055 U	<0.0045 UJ	<0.0058 UJ	<0.0056 UJ
ENDOSULFAN SULFATE	0.00286	*<0.0093 UJ*	--	*<0.0098 UJ*	*<0.013 U*	*<0.01 UJ*	*<0.014 UJ*	*<0.013 UJ*
		Polychlorinated Biphenyls (PCBs) (mg/kg)						
AROCLOR-1260		<0.027 UJ	--	<0.028 UJ	<0.037 U	<0.03 UJ	<0.039 UJ	<0.038 UJ
		Semivolatile Organic Compounds (mg/kg)						
2-METHYLNAPHTHALENE	0.07	<0.044 U	--	<0.046 U	<0.06 U	<0.049 U	<0.064 U	<0.062 U
BENZO(A)ANTHRACENE	0.412	<0.044 U	--	<0.046 U	<0.06 U	<0.049 U	<0.064 U	<0.062 U
BENZO(A)PYRENE	0.43	<0.044 U	--	<0.046 U	<0.06 U	<0.049 U	<0.064 U	<0.062 U
DIBENZ(A,H)ANTHRACENE	0.0634	<0.044 U	--	<0.046 U	<0.06 U	<0.049 UJ	*<0.064 UJ*	<0.062 UJ

Table B-1
Former Sewage Treatment Plant Data
Focused Feasibility Study
Hamilton Army Airfield
Novato, California
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Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth						
		HB-4397 04/15/97 SB-FSTP-006 11 ft	HB-4398 04/15/97 SB-FSTP-006 11 ft	HB-4402 04/15/97 SB-FSTP-002 5.5 ft	HB-4403 04/15/97 SB-FSTP-002 11.5 ft	HB-4405 04/15/97 SB-FSTP-001 5.5 ft	HB-4406 04/15/97 SB-FSTP-001 10.5 ft	HB-4411 04/16/97 SB-FSTP-003 11.5 ft
		Metals (mg/kg)						
BARIUM	190	68.2	--	46.6	54.0	57.9	47.4	--
BORON	36.9	--	35.1	17.0	**37.4**	27.4	33.3	--
CHROMIUM	112	91.5 J+	--	77.9 J+	98.9 J+	94.2 J+	92.4 J+	--
COPPER	68.1	--	45.2	28.9	34.1	34.0	33.1	39.2
LEAD	43.2	12.0	--	7.7	10.0	9.3	9.4	11.0
MERCURY	0.43	0.23	--	<0.11 U	<0.14 U	<0.13 U	<0.14 U	<0.14 U
SELENIUM	0.64	--	--	--	--	--	--	--
SILVER	1	0.78	--	<0.73 U	<0.93 U	<0.87 U	<0.91 U	<0.94 U
ZINC	158	94.8	--	70.1	87.2	75.9	81.9	93.8
		Pesticides (mg/kg)						
ALPHA-CHLORDANE		--	--	--	--	--	--	--
GAMMA-CHLORDANE		--	--	--	--	--	--	--
4,4'-DDD	0.007 (Total DDTs)	<0.15 UJ	--	<0.15 UJ	<0.19 UJ	<0.17 UJ	<0.18 UJ	<0.19 UJ
4,4'-DDE		<0.0029 UJ	--	<0.0029 UJ	<0.0037 UJ	<0.0035 UJ	<0.0036 UJ	<0.0038 UJ
4,4'-DDT		<0.0022 UJ	--	<0.0022 UJ	<0.0028 UJ	<0.0026 UJ	<0.0027 UJ	<0.0028 UJ
DIELDRIN	0.00072	--	--	--	--	--	--	--
ENDRIN ALDEHYDE	0.0215	<0.0044 UJ	--	<0.0044 UJ	<0.0056 UJ	<0.0052 UJ	<0.0054 UJ	<0.0056 UJ
ENDOSULFAN SULFATE	0.00286	*<0.01 UJ*	--	*<0.01 UJ*	*<0.013 UJ*	*<0.012 UJ*	*<0.013 UJ*	*<0.013 UJ*
		Polychlorinated Biphenyls (PCBs) (mg/kg)						
AROCLOR-1260		<0.029 UJ	--	<0.029 UJ	<0.037 UJ	<0.035 UJ	<0.036 UJ	<0.038 UJ
		Semivolatile Organic Compounds (mg/kg)						
2-METHYLNAPHTHALENE	0.07	<0.048 U	--	<0.048 U	<0.062 U	<0.057 U	<0.06 U	<0.062 U
BENZO(A)ANTHRACENE	0.412	<0.048 U	--	<0.048 U	<0.062 U	<0.057 U	<0.06 U	<0.062 U
BENZO(A)PYRENE	0.43	<0.048 U	--	<0.048 U	<0.062 U	<0.057 U	<0.06 U	<0.062 U
DIBENZ(A,H)ANTHRACENE	0.0634	<0.048 UJ	--	<0.048 UJ	<0.062 UJ	<0.057 UJ	<0.06 U	<0.062 U

Table B-1
Former Sewage Treatment Plant Data
Focused Feasibility Study
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Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth						
		HB-4412 04/16/97 SB-FSTP-003 11.5 ft	HB-4416 04/16/97 SB-FSTP-005 10.5 ft	HB-4419 04/16/97 SB-FSTP-008 10 ft	HB-4422 04/16/97 SB-FSTP-010 9.5 ft	HB-4423 04/16/97 SB-FSTP-010 10.5 ft	HB-4426 04/16/97 SB-FSTP-007 10 ft	HB-4430 04/17/97 SB-FSTP-004 5 ft
		Metals (mg/kg)						
BARIUM	190	56.3	54.9	52.4	49.1	--	44.8	61.6
BORON	36.9	**44.6**	**41.6**	**38.1**	32.2	--	27.9	16.5
CHROMIUM	112	110	106	103	86.3	--	83.1	93.7 J+
COPPER	68.1	--	36.4	36.3	31.6	--	28.6	51.8
LEAD	43.2	--	10.5	10.6	--	9.5	8.9	20.3
MERCURY	0.43	--	<0.13 U	<0.14 U	--	<0.13 U	<0.13 U	<0.12 U
SELENIUM	0.64	--	--	--	--	--	--	--
SILVER	1	--	<0.88 U	<0.93 U	--	<0.87 U	<0.89 U	<0.79 U
ZINC	158	--	86.2	87.9	--	81.4	74.4	78.6
		Pesticides (mg/kg)						
ALPHA-CHLORDANE		--	--	--	--	--	--	--
GAMMA-CHLORDANE		--	--	--	--	--	--	--
4,4'-DDD	0.007 (Total DDTs)	--	<0.18 UJ	<0.19 UJ	--	<0.17 UJ	<0.18 UJ	<0.16 UJ
4,4'-DDE		--	<0.0035 UJ	<0.0037 UJ	--	<0.0035 UJ	<0.0036 UJ	<0.0032 UJ
4,4'-DDT		--	<0.0027 UJ	<0.0028 UJ	--	<0.0026 UJ	<0.0027 UJ	<0.0024 UJ
DIELDRIN	0.00072	--	--	--	--	--	--	--
ENDRIN ALDEHYDE	0.0215	--	<0.0053 UJ	<0.0056 UJ	--	<0.0052 UJ	<0.0053 UJ	<0.0047 UJ
ENDOSULFAN SULFATE	0.00286	--	*<0.012 UJ*	*<0.013 UJ*	--	*<0.012 UJ*	*<0.012 UJ*	*<0.011 UJ*
		Polychlorinated Biphenyls (PCBs) (mg/kg)						
AROCLOR-1260		--	<0.035 UJ	<0.037 UJ	--	<0.035 UJ	<0.036 UJ	<0.032 UJ
		Semivolatile Organic Compounds (mg/kg)						
2-METHYLNAPHTHALENE	0.07	--	<0.058 U	<0.062 U	--	<0.057 U	<0.059 U	<0.052 U
BENZO(A)ANTHRACENE	0.412	--	<0.058 U	<0.062 U	--	<0.057 U	<0.059 U	<0.052 U
BENZO(A)PYRENE	0.43	--	<0.058 U	<0.062 U	--	<0.057 U	<0.059 U	<0.052 U
DIBENZ(A,H)ANTHRACENE	0.0634	--	<0.058 U	<0.062 U	--	<0.057 U	<0.059 U	<0.052 U

Table B-1
Former Sewage Treatment Plant Data
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Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth					
		HB-4432 04/17/97 SB-FSTP-004 11.5 ft	HB-4434 04/17/97 SB-FSTP-011 5 ft	HB-4435 04/17/97 SB-FSTP-011 10.5 ft	HB-4436 04/17/97 SB-FSTP-011 10.5 ft	HB-6261 11/02/98 CS-FSTP-S01 2.5 ft	HB-6262 11/02/98 CS-FSTP-S02 2.5 ft
		Metals (mg/kg)					
BARIUM	190	29.8	45.6	41.8	--	150	162
BORON	36.9	19.7	17.8	28.2	--	<12.6 U	<12.3 U
CHROMIUM	112	62.4 J+	77.6 J+	85.7 J+	--	54.4	35.5
COPPER	68.1	26.3	38.1	32.8	--	19.2	12.9
LEAD	43.2	6.8	11.0	8.8	--	27.0	23.1
MERCURY	0.43	<0.11 U	0.26	--	<0.13 U	0.23	0.17
SELENIUM	0.64	--	--	--	--	<0.44 U	<0.43 U
SILVER	1	<0.73 U	<0.76 U	--	<0.84 U	<0.63 U	<0.61 U
ZINC	158	59.8	74.0	78.6	--	118	69.7
		Pesticides (mg/kg)					
ALPHA-CHLORDANE		--	--	--	--	--	--
GAMMA-CHLORDANE		--	--	--	--	--	--
4,4'-DDD	0.007 (Total DDTs)	<0.15 UJ	<0.15 UJ	--	<0.17 UJ	--	--
4,4'-DDE		<0.0029 UJ	<0.003 UJ	--	<0.0034 UJ	<0.025 U	0.043
4,4'-DDT		<0.0022 UJ	<0.0023 UJ	--	<0.0025 UJ	<0.021 U	<0.021 U
DIELDRIN	0.00072	--	--	--	--	--	--
ENDRIN ALDEHYDE	0.0215	<0.0044 UJ	<0.0045 UJ	--	<0.005 UJ	--	--
ENDOSULFAN SULFATE	0.00286	*<0.01 UJ*	*<0.011 UJ*	--	*<0.012 UJ*	--	--
		Polychlorinated Biphenyls (PCBs) (mg/kg)					
AROCLOR-1260		<0.029 UJ	<0.03 UJ	--	<0.034 UJ	<0.25 U	<0.25 U
		Semivolatile Organic Compounds (mg/kg)					
2-METHYLNAPHTHALENE	0.07	<0.048 U	<0.05 U	--	<0.055 U	<0.042 U	*<0.081 U*
BENZO(A)ANTHRACENE	0.412	<0.048 U	<0.05 U	--	<0.055 U	<0.042 U	**1.6**
BENZO(A)PYRENE	0.43	<0.048 U	<0.05 U	--	<0.055 U	<0.042 U	**1.5**
DIBENZ(A,H)ANTHRACENE	0.0634	<0.048 U	<0.05 U	--	<0.055 U	<0.042 U	**0.54**

Table B-1
Former Sewage Treatment Plant Data
Focused Feasibility Study
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Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth					
		HB-6263 11/02/98 CS-FSTP-B03 10.5 ft	HB-6264 11/02/98 CS-FSTP-B04 10.5 ft	HB-6265 11/02/98 CS-FSTP-B05 10.5 ft	HB-6266 11/02/98 CS-FSTP-S06 7.5 ft	HB-6267 11/02/98 CS-FSTP-S07 7.5 ft	HB-6268 11/02/98 CS-FSTP-S08 7.5 ft
		Metals (mg/kg)					
BARIUM	190	77.5	68.6	87.4	53.8	**210**	57.4
BORON	36.9	<14.4 U	<13.8 U	16.3	24.8	<15.2 U	<17.3 U
CHROMIUM	112	65.0	57.4	72.7	84.4	78.0	85.2
COPPER	68.1	27.5	41.7	41.4	41.0	36.6	45.7
LEAD	43.2	10.6	11.6	11.3	13.1	13.7	11.7
MERCURY	0.43	0.13	0.22	0.15	0.16	0.19	0.29
SELENIUM	0.64	<0.50 U	<0.48 U	--	--	<0.53 U	--
SILVER	1	<0.72 U	<0.69 U	<0.80 U	<0.99 U	<0.76 U	<0.86 U
ZINC	158	57.1	61.7	85.9	88.9	91.7	82.2
		Pesticides (mg/kg)					
ALPHA-CHLORDANE		--	--	--	--	--	--
GAMMA-CHLORDANE		--	--	--	--	--	--
4,4'-DDD	0.007 (Total DDTs)	--	--	--	--	--	--
4,4'-DDE		<0.029 U	<0.055 U	<0.016 U	--	--	<0.017 U
4,4'-DDT		0.046	<0.047 U	<0.014 U	<0.17 U	<0.13 U	<0.015 U
DIELDRIN	0.00072	--	--	--	--	--	--
ENDRIN ALDEHYDE	0.0215	--	--	--	--	--	--
ENDOSULFAN SULFATE	0.00286	--	--	--	--	--	--
		Polychlorinated Biphenyls (PCBs) (mg/kg)					
AROCLOR-1260		--	--	<0.16 U	--	--	<0.17 U
		Semivolatile Organic Compounds (mg/kg)					
2-METHYLNAPHTHALENE	0.07	<0.048 U	<0.046 U	<0.053 U	<0.066 U	<0.05 U	<0.057 U
BENZO(A)ANTHRACENE	0.412	0.23	0.38	0.069	<0.066 U	<0.05 U	<0.057 U
BENZO(A)PYRENE	0.43	0.21	0.35	0.067	<0.066 U	<0.05 U	<0.057 U
DIBENZ(A,H)ANTHRACENE	0.0634	**0.075**	**0.15**	<0.053 U	*<0.066 U*	<0.05 U	<0.057 U

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Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth					
		HB-6276 11/04/98 CS-FSTP-S09 7.5 ft	HB-6277 11/05/98 CS-FSTP-S10 2.5 ft	HB-6278 11/05/98 CS-FSTP-S10 2.5 ft	HB-6280 11/05/98 CS-FSTP-B12 5.5 ft	HB-6281 11/05/98 CS-FSTP-B13 5.5 ft	HB-6283 11/05/98 CS-FSTP-B15 5.5 ft
		Metals (mg/kg)					
BARIUM	190	126	**272**	--	48.2	**279**	65.3
BORON	36.9	<12.6 U	--	<11.0 U	<13.7 U	<12.4 U	<14.0 U
CHROMIUM	112	45.9	33.6	--	78.6	46.7	78.3
COPPER	68.1	21.8	36.2	--	35.6	67.4	44.3
LEAD	43.2	15.1	28.1	--	10.6	22.7	17.8
MERCURY	0.43	0.20	--	**1.0 J-**	0.15 J-	**0.88 J-**	0.26 J-
SELENIUM	0.64	<0.44 U	<0.39 U	--	<0.48 U	<0.43 U	<0.49 U
SILVER	1	<0.63 U	**5.9**	--	<0.69 U	**2.3**	<0.70 U
ZINC	158	105 J-	--	114 J-	72.3 J-	129 J-	80.1 J-
		Pesticides (mg/kg)					
ALPHA-CHLORDANE		--	--	--	--	--	--
GAMMA-CHLORDANE		--	--	--	--	--	--
4,4'-DDD	0.007 (Total DDTs)	--	--	--	<0.14 U	<0.12 U	<0.14 U
4,4'-DDE		<0.013 U	**0.021**	--	<0.0027 U	.0027	<0.0028 U
4,4'-DDT		<0.011 U	**0.032**	--	<0.0023 U	.0024	<0.0024 U
DIELDRIN	0.00072	*<0.05 U*	--	*<0.035 U*	*<0.011 U*	*<0.0099 U*	*<0.011 U*
ENDRIN ALDEHYDE	0.0215	--	--	--	<0.0041 U	<0.0037 U	<0.0042 U
ENDOSULFAN SULFATE	0.00286	--	--	--	*<0.0096 U*	*<0.0087 U*	*<0.0098 U*
		Polychlorinated Biphenyls (PCBs) (mg/kg)					
AROCLOR-1260		<0.13 U	--	<0.088 U	<0.027 U	<0.12 U	<0.028 U
		Semivolatile Organic Compounds (mg/kg)					
2-METHYLNAPHTHALENE	0.07	0.06	--	<0.036 U	<0.045 U	<0.041 U	<0.046 U
BENZO(A)ANTHRACENE	0.412	<0.042 U	--	<0.036 U	<0.045 U	0.042	<0.046 U
BENZO(A)PYRENE	0.43	<0.042 U	--	<0.036 U	<0.045 U	0.065	<0.046 U
DIBENZ(A,H)ANTHRACENE	0.0634	<0.042 U	--	<0.036 U	<0.045 U	<0.041 U	<0.046 U

Table B-1
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Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth					
		HB-6285 11/05/98 CS-FSTP-B17 5.5 ft	HB-6288 11/10/98 CS-FSTP-S19 2.5 ft	HB-6289 11/10/98 CS-FSTP-S19 2.5 ft	HB-6291 11/11/98 CS-FSTP-B20 5.5 ft	HB-6292 11/11/98 CS-FSTP-B20 5.5 ft	HB-6293 11/11/98 CS-FSTP-B21 5.5 ft
		Metals (mg/kg)					
BARIUM	190	60.3	--	**380**	--	50.7	58.0
BORON	36.9	<14.9 U	<11.3 U	--	--	<13.6 U	<12.5 U
CHROMIUM	112	81.1	14.2	--	--	86.2 J+	82.9 J+
COPPER	68.1	43.9	--	27.3	39.8	--	46.9
LEAD	43.2	17.1	--	9.3	--	9.8	16.3
MERCURY	0.43	0.25 J-	--	0.086	--	0.20	0.33
SELENIUM	0.64	<0.52 U	<0.40 U	--	--	<0.48 U	<0.44 U
SILVER	1	<0.74 U	<0.56 U	--	--	<0.68 U	<0.63 U
ZINC	158	75.6 J-	--	53.3	76.9	--	70.9
		Pesticides (mg/kg)					
ALPHA-CHLORDANE		--	--	--	--	--	--
GAMMA-CHLORDANE		--	--	--	--	--	--
4,4'-DDD	0.007 (Total DDTs)	--	<0.11 U	--	<0.14 U	--	<0.13 U
4,4'-DDE		<0.03 U	<0.0023 U	--	--	<0.0027 U	<0.0025 U
4,4'-DDT		<0.025 U	<0.0019 U	--	--	<0.0023 U	<0.0021 U
DIELDRIN	0.00072	--	*<0.009 U*	--	*<0.011 U*	--	*<0.01 U*
ENDRIN ALDEHYDE	0.0215	--	<0.0034 U	--	--	<0.0041 U	<0.0038 U
ENDOSULFAN SULFATE	0.00286	--	*<0.0079 U*	--	--	*<0.0095 U*	*<0.0088 U*
		Polychlorinated Biphenyls (PCBs) (mg/kg)					
AROCLOR-1260		--	<0.023 U	--	--	<0.027 U	<0.025 U
		Semivolatile Organic Compounds (mg/kg)					
2-METHYLNAPHTHALENE	0.07	<0.049 U	<0.037 U	--	--	<0.045 U	<0.041 U
BENZO(A)ANTHRACENE	0.412	<0.049 U	<0.037 U	--	--	<0.045 U	<0.041 U
BENZO(A)PYRENE	0.43	<0.049 U	<0.037 U	--	--	<0.045 U	<0.041 U
DIBENZ(A,H)ANTHRACENE	0.0634	<0.049 U	<0.037 U	--	--	<0.045 U	<0.041 U

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Former Sewage Treatment Plant Data
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Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth					
		HB-6295 11/11/98 CS-FSTP-B22 5.5 ft	HB-6296 11/11/98 CS-FSTP-B23 5.5 ft	HB-6297 11/11/98 CS-FSTP-B24 5.5 ft	HB-6298 11/12/98 CS-FSTP-S25 2.5 ft	HB-6299 11/12/98 CS-FSTP-S26 2.5 ft	HB-6301 11/16/98 CS-FSTP-S27 2.5 ft
		Metals (mg/kg)					
BARIUM	190	45.2	45.0	57.4	63.4	64.2	54.5
BORON	36.9	<13.8 U	<15.3 U	<14.2 U	<14.2 U	<14.4 U	<13.7 U
CHROMIUM	112	85.1 J+	89.0 J+	84.5 J+	81.8 J+	99.1 J+	63.8 J+
COPPER	68.1	44.5	37.0	49.5	50.0	47.3	46.0
LEAD	43.2	14.4	11.3	12.9	13.4	20.2	12.1
MERCURY	0.43	0.20	0.21	0.37	0.39	0.40	0.36
SELENIUM	0.64	<0.48 U	<0.53 U	<0.50 U	<0.50 UJ	<0.50 UJ	<0.48 UJ
SILVER	1	<0.69 U	<0.76 U	<0.71 U	<0.71 U	<0.72 U	<0.68 U
ZINC	158	95.7	67.6	75.6	65.2	72.8	91.2
		Pesticides (mg/kg)					
ALPHA-CHLORDANE		--	--	--	--	--	--
GAMMA-CHLORDANE		--	--	--	--	--	--
4,4'-DDD	0.007 (Total DDTs)	<0.14 U	<0.15 U	<0.14 U	--	<0.14 U	<0.14 U
4,4'-DDE		<0.0028 U	<0.0031 U	<0.0028 U	--	<0.0029 U	<0.0027 U
4,4'-DDT		<0.0023 U	<0.0026 U	<0.0024 U	--	<0.0024 U	<0.0023 U
DIELDRIN	0.00072	*<0.011 U*	*<0.012 U*	*<0.011 U*	--	*<0.012 U*	*<0.011 U*
ENDRIN ALDEHYDE	0.0215	<0.0041 U	<0.0046 U	<0.0043 U	--	<0.0043 U	<0.0041 U
ENDOSULFAN SULFATE	0.00286	*<0.0097 U*	*<0.011 U*	*<0.01 U*	--	*<0.01 U*	*<0.0096 U*
		Polychlorinated Biphenyls (PCBs) (mg/kg)					
AROCLOR-1260		<0.028 U	<0.031 U	<0.028 U	--	<0.029 U	<0.027 U
		Semivolatile Organic Compounds (mg/kg)					
2-METHYLNAPHTHALENE	0.07	<0.046 U	<0.05 U	<0.047 U	<0.047 UJ	<0.047 UJ	<0.045 U
BENZO(A)ANTHRACENE	0.412	<0.046 U	<0.05 U	<0.047 U	<0.047 U	<0.047 U	<0.045 U
BENZO(A)PYRENE	0.43	<0.046 U	<0.05 U	<0.047 U	<0.047 U	<0.047 U	<0.045 U
DIBENZ(A,H)ANTHRACENE	0.0634	<0.046 U	<0.05 U	<0.047 U	<0.047 U	<0.047 U	<0.045 U

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Former Sewage Treatment Plant Data
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Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth					
		HB-6302 11/16/98 CS-FSTP-S28 2.5 ft	HB-6303 11/16/98 CS-FSTP-B29 5.5 ft	HB-6304 11/16/98 CS-FSTP-B29 5.5 ft	HB-6305 11/16/98 CS-FSTP-S30 2.5 ft	HB-6306 11/16/98 CS-FSTP-B31 5.5 ft	HB-6308 11/16/98 CS-FSTP-S32 2.5 ft
		Metals (mg/kg)					
BARIUM	190	62.9	--	42.0	51.6	40.8	68.0
BORON	36.9	<13.6 U	<15.6 U	--	<14.3 U	15.1	15.7
CHROMIUM	112	67.7 J+	70.5 J+	--	71.5 J+	67.9 J+	75.2 J+
COPPER	68.1	41.8	29.2	--	42.3	38.1	47.7
LEAD	43.2	13.6	--	8.8	11.2	8.9	16.2
MERCURY	0.43	0.26	<0.12 U	--	0.26	<0.11 U	0.35
SELENIUM	0.64	<0.48 UJ	<0.55 UJ	--	<0.50 UJ	<0.51 UJ	<0.49 UJ
SILVER	1	<0.68 U	<0.78 U	--	<0.71 U	<0.73 U	<0.71 U
ZINC	158	63.4	65.9	--	68.4	75.2	65.6
		Pesticides (mg/kg)					
ALPHA-CHLORDANE		--	--	--	--	--	--
GAMMA-CHLORDANE		--	--	--	--	--	--
4,4'-DDD	0.007 (Total DDTs)	<0.14 U	--	--	<0.14 U	<0.15 U	<0.14 U
4,4'-DDE		<0.0027 U	--	<0.062 U	<0.0029 U	<0.0029 U	<0.0028 U
4,4'-DDT		<0.0023 U	<0.053 U	--	<0.0024 U	<0.0025 U	<0.0024 U
DIELDRIN	0.00072	*<0.011 U*	--	--	*<0.011 U*	*<0.012 U*	*<0.011 U*
ENDRIN ALDEHYDE	0.0215	<0.0054 U	--	--	<0.0043 U	<0.0044 U	<0.0042 U
ENDOSULFAN SULFATE	0.00286	*<0.0095 U*	--	--	*<0.01 U*	*<0.01 U*	*<0.0099 U*
		Polychlorinated Biphenyls (PCBs) (mg/kg)					
AROCLOR-1260		<0.027 U	--	--	<0.029 U	<0.029 U	<0.028 U
		Semivolatile Organic Compounds (mg/kg)					
2-METHYLNAPHTHALENE	0.07	<0.045 U	<0.052 U	--	<0.047 U	<0.048 U	<0.047 U
BENZO(A)ANTHRACENE	0.412	<0.045 U	<0.052 U	--	<0.047 U	<0.048 U	<0.047 U
BENZO(A)PYRENE	0.43	<0.045 U	<0.052 U	--	<0.047 U	<0.048 U	<0.047 U
DIBENZ(A,H)ANTHRACENE	0.0634	<0.045 U	<0.052 U	--	<0.047 U	<0.048 U	<0.047 U

Table B-1
Former Sewage Treatment Plant Data
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Hamilton Army Airfield
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Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth					
		HB-6309 11/16/98 CS-FSTP-B33 5.5 ft	HB-6310 11/16/98 CS-FSTP-S34 2.5 ft	HB-6311 11/16/98 CS-FSTP-B35 5.5 ft	HB-6312 11/17/98 CS-FSTP-S36 2.5 ft	HB-6313 11/17/98 CS-FSTP-S36 2.5 ft	HB-6314 11/17/98 CS-FSTP-B37 5.5 ft
		Metals (mg/kg)					
BARIUM	190	44.6	63.9	42.1	--	77.2	44.4
BORON	36.9	14.1	<14.6 U	<14.6 U	--	<14.0 UJ	<15.6 UJ
CHROMIUM	112	85.3 J+	91.1 J+	73.5 J+	**113 J+**	--	96.6 J+
COPPER	68.1	27.7	53.7	29.2	--	50.5	34.2
LEAD	43.2	11.1	12.1	11.9	20.9 J+	--	9.5 J+
MERCURY	0.43	<0.10 U	0.29	<0.11 U	--	0.38	<0.12 U
SELENIUM	0.64	<0.48 UJ	<0.51 UJ	<0.51 UJ	--	<0.49 U	<0.55 U
SILVER	1	<0.69 U	<0.73 U	<0.73 U	--	<0.70 U	<0.78 U
ZINC	158	69.1	69.4	66.8	--	67.8	72.1
		Pesticides (mg/kg)					
ALPHA-CHLORDANE		--	--	--	--	--	--
GAMMA-CHLORDANE		--	--	--	--	--	--
4,4'-DDD	0.007 (Total DDTs)	<0.14 U	<0.15 U	<0.15 U	<0.14 U	--	<0.16 U
4,4'-DDE		<0.0028 U	<0.0029 U	<0.0029 U	--	<0.0028 U	<0.0031 U
4,4'-DDT		<0.0024 U	<0.0025 U	<0.0025 U	<0.0024 U	--	<0.0027 U
DIELDRIN	0.00072	*<0.011 U*	*<0.012 U*	*<0.012 U*	--	*<0.011 U*	*<0.012 U*
ENDRIN ALDEHYDE	0.0215	<0.0041 U	<0.0044 U	<0.0044 U	--	<0.0042 U	<0.0047 U
ENDOSULFAN SULFATE	0.00286	*<0.0097 U*	*<0.01 U*	*<0.01 U*	--	*<0.0098 U*	*<0.011 U*
		Polychlorinated Biphenyls (PCBs) (mg/kg)					
AROCLOR-1260		<0.028 U	<0.029 U	<0.029 U	--	<0.028 U	<0.031 U
		Semivolatile Organic Compounds (mg/kg)					
2-METHYLNAPHTHALENE	0.07	<0.046 U	<0.048 U	<0.048 U	--	<0.046 U	<0.052 U
BENZO(A)ANTHRACENE	0.412	<0.046 U	<0.048 U	<0.048 U	--	<0.046 U	<0.052 U
BENZO(A)PYRENE	0.43	<0.046 U	<0.048 U	<0.048 U	--	<0.046 U	<0.052 U
DIBENZ(A,H)ANTHRACENE	0.0634	<0.046 U	<0.048 U	<0.048 U	--	<0.046 U	<0.052 U

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Former Sewage Treatment Plant Data
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Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth	
		HB-6316 11/17/98 CS-FSTP-S38 2.5 ft	TP003SS1 12/06/90 TP-MW-101 10 ft
		Metals (mg/kg)	
BARIUM	190	61.9	--
BORON	36.9	<13.0 UJ	--
CHROMIUM	112	99.1 J+	--
COPPER	68.1	47.5	--
LEAD	43.2	23.0 J+	--
MERCURY	0.43	0.31	--
SELENIUM	0.64	<0.45 U	--
SILVER	1	<0.65 U	--
ZINC	158	69.5	--
		Pesticides (mg/kg)	
ALPHA-CHLORDANE		--	--
GAMMA-CHLORDANE		--	--
4,4'-DDD	0.007 (Total DDTs)	<0.13 U	<0.064 U
4,4'-DDE		<0.0026 U	<0.068 U
4,4'-DDT		<0.0022 U	<0.1
DIELDRIN	0.00072	*<0.01 U*	--
ENDRIN ALDEHYDE	0.0215	<0.0039 U	--
ENDOSULFAN SULFATE	0.00286	*<0.0091 U*	--
		Polychlorinated Biphenyls (PCBs) (mg/kg)	
AROCLOR-1260		<0.026 U	--
		Semivolatile Organic Compounds (mg/kg)	
2-METHYLNAPHTHALENE	0.07	<0.043 U	<0.032 U
BENZO(A)ANTHRACENE	0.412	<0.043 U	<0.041 U
BENZO(A)PYRENE	0.43	<0.043 U	*<1.2 U*
DIBENZ(A,H)ANTHRACENE	0.0634	<0.043 U	*<0.31 U*

Table B-2
Building 20 Data
Focused Feasibility Study
Hamilton Army Airfield
Novato, California

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth					
		HB-6008 09/17/98 SS-B20E-P01 1 ft	HB-6009 09/17/98 SS-B20E-P02 1 ft	HB-6012 09/18/98 CS-B20E-S01 5 ft	HB-6013 09/18/98 CS-B20E-S01 5 ft	HB-6014 09/18/98 CS-B20E-S02 5 ft	HB-6015 09/18/98 CS-B20E-S03 5 ft
Metals (mg/kg)							
BERYLLIUM	1	**1.1**	0.68	<0.73 U	--	0.72	<0.81 U
ZINC	158	104	86.3	--	74.7	88.9	92.8

Table B-2
Building 20 Data
Focused Feasibility Study
Hamilton Army Airfield
Novato, California

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth				
		HB-6016 09/18/98 CS-B20E-S04 5 ft	HB-6017 09/18/98 CS-B20E-S05 5 ft	HB-6018 09/18/98 CS-B20E-B06 10.5 ft	HB-6019 09/18/98 CS-B20E-S07 10.5 ft	HB-6022 09/21/98 CS-B20E-S08 6.5 ft
Metals (mg/kg)						
BERYLLIUM	1	<0.74 U	<0.69 U	<0.89 U	<0.84 U	<0.82 U
ZINC	158	73.9	78.3	81.2	79.0	78.5

Table B-3
Building 26 Data
Focused Feasibility Study
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Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth					
		HB-4556 04/22/97 SS-B26T-004 3 ft	HB-4557 04/22/97 UE-B26T-001 5.5 ft	HB-4725 07/01/97 PH-B026-005 10 ft	HB-4726 07/01/97 PH-B026-004 10 ft	HB-4728 07/01/97 PH-B026-003 5 ft	HB-4729 07/01/97 PH-B026-003 10 ft
Total Petroleum Hydrocarbons (mg/kg)							
DIESEL RANGE	144	<10	**770**	<17	<18	25	<17

Table B-3
Building 26 Data
Focused Feasibility Study
Hamilton Army Airfield
Novato, California

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth				
		HB-4730 07/02/97 PH-B026-005 5 ft	HB-4731 07/02/97 PH-B026-004 5 ft	HB-4733 07/02/97 PH-B026-002 5 ft	HB-4734 07/02/97 PH-B026-002 10 ft	HB-4735 07/02/97 PH-B026-001 10 ft
Total Petroleum Hydrocarbons (mg/kg)						
DIESEL RANGE	144	41	**370**	83	<17	<19

Table B-4
Buildings 35/39 Area Data
Focused Feasibility Study
Hamilton Army Airfield
Novato, California

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth								
		HB-3469 11/10/99 B35E-CS-001 4.5 ft	HB-3470 11/10/99 B35E-CS-002 4.5 ft	HB-3471 11/10/99 B35E-CS-003 3 ft	HB-3472 11/10/99 B35E-DS-003 3 ft	HB-3473 11/10/99 B35E-CS-004 7.5 ft	HB-3474 11/10/99 B35E-CS-005 3.5 ft	HB-3475 11/10/99 B35E-CS-006 3 ft	HB-3476 11/10/99 B35E-CS-007 4.5 ft	HB-3477 11/10/99 B35E-CS-008 7.5 ft
Metals (mg/kg)										
CADMIUM	1.2	--	--	--	--	--	--	--	--	--
CHROMIUM	112	--	--	--	--	--	--	--	--	--
ZINC	158	--	--	--	--	--	--	--	--	--
Pesticides (mg/kg)										
4,4'-DDD	0.007 (Total DDTs)	<0.0048 U	**.91**	<0.0048 U	--	<0.005 U	<0.0047 UJ	<0.0048 UJ	<0.0047 UJ	<0.0058 UJ
4,4'-DDE		<0.0048 U	**0.32 J**	<0.0048 U	--	<0.005 U	0.00072 J-	0.0033 J-	<0.0047 UJ	<0.0058 UJ
4,4'-DDT		<0.0048 U	**2.7 J**	--	0.0017 J	<0.005 U	**0.016 J-**	<0.0048 UJ	<0.0047 UJ	<0.0058 UJ
ENDRIN	0.0215	--	--	--	--	--	--	0.00089 J-	--	--
Semivolatile Organic Compounds (mg/kg)										
2-METHYLNAPHTHALENE	0.07	*<0.097 U*	--	*<0.098 U*	--	*<0.1 U*	**0.27 J**	*<0.098 U*	*<0.095 U*	*<0.12 U*
ANTHRACENE	0.088	<0.0097 U	--	<0.0098 U	--	<0.01 U	0.023 J	0.0058 J	<0.0095 U	<0.012 U
BENZO(A)PYRENE	0.43	.0064 J	**0.92**	<0.0098 U	--	0.025	0.07 J	0.024	<0.0095 U	0.041
DIBENZ(A,H)ANTHRACENE	0.0634	<0.019 U	**0.18 J**	<0.019 U	--	<0.02 U	**0.14 J**	<0.019 U	<0.018 U	<0.023 U
FLUORENE	0.0253	<0.019 U	--	<0.019 U	--	<0.02 U	**0.027 J**	<0.019 U	<0.018 U	<0.023 U

Table B-4
Buildings 35/39 Area Data
Focused Feasibility Study
Hamilton Army Airfield
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Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth								
		HB-3478 11/10/99 B35E-CS-009 4 ft	HB-3479 11/10/99 B35E-CS-010 5 ft	HB-6324 11/23/98 CS-PSA2-B01 5.5 ft	HB-6325 11/23/98 CS-PSA2-S02 2.5 ft	HB-6326 11/23/98 CS-PSA2-S03 2.5 ft	HB-6327 11/23/98 CS-PSA2-S04 2.5 ft	HB-6328 11/23/98 CS-PSA2-S05 2.5 ft	HB-6350 11/16/98 SB-AST6-05 5 ft	HB-6351 11/16/98 SB-AST6-05 7 ft
Metals (mg/kg)										
CADMIUM	1.2	--	--	--	--	--	--	--	0.77	<0.78 U
CHROMIUM	112	--	--	--	--	--	--	--	91.6 J+	56.3 J+
ZINC	158	--	--	--	--	--	--	--	71.0	70.8
Pesticides (mg/kg)										
4,4'-DDD	0.007 (Total DDTs)	<0.0049 UJ	<0.0047 UJ	--	--	--	--	--	<0.15 U	<0.16 U
4,4'-DDE		<0.0049 UJ	<0.0047 UJ	--	--	--	--	--	<0.003 U	<0.0031 U
4,4'-DDT		<0.0049 UJ	<0.0047 UJ	--	--	--	--	--	<0.0025 U	<0.0026 U
ENDRIN	0.0215	--	--	--	--	--	--	--	--	--
Semivolatile Organic Compounds (mg/kg)										
2-METHYLNAPHTHALENE	0.07	*<0.099 U*	*<0.095 U*	<0.051 U	<0.045 U	<0.043 U	<0.044 U	<0.042 U	<0.049 U	<0.051 U
ANTHRACENE	0.088	<0.0099 U	<0.0095 U	--	<0.045 U	<0.043 U	<0.044 U	<0.042 U	--	--
BENZO(A)PYRENE	0.43	<0.0099 U	0.0073 J	<0.051 U	<0.045 U	<0.043 U	<0.044 U	<0.042 U	<0.049 U	0.099
DIBENZ(A,H)ANTHRACENE	0.0634	<0.019 U	<0.018 U	<0.051 U	<0.045 U	<0.043 U	<0.044 U	<0.042 U	<0.049 U	<0.051 U
FLUORENE	0.0253	<0.019 U	<0.018 U	*<0.051 U*	*<0.045 U*	*<0.043 U*	*<0.044 U*	*<0.042 U*	*<0.049 U*	*<0.051 U*

Table B-4
Buildings 35/39 Area Data
Focused Feasibility Study
Hamilton Army Airfield
Novato, California

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth								
		HB-6352 11/16/98 SB-AST6-05 12.5 ft	HB-6353 11/16/98 SB-AST6-04 9 ft	HB-6354 11/16/98 SB-AST6-04 12 ft	HB-6355 11/16/98 SB-AST6-04 15.5 ft	HB-6359 11/16/98 SB-AST6-03 10.5 ft	HB-6362 11/17/98 SB-AST6-01 11.5 ft	HB-6365 11/17/98 SB-AST6-02 11.5 ft	PSA-WC-20-SB4 05/10/95 PSA-SB4 2.5 ft	PSA-WC-25-SB3 05/10/95 PSA-SB3 3 ft
Metals (mg/kg)										
CADMIUM	1.2	<0.96 U	**1.3**	1.2	1.0	<0.94 U	**1.6**	0.96	--	--
CHROMIUM	112	86.2 J+	86.9 J+	86.5 J+	93.0 J+	104 J+	98.2 J+	**116 J+**	--	--
ZINC	158	86.0	72.6	74.9	85.9	76.8	102	75.4	--	--
Pesticides (mg/kg)										
4,4'-DDD	0.007 (Total DDTs)	<0.19 U	<0.17 U	<0.17 U	<0.4 U	--	--	--	--	--
4,4'-DDE		<0.0038 U	<0.0033 U	<0.0034 U	<0.0079 U	<0.075 U	*<0.18 U*	*<0.18 U*	--	--
4,4'-DDT		<0.0032 U	<0.0028 U	<0.0029 U	<0.0067 U	<0.064 U	*<0.15 U*	*<0.15 U*	--	--
ENDRIN	0.0215	--	--	--	--	--	--	--	--	--
Semivolatile Organic Compounds (mg/kg)										
2-METHYLNAPHTHALENE	0.07	<0.063 U	<0.055 U	<0.056 U	<0.065 U	<0.062 U	<0.06 UJ	<0.059 UJ	--	--
ANTHRACENE	0.088	--	--	--	--	--	--	--	--	--
BENZO(A)PYRENE	0.43	0.23	0.1	.18	0.24	0.074	0.096	0.14	<0.047 U	<0.045 U
DIBENZ(A,H)ANTHRACENE	0.0634	<0.063 U	<0.055 U	<0.056 U	*<0.065 U*	<0.062 U	<0.06 U	<0.059 U	<0.047 U	<0.045 U
FLUORENE	0.0253	--	--	--	--	--	--	--	--	--

Table B-4
Buildings 35/39 Area Data
Focused Feasibility Study
Hamilton Army Airfield
Novato, California

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth		
		PSA-WC-25-SB4 05/10/95 PSA-SB4 3 ft	PSA-WC-25-SB5 05/10/95 PSA-SB5 3 ft	PSA-WC-25-SB6 05/10/95 PSA-SB6 3 ft
Metals (mg/kg)				
CADMIUM	1.2	--	--	--
CHROMIUM	112	--	--	--
ZINC	158	--	--	--
Pesticides (mg/kg)				
4,4'-DDD	0.007 (Total DDTs)	--	--	--
4,4'-DDE		--	--	--
4,4'-DDT		--	--	--
ENDRIN	0.0215	--	--	--
Semivolatile Organic Compounds (mg/kg)				
2-METHYLNAPHTHALENE	0.07	--	--	--
ANTHRACENE	0.088	--	--	--
BENZO(A)PYRENE	0.43	<0.046 U	<0.061 U	<0.049 U
DIBENZ(A,H)ANTHRACENE	0.0634	<0.046 U	<0.061 U	<0.049 U
FLUORENE	0.0253	--	--	--

Table B-5
Building 41 Data
Focused Feasibility Study
Hamilton Army Airfield
Novato, California

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth								
		HB-3454 11/09/99 B41E-CS-001 9.5 ft	HB-3455 11/09/99 B41E-CS-002 6 ft	HB-3457 11/09/99 B41E-CS-003 6.5 ft	HB-3458 11/09/99 B41E-CS-004 9.5 ft	HB-3459 11/09/99 B41E-CS-005 9.5 ft	HB-3460 11/09/99 B41E-CS-006 7.5 ft	HB-3461 11/09/99 B41E-CS-007 7 ft	HB-3462 11/09/99 B41E-CS-008 4 ft	HB-3463 11/09/99 B41E-CS-009 4.5 ft
Semivolatile Organic Compounds (mg/kg)										
2-METHYLNAPHTHALENE	0.07	--	--	--	--	--	--	--	--	--
ACENAPHTHENE	0.026	--	--	--	--	--	--	--	--	--
BENZO(A)PYRENE	0.43	--	--	--	--	--	--	--	--	--
FLUORANTHENE	0.6	--	--	--	--	--	--	--	--	--
FLUORENE	0.0253	--	--	--	--	--	--	--	--	--
NAPHTHALENE	0.16	--	--	--	--	--	--	--	--	--
PHENANTHRENE	0.24	--	--	--	--	--	--	--	--	--
PYRENE	0.665	--	--	--	--	--	--	--	--	--
Total Petroleum Hydrocarbons (mg/kg)										
DIESEL RANGE	144	51	37	**460**	27	<18 U	**1200**	**230**	**220**	**290**

Table B-5
Building 41 Data
Focused Feasibility Study
Hamilton Army Airfield
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Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth								
		HB-3464 11/09/99 B41E-CS-010 5.5 ft	HB-3465 11/09/99 B41E-CS-011 6 ft	HB-3466 11/09/99 B41E-CS-012 6 ft	HB-3468 11/09/99 B41E-CS-013 4 ft	HB-4487 04/22/97 SB-PSAP-001 15.5 ft	HB-4488 04/22/97 SB-PSAP-002 2.5 ft	HB-4489 04/22/97 SB-PSAP-002 8 ft	HB-4490 04/22/97 SB-PSAP-002 15 ft	HB-4493 04/23/97 SB-PSAP-003 4 ft
Semivolatile Organic Compounds (mg/kg)										
2-METHYLNAPHTHALENE	0.07	--	--	--	--	<0.06 U	<0.047 U	<0.055 U	<0.057 U	<0.049 U
ACENAPHTHENE	0.026	--	--	--	--	*<0.06 U*	*<0.047 U*	*<0.055 U*	*<0.057 U*	*<0.049 U*
BENZO(A)PYRENE	0.43	--	--	--	--	<0.06 U	<0.047 U	<0.055 U	<0.057 U	<0.049 U
FLUORANTHENE	0.6	--	--	--	--	<0.06 U	<0.047 U	<0.055 U	<0.057 U	<0.049 U
FLUORENE	0.0253	--	--	--	--	*<0.06 U*	*<0.047 U*	*<0.055 U*	*<0.057 U*	*<0.049 U*
NAPHTHALENE	0.16	--	--	--	--	<0.06 U	<0.047 U	<0.055 U	<0.057 U	<0.049 U
PHENANTHRENE	0.24	--	--	--	--	<0.06 U	<0.047 U	<0.055 U	<0.057 U	<0.049 U
PYRENE	0.665	--	--	--	--	<0.06 U	<0.047 U	<0.055 U	<0.057 U	<0.049 U
Total Petroleum Hydrocarbons (mg/kg)										
DIESEL RANGE	144	60	<15 U	24	110	<18 U	29	35	<17 U	<15 U

Table B-5
Building 41 Data
Focused Feasibility Study
Hamilton Army Airfield
Novato, California

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth							
		HB-4494 04/23/97 SB-PSAP-003 8 ft	HB-4495 04/23/97 SB-PSAP-003 15 ft	HB-4496 04/23/97 SB-PSAP-004 3 ft	HB-4498 04/23/97 SB-PSAP-004 9 ft	HB-4499 04/23/97 SB-PSAP-004 15 ft	HB-4968 07/25/97 PH-PSAP-005 3 ft	HB-4969 07/25/97 PH-PSAP-005 8.5 ft	HB-4971 07/25/97 PH-PSAP-005 10.5 ft
Semivolatile Organic Compounds (mg/kg)									
2-METHYLNAPHTHALENE	0.07	<0.047 U	<0.061 U	<0.046 U	<0.056 U	<0.067 U	<0.044 U	<0.054 U	<0.064 U
ACENAPHTHENE	0.026	*<0.047 U*	*<0.061 U*	*<0.046 U*	*<0.056 U*	*<0.067 U*	*<0.044 U*	*<0.054 U*	*<0.064 U*
BENZO(A)PYRENE	0.43	<0.047 U	<0.061 U	<0.046 U	<0.056 U	<0.067 U	<0.044 U	<0.054 U	<0.064 U
FLUORANTHENE	0.6	<0.047 U	<0.061 U	<0.046 U	<0.056 U	<0.067 U	<0.044 U	<0.054 U	<0.064 U
FLUORENE	0.0253	*<0.047 U*	*<0.061 U*	*<0.046 U*	*<0.056 U*	*<0.067 U*	*<0.044 U*	*<0.054 U*	*<0.064 U*
NAPHTHALENE	0.16	<0.047 U	<0.061 U	<0.046 U	<0.056 U	<0.067 U	<0.044 U	<0.054 U	<0.064 U
PHENANTHRENE	0.24	<0.047 U	<0.061 U	<0.046 U	<0.056 U	<0.067 U	<0.044 U	<0.054 U	<0.064 U
PYRENE	0.665	<0.047 U	<0.061 U	<0.046 U	<0.056 U	<0.067 U	<0.044 U	<0.054 U	<0.064 U
Total Petroleum Hydrocarbons (mg/kg)									
DIESEL RANGE	144	<14 U	<19 U	20	<17 U	<20 U	<13 U	<16 U	<19 U

Table B-5
Building 41 Data
Focused Feasibility Study
Hamilton Army Airfield
Novato, California
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Parameter	Comparison Value (mg/kg)	HB-6318 11/18/98 CS-PSA4-B01 6 ft
2-METHYLNAPHTHALENE	0.07	<0.054 U
ACENAPHTHENE	0.026	*<0.054 U*
BENZO(A)PYRENE	0.43	<0.054 U
FLUORANTHENE	0.6	<0.054 U
FLUORENE	0.0253	*<0.054 U*
NAPHTHALENE	0.16	<0.054 U
PHENANTHRENE	0.24	<0.054 U
PYRENE	0.665	<0.054 U
DIESEL RANGE	144	--

Table B-5
Building 41 Data
Focused Feasibility Study
Hamilton Army Airfield
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Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth							
		HB-6319 11/18/98 CS-PSA4-B01 6 ft	HB-6320 11/18/98 CS-PSA4-S02 2.5 ft	HB-6321 11/18/98 CS-PSA4-S03 2.5 ft	HB-6322 11/18/98 CS-PSA4-S04 2.5 ft	HB-6323 11/18/98 CS-PSA4-S05 2.5 ft	HB-6367 11/17/98 SB-UST41-03 16.5 ft	HB-6368 11/18/98 SB-UST41-02 16.5 ft	HB-6370 11/18/98 SB-UST41-02 18.5 ft
Semivolatile Organic Compounds (mg/kg)									
2-METHYLNAPHTHALENE	0.07	--	<0.049 U	*<0.55 U*	*<0.099 U*	<0.043 U	<0.06 U	<0.057 UJ	<0.061 UJ
ACENAPHTHENE	0.026	--	*<0.049 U*	*<0.55 U*	*<0.099 U*	*<0.043 U*	*<0.06 U*	*<0.057 U*	*<0.061 U*
BENZO(A)PYRENE	0.43	--	<0.049 U	**--**	<0.099 U	<0.043 U	<0.06 U	<0.057 U	0.089
FLUORANTHENE	0.6	--	<0.049 U	<0.55 U	<0.099 U	<0.043 U	<0.06 U	<0.057 U	<0.061 U
FLUORENE	0.0253	--	*<0.049 U*	*<0.55 U*	*<0.099 U*	*<0.043 U*	*<0.06 U*	*<0.057 U*	*<0.061 U*
NAPHTHALENE	0.16	--	<0.049 U	*<0.55 U*	<0.099 U	<0.043 U	<0.06 U	<0.057 U	<0.061 U
PHENANTHRENE	0.24	--	<0.049 U	*<0.55 U*	<0.099 U	<0.043 U	<0.06 U	<0.057 U	<0.061 U
PYRENE	0.665	--	<0.049 U	<0.55 U	<0.099 U	<0.043 U	<0.06 U	<0.057 U	<0.061 U
Total Petroleum Hydrocarbons (mg/kg)									
DIESEL RANGE	144	**360**	<15 U	**3100**	**620**	<13 U	<18 U	<17 U	<18 U

Table B-5
Building 41 Data
Focused Feasibility Study
Hamilton Army Airfield
Novato, California

Parameter	Comparison Value (mg/kg)	HB-6372 11/18/98 SB-UST41-01 14.5 ft	Sample Number/Date/Location/Depth						
			HB-6373 11/18/98 SB-UST41-01 18.5 ft	PS009SS1 12/13/90 PS-SS-05 0 ft	PS010SS1 12/13/90 PS-SS-06 0 ft	PS011SS1 12/13/90 PS-SS-07 0 ft	PS012SS1 12/13/90 PS-SS-08 0 ft	PSA-WC-25-SB2 05/10/95 PSA-SB2 3 ft	PSA-WC-30-SB1 05/10/95 PSA-SB1 3.5 ft
			Semivolatile Organic Compounds (mg/kg)						
2-METHYLNAPHTHALENE	0.07	**.32 J-**	**3.9 J-**	<0.032 U	<0.032 U	**<0.2 U**	<0.032 U	--	--
ACENAPHTHENE	0.026	**1.1**	**8.3**	*<0.041 U*	*<0.041 U*	*<0.2 U*	*<0.041 U*	*<0.16 U*	*<0.16 U*
BENZO(A)PYRENE	0.43	0.18	**--**	**--**	**--**	**--**	**--**	<0.052 U	<0.051 U
FLUORANTHENE	0.6	<0.063 U	**6.9**	<0.032 U	<0.032 U	<0.2 U	<0.032 U	<0.16 U	<0.16 U
FLUORENE	0.0253	**0.7**	**6.6**	*<0.065 U*	*<0.065 U*	*<0.3 U*	*<0.065 U*	**0.23**	*<0.16 U*
NAPHTHALENE	0.16	**0.72**	**49**	*<0.74 U*	*<0.74 U*	*<4 U*	*<0.74 U*	*<0.63 U*	*<0.62 U*
PHENANTHRENE	0.24	**0.31**	**22**	<0.032 U	<0.032 U	*<0.5 U*	<0.032 U	--	--
PYRENE	0.665	<0.063 U	**4.4**	<0.083 U	<0.083 U	<0.4 U	<0.083 U	<0.16 U	<0.16 U
			Total Petroleum Hydrocarbons (mg/kg)						
DIESEL RANGE	144	<19 U	**1300**	--	--	--	--	**880**	<1.6 U

Table B-6
Buildings 82/87/92/94 Area and Building 86 Data
Focused Feasibility Study
Hamilton Army Airfield
Novato, California

Building 86

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth									
		AM001SS1 12/17/90 AM-MW-101 2 ft	AM001SS2 12/17/90 AM-MW-101 2.5 ft	AM002SS1 12/17/90 AM-MW-101 5.5 ft	AM023SS2 12/19/90 AM-TP-01 1 ft	AM023SS3 12/14/90 AM-TP-01 1 ft	AM024SS2 12/19/90 AM-TP-01 2 ft	AM024SS3 12/14/90 AM-TP-01 2 ft	AM024SS4 12/19/90 AM-SD-02 2 ft	AM025SS2 12/20/90 AM-TP-01 2.5 ft	AM025SS3 12/14/90 AM-TP-01 2.5 ft
Metals (mg/kg)											
BARIUM	190	--	126	--	**196**	--	166	--	**963**	147	--
BERYLLIUM	1	--	**1.22**	--	**1.2**	--	**1.09**	--	0.427	0.872	--
BORON	36.9	--	--	--	--	--	--	--	**68.3**	--	--
CADMIUM	1.2	--	<1.2 U	--	<1.2 U	--	<1.2 U	--	**68.4**	<1.2 U	--
CHROMIUM	112	--	13.7	--	28.4	--	18	--	**710**	45.5	--
COBALT	27.6	--	9.23	--	12.2	--	9.35	--	14.5	9.38	--
COPPER	68.1	--	10.8	--	23.4	--	10.4	--	**274**	21.8	--
LEAD	43.2	--	8.18	--	7.53	--	9.39	--	**1020**	8.28	--
MANGANESE	943	--	303	--	339	--	227	--	359	282	--
NICKEL	113	--	17.7	--	36.9	--	20.1	--	61.3	36.7	--
SILVER	1	--	<0.803 U	--	<0.803 U	--	<0.803 U	--	**4.2**	<0.803 U	--
ZINC	158	--	40.9	--	41.9	--	38.8	--	**588**	49.9	--
Semivolatile Organic Compounds (mg/kg)											
2-METHYLNAPHTHALENE	0.07	<0.032 U	--	<0.032 U	--	<0.032 U	--	<0.032 U	--	--	<0.032 U
ACENAPHTHENE	0.026	*<0.041 U*	--	*<0.041 U*	--	*<0.041 U*	--	*<0.041 U*	--	--	*<0.041 U*
ANTHRACENE	0.088	*<0.71 U*	--	*<0.71 U*	--	*<0.71 U*	--	*<0.71 U*	--	--	*<0.71 U*
BENZO(A)ANTHRACENE	0.412	<0.041 U	--	<0.041 U	--	<0.041 U	--	<0.041 U	--	--	<0.041 U
BENZO(A)PYRENE	0.43	*<1.2 U*	--	**<1.2 U**	--	**<1.2 U**	--	**<1.2 U**	--	--	**<1.2 U**
BENZO(B)FLUORANTHENE	0.371	<0.31 U	--	<0.31 U	--	<0.31 U	--	<0.31 U	--	--	<0.31 U
CHRYSENE	0.384	<0.032 U	--	<0.032 U	--	<0.032 U	--	<0.032 U	--	--	<0.032 U
FLUORANTHENE	0.6	<0.032 U	--	<0.032 U	--	<0.032 U	--	<0.032 U	--	--	<0.032 U
PHENANTHRENE	0.24	<0.032 U	--	<0.032 U	--	<0.032 U	--	<0.032 U	--	--	<0.032 U
PYRENE	0.665	<0.083 U	--	<0.083 U	--	<0.083 U	--	<0.083 U	--	--	<0.083 U

Table B-6
Buildings 82/87/92/94 Area and Building 86 Data
Focused Feasibility Study
Hamilton Army Airfield
Novato, California

Building 86

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth									
		AM025SS4 12/20/90 AM-SD-03 0 ft	AM027SS1 12/20/90 AM-TP-02 0.5 ft	AM027SS2 12/20/90 AM-TP-02 0.5 ft	AM028SS1 12/20/90 AM-TP-02 2.5 ft	AM028SS2 12/20/90 AM-TP-02 2.5 ft	AM029DS2 12/20/90 AM-TP-02 2.5 ft	AM205SS1 08/11/92 AM-SB-03 2 ft	AM206SS1 08/11/92 AM-SB-03 4 ft	AM207SS1 08/11/92 AM-SB-04 2 ft	AM208SS1 08/07/92 AM-SB-04 4 ft
Metals (mg/kg)											
BARIUM	190	83.3	--	**387**	--	--	178	168	146	**238**	120
BERYLLIUM	1	**6.44**	--	**1.58**	--	--	**1.28**	**1.28**	.856	**1.35**	**1.22**
BORON	36.9	**161**	--	--	--	--	--	10.8	11	13.3	13.9
CADMIUM	1.2	<1.2 U	--	<1.2 U	--	<1.2 U	--	<1.2 U	<1.2 U	<1.2 U	<1.2 U
CHROMIUM	112	40.6	--	12.4	--	29.3	--	20.7	28.3	14.4	18.8
COBALT	27.6	<2.5 U	--	7.42	--	9.64	--	8.48	6.67	7.99	9.05
COPPER	68.1	51.3	--	8.54	--	--	7.96	12.1	44	9.02	11
LEAD	43.2	<7.44 U	--	7.6	--	8.56	--	10.9	13	9.33	13.8
MANGANESE	943	568	--	192	--	223	--	235	309	246	264
NICKEL	113	**118**	--	17	--	28.9	--	22.9	27.5	18.6	17.7
SILVER	1	<0.803 U	--	<0.803 U	--	<0.803 U	--	<0.803 U	<0.803 U	<0.803 U	<0.803 U
ZINC	158	**175**	--	38.8	--	42.5	--	40.9	37.5	37.9	41.7
Semivolatile Organic Compounds (mg/kg)											
2-METHYLNAPHTHALENE	0.07	--	<0.032 U	--	<0.032 U	--	--	--	<0.032 U	--	--
ACENAPHTHENE	0.026	--	*<0.041 U*	--	*<0.041 U*	--	--	--	*<0.041 U*	--	--
ANTHRACENE	0.088	--	*<0.71 U*	--	*<0.71 U*	--	--	--	*<0.71 U*	--	--
BENZO(A)ANTHRACENE	0.412	--	<0.041 U	--	<0.041 U	--	--	--	<0.041 U	--	--
BENZO(A)PYRENE	0.43	--	**<1.2 U**	--	**<1.2 U**	--	--	--	**<1.2 U**	--	--
BENZO(B)FLUORANTHENE	0.371	--	<0.31 U	--	<0.31 U	--	--	--	<0.31 U	--	--
CHRYSENE	0.384	--	<0.032 U	--	<0.032 U	--	--	--	<0.032 U	--	--
FLUORANTHENE	0.6	--	<0.032 U	--	<0.032 U	--	--	--	<0.032 U	--	--
PHENANTHRENE	0.24	--	<0.032 U	--	<0.032 U	--	--	--	<0.032 U	--	--
PYRENE	0.665	--	<0.083 U	--	<0.083 U	--	--	--	<0.083 U	--	--

Table B-6
Buildings 82/87/92/94 Area and Building 86 Data
Focused Feasibility Study
Hamilton Army Airfield
Novato, California

Building 86

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth							
		AM221SS1 08/07/92 AM-MW-102 2 ft	AM223SS1 08/10/92 AM-MW-104 2.5 ft	AMA-WC-25-SB1 05/10/95 AMA-SB1 3 ft	AMA-WC-25-SB2 05/10/95 AMA-SB2 3 ft	HB-4081 10/30/96 PH-AM86-002 3 ft	HB-4082 10/30/96 PH-AM86-002 3 ft	HB-4084 10/30/96 PH-AM86-002 8 ft	HB-4085 10/30/96 PH-AM86-001 3 ft
Metals (mg/kg)									
BARIUM	190	**230**	171	--	--	--	--	--	--
BERYLLIUM	1	**1.17**	**1.18**	--	--	--	--	--	--
BORON	36.9	21.2	**42.2**	--	--	--	--	--	--
CADMIUM	1.2	<1.2 U	<1.2 U	--	--	--	--	--	--
CHROMIUM	112	74.5	**150**	--	--	--	--	--	--
COBALT	27.6	12.3	22	--	--	--	--	--	--
COPPER	68.1	14.6	51.8	--	--	--	--	--	--
LEAD	43.2	**63**	23	--	--	10.3	11.4	12.1	11.3
MANGANESE	943	430	580	--	--	--	--	--	--
NICKEL	113	98	96.4	--	--	--	--	--	--
SILVER	1	<0.803 U	<0.803 U	--	--	--	--	--	--
ZINC	158	68.4	94.4	--	--	--	--	--	--
Semivolatile Organic Compounds (mg/kg)									
2-METHYLNAPHTHALENE	0.07	--	<0.032 U	--	--	<0.035 U	<0.043 U	<0.06 U	<0.041 U
ACENAPHTHENE	0.026	--	*<0.041 U*	*<0.12 U*	*<0.12 U*	*<0.035 U*	*<0.043 U*	*<0.06 U*	*<0.041 U*
ANTHRACENE	0.088	--	*<0.71 U*	*<0.12 U*	*<0.12 U*	<0.035 U	<0.043 U	<0.06 U	<0.041 U
BENZO(A)ANTHRACENE	0.412	--	<0.041 U	<0.12 U	<0.12 U	<0.035 U	<0.043 U	<0.06 U	<0.041 U
BENZO(A)PYRENE	0.43	--	**<1.2 U**	<0.038 U	<0.038 U	<0.035 U	<0.043 U	<0.06 U	<0.041 U
BENZO(B)FLUORANTHENE	0.371	--	<0.31 U	<0.12 U	<0.12 U	<0.035 UJ	<0.043 UJ	<0.06 UJ	<0.041 UJ
CHRYSENE	0.384	--	<0.032 U	<0.12 U	<0.12 U	<0.035 U	<0.043 U	<0.06 U	<0.041 U
FLUORANTHENE	0.6	--	<0.032 U	<0.12 U	<0.12 U	<0.035 U	<0.043 U	<0.06 U	<0.041 U
PHENANTHRENE	0.24	--	<0.032 U	--	--	<0.035 U	<0.043 U	<0.06 U	<0.041 U
PYRENE	0.665	--	<0.083 U	<0.12 U	<0.12 U	<0.035 U	<0.043 U	<0.06 U	<0.041 U

Table B-6
Buildings 82/87/92/94 Area and Building 86 Data
Focused Feasibility Study
Hamilton Army Airfield
Novato, California

Building 86

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth							
		HB-4086 10/30/96 PH-AM86-001 4 ft	HB-4087 10/30/96 PH-AM86-001 7 ft	HB-4122 11/15/96 PH-AMSD-02R 2 ft	HB-4123 11/15/96 PH-AMSD-02R 4 ft	HB-4124 11/15/96 PH-AMSD-02R 7.5 ft	HB-4125 11/15/96 PH-AMSD-03E 2 ft	HB-4126 11/15/96 PH-AMSD-03E 5 ft	HB-4127 11/15/96 PH-AMSD-03E 5 ft
Metals (mg/kg)									
BARIUM	190	--	--	124	115	58.3	132	--	111
BERYLLIUM	1	--	--	1.0	0.74	<0.73 U	0.92	--	0.95
BORON	36.9	--	--	3.7	3.3	9.7	2.9	--	4.1
CADMIUM	1.2	--	--	<0.55 U	<0.57 U	<0.73 U	<0.56 U	<0.59 U	--
CHROMIUM	112	--	--	18.6	11.2	90.2	17.5	--	22.5
COBALT	27.6	--	--	7.5	<5.7 U	10.0	8.1	9.0	--
COPPER	68.1	--	--	9.6	6.1	38.9	8.2	8.2	--
LEAD	43.2	15.2	17.2	11.4	8.2	22.5	9.8	--	18.5
MANGANESE	943	--	--	294	198	296	440	--	635
NICKEL	113	--	--	20.6	14.1	59.7	27.8	--	33.2
SILVER	1	--	--	<0.55 U	<0.57 U	<0.73 U	<0.56 U	<0.59 U	--
ZINC	158	--	--	33.2	26.0	56.9	33.1	--	38.3
Semivolatile Organic Compounds (mg/kg)									
2-METHYLNAPHTHALENE	0.07	<0.045 U	<0.058 U	<0.036 U	<0.038 U	<0.048 U	<0.037 U	<0.039 U	--
ACENAPHTHENE	0.026	*<0.045 U*	*<0.058 U*	*<0.036 U*	*<0.038 U*	*<0.048 U*	*<0.037 U*	*<0.039 U*	--
ANTHRACENE	0.088	<0.045 U	<0.058 U	<0.036 U	<0.038 U	<0.048 U	<0.037 U	<0.039 U	--
BENZO(A)ANTHRACENE	0.412	<0.045 U	<0.058 U	<0.036 UJ	<0.038 UJ	<0.048 UJ	<0.037 UJ	<0.039 UJ	--
BENZO(A)PYRENE	0.43	<0.045 U	<0.058 U	<0.036 U	<0.038 U	<0.048 U	<0.037 U	<0.039 U	--
BENZO(B)FLUORANTHENE	0.371	<0.045 UJ	<0.058 UJ	<0.036 UJ	<0.038 UJ	<0.048 UJ	<0.037 UJ	<0.039 UJ	--
CHRYSENE	0.384	<0.045 U	<0.058 U	<0.036 U	<0.038 U	<0.048 U	<0.037 U	<0.039 U	--
FLUORANTHENE	0.6	<0.045 U	<0.058 U	<0.036 U	<0.038 U	<0.048 U	<0.037 U	<0.039 U	--
PHENANTHRENE	0.24	<0.045 U	<0.058 U	<0.036 U	<0.038 U	<0.048 U	<0.037 U	<0.039 U	--
PYRENE	0.665	<0.045 U	<0.058 U	<0.036 U	<0.038 U	<0.048 U	<0.037 U	<0.039 U	--

Table B-6
Buildings 82/87/92/94 Area and Building 86 Data
Focused Feasibility Study
Hamilton Army Airfield
Novato, California

Building 86

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth							
		HB-4128 11/15/96 PH-AMSD-03E 9 ft	HB-4131 11/18/96 PH-AMSD-05Q 1 ft	HB-4132 11/18/96 PH-AMSD-05Q 6 ft	HB-4133 11/18/96 PH-AMSD-05Q 11 ft	HB-4439 04/19/97 SB-AM86-003 4 ft	HB-4440 04/19/97 SB-AM86-003 6 ft	HB-4441 04/19/97 SB-AM86-003 11.5 ft	HB-4442 04/19/97 SB-AM86-002 4 ft
Metals (mg/kg)									
BARIUM	190	40.3	138	**203**	41.4	--	--	--	--
BERYLLIUM	1	<0.85 U	0.74	0.95	<0.87 U	--	--	--	--
BORON	36.9	22.5	5.0	11.0	25.3	--	--	--	--
CADMIUM	1.2	<0.85 U	<0.58 U	<0.58 U	<0.87 U	--	--	--	--
CHROMIUM	112	82.5	27.4	**326**	84.4	--	--	--	--
COBALT	27.6	15.2	6.4	**79.8**	16.0	--	--	--	--
COPPER	68.1	30.0	13.1	32.6	31.1	--	--	--	--
LEAD	43.2	9.4	18.4	13.2	9.8	9.2	13.6	7.2	13.7
MANGANESE	943	593	214	**2740**	629	--	--	--	--
NICKEL	113	81.9	23.9	**441**	84.4	--	--	--	--
SILVER	1	<0.85 U	<0.58 U	<0.58 U	<0.87 U	--	--	--	--
ZINC	158	67.8	37.9	92.8	75.4	--	--	--	--
Semivolatile Organic Compounds (mg/kg)									
2-METHYLNAPHTHALENE	0.07	<0.056 U	<0.038 U	<0.038 U	<0.057 U	<0.036 U	<0.055 U	<0.054 U	<0.048 U
ACENAPHTHENE	0.026	*<0.056 U*	*<0.038 U*	*<0.038 U*	*<0.057 U*	*<0.036 U*	*<0.055 U*	*<0.054 U*	*<0.048 U*
ANTHRACENE	0.088	<0.056 U	<0.038 U	<0.038 U	<0.057 U	<0.036 U	<0.055 U	<0.054 U	<0.048 U
BENZO(A)ANTHRACENE	0.412	<0.056 UJ	<0.038 U	<0.038 U	<0.057 U	<0.036 U	<0.055 U	<0.054 U	<0.048 U
BENZO(A)PYRENE	0.43	<0.056 U	<0.038 U	<0.038 U	<0.057 U	<0.036 U	<0.055 U	<0.054 U	<0.048 U
BENZO(B)FLUORANTHENE	0.371	<0.056 UJ	<0.038 U	<0.038 U	<0.057 U	<0.036 U	<0.055 U	<0.054 U	<0.048 U
CHRYSENE	0.384	<0.056 U	<0.038 U	<0.038 U	<0.057 U	<0.036 U	<0.055 U	<0.054 U	<0.048 U
FLUORANTHENE	0.6	<0.056 U	<0.038 U	<0.038 U	<0.057 U	<0.036 U	<0.055 U	<0.054 U	<0.048 U
PHENANTHRENE	0.24	<0.056 U	<0.038 U	0.069	<0.057 U	<0.036 U	<0.055 U	<0.054 U	<0.048 U
PYRENE	0.665	<0.056 U	<0.038 U	<0.038 U	<0.057 U	<0.036 UJ	<0.055 UJ	<0.054 UJ	<0.048 UJ

Table B-6
Buildings 82/87/92/94 Area and Building 86 Data
Focused Feasibility Study
Hamilton Army Airfield
Novato, California

Building 86

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth							
		HB-4443 04/19/97 SB-AM86-002 7.5v	HB-4444 04/19/97 SB-AM86-002 7.5 ft	HB-4445 04/19/97 SB-AM86-002 11 ft	HB-4446 04/19/97 SB-AM86-004 4.5 ft	HB-4447 04/19/97 SB-AM86-004 6.5 ft	HB-4448 04/19/97 SB-AM86-004 11.5 ft	HB-4449 04/19/97 SB-AM86-005 4 ft	HB-4450 04/19/97 SB-AM86-005 6 ft
Metals (mg/kg)									
BARIUM	190	--	--	--	--	--	--	--	--
BERYLLIUM	1	--	--	--	--	--	--	--	--
BORON	36.9	--	--	--	--	--	--	--	--
CADMIUM	1.2	--	--	--	--	--	--	--	--
CHROMIUM	112	--	--	--	--	--	--	--	--
COBALT	27.6	--	--	--	--	--	--	--	--
COPPER	68.1	--	--	--	--	--	--	--	--
LEAD	43.2	--	7.3	7.2	10.7	7.1	10.5	5.9	13.2
MANGANESE	943	--	--	--	--	--	--	--	--
NICKEL	113	--	--	--	--	--	--	--	--
SILVER	1	--	--	--	--	--	--	--	--
ZINC	158	--	--	--	--	--	--	--	--
Semivolatile Organic Compounds (mg/kg)									
2-METHYLNAPHTHALENE	0.07	<0.057 U	--	<0.059 U	<0.053 U	<0.054 U	<0.058 U	<0.053 U	<0.055 U
ACENAPHTHENE	0.026	*<0.057 U*	--	*<0.059 U*	*<0.053 U*	*<0.054 U*	*<0.058 U*	*<0.053 U*	*<0.055 U*
ANTHRACENE	0.088	<0.057 U	--	<0.059 U	<0.053 U	<0.054 U	<0.058 U	<0.053 U	<0.055 U
BENZO(A)ANTHRACENE	0.412	<0.057 U	--	<0.059 U	<0.053 U	<0.054 U	<0.058 U	<0.053 U	<0.055 U
BENZO(A)PYRENE	0.43	<0.057 U	--	<0.059 U	<0.053 U	<0.054 U	<0.058 U	<0.053 U	<0.055 U
BENZO(B)FLUORANTHENE	0.371	<0.057 U	--	<0.059 U	<0.053 U	<0.054 U	<0.058 U	<0.053 U	<0.055 U
CHRYSENE	0.384	<0.057 U	--	<0.059 U	<0.053 U	<0.054 U	<0.058 U	<0.053 U	<0.055 U
FLUORANTHENE	0.6	<0.057 U	--	<0.059 U	<0.053 U	<0.054 U	<0.058 U	<0.053 U	<0.055 U
PHENANTHRENE	0.24	<0.057 U	--	<0.059 U	<0.053 U	<0.054 U	<0.058 U	<0.053 U	<0.055 U
PYRENE	0.665	<0.057 UJ	--	<0.059 UJ	<0.053 UJ	<0.054 UJ	<0.058 UJ	<0.053 UJ	<0.055 UJ

Table B-6
Buildings 82/87/92/94 Area and Building 86 Data
Focused Feasibility Study
Hamilton Army Airfield
Novato, California

Building 86

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth							
		HB-4451 04/19/97 SB-AM86-005 9.5 ft	HB-4452 04/19/97 SB-AM86-008 3.5 ft	HB-4453 04/19/97 SB-AM86-008 8 ft	HB-4454 04/19/97 SB-AM86-008 11.5 ft	HB-4455 04/19/97 SB-AM86-007 4.5 ft	HB-4456 04/19/97 SB-AM86-007 8 ft	HB-4457 04/19/97 SB-AM86-007 11.5 ft	HB-4458 04/19/97 SB-AM86-006 4 ft
Metals (mg/kg)									
BARIUM	190	--	--	--	--	--	--	--	--
BERYLLIUM	1	--	--	--	--	--	--	--	--
BORON	36.9	--	--	--	--	--	--	--	--
CADMIUM	1.2	--	--	--	--	--	--	--	--
CHROMIUM	112	--	--	--	--	--	--	--	--
COBALT	27.6	--	--	--	--	--	--	--	--
COPPER	68.1	--	--	--	--	--	--	--	--
LEAD	43.2	10.6	11.1	11.1	8.9	13.9	8.2	9.9	14.9
MANGANESE	943	--	--	--	--	--	--	--	--
NICKEL	113	--	--	--	--	--	--	--	--
SILVER	1	--	--	--	--	--	--	--	--
ZINC	158	--	--	--	--	--	--	--	--
Semivolatile Organic Compounds (mg/kg)									
2-METHYLNAPHTHALENE	0.07	<0.063 U	<0.036 U	<0.055 U	<0.06 U	0.049	<0.056 U	<0.057 U	<0.05 U
ACENAPHTHENE	0.026	*<0.063 U*	*<0.036 U*	*<0.055 U*	*<0.06 U*	*<0.049 U*	*<0.056 U*	*<0.057 U*	*<0.05 U*
ANTHRACENE	0.088	<0.063 U	<0.036 U	<0.055 U	<0.06 U	<0.049 U	<0.056 U	<0.057 U	<0.05 U
BENZO(A)ANTHRACENE	0.412	<0.063 U	<0.036 U	<0.055 U	<0.06 U	<0.049 U	<0.056 U	<0.057 U	<0.05 U
BENZO(A)PYRENE	0.43	<0.063 U	<0.036 U	<0.055 U	<0.06 U	<0.049 U	<0.056 U	<0.057 U	<0.05 U
BENZO(B)FLUORANTHENE	0.371	<0.063 U	<0.036 U	<0.055 U	<0.06 U	<0.049 U	<0.056 U	<0.057 U	<0.05 U
CHRYSENE	0.384	<0.063 U	<0.036 U	<0.055 U	<0.06 U	<0.049 U	<0.056 U	<0.057 U	<0.05 U
FLUORANTHENE	0.6	<0.063 U	<0.036 U	<0.055 U	<0.06 U	<0.049 U	<0.056 U	<0.057 U	<0.05 U
PHENANTHRENE	0.24	<0.063 U	<0.036 U	<0.055 U	<0.06 U	<0.049 U	<0.056 U	<0.057 U	<0.05 U
PYRENE	0.665	<0.063 UJ	<0.036 UJ	<0.055 UJ	<0.06 UJ	<0.049 UJ	<0.056 UJ	<0.057 UJ	<0.05 U

Table B-6
Buildings 82/87/92/94 Area and Building 86 Data
Focused Feasibility Study
Hamilton Army Airfield
Novato, California

Building 86

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth							
		HB-4459 04/19/97 SB-AM86-006 7 ft	HB-4460 04/19/97 SB-AM86-006 11.5 ft	HB-4465 04/21/97 SB-AM86-001 3.5 ft	HB-4467 04/21/97 SB-AM86-001 8.5 ft	HB-4468 04/21/97 SB-AM86-001 12 ft	HB-4469 04/21/97 SB-AMSD-02Q 3.5 ft	HB-4470 04/21/97 SB-AMSD-02Q 6 ft	HB-4471 04/21/97 SB-AMSD-02Q 11.5 ft
Metals (mg/kg)									
BARIUM	190	--	--	--	--	--	--	--	--
BERYLLIUM	1	--	--	--	--	--	--	--	--
BORON	36.9	--	--	--	--	--	--	--	--
CADMIUM	1.2	--	--	--	--	--	--	--	--
CHROMIUM	112	--	--	--	--	--	--	--	--
COBALT	27.6	--	--	--	--	--	--	--	--
COPPER	68.1	--	--	--	--	--	--	--	--
LEAD	43.2	10.5	10.8	9.0	9.5	13.6	8.9	12.2	11.0
MANGANESE	943	--	--	--	--	--	--	--	--
NICKEL	113	--	--	--	--	--	--	--	--
SILVER	1	--	--	--	--	--	--	--	--
ZINC	158	--	--	--	--	--	--	--	--
Semivolatile Organic Compounds (mg/kg)									
2-METHYLNAPHTHALENE	0.07	<0.062 U	<0.061 U	<0.037 U	<0.055 U	**<0.071 U**	<0.037 U	<0.053 U	<0.057 U
ACENAPHTHENE	0.026	*<0.062 U*	*<0.061 U*	*<0.037 U*	*<0.055 U*	*<0.071 U*	*<0.037 U*	*<0.053 U*	*<0.057 U*
ANTHRACENE	0.088	<0.062 U	<0.061 U	<0.037 U	<0.055 U	<0.071 U	<0.037 U	<0.053 U	<0.057 U
BENZO(A)ANTHRACENE	0.412	<0.062 U	<0.061 U	<0.037 U	<0.055 U	<0.071 U	<0.037 U	<0.053 U	<0.057 U
BENZO(A)PYRENE	0.43	<0.062 U	<0.061 U	<0.037 U	<0.055 U	<0.071 U	<0.037 U	<0.053 U	<0.057 U
BENZO(B)FLUORANTHENE	0.371	<0.062 U	<0.061 U	<0.037 U	<0.055 U	<0.071 U	<0.037 U	<0.053 U	<0.057 U
CHRYSENE	0.384	<0.062 U	<0.061 U	<0.037 U	<0.055 U	<0.071 U	<0.037 U	<0.053 U	<0.057 U
FLUORANTHENE	0.6	<0.062 U	<0.061 U	<0.037 U	<0.055 U	<0.071 U	<0.037 U	<0.053 U	<0.057 U
PHENANTHRENE	0.24	<0.062 U	<0.061 U	<0.037 U	<0.055 U	<0.071 U	<0.037 U	<0.053 U	<0.057 U
PYRENE	0.665	<0.062 UJ	<0.061 UJ	<0.037 U	<0.055 UJ	<0.071 UJ	<0.037 UJ	<0.053 UJ	<0.057 U

Table B-6
Buildings 82/87/92/94 Area and Building 86 Data
Focused Feasibility Study
Hamilton Army Airfield
Novato, California

Building 86

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth									
		HB-6376 11/19/98 SB-SD1-01 7 ft	HB-6377 11/19/98 SB-SD1-01 9 ft	HB-6378 11/19/98 SB-SD1-01 9 ft	HB-6379 11/19/98 SB-SD1-01 14v	HB-6381 11/19/98 SB-SD1-03 5.5 ft	HB-6382 11/19/98 SB-SD1-03 7.5 ft	HB-6383 11/19/98 SB-SD1-03 11.5 ft	HB-6384 11/19/98 SB-SD1-04 7.5 ft	HB-6385 11/19/98 SB-SD1-04 11.5 ft	HB-6386 11/19/98 SB-SD1-02 9 ft
Metals (mg/kg)											
BARIUM	190	38.1	--	45.5	41.9	138	42.3	45.7	34.2	44.0	52.5
BERYLLIUM	1	<0.84 U	<0.86 U	--	<0.91 U	0.86	<0.83 U	**1.7**	<0.84 U	<0.90 U	<0.81 U
BORON	36.9	12.5 J-	25.6 J-	--	24.4 J-	7.7 J-	13.1 J-	31.1 J-	15.1 J-	20.4 J-	19.2 J-
CADMIUM	1.2	<0.84 U	--	0.99	<0.91 U	<0.63 U	<0.83 U	1.1	<0.84 U	<0.90 U	<0.81 U
CHROMIUM	112	109 J+	**118 J+**	--	110 J+	66.3 J+	**114 J+**	**114 J+**	**116 J+**	102 J+	**125 J+**
COBALT	27.6	11.0	--	20.6	17.2	12.5	17.3	**69.6**	10.9	14.2	11.7
COPPER	68.1	33.2	--	33.3	31.8	24.0	35.6	40.8	31.5	29.2	33.5
LEAD	43.2	7.3 J+	12.1 J+	--	10.7 J+	**101 J+**	12.6 J+	10.0 J+	7.6 J+	9.6 J+	12.6 J+
MANGANESE	943	370	--	495	569	355	351	580	331	437	393
NICKEL	113	63.7	91.1	--	90.4	57.4	89.2	**285**	56.8	86.5	65.3
SILVER	1	<0.84 U	<0.86 U	--	<0.91 U	<0.63 U	<0.83 U	**<1.1 U**	<0.84 U	<0.90 U	<0.81 U
ZINC	158	74.3	--	94.9	81.8	65.7	87.2	137	77.3	77.6	89.6
Semivolatile Organic Compounds (mg/kg)											
2-METHYLNAPHTHALENE	0.07	<0.055 U	<0.057 U	--	<0.06 U	<0.042 U	<0.055 U	<0.07 U	<0.055 U	<0.06 U	<0.054 U
ACENAPHTHENE	0.026	*<0.055 U*	*<0.057 U*	--	*<0.06 U*	*<0.042 U*	*<0.055 U*	*<0.07 U*	*<0.055 U*	*<0.06 U*	*<0.054 U*
ANTHRACENE	0.088	<0.055 U	<0.057 U	--	<0.06 U	<0.042 U	<0.055 U	<0.07 U	<0.055 U	<0.06 U	<0.054 U
BENZO(A)ANTHRACENE	0.412	<0.055 U	<0.057 U	--	<0.06 U	<0.042 U	<0.055 U	<0.07 U	<0.055 U	<0.06 U	<0.054 U
BENZO(A)PYRENE	0.43	<0.055 U	--	0.077	0.23	<0.042 U	<0.055 U	<0.07 U	<0.055 U	0.13	<0.054 U
BENZO(B)FLUORANTHENE	0.371	<0.055 U	<0.057 U	--	<0.06 U	<0.042 U	<0.055 U	<0.07 U	<0.055 U	<0.06 U	<0.054 U
CHRYSENE	0.384	<0.055 U	<0.057 U	--	<0.06 U	<0.042 U	<0.055 U	<0.07 U	<0.055 U	<0.06 U	<0.054 U
FLUORANTHENE	0.6	<0.055 U	<0.057 U	--	<0.06 U	<0.042 U	<0.055 U	<0.07 U	<0.055 U	<0.06 U	<0.054 U
PHENANTHRENE	0.24	<0.055 U	<0.057 U	--	<0.06 U	<0.042 U	<0.055 U	<0.07 U	<0.055 U	<0.06 U	<0.054 U
PYRENE	0.665	<0.055 U	<0.057 U	--	<0.06 U	<0.042 U	<0.055 U	<0.07 U	<0.055 U	<0.06 U	<0.054 U

Table B-6
Buildings 82/87/92/94 Area and Building 86 Data
Focused Feasibility Study
Hamilton Army Airfield
Novato, California

Building 86

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth									
		HB-6387 11/19/98 SB-SD1-02 13 ft	HB-6391 11/20/98 SB-SD1-05 6.5 ft	HB-6392 11/20/98 SB-SD1-05 8.5 ft	HB-6393 11/20/98 SB-SD1-05 12 ft	HB-6394 11/20/98 SB-SD1-06 7.5 ft	HB-6395 11/20/98 SB-SD1-06 12.5 ft	HB-6397 11/20/98 SB-SD1-07 6 ft	HB-6398 11/20/98 SB-SD1-07 9.5 ft	HB-6399 11/20/98 SB-SD1-07 9.5 ft	HB-6650 11/20/98 SB-SD1-07 12 ft
Metals (mg/kg)											
BARIUM	190	38.0	48.7	46.0	50.5	43.6	45.2	140	--	56.1	42.9
BERYLLIUM	1	<0.88 U	<0.86 U	<0.84 U	<0.91 U	<0.58 U	<0.87 U	0.82	<0.81 U	--	<0.89 U
BORON	36.9	22.7 J-	17.5	18.8	32.5	14.8	27.0	6.9	18.1	--	22.4
CADMIUM	1.2	<0.88 U	<0.86 U	<0.84 U	<0.91 U	<0.58 U	<0.87 U	<0.67 U	<0.81 U	--	<0.89 U
CHROMIUM	112	108 J+	**114**	97.7	106	70.2	106	51.9	--	95.4	78.2
COBALT	27.6	15.3	13.9	14.4	15.6	11.8	15.0	6.7	11.5	--	14.9
COPPER	68.1	28.5	40.1	45.3	29.0	23.7	28.8	10.0	29.0	--	29.8
LEAD	43.2	9.8 J+	11.5	11.0	9.8	5.9	9.5	14.8	9.3	--	10.2
MANGANESE	943	792	397	415	419	312	502	185	--	387	475
NICKEL	113	80.3	73.8	80.1	85.8	67.8	81.9	31.1	--	67.4	85.0
SILVER	1	<0.88 U	<0.86 U	<0.84 U	<0.91 U	<0.58 U	<0.87 U	<0.67 U	<0.81 U	--	<0.89 U
ZINC	158	73.2	94.5	82.0	78.7	60.5	74.7	33.1	--	71.2	76.0
Semivolatile Organic Compounds (mg/kg)											
2-METHYLNAPHTHALENE	0.07	<0.058 U	<0.057 U	<0.056 U	<0.06 U	<0.039 U	<0.057 U	<0.044 U	<0.054 U	--	<0.059 U
ACENAPHTHENE	0.026	*<0.058 U*	*<0.057 U*	*<0.056 U*	*<0.06 U*	*<0.039 U*	*<0.057 U*	*<0.044 U*	*<0.054 U*	--	*<0.059 U*
ANTHRACENE	0.088	<0.058 U	<0.057 U	<0.056 U	<0.06 U	<0.039 U	<0.057 U	<0.044 U	<0.054 U	--	<0.059 U
BENZO(A)ANTHRACENE	0.412	<0.058 U	<0.057 U	<0.056 U	<0.06 U	<0.039 U	<0.057 U	<0.044 U	<0.054 U	--	<0.059 U
BENZO(A)PYRENE	0.43	0.18	<0.057 U	<0.056 U	0.15	<0.039 U	0.15	<0.044 U	0.061	--	0.17
BENZO(B)FLUORANTHENE	0.371	<0.058 U	<0.057 U	<0.056 U	<0.06 U	<0.039 U	<0.057 U	<0.044 U	<0.054 U	--	<0.059 U
CHRYSENE	0.384	<0.058 U	<0.057 U	<0.056 U	<0.06 U	<0.039 U	<0.057 U	<0.044 U	<0.054 U	--	<0.059 U
FLUORANTHENE	0.6	<0.058 U	<0.057 U	<0.056 U	<0.06 U	<0.039 U	<0.057 U	<0.044 U	<0.054 U	--	<0.059 U
PHENANTHRENE	0.24	<0.058 U	<0.057 U	<0.056 U	<0.06 U	<0.039 U	<0.057 U	<0.044 U	<0.054 U	--	<0.059 U
PYRENE	0.665	<0.058 U	<0.057 U	<0.056 U	<0.06 U	<0.039 U	<0.057 U	<0.044 U	<0.054 U	--	<0.059 U

Table B-6
Buildings 82/87/92/94 Area and Building 86 Data
Focused Feasibility Study
Hamilton Army Airfield
Novato, California

Building 86

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth							
		HB-6651 11/20/98 SB-SD1-08 10 ft	HB-6652 11/20/98 SB-SD1-08 12.5 ft	HB-6653 11/20/98 SB-SD1-09 6.5 ft	HB-6654 11/20/98 SB-SD1-09 10.5 ft	HB-6655 11/20/98 SB-SD1-010 6.5 ft	HB-6656 11/20/98 SB-SD1-010 8.5 ft	HB-6657 11/20/98 SB-SD1-010 13 ft	HB-6658 11/20/98 SB-SD1-010 13 ft
Metals (mg/kg)									
BARIUM	190	41.3	41.7	55.2	50.1	46.1	41.4	--	45.5
BERYLLIUM	1	<0.87 U	<0.91 U	<0.81 U	<0.88 U	<0.81 U	<0.85 U	<0.91 U	--
BORON	36.9	21.4	23.4	11.6	22.1	12.6	20.9	--	24.8
CADMIUM	1.2	<0.87 U	<0.91 U	<0.81 U	<0.88 U	<0.81 U	<0.85 U	<0.91 U	--
CHROMIUM	112	80.5	81.3	87.9	75.5	77.0	78.7	--	86.2
COBALT	27.6	15.1	15.0	11.7	14.6	21.8	15.3	15.6	--
COPPER	68.1	27.2	28.9	28.6	27.8	28.7	27.5	30.0	--
LEAD	43.2	11.8	10.4	11.1	9.2	10.6	10.1	--	10.7
MANGANESE	943	426	722	358	556	466	521	700	--
NICKEL	113	77.5	80.1	71.0	80.1	105	81.7	85.3	--
SILVER	1	<0.87 U	<0.91 U	<0.81 U	<0.88 U	<0.81 U	<0.85 U	<0.91 U	--
ZINC	158	73.2	74.5	70.1	73.6	84.3	75.5	78.1	--
Semivolatile Organic Compounds (mg/kg)									
2-METHYLNAPHTHALENE	0.07	--	<0.06 U	<0.054 U	<0.058 U	<0.053 U	<0.056 U	<0.06 U	--
ACENAPHTHENE	0.026	**2.9**	*<0.06 U*	*<0.054 U*	*<0.058 U*	*<0.053 U*	*<0.056 U*	*<0.06 U*	--
ANTHRACENE	0.088	**7**	<0.06 U	<0.054 U	<0.058 U	<0.053 U	<0.056 U	<0.06 U	--
BENZO(A)ANTHRACENE	0.412	**64**	<0.06 U	<0.054 U	<0.058 U	<0.053 U	<0.056 U	<0.06 U	--
BENZO(A)PYRENE	0.43	**52**	<0.06 U	0.065	0.2	0.058	<0.056 U	0.23	--
BENZO(B)FLUORANTHENE	0.371	**85 J**	<0.06 U	<0.054 U	<0.058 U	<0.053 U	<0.056 U	<0.06 U	--
CHRYSENE	0.384	**50**	<0.06 U	<0.054 U	<0.058 U	<0.053 U	<0.056 U	<0.06 U	--
FLUORANTHENE	0.6	**59**	<0.06 U	<0.054 U	<0.058 U	<0.053 U	<0.056 U	<0.06 U	--
PHENANTHRENE	0.24	**22**	<0.06 U	<0.054 U	<0.058 U	<0.053 U	<0.056 U	<0.06 U	--
PYRENE	0.665	**72**	<0.06 U	<0.054 U	<0.058 U	<0.053 U	<0.056 U	<0.06 U	--

Table B-6
Buildings 82/87/92/94 Area and Building 86 Data
Focused Feasibility Study
Hamilton Army Airfield
Novato, California

Building 82/87/92/94

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth										
		AM010SS2 12/18/90 AM-TP-05 1.5 ft	AM011SS2 12/18/90 AM-TP-05 4 ft	AM012SS2 12/18/90 AM-TP-05 5.5 ft	AM013SS2 12/19/90 AM-TP-06 0.5 ft	AM014SS2 12/19/90 AM-TP-06 2 ft	AM015SS2 12/19/90 AM-TP-06 4 ft	AM016SS2 12/19/90 AM-TP-04 0.5 ft	AM017SS2 12/19/90 AM-TP-04 3 ft	AM018SS2 12/19/90 AM-TP-04 4.5 ft	AM019SS2 12/19/90 AM-TP-03 0.5 ft	AM020SS2 12/19/90 AM-TP-03 2.5 ft
Metals (mg/kg)												
BARIUM	190	**256**	49.6	49.6	**275**	45.5	49.6	189	**273**	**199**	**194**	171
BERYLLIUM	1	0.872	0.65	0.427	**1.2**	0.752	0.427	**1.17**	**1.14**	**1.21**	**1.21**	**1.26**
BORON	36.9	--	--	--	--	--	--	--	--	--	--	--
CHROMIUM	112	39.5	86.7	87.8	87.5	80.8	99	23.6	30.2	21.6	17.4	12.8
ZINC	158	35.8	63.1	90.9	41	65.9	92.6	37	39.6	40.6	39.1	37
Polychlorinated Biphenyls (PCBs) (mg/kg)												
AROCLOR-1260		--	--	--	--	--	--	--	--	--	--	--

Table B-6
Buildings 82/87/92/94 Area and Building 86 Data
Focused Feasibility Study
Hamilton Army Airfield
Novato, California

Building 82/87/92/94

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth										
		AM021SS2 12/19/90 AM-TP-03 4.5 ft	AM209SS1 08/07/92 AM-SB-05 2 ft	AM210SS1 08/07/92 AM-SB-05 4 ft	AM211SS1 08/10/92 AM-SB-06 2 ft	AM212SS1 08/10/92 AM-SB-06 4 ft	AM213SS1 08/10/92 AM-SB-07 2 ft	AM214SS1 08/10/92 AM-SB-07 4 ft	AM215SS1 08/10/92 AM-SB-08 2 ft	AM216SS1 08/10/92 AM-SB-08 4 ft	AM217SS1 08/10/92 AM-SB-09 2 ft	AM218SS1 08/10/92 AM-SB-09 4 ft
Metals (mg/kg)												
BARIUM	190	46	**379**	143	**391**	103	186	96.7	**814**	152	**231**	74.1
BERYLLIUM	1	0.748	**3.02**	**1.32**	**1.61**	**1.82**	**1.61**	0.932	0.832	**1.11**	**1.57**	0.427
BORON	36.9	--	18	**52.6**	23.2	21.6	20.3	33.5	10	25.1	13.4	27.7
CHROMIUM	112	81.3	37.7	**135**	24.4	22.5	20.4	**142**	20.3	108	18.8	**127**
ZINC	158	63.6	89.8	111	40.9	54	40.4	88.1	28.5	84	38.6	85.7
Polychlorinated Biphenyls (PCBs) (mg/kg)												
AROCLOR-1260		--	--	--	--	--	--	--	--	--	--	--

Table B-6
Buildings 82/87/92/94 Area and Building 86 Data
Focused Feasibility Study
Hamilton Army Airfield
Novato, California

Building 82/87/92/94

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth									
		AM219SS1 08/10/92 AM-SB-10 2 ft	AM220SS1 08/10/92 AM-SB-10 4 ft	HB-4754 07/09/97 PH-B082-005 10 ft	HB-4799 07/22/97 PH-B94T-005 5 ft	HB-4950 07/22/97 PH-B94T-005 7 ft	HB-4951 07/22/97 PH-B94T-006 4 ft	HB-4952 07/22/97 PH-B94T-006 4.5 ft	HB-4956 07/23/97 PH-B94T-007 4.5 ft	HB-6246 10/28/98 CS-B82E-S01 2.5 ft	HB-6250 10/26/98 CS-B94E-S01 2.5 ft
Metals (mg/kg)											
BARIUM	190	69.1	70.6	--	--	--	--	--	--	--	--
BERYLLIUM	1	**1.32**	**1.14**	--	--	--	--	--	--	--	--
BORON	36.9	9.08	30.1	--	--	--	--	--	--	--	--
CHROMIUM	112	29.3	**129**	--	--	--	--	--	--	--	--
ZINC	158	24.3	109	--	--	--	--	--	--	--	--
Polychlorinated Biphenyls (PCBs) (mg/kg)											
AROCLOR-1260		--	--	<0.022 U	<0.023 U	<0.024 U	<0.022 U	<0.022 U	<0.022 U	<0.022 U	<0.022 U

Table B-6
Buildings 82/87/92/94 Area and Building 86 Data
Focused Feasibility Study
Hamilton Army Airfield
Novato, California

Building 82/87/92/94

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth						
		HB-6251 10/26/98 CS-B94E-S02 2.5 ft	HB-6254 10/27/98 CS-B94E-B01 4.5 ft	HB-6256 10/27/98 CS-B94E-B02 4.5 ft	HB-6257 10/27/98 CS-B94E-S03 2.5 ft	HB-6258 10/27/98 CS-B94E-S04 2.5 ft	HB-6259 10/27/98 CS-B94E-S05 2.5 ft	HB-6260 10/27/98 CS-B94E-S06 2.5 ft
Metals (mg/kg)								
BARIUM	190	--	--	--	--	--	--	--
BERYLLIUM	1	--	--	--	--	--	--	--
BORON	36.9	--	--	--	--	--	--	--
CHROMIUM	112	--	--	--	--	--	--	--
ZINC	158	--	--	--	--	--	--	--
Polychlorinated Biphenyls (PCBs) (mg/kg)								
AROCLOR-1260		<0.023 U	0.028 J-	<0.022 U	<0.022 U	<0.022 U	<0.022 U	<0.022 UJ

Table B-6
Buildings 82/87/92/94 Area and Building 86 Data
Focused Feasibility Study
Hamilton Army Airfield
Novato, California

Building 82/87/92/94

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth		
		HB-6272 10/28/98 CS-B82E-S07 2.5 ft	HB-6273 10/28/98 CS-B82E-S08 2.5 ft	HB-6274 10/28/98 CS-B82E-S09 2.5 ft
Metals (mg/kg)				
BARIUM	190	--	--	--
BERYLLIUM	1	--	--	--
BORON	36.9	--	--	--
CHROMIUM	112	--	--	--
ZINC	158	--	--	--
Polychlorinated Biphenyls (PCBs) (mg/kg)				
AROCLOR-1260		<0.021 U	<0.022 U	<0.022 U

Table B-7
Buildings 84/90 Area Data
Focused Feasibility Study
Hamilton Army Airfield
Novato, California

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth								
		HB-4054 10/25/96 SB-AM90-002 7 ft	HB-4057 10/25/96 SB-AM90-001 3.5 ft	HB-4058 10/25/96 SB-AM90-001 10.5 ft	HB-4102 11/06/96 SS-AM84-001 0.5 ft	HB-4104 11/06/96 SS-AM84-001 0.5 ft	HB-4473 04/22/97 SB-AM90-005 4 ft	HB-4474 04/22/97 SB-AM90-005 7 ft	HB-4475 04/22/97 SB-AM90-005 11 ft	HB-4476 04/22/97 SB-AM90-004 3.5 ft
Metals (mg/kg)										
SELENIUM	0.64	<0.57 U	<0.52 U	<0.60 U	<0.37 U	--	<0.55 UJ	<0.62 UJ	<0.53 UJ	<0.55 UJ
ZINC	158	69.6	63.3	72.1	150	--	65.0	72.4	53.0	54.0
Polychlorinated Biphenyls (PCBs) (mg/kg)										
AROCLOR-1260		--	--	--	--	--	--	--	--	--
Semivolatile Organic Compounds (mg/kg)										
BENZO(A)PYRENE	0.43	<0.054 U	<0.049 U	<0.057 U	--	--	<0.052 U	<0.059 U	<0.05 U	<0.052 U

Table B-7
Buildings 84/90 Area Data
Focused Feasibility Study
Hamilton Army Airfield
Novato, California

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth								
		HB-4477 04/22/97 SB-AM90-004 6 ft	HB-4478 04/22/97 SB-AM90-004 7 ft	HB-4479 04/22/97 SB-AM90-004 10.5 ft	HB-4481 04/22/97 SB-AM90-003 2.5 ft	HB-4482 04/22/97 SB-AM90-003 5.5 ft	HB-4483 04/22/97 SB-AM90-003 11 ft	HB-4518 04/16/97 SS-B84T-001 0.5 ft	HB-4519 04/16/97 SS-B84T-004 0.75 ft	HB-4520 04/16/97 SS-B84T-002 0.75v
Metals (mg/kg)										
SELENIUM	0.64	--	<0.58 UJ	<0.61 UJ	0.52 J-	0.42 J-	<0.60 UJ	--	--	--
ZINC	158	--	67.5	62.7	135	53.5	63.1	--	--	--
Polychlorinated Biphenyls (PCBs) (mg/kg)										
AROCLOR-1260		--	--	--	--	--	--	<0.023 UJ	<0.021 U	<0.022 U
Semivolatile Organic Compounds (mg/kg)										
BENZO(A)PYRENE	0.43	--	<0.055 U	<0.057 U	<0.049 U	.063	<0.057 U	--	--	--

Table B-7
Buildings 84/90 Area Data
Focused Feasibility Study
Hamilton Army Airfield
Novato, California

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth								
		HB-4521 04/16/97 SS-B84T-003 0.75v	HB-4522 04/16/97 SS-PDDT-001 0.5 ft	HB-4523 04/16/97 SS-PDDT-002 0.5 ft	HB-4524 04/16/97 SS-PDDT-003 0.5 ft	HB-4525 04/16/97 SS-PDDT-004 0.5 ft	HB-4551 04/22/97 SS-B90T-002 0.5 ft	HB-4552 04/22/97 SS-B90T-003 0.5 ft	HB-4553 04/22/97 SS-B90T-004 0.5 ft	HB-4644 06/05/97 SS-B90T-001 1.5 ft
Metals (mg/kg)										
SELENIUM	0.64	--	--	--	--	--	--	--	--	--
ZINC	158	--	--	--	--	--	--	--	--	--
Polychlorinated Biphenyls (PCBs) (mg/kg)										
AROCLOR-1260		<0.022 UJ	<0.022 UJ	<0.022 UJ	**0.027 J-**	**0.022 J-**	<0.023 U	<0.021 U	<0.022 U	<0.025 U
Semivolatile Organic Compounds (mg/kg)										
BENZO(A)PYRENE	0.43	--	--	--	--	--	--	--	--	--

Table B-8
Perimeter Drainage Ditch
and
Spoils Pile A Data
Focused Feasibility Study
Hamilton Army Airfield
Novato, California

Perimeter Drainage Ditch

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth								
		HB-4517 04/16/97 SD-PCBI-001 0.5 ft	HB-4566 04/22/97 SD-PCBI-001 1.5 ft	HB-6117 10/12/98 SS-PDUL-B07 1 ft	HB-6118 10/12/98 SS-PDUL-B09 1 ft	HB-6119 10/12/98 SS-PDUL-B11 1 ft	HB-6120 10/12/98 SS-PDUL-B13 1 ft	HB-6121 10/12/98 SS-PDUL-B15 1 ft	HB-6122 10/12/98 SS-PDUL-B17 1 ft	HB-6123 10/12/98 SS-PDUL-B17 1 ft
Metals (mg/kg)										
ARSENIC	16.7	--	--	--	--	--	--	--	--	--
BARIUM	190	--	--	--	--	--	--	--	--	--
BORON	36.9	--	--	--	--	--	--	--	--	--
BERYLLIUM	1	--	--	**1.3**	**1.7**	**2.2**	<0.80 U	<0.82 U	--	**1.5**
CADMIUM	1.2	--	--	<0.80 U	<0.85 U	**2.1**	<0.80 U	<0.82 U	--	<0.80 U
CHROMIUM	112	--	--	--	--	--	--	--	--	--
COBALT	27.6	--	--	--	--	--	--	--	--	--
COPPER	68.1	--	--	34.7	34.6	38.3	33.8	33.5	42.3	--
LEAD	43.2	--	--	--	--	--	--	--	--	--
MANGANESE	943	--	--	--	--	--	--	--	--	--
MERCURY	0.43	--	--	--	--	--	--	--	--	--
NICKEL	113	--	--	102	92.6	**170**	96.1	95.8	98.5	--
SELENIUM	0.64	--	--	<0.64 U	**<0.68 U**	**<0.65 U**	<0.64 U	**<0.66 U**	--	<0.64 U
SILVER	1	--	--	--	--	--	--	--	--	--
VANADIUM	118	--	--	--	--	--	--	--	--	--
ZINC	158	--	--	98.1	99.5	**205**	89.3	91.6	--	95.3
Pesticides (mg/kg)										
4,4'-DDD	--	<.24 UJ	<.18 UJ	.12 J	<.17 UJ	.11 J	<.16 UJ	<.16 U	--	.4 J
4,4'-DDE	--	.01 J-	.02 J-	.011 J	.0097 J-	.023	<.0032 UJ	<.0033 U	--	.032
4,4'-DDT	--	.0068 J-	.078 J-	.01 J+	.013 J-	.02	<.0027 UJ	<.0028 U	.024	--
DIELDRIN	0.00072	--	--	--	**<.014 UJ**	--	**<.013 UJ**	**<.013 U**	--	--
Semivolatile Organic Compounds (mg/kg)										
BENZO(A)PYRENE	0.43	--	--	--	--	--	--	--	--	--
BENZO(B)FLUORANTHENE	0.371	--	--	<.053 U	<.056 U	<.054 U	<.053 U	<.054 U	--	<.053 U
CHRYSENE	0.384	--	--	<.053 U	<.056 U	<.054 U	<.053 U	<.054 U	--	<.053 U
FLUORANTHENE	0.6	--	--	<.053 U	<.056 U	<.054 U	<.053 U	<.054 U	--	<.053 U
INDENO(1,2,3-cd)PYRENE	0.382	--	--	--	--	--	--	--	--	--
PYRENE	0.665	--	--	--	--	--	--	--	--	--

Table B-8
Perimeter Drainage Ditch
and
Spoils Pile A Data
Focused Feasibility Study
Hamilton Army Airfield
Novato, California

Perimeter Drainage Ditch

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth							
		HB-6124 10/12/98 SS-PDUL-B19 1 ft	HB-6125 10/12/98 SS-PDUL-B21 1 ft	HB-6126 10/12/98 SS-PDUL-B23 1 ft	HB-6127 10/12/98 SS-PDUL-B25 1 ft	HB-6128 10/13/98 SS-PDUL-B27 1 ft	HB-6129 10/13/98 SS-PDUL-B29 1 ft	HB-6130 10/13/98 SS-PDUL-B31 1 ft	HB-6131 10/13/98 SS-PDUL-B33 1 ft
Metals (mg/kg)									
ARSENIC	16.7	--	--	--	--	--	--	--	--
BARIUM	190	--	--	--	--	--	--	--	--
BORON	36.9	--	--	--	--	--	--	--	--
BERYLLIUM	1	<0.81 U	<0.82 U	<0.87 U	<0.87 U	**1.4**	<0.85 U	**2.6**	<0.83 U
CADMIUM	1.2	<0.81 U	<0.82 U	<0.87 U	<0.87 U	<0.87 U	<0.85 U	<0.66 U	<0.83 U
CHROMIUM	112	--	--	--	--	--	--	--	--
COBALT	27.6	--	--	--	--	--	--	--	--
COPPER	68.1	36.6	29.8	38.1	31.3	30.9	23.2	26.4	29.8
LEAD	43.2	--	--	--	--	--	--	--	--
MANGANESE	943	--	--	--	--	--	--	--	--
MERCURY	0.43	--	--	--	--	--	--	--	--
NICKEL	113	106	87.5	**115**	87.6	91.6	52.6	96.8	65.3
SELENIUM	0.64	**<0.65 U**	**<0.65 U**	**<0.69 U**	**<0.70 U**	**<0.69 U**	**<0.68 U**	**0.8**	**<0.66 U**
SILVER	1	--	--	--	--	--	--	--	--
VANADIUM	118	--	--	--	--	--	--	--	--
ZINC	158	102	90.6	101	84.1	96.6	66.9	112	70.8
Pesticides (mg/kg)									
4,4'-DDD	--	.53 J	<.16 U	<.87 U	<.17 U	<.17 UJ	.035 J-	.16 J+	<.17 UJ
4,4'-DDE	--	<.032 U	<.0033 U	<.017 U	<.0035 U	<.0035 UJ	.0036 J-	.031	<.0033 UJ
4,4'-DDT	--	<.028 U	<.0028 U	<.015 U	<.003 U	<.003 UJ	.0063 J-	.027 J-	<.0028 UJ
DIELDRIN	0.00072	--	**<.013 U**	--	**<.014 U**	**<.014 UJ**	**<.014 UJ**	--	**<.013 UJ**
Semivolatile Organic Compounds (mg/kg)									
BENZO(A)PYRENE	0.43	--	--	--	--	--	--	--	--
BENZO(B)FLUORANTHENE	0.371	<.054 U	<.054 U	<.057 U	<.057 U	<.057 UJ	<.056 U	<.044 UJ	<.055 UJ
CHRYSENE	0.384	<.054 U	<.054 U	<.057 U	<.057 U	<.057 U	<.056 U	<.044 U	<.055 UJ
FLUORANTHENE	0.6	<.054 U	<.054 U	<.057 U	<.057 U	<.057 U	<.056 U	<.044 U	<.055 UJ
INDENO(1,2,3-cd)PYRENE	0.382	--	--	--	--	--	--	--	--
PYRENE	0.665	--	--	--	--	--	--	--	--

Table B-8
Perimeter Drainage Ditch
and
Spoils Pile A Data
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Hamilton Army Airfield
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Perimeter Drainage Ditch

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth							
		HB-6132 10/13/98 SS-PDUL-B35 1 ft	HB-6133 10/13/98 SS-PDUL-B37 1 ft	HB-6134 10/13/98 SS-PDUL-B37 1 ft	HB-6135 10/13/98 SS-PDUL-B39 1 ft	HB-6137 10/13/98 SS-PDUL-B03 1 ft	HB-6138 10/13/98 SS-PDUL-B01 1 ft	HB-6139 10/13/98 SS-PDUL-B05 1 ft	HB-6154 10/19/98 SS-PDUL-S01W 1 ft
Metals (mg/kg)									
ARSENIC	16.7	--	--	--	--	--	--	--	--
BARIUM	190	--	--	--	--	--	--	--	--
BORON	36.9	--	--	--	--	--	--	--	--
BERYLLIUM	1	**3.5**	--	**1.2**	0.68	<0.82 U	**1.9**	**1.9**	<0.78 U
CADMIUM	1.2	<1.1 U	<0.84 U	--	<0.59 U	1.0	**1.5**	1.1	<0.78 U
CHROMIUM	112	--	--	--	--	--	--	--	--
COBALT	27.6	--	--	--	--	--	--	--	--
COPPER	68.1	**75.3**	--	43.0	7.4	17.0	40.8	36.2	38.3
LEAD	43.2	--	--	--	--	--	--	--	--
MANGANESE	943	--	--	--	--	--	--	--	--
MERCURY	0.43	--	--	--	--	--	--	--	--
NICKEL	113	**165**	--	74.3	29.8	59.6	81.4	**120**	74.1
SELENIUM	0.64	**1.2**	--	0.62	<0.47 U	**<0.66 U**	**<0.84 U**	<0.60 U	<0.55 U
SILVER	1	--	--	--	--	--	--	--	--
VANADIUM	118	--	--	--	--	--	--	--	--
ZINC	158	129	50.1	--	68.9	63.3	109	116	92.2
Pesticides (mg/kg)									
4,4'-DDD	--	.45 J+	.7 J+	--	.17 J+	<.16 U	.36 J+	<.15 UJ	<.16 U
4,4'-DDE	--	.12	<.17 U	--	.038	<.0033 U	.048	.0088 J-	<.0031 U
4,4'-DDT	--	.049 J-	.46 J-	--	.17 J-	<.0028 UJ	<.036 UJ	<.0025 UJ	.0058 J-
DIELDRIN	0.00072	--	--	--	--	**<.013 U**	--	**<.012 UJ**	**<.012 U**
Semivolatile Organic Compounds (mg/kg)									
BENZO(A)PYRENE	0.43	--	--	--	--	--	--	--	--
BENZO(B)FLUORANTHENE	0.371	<.072 UJ	.11 J-	--	<.039 UJ	<.054 UJ	.25 J-	<.049 UJ	<.051 U
CHRYSENE	0.384	<.072 U	.08	--	<.039 U	<.054 U	.23	<.049 U	<.051 U
FLUORANTHENE	0.6	<.072 U	--	<.055 U	<.039 U	<.054 U	.15	<.049 U	<.051 U
INDENO(1,2,3-cd)PYRENE	0.382	--	--	--	--	--	--	--	--
PYRENE	0.665	--	--	--	--	--	--	--	--

Table B-8
Perimeter Drainage Ditch
and
Spoils Pile A Data
Focused Feasibility Study
Hamilton Army Airfield
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Perimeter Drainage Ditch

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth						
		HB-6155 10/19/98 SS-PDUL-S03E 1 ft	HB-6157 10/19/98 SS-PDUL-S05W 1 ft	HB-6158 10/19/98 SS-PDUL-S07E 1 ft	HB-6159 10/19/98 SS-PDUL-S09W 1 ft	HB-6160 10/19/98 SS-PDUL-S11E 1 ft	HB-6161 10/19/98 SS-PDUL-S13W 1 ft	HB-6162 10/19/98 SS-PDUL-S15E 1 ft
Metals (mg/kg)								
ARSENIC	16.7	--	--	--	--	--	--	--
BARIUM	190	--	--	--	--	--	--	--
BORON	36.9	--	--	--	--	--	--	--
BERYLLIUM	1	<0.73 U	0.88	0.80	<0.83 U	**1.5**	**1.3**	**1.4**
CADMIUM	1.2	<0.73 U	<0.84 U	<0.74 U	<0.83 U	<0.75 U	<0.85 U	<0.81 U
CHROMIUM	112	--	--	--	--	--	--	--
COBALT	27.6	--	--	--	--	--	--	--
COPPER	68.1	36.4	34.5	41.3	37.6	36.9	37.4	34.6
LEAD	43.2	--	--	--	--	--	--	--
MANGANESE	943	--	--	--	--	--	--	--
MERCURY	0.43	--	--	--	--	--	--	--
NICKEL	113	74.8	83.3	98.5	85.1	**127**	110	103
SELENIUM	0.64	<0.51 U	<0.59 U	<0.52 U	<0.58 U	<0.52 U	<0.60 U	<0.57 U
SILVER	1	--	--	--	--	--	--	--
VANADIUM	118	--	--	--	--	--	--	--
ZINC	158	87.8	91.3	84.7	97.9	111	102	97.0
Pesticides (mg/kg)								
4,4'-DDD	--	<.15 U	<.17 U	<.15 U	<.17 UJ	<.15 UJ	<.17 U	<.16 U
4,4'-DDE	--	<.0029 U	<.0033 U	<.003 U	<.0033 UJ	.0069 J-	<.0034 U	<.0032 U
4,4'-DDT	--	.0038 J-	.0073 J-	<.0025 UJ	<.0028 UJ	.0053 J-	<.0029 U	.0042
DIELDRIN	0.00072	**<.012 U**	**<.013 U**	**<.012 U**	**<.013 UJ**	**<.012 UJ**	**<.014 U**	**<.013 U**
Semivolatile Organic Compounds (mg/kg)								
BENZO(A)PYRENE	0.43	--	--	--	--	--	--	--
BENZO(B)FLUORANTHENE	0.371	<.048 UJ	<.055 UJ	<.049 UJ	<.055 UJ	<.049 UJ	<.056 UJ	<.054 UJ
CHRYSENE	0.384	<.048 U	<.055 U	<.049 U	<.055 U	<.049 U	<.056 U	<.054 U
FLUORANTHENE	0.6	<.048 U	<.055 U	<.049 U	<.055 U	<.049 U	<.056 U	<.054 U
INDENO(1,2,3-cd)PYRENE	0.382	--	--	--	--	--	--	--
PYRENE	0.665	--	--	--	--	--	--	--

Table B-8
Perimeter Drainage Ditch
and
Spoils Pile A Data
Focused Feasibility Study
Hamilton Army Airfield
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Perimeter Drainage Ditch

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth						
		HB-6163 10/19/98 SS-PDUL-S17W 1 ft	HB-6164 10/20/98 SS-PDUL-S19E 1 ft	HB-6165 10/20/98 SS-PDUL-S21W 1 ft	HB-6166 10/20/98 SS-PDUL-S21W 1 ft	HB-6167 10/20/98 SS-PDUL-S23E 1 ft	HB-6168 10/20/98 SS-PDUL-S25W 1 ft	HB-6170 10/20/98 SS-PDUL-S27E 1 ft
Metals (mg/kg)								
ARSENIC	16.7	--	--	--	--	--	--	--
BARIUM	190	--	--	--	--	--	--	--
BORON	36.9	--	--	--	--	--	--	--
BERYLLIUM	1	**1.1**	**1.3**	**1.3**	--	0.89	**2.2**	<0.75 U
CADMIUM	1.2	<0.81 U	<0.75 U	<0.74 U	--	<0.81 U	<0.77 U	<0.75 U
CHROMIUM	112	--	--	--	--	--	--	--
COBALT	27.6	--	--	--	--	--	--	--
COPPER	68.1	38.8	31.7	35.0	--	37.9	44.0	35.4
LEAD	43.2	--	--	--	--	--	--	--
MANGANESE	943	--	--	--	--	--	--	--
MERCURY	0.43	--	--	--	--	--	--	--
NICKEL	113	89.3	85.3	--	96.7	77.0	94.4	67.5
SELENIUM	0.64	<0.56 U	<0.60 U	<0.59 U	--	<0.64 U	<0.61 U	<0.60 U
SILVER	1	--	--	--	--	--	--	--
VANADIUM	118	--	--	--	--	--	--	--
ZINC	158	92.1	93.5	99.1	--	82.6	106	75.6
Pesticides (mg/kg)								
4,4'-DDD	--	<.16 UJ	<3 U	<.15 U	--	<.16 U	<.77 U	<.15 U
4,4'-DDE	--	.0055 J-	<.06 U	--	.021	<.0032 U	.038	<.003 U
4,4'-DDT	--	.0066 J-	.25	--	.08	.027	.04	.017
DIELDRIN	0.00072	**<.013 UJ**	--	**<.012 U**	--	**<.013 U**	--	**<.012 U**
Semivolatile Organic Compounds (mg/kg)								
BENZO(A)PYRENE	0.43	--	--	--	--	--	--	--
BENZO(B)FLUORANTHENE	0.371	<.053 UJ	<.05 U	<.049 U	--	<.053 U	<.051 U	<.05 U
CHRYSENE	0.384	<.053 U	<.05 U	<.049 U	--	<.053 U	<.051 U	<.05 U
FLUORANTHENE	0.6	<.053 U	<.05 U	<.049 U	--	<.053 U	<.051 U	<.05 U
INDENO(1,2,3-cd)PYRENE	0.382	--	--	--	--	--	--	--
PYRENE	0.665	--	--	--	--	--	--	--

Table B-8
Perimeter Drainage Ditch
and
Spoils Pile A Data
Focused Feasibility Study
Hamilton Army Airfield
Novato, California

Perimeter Drainage Ditch

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth						
		HB-6171 10/20/98 SS-PDUL-S29W 1 ft	HB-6172 10/20/98 SS-PDUL-S31E 1 ft	HB-6173 10/20/98 SS-PDUL-S31E 1 ft	HB-6174 10/20/98 SS-PDUL-S33W 1 ft	HB-6175 10/20/98 SS-PDUL-S33W 1 ft	HB-6176 10/20/98 SS-PDUL-S35E 1 ft	HB-6177 10/20/98 SS-PDUL-S37W 1 ft
Metals (mg/kg)								
ARSENIC	16.7	--	--	--	--	--	--	--
BARIUM	190	--	--	--	--	--	--	--
BORON	36.9	--	--	--	--	--	--	--
BERYLLIUM	1	0.92	**1.5**	--	--	**1.3**	0.87	1.0
CADMIUM	1.2	<0.75 U	<0.53 U	--	<0.72 U	--	<0.76 U	<0.77 U
CHROMIUM	112	--	--	--	--	--	--	--
COBALT	27.6	--	--	--	--	--	--	--
COPPER	68.1	39.3	29.9	--	37.0	--	35.7	39.0
LEAD	43.2	--	--	--	--	--	--	--
MANGANESE	943	--	--	--	--	--	--	--
MERCURY	0.43	--	--	--	--	--	--	--
NICKEL	113	83.8	93.2	--	74.2	--	81.1	78.6
SELENIUM	0.64	<0.60 U	<0.42 U	--	<0.58 U	--	<0.61 U	<0.62 U
SILVER	1	--	--	--	--	--	--	--
VANADIUM	118	--	--	--	--	--	--	--
ZINC	158	95.9	116	--	92.6	--	94.4	109
Pesticides (mg/kg)								
4,4'-DDD	--	<.15 U	--	<1.1 U	--	<1.5 U	<.76 U	<3.1 U
4,4'-DDE	--	.01	.055	--	.089	--	.017	.21
4,4'-DDT	--	.086	.047	--	.4	--	.23	1.9
DIELDRIN	0.00072	**<.012 U**	--	--	--	--	--	--
Semivolatile Organic Compounds (mg/kg)								
BENZO(A)PYRENE	0.43	--	--	--	--	--	--	--
BENZO(B)FLUORANTHENE	0.371	<.05 U	<.035 U	--	<.048 U	--	<.05 U	<.051 U
CHRYSENE	0.384	<.05 U	<.035 U	--	<.048 U	--	<.05 U	<.051 U
FLUORANTHENE	0.6	<.05 U	<.035 U	--	<.048 U	--	<.05 U	<.051 U
INDENO(1,2,3-cd)PYRENE	0.382	--	--	--	--	--	--	--
PYRENE	0.665	--	--	--	--	--	--	--

Table B-8
Perimeter Drainage Ditch
and
Spoils Pile A Data
Focused Feasibility Study
Hamilton Army Airfield
Novato, California

Perimeter Drainage Ditch

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth					
		HB-6178 10/20/98 SS-PDUL-S39E 1 ft	PDD-SD01-15 04/11/95 PDD-SD01 1.5 ft	PDD-SD02-15 04/11/95 PDD-SD02 1.5 ft	PDD-SD03-5 04/11/95 PDD-SD03 0.5 ft	28 08/04/1999 HB-99-SD-28 0 ft	29 08/04/1999 HB-99-SD-29 0 ft
Metals (mg/kg)							
ARSENIC	16.7	--	--	--	--	9.4	6.1
BARIUM	190	--	--	--	--	103	103
BORON	36.9	--	--	--	--	20.1 J-	12.3 J-
BERYLLIUM	1	**1.1**	<.28 U	.83	**1.5**	**1.7**	**1.2**
CADMIUM	1.2	<0.68 U	<.69 U	<.84 U	**1.5**	1	0.71
CHROMIUM	112	--	--	--	--	69.5 J-	59.6 J-
COBALT	27.6	--	--	--	--	53.3	38.4
COPPER	68.1	33.6	5	34.7	28.1	38.3	29
LEAD	43.2	--	--	--	--	49.6	26.6
MANGANESE	943	--	--	--	--	2090	1,000.0
MERCURY	0.43	--	--	--	--	0.069 J	0.17 J
NICKEL	113	85.1	24.8	107	111	179 J-	121 J-
SELENIUM	0.64	<0.54 U	**<0.69 U**	**<0.84 U**	--	<0.42	<0.4
SILVER	1	--	--	--	--	0.19	0.16
VANADIUM	118	--	--	--	--	71.6	69.6
ZINC	158	108	55.6	92.1	107	133 J	108
Pesticides (mg/kg)							
4,4'-DDD	--	--	3.8	1.1	.069	0.180	0.073
4,4'-DDE	--	1.1	.06	.0074	.25	0.260	0.200
4,4'-DDT	--	8.4	.64	.024	.49	0.260	0.080
DIELDRIN	0.00072	--	--	**0.019**	--	<0.029	<0.028
Semivolatile Organic Compounds (mg/kg)							
BENZO(A)PYRENE	0.43	--	--	--	--	<.058	0.038 J
BENZO(B)FLUORANTHENE	0.371	<.045 U	<.14 U	<.17 U	--	<.058	0.052 J
CHRYSENE	0.384	<.045 U	<.14 U	<.17 U	--	<.058	0.044 J
FLUORANTHENE	0.6	<.045 U	<.14 U	--	--	<.058	0.043 J
INDENO(1,2,3-cd)PYRENE	0.382	--	--	--	--	<.058	0.029 J
PYRENE	0.665	--	--	--	--	<.058	0.051 J

Table B-8
Perimeter Drainage Ditch
and
Spoils Pile A Data
Focused Feasibility Study
Hamilton Army Airfield
Novato, California
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Spoils Pile A

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth HB-6200 10/19/98 SS-PDSP-A01 1ft
Metals (mg/kg)		
BERYLLIUM	1	**1.9**
ZINC	158	**164**
Pesticides (mg/kg)		
4,4'-DDE		.033
4,4'-DDT		.25

Table B-9
Perimeter Drainage Ditch Spoils Piles (North Section) Data
Focused Feasibility Study
Hamilton Army Airfield
Novato, California

Spoils Pile B

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth								
		HB-3414 10/04/99 PDD-SP-B1 0.5 ft	HB-3415 10/04/99 PDD-SP-B2 0.5 ft	HB-3416 10/04/99 PDD-SP-B3 0.5 ft	HB-3417 10/04/99 PDD-SP-B4 0 ft	HB-6141 10/14/98 SS-PDSP-B01 1 ft	HB-6142 10/14/98 SS-PDSP-B02 1 ft	HB-6143 10/14/98 SS-PDSP-B03 1 ft	HB-6144 10/14/98 SS-PDSP-B04 1 ft	HB-6145 10/14/98 SS-PDSP-B05 1 ft
Metals (mg/kg)										
ANTIMONY	0.37	--	--	--	--	--	**1.2 J-**	**1.3 R**	**1.2 R**	**1.2 R**
CADMIUM	1.2	--	--	--	--	**2**	**5.2**	**2.1**	**1.3**	<0.58 U
COPPER	68.1	--	--	--	--	49.1	**185**	**70**	26.7	28.7
MERCURY	0.43	0.17 J-	0.16 J-	0.1 J-	0.1 J-	**1.7**	--	--	--	--
SILVER	1	**1.03 J**	<0.86 U	<0.83 U	**1.07 J**	<0.63 U	--	--	--	--
ZINC	158	--	--	--	--	**368**	**324**	**252**	**210**	103
Pesticides (mg/kg)										
4,4'-DDD		--	.002 J	--	--	--	--	--	--	--
4,4'-DDE		--	.001 J	--	.0009 J	--	--	--	--	--
4,4'-DDT		.005 J	.013 J	.002 J	.003 J	<.0021 UJ	--	--	--	--
ENDRIN ALDEHYDE	0.0215	--	.002 J	--	--	<.0038 U	--	--	--	--
Semivolatile Organic Compounds (mg/kg)										
CHRYSENE	0.384	--	--	--	--	--	.041	<.042 U	<.039 U	<.039 U

Table B-9
Perimeter Drainage Ditch Spoils Piles (North Section) Data
Focused Feasibility Study
Hamilton Army Airfield
Novato, California
(Page 10 of 21)

Spoils Pile C

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth HB-3421 10/05/99 PDD-SP-C1 0.5 ft
Pesticides (mg/kg)		
4,4'-DDD		.001 J
4,4'-DDE		.011 J
4,4'-DDT		.027

Table B-9
Perimeter Drainage Ditch Spoils Piles (North Section) Data
Focused Feasibility Study
Hamilton Army Airfield
Novato, California

Spoils Pile D

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth HB-6208 10/20/98 SS-PDSP-D01 1 ft
Pesticides (mg/kg)		
4,4'-DDE		.049 J+
4,4'-DDT		.08 J+

Table B-9
Perimeter Drainage Ditch Spoils Piles (North Section) Data
Focused Feasibility Study
Hamilton Army Airfield
Novato, California

Spoils Pile E

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth			
		HB-3422 10/05/99 PDD-SP-E1 0.5 ft	HB-3423 10/05/99 PDD-SP-E2 0.5 ft	HB-6147 10/14/98 SS-PDSP-E01 1 ft	HB-6149 10/14/98 SS-PDSP-E03 1 ft
Pesticides (mg/kg)					
4,4'-DDE		.0007 J	.001 J	.0059 J-	.0081
4,4'-DDT		.001 J	.003 J	.011 J-	.021

Table B-9
Perimeter Drainage Ditch Spoils Piles (North Section) Data
Focused Feasibility Study
Hamilton Army Airfield
Novato, California

Spoils Pile F

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth		
		PDD-DSPL11 04/17/95 PDD-DSPL11 0.5 ft	PDD-DSPL12 04/17/95 PDD-DSPL12 0.5 ft	PDD-DSPL13 04/17/95 PDD-DSPL13 0.5 ft
Metals (mg/kg)				
ARSENIC	16.7	14	**29.6**	3.7
BERYLLIUM	1	**1.2**	**4.8**	.59
CADMIUM	1.2	<.67 U	**2.3**	<.52 U
COBALT	27.6	15.8	**61.1**	6.5
LEAD	43.2	**102**	**109**	16.5
MANGANESE	943	775	**1870**	564
NICKEL	113	82.9	**198**	23.9
ZINC	158	98.7	**224**	43.9
Pesticides (mg/kg)				
4,4'-DDD		.081	.18	.0091
4,4'-DDE		.16	.055	<.0031 U
4,4'-DDT		.4	.15	.012
Semivolatile Organic Compounds (mg/kg)				
ACENAPHTHENE	0.026	**<0.44 U**	**2.5**	**<1.7 U**
ANTHRACENE	0.088	**<0.44 U**	**0.85**	
BENZO(A)ANTHRACENE	0.412	**0.54**	**3**	**<1.7 U**
BENZO(A)PYRENE	0.43	**0.6**	**3**	**<1.7 U**
BENZO(B)FLUORANTHENE	0.371	**0.95**	**6.5**	**<1.7 U**
BENZO(G,H,I)PERYLENE	0.31	**0.46**	**1.2**	**<1.7 U**
CHRYSENE	0.384	**0.66**	**3.1**	**<1.7 U**
DIBENZOFURAN	0.11	**<0.44 U**	**1.2**	**<1.7 U**
FLUORANTHENE	0.6	**1.3**	**5.7**	**<1.7 U**
FLUORENE	0.0253	**<0.44 U**	**1.8**	**<1.7 U**
INDENO(1,2,3-CD)PYRENE	0.382	**0.51**	**1.4**	**<1.7 U**
PHENANTHRENE	0.24	**1.1**	**6.4**	**<1.7 U**
PYRENE	0.665	**1.2**	**5.7**	**<1.7 U**

Table B-10
Perimeter Drainage Ditch Spoils Piles (South Section) Data
Focused Feasibility Study
Hamilton Army Airfield
Novato, California

Spoils Pile G

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth HB-6201 10/19/98 SS-PDSP-G01 1 ft
Pesticides (mg/kg)		
4,4'-DDE		.061
4,4'-DDT		.15

Table B-10
Perimeter Drainage Ditch Spoils Piles (South Section) Data
Focused Feasibility Study
Hamilton Army Airfield
Novato, California

Spoils Pile H

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth			
		HB-3424 10/05/99 PDD-SP-H1 0.5 ft	HB-3426 10/05/99 PDD-SP-H2 0.5 ft	HB-6202 10/19/98 SS-PDSP-H01 1 ft	HB-6203 10/19/98 SS-PDSP-H02 1 ft
Pesticides (mg/kg)					
4,4'-DDE		.001 J	.0009 J	--	--
4,4'-DDT		.004 J	.003 J	--	--
Semivolatile Organic Compounds (mg/kg)					
BENZO(A)PYRENE	0.43	--	--	<.038 U	.1

Table B-10
Perimeter Drainage Ditch Spoils Piles (South Section) Data
Focused Feasibility Study
Hamilton Army Airfield
Novato, California

Spoils Pile I

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth		
		HB-3427 10/05/99 PDD-SP-I1 0.5 ft	HB-6153 10/19/98 SS-PDSP-I02 1 ft	HB-6179 10/19/98 SS-PDSP-I01 1 ft
Metals (mg/kg)				
BERYLLIUM	1	--	0.71	**1.1**
Pesticides (mg/kg)				
4,4'-DDE		<.013 U	--	.014
4,4'-DDT		<.013 U	--	.039 J-
Semivolatile Organic Compounds (mg/kg)				
BENZO(A)PYRENE	0.43	--	.084	--

Table B-10
Perimeter Drainage Ditch Spoils Piles (South Section) Data
Focused Feasibility Study
Hamilton Army Airfield
Novato, California

Spoils Pile J

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth	
		HB-3429 10/05/99 PDD-SP-J1 0.5 ft	HB-3430 10/05/99 PDD-SP-J1 0.5 ft
Pesticides (mg/kg)			
4,4'-DDD		--	.005 J
4,4'-DDE		--	.026
4,4'-DDT		--	.086 J+
Semivolatile Organic Compounds (mg/kg)			
BENZO(A)PYRENE	0.43	0.07 J	--

Table B-10
Perimeter Drainage Ditch Spoils Piles (South Section) Data
Focused Feasibility Study
Hamilton Army Airfield
Novato, California

Spoils Pile K

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth HB-6206 10/20/98 SS-PDSP-K01 1 ft
Metals (mg/kg)		
LEAD	43.2	35.2
ZINC	158	97.7
Pesticides (mg/kg)		
4,4'-DDE		.028
4,4'-DDT		.15

Table B-10
Perimeter Drainage Ditch Spoils Piles (South Section) Data
Focused Feasibility Study
Hamilton Army Airfield
Novato, California

Spoils Pile L

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth HB-6207 10/20/98 SS-PDSP-L01 1 ft
Metals (mg/kg)		
BARIUM	190	**222**
COBALT	27.6	**56.6**
LEAD	43.2	**77.4**
ZINC	158	**164**
Pesticides (mg/kg)		
4,4'-DDD		<.13 U
4,4'-DDE		.0051
4,4'-DDT		.02

Table B-10
Perimeter Drainage Ditch Spoils Piles (South Section) Data
Focused Feasibility Study
Hamilton Army Airfield
Novato, California

Spoils Pile M

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth	
		HB-6151 10/14/98 SS-PDSP-M01 1 ft	HB-6152 10/14/98 SS-PDSP-M02 1 ft
Pesticides (mg/kg)			
4,4'-DDE		.0049	.012 J-
4,4'-DDT		.017	.026 J-

Table B-10
Perimeter Drainage Ditch Spoils Piles (South Section) Data
Focused Feasibility Study
Hamilton Army Airfield
Novato, California

Spoils Pile N

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth		
		HB-6020 09/21/98 SS-PDSP-129 0.5 ft	HB-6061 09/29/98 SS-PDSP-130 0.5 ft	HB-6062 09/29/98 SS-PDSP-132 0.5 ft
Metals (mg/kg)				
LEAD	43.2	16.5	28.4	**57.5**
Pesticides (mg/kg)				
4,4'-DDE		.0057	.011	.011
4,4'-DDT		.03	.076	.077

Table B-11
East Levee Generator Pad Data
Focused Feasibility Study
Hamilton Army Airfield
Novato, California

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth							
		HB-6180 10/21/98 CS-ELGE-S01 2.5 ft	HB-6181 10/21/98 CS-ELGE-S02 2.5 ft	HB-6183 10/21/98 CS-ELGE-S03 2.5 ft	HB-6184 10/21/98 CS-ELGE-S04 2.5 ft	HB-6185 10/21/98 CS-ELGE-S05 2.5 ft	HB-6186 10/21/98 CS-ELGE-S06 2.5 ft	HB-6187 10/21/98 CS-ELGE-S07 2.5 ft	HB-6188 10/21/98 CS-ELGE-S08 2.5 ft
Metals (mg/kg)									
COPPER	68.1	47.2	49.7	42.9	50.4	45.9	43.7	44.8	44.1

Table B-11
East Levee Generator Pad Data
Focused Feasibility Study
Hamilton Army Airfield
Novato, California

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth						
		HB-6189 10/22/98 CS-ELGE-S09 2.5 ft	HB-6191 10/22/98 CS-ELGE-B10 5.5 ft	HB-6192 10/22/98 CS-ELGE-B11 5.5 ft	HB-6193 10/22/98 CS-ELGE-B12 5.5 ft	HB-6195 10/22/98 CS-ELGE-B13 5.5 ft	HB-6196 10/22/98 CS-ELGE-B14 5.5 ft	HB-6198 10/22/98 CS-ELGE-B15 5.5 ft
Metals (mg/kg)								
COPPER	68.1	45.6	51.2	49.8	45.4	35.6	33.9	34.9

Table B-12
Onshore Fuel Line - 54-Inch Drain Line Segment Data
Focused Feasibility Study
Hamilton Army Airfield
Novato, California

Parameter	Comparison Value (mg/kg)	Sample Number/ Date/Location/Depth									
		HB-0067 09/25/95 POTHOLE 54SD-7 8 ft	HB-0069 09/25/95 POTHOLE 54SD-8 8 ft	HB-0071 09/25/95 POTHOLE 54SD-8 10.5 ft	HB-0110 09/26/95 JOINT . 7 7.5 ft	HB-0111 09/26/95 JOINT . 7 7.5 ft	HB-0112 09/26/95 JOINT . 6 7.5 ft	HB-0123 09/27/95 JOINT . 7 8 ft	HB-0125 09/27/95 JOINT . 6 7.5 ft	HB-0126 09/27/95 JOINT . 6 8 ft	HB-0139 09/29/95 POTHOLE 54SD-9 7 ft
Metals (mg/kg)											
LEAD	43.2	19.4	--	8.3	28.9 J	7.8 J	13.8 J	8.9	**139**	5.5	6.2
Total Petroleum Hydrocarbons (mg/kg)											
GASOLINE RANGE	12	<1.7 U	<1.7 U	--	<1.2 U	<1.7 U	<1.8 U	<1 U	<1 U	<1 U	<1 U

Table B-12
Onshore Fuel Line - 54-Inch Drain Line Segment Data
Focused Feasibility Study
Hamilton Army Airfield
Novato, California

Parameter	Comparison Value (mg/kg)	Sample Number/ Date/Location/Depth					
		HB-0140 09/29/95 POTHOLE 54SD-9 9 ft	HB-0144 09/29/95 POTHOLE 54SD-10 6.5 ft	HB-0146 09/29/95 POTHOLE 54SD-10 7.5 ft	HB-0147 09/29/95 POTHOLE 54SD-10 10 ft	HB-0149 09/29/95 POTHOLE 54SD-11 8 ft	HB-0150 09/29/95 POTHOLE 54SD-11 8.5 ft
Metals (mg/kg)							
LEAD	43.2	6.5	7.5	5.5	5.0	6.9	6.3
Total Petroleum Hydrocarbons (mg/kg)							
GASOLINE RANGE	12	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U

Table B-12
Onshore Fuel Line - 54-Inch Drain Line Segment Data
Focused Feasibility Study
Hamilton Army Airfield
Novato, California

Parameter	Comparison Value (mg/kg)	Sample Number/ Date/Location/Depth					
		HB-0160 10/02/95 POTHOLE 54SD-12 10 ft	HB-0161 10/02/95 POTHOLE 54SD-12 10.5 ft	HB-0163 10/02/95 POTHOLE 54SD-13 9.5 ft	HB-0164 10/02/95 POTHOLE 54SD-13 11 ft	HB-0166 10/02/95 POTHOLE 54SD-14 11.5 ft	HB-0168 10/02/95 POTHOLE 54SD-14 13 ft
Metals (mg/kg)							
LEAD	43.2	8.0	11.2	**81**	31.	10.4	9.5
Total Petroleum Hydrocarbons (mg/kg)							
GASOLINE RANGE	12	**200**	<1.8 U	**160**	<1.4 U	**220**	<1.7 U

Table B-12
Onshore Fuel Line - 54-Inch Drain Line Segment Data
Focused Feasibility Study
Hamilton Army Airfield
Novato, California

Parameter	Comparison Value (mg/kg)	Sample Number/ Date/Location/Depth					
		HB-0169 10/02/95 POTHOLE 54SD-15 7 ft	HB-0401 10/02/95 POTHOLE 54SD-15 10 ft	HB-0403 10/02/95 POTHOLE 54SD-16 9.5 ft	HB-0404 10/02/95 POTHOLE 54SD-16 11 ft	HB-0411 10/03/95 POTHOLE 54SD-17 3 ft	HB-0412 10/03/95 POTHOLE 54SD-17 3 ft
Metals (mg/kg)							
LEAD	43.2	**59**	11.4	7.9	8.3	15.6	--
Total Petroleum Hydrocarbons (mg/kg)							
GASOLINE RANGE	12	**220**	<1.8 U	<1.3 U	<1.8 U	<1.4 U	**94**

Table B-12
Onshore Fuel Line - 54-Inch Drain Line Segment Data
Focused Feasibility Study
Hamilton Army Airfield
Novato, California

Parameter	Comparison Value (mg/kg)	Sample Number/ Date/Location/Depth					
		HB-0478 10/11/95 POTHOLE 54SD-18 6 ft	HB-0480 10/11/95 POTHOLE 54SD-18 8 ft	HB-0481 10/11/95 POTHOLE 54SD-18 10 ft	HB-0483 10/11/95 POTHOLE 54SD-19 8 ft	HB-0484 10/11/95 POTHOLE 54SD-19 10 ft	HB-0486 10/11/95 POTHOLE 54SD-20 8 ft
Metals (mg/kg)							
LEAD	43.2	10.2	14.1	7.2	8.0	15.6	10.5
Total Petroleum Hydrocarbons (mg/kg)							
GASOLINE RANGE	12	<1.1 U	**43**	**53**	**45**	**47**	**48**

Table B-12
Onshore Fuel Line - 54-Inch Drain Line Segment Data
Focused Feasibility Study
Hamilton Army Airfield
Novato, California

Parameter	Comparison Value (mg/kg)	Sample Number/ Date/Location/Depth						
		HB-0487 10/11/95 POTHOLE 54SD-20 10 ft	HB-0491 10/11/95 POTHOLE 54SD-21 11 ft	HB-0496 10/11/95 POTHOLE 54SD-22 6 ft	HB-5203 10/27/97 54SD-13 0.5 ft	HB-5205 10/27/97 54SD-13 8 ft	HB-5206 10/27/97 54SD-13 10 ft	JP011DS1 02/21/91 JP-SS-11 0 ft
Metals (mg/kg)								
LEAD	43.2	10.7	12.7	10.7	13.2 J-	11.4 J-	9.53 J-	**48**
Total Petroleum Hydrocarbons (mg/kg)								
GASOLINE RANGE	12	<1.8 U	<1.7 U	<1.7 U	<1.1 U	<1.1 U	<1.3 U	--

Table B-13
Onshore Fuel Line - Hangar Area Data
Focused Feasibility Study
Hamilton Army Airfield
Novato, California

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth									
		HB-0511 11/27/95 ATG(B)-048 0.5 ft	HB-0512 11/27/95 ATG(B)-048 0.5 ft	HB-0436 10/13/95 ATG(B)-051 4 ft	HB-0620 10/13/95 ATG(B)-051 4 ft	HB-0444 11/27/95 ATG(B)-054 0.67 ft	HB-0445 11/27/95 ATG(B)-054 0.67 ft	HB-0448 11/27/95 ATG(B)-057 0.67 ft	HB-0725 11/21/95 ATG(B)-063 4 ft	HB-0598 11/27/95 ATG(B)-068S 1 ft	HB-0625 11/27/95 ATG(B)-086 3 ft
Benzene, Toluene, Ethylbenzene and Xylenes (mg/kg)											
ETHYLBENZENE	0.004	--	--	**<0.008 U**	--	--	--	--	**<.0076 U**	--	--
XYLENES (TOTAL)	0.04	--	--	<0.02 U	--	--	--	--	<.0076 U	--	--
Metals											
LEAD	43.2	--	--	5.8	--	--	--	--	<7.6 U	--	--
Semivolatile Organic Compounds (mg/kg)											
ACENAPHTHENE	0.026	**<.1 U**	**<.11 U**	--	**<0.16 U**	**<.54 U**	**<.12 U**	**<.11 U**	**<.15 U**	**<.13 U**	**<.16 U**
ANTHRACENE	0.088	**<.1 U**	**<.11 U**	--	0.05 J	**<.54 U**	**<.12 U**	**<.11 U**	**<.15 U**	**<.13 U**	**<.16 U**
BENZO(A)ANTHRACENE	0.412	<.1 UJ	<.11 UJ	--	**0.67**	**<.54 U**	<.12 UJ	<.11 UJ	<.15 U	<.13 U	<.16 U
BENZO(A)PYRENE	0.43	<.034 U	<.035 U	--	**0.86**	<.18 U	<.039 U	<.036 U	<.05 U	<.042 U	<.052 U
BENZO(B)FLUORANTHENE	0.371	<.1 U	<.11 U	--	**0.9**	**<.54 U**	<.12 U	<.11 U	<.15 U	<.13 U	<.16 U
CHRYSENE	0.384	<.1 UJ	<.11 UJ	--	**0.84**	**<.54 U**	<.12 UJ	<.11 UJ	<.15 U	<.13 U	<.16 U
DIBENZ(A,H)ANTHRACENE	0.0634	<.034 UJ	<.035 UJ	--	**0.23**	**<.18 U**	<.039 UJ	<.036 UJ	<.05 U	<.042 U	<.052 U
FLUORANTHENE	0.6	<.1 U	<.11 U	--	**0.82**	<.54 U	<.12 U	<.11 U	<.15 U	<.13 U	<.16 U
FLUORENE	0.0253	**<.1 U**	**<.11 U**	--	**<0.16 U**	**<.54 U**	**<.12 U**	**<.11 U**	**<.15 U**	**<.13 U**	**<.16 U**
INDENO(1,2,3-CD)PYRENE	0.382	<.1 UJ	<.11 UJ	--	**0.54**	**<.54 U**	<.12 UJ	<.11 UJ	<.15 U	<.13 U	<.16 U
NAPHTHALENE	0.16	**<.41 U**	**<.42 U**	--	<0.16 U	**<2.2 U**	**<.47 U**	**<.44 U**	**<.61 U**	**<.51 U**	**<.62 U**
PHENANTHRENE	0.24	--	--	--	0.18	--	--	--	--	--	--
PYRENE	0.665	<.1 U	<.11 U	--	**0.75**	<.54 U	<.12 U	<.11 U	<.15 U	<.13 U	<.16 U
Total Petroleum Hydrocarbons (mg/kg)											
AVIATION FUEL RANGE (JP4)	12	--	--	--	**<16 U**	--	--	--	**<15 U**	--	--
GASOLINE RANGE	12	--	--	**51**	--	--	--	--	<1.5 U	--	--

Table B-13
Onshore Fuel Line - Hangar Area Data
Focused Feasibility Study
Hamilton Army Airfield
Novato, California

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth								
		HB-0735 11/30/95 ATG(B)-213 4 ft	HB-0737 12/07/95 ATG(B)-213 1.33 ft	HB-0990 11/27/95 ATG(G)-013 5 ft	HB-0931 11/15/95 ATG(G)-219 4 ft	HB-0937 11/15/95 ATG(G)-223 4 ft	HB-0943 11/15/95 ATG(G)-227 4 ft	HB-0344 11/21/95 ATG(G)-229 7 ft	HB-0341 11/21/95 ATG(G)-230 5 ft	HB-0948 11/15/95 ATG(G)-233 7 ft
Benzene, Toluene, Ethylbenzene and Xylenes (mg/kg)										
ETHYLBENZENE	0.004	--	--	**<.0076 U**	**<.0075 U**	**<.0078 U**	**<.0081 U**	--	--	**<.0086 U**
XYLENES (TOTAL)	0.04	--	--	<.0076 U	<.0075 U	<.0078 U	<.0081 U	--	--	<.0086 U
Metals										
LEAD	43.2	--	--	16.5	28.9	--	13.	--	--	13.6
Semivolatile Organic Compounds (mg/kg)										
ACENAPHTHENE	0.026	**<.15 U**	**<.13 U**	**<.15 U**	**<.15 U**	**<.15 U**	**<.16 U**	**<.19 U**	**<.17 U**	**<.17 U**
ANTHRACENE	0.088	**<.15 U**	**<.13 U**	**<.15 U**	**<.15 U**	**<.15 U**	**<.16 U**	**<.19 U**	**<.17 U**	**<.17 U**
BENZO(A)ANTHRACENE	0.412	<.15 U	<.13 U	<.15 UJ	<.15 U	<.15 U	<.16 U	<.19 U	<.17 U	.17
BENZO(A)PYRENE	0.43	<.05 U	<.044 U	<.05 U	<.048 U	<.051 U	<.053 U	<.061 U	<.056 U	.11
BENZO(B)FLUORANTHENE	0.371	<.15 U	<.13 U	<.15 U	<.15 U	<.15 U	<.16 U	<.19 U	<.17 U	.15 J
CHRYSENE	0.384	<.15 U	<.13 U	<.15 UJ	<.15 U	<.15 U	<.16 U	<.19 U	<.17 U	.18
DIBENZ(A,H)ANTHRACENE	0.0634	<.05 U	<.044 U	<.05 UJ	<.048 U	<.051 U	<.053 U	<.061 U	<.056 U	<.056 U
FLUORANTHENE	0.6	<.15 U	<.13 U	<.15 U	<.15 U	<.15 U	<.16 U	<.19 U	<.17 U	.43
FLUORENE	0.0253	**<.15 U**	**<.13 U**	**<.15 U**	**<.15 U**	**<.15 U**	**<.16 U**	**<.19 U**	**<.17 U**	**<.17 U**
INDENO(1,2,3-CD)PYRENE	0.382	<.15 U	<.13 U	<.15 UJ	<.15 U	<.15 U	<.16 U	<.19 U	<.17 U	<.17 U
NAPHTHALENE	0.16	**<.61 U**	**<.53 U**	**<.61 U**	**<.58 U**	**<.61 U**	**<.64 U**	**<.74 U**	**<.68 U**	**<.68 U**
PHENANTHRENE	0.24	--	--	--	--	--	--	--	--	--
PYRENE	0.665	<.15 U	<.13 U	<.15 U	<.15 U	<.15 U	<.16 U	<.19 U	<.17 U	.31
Total Petroleum Hydrocarbons (mg/kg)										
AVIATION FUEL RANGE (JP4)	12	--	--	**<15 U**	**<15 U**	**<16 U**	**<16 U**	--	--	**<17 U**
GASOLINE RANGE	12	--	--	<1.5 U	<1.5 U	<1.6 U	<1.6 U	--	--	<1.7 U

Table B-13
Onshore Fuel Line - Hangar Area Data
Focused Feasibility Study
Hamilton Army Airfield
Novato, California

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth									
		HB-0323 11/21/95 ATG(G)-239 3 ft	HB-0324 11/21/95 ATG(G)-239 0.5 ft	HB-0320 11/21/95 ATG(G)-240 3 ft	HB-0321 11/21/95 ATG(G)-240 0.5 ft	HB-0322 11/21/95 ATG(G)-240 0.5 ft	HB-0318 12/07/95 ATG(G)-241 0.5 ft	HB-0319 11/07/95 ATG(G)-241 0.5 ft	HB-0955 11/15/95 ATG(G)-243 3.5 ft	HB-0315 12/07/95 ATG(G)-245 0.5 ft	HB-0316 12/07/95 ATG(G)-245 0.5 ft
Benzene, Toluene, Ethylbenzene and Xylenes (mg/kg)											
ETHYLBENZENE	0.004	--	--	--	--	--	--	--	**<.0078 U**	--	--
XYLENES (TOTAL)	0.04	--	--	--	--	--	--	--	<.0078 U	--	--
Metals											
LEAD	43.2	--	--	--	--	--	--	--	8.7	--	--
Semivolatile Organic Compounds (mg/kg)											
ACENAPHTHENE	0.026	**<.15 U**	**<.12 U**	**<.15 U**	**<.12 U**	**<.11 U**	**<.12 U**	**<.12 U**	**<.16 U**	**<.13 U**	**<.12 U**
ANTHRACENE	0.088	**<.15 U**	**<.12 U**	**<.15 U**	**<.12 U**	**<.11 U**	**<.12 U**	**<.12 U**	**<.16 U**	**<.13 U**	**<.12 U**
BENZO(A)ANTHRACENE	0.412	<.15 U	<.12 U	<.15 U	<.12 UJ	<.11 U	<.12 U	<.12 U	<.16 U	<.13 U	<.12 U
BENZO(A)PYRENE	0.43	<.051 U	<.04 U	<.049 U	<.04 U	<.036 U	<.041 U	<.039 U	<.051 U	<.042 U	<.04 U
BENZO(B)FLUORANTHENE	0.371	<.15 U	<.12 U	<.15 U	<.12 U	<.11 U	<.12 U	<.12 U	<.16 U	<.13 U	<.12 U
CHRYSENE	0.384	<.15 U	<.12 U	<.15 U	<.12 UJ	<.11 U	<.12 U	<.12 U	<.16 U	<.13 U	<.12 U
DIBENZ(A,H)ANTHRACENE	0.0634	<.051 U	<.04 UJ	<.049 U	<.04 UJ	<.036 U	<.041 U	<.039 U	<.051 U	<.042 U	<.04 U
FLUORANTHENE	0.6	<.15 U	<.12 U	<.15 U	<.12 U	<.11 U	<.12 U	<.12 U	<.16 U	<.13 U	<.12 U
FLUORENE	0.0253	**<.15 U**	**<.12 U**	**<.15 U**	**<.12 U**	**<.11 U**	**<.12 U**	**<.12 U**	**<.16 U**	**<.13 U**	**<.12 U**
INDENO(1,2,3-CD)PYRENE	0.382	<.15 U	<.12 UJ	<.15 U	<.12 UJ	<.11 U	<.12 U	<.12 U	<.16 U	<.13 U	<.12 U
NAPHTHALENE	0.16	**<.62 U**	**<.48 U**	**<.6 U**	**<.49 U**	**<.43 U**	**<.49 U**	**<.48 U**	**<.62 U**	**<.51 U**	**<.49 U**
PHENANTHRENE	0.24	--	--	--	--	--	--	--	--	--	--
PYRENE	0.665	<.15 U	<.12 U	<.15 U	<.12 U	<.11 U	<.12 U	<.12 U	<.16 U	<.13 U	<.12 U
Total Petroleum Hydrocarbons (mg/kg)											
AVIATION FUEL RANGE (JP4)	12	--	--	--	--	--	--	--	**<16 U**	--	--
GASOLINE RANGE	12	--	--	--	--	--	--	--	<1.6 U	--	--

Table B-13
Onshore Fuel Line - Hangar Area Data
Focused Feasibility Study
Hamilton Army Airfield
Novato, California

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth								
		HB-0629 11/27/95 ATG(G)-245S 3.5 ft	HB-0311 12/07/95 ATG(G)-247 0.67 ft	HB-0312 12/07/95 ATG(G)-247 0.67 ft	HB-0309 11/27/95 ATG(G)-250 6.5 ft	HB-0307 12/07/95 ATG(G)-252 1 ft	HB-0304 11/27/95 ATG(G)-253 8 ft	HB-0305 11/27/95 ATG(G)-253 4 ft	HB-0556 11/27/95 ATG(G)-253N 7 ft	HB-0978 11/21/95 ATG(G)-255 6 ft
Benzene, Toluene, Ethylbenzene and Xylenes (mg/kg)										
ETHYLBENZENE	0.004	--	--	--	--	--	--	--	--	**<.0083 U**
XYLENES (TOTAL)	0.04	--	--	--	--	--	--	--	--	<.0083 U
Metals										
LEAD	43.2	--	--	--	--	--	--	--	--	13.7
Semivolatile Organic Compounds (mg/kg)										
ACENAPHTHENE	0.026	**<.15 U**	**<.11 U**	**<.11 U**	**<.18 U**	**<.12 U**	**<.68 U**	**<.11 U**	**<.18 U**	**<.17 U**
ANTHRACENE	0.088	**<.15 U**	**<.11 U**	**<.11 U**	**<.18 U**	**<.12 U**	**<.68 U**	**<.11 U**	**<.18 U**	**<.17 U**
BENZO(A)ANTHRACENE	0.412	<.15 U	<.11 U	<.11 U	<.18 U	<.12 U	**<.68 U**	<.11 U	<.18 U	<.17 UJ
BENZO(A)PYRENE	0.43	<.05 U	<.035 U	<.035 U	<.059 U	<.04 U	<.22 U	<.036 U	<.058 U	<.055 U
BENZO(B)FLUORANTHENE	0.371	<.15 U	<.11 U	<.11 U	<.18 U	<.12 U	**<.68 U**	<.11 U	<.18 U	<.17 U
CHRYSENE	0.384	<.15 U	<.11 U	<.11 U	<.18 U	<.12 U	**<.68 U**	<.11 U	<.18 U	<.17 UJ
DIBENZ(A,H)ANTHRACENE	0.0634	<.05 U	<.035 U	<.035 U	<.059 U	<.04 U	**<.22 U**	<.036 U	<.058 U	<.055 UJ
FLUORANTHENE	0.6	<.15 U	<.11 U	<.11 U	<.18 U	<.12 U	**<.68 U**	<.11 U	<.18 U	<.17 U
FLUORENE	0.0253	**<.15 U**	**<.11 U**	**<.11 U**	**<.18 U**	**<.12 U**	**<.68 U**	**<.11 U**	**<.18 U**	**<.17 U**
INDENO(1,2,3-CD)PYRENE	0.382	<.15 U	<.11 U	<.11 U	<.18 U	<.12 U	**<.68 U**	<.11 U	<.18 U	<.17 UJ
NAPHTHALENE	0.16	**<.61 U**	**<.42 U**	**<.43 U**	**<.71 U**	**<.49 U**	**<2.7 U**	**<.43 U**	**<.7 U**	**<.67 U**
PHENANTHRENE	0.24	--	--	--	--	--	--	--	--	--
PYRENE	0.665	<.15 U	<.11 U	<.11 U	<.18 U	<.12 U	**<.68 U**	<.11 U	<.18 U	<.17 U
Total Petroleum Hydrocarbons (mg/kg)										
AVIATION FUEL RANGE (JP4)	12	--	--	--	--	--	--	--	--	**<17 U**
GASOLINE RANGE	12	--	--	--	--	--	--	--	--	<1.7 U

Table B-13
Onshore Fuel Line - Hangar Area Data
Focused Feasibility Study
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Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth									
		HB-0301 11/28/95 ATG(G)-257 3 ft	HB-0302 11/28/95 ATG(G)-257 0.67 ft	HB-0300 11/28/95 ATG(G)-258 0.67 ft	HB-0295 11/28/95 ATG(G)-259 3.5 ft	HB-0296 11/28/95 ATG(G)-259 1 ft	HB-0297 11/28/95 ATG(G)-259 1 ft	HB-0294 11/28/95 ATG(G)-260 0.67 ft	HB-0289 11/28/95 ATG(G)-261 3.5 ft	HB-0290 11/28/95 ATG(G)-261 0.5 ft	HB-0286 12/05/95 ATG(G)-262 4.5 ft
Benzene, Toluene, Ethylbenzene and Xylenes (mg/kg)											
ETHYLBENZENE	0.004	--	--	--	--	--	--	--	--	--	--
XYLENES (TOTAL)	0.04	--	--	--	--	--	--	--	--	--	--
Metals											
LEAD	43.2	--	--	--	--	--	--	--	--	--	--
Semivolatile Organic Compounds (mg/kg)											
ACENAPHTHENE	0.026	**<.16 U**	**<.12 U**	**<.12 U**	**<.15 U**	**<.1 U**	**<.13 U**	**<.12 U**	**<.16 U**	**<.13 U**	**<.15 U**
ANTHRACENE	0.088	**<.16 U**	**<.12 U**	**<.12 U**	**<.15 U**	**<.1 U**	**<.13 U**	**<.12 U**	**<.16 U**	**<.13 U**	**<.15 U**
BENZO(A)ANTHRACENE	0.412	<.16 U	<.12 U	<.12 U	<.15 U	<.1 U	<.13 U	<.12 U	<.16 U	<.13 U	<.15 U
BENZO(A)PYRENE	0.43	<.052 U	<.04 U	<.041 U	<.05 U	<.034 U	<.044 U	<.04 U	<.052 U	<.041 U	<.051 U
BENZO(B)FLUORANTHENE	0.371	<.16 U	<.12 U	<.12 U	<.15 U	<.1 U	<.13 U	<.12 U	<.16 U	<.13 U	<.15 U
CHRYSENE	0.384	<.16 U	<.12 U	<.12 U	<.15 U	<.1 U	<.13 U	<.12 U	<.16 U	<.13 U	<.15 U
DIBENZ(A,H)ANTHRACENE	0.0634	<.052 U	<.04 U	<.041 U	<.05 U	<.034 U	<.044 U	<.04 U	<.052 U	<.041 U	<.051 U
FLUORANTHENE	0.6	<.16 U	<.12 U	<.12 U	<.15 U	<.1 U	<.13 U	<.12 U	<.16 U	<.13 U	<.15 U
FLUORENE	0.0253	**<.16 U**	**<.12 U**	**<.12 U**	**<.15 U**	**<.1 U**	**<.13 U**	**<.12 U**	**<.16 U**	**<.13 U**	**<.15 U**
INDENO(1,2,3-CD)PYRENE	0.382	<.16 U	<.12 U	<.12 U	<.15 U	<.1 U	<.13 U	<.12 U	<.16 U	<.13 U	<.15 U
NAPHTHALENE	0.16	**<.63 U**	**<.48 U**	**<.5 U**	**<.61 U**	**<.41 U**	**<.53 U**	**<.49 U**	**<.63 U**	**<.5 U**	**<.62 U**
PHENANTHRENE	0.24	--	--	--	--	--	--	--	--	--	--
PYRENE	0.665	<.16 U	<.12 U	<.12 U	<.15 U	<.1 U	<.13 U	<.12 U	<.16 U	<.13 U	<.15 U
Total Petroleum Hydrocarbons (mg/kg)											
AVIATION FUEL RANGE (JP4)	12	--	--	--	--	--	--	--	--	--	--
GASOLINE RANGE	12	--	--	--	--	--	--	--	--	--	--

Table B-13
Onshore Fuel Line - Hangar Area Data
Focused Feasibility Study
Hamilton Army Airfield
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Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth									
		HB-0287 12/05/95 ATG(G)-262 0.58 ft	HB-0552 12/05/95 ATG(G)-262S 0.67 ft	HB-0284 12/05/95 ATG(G)-263 1 ft	HB-0285 12/05/95 ATG(G)-263 0.67 ft	HB-0981 12/05/95 ATG(G)-263 4 ft	HB-0281 11/27/95 ATG(G)-264 5 ft	HB-0282 11/27/95 ATG(G)-264 0.67 ft	HB-0964 11/15/95 ATG(G)-265 3.5 ft	HB-0965 11/28/95 ATG(G)-267 5 ft	HB-0966 11/28/95 ATG(G)-273 8 ft
Benzene, Toluene, Ethylbenzene and Xylenes (mg/kg)											
ETHYLBENZENE	0.004	--	--	--	--	--	--	--	**<.0078 U**	--	--
XYLENES (TOTAL)	0.04	--	--	--	--	--	--	--	<.0078 U	--	--
Metals											
LEAD	43.2	--	--	--	--	--	--	--	17.3	--	--
Semivolatile Organic Compounds (mg/kg)											
ACENAPHTHENE	0.026	**<.12 U**	**<.12 U**	**<.13 U**	**<.12 U**	**<.15 U**	**<.11 U**	**<.13 U**	**<.15 U**	**<.17 U**	**<.18 U**
ANTHRACENE	0.088	**<.12 U**	**<.12 U**	**<.13 U**	**<.12 U**	**<.15 U**	**<.11 U**	**<.13 U**	**<.15 U**	**<.17 U**	**<.18 U**
BENZO(A)ANTHRACENE	0.412	<.12 U	<.12 U	<.13 U	<.12 U	<.15 U	<.11 U	<.13 U	<.15 U	<.17 U	<.18 U
BENZO(A)PYRENE	0.43	<.04 U	<.039 U	<.042 U	<.039 U	<.049 U	<.035 U	<.042 U	<.051 U	<.056 U	<.058 U
BENZO(B)FLUORANTHENE	0.371	<.12 U	<.12 U	<.13 U	<.12 U	<.15 U	<.11 U	<.13 U	<.15 U	<.17 U	<.18 U
CHRYSENE	0.384	<.12 U	<.12 U	<.13 U	<.12 U	<.15 U	<.11 U	<.13 U	<.15 U	<.17 U	<.18 U
DIBENZ(A,H)ANTHRACENE	0.0634	<.04 U	<.039 U	<.042 U	<.039 U	<.049 U	<.035 U	<.042 U	<.051 U	<.056 U	<.058 U
FLUORANTHENE	0.6	<.12 U	<.12 U	<.13 U	<.12 U	<.15 U	<.11 U	<.13 U	<.15 U	<.17 U	<.18 U
FLUORENE	0.0253	**<.12 U**	**<.12 U**	**<.13 U**	**<.12 U**	**<.15 U**	**<.11 U**	**<.13 U**	**<.15 U**	**<.17 U**	**<.18 U**
INDENO(1,2,3-CD)PYRENE	0.382	<.12 U	<.12 U	<.13 U	<.12 U	<.15 U	<.11 U	<.13 U	<.15 U	<.17 U	<.18 U
NAPHTHALENE	0.16	**<.49 U**	**<.48 U**	**<.51 U**	**<.48 U**	**<.6 U**	**<.43 U**	**<.51 U**	**<.61 U**	**<.68 U**	**<.71 U**
PHENANTHRENE	0.24	--	--	--	--	--	--	--	--	--	--
PYRENE	0.665	<.12 U	<.12 U	<.13 U	<.12 U	<.15 U	<.11 U	<.13 U	<.15 U	<.17 U	<.18 U
Total Petroleum Hydrocarbons (mg/kg)											
AVIATION FUEL RANGE (JP4)	12	--	--	--	--	--	--	--	**<16 U**	--	--
GASOLINE RANGE	12	--	--	--	--	--	--	--	<1.6 U	--	--

Table B-13
Onshore Fuel Line - Hangar Area Data
Focused Feasibility Study
Hamilton Army Airfield
Novato, California

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth								
		HB-0967 11/27/95 ATG(G)-275 5 ft	HB-0425 11/27/95 ATG(G)-276 4 ft	HB-0593 11/27/95 ATG(G)-276 0.67 ft	HB-0594 11/27/95 ATG(G)-276 0.67 ft	HB-0595 10/12/95 ATG(G)-277 0.58 ft	HB-0596 10/12/95 ATG(G)-277 0.58 ft	HB-0367 12/05/95 ATG(G)-278S 0.5 ft	HB-0247 10/13/95 ATG(G)-280 1 ft	HB-0248 10/13/95 ATG(G)-280 1.5 ft
Benzene, Toluene, Ethylbenzene and Xylenes (mg/kg)										
ETHYLBENZENE	0.004	**<.0079 U**	--	--	--	**<0.005 U**	**<0.01 U**	--	**<0.006 U**	**<0.005 U**
XYLENES (TOTAL)	0.04	<.0079 U	--	--	--	<0.01 U	<0.02 U	--	<0.01 U	<0.01 U
Metals										
LEAD	43.2	8.30	--	--	--	13.4	34.8	--	17.5	14.2
Semivolatile Organic Compounds (mg/kg)										
ACENAPHTHENE	0.026	**<.16 U**	**<.16 U**	**<.22 U**	**<.12 U**	**<0.11 U**	**<0.22 UJ**	**<.12 U**	**<0.11 U**	**<0.11 U**
ANTHRACENE	0.088	**<.16 U**	**<.16 U**	**<.22 U**	**<.12 U**	**<0.11 U**	**<0.22 UJ**	**<.12 U**	**<0.11 U**	**<0.11 U**
BENZO(A)ANTHRACENE	0.412	<.16 U	<.16 U	<.22 UJ	<.12 U	<0.11 U	<0.22 U	<.12 U	<0.11 U	<0.11 U
BENZO(A)PYRENE	0.43	<.052 U	<.052 U	<.074 U	<.039 U	<0.035 U	<0.071 UJ	<.041 U	<0.037 U	<0.035 U
BENZO(B)FLUORANTHENE	0.371	<.16 U	<.16 U	<.22 U	<.12 U	<0.11 U	<0.22 UJ	<.12 U	<0.11 U	<0.11 U
CHRYSENE	0.384	<.16 U	<.16 U	<.22 UJ	<.12 U	<0.11 U	<0.22 U	<.12 U	<0.11 U	<0.11 U
DIBENZ(A,H)ANTHRACENE	0.0634	<.052 U	<.052 U	**<.074 U**	<.039 U	<0.035 U	**<0.071 UJ**	<.041 U	<0.037 U	<0.035 U
FLUORANTHENE	0.6	<.16 U	<.16 U	<.22 U	<.12 U	<0.11 U	<0.22 UJ	<.12 U	<0.11 U	<0.11 U
FLUORENE	0.0253	**<.16 U**	**<.16 U**	**<.22 U**	**<.12 U**	**<0.11 U**	**<0.22 UJ**	**<.12 U**	**<0.11 U**	**<0.11 U**
INDENO(1,2,3-CD)PYRENE	0.382	<.16 U	<.16 U	<.22 U	<.12 U	<0.11 U	<0.22 UJ	<.12 U	<0.11 U	<0.11 U
NAPHTHALENE	0.16	**<.63 U**	**<.63 U**	**<.9 U**	**<.48 U**	<0.11 U	**<0.22 UJ**	**<.5 U**	<0.11 U	<0.11 U
PHENANTHRENE	0.24	--	--	--	--	<0.11 U	<0.22 UJ	--	<0.11 U	<0.11 U
PYRENE	0.665	<.16 U	<.16 U	<.22 U	<.12 U	<0.11 U	<0.22 U	<.12 U	<0.11 U	<0.11 U
Total Petroleum Hydrocarbons (mg/kg)										
AVIATION FUEL RANGE (JP4)	12	**<16 U**	--	--	--	<11 U	**<22 U**	--	<11 U	<11 U
GASOLINE RANGE	12	<1.6 U	--	--	--	**29**	<2.2 U	--	<1.1 U	**38**

Table B-13
Onshore Fuel Line - Hangar Area Data
Focused Feasibility Study
Hamilton Army Airfield
Novato, California

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth								
		HB-0356 10/13/95 ATG(G)-280N 3 ft	HB-0359 10/13/95 ATG(G)-280S 3 ft	HB-0970 11/15/95 ATG(G)-281 4 ft	HB-0237 10/05/95 ATG(G)-282 3 ft	HB-0983 11/27/95 ATG(G)-285 3.25 ft	HB-0229 10/05/95 ATG(G)-288 8 ft	HB-0394 10/05/95 ATG(G)-288 8 ft	HB-0193 11/16/95 ATG(R)-042 3.5 ft	HB-0212 10/04/95 ATG(R)-055 1.5 ft
Benzene, Toluene, Ethylbenzene and Xylenes (mg/kg)										
ETHYLBENZENE	0.004	**<0.008 U**	**<0.008 U**	**<.0075 U**	**<0.007 U**	**<.0079 U**	**<0.006 U**	--	--	**<.0055 U**
XYLENES (TOTAL)	0.04	<0.02 U	<0.02 U	<.0075 U	<0.01 U	<.0079 U	<0.01 U	--	--	<.0055 U
Metals										
LEAD	43.2	13.3	14.0	12.3	23.4	15.5	--	22.2	--	14.4
Semivolatile Organic Compounds (mg/kg)										
ACENAPHTHENE	0.026	**<0.17 U**	**<0.16 U**	**<.75 U**	**<0.14 U**	**<.15 U**	**<0.12 U**	--	**<.16 U**	**<.11 U**
ANTHRACENE	0.088	**<0.17 U**	**<0.16 U**	**<.75 U**	**<0.14 U**	**<.15 U**	**<0.12 U**	--	**<.16 U**	**<.11 U**
BENZO(A)ANTHRACENE	0.412	<0.17 U	<0.16 U	**<.75 U**	<0.14 U	<.15 U	<0.12 U	--	<.16 UJ	<.11 U
BENZO(A)PYRENE	0.43	<0.055 U	<0.051 U	<.25 U	<0.047 U	<.051 U	<0.040 U	--	<.053 U	<.036 U
BENZO(B)FLUORANTHENE	0.371	<0.17 U	<0.16 U	**<.75 U**	<0.14 U	<.15 U	<0.12 U	--	<.16 U	<.11 U
CHRYSENE	0.384	<0.17 U	<0.16 U	**<.75 U**	<0.14 U	<.15 U	<0.12 U	--	<.16 UJ	<.11 U
DIBENZ(A,H)ANTHRACENE	0.0634	<0.055 U	<0.051 U	**<.25 U**	<0.047 U	<.051 U	<0.040 U	--	<.053 UJ	<.036 U
FLUORANTHENE	0.6	<0.17 U	<0.16 U	**<.75 U**	<0.14 U	<.15 U	<0.12 U	--	<.16 U	<.11 U
FLUORENE	0.0253	**<0.17 U**	**<0.16 U**	**<.75 U**	**<0.14 U**	**<.15 U**	**<0.12 U**	--	**<.16 U**	**<.11 U**
INDENO(1,2,3-CD)PYRENE	0.382	<0.17 U	<0.16 U	**<.75 U**	<0.14 U	<.15 U	<0.12 U	--	<.16 U	<.11 U
NAPHTHALENE	0.16	**<0.17 U**	<0.16 U	**<3 U**	<0.14 U	**<.62 U**	<0.12 U	--	**<.65 U**	**<.44 U**
PHENANTHRENE	0.24	<0.17 U	<0.16 U	--	<0.14 U	--	<0.12 U	--	--	--
PYRENE	0.665	<0.17 U	<0.16 U	**<.75 U**	<0.14 U	<.15 U	<0.12 U	--	<.16 U	<.11 U
Total Petroleum Hydrocarbons (mg/kg)										
AVIATION FUEL RANGE (JP4)	12	**<17 U**	**<16 U**	**<30 U**	**<15 U**	**<16 U**	<12 U	--	--	<11 U
GASOLINE RANGE	12	**88**	<1.6 U	<1.5 U	<1.5 U	<1.6 U	**260**	--	--	<1.1 U

Table B-13
Onshore Fuel Line - Hangar Area Data
Focused Feasibility Study
Hamilton Army Airfield
Novato, California

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth								
		HB-0213 10/04/95 ATG(R)-055 1 ft	HB-0350 11/20/95 ATG(R)-055N 1.5 ft	HB-0351 11/20/95 ATG(R)-055N 3.5 ft	HB-0347 12/04/95 ATG(R)-055S 0.67 ft	HB-0348 10/13/95 ATG(R)-055S 3.5 ft	HB-0214 10/04/95 ATG(R)-056 4.5 ft	HB-0216 10/04/95 ATG(R)-056 1 ft	HB-0217 11/20/95 ATG(R)-057 4 ft	HB-0220 10/05/95 ATG(R)-058 3.5 ft
Benzene, Toluene, Ethylbenzene and Xylenes (mg/kg)										
ETHYLBENZENE	0.004	**<.0052 U**	--	--	--	**<0.007 U**	**<.0077 U**	**<.0062 U**	--	**<0.007 U**
XYLENES (TOTAL)	0.04	<.0052 U	--	--	--	<0.01 U	<.0077 U	<.0062 U	--	<0.01 U
Metals										
LEAD	43.2	9.9	--	--	--	24.9	18.0	18.1	--	--
Semivolatile Organic Compounds (mg/kg)										
ACENAPHTHENE	0.026	**<.1 U**	**<.11 U**	**<.16 U**	**<.11 U**	**<0.14 U**	**<.15 U**	**<.12 U**	**<.15 U**	**<0.14 U**
ANTHRACENE	0.088	**<.1 U**	**<.11 U**	**<.16 U**	**<.11 U**	**<0.14 U**	**<.15 U**	**<.12 U**	**<.15 U**	**<0.14 U**
BENZO(A)ANTHRACENE	0.412	<.1 U	<.11 U	<.16 U	<.11 U	<0.14 U	<.15 U	<.12 U	--	<0.14 U
BENZO(A)PYRENE	0.43	<.034 U	<.037 U	<.052 U	<.035 U	<0.045 U	<.051 U	<.041 U	--	<0.046 U
BENZO(B)FLUORANTHENE	0.371	<.1 U	<.11 U	<.16 U	<.11 U	<0.14 U	<.15 U	<.12 U	--	<0.14 U
CHRYSENE	0.384	<.1 U	<.11 U	<.16 U	<.11 U	<0.14 U	<.15 U	<.12 U	--	<0.14 U
DIBENZ(A,H)ANTHRACENE	0.0634	<.034 U	<.037 U	<.052 U	<.035 U	<0.045 U	<.051 U	<.041 U	--	<0.046 U
FLUORANTHENE	0.6	<.1 U	<.11 U	<.16 U	<.11 U	<0.14 U	<.15 U	<.12 U	--	<0.14 U
FLUORENE	0.0253	**<.1 U**	**<.11 U**	**<.16 U**	**<.11 U**	**<0.14 U**	**<.15 U**	**<.12 U**	**<.15 U**	**<0.14 U**
INDENO(1,2,3-CD)PYRENE	0.382	<.1 U	<.11 U	<.16 U	<.11 U	<0.14 U	<.15 U	<.12 U	--	<0.14 U
NAPHTHALENE	0.16	**<.41 U**	**<.45 U**	**<.63 U**	**<.42 U**	<0.14 U	**<.61 U**	**<.5 U**	--	<0.14 U
PHENANTHRENE	0.24	--	--	--	--	<0.14 U	--	--	--	<0.14 U
PYRENE	0.665	<.1 U	<.11 U	<.16 U	<.11 U	<0.14 U	<.15 U	<.12 U	--	<0.14 U
Total Petroleum Hydrocarbons (mg/kg)										
AVIATION FUEL RANGE (JP4)	12	<10 U	--	--	--	**<14 U**	**<15 U**	<12 U	--	**<14 U**
GASOLINE RANGE	12	<1 U	--	--	--	<1.4 U	<1.5 U	<1.2 U	--	<1.4 U

Table B-13
Onshore Fuel Line - Hangar Area Data
Focused Feasibility Study
Hamilton Army Airfield
Novato, California

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth									
		HB-0393 10/05/95 ATG(R)-058 3.5 ft	HB-0223 11/20/95 ATG(R)-059 3.5 ft	HB-0514 11/20/95 ATG(R)-063 1 ft	HB-0430 10/13/95 ATG(R)-065 3 ft	HB-0432 12/05/95 ATG(R)-068 3 ft	HB-0587 11/20/95 ATG(R)-071 2 ft	HB-0603 11/20/95 ATG(R)-077 2.5 ft	HB-0604 11/20/95 ATG(R)-077 1 ft	HB-0606 11/21/95 ATG(R)-087 1.5 ft	HB-0608 11/21/95 ATG(R)-087 1 ft
Benzene, Toluene, Ethylbenzene and Xylenes (mg/kg)											
ETHYLBENZENE	0.004	--	--	--	**<0.008 U**	--	--	--	--	--	--
XYLENES (TOTAL)	0.04	--	--	--	<0.02 U	--	--	--	--	--	--
Metals											
LEAD	43.2	21.3	--	--	21.6	--	--	--	--	--	--
Semivolatile Organic Compounds (mg/kg)											
ACENAPHTHENE	0.026	--	**0.19**	**<.12 U**	**<0.16 U**	**<.14 U**	**<.12 U**	**<.15 U**	**<.11 U**	**<.12 U**	**<.12 U**
ANTHRACENE	0.088	--	**0.59**	**<.12 U**	**<0.16 U**	**<.14 U**	**<.12 U**	**<.15 U**	**<.11 U**	**<.12 U**	**<.12 U**
BENZO(A)ANTHRACENE	0.412	--	**1.7**	<.12 U	<0.16 U	<.14 U	<.12 U	<.15 U	<.11 U	<.12 U	<.12 U
BENZO(A)PYRENE	0.43	--	**1.3**	<.041 U	<0.051 U	<.048 U	<.039 U	<.049 U	<.037 U	<.039 U	<.039 U
BENZO(B)FLUORANTHENE	0.371	--	**1.2**	<.12 U	<0.16 U	<.14 U	<.12 U	<.15 U	<.11 U	<.12 U	<.12 U
CHRYSENE	0.384	--	**1.9**	<.12 U	<0.16 U	<.14 U	<.12 U	<.15 U	<.11 U	<.12 U	<.12 U
DIBENZ(A,H)ANTHRACENE	0.0634	--	**0.27**	<.041 U	<0.051 U	<.048 U	<.039 U	<.049 U	<.037 U	<.039 U	<.039 U
FLUORANTHENE	0.6	--	**3.8**	<.12 U	<0.16 U	<.14 U	<.12 U	<.15 U	<.11 U	<.12 U	<.12 U
FLUORENE	0.0253	--	**0.26**	**<.12 U**	**<0.16 U**	**<.14 U**	**<.12 U**	**<.15 U**	**<.11 U**	**<.12 U**	**<.12 U**
INDENO(1,2,3-CD)PYRENE	0.382	--	**0.54**	<.12 U	<0.16 U	<.14 U	<.12 U	<.15 U	<.11 U	<.12 U	<.12 U
NAPHTHALENE	0.16	--	.15 J	**<.5 U**	<0.16 U	**<.58 U**	**<.47 U**	**<.59 U**	**<.44 U**	**<.48 U**	**<.48 U**
PHENANTHRENE	0.24	--	--	--	<0.16 U	--	--	--	--	--	--
PYRENE	0.665	--	**4.1**	<.12 U	<0.16 U	<.14 U	<.12 U	<.15 U	<.11 U	<.12 U	<.12 U
Total Petroleum Hydrocarbons (mg/kg)											
AVIATION FUEL RANGE (JP4)	12	--	--	--	**<16 U**	--	--	--	--	--	--
GASOLINE RANGE	12	--	--	--	<1.6 U	--	--	--	--	--	--

Table B-13
Onshore Fuel Line - Hangar Area Data
Focused Feasibility Study
Hamilton Army Airfield
Novato, California

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth									
		HB-0613 12/05/95 ATG(R)-092N 1 ft	HB-0996 12/06/95 ATG(R)-094 3.5 ft	HB-0630 11/21/95 ATG(R)-102 3 ft	HB-0631 11/21/95 ATG(R)-102 2 ft	HB-0188 11/16/95 ATG(R)-294 3 ft	HB-0424 11/16/95 ATG(R)-294 3 ft	HB-0179 09/27/95 ATG-013 2 ft	HB-0180 09/27/95 ATG-013 2 ft	HB-0170 09/27/95 ATG-014 2 ft	HB-0171 09/27/95 ATG-014 2 ft
Benzene, Toluene, Ethylbenzene and Xylenes (mg/kg)											
ETHYLBENZENE	0.004	--	--	--	--	--	--	**<.005 U**	**<.005 U**	**<.0074 U**	**<.005 U**
XYLENES (TOTAL)	0.04	--	--	--	--	--	--	<.005 U	<.005 U	<.0074 U	<.005 U
Metals											
LEAD	43.2	--	--	--	--	--	--	9.2	12.6	8.3	8.5
Semivolatile Organic Compounds (mg/kg)											
ACENAPHTHENE	0.026	**<.11 U**	**<.16 U**	**<.15 U**	**<.11 U**	**<.18 U**	**<.16 U**	**<.14 U**	**<.14 U**	**<.15 U**	**<.15 U**
ANTHRACENE	0.088	**<.11 U**	**<.16 U**	**<.15 U**	**<.11 U**	**<.18 U**	**<.16 U**	**<.14 U**	**<.14 U**	**<.15 U**	**<.15 U**
BENZO(A)ANTHRACENE	0.412	<.11 U	<.16 U	<.15 U	<.11 U	<.18 U	<.16 U	<.14 U	<.14 U	<.15 U	<.15 U
BENZO(A)PYRENE	0.43	<.035 U	<.052 U	<.049 U	<.035 U	<.059 U	<.052 UJ	<.045 U	<.046 U	<.049 U	<.051 U
BENZO(B)FLUORANTHENE	0.371	<.11 U	<.16 U	<.15 U	<.11 U	<.18 U	<.16 U	<.14 U	<.14 U	<.15 U	<.15 U
CHRYSENE	0.384	<.11 U	<.16 U	<.15 U	<.11 U	<.18 U	<.16 UJ	<.14 U	<.14 U	<.15 U	<.15 U
DIBENZ(A,H)ANTHRACENE	0.0634	<.035 U	<.052 U	<.049 U	<.035 U	<.059 U	<.052 UJ	<.045 U	<.046 U	<.049 U	<.051 U
FLUORANTHENE	0.6	<.11 U	<.16 U	<.15 U	<.11 U	<.18 U	<.16 U	<.14 U	<.14 U	<.15 U	<.15 U
FLUORENE	0.0253	**<.11 U**	**<.16 U**	**<.15 U**	**<.11 U**	**<.18 U**	**<.16 U**	**<.14 U**	**<.14 U**	**<.15 U**	**<.15 U**
INDENO(1,2,3-CD)PYRENE	0.382	<.11 U	<.16 U	<.15 U	<.11 U	<.18 U	<.16 U	<.14 U	<.14 U	<.15 U	<.15 U
NAPHTHALENE	0.16	**<.42 U**	**<.63 U**	**<.6 U**	**<.43 U**	**<.71 U**	**<.62 U**	**<.55 U**	**<.56 U**	**<.59 U**	**<.62 U**
PHENANTHRENE	0.24	--	--	--	--	--	--	--	--	--	--
PYRENE	0.665	<.11 U	<.16 U	<.15 U	<.11 U	<.18 U	<.16 U	<.14 U	<.14 U	<.15 U	<.15 U
Total Petroleum Hydrocarbons (mg/kg)											
AVIATION FUEL RANGE (JP4)	12	--	--	--	--	--	--	**<14 U**	**<14 U**	**<15 U**	**<15 U**
GASOLINE RANGE	12	--	--	--	--	--	--	<1 U	<1 U	<1.5 U	<1 U

Table B-13
Onshore Fuel Line - Hangar Area Data
Focused Feasibility Study
Hamilton Army Airfield
Novato, California

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth									
		HB-0108 09/27/95 ATG-015 2 ft	HB-0109 09/27/95 ATG-015 2 ft	HB-0106 09/27/95 ATG-024 2 ft	HB-0107 09/27/95 ATG-024 2 ft	HB-0105 09/27/95 ATG-032 1.5 ft	HB-0104 09/27/95 ATG-033 2 ft	HB-0423 11/17/95 ATG-033 4 ft	HB-0100 09/27/95 ATG-034 4 ft	HB-0101 09/27/95 ATG-034 4 ft	HB-0102 09/27/95 ATG-034 2 ft
Benzene, Toluene, Ethylbenzene and Xylenes (mg/kg)											
ETHYLBENZENE	0.004	**<.005 U**	**<.005 U**	**<.005 U**	**<.005 U**	**<.005 U**	**<.005 U**	--	**<.005 U**	--	**<.005 U**
XYLENES (TOTAL)	0.04	<.005 U	<.005 U	<.005 U	<.005 U	<.005 U	<.005 U	--	<.005 U	--	<.005 U
Metals											
LEAD	43.2	8.3	10.5	10.5	12.2	18.8	13.9	--	--	8.7	12.6
Semivolatile Organic Compounds (mg/kg)											
ACENAPHTHENE	0.026	**<.11 U**	**<.12 U**	**<.12 U**	**<.13 U**	**<.12 U**	**<.12 U**	**<.15 U**	**<.13 U**	--	**<.12 U**
ANTHRACENE	0.088	**<.11 U**	**<.12 U**	**<.12 U**	**<.13 U**	**<.12 U**	**<.12 U**	**<.15 U**	**<.13 U**	--	**<.12 U**
BENZO(A)ANTHRACENE	0.412	<.11 U	<.12 U	<.12 U	<.13 U	<.12 U	<.12 U	<.15 U	.15	--	<.12 U
BENZO(A)PYRENE	0.43	<.037 U	<.041 U	<.038 U	<.044 U	<.039 U	<.039 U	<.051 U	.09	--	<.039 U
BENZO(B)FLUORANTHENE	0.371	<.11 U	<.12 U	<.12 U	<.13 U	<.12 U	<.12 U	<.15 U	<.13 U	--	<.12 U
CHRYSENE	0.384	<.11 U	<.12 U	<.12 U	<.13 U	<.12 U	<.12 U	<.15 U	<.13 U	--	<.12 U
DIBENZ(A,H)ANTHRACENE	0.0634	<.037 U	<.041 U	<.038 U	<.044 U	<.039 U	<.039 U	<.051 U	<.043 U	--	<.039 U
FLUORANTHENE	0.6	<.11 U	<.12 U	<.12 U	<.13 U	<.12 U	<.12 U	<.15 U	.26	--	<.12 U
FLUORENE	0.0253	**<.11 U**	**<.12 U**	**<.12 U**	**<.13 U**	**<.12 U**	**<.12 U**	**<.15 U**	**<.13 U**	--	**<.12 U**
INDENO(1,2,3-CD)PYRENE	0.382	<.11 U	<.12 U	<.12 U	<.13 U	<.12 U	<.12 U	<.15 U	<.13 U	--	<.12 U
NAPHTHALENE	0.16	**<.45 U**	**<.5 U**	**<.47 U**	**<.53 U**	**<.47 U**	**<.47 U**	**<.62 U**	**<.52 U**	--	**<.48 U**
PHENANTHRENE	0.24	--	--	--	--	--	--	--	--	--	--
PYRENE	0.665	<.11 U	<.12 U	<.12 U	<.13 U	<.12 U	<.12 U	<.15 U	.24	--	<.12 U
Total Petroleum Hydrocarbons (mg/kg)											
AVIATION FUEL RANGE (JP4)	12	<11 U	<12 U	<12 U	**<13 U**	<12 U	<12 U	--	**<13 U**	--	<12 U
GASOLINE RANGE	12	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	--	<1 U	--	<1 U

Table B-13
Onshore Fuel Line - Hangar Area Data
Focused Feasibility Study
Hamilton Army Airfield
Novato, California

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth									
		HB-0719 11/07/95 ATG-035 6 ft	HB-0172 09/27/95 ATG-369 5 ft	HB-0176 09/27/95 ATG-369 5 ft	HB-0173 09/27/95 ATG-370 5 ft	HB-0174 09/27/95 ATG-370 5 ft	HB-0076 09/26/95 ATG-371 5.3 ft	HB-0079 09/26/95 ATG-371 3.5 ft	HB-0083 09/26/95 ATG-371 3.5 ft	HB-0098 09/26/95 ATG-373 4 ft	HB-0094 09/26/95 ATG-375 3 ft
Benzene, Toluene, Ethylbenzene and Xylenes (mg/kg)											
ETHYLBENZENE	0.004	--	**<.0072 U**	**<.0068 U**	--	**<.0055 U**	**<.005 U**	**<.0065 U**	**<.0054 U**	**<.0059 U**	**<.0054 U**
XYLENES (TOTAL)	0.04	--	<.0086 U	--	--	<.0055 U	<.005 U	<.0065 U	<.0054 U	<.0059 U	<.0054 U
Metals											
LEAD	43.2	--	16.2	--	35.1	--	8.1	9.6	7.1	13.4	11.7
Semivolatile Organic Compounds (mg/kg)											
ACENAPHTHENE	0.026	**<.16 U**	**<.14 U**	**<.068 U**	--	**<.11 U**	**<.17 U**	**<.13 U**	**<.11 U**	**<.12 U**	**<.11 U**
ANTHRACENE	0.088	**<.16 U**	**<.14 U**	<.068 U	--	**<.11 U**	**<.17 U**	**<.13 U**	**<.11 U**	**<.12 U**	**<.11 U**
BENZO(A)ANTHRACENE	0.412	<.16 U	<.14 U	<.068 U	--	<.11 U	<.17 U	<.13 U	<.11 U	<.12 U	<.11 U
BENZO(A)PYRENE	0.43	.059	<.047 U	.068	--	<.036 U	<.055 U	<.043 U	<.036 U	<.039 U	<.036 U
BENZO(B)FLUORANTHENE	0.371	<.16 U	<.14 U	<.068 U	--	<.11 U	<.17 U	<.13 U	<.11 U	<.12 U	<.11 U
CHRYSENE	0.384	<.16 U	<.14 U	<.068 U	--	<.11 U	<.17 U	<.13 U	<.11 U	<.12 U	<.11 U
DIBENZ(A,H)ANTHRACENE	0.0634	**<.16 U**	<.047 U	<.048 U	--	<.036 U	<.055 U	<.043 U	<.036 U	<.039 U	<.036 U
FLUORANTHENE	0.6	<.16 U	<.14 U	<.068 U	--	<.11 U	<.17 U	<.13 U	<.11 U	<.12 U	<.11 U
FLUORENE	0.0253	**<.16 U**	**<.14 U**	**<.068 U**	--	**<.11 U**	**<.17 U**	**<.13 U**	**<.11 U**	**<.12 U**	**<.11 U**
INDENO(1,2,3-CD)PYRENE	0.382	<.16 U	<.14 U	<.068 U	--	<.11 U	<.17 U	<.13 U	<.11 U	<.12 U	<.11 U
NAPHTHALENE	0.16	<.16 U	**<.57 U**	<.068 U	--	**<.44 U**	**<.67 U**	**<.52 U**	**<.44 U**	**<.47 U**	**<.44 U**
PHENANTHRENE	0.24	<.16 U	--	<.068 U	--	--	--	--	--	--	--
PYRENE	0.665	<.16 U	<.14 U	<.068 U	--	<.11 U	<.17 U	<.13 U	<.11 U	<.12 U	<.11 U
Total Petroleum Hydrocarbons (mg/kg)											
AVIATION FUEL RANGE (JP4)	12	--	**<14 U**	<2.7 U	--	<11 U	**<17 U**	**<13 U**	<11 U	<12 U	<11 U
GASOLINE RANGE	12	--	8.9	<1.4 U	**18**	--	1.9	<1.3 U	<1.1 U	<1.2 U	<1.1 U

Table B-13
Onshore Fuel Line - Hangar Area Data
Focused Feasibility Study
Hamilton Army Airfield
Novato, California

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth								
		HB-0095 09/26/95 ATG-375 3.5 ft	HB-0090 09/26/95 ATG-386 5.33 ft	HB-0091 09/26/95 ATG-386 3.5 ft	HB-0092 09/26/95 ATG-386 3 ft	HB-0085 09/26/95 ATG-A 7 ft	HB-0084 09/26/95 ATG-B 5 ft	HB-0989 11/28/95 IT-018 5 ft	HB-0687 12/07/95 LAT-413 2 ft	HB-1508 11/20/95 LAT-417 3.75 ft
Benzene, Toluene, Ethylbenzene and Xylenes (mg/kg)										
ETHYLBENZENE	0.004	**<.0055 U**	**0.012**	**<.0088 U**	**<.0077 U**	**<.0058 U**	**<.0051 U**	--	--	**<.0075 U**
XYLENES (TOTAL)	0.04	<.0055 U	.037	<.0088 U	<.0077 U	<.0058 U	<.0051 U	--	--	<.0075 U
Metals										
LEAD	43.2	12.4	10.6	16.3	15.2	3.4	21.0	--	--	<14.9 U
Semivolatile Organic Compounds (mg/kg)										
ACENAPHTHENE	0.026	**<.11 U**	**<.18 U**	**<.18 U**	**<.15 U**	**<.12 U**	**<.1 U**	**<.14 U**	**<.14 U**	**<.15 U**
ANTHRACENE	0.088	**<.11 U**	**<.18 U**	**<.18 U**	**<.15 U**	**<.12 U**	**<.1 U**	**<.14 U**	**<.14 U**	**<.15 U**
BENZO(A)ANTHRACENE	0.412	.15	<.18 U	<.18 U	<.15 U	<.12 U	<.1 U	<.14 U	<.14 U	<.15 U
BENZO(A)PYRENE	0.43	.12	<.059 U	<.058 U	<.05 U	<.038 U	.077	<.046 U	<.046 U	<.049 U
BENZO(B)FLUORANTHENE	0.371	.15	<.18 U	<.18 U	<.15 U	<.12 U	.11	<.14 U	<.14 U	<.15 U
CHRYSENE	0.384	.11	<.18 U	<.18 U	<.15 U	<.12 U	<.1 U	<.14 U	<.14 U	<.15 U
DIBENZ(A,H)ANTHRACENE	0.0634	<.036 U	<.059 U	<.058 U	<.05 U	<.038 U	<.034 U	<.046 U	<.046 U	<.049 U
FLUORANTHENE	0.6	.23	<.18 U	<.18 U	<.15 U	<.12 U	.18	<.14 U	<.14 U	<.15 U
FLUORENE	0.0253	**<.11 U**	**<.18 U**	**<.18 U**	**<.15 U**	**<.12 U**	**<.1 U**	**<.14 U**	**<.14 U**	**<.15 U**
INDENO(1,2,3-CD)PYRENE	0.382	<.11 U	<.18 U	<.18 U	<.15 U	<.12 U	<.1 U	<.14 U	<.14 U	<.15 U
NAPHTHALENE	0.16	**<.44 U**	**<.72 U**	**<.7 U**	**<.61 U**	**<.47 U**	**<.41 U**	**<.56 U**	**<.56 U**	**<.6 U**
PHENANTHRENE	0.24	--	--	--	--	--	--	--	--	--
PYRENE	0.665	.21	<.18 U	<.18 U	<.15 U	<.12 U	.2	<.14 U	<.14 U	<.15 U
Total Petroleum Hydrocarbons (mg/kg)										
AVIATION FUEL RANGE (JP4)	12	<11 U	**<18 U**	**<18 U**	**<15 U**	<12 U	<10 U	--	--	**<15 U**
GASOLINE RANGE	12	<1.1 U	3.5	<1.8 U	<1.5 U	<1.2 U	<1 U	--	--	<1.5 U

Table B-13
Onshore Fuel Line - Hangar Area Data
Focused Feasibility Study
Hamilton Army Airfield
Novato, California

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth									
		HB-2368 11/14/95 ATG(B)-002 3 ft	HB-1209 11/15/95 ATG(B)-004 3 ft	HB-1215 11/15/95 ATG(B)-008 3 ft	HB-1229 11/15/95 ATG(B)-030 3 ft	HB-1225 11/15/95 ATG(B)-034 3 ft	HB-1361 12/01/95 ATG(B)-035 3 ft	HB-1221 11/15/95 ATG(B)-038 3.5 ft	HB-1235 11/15/95 ATG(B)-041 3.5 ft	HB-2383 11/15/95 ATG(B)-045 4.5 ft	HB-1244 11/15/95 ATG(B)-049 3 ft
Benzene, Toluene, Ethylbenzene and Xylenes (mg/kg)											
ETHYLBENZENE	0.004	**<.0075 U**	**<.008 U**	**<.0079 U**	**<.0064 U**	**<.0075 U**	--	**<.0078 U**	**<.0077 U**	**<.0076 U**	**<.0076 U**
XYLENES (TOTAL)	0.04	<.0075 U	<.008 U	<.0079 U	<.0064 U	<.0075 U	--	<.0078 U	<.0077 U	<.0076 U	<.0076 U
Metals (mg/kg)											
LEAD	43.2	13.4	17.2	39.5	11.7	11.8	--	17.3	12.3	14.4	<15.2 U
Semivolatile Organic Compounds (mg/kg)											
ACENAPHTHENE	0.026	**<.15 U**	**<.16 U**	**<.15 U**	**<.13 U**	**<.15 U**	**<.14 U**	**<.15 U**	**<.15 U**	**<.15 U**	**<.15 U**
ANTHRACENE	0.088	**<.15 U**	**<.16 U**	**<.15 U**	**<.13 U**	**<.15 U**	**<.14 U**	**<.15 U**	**<.15 U**	**<.15 U**	**<.15 U**
BENZO(A)ANTHRACENE	0.412	<.15 U	<.16 U	<.15 U	<.13 U	<.15 U	<.14 U	<.15 U	<.15 U	<.15 UJ	<.15 U
BENZO(A)PYRENE	0.43	<.049 U	<.053 U	<.051 U	<.042 U	<.049 U	.16	<.05 U	<.051 U	<.05 U	<.05 U
BENZO(B)FLUORANTHENE	0.371	<.15 U	<.16 U	<.15 U	<.13 U	<.15 U	.32 J	<.15 U	<.15 U	<.15 U	<.15 U
CHRYSENE	0.384	<.15 U	<.16 U	<.15 U	<.13 U	<.15 U	<.14 U	<.15 U	<.15 U	<.15 UJ	<.15 U
DIBENZ(A,H)ANTHRACENE	0.0634	<.049 UJ	<.053 U	<.051 U	<.042 U	<.049 U	<.048 U	<.05 U	<.051 U	<.05 UJ	<.05 U
FLUORANTHENE	0.6	<.15 U	<.16 U	<.15 U	<.13 U	<.15 U	.14	<.15 U	<.15 U	<.15 U	<.15 U
FLUORENE	0.0253	**<.15 U**	**<.16 U**	**<.15 U**	**<.13 U**	**<.15 U**	**<.14 U**	**<.15 U**	**<.15 U**	**<.15 U**	**<.15 U**
INDENO(1,2,3-CD)PYRENE	0.382	<.15 UJ	<.16 U	<.15 U	<.13 U	<.15 U	<.14 U	<.15 U	<.15 U	<.15 U	<.15 U
NAPHTHALENE	0.16	**<.6 U**	**<.64 U**	**<.61 U**	**<.51 U**	**<.59 U**	**<.58 U**	**<.61 U**	**<.62 U**	**<.61 U**	**<.61 U**
PHENANTHRENE	0.24	--	--	--	--	--	--	--	--	--	--
PYRENE	0.665	<.15 U	<.16 U	<.15 U	<.13 U	<.15 U	<.14 U	<.15 U	<.15 U	<.15 U	<.15 U
Total Petroleum Hydrocarbons (mg/kg)											
AVIATION FUEL RANGE (JP4)	12	**<15 U**	**<16 U**	**<16 U**	**<13 U**	**<15 U**	--	**<16 U**	**<15 U**	**<15 U**	**<15 U**
GASOLINE RANGE	12	<1.5 U	<1.6 U	<1.6 U	<1.3 U	<1.5 U	--	<1.6 U	<1.5 U	<1.5 U	<1.5 U

Table B-13
Onshore Fuel Line - Hangar Area Data
Focused Feasibility Study
Hamilton Army Airfield
Novato, California

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth									
		HB-1248 11/15/95 ATG(B)-053 3 ft	HB-1249 11/15/95 ATG(B)-055 3.5 ft	HB-1251 11/15/95 ATG(B)-059 4 ft	HB-2401 11/16/95 ATG(B)-065 1.67 ft	HB-1261 11/20/95 ATG(B)-071 3.5 ft	HB-1267 11/20/95 ATG(B)-075 2.5 ft	HB-1276 11/20/95 ATG(B)-079 3.5 ft	HB-1341 11/30/95 ATG(B)-079N 3.83 ft	HB-1538 11/30/95 ATG(B)-079N 3.83 ft	HB-1282 11/20/95 ATG(B)-083 3.5 ft
Benzene, Toluene, Ethylbenzene and Xylenes (mg/kg)											
ETHYLBENZENE	0.004	**<.0081 U**	**<.0077 U**	**<.0081 U**	--	**<.0078 U**	**<.0075 U**	**<.0078 U**	--	--	**<.0077 U**
XYLENES (TOTAL)	0.04	<.0081 U	<.0077 U	<.0081 U	--	<.0078 U	<.0075 U	<.0078 U	--	--	<.0077 U
Metals (mg/kg)											
LEAD	43.2	14.1	16.4	15.1	--	16.6	14.2	15.3	--	--	<15.4 U
Semivolatile Organic Compounds (mg/kg)											
ACENAPHTHENE	0.026	**<.16 U**	**<.15 U**	**<.16 U**	**<.13 U**	**<.16 U**	**<.15 U**	**<.16 U**	--	**<.15 U**	**<.15 U**
ANTHRACENE	0.088	**<.16 U**	**<.15 U**	**<.16 U**	**<.13 U**	**<.16 U**	**<.15 U**	**<.16 U**	--	**<.15 U**	**<.15 U**
BENZO(A)ANTHRACENE	0.412	<.16 U	<.15 U	<.16 U	<.13 U	<.16 U	<.15 U	<.16 U	--	<.15 U	<.15 U
BENZO(A)PYRENE	0.43	<.053 U	<.051 U	<.053 U	<.043 U	<.051 U	<.048 U	<.051 U	<.05 U	--	<.051 U
BENZO(B)FLUORANTHENE	0.371	<.16 U	<.15 U	<.16 U	<.13 U	<.16 U	<.15 U	<.16 U	--	<.15 U	<.15 U
CHRYSENE	0.384	<.16 U	<.15 U	<.16 U	<.13 U	<.16 U	<.15 U	<.16 U	--	<.15 U	<.15 U
DIBENZ(A,H)ANTHRACENE	0.0634	<.053 U	<.051 U	<.053 U	<.043 U	<.051 U	<.048 U	<.051 U	<.05 U	--	<.051 UJ
FLUORANTHENE	0.6	<.16 U	<.15 U	<.16 U	<.13 U	<.16 U	<.15 U	<.16 U	--	<.15 U	<.15 U
FLUORENE	0.0253	**<.16 U**	**<.15 U**	**<.16 U**	**<.13 U**	**<.16 U**	**<.15 U**	**<.16 U**	--	**<.15 U**	**<.15 U**
INDENO(1,2,3-CD)PYRENE	0.382	<.16 U	<.15 U	<.16 U	<.13 U	<.16 U	<.15 U	<.16 U	--	<.15 U	<.15 UJ
NAPHTHALENE	0.16	**<.65 U**	**<.62 U**	**<.65 U**	**<.52 U**	**<.62 U**	**<.59 U**	**<.62 U**	**<.61 U**	--	**<.62 U**
PHENANTHRENE	0.24	--	--	--	--	--	--	--	--	--	--
PYRENE	0.665	<.16 U	<.15 U	<.16 U	<.13 U	<.16 U	<.15 U	<.16 U	--	<.15 U	<.15 U
Total Petroleum Hydrocarbons (mg/kg)											
AVIATION FUEL RANGE (JP4)	12	**<16 U**	**<15 U**	**<16 U**	--	**<16 U**	**<15 U**	**<16 U**	--	--	**<15 U**
GASOLINE RANGE	12	<1.6 U	<1.5 U	<1.6 U	--	<1.6 U	<1.5 U	<1.6 U	--	--	<1.5 U

Table B-13
Onshore Fuel Line - Hangar Area Data
Focused Feasibility Study
Hamilton Army Airfield
Novato, California
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Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth									
		HB-1273 11/21/95 ATG(B)-187 3 ft	HB-1288 11/21/95 ATG(B)-191 3 ft	HB-1294 11/21/95 ATG(B)-195 3 ft	HB-1303 11/21/95 ATG(B)-201 3 ft	HB-2418 11/16/95 ATG(B)-205 3.25 ft	HB-1309 11/21/95 ATG(B)-209 3 ft	HB-2345 11/21/95 ATG(B)-215 2.67 ft	HB-2161 11/15/95 ATG(G)-223 4 ft	HB-2236 11/21/95 ATG(G)-231 3.5 ft	HB-1583 12/01/95 ATG(G)-238 1.33 ft
Benzene, Toluene, Ethylbenzene and Xylenes (mg/kg)											
ETHYLBENZENE	0.004	**<.0075 U**	**<.0076 U**	**<.0078 U**	**<.0071 U**	**<.0077 U**	**<.0074 U**	**<.0071 U**	--	--	--
XYLENES (TOTAL)	0.04	<.0075 U	<.0076 U	<.0078 U	<.0071 U	<.0077 U	<.0074 U	<.0071 U	--	--	--
Metals (mg/kg)											
LEAD	43.2	12.8	11.4	11.3	15.9	16.4	15.4	17.3	16.3	--	--
Semivolatile Organic Compounds (mg/kg)											
ACENAPHTHENE	0.026	**<.15 U**	**<.15 U**	**<.16 U**	**<.14 U**	**<.15 U**	**<.15 U**	**<.14 U**	--	**<.16 U**	**<.14 U**
ANTHRACENE	0.088	**<.15 U**	**<.15 U**	**<.16 U**	**<.14 U**	**<.15 U**	**<.15 U**	**<.14 U**	--	**<.16 U**	**<.14 U**
BENZO(A)ANTHRACENE	0.412	<.15 U	<.15 U	<.16 U	<.14 U	<.15 U	<.15 U	<.14 U	--	<.16 U	<.14 U
BENZO(A)PYRENE	0.43	<.049 U	<.05 U	<.052 U	.087	<.051 U	<.049 U	<.047 U	--	<.053 U	<.045 U
BENZO(B)FLUORANTHENE	0.371	<.15 U	.18 J	<.16 U	.31 J	<.15 U	<.15 U	<.14 U	--	<.16 U	<.14 U
CHRYSENE	0.384	<.15 U	<.15 U	<.16 U	<.14 U	<.15 U	<.15 U	<.14 U	--	<.16 U	<.14 U
DIBENZ(A,H)ANTHRACENE	0.0634	<.049 U	<.05 U	<.052 U	<.047 U	<.051 UJ	<.049 U	<.047 U	--	<.053 U	<.045 U
FLUORANTHENE	0.6	<.15 U	<.15 U	<.16 U	<.14 U	<.15 U	<.15 U	<.14 U	--	<.16 U	<.14 U
FLUORENE	0.0253	**<.15 U**	**<.15 U**	**<.16 U**	**<.14 U**	**<.15 U**	**<.15 U**	**<.14 U**	--	**<.16 U**	**<.14 U**
INDENO(1,2,3-CD)PYRENE	0.382	<.15 U	<.15 U	<.16 U	<.14 U	<.15 UJ	<.15 U	<.14 U	--	<.16 U	<.14 U
NAPHTHALENE	0.16	**<.6 U**	**<.61 U**	**<.62 U**	**<.57 U**	**<.62 U**	**<.59 U**	**<.57 U**	--	**<.65 U**	**<.54 U**
PHENANTHRENE	0.24	--	--	--	--	--	--	--	--	--	--
PYRENE	0.665	<.15 U	<.15 U	<.16 U	<.14 U	<.15 U	<.15 U	<.14 U	--	<.16 U	<.14 U
Total Petroleum Hydrocarbons (mg/kg)											
AVIATION FUEL RANGE (JP4)	12	**<15 U**	**<15 U**	**<16 U**	**<14 U**	**<15 U**	**<15 U**	**<14 U**	--	--	--
GASOLINE RANGE	12	<1.5 U	<1.5 U	<1.6 U	<1.4 U	<1.5 U	<1.5 U	<1.4 U	--	--	--

Table B-13
Onshore Fuel Line - Hangar Area Data
Focused Feasibility Study
Hamilton Army Airfield
Novato, California

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth									
		HB-2273 11/16/95 ATG(G)-249 8 ft	HB-2411 11/16/95 ATG(G)-251 5 ft	HB-1322 11/27/95 ATG(G)-264 4 ft	HB-2288 11/27/95 ATG(G)-266 3 ft	HB-2392 11/15/95 ATG(G)-271 5.33 ft	HB-2378 11/15/95 ATG(G)-289 7.5 ft	HB-2379 11/15/95 ATG(G)-291 4.5 ft	HB-2084 11/15/95 ATG(R)-034 4.5 ft	HB-2093 11/15/95 ATG(R)-038 4 ft	HB-2096 11/16/95 ATG(R)-040 3.5 ft
Benzene, Toluene, Ethylbenzene and Xylenes (mg/kg)											
ETHYLBENZENE	0.004	**<.0093 U**	**<.0083 U**	--	**<.0077 U**	**<.0082 U**	**<.0085 U**	**<.0072 U**	**<.0072 U**	**<.0078 U**	--
XYLENES (TOTAL)	0.04	<.0093 U	<.0083 U	--	<.0077 U	<.0082 U	.01 J	<.0072 U	<.0072 U	<.0078 U	--
Metals (mg/kg)											
LEAD	43.2	17.9	13.4	--	27.8	12.8	<25.4 U	15.3	8.5	12.4	--
Semivolatile Organic Compounds (mg/kg)											
ACENAPHTHENE	0.026	**<.19 U**	**<.17 U**	**<.15 U**	**<.15 U**	**<.16 U**	--	**<.14 U**	**<.14 U**	**<.15 U**	**<.16 U**
ANTHRACENE	0.088	**<.19 U**	**<.17 U**	**<.15 U**	**<.15 U**	**<.16 U**	--	**<.14 U**	**<.14 U**	**<.15 U**	**<.16 U**
BENZO(A)ANTHRACENE	0.412	<.19 U	<.17 U	<.15 U	<.15 U	<.16 U	**<6.8 U**	<.14 UJ	<.14 U	<.15 U	<.16 UJ
BENZO(A)PYRENE	0.43	<.061 U	<.055 U	<.051 U	<.051 U	<.054 U	**<2.2 U**	<.048 U	<.048 U	<.051 U	<.052 U
BENZO(B)FLUORANTHENE	0.371	<.19 U	<.17 U	<.15 U	<.15 U	<.16 U	**<6.8 U**	<.14 U	<.14 U	<.15 U	<.16 U
CHRYSENE	0.384	<.19 U	<.17 U	<.15 U	<.15 U	<.16 U	**<6.8 U**	<.14 UJ	<.14 U	<.15 U	<.16 UJ
DIBENZ(A,H)ANTHRACENE	0.0634	<.061 U	<.055 UJ	<.051 U	<.051 U	<.054 UJ	**<2.2 U**	<.048 UJ	<.048 U	<.051 U	<.052 UJ
FLUORANTHENE	0.6	<.19 U	<.17 U	<.15 U	<.15 U	<.16 U	**<6.8 U**	<.14 U	<.14 U	<.15 U	<.16 U
FLUORENE	0.0253	**<.19 U**	**<.17 U**	**<.15 U**	**<.15 U**	**<.16 U**	--	**<.14 U**	**<.14 U**	**<.15 U**	**<.16 U**
INDENO(1,2,3-CD)PYRENE	0.382	<.19 U	<.17 UJ	<.15 U	<.15 U	<.16 UJ	**<6.8 U**	<.14 U	<.14 U	<.15 U	<.16 U
NAPHTHALENE	0.16	**<.74 U**	**<.67 U**	**<.62 U**	**<.62 U**	**<.66 U**	--	**<.58 U**	**<.58 U**	**<.61 U**	**<.62 U**
PHENANTHRENE	0.24	--	--	--	--	--	--	--	--	--	--
PYRENE	0.665	<.19 U	<.17 U	<.15 U	<.15 U	<.16 U	**<6.8 U**	<.14 U	<.14 U	<.15 U	<.16 U
Total Petroleum Hydrocarbons (mg/kg)											
AVIATION FUEL RANGE (JP4)	12	**<19 U**	**<17 U**	--	**<15 U**	**<16 U**	**<170 U**	**<14 U**	**<14 U**	**<16 U**	--
GASOLINE RANGE	12	<1.9 U	<1.7 U	--	<1.5 U	<1.6 U	<1.7 U	<1.4 U	<1.4 U	<1.6 U	--

Table B-13
Onshore Fuel Line - Hangar Area Data
Focused Feasibility Study
Hamilton Army Airfield
Novato, California

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth									
		HB-2104 11/16/95 ATG(R)-046 2 ft	HB-2105 11/16/95 ATG(R)-046 1.25 ft	HB-2106 11/15/95 ATG(R)-048 4.5 ft	HB-2107 11/15/95 ATG(R)-050 3.5 ft	HB-2109 12/04/95 ATG(R)-052 3.5 ft	HB-2111 12/04/95 ATG(R)-052 1.5 ft	HB-2246 12/05/95 ATG(R)-053 4 ft	HB-2247 12/05/95 ATG(R)-053 1.5 ft	HB-2108 11/27/95 ATG(R)-054 4 ft	HB-2112 12/05/95 ATG(R)-056 4.5 ft
Benzene, Toluene, Ethylbenzene and Xylenes (mg/kg)											
ETHYLBENZENE	0.004	--	--	**<.008 U**	**<.0074 U**	--	--	--	--	**<.0078 U**	--
XYLENES (TOTAL)	0.04	--	--	<.008 U	<.0074 U	--	--	--	--	<.0078 U	--
Metals (mg/kg)											
LEAD	43.2	--	--	10.5	14.8	--	--	--	--	15.2	--
Semivolatile Organic Compounds (mg/kg)											
ACENAPHTHENE	0.026	**<.11 U**	**<.13 U**	**<.16 U**	**<.15 U**	**<.11 U**	**<.1 U**	**<.16 U**	**<.11 U**	**<.15 U**	**<.16 U**
ANTHRACENE	0.088	**0.14**	**<.13 U**	**<.16 U**	.068 J	**<.11 U**	**<.1 U**	**<.16 U**	**<.11 U**	**<.15 U**	**<.16 U**
BENZO(A)ANTHRACENE	0.412	**.81 J**	<.13 UJ	<.16 U	.21	<.11 U	<.1 U	<.16 U	<.11 U	<.15 U	.31
BENZO(A)PYRENE	0.43	.23	<.042 U	<.052 U	.15	<.038 U	<.033 U	<.052 U	<.036 U	<.051 U	.22
BENZO(B)FLUORANTHENE	0.371	**.87 J**	<.13 U	<.16 U	.15	<.11 U	<.1 U	<.16 U	<.11 U	<.15 U	.28
CHRYSENE	0.384	.2 J	<.13 UJ	<.16 U	.23	<.11 U	<.1 U	<.16 U	<.11 U	<.15 U	.25
DIBENZ(A,H)ANTHRACENE	0.0634	<.036 UJ	<.042 UJ	<.052 U	<.048 U	<.038 U	<.033 U	<.052 U	<.036 U	<.051 U	<.052 U
FLUORANTHENE	0.6	**0.9**	<.13 U	<.16 U	.47	<.11 U	<.1 U	<.16 U	<.11 U	<.15 U	**0.72**
FLUORENE	0.0253	**<.11 U**	**<.13 U**	**<.16 U**	**<.15 U**	**<.11 U**	**<.1 U**	**<.16 U**	**<.11 U**	**<.15 U**	**<.16 U**
INDENO(1,2,3-CD)PYRENE	0.382	<.11 U	<.13 U	<.16 U	.067 J	<.11 U	<.1 U	<.16 U	<.11 U	<.15 U	<.16 U
NAPHTHALENE	0.16	**<.44 U**	**<.51 U**	**<.63 U**	**<.59 U**	**<.46 U**	**<.41 U**	**<.62 U**	**<.44 U**	**<.62 U**	**<.62 U**
PHENANTHRENE	0.24	--	--	--	--	--	--	--	--	--	--
PYRENE	0.665	.65	<.13 U	<.16 U	.48	<.11 U	<.1 U	<.16 U	<.11 U	<.15 U	.56
Total Petroleum Hydrocarbons (mg/kg)											
AVIATION FUEL RANGE (JP4)	12	--	--	**<80 U**	**<15 U**	--	--	--	--	**<16 U**	--
GASOLINE RANGE	12	--	--	<1.6 U	<1.5 U	--	--	--	--	<1.6 U	--

Table B-13
Onshore Fuel Line - Hangar Area Data
Focused Feasibility Study
Hamilton Army Airfield
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Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth									
		HB-1559 12/05/95 ATG(R)-057 3.5 ft	HB-2233 11/20/95 ATG(R)-057 4 ft	HB-2113 11/21/95 ATG(R)-058 4.5 ft	HB-2387 11/15/95 ATG(R)-060 3.42 ft	HB-1563 12/05/95 ATG(R)-067 3 ft	HB-2389 11/15/95 ATG(R)-070 4.17 ft	HB-2130 11/21/95 ATG(R)-078 3.5 ft	HB-2217 12/05/95 ATG(R)-079 4 ft	HB-2133 11/21/95 ATG(R)-080 3 ft	HB-2139 11/21/95 ATG(R)-084 3 ft
Benzene, Toluene, Ethylbenzene and Xylenes (mg/kg)											
ETHYLBENZENE	0.004	--	--	--	--	--	**<.0077 U**	**<.0076 U**	--	**<.0066 U**	**<.0067 U**
XYLENES (TOTAL)	0.04	--	--	--	--	--	<.0077 U	<.0076 U	--	<.0066 U	<.0067 U
Metals (mg/kg)											
LEAD	43.2	--	--	--	--	--	21.6	<15.2 U	--	25.8	38.8
Semivolatile Organic Compounds (mg/kg)											
ACENAPHTHENE	0.026	**<.15 U**	--	**<.15 U**	**<.14 U**	**<.15 U**	**<.15 U**	**<.15 U**	**<.13 U**	**<.13 U**	**<.13 U**
ANTHRACENE	0.088	**<.15 U**	--	**<.15 U**	**<.14 U**	**<.15 U**	**<.15 U**	**<.15 U**	**<.13 U**	**<.13 U**	**<.13 U**
BENZO(A)ANTHRACENE	0.412	<.15 U	.17	<.15 U	<.14 UJ	**0.61**	<.15 U	<.15 UJ	<.13 U	<.13 UJ	<.13 UJ
BENZO(A)PYRENE	0.43	<.05 U	.14	<.051 U	<.046 U	.41	<.051 U	<.05 U	<.043 U	<.043 U	<.044 U
BENZO(B)FLUORANTHENE	0.371	<.15 U	.15	<.15 U	<.14 U	**0.5**	<.15 U	<.15 U	<.13 U	<.13 U	<.13 U
CHRYSENE	0.384	<.15 U	.21	<.15 U	<.14 UJ	**0.41**	<.15 U	<.15 UJ	<.13 U	<.13 UJ	<.13 UJ
DIBENZ(A,H)ANTHRACENE	0.0634	<.05 U	<.048 U	<.051 U	<.046 UJ	<.05 U	<.051 U	<.05 UJ	<.043 U	<.043 UJ	<.044 UJ
FLUORANTHENE	0.6	<.15 U	.35	<.15 U	<.14 U	**1.1**	<.15 U	<.15 U	<.13 U	<.13 U	<.13 U
FLUORENE	0.0253	**<.15 U**	--	**<.15 U**	**<.14 U**	**<.15 U**	**<.15 U**	**<.15 U**	**<.13 U**	**<.13 U**	**<.13 U**
INDENO(1,2,3-CD)PYRENE	0.382	<.15 U	.08 J	<.15 U	<.14 U	.15 J	<.15 U	<.15 UJ	<.13 U	<.13 UJ	<.13 UJ
NAPHTHALENE	0.16	**<.61 U**	**<.58 U**	**<.62 U**	**<.56 U**	**<.61 U**	**<.62 U**	**<.61 U**	**<.52 U**	**<.53 U**	**<.53 U**
PHENANTHRENE	0.24	--	--	--	--	--	--	--	--	--	--
PYRENE	0.665	<.15 U	.39	<.15 U	<.14 U	**0.86**	<.15 U	<.15 U	<.13 U	<.13 U	<.13 U
Total Petroleum Hydrocarbons (mg/kg)											
AVIATION FUEL RANGE (JP4)	12	--	--	--	--	--	**<15 U**	**<15 U**	--	**<13 U**	**<13 U**
GASOLINE RANGE	12	--	--	--	--	--	<1.5 U	<1.5 U	--	<1.3 U	<1.3 U

Table B-13
Onshore Fuel Line - Hangar Area Data
Focused Feasibility Study
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Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth									
		HB-2143 11/21/95 ATG(R)-088 2.5 ft	HB-2144 12/05/95 ATG(R)-092 2.5 ft	HB-2407 11/16/95 ATG(R)-096 3.2 ft	HB-2430 11/17/95 ATG(R)-100 3.3 ft	HB-2431 11/17/95 ATG(R)-100 3.25 ft	HB-2150 11/21/95 ATG(R)-104 4 ft	HB-2154 12/06/95 ATG(R)-106 1.33 ft	HB-2156 12/07/95 ATG(R)-108 4.5 ft	HB-2218 11/21/95 ATG(R)-109 4.5 ft	HB-2424 11/16/95 ATG(R)-110 2 ft
Benzene, Toluene, Ethylbenzene and Xylenes (mg/kg)											
ETHYLBENZENE	0.004	**<.0065 U**	--	**<.0083 U**	**<.0056 U**	--	**<.0075 U**	--	--	**<.0076 U**	--
XYLENES (TOTAL)	0.04	<.0065 U	--	<.0083 U	<.0056 U	--	<.0075 U	--	--	<.0076 U	--
Metals (mg/kg)											
LEAD	43.2	26.4	--	10.3	--	12.7	18.1	--	--	<15.2 U	--
Semivolatile Organic Compounds (mg/kg)											
ACENAPHTHENE	0.026	**<.13 UJ**	**<.11 U**	**<.17 U**	**<.11 U**	--	**<.15 U**	**<.11 U**	**<.15 U**	**<.15 U**	**<.12 U**
ANTHRACENE	0.088	**<.13 UJ**	**<.11 U**	**<.17 U**	**<.11 U**	--	**<.15 U**	**<.11 U**	**<.15 U**	**<.15 U**	**<.12 U**
BENZO(A)ANTHRACENE	0.412	<.13 UJ	<.11 U	<.17 U	<.11 U	--	<.15 U	<.11 U	<.15 U	<.15 U	<.12 U
BENZO(A)PYRENE	0.43	<.043 UJ	<.035 U	<.055 U	<.037 U	--	<.049 U	.046	<.049 U	<.05 U	<.04 U
BENZO(B)FLUORANTHENE	0.371	<.13 UJ	<.11 U	<.17 U	<.11 U	--	<.15 U	<.11 U	<.15 U	<.15 U	<.12 U
CHRYSENE	0.384	<.13 UJ	<.11 U	<.17 U	<.11 U	--	<.15 U	<.11 U	<.15 U	<.15 U	<.12 U
DIBENZ(A,H)ANTHRACENE	0.0634	<.043 UJ	<.035 U	<.055 UJ	<.037 UJ	--	<.049 U	**0.078**	<.049 U	<.05 U	<.04 U
FLUORANTHENE	0.6	<.13 UJ	<.11 U	<.17 U	<.11 U	--	<.15 U	<.11 U	<.15 U	<.15 U	<.12 U
FLUORENE	0.0253	**<.13 UJ**	**<.11 U**	**<.17 U**	**<.11 U**	--	**<.15 U**	**<.11 U**	**<.15 U**	**<.15 U**	**<.12 U**
INDENO(1,2,3-CD)PYRENE	0.382	<.13 UJ	<.11 U	<.17 UJ	<.11 UJ	--	<.15 U	<.11 U	<.15 U	<.15 U	<.12 U
NAPHTHALENE	0.16	**<.52 UJ**	**<.43 U**	**<.67 U**	**<.44 U**	--	**<.6 U**	**<.42 U**	**<.6 U**	**<.61 U**	**<.48 U**
PHENANTHRENE	0.24	--	--	--	--	--	--	--	--	--	--
PYRENE	0.665	<.13 UJ	<.11 U	<.17 U	<.11 U	--	<.15 U	<.11 U	<.15 U	<.15 U	<.12 U
Total Petroleum Hydrocarbons (mg/kg)											
AVIATION FUEL RANGE (JP4)	12	**<13 U**	--	**<17 U**	<11 U	--	**<15 U**	--	--	**<15 U**	--
GASOLINE RANGE	12	<1.3 U	--	<1.7 U	<1.1 U	--	<1.5 U	--	--	<1.5 U	--

Table B-13
Onshore Fuel Line - Hangar Area Data
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Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth									
		HB-2422 11/16/95 ATG(R)-112 1.33 ft	HB-1391 12/08/95 ATG(R)-114 2.08 ft	HB-2202 12/08/95 ATG(R)-114 2.08 ft	HB-1384 12/06/95 ATG(R)-115 4 ft	HB-2204 12/07/95 ATG(R)-116 3 ft	HB-2294 11/30/95 ATG(R)-117 3 ft	HB-1406 11/21/95 ATG(R)-118 4 ft	HB-2207 11/21/95 ATG(R)-118 4 ft	HB-2083 11/27/95 ATG(R)-293 4 ft	HB-2082 11/15/95 ATG(R)-295 4.5 ft
Benzene, Toluene, Ethylbenzene and Xylenes (mg/kg)											
ETHYLBENZENE	0.004	--	--	--	--	--	--	**<.0079 U**	--	**<.0079 U**	--
XYLENES (TOTAL)	0.04	--	--	--	--	--	--	<.0079 U	--	<.0079 U	--
Metals (mg/kg)											
LEAD	43.2	--	--	--	--	--	--	--	22.1	17.5	11.3
Semivolatile Organic Compounds (mg/kg)											
ACENAPHTHENE	0.026	**<.11 U**	**<.14 U**	--	**<.14 U**	**<.15 U**	**<.15 U**	--	**<.16 U**	**<.15 U**	--
ANTHRACENE	0.088	**<.11 U**	**<.14 U**	--	**<.14 U**	**<.15 U**	**<.15 U**	--	**<.16 U**	**<.15 U**	--
BENZO(A)ANTHRACENE	0.412	<.11 U	--	**120**	<.14 U	<.15 U	<.15 U	.22	--	<.15 U	--
BENZO(A)PYRENE	0.43	<.037 U	--	**99**	.074	<.05 U	<.051 U	.13	--	<.05 U	--
BENZO(B)FLUORANTHENE	0.371	<.11 U	--	**180 J**	<.14 U	<.15 U	<.15 U	**.4 J**	--	<.15 U	--
CHRYSENE	0.384	<.11 U	--	**64**	<.14 U	<.15 U	<.15 U	.27	--	<.15 U	--
DIBENZ(A,H)ANTHRACENE	0.0634	<.037 U	--	**17 J**	<.048 U	<.05 U	<.051 U	<.052 U	--	<.05 U	--
FLUORANTHENE	0.6	<.11 U	--	**120**	.26	<.15 U	<.15 U	.32	--	<.15 U	--
FLUORENE	0.0253	**<.11 U**	**<.14 U**	--	**<.14 U**	**<.15 U**	**<.15 U**	--	**<.16 U**	**<.15 U**	--
INDENO(1,2,3-CD)PYRENE	0.382	<.11 U	--	**51 J**	<.14 U	<.15 U	<.15 U	--	<.16 U	<.15 U	--
NAPHTHALENE	0.16	**<.44 U**	**<.56 U**	--	**<.58 U**	**<.61 U**	**<.62 U**	**<.63 U**	--	**<.61 U**	--
PHENANTHRENE	0.24	--	--	--	--	--	--	--	--	--	--
PYRENE	0.665	<.11 U	--	**91**	.19	<.15 U	<.15 U	.32	--	<.15 U	--
Total Petroleum Hydrocarbons (mg/kg)											
AVIATION FUEL RANGE (JP4)	12	--	--	--	--	--	--	--	**<16 U**	**<16 U**	**<18 U**
GASOLINE RANGE	12	--	--	--	--	--	--	--	<1.6 U	<1.6 U	<1.8 U

Table B-13
Onshore Fuel Line - Hangar Area Data
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Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth										
		HB-2162 11/15/95 ATG(R)-295 4.5 ft	HB-2061 11/16/95 ATG-014 3.67 ft	HB-2059 11/20/95 ATG-016 1.5 ft	HB-2055 11/16/95 ATG-018 3.8 ft	HB-2053 11/20/95 ATG-020 1.33 ft	HB-2050 11/20/95 ATG-023 1.25 ft	HB-1449 12/04/95 ATG-024 2 ft	HB-2047 11/20/95 ATG-025 0.33 ft	HB-2045 11/20/95 ATG-027 4.17 ft	HB-2231 11/20/95 ATG-027 4.17 ft	HB-2244 11/20/95 ATG-027 0.75 ft
Benzene, Toluene, Ethylbenzene and Xylenes (mg/kg)												
ETHYLBENZENE	0.004	**<.0089 U**	**<.0078 U**	--	**<.0083 U**	--	--	--	--	--	--	--
XYLENES (TOTAL)	0.04	<.0089 U	<.0078 U	--	<.0083 U	--	--	--	--	--	--	--
Metals (mg/kg)												
LEAD	43.2	--	10.8	--	16.3	--	--	--	--	--	--	--
Semivolatile Organic Compounds (mg/kg)												
ACENAPHTHENE	0.026	**<.17 U**	**<.16 U**	**<.14 U**	**<.17 U**	**<.12 U**	**<.12 U**	**<.13 U**	**<.12 U**	**<.15 U**	--	**<.12 U**
ANTHRACENE	0.088	**<.17 U**	**<.16 U**	**<.14 U**	**<.17 U**	**<.12 U**	**<.12 U**	**<.13 U**	**<.12 U**	--	**.12 J**	**<.12 U**
BENZO(A)ANTHRACENE	0.412	<.17 U	<.16 U	<.14 U	<.17 U	<.12 U	<.12 U	<.13 U	<.12 U	--	.36	<.12 U
BENZO(A)PYRENE	0.43	<.057 U	<.052 U	<.046 U	<.055 U	<.041 U	<.038 U	<.044 U	<.039 U	--	.25	<.04 U
BENZO(B)FLUORANTHENE	0.371	<.17 U	<.16 U	<.14 U	<.17 U	<.12 U	<.12 U	<.13 U	<.12 U	--	.22	<.12 U
CHRYSENE	0.384	<.17 U	<.16 U	<.14 U	<.17 U	<.12 U	<.12 U	<.13 U	<.12 U	--	**0.42**	<.12 U
DIBENZ(A,H)ANTHRACENE	0.0634	<.057 U	<.052 U	<.046 U	<.055 U	<.041 U	<.038 U	<.044 U	<.039 U	--	**0.068**	<.04 U
FLUORANTHENE	0.6	<.17 U	<.16 U	<.14 U	<.17 U	<.12 U	<.12 U	<.13 U	<.12 U	--	**0.94**	<.12 U
FLUORENE	0.0253	**<.17 U**	**<.16 U**	**<.14 U**	**<.17 U**	**<.12 U**	**<.12 U**	**<.13 U**	**<.12 U**	**<.15 U**	--	**<.12 U**
INDENO(1,2,3-CD)PYRENE	0.382	<.17 U	<.16 U	<.14 U	<.17 U	<.12 U	<.12 U	<.13 U	<.12 U	--	.1 J	<.12 U
NAPHTHALENE	0.16	**<.69 U**	**<.62 U**	**<.55 U**	**<.67 U**	**<.5 U**	**<.46 U**	**<.53 U**	**<.48 U**	--	**<.61 U**	**<.49 U**
PHENANTHRENE	0.24	--	--	--	--	--	--	--	--	--	--	--
PYRENE	0.665	<.17 U	<.16 U	<.14 U	<.17 U	<.12 U	<.12 U	<.13 U	<.12 U	--	**0.91**	<.12 U
Total Petroleum Hydrocarbons (mg/kg)												
AVIATION FUEL RANGE (JP4)	12	--	**<16 U**	--	**<17 U**	--	--	--	--	--	--	--
GASOLINE RANGE	12	--	<1.6 U	--	<1.7 U	--	--	--	--	--	--	--

Table B-13
Onshore Fuel Line - Hangar Area Data
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Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth								
		HB-2042 11/16/95 ATG-029 3.92 ft	HB-2037 11/17/95 ATG-031 1.83 ft	HB-2038 11/20/95 ATG-031 1.33 ft	HB-1413 12/04/95 ATG-034 4 ft	HB-1442 12/04/95 ATG-034P10NE 6 ft	HB-2304 11/08/95 ATG-035P20NW 6 ft	HB-2305 11/08/95 ATG-035P20NW 8 ft	HB-2306 11/08/95 ATG-035P20NW 10 ft	HB-2308 11/08/95 ATG-035P40NW 6 ft
Benzene, Toluene, Ethylbenzene and Xylenes (mg/kg)										
ETHYLBENZENE	0.004	**<.0074 U**	--	--	--	--	**<.0077 U**	--	--	**<.008 U**
XYLENES (TOTAL)	0.04	<.0074 U	--	--	--	--	<.0077 U	--	--	<.011 U
Metals (mg/kg)										
LEAD	43.2	<14.7 U	--	--	--	--	13.1	--	--	13.1
Semivolatile Organic Compounds (mg/kg)										
ACENAPHTHENE	0.026	**<.15 U**	**<.12 U**	**<.1 U**	**<.17 U**	**<.16 U**	**<.15 U**	**<.15 U**	**<.16 U**	**<.16 U**
ANTHRACENE	0.088	**<.15 U**	**<.12 U**	**<.1 U**	**<.17 U**	**<.16 U**	**<.15 U**	**<.15 U**	**<.16 U**	**<.16 U**
BENZO(A)ANTHRACENE	0.412	<.15 U	<.12 U	<.1 U	<.17 U	<.16 U	<.15 U	<.15 UJ	<.16 UJ	<.16 U
BENZO(A)PYRENE	0.43	<.049 U	<.04 U	<.034 U	<.056 U	<.052 U	<.05 U	<.05 U	<.052 U	<.052 U
BENZO(B)FLUORANTHENE	0.371	<.15 U	<.12 U	<.1 U	<.17 U	<.16 U	<.15 U	<.15 U	<.16 U	<.16 U
CHRYSENE	0.384	<.15 U	<.12 U	<.1 U	<.17 U	<.16 U	<.15 U	<.15 UJ	<.16 UJ	<.16 U
DIBENZ(A,H)ANTHRACENE	0.0634	<.049 U	<.04 U	<.034 U	<.056 U	<.052 U	<.05 U	<.05 UJ	<.052 UJ	<.052 U
FLUORANTHENE	0.6	<.15 U	<.12 U	<.1 U	<.17 U	<.16 U	<.15 U	<.15 U	<.16 U	<.16 U
FLUORENE	0.0253	**<.15 U**	**<.12 U**	**<.1 U**	**<.17 U**	**<.16 U**	**<.15 U**	**<.15 U**	**<.16 U**	**<.16 U**
INDENO(1,2,3-CD)PYRENE	0.382	<.15 U	<.12 U	<.1 U	<.17 U	<.16 U	<.15 U	<.15 U	<.16 U	<.16 U
NAPHTHALENE	0.16	**<.59 U**	**<.48 U**	**<.42 U**	**<.68 U**	**<.62 U**	**<.61 U**	**<.61 U**	**<.63 U**	**<.63 U**
PHENANTHRENE	0.24	--	--	--	--	--	--	--	--	--
PYRENE	0.665	<.15 U	<.12 U	<.1 U	<.17 U	<.16 U	<.15 U	<.15 U	<.16 U	<.16 U
Total Petroleum Hydrocarbons (mg/kg)										
AVIATION FUEL RANGE (JP4)	12	**<15 U**	--	--	--	--	**<15 U**	--	--	**<16 U**
GASOLINE RANGE	12	<1.5 U	--	--	--	--	<1.5 U	--	--	<1.6 U

Table B-13
Onshore Fuel Line - Hangar Area Data
Focused Feasibility Study
Hamilton Army Airfield
Novato, California

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth								
		HB-2309 11/08/95 ATG-035P40NW 8 ft	HB-2310 11/08/95 ATG-035P40NW 10 ft	HB-1327 11/29/95 ATG-367 EXC(SE_CORN) 6 ft	HB-1373 12/05/95 ATG-370 5 ft	HB-1015 11/07/95 ATG-371S 5 ft	HB-1021 11/07/95 ATG-371S 3 ft	HB-1372 12/05/95 ATG-373 4 ft	HB-2230 11/17/95 ATG-373 4 ft	HB-1207 11/17/95 ATG-374 4 ft
Benzene, Toluene, Ethylbenzene and Xylenes (mg/kg)										
ETHYLBENZENE	0.004	--	--	**<.0072 U**	--	--	--	--	--	--
XYLENES (TOTAL)	0.04	--	--	<.014 U	--	--	--	--	--	--
Metals (mg/kg)										
LEAD	43.2	--	--	8.7	--	--	--	--	--	--
Semivolatile Organic Compounds (mg/kg)										
ACENAPHTHENE	0.026	**<.16 U**	**<.17 U**	**<.14 U**	**<.2 U**	**<.19 U**	**<.16 U**	**<.17 U**	**<.16 U**	**<.12 U**
ANTHRACENE	0.088	**<.16 U**	**<.17 U**	**<.14 U**	**<.2 U**	**<.19 U**	**<.16 U**	**<.17 U**	**<.16 U**	**<.12 U**
BENZO(A)ANTHRACENE	0.412	<.16 UJ	<.17 UJ	<.14 U	<.2 U	<.19 U	<.16 U	<.17 U	<.16 U	.079 J
BENZO(A)PYRENE	0.43	<.053 U	<.055 U	<.047 U	<.067 U	.087	<.16 U	<.057 U	<.054 U	.072
BENZO(B)FLUORANTHENE	0.371	<.16 U	<.17 U	<.14 U	<.2 U	<.19 U	<.16 U	<.17 U	<.16 U	.067 J
CHRYSENE	0.384	<.16 UJ	<.17 UJ	<.14 U	<.2 U	<.19 U	<.16 U	<.17 U	<.16 U	.066 J
DIBENZ(A,H)ANTHRACENE	0.0634	<.053 UJ	<.055 UJ	<.047 U	**<.067 U**	**<.19 U**	**<.16 U**	<.057 U	<.054 U	<.041 U
FLUORANTHENE	0.6	<.16 U	<.17 U	<.14 U	<.2 U	<.19 U	<.16 U	<.17 U	<.16 U	.093 J
FLUORENE	0.0253	**<.16 U**	**<.17 U**	**<.14 U**	**<.2 U**	**<.19 U**	**<.16 U**	**<.17 U**	**<.16 U**	**<.12 U**
INDENO(1,2,3-CD)PYRENE	0.382	<.16 U	<.17 U	<.14 U	<.2 U	<.19 U	<.16 U	<.17 U	<.16 U	<.12 U
NAPHTHALENE	0.16	**<.65 U**	**<.67 U**	**<.57 U**	**<.82 U**	**<.19 U**	<.16 U	**<.69 U**	**<.66 U**	**<.49 U**
PHENANTHRENE	0.24	--	--	--	--	<.19 U	<.16 U	--	--	--
PYRENE	0.665	<.16 U	<.17 U	<.14 U	<.2 U	<.19 U	<.16 U	<.17 U	<.16 U	.094 J
Total Petroleum Hydrocarbons (mg/kg)										
AVIATION FUEL RANGE (JP4)	12	--	--	**<14 U**	--	--	--	--	--	--
GASOLINE RANGE	12	--	--	<1.4 U	--	--	--	--	--	--

Table B-13
Onshore Fuel Line - Hangar Area Data
Focused Feasibility Study
Hamilton Army Airfield
Novato, California

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth										
		HB-2227 11/17/95 ATG-375 4.5 ft	HB-2301 11/17/95 ATG-378 3.58 ft	HB-2302 11/17/95 ATG-378 3.58 ft	HB-2311 12/01/95 ATG-381 5.5 ft	HB-2318 12/05/95 ATG-385 5.33 ft	HB-2329 12/04/95 ATG-395 6.67 ft	HB-2364 11/14/95 ATG-397 6 ft	HB-2514 12/04/95 CN-0060 5 ft	HB-2354 11/14/95 IT-002 3 ft	HB-2358 11/14/95 IT-004 3 ft	HB-2359 11/14/95 IT-004 5 ft
Benzene, Toluene, Ethylbenzene and Xylenes (mg/kg)												
ETHYLBENZENE	0.004	--	--	--	**0.033**	**<.0093 U**	--	**<.0089 U**	--	--	--	--
XYLENES (TOTAL)	0.04	--	--	--	**0.098**	<.0093 U	--	<.0089 U	--	--	--	--
Metals (mg/kg)												
LEAD	43.2	--	--	--	11.0	<9.3 U	--	14.3	--	--	--	--
Semivolatile Organic Compounds (mg/kg)												
ACENAPHTHENE	0.026	**<1.6 U**	**<.16 U**	**<.15 U**	**<.19 U**	**<.19 U**	**<.16 U**	**<.18 U**	**<.2 U**	**<.86 U**	**<.15 U**	**<.19 U**
ANTHRACENE	0.088	**<1.6 U**	**<.16 U**	**<.15 U**	**<.19 U**	**<.19 U**	**<.16 U**	**<.18 U**	**<.2 U**	**<.86 U**	**<.15 U**	**<.19 U**
BENZO(A)ANTHRACENE	0.412	**<1.6 U**	<.16 U	<.15 U	<.19 U	<.19 U	<.16 U	<.18 U	<.2 U	**<.86 UJ**	<.15 UJ	<.19 U
BENZO(A)PYRENE	0.43	**<.51 U**	<.051 U	<.05 U	<.063 U	<.061 U	<.054 U	<.059 U	<.065 U	<.28 U	<.049 U	<.062 U
BENZO(B)FLUORANTHENE	0.371	**<1.6 U**	<.16 U	<.15 U	<.19 U	<.19 U	<.16 U	<.18 U	<.2 U	**<.86 U**	<.15 U	<.19 U
CHRYSENE	0.384	**1.1 J**	<.16 U	<.15 U	<.19 U	<.19 U	<.16 U	<.18 U	<.2 U	**<.86 UJ**	<.15 UJ	<.19 U
DIBENZ(A,H)ANTHRACENE	0.0634	**<.51 U**	<.051 U	<.05 U	<.063 U	<.061 U	<.054 U	<.059 UJ	**<.065 U**	**<.28 UJ**	<.049 UJ	<.062 U
FLUORANTHENE	0.6	**<1.6 U**	<.16 U	<.15 U	<.19 U	<.19 U	<.16 U	<.18 U	<.2 U	**<.86 U**	<.15 U	<.19 U
FLUORENE	0.0253	**<1.6 U**	**<.16 U**	**<.15 U**	**<.19 U**	**<.19 U**	**<.16 U**	**<.18 U**	**<.2 U**	**<.86 U**	**<.15 U**	**<.19 U**
INDENO(1,2,3-CD)PYRENE	0.382	**<1.6 U**	<.16 U	<.15 U	<.19 U	<.19 U	<.16 U	<.18 UJ	<.2 U	**#<.86 U**	<.15 U	<.19 U
NAPHTHALENE	0.16	--	**<.62 U**	**<.61 U**	**<.76 U**	**<.74 U**	**<.66 U**	**<.71 U**	**<.79 U**	**<3.4 U**	**<.6 U**	**<.75 U**
PHENANTHRENE	0.24	--	--	--	--	--	--	--	--	--	--	--
PYRENE	0.665	**<1.6 U**	<.16 U	<.15 U	<.19 U	<.19 U	<.16 U	<.18 U	<.2 U	**<.86 U**	<.15 U	<.19 U
Total Petroleum Hydrocarbons (mg/kg)												
AVIATION FUEL RANGE (JP4)	12	--	--	--	**<19 U**	**<19 U**	--	**<18 U**	--	--	--	--
GASOLINE RANGE	12	--	--	--	<1.9 U	<1.9 U	--	<1.8 U	--	--	--	--

Table B-13
Onshore Fuel Line - Hangar Area Data
Focused Feasibility Study
Hamilton Army Airfield
Novato, California

Parameter	Comparison Value (mg/kg)	Sample Number									
		HB-2339 12/04/95 IT-005 2.33 ft	HB-2338 12/04/95 IT-006 2.5 ft	HB-2067 11/16/95 IT-009 4.5 ft	HB-2073 11/16/95 IT-011 4 ft	HB-2250 11/21/95 IT-013 3.5 ft	HB-2255 11/16/95 IT-014 2.7 ft	HB-2371 11/14/95 IT-017 5.5 ft	HB-2437 11/17/95 ITLAT-01A 5.58 ft	HB-2297 11/17/95 ITLAT-01B 4 ft	HB-2473 11/20/95 ITLAT-01C 4 ft
Benzene, Toluene, Ethylbenzene and Xylenes (mg/kg)											
ETHYLBENZENE	0.004	--	--	**<.0079 U**	**<.0076 U**	--	--	**<.0078 U**	**<.0078 U**	--	**<.0076 U**
XYLENES (TOTAL)	0.04	--	--	<.0079 U	<.0076 U	--	--	<.0078 U	<.0078 U	--	<.0076 U
Metals (mg/kg)											
LEAD	43.2	--	--	22.1	15.9	--	--	14.7	8.6	--	11.1 J
Semivolatile Organic Compounds (mg/kg)											
ACENAPHTHENE	0.026	**<.14 U**	**<.11 U**	**<.16 U**	**<.15 U**	**<.85 U**	**<.15 U**	**<.16 U**	**<.16 U**	**<.16 U**	**<.15 U**
ANTHRACENE	0.088	**<.14 U**	**<.11 U**	**<.16 U**	**<.15 U**	**<.85 U**	**<.15 U**	**<.16 U**	**<.16 U**	**<.16 U**	**<.15 U**
BENZO(A)ANTHRACENE	0.412	<.14 U	<.11 U	<.16 U	<.15 U	**<.85 U**	<.15 U	<.16 U	<.16 U	<.16 U	<.15 U
BENZO(A)PYRENE	0.43	<.046 U	<.036 U	<.052 U	<.05 U	<.28 U	<.05 U	<.052 U	<.052 U	<.054 U	<.05 U
BENZO(B)FLUORANTHENE	0.371	<.14 U	<.11 U	<.16 U	<.15 U	**<.85 U**	<.15 U	<.16 U	<.16 U	<.16 U	<.15 U
CHRYSENE	0.384	<.14 U	<.11 U	<.16 U	<.15 U	**<.85 U**	<.15 U	<.16 U	<.16 U	<.16 U	<.15 U
DIBENZ(A,H)ANTHRACENE	0.0634	<.046 U	<.036 U	<.052 U	<.05 U	**<.28 U**	<.05 U	<.052 UJ	<.052 U	<.054 U	<.05 U
FLUORANTHENE	0.6	<.14 U	<.11 U	<.16 U	<.15 U	**<.85 U**	<.15 U	<.16 U	<.16 U	<.16 U	<.15 U
FLUORENE	0.0253	**<.14 U**	**<.11 U**	**<.16 U**	**<.15 U**	**<.85 U**	**<.15 U**	**<.16 U**	**<.16 U**	**<.16 U**	**<.15 U**
INDENO(1,2,3-CD)PYRENE	0.382	<.14 U	<.11 U	<.16 U	<.15 U	**<.85 U**	<.15 U	<.16 UJ	<.16 U	<.16 U	<.15 U
NAPHTHALENE	0.16	**<.56 U**	**<.43 U**	**<.63 U**	**<.61 U**	**<3.4 U**	**<.61 U**	**<.62 U**	**<.62 U**	**<.66 U**	**<.61 U**
PHENANTHRENE	0.24	--	--	--	--	--	--	--	--	--	--
PYRENE	0.665	<.14 U	<.11 U	<.16 U	<.15 U	**<.85 U**	<.15 U	<.16 U	<.16 U	<.16 U	<.15 U
Total Petroleum Hydrocarbons (mg/kg)											
AVIATION FUEL RANGE (JP4)	12	--	--	**<16 U**	**<15 U**	--	--	**<16 U**	**<16 U**	--	**<15 U**
GASOLINE RANGE	12	--	--	<1.6 U	<1.5 U	--	--	<1.6 U	<1.6 U	--	<1.5 U

Table B-13
Onshore Fuel Line - Hangar Area Data
Focused Feasibility Study
Hamilton Army Airfield
Novato, California

Parameter	Comparison Value (mg/kg)	r/Date/Location/Depth									
		HB-2475 11/20/95 ITLAT-01E 3 ft	HB-2426 11/16/95 ITLAT-02A 5.5 ft	HB-2469 11/20/95 ITLAT-02C 3.75 ft	HB-2470 11/20/95 ITLAT-02C 3.75 ft	HB-2472 11/20/95 ITLAT-02E 2.5 ft	HB-2434 11/17/95 ITLAT-03B 7 ft	HB-2467 11/20/95 ITLAT-03C 1.58 ft	HB-2465 11/20/95 ITLAT-03D 6 ft	HB-2496 11/21/95 ITLAT-03F 2.67 ft	HB-2497 11/21/95 ITLAT-03F 2.67 ft
Benzene, Toluene, Ethylbenzene and Xylenes (mg/kg)											
ETHYLBENZENE	0.004	**<.0078 U**	**<.0081 U**	**<.0077 U**	--	**<.0074 U**	**<.0082 U**	--	**<.0075 U**	**<.0077 U**	--
XYLENES (TOTAL)	0.04	<.0078 U	<.016 U	--	<.0077 U	<.0074 U	<.0082 U	--	<.0075 U	<.0077 U	--
Metals (mg/kg)											
LEAD	43.2	<15.6 U	11.9	--	16.9 J	17.7 J	13.6 J	--	<7.5 U	13.5	--
Semivolatile Organic Compounds (mg/kg)											
ACENAPHTHENE	0.026	**<.16 U**	**<.16 U**	**<.15 U**	--	**<.15 U**	**<.16 U**	**<.11 U**	**<.15 U**	**<.15 U**	--
ANTHRACENE	0.088	**<.16 U**	**<.16 U**	**<.15 U**	--	**<.15 U**	**<.16 U**	**<.11 U**	**<.15 U**	**<.15 U**	--
BENZO(A)ANTHRACENE	0.412	<.16 U	<.16 U	<.15 U	--	<.15 U	<.16 U	<.11 U	<.15 U	<.15 U	--
BENZO(A)PYRENE	0.43	<.052 U	<.053 U	<.049 U	--	<.049 U	<.054 U	<.038 U	<.049 U	<.051 U	--
BENZO(B)FLUORANTHENE	0.371	<.16 U	<.16 U	<.15 U	--	<.15 U	<.16 U	<.11 U	<.15 U	<.15 U	--
CHRYSENE	0.384	<.16 U	<.16 U	<.15 U	--	<.15 U	<.16 U	<.11 U	<.15 U	<.15 U	--
DIBENZ(A,H)ANTHRACENE	0.0634	<.052 U	<.053 U	<.049 U	--	<.049 U	<.054 U	<.038 U	<.049 U	<.051 U	--
FLUORANTHENE	0.6	<.16 U	<.16 U	<.15 U	--	<.15 U	<.16 U	<.11 U	<.15 U	<.15 U	--
FLUORENE	0.0253	**<.16 U**	**<.16 U**	**<.15 U**	--	**<.15 U**	**<.16 U**	**<.11 U**	**<.15 U**	**<.15 U**	--
INDENO(1,2,3-CD)PYRENE	0.382	<.16 U	<.16 U	<.15 U	--	<.15 U	<.16 U	<.11 U	<.15 U	<.15 U	--
NAPHTHALENE	0.16	**<.62 U**	**<.64 U**	**<.6 U**	--	**<.59 U**	**<.66 U**	**<.46 U**	**<.6 U**	**<.62 U**	--
PHENANTHRENE	0.24	--	--	--	--	--	--	--	--	--	--
PYRENE	0.665	<.16 U	<.16 U	<.15 U	--	<.15 U	<.16 U	<.11 U	<.15 U	<.15 U	--
Total Petroleum Hydrocarbons (mg/kg)											
AVIATION FUEL RANGE (JP4)	12	**<16 U**	**<16 U**	--	**<15 U**	**<15 U**	**<16 U**	--	**<15 U**	**<15 U**	--
GASOLINE RANGE	12	<1.6 U	<1.6 U	<1.5 U	--	<1.5 U	<1.6 U	--	<1.5 U	--	<2.2 U

Table B-13
Onshore Fuel Line - Hangar Area Data
Focused Feasibility Study
Hamilton Army Airfield
Novato, California

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth									
		HB-2495 11/21/95 ITLAT-04B 3.75 ft	HB-2464 11/20/95 ITLAT-04D 4.17 ft	HB-2494 11/21/95 ITLAT-04F 4 ft	HB-2490 11/21/95 ITLAT-05B 4.58 ft	HB-2463 11/20/95 ITLAT-05D 3.17 ft	HB-2482 11/21/95 ITLAT-06B 3.75 ft	HB-2462 11/20/95 ITLAT-06D 2.33 ft	HB-2440 11/17/95 ITLAT-07A 4.33 ft	HB-2441 11/17/95 ITLAT-07C 5.33 ft	HB-2445 11/17/95 ITLAT-08C 5.67 ft
Benzene, Toluene, Ethylbenzene and Xylenes (mg/kg)											
ETHYLBENZENE	0.004	**<.0078 U**	**<.0074 UJ**	**<.14 U**	**<.0077 U**	**<.0079 U**	**0.0089**	**<.0079 U**	--	**<.0082 U**	**<.0082 U**
XYLENES (TOTAL)	0.04	<.0078 U	<.0074 UJ	**2.5**	<.0077 U	<.01 UJ	**0.057**	<.011 U	--	<.0082 U	<.0082 U
Metals (mg/kg)											
LEAD	43.2	9.3	10.4 J	23.6	16.8	18.3	<15.4 U	15.9	--	11.6 J	9.8 J
Semivolatile Organic Compounds (mg/kg)											
ACENAPHTHENE	0.026	**<.16 U**	**<.15 U**	**<.14 U**	**<.15 U**	**<.16 U**	**<.15 U**	**<.16 U**	**<.29 U**	**<.16 U**	**<.16 U**
ANTHRACENE	0.088	**<.16 U**	**<.15 U**	**<.14 U**	**<.15 U**	**<.16 U**	**<.15 U**	**<.16 U**	**<.29 U**	**<.16 U**	**<.16 U**
BENZO(A)ANTHRACENE	0.412	<.16 U	<.15 U	<.14 U	<.15 U	<.16 U	<.15 U	<.16 U	<.29 UJ	<.16 UJ	<.16 UJ
BENZO(A)PYRENE	0.43	<.052 U	<.049 U	<.048 U	<.051 U	<.051 U	<.051 U	<.052 U	<.094 U	<.054 U	<.054 U
BENZO(B)FLUORANTHENE	0.371	<.16 U	<.15 U	<.14 U	<.15 U	<.16 U	<.15 U	<.16 U	<.29 U	<.16 U	<.16 U
CHRYSENE	0.384	<.16 U	<.15 U	<.14 U	<.15 U	<.16 U	<.15 U	<.16 U	<.29 UJ	<.16 UJ	<.16 UJ
DIBENZ(A,H)ANTHRACENE	0.0634	<.052 U	<.049 U	<.048 U	<.051 U	<.051 U	<.051 U	<.052 U	**<.094 U**	<.054 U	<.054 U
FLUORANTHENE	0.6	<.16 U	<.15 U	<.14 U	<.15 U	<.16 U	<.15 U	<.16 U	<.29 U	<.16 U	<.16 U
FLUORENE	0.0253	**<.16 U**	**<.15 U**	**<.14 U**	**<.15 U**	**<.16 U**	**<.15 U**	**<.16 U**	**<.29 U**	**<.16 U**	**<.16 U**
INDENO(1,2,3-CD)PYRENE	0.382	<.16 U	<.15 U	<.14 U	<.15 U	<.16 U	<.15 U	<.16 U	<.29 U	<.16 U	<.16 U
NAPHTHALENE	0.16	**<.62 U**	**<.59 U**	**<.58 U**	**<.62 U**	**<.62 U**	**<.62 U**	**<.63 U**	**<1.1 U**	**<.66 U**	**<.66 U**
PHENANTHRENE	0.24	--	--	--	--	--	--	--	--	--	--
PYRENE	0.665	<.16 U	<.15 U	<.14 U	<.15 U	<.16 U	<.15 U	<.16 U	<.29 U	<.16 U	<.16 U
Total Petroleum Hydrocarbons (mg/kg)											
AVIATION FUEL RANGE (JP4)	12	**<16 U**	**<15 U**	**<14 U**	**<15 U**	**<16 U**	**<15 U**	**<16 U**	--	**<16 U**	**<16 U**
GASOLINE RANGE	12	<1.6 U	<1.5 U	6.2	<1.5 U	<1.6 U	<1.5 U	<1.6 U	--	<1.6 U	<1.6 U

Table B-13
Onshore Fuel Line - Hangar Area Data
Focused Feasibility Study
Hamilton Army Airfield
Novato, California

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth									
		HB-2444 11/17/95 ITLAT-08E 8 ft	HB-2460 11/20/95 ITLAT-09D 4.58 ft	HB-2448 11/17/95 ITLAT-10A 3.5 ft	HB-2458 11/20/95 ITLAT-10C 6 ft	HB-2459 11/20/95 ITLAT-10C 6 ft	HB-2500 11/22/95 LAT-397 2.83 ft	HB-2501 11/22/95 LAT-397 2.83 ft	HB-2506 11/22/95 LAT-403 4 ft	HB-1522 11/21/95 LAT-404 4 ft	HB-1515 11/20/95 LAT-409 3.67 ft
Benzene, Toluene, Ethylbenzene and Xylenes (mg/kg)											
ETHYLBENZENE	0.004	**<.0093 U**	**<.0079 U**	**<.0072 U**	**<.0084 U**	--	**<.0076 U**	--	**<.0078 U**	**<.0068 U**	**<.0075 U**
XYLENES (TOTAL)	0.04	<.0093 U	<.0095 U	<.0072 U	--	<.015 U	<.0076 U	--	<.0078 U	<.0068 U	<.0075 U
Metals (mg/kg)											
LEAD	43.2	11.2 J	18.8	15.9 J	11.2	--	--	7.7	<7.8 U	13.0 J	**56.1 J**
Semivolatile Organic Compounds (mg/kg)											
ACENAPHTHENE	0.026	**<.19 U**	**<.15 U**	**<.14 U**	**<.16 U**	--	**<.15 U**	--	**<.16 U**	**<.14 U**	**<.15 U**
ANTHRACENE	0.088	**<.19 U**	**<.15 U**	**<.14 U**	**<.16 U**	--	**<.15 U**	--	**<.16 U**	**<.14 U**	**<.15 U**
BENZO(A)ANTHRACENE	0.412	<.19 UJ	<.15 U	<.14 UJ	<.16 U	--	<.15 U	--	<.16 U	<.14 U	<.15 U
BENZO(A)PYRENE	0.43	<.061 U	<.051 U	<.048 U	<.054 U	--	<.05 U	--	<.052 U	<.045 U	<.049 U
BENZO(B)FLUORANTHENE	0.371	<.19 U	<.15 U	<.14 U	<.16 U	--	<.15 U	--	<.16 U	<.14 U	<.15 U
CHRYSENE	0.384	<.19 UJ	<.15 U	<.14 UJ	<.16 U	--	<.15 U	--	<.16 U	<.14 U	<.15 U
DIBENZ(A,H)ANTHRACENE	0.0634	<.061 U	<.051 U	<.048 U	<.054 U	--	<.05 U	--	<.052 U	<.045 U	<.049 U
FLUORANTHENE	0.6	<.19 U	<.15 U	<.14 U	<.16 U	--	<.15 U	--	<.16 U	<.14 U	<.15 U
FLUORENE	0.0253	**<.19 U**	**<.15 U**	**<.14 U**	**<.16 U**	--	**<.15 U**	--	**<.16 U**	**<.14 U**	**<.15 U**
INDENO(1,2,3-CD)PYRENE	0.382	<.19 U	<.15 U	<.14 U	<.16 U	--	<.15 U	--	<.16 U	<.14 U	<.15 U
NAPHTHALENE	0.16	**<.74 U**	**<.62 U**	**<.58 U**	**<.66 U**	--	**<.61 U**	--	**<.62 U**	**<.55 U**	**<.6 U**
PHENANTHRENE	0.24	--	--	--	--	--	--	--	--	--	--
PYRENE	0.665	<.19 U	<.15 U	<.14 U	<.16 U	--	<.15 U	--	<.16 U	<.14 U	<.15 U
Total Petroleum Hydrocarbons (mg/kg)											
AVIATION FUEL RANGE (JP4)	12	**<19 U**	**<16 U**	**<14 U**	**<17 U**	--	**<15 U**	--	**<16 U**	**<14 U**	**<15 U**
GASOLINE RANGE	12	<1.9 U	<1.6 U	<1.4 U	<1.7 U	--	<1.5 U	--	<1.6 U	<1.4 U	<1.5 U

Table B-13
Onshore Fuel Line - Hangar Area Data
Focused Feasibility Study
Hamilton Army Airfield
Novato, California

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth						
		HB-5038 10/07/97 ATG(B)-067(HS) 0.5 ft	HB-5045 10/07/97 ATG(B)-067(HS) 2.5 ft	HB-5046 10/07/97 ATG(B)-067(HS) 2.5 ft	HB-5054 10/08/97 ATG(B)-067(HS) 7.5 ft	HB-5047 10/07/97 ATG(B)-067(HSE) 2.5 ft	HB-5056 10/08/97 ATG(B)-067(HSE) 7.5 ft	HB-5042 10/07/97 ATG(B)-067(HSN) 0.5 ft
Benzene, Toluene, Ethylbenzene and Xylenes (mg/kg)								
ETHYLBENZENE	0.004	**<.0061 U**	**<.0073 U**	--	.0037 J	**<.0068 U**	**<.0077 U**	**<.0058 U**
XYLENES (TOTAL)	0.04	<.012 U	.014 J	--	<.018 U	<.014 U	<.015 U	<.012 U
Metals (mg/kg)								
LEAD	43.2	**73.7**	--	--	12.7 J-	--	15.7 J-	**85.4**
Semivolatile Organic Compounds (mg/kg								
ACENAPHTHENE	0.026	**<.04 U**	**<.048 U**	**--**	**<.06 U**	**<.045 U**	**<.051 U**	**<.038 U**
ANTHRACENE	0.088	<.04 U	<.048 U	--	<.06 U	<.045 U	<.051 U	<.038 U
BENZO(A)ANTHRACENE	0.412	<.04 U	<.048 U	--	<.06 U	<.045 U	<.051 U	<.038 U
BENZO(A)PYRENE	0.43	<.04 U	<.048 U	--	<.06 U	<.045 U	<.051 U	<.038 U
BENZO(B)FLUORANTHENE	0.371	.049	.06	--	<.06 U	<.045 U	<.051 U	<.038 U
CHRYSENE	0.384	.041	<.048 U	--	<.06 U	<.045 U	<.051 U	<.038 U
DIBENZ(A,H)ANTHRACENE	0.0634	<.04 U	<.048 U	--	<.06 U	<.045 U	<.051 U	<.038 U
FLUORANTHENE	0.6	<.04 U	<.048 U	--	<.06 U	<.045 U	<.051 U	<.038 U
FLUORENE	0.0253	**<.04 U**	**<.048 U**	--	**<.06 U**	**<.045 U**	**<.051 U**	**<.038 U**
INDENO(1,2,3-CD)PYRENE	0.382	<.04 U	<.048 U	--	<.06 U	<.045 U	<.051 U	<.038 U
NAPHTHALENE	0.16	<.04 U	<.048 U	--	<.06 U	<.045 U	<.051 U	<.038 U
PHENANTHRENE	0.24	--	--	--	--	--	--	--
PYRENE	0.665	<.04 U	<.048 U	--	<.06 U	<.045 U	<.051 U	<.038 U
Total Petroleum Hydrocarbons (mg/kg)								
AVIATION FUEL RANGE (JP4)	12	12	**250**	**1100**	**18**	**14**	**15**	12
GASOLINE RANGE	12	1.2	1.5	--	1.8	1.4	1.5	1.2

Table B-13
Onshore Fuel Line - Hangar Area Data
Focused Feasibility Study
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Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth						
		HB-5048 10/07/97 ATG(B)-067(HSN) 2.5 ft	HB-5055 10/08/97 ATG(B)-067(HSN) 7.5 ft	HB-5040 10/07/97 ATG(B)-067(HSS) 0.5 ft	HB-5041 10/07/97 ATG(B)-067(HSS) 0.5 ft	HB-5043 10/07/97 ATG(B)-067(HSS) 2.5 ft	HB-5052 10/08/97 ATG(B)-067(HSS) 7.5 ft	HB-5044 10/07/97 ATG(B)-067(HSW) 2.5 ft
Benzene, Toluene, Ethylbenzene and Xylenes (mg/kg)								
ETHYLBENZENE	0.004	**<.0059 U**	**<.009 U**	--	**<.0062 U**	**<.0059 U**	**.044 J**	**<.0067 U**
XYLENES (TOTAL)	0.04	<.012 U	<.018 U	.0018 J	--	<.012 U	**.9 J+**	<.013 U
Metals (mg/kg)								
LEAD	43.2	--	18.0 J-	--	**72.8**	**63.2**	8.89 J-	--
Semivolatile Organic Compounds (mg/kg								
ACENAPHTHENE	0.026	**<.039 U**	**<.059 U**	--	**<.041 U**	**<.039 U**	**<.066 U**	**<.044 U**
ANTHRACENE	0.088	<.039 U	<.059 U	--	<.041 U	<.039 U	<.066 U	<.044 U
BENZO(A)ANTHRACENE	0.412	<.039 U	<.059 U	.065	--	<.039 U	<.066 U	<.044 U
BENZO(A)PYRENE	0.43	<.039 U	<.059 U	.11	--	<.039 U	<.066 U	<.044 U
BENZO(B)FLUORANTHENE	0.371	<.039 U	<.059 U	.13	--	<.039 U	<.066 U	<.044 U
CHRYSENE	0.384	<.039 U	<.059 U	.1	--	<.039 U	<.066 U	<.044 U
DIBENZ(A,H)ANTHRACENE	0.0634	<.039 U	<.059 U	--	<.041 U	<.039 U	**<.066 U**	<.044 U
FLUORANTHENE	0.6	<.039 U	<.059 U	.057	--	<.039 U	<.066 U	<.044 U
FLUORENE	0.0253	**<.039 U**	**<.059 U**	--	**<.041 U**	**<.039 U**	**<.066 U**	**<.044 U**
INDENO(1,2,3-CD)PYRENE	0.382	<.039 U	<.059 U	.081	--	<.039 U	<.066 U	<.044 U
NAPHTHALENE	0.16	<.039 U	<.059 U	--	<.041 U	<.039 U	<.066 U	<.044 U
PHENANTHRENE	0.24	--	--	--	--	--	--	--
PYRENE	0.665	<.039 U	<.059 U	.049	--	<.039 U	<.066 U	<.044 U
Total Petroleum Hydrocarbons (mg/kg)								
AVIATION FUEL RANGE (JP4)	12	12	**18**	--	12	12	**20**	**13**
GASOLINE RANGE	12	--	1.8	--	1.2	1.8	**17**	1.3

Table B-13
Onshore Fuel Line - Hangar Area Data
Focused Feasibility Study
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Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth						
		HB-5057 10/08/97 ATG(B)-067(HSW) 7.5 ft	HB-5065 10/09/97 ATG(B)-085(HS) 0.5 ft	HB-5068 10/09/97 ATG(B)-085(HS) 1.5 ft	HB-5075 10/09/97 ATG(B)-085(HS) 7.5 ft	HB-5070 10/09/97 ATG(B)-085(HSE) 1.5 ft	HB-5076 10/09/97 ATG(B)-085(HSE) 7.5 ft	HB-5066 10/09/97 ATG(B)-085(HSN) 0.5 ft
		Benzene, Toluene, Ethylbenzene and Xylenes (mg/kg)						
ETHYLBENZENE	0.004	**<.0092 U**	<.0013 UJ	<.0013 UJ	<.0019 UJ	<.0014 UJ	<.0017 U	<.0013 UJ
XYLENES (TOTAL)	0.04	<.018 U	<.0013 UJ	<.0013 UJ	<.0019 UJ	<.0014 UJ	<.0017 U	<.0013 UJ
		Metals (mg/kg)						
LEAD	43.2	13.2 J-	**53.8**	30.4	11.2	24.7	9.8	**46.1**
		Semivolatile Organic Compounds (mg/kg						
ACENAPHTHENE	0.026	**<.061 U**	**<.042 U**	**<.042 U**	**<.062 U**	**<.045 U**	**<.055 U**	**<.042 U**
ANTHRACENE	0.088	<.061 U	<.042 U	<.042 U	<.062 U	<.045 U	<.055 U	<.042 U
BENZO(A)ANTHRACENE	0.412	<.061 U	<.042 U	<.042 U	<.062 U	<.045 U	<.055 U	<.042 U
BENZO(A)PYRENE	0.43	<.061 U	<.042 U	<.042 U	<.062 U	<.045 U	<.055 U	<.042 U
BENZO(B)FLUORANTHENE	0.371	<.061 U	.051 J	.047 J	<.062 U	<.045 U	<.055 U	<.042 U
CHRYSENE	0.384	<.061 U	.053	<.042 U	<.062 U	<.045 U	<.055 U	<.042 U
DIBENZ(A,H)ANTHRACENE	0.0634	<.061 U	<.042 U	<.042 U	<.062 U	<.045 U	<.055 U	<.042 U
FLUORANTHENE	0.6	<.061 U	<.042 U	<.042 U	<.062 U	<.045 U	<.055 U	<.042 U
FLUORENE	0.0253	**<.061 U**	**<.042 U**	**<.042 U**	**<.062 U**	**<.045 U**	**<.055 U**	**<.042 U**
INDENO(1,2,3-CD)PYRENE	0.382	<.061 U	<.042 U	<.042 U	<.062 U	<.045 U	<.055 U	<.042 U
NAPHTHALENE	0.16	<.061 U	<.042 U	<.042 U	<.062 U	<.045 U	<.055 U	<.042 U
PHENANTHRENE	0.24	--	--	--	--	--	--	--
PYRENE	0.665	<.061 U	<.042 U	<.042 U	<.062 U	<.045 U	<.055 U	<.042 U
		Total Petroleum Hydrocarbons (mg/kg)						
AVIATION FUEL RANGE (JP4)	12	**18**	**13**	**13**	**19**	**14**	**17**	**13**
GASOLINE RANGE	12	1.8	1.3	--	1.9	--	1.7	1.3

Table B-13
Onshore Fuel Line - Hangar Area Data
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Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth						
		HB-5069 10/09/97 ATG(B)-085(HSN) 1.5 ft	HB-5079 10/10/97 ATG(B)-085(HSN) 7.5 ft	HB-5064 10/09/97 ATG(B)-085(HSS) 0.5 ft	HB-5067 10/09/97 ATG(B)-085(HSS) 1.5 ft	HB-5078 10/10/97 ATG(B)-085(HSS) 7.5 ft	HB-5071 10/09/97 ATG(B)-085(HSW) 1.5 ft	HB-5074 10/09/97 ATG(B)-085(HSW) 7.5 ft
Benzene, Toluene, Ethylbenzene and Xylenes (mg/kg)								
ETHYLBENZENE	0.004	<.0013 U	<.0017 U	<.0013 U	<.0013 UJ	<.0019 U	<.0013 UJ	<.0017 U
XYLENES (TOTAL)	0.04	<.0013 U	<.0017 U	<.0013 U	<.0013 UJ	<.0039 U	<.0013 UJ	.0021
Metals (mg/kg)								
LEAD	43.2	**51.5**	9.9	31.6	**55.4**	9.9	13.2	10.0
Semivolatile Organic Compounds (mg/kg								
ACENAPHTHENE	0.026	**<.042 U**	**<.056 U**	**<.043 U**	**<.043 U**	**<.064 U**	**<.042 U**	**<.057 U**
ANTHRACENE	0.088	<.042 U	<.056 U	<.043 U	<.043 U	<.064 U	<.042 U	<.057 U
BENZO(A)ANTHRACENE	0.412	<.042 U	<.056 U	<.043 U	<.043 U	<.064 U	<.042 U	<.057 U
BENZO(A)PYRENE	0.43	<.042 U	<.056 U	.058	<.043 U	<.064 U	<.042 U	<.057 U
BENZO(B)FLUORANTHENE	0.371	.062 J	<.056 U	.11 J	<.043 U	<.064 U	<.042 U	<.057 U
CHRYSENE	0.384	.046	<.056 U	.069	<.043 U	<.064 U	<.042 U	<.057 U
DIBENZ(A,H)ANTHRACENE	0.0634	<.042 U	<.056 U	<.043 U	<.043 U	**<.064 U**	<.042 U	<.057 U
FLUORANTHENE	0.6	<.042 U	<.056 U	.066	<.043 U	<.064 U	<.042 U	<.057 U
FLUORENE	0.0253	**<.042 U**	**<.056 U**	**<.043 U**	**<.043 U**	**<.064 U**	**<.042 U**	**<.057 U**
INDENO(1,2,3-CD)PYRENE	0.382	<.042 U	<.056 U	.045	<.043 U	<.064 U	<.042 U	<.057 U
NAPHTHALENE	0.16	<.042 U	<.056 U	<.043 U	<.043 U	<.064 U	<.042 U	<.057 U
PHENANTHRENE	0.24	--	--	--	--	--	--	--
PYRENE	0.665	<.042 U	<.056 U	.047	<.043 U	<.064 U	<.042 U	<.057 U
Total Petroleum Hydrocarbons (mg/kg)								
AVIATION FUEL RANGE (JP4)	12	**13**	**17**	**13**	**13**	**19**	**13**	**17**
GASOLINE RANGE	12	--	1.7	1.3	1.3	1.9	--	1.7

Table B-13
Onshore Fuel Line - Hangar Area Data
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Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth							
		HB-5080 10/10/97 ATG(G)-237 0.5 ft	HB-5082 10/10/97 ATG(G)-237 3.5 ft	HB-5083 10/10/97 ATG(G)-237 7.5 ft	HB-5058 10/08/97 ATG(G)-261 0.5 ft	HB-5059 10/08/97 ATG(G)-261 0.5 ft	HB-5060 10/08/97 ATG(G)-261 1 ft	HB-5061 10/08/97 ATG(G)-261 7.5 ft	HB-5036 10/07/97 ATG(G)-280 (HSN) 7.5 ft
		Benzene, Toluene, Ethylbenzene and Xylenes (mg/kg)							
ETHYLBENZENE	0.004	**<.0065 UJ**	**<.0078 UJ**	**<.0084 UJ**	**<.0063 U**	--	**<.0067 U**	**<.0087 U**	<.0016 U
XYLENES (TOTAL)	0.04	<.013 UJ	<.016 UJ	<.017 UJ	--	.0016 J	.0018 J	.003 J+	<.0016 U
		Metals (mg/kg)							
LEAD	43.2	**96.1**	--	--	--	**#80.6 J-**	**122 J-**	9.77 J-	12.4
		Semivolatile Organic Compounds (mg/kg							
ACENAPHTHENE	0.026	**<.043 U**	**<.051 U**	**<.056 U**	**<.042 U**	--	**<.044 U**	**<.058 U**	**<.054 U**
ANTHRACENE	0.088	<.043 U	<.051 U	<.056 U	<.042 U	--	<.044 U	<.058 U	<.054 U
BENZO(A)ANTHRACENE	0.412	<.043 U	<.051 U	<.056 U	<.042 U	--	<.044 U	<.058 U	<.054 U
BENZO(A)PYRENE	0.43	<.043 U	<.051 U	<.056 U	<.042 U	--	<.044 U	<.058 U	<.054 U
BENZO(B)FLUORANTHENE	0.371	.052	<.051 U	<.056 U	<.042 U	--	<.044 U	<.058 U	<.054 U
CHRYSENE	0.384	.044	<.051 U	<.056 U	<.042 U	--	<.044 U	<.058 U	<.054 U
DIBENZ(A,H)ANTHRACENE	0.0634	<.043 U	<.051 U	<.056 U	<.042 U	--	<.044 U	<.058 U	<.054 U
FLUORANTHENE	0.6	<.043 U	<.051 U	<.056 U	<.042 U	--	<.044 U	<.058 U	<.054 U
FLUORENE	0.0253	**<.043 U**	**<.051 U**	**<.056 U**	**<.042 U**	--	**<.044 U**	**<.058 U**	**<.054 U**
INDENO(1,2,3-CD)PYRENE	0.382	<.043 U	<.051 U	<.056 U	<.042 U	--	<.044 U	<.058 U	<.054 U
NAPHTHALENE	0.16	<.043 U	<.051 U	<.056 U	<.042 U	--	<.044 U	<.058 U	<.054 U
PHENANTHRENE	0.24	--	--	--	--	--	--	--	--
PYRENE	0.665	<.043 U	<.051 U	<.056 U	<.042 U	--	<.044 U	<.058 U	<.054 U
		Total Petroleum Hydrocarbons (mg/kg)							
AVIATION FUEL RANGE (JP4)	12	**13**	**16**	**17**	**13**	--	**13**	**17**	**16**
GASOLINE RANGE	12	1.3	--	1.7	1.3	--	1.3	1.7	--

Table B-13
Onshore Fuel Line - Hangar Area Data
Focused Feasibility Study
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Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth						
		HB-5035 10/07/97 ATG(G)-280 (HSS) 7.5 ft	HB-5021 10/06/97 ATG(G)-280(HS) 0.5 ft	HB-5024 10/06/97 ATG(G)-280(HS) 3 ft	HB-5025 10/06/97 ATG(G)-280(HS) 3 ft	HB-5030 10/06/97 ATG(G)-280(HS) 7.5 ft	HB-5023 10/06/97 ATG(G)-280(HSE) 3 ft	HB-5031 10/06/97 ATG(G)-280(HSE) 7.5 ft
		Benzene, Toluene, Ethylbenzene and Xylenes (mg/kg)						
ETHYLBENZENE	0.004	<.0016 U	<.0013 U	<.0014 U	--	<.0016 U	<.0013 U	<.0017 U
XYLENES (TOTAL)	0.04	<.0016 U	<.0013 U	<.0014 U	--	<.0016 U	<.0013 U	<.0017 U
		Metals (mg/kg)						
LEAD	43.2	11.9	**67.6**	10.2	--	11.0	20.4	13.0
		Semivolatile Organic Compounds (mg/kg						
ACENAPHTHENE	0.026	**<.051 U**	**<.042 U**	**<.045 U**	--	**<.054 U**	**<.042 U**	**<.056 U**
ANTHRACENE	0.088	<.051 U	<.042 U	<.045 U	--	<.054 U	<.042 U	<.056 U
BENZO(A)ANTHRACENE	0.412	<.051 U	<.042 U	<.045 U	--	<.054 U	<.042 U	<.056 U
BENZO(A)PYRENE	0.43	<.051 U	<.042 U	<.045 U	--	<.054 U	<.042 U	<.056 U
BENZO(B)FLUORANTHENE	0.371	<.051 U	<.042 U	<.045 U	--	<.054 U	<.042 U	<.056 U
CHRYSENE	0.384	<.051 U	<.042 U	<.045 U	--	<.054 U	<.042 U	<.056 U
DIBENZ(A,H)ANTHRACENE	0.0634	<.051 U	<.042 U	<.045 U	--	<.054 U	<.042 U	<.056 U
FLUORANTHENE	0.6	<.051 U	<.042 U	<.045 U	--	<.054 U	<.042 U	<.056 U
FLUORENE	0.0253	**<.051 U**	**<.042 U**	**<.045 U**	--	**<.054 U**	**<.042 U**	**<.056 U**
INDENO(1,2,3-CD)PYRENE	0.382	<.051 U	<.042 U	<.045 U	--	<.054 U	<.042 U	<.056 U
NAPHTHALENE	0.16	<.051 U	<.042 U	<.045 U	--	<.054 U	<.042 U	<.056 U
PHENANTHRENE	0.24	--	--	--	--	--	--	--
PYRENE	0.665	<.051 U	<.042 U	<.045 U	--	<.054 U	<.042 U	<.056 U
		Total Petroleum Hydrocarbons (mg/kg)						
AVIATION FUEL RANGE (JP4)	12	**16**	**13**	**14**	**14**	**16**	**13**	**17**
GASOLINE RANGE	12	1.6	1.3	1.4	--	--	1.3	--

Table B-13
Onshore Fuel Line - Hangar Area Data
Focused Feasibility Study
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Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth						
		HB-5019 10/06/97 ATG(G)-280(HSN) 0.5 ft	HB-5026 10/06/97 ATG(G)-280(HSN) 3 ft	HB-5020 10/06/97 ATG(G)-280(HSS) 0.5 ft	HB-5028 10/06/97 ATG(G)-280(HSS) 3 ft	HB-5022 10/06/97 ATG(G)-280(HSW) 3 ft	HB-5029 10/06/97 ATG(G)-280(HSW) 7.5 ft	HB-5002 10/03/97 ATG(R)-072(HS) 0.5 ft
Benzene, Toluene, Ethylbenzene and Xylenes (mg/kg)								
ETHYLBENZENE	0.004	<.0014 U	<.0014 U	<.0012 U	<.0014 U	<.0014 U	<.0017 U	**<.0054 U**
XYLENES (TOTAL)	0.04	<.0014 U	<.0014 U	<.0012 U	<.0014 U	<.0014 U	<.0017 U	<.011 U
Metals (mg/kg)								
LEAD	43.2	**54.8**	12.5	25.8	11.3	13.9	9.3	**78.5**
Semivolatile Organic Compounds (mg/kg								
ACENAPHTHENE	0.026	**<.047 U**	**<.047 U**	**<.04 U**	**<.045 U**	**<.045 U**	**<.056 U**	**<.036 U**
ANTHRACENE	0.088	<.047 U	<.047 U	<.04 U	<.045 U	<.045 U	<.056 U	<.036 U
BENZO(A)ANTHRACENE	0.412	<.047 U	<.047 U	<.04 U	<.045 U	<.045 U	<.056 U	.11
BENZO(A)PYRENE	0.43	<.047 U	<.047 U	<.04 U	<.045 U	<.045 U	<.056 U	.19
BENZO(B)FLUORANTHENE	0.371	<.047 U	<.047 U	<.04 U	<.045 U	<.045 U	<.056 U	.25
CHRYSENE	0.384	<.047 U	<.047 U	<.04 U	<.045 U	<.045 U	<.056 U	.2
DIBENZ(A,H)ANTHRACENE	0.0634	<.047 U	<.047 U	<.04 U	<.045 U	<.045 U	<.056 U	.053
FLUORANTHENE	0.6	<.047 U	<.047 U	<.04 U	<.045 U	<.045 U	<.056 U	.23
FLUORENE	0.0253	**<.047 U**	**<.047 U**	**<.04 U**	**<.045 U**	**<.045 U**	**<.056 U**	**<.036 U**
INDENO(1,2,3-CD)PYRENE	0.382	<.047 U	<.047 U	<.04 U	<.045 U	<.045 U	<.056 U	.16
NAPHTHALENE	0.16	<.047 U	<.047 U	<.04 U	<.045 U	<.045 U	<.056 U	<.036 U
PHENANTHRENE	0.24	--	--	--	--	--	--	--
PYRENE	0.665	<.047 U	<.047 U	<.04 U	<.045 U	<.045 U	<.056 U	.22
Total Petroleum Hydrocarbons (mg/kg)								
AVIATION FUEL RANGE (JP4)	12	**14**	**14**	12	**14**	**14**	**17**	11
GASOLINE RANGE	12	1.4	1.4	1.2	1.4	--	--	1.1

Table B-13
Onshore Fuel Line - Hangar Area Data
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Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth						
		HB-5004 10/03/97 ATG(R)-072(HS) 5 ft	HB-5006 10/03/97 ATG(R)-072(HS) 5 ft	HB-5014 10/06/97 ATG(R)-072(HS) 7.5 ft	HB-5010 10/03/97 ATG(R)-072(HSE) 5 ft	HB-5017 10/06/97 ATG(R)-072(HSE) 7.5 ft	HB-5001 10/03/97 ATG(R)-072(HSN) 0.5 ft	HB-5008 10/03/97 ATG(R)-072(HSN) 5 ft
Benzene, Toluene, Ethylbenzene and Xylenes (mg/kg)								
ETHYLBENZENE	0.004	**.0042 J**	--	**<.0087 U**	**0.01**	**<.0088 U**	**<.0053 U**	**0.031**
XYLENES (TOTAL)	0.04	.028	--	.0062 J	**0.041**	.0025 J+	<.011 U	**#.2**
Metals (mg/kg)								
LEAD	43.2	10.1	--	8.34	10.3	9.67	37.2	4.6
Semivolatile Organic Compounds (mg/kg								
ACENAPHTHENE	0.026	**0.11**	--	**<.058 U**	**<.045 U**	**<.058 U**	**<.035 U**	**<.048 U**
ANTHRACENE	0.088	<.045 U	--	<.058 U	<.045 U	<.058 U	<.035 U	<.048 U
BENZO(A)ANTHRACENE	0.412	<.045 U	--	<.058 U	<.045 U	<.058 U	.21	<.048 U
BENZO(A)PYRENE	0.43	<.045 U	--	<.058 U	<.045 U	<.058 U	.21	<.048 U
BENZO(B)FLUORANTHENE	0.371	<.045 U	--	<.058 U	<.045 U	<.058 U	.24	<.048 U
CHRYSENE	0.384	<.045 U	--	<.058 U	<.045 U	<.058 U	.26	<.048 U
DIBENZ(A,H)ANTHRACENE	0.0634	<.045 U	--	<.058 U	<.045 U	<.058 U	<.035 U	<.048 U
FLUORANTHENE	0.6	.068	--	<.058 U	<.045 U	<.058 U	.35	<.048 U
FLUORENE	0.0253	**0.27**	--	**<.058 U**	**<.045 U**	**<.058 U**	**<.035 U**	**<.048 U**
INDENO(1,2,3-CD)PYRENE	0.382	<.045 U	--	<.058 U	<.045 U	<.058 U	.11	<.048 U
NAPHTHALENE	0.16	**1.7**	--	<.058 U	.088	<.058 U	<.035 U	**0.21**
PHENANTHRENE	0.24	--	--	--	--	--	--	--
PYRENE	0.665	.068	--	<.058 U	<.045 U	<.058 U	.4	<.048 U
Total Petroleum Hydrocarbons (mg/kg)								
AVIATION FUEL RANGE (JP4)	12	**140**	**67**	**17**	**14**	**18**	11	**14**
GASOLINE RANGE	12	2.2	--	1.7	6.2	1.8	1.1	**72**

Table B-13
Onshore Fuel Line - Hangar Area Data
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Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth						
		HB-5013 10/06/97 ATG(R)-072(HSN) 7.5 ft	HB-5003 10/03/97 ATG(R)-072(HSS) 0.5 ft	HB-5009 10/03/97 ATG(R)-072(HSS) 5 ft	HB-5015 10/06/97 ATG(R)-072(HSS) 7.5 ft	HB-5011 10/03/97 ATG(R)-072(HSW) 5 ft	HB-5016 10/06/97 ATG(R)-072(HSW) 7.5 ft	HB-5085 10/13/97 ATG(R)-120(HS) 0.5 ft
Benzene, Toluene, Ethylbenzene and Xylenes (mg/kg)								
ETHYLBENZENE	0.004	**<.0084 U**	**<.0055 U**	**<.0068 U**	**<.0094 U**	**<.0059 U**	**<.0089 U**	**<.0055 U**
XYLENES (TOTAL)	0.04	.003 J+	<.011 U	<.014 U	<.019 U	.0013 J	.0022 J	<.011 U
Metals (mg/kg)								
LEAD	43.2	5.08	**54.2**	14.2	10.8	8.28	18.1	**63.3 J-**
Semivolatile Organic Compounds (mg/kg								
ACENAPHTHENE	0.026	**0.23**	**<.036 U**	**<.045 U**	**<.062 U**	**<.039 U**	**<.059 U**	**<.037 U**
ANTHRACENE	0.088	<.055 U	<.036 U	<.045 U	<.062 U	<.039 U	<.059 U	.054
BENZO(A)ANTHRACENE	0.412	.077	.14	<.045 U	<.062 U	<.039 U	<.059 U	**1**
BENZO(A)PYRENE	0.43	.059	.24	<.045 U	<.062 U	<.039 U	<.059 U	**1.3**
BENZO(B)FLUORANTHENE	0.371	.092	.32	<.045 U	<.062 U	<.039 U	<.059 U	**1.4**
CHRYSENE	0.384	.1	.21	<.045 U	<.062 U	<.039 U	<.059 U	**1.3**
DIBENZ(A,H)ANTHRACENE	0.0634	<.055 U	<.036 U	<.045 U	<.062 U	<.039 U	<.059 U	**0.17**
FLUORANTHENE	0.6	.19	.18	<.045 U	<.062 U	<.039 U	<.059 U	**1.5**
FLUORENE	0.0253	**0.54**	**<.036 U**	**<.045 U**	**<.062 U**	**<.039 U**	**<.059 U**	**<.037 U**
INDENO(1,2,3-CD)PYRENE	0.382	<.055 U	.19	<.045 U	<.062 U	<.039 U	<.059 U	**0.65**
NAPHTHALENE	0.16	**5.1**	<.036 U	<.045 U	<.062 U	<.039 U	<.059 U	<.037 U
PHENANTHRENE	0.24	--	--	--	--	--	--	--
PYRENE	0.665	.23	.19	<.045 U	<.062 U	<.039 U	<.059 U	**2.1**
Total Petroleum Hydrocarbons (mg/kg)								
AVIATION FUEL RANGE (JP4)	12	**67**	11	**14**	**19**	12	**18**	11
GASOLINE RANGE	12	1.7	1.1	1.4	1.9	1.2	1.8	1.1

Table B-13
Onshore Fuel Line - Hangar Area Data
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Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth					
		HB-5089 10/13/97 ATG(R)-120(HS) 3.5 ft	HB-5098 10/13/97 ATG(R)-120(HS) 7.5 ft	HB-5095 10/13/97 ATG(R)-120(HSE) 3.5 ft	HB-5099 10/14/97 ATG(R)-120(HSE) 7.5 ft	HB-5088 10/13/97 ATG(R)-120(HSN) 0.5 ft	HB-5093 10/13/97 ATG(R)-120(HSN) 3.5 ft
Benzene, Toluene, Ethylbenzene and Xylenes (mg/kg)							
ETHYLBENZENE	0.004	**<.0057 U**	**<.0086 U**	**<.0055 U**	**<.0083 U**	**<.0057 U**	**<.0055 U**
XYLENES (TOTAL)	0.04	<.011 U	<.017 U	<.011 U	<.017 U	<.011 U	<.011 U
Metals (mg/kg)							
LEAD	43.2	11.1 J-	21.2 J-	30.5	<14.1 U	**151 J-**	15.3 J-
Semivolatile Organic Compounds (mg/kg							
ACENAPHTHENE	0.026	**<.038 U**	**<.057 U**	**<.036 U**	**<.055 U**	**<.037 U**	**<.037 U**
ANTHRACENE	0.088	<.038 U	<.057 U	<.036 U	<.055 U	**0.093**	<.037 U
BENZO(A)ANTHRACENE	0.412	<.038 U	<.057 U	<.036 U	<.055 U	**0.47**	.059
BENZO(A)PYRENE	0.43	<.038 U	<.057 U	<.036 U	<.055 U	**0.83**	.33
BENZO(B)FLUORANTHENE	0.371	<.038 U	<.057 U	<.036 U	<.055 U	**0.8**	.25
CHRYSENE	0.384	<.038 U	<.057 U	<.036 U	<.055 U	**0.63**	.12
DIBENZ(A,H)ANTHRACENE	0.0634	<.038 U	<.057 U	<.036 U	<.055 U	**0.12**	<.037 U
FLUORANTHENE	0.6	<.038 U	<.057 U	<.036 U	<.055 U	**0.79**	.052
FLUORENE	0.0253	**<.038 U**	**<.057 U**	**<.036 U**	**<.055 U**	**<.037 U**	**<.037 U**
INDENO(1,2,3-CD)PYRENE	0.382	<.038 U	<.057 U	<.036 U	<.055 U	**0.45**	**0.41**
NAPHTHALENE	0.16	<.038 U	<.057 U	<.036 U	<.055 U	<.037 U	<.037 U
PHENANTHRENE	0.24	--	--	--	--	--	--
PYRENE	0.665	<.038 U	<.057 U	<.036 U	<.055 U	**0.94**	.097
Total Petroleum Hydrocarbons (mg/kg)							
AVIATION FUEL RANGE (JP4)	12	11	**17**	11	**17**	11	11
GASOLINE RANGE	12	1.1	11	1.1	2.6	1.1	1.1

Table B-13
Onshore Fuel Line - Hangar Area Data
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Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth			
		HB-5086 10/13/97 ATG(R)-120(HSS) 0.5 ft	HB-5090 10/13/97 ATG(R)-120(HSS) 3.5 ft	HB-5094 10/13/97 ATG(R)-120(HSW) 3.5 ft	HB-5096 10/13/97 ATG(R)-120(HSW) 7.5 ft
			Benzene, Toluene, Ethylbenzene and Xylenes (mg/kg)		
ETHYLBENZENE	0.004	**<.0054 U**	**<.0055 U**	**<.0056 U**	**<.0088 U**
XYLENES (TOTAL)	0.04	.0028 J	<.011 U	<.011 U	.0059 J+
			Metals (mg/kg)		
LEAD	43.2	**279 J-**	**69 J-**	10.4	13 J-
			Semivolatile Organic Compounds (mg/kg)		
ACENAPHTHENE	0.026	**<.036 U**	**<.036 U**	**<.037 U**	**<.058 U**
ANTHRACENE	0.088	.071	<.036 U	<.037 U	<.058 U
BENZO(A)ANTHRACENE	0.412	**1.2**	<.036 U	<.037 U	<.058 U
BENZO(A)PYRENE	0.43	**1.2**	.078	<.037 U	<.058 U
BENZO(B)FLUORANTHENE	0.371	**1.5**	.1	<.037 U	<.058 U
CHRYSENE	0.384	**1.4**	.075	<.037 U	<.058 U
DIBENZ(A,H)ANTHRACENE	0.0634	**0.17**	<.036 U	<.037 U	<.058 U
FLUORANTHENE	0.6	**1.4**	.057	<.037 U	<.058 U
FLUORENE	0.0253	**<.036 U**	**<.036 U**	**<.037 U**	**<.058 U**
INDENO(1,2,3-CD)PYRENE	0.382	**0.53**	.088	<.037 U	<.058 U
NAPHTHALENE	0.16	<.036 U	<.036 U	<.037 U	<.058 U
PHENANTHRENE	0.24	--	--	--	--
PYRENE	0.665	**1.5**	.064	<.037 U	<.058 U
			Total Petroleum Hydrocarbons (mg/kg)		
AVIATION FUEL RANGE (JP4)	12	11	11	11	**18**
GASOLINE RANGE	12	1.1	1.1	1.1	5.5

Table B-13
Onshore Fuel Line - Hangar Area Data
Focused Feasibility Study
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Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth								
		HB-5147 10/20/97 ATG(B)-035 0.5 ft	HB-5148 10/20/97 ATG(B)-035 1.5 ft	HB-5149 10/20/97 ATG(B)-035 7.5 ft	HB-5173 10/22/97 ATG(B)-201 0.5 ft	HB-5174 10/22/97 ATG(B)-201 1.5 ft	HB-5175 10/22/97 ATG(B)-201 7.5 ft	HB-5155 10/21/97 ATG(G)-276 0.5 ft	HB-5156 10/21/97 ATG(G)-276 0.5 ft	HB-5157 10/21/97 ATG(G)-276 4 ft
Benzene, Toluene, Ethylbenzene and Xylenes (mg/kg)										
ETHYLBENZENE	0.004	**<.0058 U**	**<.0063 U**	**<.0086 U**	**<.0059 U**	**<.006 U**	**<.0084 U**	--	**<.0064 U**	**<.0072 U**
XYLENES (TOTAL)	0.04	<.012 U	<.013 U	<.017 U	.0019 J	<.012 U	.0018 J+	--	<.0023 U	<.014 U
Metals (mg/kg)										
LEAD	43.2	**59.8 J-**	28 J-	13.5	31.3	41	11.9	42.1 J-	--	16.4 J-
Semivolatile Organic Compounds (mg/kg)										
ACENAPHTHENE	0.026	**<.038 U**	**<.042 U**	**<.057 U**	**<.039 U**	**<.04 U**	**<.056 U**	--	**<.042 U**	**<.047 U**
ANTHRACENE	0.088	<.038 U	<.042 U	<.057 U	<.039 U	<.04 U	<.056 U	--	<.042 U	<.047 U
BENZO(A)ANTHRACENE	0.412	<.038 U	<.042 U	<.057 U	.1	<.04 U	<.056 U	--	<.042 U	<.047 U
BENZO(A)PYRENE	0.43	<.038 U	<.042 U	<.057 U	.12	<.04 U	<.056 U	--	<.042 U	<.047 U
BENZO(B)FLUORANTHENE	0.371	.059	<.042 U	<.057 U	.16	<.04 U	<.056 U	--	<.042 U	<.047 U
CHRYSENE	0.384	.051	<.042 U	<.057 U	.13	<.04 U	<.056 U	--	<.042 U	<.047 U
DIBENZ(A,H)ANTHRACENE	0.0634	<.038 U	<.042 U	<.057 U	<.039 U	<.04 U	<.056 U	--	<.042 U	<.047 U
FLUORANTHENE	0.6	.057	<.042 U	<.057 U	.13	<.04 U	<.056 U	--	<.042 U	<.047 U
FLUORENE	0.0253	**<.038 U**	**<.042 U**	**<.057 U**	**<.039 U**	**<.04 U**	**<.056 U**	--	**<.042 U**	**<.047 U**
INDENO(1,2,3-CD)PYRENE	0.382	<.038 U	<.042 U	<.057 U	.054	<.04 U	<.056 U	--	<.042 U	<.047 U
NAPHTHALENE	0.16	<.038 U	<.042 U	<.057 U	<.039 U	<.04 U	<.056 U	--	<.042 U	<.047 U
PHENANTHRENE	0.24	--	--	--	--	--	--	--	--	--
PYRENE	0.665	.052	<.042 U	<.057 U	.11	<.04 U	<.056 U	--	<.042 U	<.047 U
Total Petroleum Hydrocarbons (mg/kg)										
AVIATION FUEL RANGE (JP4)	12	<12 U	**<13 U**	**<17 U**	<12 U	<12 U	**<17 U**	**<13 U**	--	**<14 U**
GASOLINE RANGE	12	<1.2 U	<1.3 U	<1.7 U	<1.2 U	<1.2 U	<1.7 U	<1.3 U	--	<1.4 U

Table B-13
Onshore Fuel Line - Hangar Area Data
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Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth								
		HB-5159 10/21/97 ATG(G)-276 7.5 ft	HB-5138 10/17/97 ATG(R)-044 0.5 ft	HB-5139 10/17/97 ATG(R)-044 4 ft	HB-5140 10/17/97 ATG(R)-044 7.5 ft	HB-5141 10/17/97 ATG(R)-044 7.5 ft	HB-5144 10/20/97 ATG(R)-046 0.5 ft	HB-5145 10/20/97 ATG(R)-046 1.25 ft	HB-5146 10/20/97 ATG(R)-046 7.5 ft	HB-5150 10/20/97 ATG(R)-057 0.5 ft
Benzene, Toluene, Ethylbenzene and Xylenes (mg/kg)										
ETHYLBENZENE	0.004	**<.0087 U**	**<.0062 U**	**<.0074 U**	**<.0088 U**	--	**<.0069 U**	**<.0065 U**	**<.0081 U**	**<.0057 U**
XYLENES (TOTAL)	0.04	<.017 U	.0014 J	.0015 J	<.018 U	--	<.014 U	<.013 U	<.016 U	<.011 U
Metals (mg/kg)										
LEAD	43.2	15	**#53.5**	13	--	13.1	18 J-	18.9 J-	13.1	15.4 J-
Semivolatile Organic Compounds (mg/kg)										
ACENAPHTHENE	0.026	**<.058 U**	**<.041 U**	**<.049 U**	**<.058 U**	--	**<.046 U**	**<.043 U**	**<.053 UJ**	**<.038 U**
ANTHRACENE	0.088	<.058 U	.077	<.049 U	<.058 U	--	.064	<.043 U	<.053 UJ	<.038 U
BENZO(A)ANTHRACENE	0.412	<.058 U	.37	<.049 U	<.058 U	--	.24	<.043 U	<.053 UJ	<.038 U
BENZO(A)PYRENE	0.43	<.058 U	.36	<.049 U	<.058 U	--	.19	<.043 U	<.053 UJ	<.038 U
BENZO(B)FLUORANTHENE	0.371	<.058 U	**0.49**	<.049 U	<.058 U	--	.21	<.043 U	<.053 UJ	<.038 U
CHRYSENE	0.384	<.058 U	**0.44**	<.049 U	<.058 U	--	.28	<.043 U	<.053 UJ	<.038 U
DIBENZ(A,H)ANTHRACENE	0.0634	<.058 U	<.041 U	<.049 U	<.058 U	--	<.046 U	<.043 U	<.053 UJ	<.038 U
FLUORANTHENE	0.6	<.058 U	**0.75**	<.049 U	<.058 U	--	.51	<.043 U	<.053 UJ	<.038 U
FLUORENE	0.0253	**<.058 U**	**<.041 U**	**<.049 U**	**<.058 U**	--	**<.046 U**	**<.043 U**	**<.053 UJ**	**<.038 U**
INDENO(1,2,3-CD)PYRENE	0.382	<.058 U	.14	<.049 U	<.058 U	--	.096	<.043 U	<.053 UJ	<.038 U
NAPHTHALENE	0.16	<.058 U	<.041 U	<.049 U	<.058 U	--	<.046 U	<.043 U	<.053 UJ	<.038 U
PHENANTHRENE	0.24	--	--	--	--	--	--	--	--	--
PYRENE	0.665	<.058 U	**0.86**	<.049 U	<.058 U	--	.52	<.043 U	<.053 UJ	<.038 U
Total Petroleum Hydrocarbons (mg/kg)										
AVIATION FUEL RANGE (JP4)	12	**<17 U**	<12 U	**<15 U**	**<18 U**	--	**<14 U**	**<13 U**	**<16 U**	<11 U
GASOLINE RANGE	12	<1.7 U	<1.2 U	<1.5 U	<1.8 U	--	<1.4 U	<1.3 U	<1.6 U	<1.1 U

Table B-13
Onshore Fuel Line - Hangar Area Data
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Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth								
		HB-5151 10/20/97 ATG(R)-057 4 ft	HB-5152 10/20/97 ATG(R)-057 7.5 ft	HB-5160 10/21/97 ATG(R)-106 0.5 ft	HB-5161 10/21/97 ATG(R)-106 1.33 ft	HB-5162 10/21/97 ATG(R)-106 7.5 ft	HB-5163 10/21/97 ATG(R)-107 0.5 ft	HB-5165 10/21/97 ATG(R)-107 1.5 ft	HB-5166 10/21/97 ATG(R)-107 7.5 ft	HB-5167 10/21/97 ATG(R)-115 0.5 ft
Benzene, Toluene, Ethylbenzene and Xylenes (mg/kg)										
ETHYLBENZENE	0.004	**<.0081 U**	**<.0083 U**	**<.0055 U**	**<.0061 U**	**<.009 U**	**<.0058 U**	**<.0065 U**	**<.0083 U**	**<.0056 U**
XYLENES (TOTAL)	0.04	<.016 U	<.017 U	<.011 U	<.012 U	<.018 U	<.0015 U	<.013 U	<.017 U	<.011 U
Metals (mg/kg)										
LEAD	43.2	30.1	14.8	**88.5 J-**	**114 J-**	9.9	12 J-	**51.1 J-**	19.7	23.6 J-
Semivolatile Organic Compounds (mg/kg)										
ACENAPHTHENE	0.026	**<.053 U**	**0.16**	**<.036 U**	**<.04 U**	**<.059 U**	**<.038 U**	**<.043 U**	**<.055 U**	**<.037 U**
ANTHRACENE	0.088	<.053 U	**0.61**	.061	<.04 U	<.059 U	<.038 U	<.043 U	<.055 U	<.037 U
BENZO(A)ANTHRACENE	0.412	<.053 U	**1.4**	**0.48**	.16	<.059 U	.13	.06	<.055 U	<.037 U
BENZO(A)PYRENE	0.43	<.053 U	**1**	**0.44**	.27	<.059 U	.12	.077	<.055 U	<.037 U
BENZO(B)FLUORANTHENE	0.371	<.053 U	**1.1**	**0.57**	.37	<.059 U	.16	.1	<.055 U	<.037 U
CHRYSENE	0.384	<.053 U	**1.2**	**0.57**	.26	<.059 U	.16	.081	<.055 U	<.037 U
DIBENZ(A,H)ANTHRACENE	0.0634	<.053 U	**0.11**	**0.067**	.048	<.059 U	<.038 U	<.043 U	<.055 U	<.037 U
FLUORANTHENE	0.6	<.053 U	**3.1**	**1.1**	.24	<.059 U	.26	.1	<.055 U	<.037 U
FLUORENE	0.0253	**<.053 U**	**0.19**	**<.036 U**	**<.04 U**	**<.059 U**	**<.038 U**	**<.043 U**	**<.055 U**	**<.037 U**
INDENO(1,2,3-CD)PYRENE	0.382	<.053 U	.33	.22	.17	<.059 U	.054	.048	<.055 U	<.037 U
NAPHTHALENE	0.16	<.053 U	<.055 U	<.036 U	<.04 U	<.059 U	<.038 U	<.043 U	<.055 U	<.037 U
PHENANTHRENE	0.24	--	--	--	--	--	--	--	--	--
PYRENE	0.665	<.053 U	**3.2**	**0.98**	.22	<.059 U	.25	.1	<.055 U	<.037 U
Total Petroleum Hydrocarbons (mg/kg)										
AVIATION FUEL RANGE (JP4)	12	**<16 U**	**<17 U**	<11 U	<12 U	**<18 U**	<12 U	**<13 U**	**<17 U**	<11 U
GASOLINE RANGE	12	<1.6 U	<1.7 U	<1.1 U	<1.2 U	<1.8 U	<1.2 U	<1.3 U	--	<1.1 U

Table B-13
Onshore Fuel Line - Hangar Area Data
Focused Feasibility Study
Hamilton Army Airfield
Novato, California

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth								
		HB-5169 10/22/97 ATG(R)-115 2 ft	HB-5171 10/22/97 ATG(R)-115 7.5 ft	HB-5172 10/22/97 ATG(R)-115 7.5 ft	HB-5102 10/14/97 ATG(R)-120(HSN) 7.5 ft	HB-5101 10/14/97 ATG(R)-120(HSS) 7.5 ft	HB-5196 10/24/97 ATG-374 0.5 ft	HB-5197 10/24/97 ATG-374 4 ft	HB-5198 10/24/97 ATG-374 4 ft	HB-5199 10/24/97 ATG-374 7.5 ft
Benzene, Toluene, Ethylbenzene and Xylenes (mg/kg)										
ETHYLBENZENE	0.004	**<.0057 U**	**<.009 U**	--	**<1.1 UJ**	**<.0092 U**	**<.0054 U**	**--**	**<.0056 U**	**<.047 U**
XYLENES (TOTAL)	0.04	<.011 U	.0032 J+	--	**<2.2 UJ**	.013 J	<.011 U	--	<.011 U	**<.095 U**
Metals (mg/kg)										
LEAD	43.2	**118**	--	12.4	9.09	13.6	31.3	--	24.9	30
Semivolatile Organic Compounds (mg/kg)										
ACENAPHTHENE	0.026	**<.038 U**	**<.059 U**	--	**<.058 U**	**<.061 U**	**<.036 U**	--	**<.037 U**	**<.062 U**
ANTHRACENE	0.088	<.038 U	<.059 U	--	<.058 U	<.061 U	<.036 U	--	<.037 U	<.062 U
BENZO(A)ANTHRACENE	0.412	<.038 U	<.059 U	--	<.058 U	<.061 U	.048	--	<.037 U	<.062 U
BENZO(A)PYRENE	0.43	<.038 U	<.059 U	--	<.058 U	<.061 U	.069	--	<.037 U	<.062 U
BENZO(B)FLUORANTHENE	0.371	.043	<.059 U	--	<.058 U	<.061 U	.11	--	<.037 U	<.062 U
CHRYSENE	0.384	<.038 U	<.059 U	--	<.058 U	<.061 U	.086	--	<.037 U	<.062 U
DIBENZ(A,H)ANTHRACENE	0.0634	<.038 U	<.059 U	--	<.058 U	<.061 U	<.036 U	--	<.037 U	<.062 U
FLUORANTHENE	0.6	<.038 U	<.059 U	--	<.058 U	<.061 U	.083	--	<.037 U	<.062 U
FLUORENE	0.0253	**<.038 U**	**<.059 U**	--	**<.058 U**	**<.061 U**	**<.036 U**	--	**<.037 U**	**<.062 U**
INDENO(1,2,3-CD)PYRENE	0.382	<.038 U	<.059 U	--	<.058 U	<.061 U	<.036 U	--	<.037 U	<.062 U
NAPHTHALENE	0.16	<.038 U	<.059 U	--	<.058 U	<.061 U	<.036 U	--	<.037 U	<.062 U
PHENANTHRENE	0.24	--	--	--	--	--	--	--	--	--
PYRENE	0.665	<.038 U	<.059 U	--	<.058 U	<.061 U	.079	--	<.037 U	<.062 U
Total Petroleum Hydrocarbons (mg/kg)										
AVIATION FUEL RANGE (JP4)	12	<11 U	**<18 U**	--	**150**	**25**	<11 U	--	<11 U	**94**
GASOLINE RANGE	12	<1.1 U	<1.8 U	--	**480**	9.9	<1.1 U	--	<1.1 U	**36**

Table B-13
Onshore Fuel Line - Hangar Area Data
Focused Feasibility Study
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Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth							
		HB-5121-SPLT 10/15/97 ATG-375S(HS) 0.5 ft	HB-5121 10/15/97 ATG-375S(HS) 0.5 ft	HB-5124 10/15/97 ATG-375S(HS) 5 ft	HB-5125 10/15/97 ATG-375S(HS) 5 ft	HB-5134-SPLT 10/16/97 ATG-375S(HS) 7.5 ft	HB-5134 10/16/97 ATG-375S(HS) 7.5 ft	HB-5123 10/15/97 ATG-375S(HSE) 5 ft	HB-5136 10/16/97 ATG-375S(HSE) 7.5 ft
Benzene, Toluene, Ethylbenzene and Xylenes (mg/kg)									
ETHYLBENZENE	0.004	--	.0015 J	--	**0.65**	--	**1.2 J-**	**0.32**	**0.11**
XYLENES (TOTAL)	0.04	--	.0017 J	**1.4**	--	--	**<2.7 UJ**	**0.14**	**0.1**
Metals (mg/kg)									
LEAD	43.2	--	23.4	--	20	--	16.8	12.4	16
Semivolatile Organic Compounds (mg/kg)									
ACENAPHTHENE	0.026	--	**<.037 U**	--	**<.059 U**	--	**<.063 U**	**<.055 U**	**<.062 U**
ANTHRACENE	0.088	--	<.037 U	--	<.059 U	--	<.063 U	<.055 U	<.062 U
BENZO(A)ANTHRACENE	0.412	--	<.037 U	--	<.059 U	--	<.063 U	<.055 U	<.062 U
BENZO(A)PYRENE	0.43	--	<.037 U	--	<.059 U	--	<.063 U	<.055 U	<.062 U
BENZO(B)FLUORANTHENE	0.371	--	.05	--	<.059 U	--	<.063 U	<.055 U	<.062 U
CHRYSENE	0.384	--	.057	--	<.059 U	--	<.063 U	<.055 U	<.062 U
DIBENZ(A,H)ANTHRACENE	0.0634	--	<.037 U	--	<.059 U	--	<.063 U	<.055 U	<.062 U
FLUORANTHENE	0.6	--	<.037 U	--	<.059 U	--	<.063 U	<.055 U	<.062 U
FLUORENE	0.0253	--	**<.037 U**	--	**<.059 U**	--	**<.063 U**	**<.055 U**	**<.062 U**
INDENO(1,2,3-CD)PYRENE	0.382	--	<.037 U	--	<.059 U	--	<.063 U	<.055 U	<.062 U
NAPHTHALENE	0.16	--	<.037 U	--	<.059 U	--	<.063 U	<.055 U	<.062 U
PHENANTHRENE	0.24	--	--	--	--	--	--	--	--
PYRENE	0.665	--	<.037 U	--	<.059 U	--	<.063 U	<.055 U	<.062 U
Total Petroleum Hydrocarbons (mg/kg)									
AVIATION FUEL RANGE (JP4)	12	--	**<23 U**	--	**82**	--	**<19 U**	**67**	**<19 U**
GASOLINE RANGE	12	--	<1.1 U	--	**35**	--	**<240 U**	**58**	5.9

Table B-13
Onshore Fuel Line - Hangar Area Data
Focused Feasibility Study
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Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth						
		HB-5120 10/15/97 ATG-375S(HSN) 0.5 ft	HB-5131 10/16/97 ATG-375S(HSN) 5 ft	HB-5133 10/16/97 ATG-375S(HSN) 7.5 ft	HB-5122 10/15/97 ATG-375S(HSS) 0.5 ft	HB-5132 10/16/97 ATG-375S(HSS) 5 ft	HB-5135 10/16/97 ATG-375S(HSS) 7.5 ft	HB-5129 10/16/97 ATG-375S(HSW) 5 ft
Benzene, Toluene, Ethylbenzene and Xylenes (mg/kg)								
ETHYLBENZENE	0.004	**<.0056 U**	**<1.1 UJ**	**0.067**	.0015 J	**<1.2 UJ**	**0.085**	**23 J-**
XYLENES (TOTAL)	0.04	<.011 U	**<2.2 UJ**	**0.065**	.0089 J	**<2.4 UJ**	.038	**77 J-**
Metals (mg/kg)								
LEAD	43.2	18.3	18.9	15.1	26.1	**87.6**	23.4	**132**
Semivolatile Organic Compounds (mg/kg)								
ACENAPHTHENE	0.026	**<.037 U**	**<.058 U**	**<.063 U**	**<.034 U**	**<.062 U**	**<.064 U**	**<.056 U**
ANTHRACENE	0.088	.068	<.058 U	<.063 U	<.034 U	<.062 U	<.064 U	<.056 U
BENZO(A)ANTHRACENE	0.412	.38	<.058 U	<.063 U	.081	<.062 U	<.064 U	<.056 U
BENZO(A)PYRENE	0.43	.28	<.058 U	<.063 U	.065	<.062 U	<.064 U	<.056 U
BENZO(B)FLUORANTHENE	0.371	**0.39**	<.058 U	<.063 U	.076	<.062 U	<.064 U	<.056 U
CHRYSENE	0.384	**0.43**	<.058 U	<.063 U	.092	<.062 U	<.064 U	<.056 U
DIBENZ(A,H)ANTHRACENE	0.0634	<.037 U	<.058 U	<.063 U	<.034 U	<.062 U	**<.064 U**	<.056 U
FLUORANTHENE	0.6	.56	<.058 U	<.063 U	.15	<.062 U	<.064 U	<.056 U
FLUORENE	0.0253	**<.037 U**	**<.058 U**	**<.063 U**	**<.034 U**	**<.062 U**	**<.064 U**	**<.056 U**
INDENO(1,2,3-CD)PYRENE	0.382	.086	<.058 U	<.063 U	<.034 U	<.062 U	<.064 U	<.056 U
NAPHTHALENE	0.16	<.037 U	<.058 U	<.063 U	<.034 U	<.062 U	<.064 U	**0.17**
PHENANTHRENE	0.24	--	--	--	--	--	--	--
PYRENE	0.665	.51	<.058 U	<.063 U	.16	<.062 U	<.064 U	<.056 U
Total Petroleum Hydrocarbons (mg/kg)								
AVIATION FUEL RANGE (JP4)	12	**<22 U**	**57**	**75**	<10 U	**78**	**96**	**610**
GASOLINE RANGE	12	<1.1 U	**<220 U**	7.8	<1 U	**940**	4.7	**3700**

Table B-13
Onshore Fuel Line - Hangar Area Data
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Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth							
		HB-5137 10/16/97 ATG-375S(HSW) 7.5 ft	HB-5182 10/23/97 ATG-379(HS) 0.5 ft	HB-5186 10/23/97 ATG-379(HS) 6 ft	HB-5191 10/23/97 ATG-379(HS) 7.5 ft	HB-5189 10/23/97 ATG-379(HS5'E) 6 ft	HB-5192 10/23/97 ATG-379(HS5'E) 7.5 ft	HB-5183 10/23/97 ATG-379(HSN) 0.5 ft	HB-5187 10/23/97 ATG-379(HSN) 6 ft
Benzene, Toluene, Ethylbenzene and Xylenes (mg/kg)									
ETHYLBENZENE	0.004	**0.18**	<.0011 UJ	**<.18 U**	**<.18 U**	**3.4**	**0.64**	**0.012**	**19**
XYLENES (TOTAL)	0.04	**0.41**	<.0011 UJ	**<.63 U**	**<.18 U**	**<.64 U**	**<.18 U**	.0065	**7.3**
Metals (mg/kg)									
LEAD	43.2	13.6	**88.9**	9.6	12.5	11.9	11.5	25.7	42.7
Semivolatile Organic Compounds (mg/kg)									
ACENAPHTHENE	0.026	**<.062 U**	**<.038 U**	**<.059 U**	**<.06 U**	**<.06 U**	**<.061 U**	**<.04 U**	**<.061 U**
ANTHRACENE	0.088	<.062 U	<.038 U	<.059 U	<.06 U	<.06 U	<.061 U	<.04 U	<.061 U
BENZO(A)ANTHRACENE	0.412	<.062 U	.052	<.059 U	<.06 U	<.06 U	<.061 U	<.04 U	<.061 U
BENZO(A)PYRENE	0.43	<.062 U	.07	<.059 U	<.06 U	<.06 U	<.061 U	<.04 U	<.061 U
BENZO(B)FLUORANTHENE	0.371	<.062 U	.15 J	<.059 U	<.06 UJ	<.06 U	<.061 U	.051 J	<.061 U
CHRYSENE	0.384	<.062 U	.074 J+	<.059 U	<.06 U	<.06 U	<.061 U	.046 J+	<.061 U
DIBENZ(A,H)ANTHRACENE	0.0634	<.062 U	<.038 U	<.059 U	<.06 U	<.06 U	<.061 U	<.04 U	<.061 U
FLUORANTHENE	0.6	<.062 U	.084	<.059 U	<.06 U	<.06 U	<.061 U	.059	<.061 U
FLUORENE	0.0253	**<.062 U**	**<.038 U**	**<.059 U**	**<.06 U**	**<.06 U**	**<.061 U**	**<.04 U**	**<.061 U**
INDENO(1,2,3-CD)PYRENE	0.382	<.062 U	<.038 U	<.059 U	<.06 U	<.06 U	<.061 U	<.04 U	<.061 U
NAPHTHALENE	0.16	<.062 U	<.038 U	<.059 U	<.06 U	<.06 U	<.061 U	<.04 U	<.061 U
PHENANTHRENE	0.24	--	--	--	--	--	--	--	--
PYRENE	0.665	<.062 U	.069	<.059 U	<.06 U	<.06 U	<.061 U	.046	<.061 U
Total Petroleum Hydrocarbons (mg/kg)									
AVIATION FUEL RANGE (JP4)	12	**<14 U**	<11 U	**<18 U**	**<18 U**	**<18 U**	**<18 U**	<12 U	**<93 U**
GASOLINE RANGE	12	**15**	<1.1 U	**1100**	**57**	**370**	**61**	1.9	**3000**

Table B-13
Onshore Fuel Line - Hangar Area Data
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Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth							
		HB-5194 10/23/97 ATG-379(HSN) 7.5 ft	HB-5180 10/23/97 ATG-379(HSS) 0.5 ft	HB-5181 10/23/97 ATG-379(HSS) 0.5 ft	HB-5184 10/23/97 ATG-379(HSS) 6 ft	HB-5185 10/23/97 ATG-379(HSS) 6 ft	HB-5193 10/23/97 ATG-379(HSS) 7.5 ft	HB-5188 10/23/97 ATG-379(HSW) 6 ft	HB-5190 10/23/97 ATG-379(HSW) 7.5 ft
Benzene, Toluene, Ethylbenzene and Xylenes (mg/kg)									
ETHYLBENZENE	0.004	**1.8**	<.0011 U	--	--	**<.19 U**	**<.53 U**	**<1 U**	**<.64 U**
XYLENES (TOTAL)	0.04	**<.28 U**	<.0011 U	--	**<.88 U**	--	**<.18 U**	**<.19 U**	**0.51**
Metals (mg/kg)									
LEAD	43.2	13.1	**52.7**	--	38.4	--	13.8	12.9	12.2
Semivolatile Organic Compounds (mg/kg)									
ACENAPHTHENE	0.026	**<.061 U**	**<.037 U**	--	**<.058 U**	--	**<.059 U**	**<.062 U**	**<.06 U**
ANTHRACENE	0.088	<.061 U	<.037 U	--	<.058 U	--	<.059 U	<.062 U	<.06 U
BENZO(A)ANTHRACENE	0.412	.13	--	.065	<.058 U	--	<.059 U	<.062 U	<.06 U
BENZO(A)PYRENE	0.43	.16	--	.094	<.058 U	--	<.059 U	<.062 U	<.06 U
BENZO(B)FLUORANTHENE	0.371	.25 J	--	.18 J	<.058 U	--	<.059 U	<.062 U	<.06 U
CHRYSENE	0.384	.18 J+	--	.13 J+	<.058 U	--	<.059 U	<.062 U	<.06 U
DIBENZ(A,H)ANTHRACENE	0.0634	<.061 U	<.037 U	--	<.058 U	--	<.059 U	<.062 U	<.06 U
FLUORANTHENE	0.6	.1	--	.12	<.058 U	--	<.059 U	<.062 U	<.06 U
FLUORENE	0.0253	**<.061 U**	**<.037 U**	--	**<.058 U**	--	**<.059 U**	**<.062 U**	**<.06 U**
INDENO(1,2,3-CD)PYRENE	0.382	<.061 U	<.037 U	--	<.058 U	--	<.059 U	<.062 U	<.06 U
NAPHTHALENE	0.16	<.061 U	<.037 U	--	<.058 U	--	<.059 U	<.062 U	<.06 U
PHENANTHRENE	0.24	--	--	--	--	--	--	--	--
PYRENE	0.665	.14	--	.1	<.058 U	--	<.059 U	<.062 U	<.06 U
Total Petroleum Hydrocarbons (mg/kg)									
AVIATION FUEL RANGE (JP4)	12	**19**	<11 U	--	**<18 U**	--	**<18 U**	**<19 U**	**<18 U**
GASOLINE RANGE	12	**<140 U**	<1.1 U	--	**690**	--	**140**	**130**	**200**

Table B-13
Onshore Fuel Line - Hangar Area Data
Focused Feasibility Study
Hamilton Army Airfield
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Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth									
		HB-5176 10/22/97 ATG-387 0.5 ft	HB-5177 10/22/97 ATG-387 5.5 ft	HB-5178 10/22/97 ATG-387 7.5 ft	HB-5104 10/14/97 IT-003(HS) 1.5 ft	HB-5108 10/14/97 IT-003(HS) 5.5 ft	HB-5116 10/15/97 IT-003(HS) 7.5 ft	HB-5112 10/15/97 IT-003(HSE) 5.5 ft	HB-5115 10/15/97 IT-003(HSE) 7.5 ft	HB-5106 10/14/97 IT-003(HSN) 0.5 ft	HB-5107 10/14/97 IT-003(HSN) 5.5 ft
Benzene, Toluene, Ethylbenzene and Xylenes (mg/kg)											
ETHYLBENZENE	0.004	**<.0054 U**	**.0078 J**	**.0047 J+**	**<.006 U**	**0.053**	**0.02**	<.0018 U	<.002 U	<.0011 U	**0.81**
XYLENES (TOTAL)	0.04	<.011 U	**0.049**	.011 J+	<.006 U	**0.19**	**0.12**	<.0018 U	<.002 U	<.0011 U	**0.4**
Metals (mg/kg)											
LEAD	43.2	17.4	8.97	17	**47.2**	13.8	10.7	9.8	10.4	**96.1**	32.4
Semivolatile Organic Compounds (mg/kg)											
ACENAPHTHENE	0.026	**<.035 U**	**<.063 U**	**<.063 U**	**<.2 UJ**	**<.06 U**	**<.065 U**	**<.061 U**	**<.065 U**	**2.1**	**<.055 U**
ANTHRACENE	0.088	<.035 U	<.063 U	<.063 U	**0.28**	<.06 U	<.065 U	<.061 U	<.065 U	**2.4**	<.055 U
BENZO(A)ANTHRACENE	0.412	<.035 U	<.063 U	<.063 U	**0.89**	<.06 U	<.065 U	<.061 U	<.065 U	**4.9**	.068
BENZO(A)PYRENE	0.43	<.035 U	<.063 U	<.063 U	**0.75**	<.06 U	<.065 U	<.061 U	<.065 U	**3.9**	.068
BENZO(B)FLUORANTHENE	0.371	<.035 U	<.063 U	<.063 U	**1.1 J**	<.06 U	<.065 U	<.061 U	<.065 U	**5.8 J**	.097 J
CHRYSENE	0.384	<.035 U	<.063 U	<.063 U	**0.77**	<.06 U	<.065 U	<.061 U	<.065 U	**4.9**	.085
DIBENZ(A,H)ANTHRACENE	0.0634	<.035 U	<.063 U	<.063 U	**<.2 U**	<.06 U	**<.065 U**	<.061 U	**<.065 U**	**0.66**	<.055 U
FLUORANTHENE	0.6	.037	<.063 U	<.063 U	**1.3**	<.06 U	<.065 U	<.061 U	<.065 U	**7.3**	.1
FLUORENE	0.0253	**<.035 U**	**<.063 U**	**<.063 U**	**<.2 U**	**<.06 U**	**<.065 U**	**<.061 U**	**<.065 U**	**2.5**	**<.055 U**
INDENO(1,2,3-CD)PYRENE	0.382	<.035 U	<.063 U	<.063 U	.32	<.06 U	<.065 U	<.061 U	<.065 U	**1.4**	<.055 U
NAPHTHALENE	0.16	<.035 U	<.063 U	<.063 U	**<.2 U**	<.06 U	<.065 U	<.061 U	<.065 U	**0.92**	<.055 U
PHENANTHRENE	0.24	--	--	--	--	--	--	--	--	--	--
PYRENE	0.665	<.035 U	<.063 U	<.063 U	**1.4 J+**	<.06 U	<.065 U	<.061 U	<.065 U	**7.5**	.12
Total Petroleum Hydrocarbons (mg/kg)											
AVIATION FUEL RANGE (JP4)	12	<11 U	**<19 U**	**<19 U**	**<48 U**	**<18 U**	**<20 U**	**<18 U**	**<20 U**	**<110 U**	**<17 U**
GASOLINE RANGE	12	<1.1 U	2.1	<1.9 U	<1.2 U	<1.8 U	<2 U	<1.8 U	<2 U	<1.1 U	7.4

Table B-13
Onshore Fuel Line - Hangar Area Data
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Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth					
		HB-5118 10/15/97 IT-003(HSN) 7.5 ft	HB-5105 10/14/97 IT-003(HSS) 0.5 ft	HB-5109 10/14/97 IT-003(HSS) 5.5 ft	HB-5119 10/15/97 IT-003(HSS) 7.5 ft	HB-5114 10/15/97 IT-003(HSW) 5.5 ft	HB-5117 10/15/97 IT-003(HSW) 7.5 ft
Benzene, Toluene, Ethylbenzene and Xylenes (mg/kg)							
ETHYLBENZENE	0.004	**0.22**	<.0011 U	<.0019 U	<.0019 U	**0.094**	**<.0097 U**
XYLENES (TOTAL)	0.04	**0.86**	<.0011 U	.0063	<.0019 U	**0.42**	.037
Metals (mg/kg)							
LEAD	43.2	9.9	**55.8**	20.0	9.7	11.5	10.3
Semivolatile Organic Compounds (mg/kg)							
ACENAPHTHENE	0.026	**<.064 U**	**0.62**	**0.077**	**<.064 U**	**<.062 U**	**<.064 U**
ANTHRACENE	0.088	<.064 U	**1.3**	**0.21**	<.064 U	<.062 U	<.064 U
BENZO(A)ANTHRACENE	0.412	<.064 U	**3.8**	**0.49**	<.064 U	<.062 U	<.064 U
BENZO(A)PYRENE	0.43	<.064 U	**3**	.37	<.064 U	<.062 U	<.064 U
BENZO(B)FLUORANTHENE	0.371	<.064 U	**4.4 J**	**.54 J**	<.064 U	<.062 U	<.064 U
CHRYSENE	0.384	<.064 U	**3.8**	**0.46**	<.064 U	<.062 U	<.064 U
DIBENZ(A,H)ANTHRACENE	0.0634	**<.064 U**	**<.57 U**	**0.074**	**<.064 U**	<.062 U	**<.064 U**
FLUORANTHENE	0.6	<.064 U	**6**	**0.64**	<.064 U	<.062 U	<.064 U
FLUORENE	0.0253	**<.064 U**	**<.57 U**	**<.063 U**	**<.064 U**	**<.062 U**	**<.064 U**
INDENO(1,2,3-CD)PYRENE	0.382	<.064 U	**1.4**	.14	<.064 U	<.062 U	<.064 U
NAPHTHALENE	0.16	<.064 U	**<.57 U**	<.063 U	<.064 U	<.062 U	<.064 U
PHENANTHRENE	0.24	--	--	--	--	--	--
PYRENE	0.665	<.064 U	**6.5**	.56	<.064 U	<.062 U	<.064 U
Total Petroleum Hydrocarbons (mg/kg)							
AVIATION FUEL RANGE (JP4)	12	**<19 U**	**<46 U**	**<19 U**	**<19 U**	**<19 U**	**<19 U**
GASOLINE RANGE	12	4.5	<1.1 U	<1.9 U	<1.9 U	<1.9 U	<1.9 U

Table B-13
Onshore Fuel Line - Hangar Area Data
Focused Feasibility Study
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Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth						
		HB-5215 10/28/97 ATG(R)-072 5 ft	HB-5216 10/28/97 ATG(R)-072 7.5 ft	HB-5217 10/28/97 ATG(R)-072 10 ft	HB-5219 10/29/97 ATG(R)-120(HS10'N) 3.5 ft	HB-5220 10/29/97 ATG(R)-120(HS10'N) 7.5 ft	HB-5222 10/29/97 ATG(R)-120(HS10'S) 3.5 ft	HB-5223 10/29/97 ATG(R)-120(HS10'W) 5 ft
Benzene, Toluene, Ethylbenzene and Xylenes (mg/kg)								
BENZENE		<.0074 U	<.0086 U	<.0087 U	<.0058 U	<.0092 U	<.0077 U	--
ETHYLBENZENE	0.004	**<.0074 U**	**<.0086 U**	**<.0087 U**	**<.0058 U**	**<.046 U**	**<.0077 U**	**<1.2 U**
TOLUENE		<.0074 U	<.0086 U	.0052 J+	<.0058 U	<.046 U	<.0077 U	--
XYLENES (TOTAL)	0.04	<.015 U	<.017 U	.0021 J+	.0014 J	**<.092 U**	.002 J	**<2.3 U**
Metals (mg/kg)								
LEAD	43.2	15.2	12.7	11.5	23.3	33.4	16.1	25.6
Semivolatile Organic Compounds (mg/kg)								
ACENAPHTHENE	0.026	**<.049 U**	**<.057 U**	**<.057 U**	**<.038 U**	**<.061 U**	**<.051 U**	**<.062 U**
ANTHRACENE	0.088	<.049 U	<.057 U	<.057 U	<.038 U	<.061 U	<.051 U	<.062 U
BENZO(A)ANTHRACENE	0.412	<.049 U	<.057 U	<.057 U	<.038 U	<.061 U	<.051 U	<.062 U
BENZO(A)PYRENE	0.43	<.049 U	<.057 U	<.057 U	<.038 U	<.061 U	<.051 U	<.062 U
BENZO(B)FLUORANTHENE	0.371	<.049 U	<.057 U	<.057 U	<.038 U	<.061 U	<.051 U	<.062 U
CHRYSENE	0.384	<.049 U	<.057 U	<.057 U	<.038 U	<.061 U	<.051 U	<.062 U
DIBENZ(A,H)ANTHRACENE	0.0634	<.049 U	<.057 U	<.057 U	<.038 U	<.061 U	<.051 U	<.062 U
FLUORANTHENE	0.6	<.049 U	<.057 U	<.057 U	.072	<.061 U	<.051 U	<.062 U
FLUORENE	0.0253	**<.049 U**	**<.057 U**	**<.057 U**	**<.038 U**	**<.061 U**	**<.051 U**	**<.062 U**
INDENO(1,2,3-CD)PYRENE	0.382	<.049 U	<.057 U	<.057 U	<.038 U	<.061 U	<.051 U	<.062 U
NAPHTHALENE	0.16	<.049 U	<.057 U	<.057 U	<.038 U	<.061 U	<.051 U	<.062 U
PHENANTHRENE	0.24	--	--	--	--	--	--	--
PYRENE	0.665	<.049 U	<.057 U	<.057 U	.058	<.061 U	<.051 U	<.062 U
Total Petroleum Hydrocarbons (mg/kg)								
AVIATION FUEL RANGE (JP4)	12	**<15 U**	**<17 U**	**<17 U**	<12 U	**57**	**<15 U**	**110**
GASOLINE RANGE	12	<1.5 U	<1.7 U	<1.7 U	<1.2 U	**90**	4.1	**400**

Table B-13
Onshore Fuel Line - Hangar Area Data
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Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth					
		HB-5234 11/05/97 ATG(R)-120(HS15'S) 3.5 ft	HB-5221 10/29/97 ATG(R)-120(HSN) 10 ft	HB-5227 10/30/97 ATG-379(HS10'E) 6 ft	HB-5228 10/30/97 ATG-379(HS10'E) 6 ft	HB-5225 10/29/97 ATG-379(HS10'N) 6 ft	HB-5229 10/30/97 ATG-379(HS10'S) 6 ft
Benzene, Toluene, Ethylbenzene and Xylenes (mg/kg)							
BENZENE		<.0014 UJ	<.0087 U	<.18 U	--	--	<.0088 U
ETHYLBENZENE	0.004	<.0014 UJ	**<.0087 U**	--	**<1.5 U**	**<1.7 U**	**<.0088 U**
TOLUENE		<.0014 UJ	<.0087 U	--	--	--	<.0088 U
XYLENES (TOTAL)	0.04	<.0014 UJ	.002 J	--	**<1.8 U**	**<1.7 U**	<.0088 U
Metals (mg/kg)							
LEAD	43.2	12.0	14.1	--	19.7	31.2	7.8
Semivolatile Organic Compounds (mg/kg)							
ACENAPHTHENE	0.026	**<.047 U**	**<.057 U**	**<.06 U**	--	**<.057 UJ**	**<.058 UJ**
ANTHRACENE	0.088	<.047 U	<.057 U	<.06 U	--	<.057 UJ	<.058 UJ
BENZO(A)ANTHRACENE	0.412	<.047 U	<.057 U	<.06 U	--	<.057 UJ	<.058 UJ
BENZO(A)PYRENE	0.43	<.047 U	<.057 U	<.06 U	--	<.057 UJ	<.058 UJ
BENZO(B)FLUORANTHENE	0.371	<.047 U	<.057 U	<.06 U	--	<.057 UJ	<.058 UJ
CHRYSENE	0.384	<.047 U	<.057 U	<.06 U	--	<.057 UJ	<.058 UJ
DIBENZ(A,H)ANTHRACENE	0.0634	<.047 U	<.057 U	<.06 U	--	<.057 UJ	<.058 UJ
FLUORANTHENE	0.6	<.047 U	<.057 U	<.06 U	--	<.057 UJ	<.058 UJ
FLUORENE	0.0253	**<.047 U**	**<.057 U**	**<.06 U**	--	**<.057 UJ**	**<.058 UJ**
INDENO(1,2,3-CD)PYRENE	0.382	<.047 U	<.057 U	<.06 U	--	<.057 UJ	<.058 UJ
NAPHTHALENE	0.16	<.047 U	<.057 U	<.06 U	--	<.057 UJ	<.058 UJ
PHENANTHRENE	0.24	--	--	--	--	--	--
PYRENE	0.665	<.047 U	<.057 U	<.06 U	--	<.057 UJ	<.058 UJ
Total Petroleum Hydrocarbons (mg/kg)							
AVIATION FUEL RANGE (JP4)	12	**<14 U**	**<17 U**	--	**93**	**530**	**<18 U**
GASOLINE RANGE	12	<1.4 U	<1.7 U	**450**	--	**1200**	<1.8 U

Table B-13
Onshore Fuel Line - Hangar Area Data
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Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth							
		HB-5240 11/06/97 ATG-379(HS15'E) 6 ft	HB-5238 11/06/97 ATG-379(HS15'N) 6 ft	HB-5239 11/06/97 ATG-379(HS15'N) 6 ft	HB-5242 11/06/97 ATG-379(HS30'E) 6 ft	HB-5243 11/06/97 ATG-379(HS60'E) 6 ft	JP001SS1 02/21/91 JP-SS-01 0 ft	JP002SS1 02/21/91 JP-SS-02 0 ft	JP003SS1 02/21/91 JP-SS-03 0 ft
Benzene, Toluene, Ethylbenzene and Xylenes (mg/kg)									
BENZENE		--	--	--	<.0089 U	<.009 U	--	--	--
ETHYLBENZENE	0.004	--	**<12 U**	--	**<.036 U**	**<.009 U**	--	--	--
TOLUENE		--	--	--	<.018 U	<.009 U	--	--	--
XYLENES (TOTAL)	0.04	**<19 U**	**<11 U**	--	<.018 U	<.009 U	--	--	--
Metals (mg/kg)									
LEAD	43.2	41.9	33.9	--	13.5	15.4	**86**	16	16
Semivolatile Organic Compounds (mg/kg)									
ACENAPHTHENE	0.026	**<.064 U**	--	**<.063 U**	**<.059 U**	**<.059 U**	--	--	--
ANTHRACENE	0.088	<.064 U	--	<.063 U	<.059 U	<.059 U	--	--	--
BENZO(A)ANTHRACENE	0.412	<.064 U	--	<.063 U	<.059 U	<.059 U	--	--	--
BENZO(A)PYRENE	0.43	<.064 U	.067	--	<.059 U	<.059 U	--	--	--
BENZO(B)FLUORANTHENE	0.371	<.064 U	--	<.063 U	<.059 U	<.059 U	--	--	--
CHRYSENE	0.384	<.064 U	.11	--	<.059 U	<.059 U	--	--	--
DIBENZ(A,H)ANTHRACENE	0.0634	**<.064 U**	--	<.063 U	<.059 U	<.059 U	--	--	--
FLUORANTHENE	0.6	<.064 U	--	<.063 U	<.059 U	<.059 U	--	--	--
FLUORENE	0.0253	**<.064 U**	--	**<.063 U**	**<.059 U**	**<.059 U**	--	--	--
INDENO(1,2,3-CD)PYRENE	0.382	<.064 U	--	<.063 U	<.059 U	<.059 U	--	--	--
NAPHTHALENE	0.16	<.064 U	.13	--	<.059 U	<.059 U	--	--	--
PHENANTHRENE	0.24	--	--	--	--	--	--	--	--
PYRENE	0.665	<.064 U	--	<.063 U	<.059 U	<.059 U	--	--	--
Total Petroleum Hydrocarbons (mg/kg)									
AVIATION FUEL RANGE (JP4)	12	**<19 U**	--	**<95 U**	**<18 U**	**<18 U**	--	--	--
GASOLINE RANGE	12	**1500**	--	**350**	8	3.5	--	--	--

Table B-13
Onshore Fuel Line - Hangar Area Data
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Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth								
		JP004SS1 02/21/91 JP-SS-04 0 ft	JP005SS1 02/21/91 JP-SS-05 0 ft	JP006SS1 02/21/91 JP-SS-06 0 ft	JP007SS1 02/21/91 JP-SS-07 0 ft	JP008SS1 02/21/91 JP-SS-08 0 ft	JP009SS1 02/21/91 JP-SS-09 0 ft	JP010SS1 02/21/91 JP-SS-10 0 ft	JP101DS1 03/14/91 JP-SS-13 2 ft	JP102SS1 03/14/91 JP-SS-14 2 ft
Benzene, Toluene, Ethylbenzene and Xylenes (mg/kg)										
BENZENE		--	--	--	--	--	--	--	--	--
ETHYLBENZENE	0.004	--	--	--	--	--	--	--	--	--
TOLUENE		--	--	--	--	--	--	--	--	--
XYLENES (TOTAL)	0.04	--	--	--	--	--	--	--	--	--
Metals (mg/kg)										
LEAD	43.2	14	33	**160**	16	**44**	26	**360**	15.2	21.6
Semivolatile Organic Compounds (mg/kg)										
ACENAPHTHENE	0.026	--	--	--	--	--	--	--	--	--
ANTHRACENE	0.088	--	--	--	--	--	--	--	--	--
BENZO(A)ANTHRACENE	0.412	--	--	--	--	--	--	--	--	--
BENZO(A)PYRENE	0.43	--	--	--	--	--	--	--	--	--
BENZO(B)FLUORANTHENE	0.371	--	--	--	--	--	--	--	--	--
CHRYSENE	0.384	--	--	--	--	--	--	--	--	--
DIBENZ(A,H)ANTHRACENE	0.0634	--	--	--	--	--	--	--	--	--
FLUORANTHENE	0.6	--	--	--	--	--	--	--	--	--
FLUORENE	0.0253	--	--	--	--	--	--	--	--	--
INDENO(1,2,3-CD)PYRENE	0.382	--	--	--	--	--	--	--	--	--
NAPHTHALENE	0.16	--	--	--	--	--	--	--	--	--
PHENANTHRENE	0.24	--	--	--	--	--	--	--	--	--
PYRENE	0.665	--	--	--	--	--	--	--	--	--
Total Petroleum Hydrocarbons (mg/kg)										
AVIATION FUEL RANGE (JP4)	12	--	--	--	--	--	--	--	--	--
GASOLINE RANGE	12	--	--	--	--	--	--	--	--	--

Table B-13
Onshore Fuel Line - Hangar Area Data
Focused Feasibility Study
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Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth			
		JP103SS1 03/14/91 JP-SS-15 2 ft	JP104SS1 03/14/91 JP-SS-16 2 ft	JP105SS1 03/14/91 JP-SS-17 2 ft	JP106SS1 03/14/91 JP-SS-18 2 ft
Benzene, Toluene, Ethylbenzene and Xylenes (mg/kg)					
BENZENE		--	--	--	--
ETHYLBENZENE	0.004	--	--	--	--
TOLUENE		--	--	--	--
XYLENES (TOTAL)	0.04	--	--	--	--
Metals (mg/kg)					
LEAD	43.2	8.68	20.8	13.7	9.22
Semivolatile Organic Compounds (mg/kg)					
ACENAPHTHENE	0.026	--	--	--	--
ANTHRACENE	0.088	--	--	--	--
BENZO(A)ANTHRACENE	0.412	--	--	--	--
BENZO(A)PYRENE	0.43	--	--	--	--
BENZO(B)FLUORANTHENE	0.371	--	--	--	--
CHRYSENE	0.384	--	--	--	--
DIBENZ(A,H)ANTHRACENE	0.0634	--	--	--	--
FLUORANTHENE	0.6	--	--	--	--
FLUORENE	0.0253	--	--	--	--
INDENO(1,2,3-CD)PYRENE	0.382	--	--	--	--
NAPHTHALENE	0.16	--	--	--	--
PHENANTHRENE	0.24	--	--	--	--
PYRENE	0.665	--	--	--	--
Total Petroleum Hydrocarbons (mg/kg)					
AVIATION FUEL RANGE (JP4)	12	--	--	--	--
GASOLINE RANGE	12	--	--	--	--

Table B-14
Onshore Fuel Line - Northern Segment Data
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Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth										
		HB-0493 10/11/95 PRL CORNER 4.5 ft	HB-0516 10/24/95 PRL-0307 4 ft	HB-0519 10/24/95 PRL-0317 4 ft	HB-0520 10/24/95 PRL-0317 1.5 ft	HB-0522 10/24/95 PRL-0327 4 ft	HB-0524 10/24/95 PRL-0327 1.5 ft	HB-0525 10/24/95 PRL-0337 4 ft	HB-0528 10/24/95 PRL-0347 4 ft	HB-0531 10/24/95 PRL-0357 4 ft	HB-0534 10/24/95 PRL-0431 4 ft	HB-0537 10/24/95 PRL-0441 4 ft
Semivolatile Organic Compounds (mg/kg)												
2-METHYLNAPHTHALENE	0.07	--	--	--	--	--	--	--	--	--	--	--
BENZO(A)PYRENE	0.43	--	--	<0.043 U	<0.042 U	<0.043 U	<0.040 U	<0.040 U	--	--	--	<0.043 U
Total Petroleum Hydrocarbons (mg/kg)												
GASOLINE RANGE	12	<1.6 U	**57**	**68**	<1.3 U	<1.2 U	<1.2 U	**27**	<1.4 U	<1.4 U	<1.4 U	<1.3 U

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Onshore Fuel Line - Northern Segment Data
Focused Feasibility Study
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Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth										
		HB-0540 10/25/95 PRL-0617 4 ft	HB-0543 10/25/95 PRL-0616 4 ft	HB-0546 10/25/95 PRL-0630 4.5 ft	HB-0548 10/25/95 PRL-0630 3 ft	HB-0636 10/25/95 PRL-0461 4 ft	HB-0639 10/24/95 PRL-0471 4 ft	HB-0641 10/24/95 PRL-0471 0.5 ft	HB-0642 10/24/95 PRL-0481 4 ft	HB-0643 10/24/95 PRL-0481 2 ft	HB-0645 10/24/95 PRL-0491 4.5 ft	HB-0648 10/24/95 PRL-0501 4 ft
Semivolatile Organic Compounds (mg/kg)												
2-METHYLNAPHTHALENE	0.07	--	--	--	--	--	--	--	--	--	--	--
BENZO(A)PYRENE	0.43	--	--	--	<0.037 U	<0.043 U	<0.045 U	<0.043 U	<0.044 U	<0.045 U	<0.043 U	<0.043 U
Total Petroleum Hydrocarbons (mg/kg)												
GASOLINE RANGE	12	**52**	**41**	**35**	**29**	<1.3 U	**30**	**32**	**32**	**45**	**31**	**29**

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Onshore Fuel Line - Northern Segment Data
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Parameter	Comparison Value (mg/kg)	HB-0652 10/24/95 PRL-0511 3.5 ft
2-METHYLNAPHTHALENE	0.07	--
BENZO(A)PYRENE	0.43	<0.043 U
GASOLINE RANGE	12	**54**

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Onshore Fuel Line - Northern Segment Data
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Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth										
		HB-0656 10/24/95 PRL-0521 4 ft	HB-0658 10/24/95 PRL-0531 4 ft	HB-0663 10/24/95 PRL-0550 4 ft	HB-0666 10/23/95 PRL-0559 4 ft	HB-0669 10/23/95 PRL-0568 4 ft	HB-0672 10/23/95 PRL-0577 3.5 ft	HB-0675 10/23/95 PRL-0586 3.5 ft	HB-0678 10/23/95 PRL-0595 3.5 ft	HB-0683 10/25/95 PRL-0639 2.5 ft	HB-0684 10/25/95 PRL-0639 2.5 ft	HB-0757 11/06/95 PRL-0305 4 ft
Semivolatile Organic Compounds (mg/kg)												
2-METHYLNAPHTHALENE	0.07	--	--	--	--	--	--	--	--	--	--	--
BENZO(A)PYRENE	0.43	<0.043 U	<0.041 U	<0.041 U	<0.042 U	<0.041 U	<0.044 U	<0.039 U	<0.038 U	0.023 J	<0.043 U	--
Total Petroleum Hydrocarbons (mg/kg)												
GASOLINE RANGE	12	**51**	**50**	**46**	**40**	**81**	**48**	**55**	**43**	**29**	<1.3 U	**39**

Table B-14
Onshore Fuel Line - Northern Segment Data
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Parameter	Comparison Value (mg/kg)	HB-0760 11/06/95 PRL-0309 4 ft	HB-0766 11/06/95 PRL-0313 4 ft	HB-0772 11/06/95 PRL-0319 4 ft	HB-0778 11/06/95 PRL-0323 4 ft	HB-0781 11/06/95 PRL-0325 4 ft	HB-0784 11/06/95 PRL-0329 4 ft	HB-0790 11/03/95 PRL-0333 2 ft	HB-0792 11/06/95 PRL-0335 4 ft	HB-0795 11/06/95 PRL-0339 4 ft	HB-0801 11/06/95 PRL-0343 4 ft	HB-0810 11/06/95 PRL-0351 4.5 ft
			Sample Number/Date/Location/Depth									
			Semivolatile Organic Compounds (mg/kg)									
2-METHYLNAPHTHALENE	0.07	--	--	--	--	--	--	--	--	--	--	--
BENZO(A)PYRENE	0.43	--	--	--	--	--	--	<0.04 U	--	--	--	--
			Total Petroleum Hydrocarbons (mg/kg)									
GASOLINE RANGE	12	**42**	**54**	**48**	**46**	**41**	< 0.27 U	--	<0.28 U	<0.25 U	<0.32 U	< 0.3 U

Table B-14
Onshore Fuel Line - Northern Segment Data
Focused Feasibility Study
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Parameter	Comparison Value (mg/kg)	HB-0815 11/06/95 PRL-0355 4 ft	HB-0826 11/09/95 PRL-0629 5.5 ft	HB-0829 11/07/95 PRL-0627 5.5 ft	HB-0830 11/07/95 PRL-0625 5.5 ft	HB-0831 11/09/95 PRL-0632 5 ft	HB-0840 11/09/95 PRL-0638 5 ft	HB-0843 11/09/95 PRL-0454 4.5 ft	HB-0846 11/03/95 PRL-0456 4.17	HB-0849 11/09/95 PRL-0458 4 ft	HB-0865 11/16/95 PRL-0469 1.17	HB-0870 11/10/95 PRL-0513 5 ft
				Sample Number/Date/Location/Depth								
				Semivolatile Organic Compounds (mg/kg)								
2-METHYLNAPHTHALENE	0.07	--	--	--	--	--	--	--	--	--	--	--
BENZO(A)PYRENE	0.43	--	--	--	--	--	--	--	<0.04 U	--	<.036 U	--
				Total Petroleum Hydrocarbons (mg/kg)								
GASOLINE RANGE	12	< 0.32 U	< 0.31 U	<0.31 U	< 0.31 U	< 0.31 U	< 0.32 U	< 0.3	--	< 0.23 U	--	< 0.27 U

Table B-14
Onshore Fuel Line - Northern Segment Data
Focused Feasibility Study
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Parameter	Comparison Value (mg/kg)	HB-0883 11/10/95 PRL-0524 3 ft	HB-0889 11/10/95 PRL-0527 3.5 ft	HB-0898 11/10/95 PRL-0539 3 ft	HB-0916 11/06/95 PRL-0359 4.5 ft	HB-0919 11/07/95 PRL-0447 4 ft	HB-0927 11/16/95 PRL-0517 2.67 ft	HB-0960 11/09/95 PRL-0477 4 ft	HB-0972 11/10/95 PRL-0509 4.67 ft	HB-1003 10/24/95 PRL-0604 4 ft	HB-1032 10/24/95 PRL-0541 3.5 ft	HB-1047 11/03/95 PRL-0601 2 ft
					Sample Number/Date/Location/Depth							
					Semivolatile Organic Compounds (mg/kg)							
2-METHYLNAPHTHALENE	0.07	--	--	--	--	--	--	--	--	--	--	--
BENZO(A)PYRENE	0.43	--	--	--	--	--	<.041 U	--	--	--	<0.043 U	0.006 J
					Total Petroleum Hydrocarbons (mg/kg)							
GASOLINE RANGE	12	< 0.25 U	< 0.26 U	< 0.25 U	< 0.25 U	< 0.28 U	< 1.2 U	< 0.23 U	< 0.26 U	**47**	**53**	--

Table B-14
Onshore Fuel Line - Northern Segment Data
Focused Feasibility Study
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Parameter	Comparison Value (mg/kg)	HB-1048 11/10/95 PRL-0599 3 ft	HB-1051 11/09/95 PRL-0451W7 5 ft	HB-1057 11/10/95 PRL-0593 3 ft	HB-1063 11/10/95 PRL-0589 4 ft	HB-1069 11/10/95 PRL-0585 3.5 ft	HB-1075 11/10/95 PRL-0581 3 ft	HB-1081 11/10/95 PRL-0607 3.5 ft	HB-1084 11/06/95 PRL-0363 4.5 ft	HB-1093 11/06/95 PRL-0435 4 ft	HB-1099 11/06/95 PRL-0439 4 ft	HB-1102 11/07/95 PRL-0443 4.5 ft
					Sample Number/Date/Location/Depth							
					Semivolatile Organic Compounds (mg/kg)							
2-METHYLNAPHTHALENE	0.07	--	--	--	--	--	--	--	--	--	--	--
BENZO(A)PYRENE	0.43	<.043 U	--	<.045 U	<.043 U	<.041 U	<.043 U	<.041 U	--	--	--	--
					Total Petroleum Hydrocarbons (mg/kg)							
GASOLINE RANGE	12	<1.3 U	< 0.31 U	< 1.4 U	< 1.3 U	< 1.3 U	< 1.3 U	< 1.3 U	< 0.36 U	< 0.29 U	< 0.28 U	< 0.27 U

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Onshore Fuel Line - Northern Segment Data
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Parameter	Comparison Value (mg/kg)	HB-1117 11/07/95 PRL-0611 4.5 ft	HB-1133 11/09/95 PRL-0489 3.5 ft	HB-1136 11/09/95 PRL-0493 3.5 ft	HB-1142 11/09/95 PRL-0497 4 ft	HB-1149 11/10/95 PRL-0301 4 ft	HB-1150 11/10/95 PRL-0301 1.5 ft	HB-1164 11/09/95 PRL-0533 4 ft	HB-1185 11/16/95 PRL-0565 3.5 ft	HB-1194 11/16/95 PRL-0561 3 ft	HB-2015 11/09/95 PRL-0485 3 ft	HB-2027 11/10/95 PRL-0554 3 ft
						Sample Number/Date/Location/						
						Semivolatile Organic Compounds						
2-METHYLNAPHTHALENE	0.07	--	--	--	--	--	--	--	--	--	--	--
BENZO(A)PYRENE	0.43	--	--	--	--	--	--	<.042 U	<.043 U	<.045 U	--	--
						Total Petroleum Hydrocarbons (						
GASOLINE RANGE	12	< 0.52 U	< 0.26 U	< 0.27 U	< 0.27 U	< 1.6 U	< 0.27 U	--	< 1.3 U	--	<0.27 U	<0.24 U

Table B-14
Onshore Fuel Line - Northern Segment Data
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Parameter	Comparison Value (mg/kg)	/Depth				Sample Number/Date/Location/De				
		HB-2030 11/16/95 PRL-0556 3.33 ft	HB-2267 11/09/95 PRL-0573 4 ft	HB-4920 01/14/98 PH-SEG1-05N 2 ft	HB-4921 01/14/98 PH-SEG1-05N 6 ft	HB-4923 01/15/98 PH-SEG1-06N 2 ft	HB-4924 01/15/98 PH-SEG1-06N 6 ft	HB-4925 01/15/98 PH-SEG1-06X 2 ft	HB-4927 01/15/98 PH-SEG1-06S 2 ft	HB-4928 01/15/98 PH-SEG1-06X 6 ft
; (mg/kg)						**Semivolatile Organic Compounds (**				
2-METHYLNAPHTHALENE	0.07	--	--	<.048 U	<.051 U	<.056 U	<.059 U	<.044 U	<.048 U	<.059 U
BENZO(A)PYRENE	0.43	<.044 U	--	--	--	--	--	<.044 U	--	--
mg/kg)						**Total Petroleum Hydrocarbons (m**				
GASOLINE RANGE	12	<1.3 U	<1.4 U	<1.4 U	<1.5 U	<1.7 U	<1.8 U	<1.3 U	<1.5 U	<1.8 U

Table B-14
Onshore Fuel Line - Northern Segment Data
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Parameter	Comparison Value (mg/kg)	epth			Sample Number/Date/Location/De				
		HB-4929 01/15/98 PH-SEG1-06S 6 ft	HB-4930 01/15/98 PH-SEG1-06W 2 ft	HB-4931 01/15/98 PH-SEG1-06W 5 ft	HB-4932 01/15/98 PH-SEG1-06E 2 ft	HB-4934 01/15/98 PH-SEG1-06E 4 ft	HB-4935 01/15/98 PH-SEG1-05X 2 ft	HB-4937 01/15/98 PH-SEG1-05W 2 ft	HB-4938 01/15/98 PH-SEG1-05W 2 ft
ng/kg)					Semivolatile Organic Compounds (m				
2-METHYLNAPHTHALENE	0.07	<.053 U	<.045 U	<.057 U	<.046 U	<.053 U	<.043 U	--	<.045 U
BENZO(A)PYRENE	0.43	--	<.045 U	--	--	--	<.043 U	--	<.045 U
g/kg)					Total Petroleum Hydrocarbons (mg				
GASOLINE RANGE	12	<1.6 U	<1.4 U	<1.7 U	<1.4 U	<1.6 U	<1.3 U	<1.4 U	--

Table B-14
Onshore Fuel Line - Northern Segment Data
Focused Feasibility Study
Hamilton Army Airfield
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Parameter	Comparison Value (mg/kg)	pth							
					Sample Number/Date/Locatic				
		HB-4939 01/15/98 PH-SEG1-05W 6 ft	HB-4940 01/15/98 PH-SEG1-05S 2 ft	HB-4942 01/15/98 PH-SEG1-05X 6 ft	HB-4943 01/15/98 PH-SEG1-05S 4.5 ft	HB-4944 01/15/98 PH-SEG1-05E 2 ft	HB-4945 01/15/98 PH-SEG1-05E 5.5 ft	HB-4948 01/20/98 PH-SEG1-04X 1.5 ft	HB-4949 01/20/98 PH-SEG1-04S 2 ft
g/kg)					Semivolatile Organic Compoun				
2-METHYLNAPHTHALENE	0.07	<.054 U	<.05 U	<.054 U	<.054 U	<.046 U	<.053 U	<.042 U	<.048 U
BENZO(A)PYRENE	0.43	--	--	--	--	--	--	<.042 U	--
/kg)					Total Petroleum Hydrocarbon				
GASOLINE RANGE	12	<1.6 U	<1.5 U	<1.7 U	<1.6 U	<1.4 U	<1.6 U	<1.3 U	<1.5 U

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Onshore Fuel Line - Northern Segment Data
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Parameter	Comparison Value (mg/kg)	on/Depth				
		HB-5207 10/27/97 PRL-0452 0.5 ft	HB-5208 10/27/97 PRL-0452 5 ft	HB-5209 10/27/97 PRL-0452 7.5 ft	HB-5210 10/27/97 PRL-0537 0.5 ft	HB-5212 10/28/97 PRL-0537 4 ft
ds (mg/kg)						
2-METHYLNAPHTHALENE	0.07	--	--	--	--	--
BENZO(A)PYRENE	0.43	<.04 U	--	--	<.04 U	<.043 U
s (mg/kg)						
GASOLINE RANGE	12	<1.2 U	<1.5 U	<1.5 U	<1.2 U	<1.3 U

Table B-14
Onshore Fuel Line - Northern Segment Data
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Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth							
		HB-5213 10/28/97 PRL-0537 7.5 ft	HB-5270 01/13/98 PH-SEG1-01W 3 ft	HB-5271 01/13/98 PH-SEG1-01X 4 ft	HB-5272 01/13/98 PH-SEG1-01S 4 ft	HB-5273 01/13/98 PH-SEG1-01E 4 ft	HB-5275 01/13/98 PH-SEG1-01S 8 ft	HB-5276 01/13/98 PH-SEG1-01W 7 ft	HB-5277 01/13/98 PH-SEG1-01X 8 ft
Semivolatile Organic Compounds (mg/kg)									
2-METHYLNAPHTHALENE	0.07	--	<.05 U	<.052 U	<.051 U	<.05 U	<.063 U	<.058 U	<.059 U
BENZO(A)PYRENE	0.43	--	--	--	--	--	--	--	--
Total Petroleum Hydrocarbons (mg/kg)									
GASOLINE RANGE	12	<1.8 U	<1.5 U	<1.6 U	<1.5 U	<1.5 U	<1.9 U	<1.8 U	<1.8 U

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Onshore Fuel Line - Northern Segment Data
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Parameter	Comparison Value (mg/kg)	HB-5279 01/13/98 PH-SEG1-01E 8 ft
2-METHYLNAPHTHALENE	0.07	<.053 U
BENZO(A)PYRENE	0.43	--
GASOLINE RANGE	12	<1.6 U

Table B-14
Onshore Fuel Line - Northern Segment Data
Focused Feasibility Study
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Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth							
		HB-5280 01/13/98 PH-SEG1-01N 4 ft	HB-5281 01/13/98 PH-SEG1-01N 8 ft	HB-5283 01/14/98 PH-SEG1-02E 3 ft	HB-5284 01/14/98 PH-SEG1-02E 7 ft	HB-5285 01/14/98 PH-SEG1-02W 3 ft	HB-5286 01/14/98 PH-SEG1-02W 7 ft	HB-5287 01/14/98 PH-SEG1-02X 3.5 ft	HB-5289 01/14/98 PH-SEG1-02X 6 ft
Semivolatile Organic Compounds (mg/kg)									
2-METHYLNAPHTHALENE	0.07	<.05 U	<.059 U	<.045 U	<.051 U	<.049 U	<.053 U	<.045 U	<.052 U
BENZO(A)PYRENE	0.43	--	--	<.045 U	--	--	--	<.045 U	--
Total Petroleum Hydrocarbons (mg/kg)									
GASOLINE RANGE	12	<1.5 U	<1.8 U	<1.4 U	<1.5 U	<1.5 U	<1.6 U	<1.4 U	<1.6 U

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Onshore Fuel Line - Northern Segment Data
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Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth							
		HB-5290 01/14/98 PH-SEG1-02S 3.5 ft	HB-5291 01/14/98 PH-SEG1-02S 7.5 ft	HB-5292 01/14/98 PH-SEG1-02N 3.5 ft	HB-5293 01/14/98 PH-SEG1-02N 7.5 ft	HB-5294 01/14/98 PH-SEG1-03N 4 ft	HB-5297 01/14/98 PH-SEG1-03N 8 ft	HB-5298 01/14/98 PH-SEG1-04N 2 ft	HB-5299 01/14/98 PH-SEG1-04N 6.5 ft
Semivolatile Organic Compounds (mg/kg)									
2-METHYLNAPHTHALENE	0.07	<.038 U	<.049 U	<.048 U	<.05 U	<.051 U	<.061 U	<.048 U	<.058 U
BENZO(A)PYRENE	0.43	<.038 U	--	--	--	--	--	--	--
Total Petroleum Hydrocarbons (mg/kg)									
GASOLINE RANGE	12	<1.2 U	<1.5 U	<1.5 U	<1.5 U	<1.5 U	<1.8 U	<1.5 U	<1.8 U

Table B-14
Onshore Fuel Line - Northern Segment Data
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Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth							
		HB-5600 01/20/98 PH-SEG1-04X 5.5 ft	HB-5601 01/20/98 PH-SEG1-04S 5.5 ft	HB-5602 01/20/98 PH-SEG1-04E 1.5 ft	HB-5604 01/20/98 PH-SEG1-04E 5.5 ft	HB-5605 01/20/98 PH-SEG1-04W 2 ft	HB-5606 01/20/98 PH-SEG1-04W 5.5 ft	HB-5608 01/20/98 PH-SEG1-03X 3 ft	HB-5610 01/20/98 PH-SEG1-03S 3.5 ft
Semivolatile Organic Compounds (mg/kg)									
2-METHYLNAPHTHALENE	0.07	<.058 U	<.051 U	<.046 U	<.061 U	<.046 U	<.052 U	<.046 U	<.05 U
BENZO(A)PYRENE	0.43	--	--	--	--	--	--	--	--
Total Petroleum Hydrocarbons (mg/kg)									
GASOLINE RANGE	12	<1.8 U	<1.5 U	<1.4 U	<1.8 U	<1.4 U	<1.6 U	<1.4 U	<1.5 U

Table B-14
Onshore Fuel Line - Northern Segment Data
Focused Feasibility Study
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Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth							
		HB-5611 01/20/98 PH-SEG1-03X 8 ft	HB-5612 01/20/98 PH-SEG1-03S 7.5 ft	HB-5613 01/20/98 PH-SEG1-03W 4.5 ft	HB-5615 01/20/98 PH-SEG1-03W 7.5 ft	HB-5616 01/20/98 PH-SEG1-03E 3.5 ft	HB-5617 01/20/98 PH-SEG1-03E 7.5 ft	HB-5621 03/02/98 PH-SEG1-03-10E 3.5 ft	HB-5622 03/02/98 PH-SEG1-03-10N 3.5 ft
Semivolatile Organic Compounds (mg/kg)									
2-METHYLNAPHTHALENE	0.07	<.059 U	<.062 U	<.049 U	<.061 U	<.046 U	<.058 U	<.05 U	--
BENZO(A)PYRENE	0.43	--	--	--	--	--	--	--	--
Total Petroleum Hydrocarbons (mg/kg)									
GASOLINE RANGE	12	<1.8 U	<1.9 U	<1.5 U	<1.9 U	<1.4 U	<1.8 U	<1.5 U	<1.6 U

Table B-14
Onshore Fuel Line - Northern Segment Data
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Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth						
		HB-5623 03/02/98 PH-SEG1-03-10N 3.5 ft	HB-5624 03/02/98 PH-SEG1-03-10S 3.5 ft	HB-5635 05/21/98 PH-SEG1-00S 5.5 ft	HB-5636 05/21/98 PH-SEG1-00W 5.5 ft	HB-5637 05/21/98 PH-SEG1-00N 5.5 ft	HB-5638 05/21/98 PH-SEG1-00E 5.5 ft	HB-5640 05/21/98 PH-SEG1-00D 5.5 ft
Semivolatile Organic Compounds (mg/kg)								
2-METHYLNAPHTHALENE	0.07	<.051 U	<.056 U	<.053 U	<.047 U	<.053 U	<.058 U	**0.43**
BENZO(A)PYRENE	0.43	--	--	--	--	--	--	--
Total Petroleum Hydrocarbons (mg/kg)								
GASOLINE RANGE	12	--	<1.7 U	<1.6 U	<1.4 U	<1.6 U	<1.8 U	**470**

Table B-15
Northwest Runway Area Data
Focused Feasibility Study
Hamilton Army Airfield
Novato, California

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth								
		HB-99-SO-23 07/30/99 23 0 ft	HB-99-SO-23X 07/30/99 23 0 ft	HG2-0539 04/17/97 SL23-TW-003 6 ft	HG2-0540 04/17/97 SL23-TW-003 10 ft	HG2-0541 04/17/97 SL23-TW-003 15 ft	HG2-0565 04/23/97 SL23-TW-004 5 ft	HG2-0566 04/23/97 SL23-TW-004 5 ft	HG2-0567 04/23/97 SL23-TW-004 10 ft	HG2-0568 04/23/97 SL23-TW-002 5 ft
Metals (mg/kg)										
ARSENIC	4.7	--	3.7	**7.2**	**7.3**	**8.0**	3.4	**4.8**	**7.3**	**13.8**
BERYLLIUM	0.72	--	**0.79**	**0.88**	**<0.89 U**	**<1.0 U**	**0.76**	**0.88**	**<0.74 U**	**2**
BORON	3.6	--	**9.7**	**13.0**	**15.8**	**25.1**	2.6	2.9	**21.3**	**19.9**
CHROMIUM	40.2	**52.6**	--	**65.7**	**79.0**	**80.3**	10.5	10.2	**79.2**	**59.4**
COPPER	12.4	**14.5**	--	**28.8**	**32.6**	**37.3**	10.9	12.3	**32.0**	**35.9**
MERCURY	0.24	.11	--	**0.26**	**0.95**	<0.15 U	0.09	<0.09 U	<0.12 U	**0.30**
NICKEL	37.2	42.6	--	**61.0**	**53.1**	**66.9**	19.1	19.3	**68.4**	**66.5**
SELENIUM	0.64	.29	--	--	--	--	--	--	--	--
ZINC	47	55.3	--	**81.2**	**70.2**	**84.3**	43.3	43.6	**94.0**	**95.3**
Pesticides (mg/kg)										
4,4'-DDE		--	.095	<0.022 U	<0.028 U	<0.032 U	<0.018 U	<0.018 U	<0.024 U	<0.027 U
4,4'-DDT		.15	--	<0.022 U	<0.028 U	<0.032 U	<0.018 U	<0.018 U	<0.024 U	<0.027 U
Semivolatile Organic Compounds (mg/kg)										
BENZO(A)PYRENE	0.43	--	.098	<.0458 U	<.0589 U	<.066 U	<.0371 U	<.0363 U	<.0492 U	<.055 U
DIBENZ(A,H)ANTHRACENE	0.0634	--	.022 J	--	--	--	<.0371 U	<.0363 U	--	--

Table B-15
Northwest Runway Area Data
Focused Feasibility Study
Hamilton Army Airfield
Novato, California

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth				
		HG2-0569 04/23/97 SL23-TW-002 10 ft	HG2-0570 04/23/97 SL23-TW-002 15v	HG2-0571 04/23/97 SL23-TW-001 5 ft	HG2-0572 04/23/97 SL23-TW-001 10 ft	HG2-0573 04/23/97 SL23-TW-001 15 ft
Metals (mg/kg)						
ARSENIC	4.7	4.4	**6.5**	**6.0**	**8.1**	**5.6**
BERYLLIUM	0.72	<0.59 U	**<0.91 U**	**<0.92 U**	**<0.85 U**	**<0.84 U**
BORON	3.6	**10.4**	**29.3**	**18.5**	**23.9**	**26.8**
CHROMIUM	40.2	34.2	**73.8**	**67.7**	**61.3**	**61.3**
COPPER	12.4	**18.5**	**60.9**	**27.7**	**29.4**	**23.8**
MERCURY	0.24	<0.10 U	<0.15 U	<0.15 U	<0.14 U	<0.14 U
NICKEL	37.2	**38.1**	**60.6**	**44.6**	**62.0**	**40.6**
SELENIUM	0.64	--	--	--	--	--
ZINC	47	**51.9**	**85.5**	**70.3**	**71.7**	**64.1**
Pesticides (mg/kg)						
4,4'-DDE		<0.019 U	<0.029 U	<0.029 U	<0.027 U	<0.027 U
4,4'-DDT		<0.019 U	<0.029 U	<0.029 U	<0.027 U	<0.027 U
Semivolatile Organic Compounds (mg/kg)						
BENZO(A)PYRENE	0.43	<.0393 U	<.06 U	<.06 U	<.0559 U	<.055 U
DIBENZ(A,H)ANTHRACENE	0.0634	<.0393 U	--	--	--	--

Table B-16
Revetment Area Data
Focused Feasibility Study
Hamilton Army Airfield
Novato, California

Revetment 1

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth			
		HB-99-SO-1a 08/18/99 REVT 1 0 ft	HB-99-SO-1b 08/18/99 REVT 1 0 ft	HB-99-SO-1c 08/18/99 REVT 1 0 ft	HB-99-SO-1d 08/23/99 REVT 1 0 ft
Metals (mg/kg)					
BARIUM	190	123	94.7	104	**233**
CADMIUM	1.2	**1.3 J+**	.85 J+	**1.8 J+**	0.04
LEAD	43.2	**70.2 J+**	40.2 J+	**62.2 J+**	9.7
SELENIUM	0.64	0.62	<0.26 U	0.51	<0.24 UJ
SILVER	1	0.31	<0.09 U	<0.09 U	0.24
Semivolatile Organic Compounds (mg/kg)					
2-METHYLNAPHTHALENE	0.07	<0.042 U	<0.034 U	0.039	<0.037 U
ACENAPHTHENE	0.026	*<0.042 U*	*<0.034 U*	**0.15**	*<0.037 U*
ANTHRACENE	0.088	<0.042 U	<0.034 U	**0.18**	<0.037 U
BENZO(A)ANTHRACENE	0.412	0.055	0.04	**0.45**	<0.037 U
BENZO(A)PYRENE	0.43	0.075	0.055	**0.44**	<0.037 U
CHRYSENE	0.384	0.072	0.045	**0.47**	<0.037 U
DIBENZ(A,H)ANTHRACENE	0.0634	0.039 J	0.021 J	**0.13**	<0.037 UJ
FLUORANTHENE	0.6	0.13 J+	0.076 J+	**1.1 J+**	<0.037 U
FLUORENE	0.0253	*<0.042 U*	*<0.034 U*	**0.14**	*<0.037 U*
PHENANTHRENE	0.24	0.11 J+	0.055 J+	**0.96 J+**	<0.037 U
PYRENE	0.665	0.095	0.059	**0.78**	<0.037 U

Table B-16
Revetment Area Data
Focused Feasibility Study
Hamilton Army Airfield
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Revetment 2

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth			
		HB-99-SO-2a 08/18/99 REVT 2 0 ft	HB-99-SO-2b 08/18/99 REVT 2 0 ft	HB-99-SO-2c 08/19/99 REVT 2 0 ft	HB-99-SO-2d 08/23/99 REVT 2 0 ft
Metals (mg/kg)					
CADMIUM	1.2	0.61 J+	**2.5 J+**	**3.1 J+**	0.43
LEAD	43.2	17.8 J+	**116 J+**	**176 J+**	16.6
SELENIUM	0.64	0.23	**0.67**	0.37	<0.29 UJ
Semivolatile Organic Compounds (mg/kg)					
ACENAPHTHENE	0.026	*<0.034 U*	0.02 J	*<0.035 U*	
BENZO(A)ANTHRACENE	0.412	0.033 J	0.18	0.024 J	<0.042 U
BENZO(A)PYRENE	0.43	0.03 J	0.2	0.028 J	<0.042 U
CHRYSENE	0.384	0.034 J	0.25	0.033 J	<0.042 U
DIBENZ(A,H)ANTHRACENE	0.0634	<0.034 U	**0.073**	<0.035 U	<0.042 UJ
FLUORANTHENE	0.6	0.085 J+	0.45 J+	0.055 J+	<0.042 U
FLUORENE	0.0253	*<0.034 U*	0.02 J	*<0.035 U*	--
PHENANTHRENE	0.24	0.08 J+	**0.25 J+**	0.033 J+	<0.042 U
PYRENE	0.665	0.062	0.32	0.041	<0.042 U

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Revetment 3

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth HB-99-SO-3a 08/23/99 REVT 3 0 ft
Metals (mg/kg)		
BARIUM	190	**479**
COPPER	68.1	**88.4**
MANGANESE	943	**1850**

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Revetment 4

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth			
		HB-99-SO-4a 08/19/99 REVT 4 0 ft	HB-99-SO-4b 08/19/99 REVT 4 0 ft	HB-99-SO-4c 08/19/99 REVT 4 0 ft	HB-99-SO-4d 08/23/99 REVT 4 0 ft
Metals (mg/kg)					
CADMIUM	1.2	**1.3 J+**	0.79 J+	**2.9 J+**	0.35
LEAD	43.2	17.6 J+	20.9 J+	**79.7 J+**	12.8
SELENIUM	0.64	<0.26 U	0.41	0.3	<0.3 UJ
SILVER	1	<0.04 U	0.33	<0.13 U	<0.05 U
Semivolatile Organic Compounds (mg/kg)					
2-METHYLNAPHTHALENE	0.07	<0.035 U	<0.034 U	**0.071**	<0.039 U
ACENAPHTHENE	0.026	*<0.035 U*	**<0.034 U**	**0.13**	*<0.039 U*
ANTHRACENE	0.088	<0.035 U	<0.034 U	0.078	<0.039 U
BENZO(A)ANTHRACENE	0.412	0.022 J	0.025 J	0.18	<0.039 U
BENZO(A)PYRENE	0.43	0.019 J	0.023 J	0.15	<0.039 U
CHRYSENE	0.384	0.024 J	0.029 J	0.19	<0.039 U
DIBENZ(A,H)ANTHRACENE	0.0634	<0.035 U	<0.034 U	0.047	<0.039 UJ
FLUORANTHENE	0.6	0.056 J+	0.072 J+	0.51 J+	<0.039 U
FLUORENE	0.0253	*<0.035 U*	**<0.034 U**	**0.11**	*<0.039 U*
NAPHTHALENE	0.16	<0.035 U	<0.034 U	0.066	<0.039 U
PHENANTHRENE	0.24	0.052 J+	0.045 J+	**0.62 J+**	<0.039 U
PYRENE	0.665	0.042	0.052	0.36	<0.039 U

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Revetment 6

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth						
		HB-6607 11/19/98 ITRV-TP2 0.5 ft	HB-99-SO-6a 08/25/99 REVT 6 0 ft	HB-99-SO-6b 08/25/99 REVT 6 0 ft	HB-99-SO-6c 08/25/99 REVT 6 0 ft	HB-99-SO-6d 08/23/99 REVT 6 0 ft	HB-99-SO-6X 08/25/99 REVT 6 0 ft	RV001SS1 12/05/90 RV-MW-101 2.5 ft
Metals (mg/kg)								
CADMIUM	1.2	--	--	0.78	0.8	0.37	0.52	--
Semivolatile Organic Compounds (mg/kg)								
2-METHYLNAPHTHALENE	0.07	--	<0.034 U	<0.04 U	*<0.14 U*	**0.45**	**--**	<0.032 U
ACENAPHTHENE	0.026	--	*<0.034 U*	*<0.04 U*	--	0.026 J	--	*<0.041 U*
FLUORENE	0.0253	--	*<0.034 U*	*<0.04 U*	--	**0.028 J**	--	--
NAPHTHALENE	0.16	--	<0.034 U	<0.04 U	<0.14 U	0.14	--	--
Total Petroleum Hydrocarbons (mg/kg)								
GASOLINE RANGE	12	<1.2 U	<6.7 U	<6.1 U	<6.2 U	**920**	--	--

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Revetment 6

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth						
		RV001SS2 12/05/90 RV-MW-101 3 ft	RV002SS1 12/05/90 RV-MW-101 3.5 ft	RV002SS2 12/05/90 RV-MW-101 4 ft	RV003SS1 12/05/90 RV-MW-101 8 ft	RV003SS2 12/05/90 RV-MW-101 8.5 ft	RV004SS1 12/17/90 RV-TP-1 0 ft	RV004SS2 12/17/90 RV-TP-1 0 ft
Metals (mg/kg)								
CADMIUM	1.2	--	--	--	--	--	--	--
Semivolatile Organic Compounds (mg/kg)								
2-METHYLNAPHTHALENE	0.07	--	<0.032 U	--	<0.032 U	--	<0.032 U	--
ACENAPHTHENE	0.026	--	*<0.041 U*	--	*<0.041 U*	--	*<0.041 U*	--
FLUORENE	0.0253	--	--	--	--	--	--	--
NAPHTHALENE	0.16	--	--	--	--	--	--	--
Total Petroleum Hydrocarbons (mg/kg)								
GASOLINE RANGE	12	--	--	--	--	--	--	--

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Revetment Area Data
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Revetment 6

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth						
		RV005SS1 12/17/90 RV-TP-1 5 ft	RV005SS2 12/17/90 RV-TP-1 5 ft	RV006SS1 12/17/90 RV-TP-1 6 ft	RV006SS2 12/17/90 RV-TP-1 6 ft	RV007SS1 12/17/90 RV-TP-3 0 ft	RV007SS2 12/17/90 RV-TP-3 0 ft	RV008SS1 12/17/90 RV-TP-3 4 ft
Metals (mg/kg)								
CADMIUM	1.2	--	--	--	--	--	--	--
Semivolatile Organic Compounds (mg/kg)								
2-METHYLNAPHTHALENE	0.07	<0.032 U	--	<0.032 U	--	<0.032 U	--	<0.032 U
ACENAPHTHENE	0.026	*<0.041 U*	--	*<0.041 U*	--	*<0.041 U*	--	*<0.041 U*
FLUORENE	0.0253	--	--	--	--	--	--	--
NAPHTHALENE	0.16	--	--	--	--	--	--	--
Total Petroleum Hydrocarbons (mg/kg)								
GASOLINE RANGE	12	--	--	--	--	--	--	--

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Revetment 6

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth					
		RV008SS2 12/17/90 RV-TP-3 4 ft	RV009SS1 12/17/90 RV-TP-3 6 ft	RV009SS2 12/17/90 RV-TP-3 6 ft	RV010SS1 12/18/90 RV-TP-2 0 ft	RV010SS2 12/18/90 RV-TP-2 0 ft	RV011SS1 12/18/90 RV-TP-2 4 ft
Metals (mg/kg)							
CADMIUM	1.2	--	--	--	--	--	--
Semivolatile Organic Compounds (mg/kg)							
2-METHYLNAPHTHALENE	0.07	--	<0.032 U	--	<0.032 U	--	<0.032 U
ACENAPHTHENE	0.026	--	*<0.041 U*	--	*<0.041 U*	--	*<0.041 U*
FLUORENE	0.0253	--	--	--	--	--	--
NAPHTHALENE	0.16	--	--	--	--	--	--
Total Petroleum Hydrocarbons (mg/kg)							
GASOLINE RANGE	12	--	--	--	--	--	--

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Revetment 6

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth				
		RV011SS2 12/18/90 RV-TP-2 4 ft	RV012SS1 12/18/90 RV-TP-2 5.5 ft	RV012SS2 12/18/90 RV-TP-2 5.5 ft	RVT-WC-20-ASETP1 05/09/95 RVT-ASETP1 2.5 ft	RVT-WC-25-ASETP2 05/09/95 RVT-ASETP2 3 ft
Metals (mg/kg)						
CADMIUM	1.2	--	--	--	--	--
Semivolatile Organic Compounds (mg/kg)						
2-METHYLNAPHTHALENE	0.07	--	<0.032 U	--	--	--
ACENAPHTHENE	0.026	--	*<0.041 U*	--	--	--
FLUORENE	0.0253	--	--	--	--	--
NAPHTHALENE	0.16	--	--	--	--	--
Total Petroleum Hydrocarbons (mg/kg)						
GASOLINE RANGE	12	--	--	--	<1.2 U	<1.5 U

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Revetment 7

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth				
		HB-99-SO-7a 08/19/99 REVT 7 0 ft	HB-99-SO-7b 08/19/99 REVT 7 0 ft	HB-99-SO-7c 08/19/99 REVT 7 0 ft	HB-99-SO-7d 08/23/99 REVT 7 0 ft	HB-99-SO-7X 08/19/99 REVT 7 0 ft
Metals (mg/kg)						
CADMIUM	1.2	1.2 J+	1.2 J+	--	0.22	0.78 J+
LEAD	43.2	**55.6 J+**	**50.6 J+**	36.6 J+	12.5	--
SELENIUM	0.64	<0.26 U	0.31	--	<0.27 UJ	0.41
Semivolatile Organic Compounds (mg/kg)						
2-METHYLNAPHTHALENE	0.07	**0.09**	0.031 J	--	<0.042 U	0.063
ACENAPHTHENE	0.026	**0.28**	**0.12**	--	*<0.042 U*	**0.12**
ANTHRACENE	0.088	**0.21**	**0.09**	--	<0.042 U	0.077
BENZO(A)ANTHRACENE	0.412	**0.56**	**0.42**	--	<0.042 U	0.2
BENZO(A)PYRENE	0.43	**0.49**	0.38	--	<0.042 U	0.16
CHRYSENE	0.384	**0.61**	**0.47**	--	<0.042 U	0.21
DIBENZ(A,H)ANTHRACENE	0.0634	**0.13**	**0.11**	--	<0.042 UJ	0.049
FLUORANTHENE	0.6	**1.5 J+**	**1 J+**	--	<0.042 U	0.57 J+
FLUORENE	0.0253	**0.24**	**0.095**	--	*<0.042 U*	**0.11**
NAPHTHALENE	0.16	0.063	<0.034 U	--	<0.042 U	0.059
PHENANTHRENE	0.24	**1.5 J+**	**0.82 J+**	--	<0.042 U	**0.66 J+**
PYRENE	0.665	**1**	**0.77**	--	<0.042 U	0.38

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Revetment 8

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth HB-99-SO-8a 08/23/99 REVT 8 0 ft
Metals (mg/kg)		
COPPER	68.1	60.8

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Revetment 9

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth							
		HB-3480 11/11/99 RV9E-CS-001 1 ft	HB-3481 11/11/99 RV9E-CS-002 1 ft	R09-AS1-15 03/29/95 RVT-09-AS1 1.5 ft	R09-AS2-15 03/29/95 RVT-09-AS2 1.5 ft	R09-AS3-15 03/29/95 RVT-09-AS3 1.5 ft	R09-AS4-05 03/29/95 RVT-09-AS4 0.5 ft	R09-AS4-15 03/29/95 RVT-09-AS4 1.5 ft	R09-AS5-05 03/29/95 RVT-09-AS5 0.5 ft
Metals (mg/kg)									
BERYLLIUM	1	--	--	0.7	**1.1**	**1.1**	0.62	0.61	0.89
COBALT	27.6	--	--	10.2	10.4	6.9	12.8	12.8	7
COPPER	68.1	--	--	50.4	22.3	13.9	43.6	62.8	51.3
LEAD	43.2	16.5	20.2	20.3	15.8	12.2	15.1	16.4	39.9
MANGANESE	943	--	--	225	333	173	332	327	279
NICKEL	113	--	--	62.3	22.5	20.7	70.8	71.9	24.5

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Revetment 9

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth							
		R09-AS5-15 03/29/95 RVT-09-AS5 1.5 ft	R09-AS6-15 03/29/95 RVT-09-AS6 1.5 ft	RVT-TW1-1 05/01/95 RVT-TW1 2.5 ft	RVT-TW1-2 05/01/95 RVT-TW1 6 ft	RVT-TW1-3 05/01/95 RVT-TW1 8 ft	RVT-TW2-1 05/01/95 RVT-TW2 3 ft	RVT-TW2-2 05/01/95 RVT-TW2 6 ft	RVT-TW2-3 05/01/95 RVT-TW2 7.5 ft
Metals (mg/kg)									
BERYLLIUM	1	0.73	0.57	0.74	**1.1**	0.77	0.84	0.43	0.54
COBALT	27.6	11.2	19.1	10.8	**40.7**	13.5	13.1	9.6	12
COPPER	68.1	51.3	**83.8**	25.2	34.7	32	53.8	29.8	33.3
LEAD	43.2	19.3	13.9	**86.5**	5.5	13	22.9	16.1	9.4
MANGANESE	943	245	486	363	**2360**	423	313	264	285
NICKEL	113	70.4	75.1	57.7	**202**	89.6	76.4	62.5	68.9

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Revetment 11

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth									
		R11-AS1-05 03/29/1995 RVT-11-AS1 0.5 ft	R11-AS1-15 03/29/1995 RVT-11-AS1 1.5 ft	R11-AS2-05-DU 03/29/1995 RVT-11-AS2 0.5 ft	R11-AS2-15 03/29/1995 RVT-11-AS2 1.5 ft	R11-AS3-05 03/29/1995 RVT-11-AS3 0.5 ft	R11-AS3-15 03/29/1995 RVT-11-AS3 1.5 ft	R11-AS4-05 03/29/1995 RVT-11-AS4 0.5 ft	R11-AS4-15 03/29/1995 RVT-11-AS4 1.5 ft	R11-AS5-05 03/29/1995 RVT-11-AS5 0.5 ft	R11-AS5-15 03/29/1995 RVT-11-AS5 1.5 ft
Metals (mg/kg)											
BERYLLIUM	1	0.69	0.64	0.72	0.76	0.56	**1.1**	0.64	0.75	0.71	0.68
CADMIUM	1.2	**2.8**	<0.6 U	**2.5**	<0.8 U	**2.3**	<0.7 U	<0.75 U	<0.71 U	<0.72 U	<0.7 U
COPPER	68.1	54.4	**126**	59.3	**73.8**	50.5	53.4	**81**	**126**	30.8	**112**
LEAD	43.2	**83.1**	21.7	26.3	24.1	38.5	18.8	**59**	19.9	33.6	18.2
ZINC	158	117	61.1	125	99.5	91.5	75.2	124	122	70.8	128

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Revetment 11

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth						
		R11-AS6-05 03/29/1995 RVT-11-AS6 0.5 ft	RVT-TW3-1 05/01/1995 RVT-TW3 2.5 ft	RVT-TW3-2 05/01/1995 RVT-TW3 5 ft	RVT-TW3-3 05/01/1995 RVT-TW3 8 ft	RVT-TW6-1 05/01/1995 RVT-TW6 3 ft	RVT-TW6-2 05/01/1995 RVT-TW6 5 ft	RVT-TW6-3 05/01/1995 RVT-TW6 8 ft
Metals (mg/kg)								
BERYLLIUM	1	0.73	0.67	0.55	0.6	0.81	0.54	**1.2**
CADMIUM	1.2	<0.72 U	<0.59 U	<0.73 U	<0.77 U	<0.71 U	<0.71 U	<0.8 U
COPPER	68.1	45.8	43.5	31.2	28.6	47.2	31.3	32.9
LEAD	43.2	36.9	8.1	8.2	9.3	17.6	9.3	9.2
ZINC	158	85	56.7	75.1	67	67.8	71.6	94.5

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Revetment 12

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth								
		R12-AS121-15 03/28/95 RVT-12-AS1 1.5 ft	R12-AS121-5 03/28/95 RVT-12-AS1 0.5 ft	R12-AS122-15 03/28/95 RVT-12-AS2 1.5 ft	R12-AS122-5 03/28/95 RVT-12-AS2 0.5 ft	R12-AS123-15 03/28/95 RVT-12-AS3 1.5 ft	R12-AS123-5 03/28/95 RVT-12-AS3 0.5 ft	R12-AS124-15 03/28/95 RVT-12-AS4 1.5 ft	R12-AS124-5 03/28/95 RVT-12-AS4 0.5 ft	R12-AS125-15 03/28/95 RVT-12-AS5 1.5 ft
Metals (mg/kg)										
COPPER	68.1	52.8	50.6	48	**218**	**168**	**132**	58.7	21.5	32.7
ZINC	158	66.5	99.3	68.9	45.6	34.2	25.2	76.5	48.6	59.9

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Revetment 12

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth						
		R12-AS125-5 03/28/95 RVT-12-AS5 0.5 ft	R12-AS126-5 03/28/95 RVT-12-AS6 0.5 ft	RVT-TW4-1 05/01/95 RVT-TW4 3 ft	RVT-TW4-2 05/01/95 RVT-TW4 5 ft	RVT-TW4-3 05/01/95 RVT-TW4 7.5 ft	RVT-TW7-1 05/01/95 RVT-TW7 5 ft	RVT-TW7-2 05/01/95 RVT-TW7 7 ft
Metals (mg/kg)								
COPPER	68.1	40.9	47.7	48.3	31	39.2	31.5	32.8
ZINC	158	86	71.3	68.8	69	115	75.2	73.1

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Revetment 13

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth				
		HB-99-SO-13a 08/25/99 REVT 13 0 ft	HB-99-SO-13b 08/25/99 REVT 13 0 ft	HB-99-SO-13c 08/25/99 REVT 13 0 ft	HB-99-SO-13d 08/23/99 REVT 13 0 ft	HB-99-SO-13X 08/25/99 REVT 13 0 ft
Metals (mg/kg)						
CADMIUM	1.2	1.2	**4.2**	0.78	0.11	--
LEAD	43.2	31.9 J-	**109 J-**	--	15.3	27 J-
Semivolatile Organic Compounds (mg/kg)						
ACENAPHTHENE	0.026	*<0.034 U*	**0.04**	*<0.036 U*	*<0.041 U*	--
ANTHRACENE	0.088	<0.034 U	**0.089**	0.061	<0.041 U	--
BENZO(A)ANTHRACENE	0.412	<0.034 U	**0.59**	**0.68**	<0.041 U	--
BENZO(A)PYRENE	0.43	0.02 J	**0.74**	**0.64**	<0.041 U	--
CHRYSENE	0.384	0.021 J	**0.7**	**0.67**	<0.041 U	--
DIBENZ(A,H)ANTHRACENE	0.0634	<0.034 U	**0.18**	**0.14**	<0.041 UJ	--
FLUORANTHENE	0.6	0.038	**1.1**	**1.1**	<0.041 U	--
FLUORENE	0.0253	*<0.034 U*	**0.038**	0.019 J	*<0.041 U*	--
PHENANTHRENE	0.24	0.025 J	**0.44**	**0.37**	<0.041 U	--
PYRENE	0.665	0.032 J	**0.96**	**0.93**	<0.041 U	--

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Revetment 14

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth HB-99-SO-14a 08/24/99 REVT 14 0 ft
Metals (mg/kg)		
COPPER	68.1	56.8
Total Petroleum Hydrocarbons (mg/kg)		
DIESEL RANGE	144	**160**

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Revetment 15

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth				
		HB-99-SO-15a 08/26/99 REVT 15 0 ft	HB-99-SO-15b 08/26/99 REVT 15 0 ft	HB-99-SO-15c 08/26/99 REVT 15 0 ft	HB-99-SO-15d-1 08/24/99 REVT 15 0 ft	HB-99-SO-15X 08/26/99 REVT 15 0 ft
Metals (mg/kg)						
CADMIUM	1.2	--	0.7	0.87	0.49	**1.5**
LEAD	43.2	--	24.2 J-	26.2 J-	13.5	**48.6 J-**
Semivolatile Organic Compounds (mg/kg)						
BENZO(A)PYRENE	0.43	0.03 J	<0.035 U	<0.034 U	<0.042 U	--

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Revetment 16

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth HB-99-SO-16a 08/24/99 REVT 16 0 ft
Metals (mg/kg)		
BARIUM	190	**406**
COPPER	68.1	63.4

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Revetment 17

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth HB-99-SO-17a 08/24/99 REVT 17 0 ft
Metals (mg/kg)		
COPPER	68.1	50.6

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Hamilton Army Airfield
Novato, California

Revetment 19

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth				
		HB-99-SO-19a 08/26/99 REVT 19 0 ft	HB-99-SO-19b 08/26/99 REVT 19 0 ft	HB-99-SO-19c 08/26/99 REVT 19 0 ft	HB-99-SO-19d 08/24/99 REVT 19 0 ft	HB-99-SO-19X 08/26/99 REVT 19 0 ft
Metals (mg/kg)						
BARIUM	190	53.6	59.6	57.1	**403**	--
CADMIUM	1.2	**1.7**	--	**1.6**	0.44	0.86
COPPER	68.1	34	36.3	34.1	**82.4**	--
LEAD	43.2	**84.5 J-**	--	33.4 J-	10	39.1 J-
Semivolatile Organic Compounds (mg/kg)						
2-METHYLNAPHTHALENE	0.07	0.068	<0.034 U	<0.034 U	**0.11 J**	--
ACENAPHTHENE	0.026	**0.33**	*<0.034 U*	0.022 J	*<0.15 U*	--
ANTHRACENE	0.088	**0.23**	<0.034 U	<0.034 U	*<0.15 U*	--
BENZO(A)ANTHRACENE	0.412	**1**	--	0.066	<0.15 U	0.038
BENZO(A)PYRENE	0.43	**0.89**	--	0.06	<0.15 U	0.039
CHRYSENE	0.384	**1.1**	--	0.073	<0.15 U	0.048
DIBENZ(A,H)ANTHRACENE	0.0634	**0.19**	<0.034 U	<0.034 U	*<0.15 U*	--
FLUORANTHENE	0.6	**2.3**	--	0.17	<0.15 U	0.088
FLUORENE	0.0253	**0.25**	*<0.034 U*	0.019 J	*<0.15 U*	--
PHENANTHRENE	0.24	**2**	--	0.15	<0.15 U	0.052
PYRENE	0.665	**1.9**	--	0.14	<0.15 U	0.078
Total Petroleum Hydrocarbons (mg/kg)						
DIESEL RANGE	144	<26 U	<26 U	<26 U	**270**	--
GASOLINE RANGE	12	<6.6 U	<7.6 U	<6.4 U	**580**	--

Table B-16
Revetment Area Data
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Revetment 20

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth					
		HB-99-SO-20a 08/24/99 REVT 20 0 ft	RV027SS1 12/07/90 RVS-90015 0 ft	RV209SS1 08/19/92 RV-SB-05 3 ft	RV210SS1 08/19/92 RV-SB-05 5 ft	RV211SS1 08/19/92 RV-SB-06 3 ft	RV212SS1 08/19/92 RV-SB-06 5 ft
Metals (mg/kg)							
CADMIUM	1.2	**1.5**	--	--	--	--	--
LEAD	43.2	13.4 J-	**44**	39	22	19	16
Semivolatile Organic Compounds (mg/kg)							
BENZO(A)ANTHRACENE	0.412	<0.038 U	.24	--	--	--	--
CHRYSENE	0.384	<0.038 U	.27	--	--	--	--
FLUORANTHENE	0.6	<0.038 U	.48	--	--	--	--
PHENANTHRENE	0.24	<0.038 U	**0.44**	--	--	--	--
PYRENE	0.665	<0.038 U	**0.78**	--	--	--	--

Table B-16
Revetment Area Data
Focused Feasibility Study
Hamilton Army Airfield
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Revetment 20

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth				
		RV213SS1 08/19/92 RV-SB-07 3 ft	RV214SS1 08/19/92 RV-SB-07 5 ft	RV215SS1 08/19/92 RV-SB-08 3 ft	RV216SS1 08/19/92 RV-SB-08 5 ft	RV234SS1 08/11/92 RV-MW-103 3 ft
Metals (mg/kg)						
CADMIUM	1.2	--	--	--	--	--
LEAD	43.2	11.7	7.28	14	7.78	9.91
Semivolatile Organic Compounds (mg/kg)						
BENZO(A)ANTHRACENE	0.412	--	--	--	--	--
CHRYSENE	0.384	--	--	--	--	--
FLUORANTHENE	0.6	--	--	--	--	--
PHENANTHRENE	0.24	--	--	--	--	--
PYRENE	0.665	--	--	--	--	--

Table B-16
Revetment Area Data
Focused Feasibility Study
Hamilton Army Airfield
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Revetment 21

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth HB-99-SO-21a 08/24/99 REVT 21 0 ft
Metals (mg/kg)		
COPPER	68.1	**70.3**
VANADIUM	118	**131**
Semivolatile Organic Compounds (mg/kg)		
2-METHYLNAPHTHALENE	0.07	**0.39**
FLUORENE	0.0253	**0.03 J**
Total Petroleum Hydrocarbons (mg/kg)		
DIESEL RANGE	144	**310**
GASOLINE RANGE	12	**230**

Table B-16
Revetment Area Data
Focused Feasibility Study
Hamilton Army Airfield
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Revetment 22

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth HB-99-SO-22a 08/24/99 REVT 22 0 ft
Semivolatile Organic Compounds (mg/kg)		
2-METHYLNAPHTHALENE	0.07	**0.51**
ACENAPHTHENE	0.026	**0.036 J**
FLUORENE	0.0253	**0.04 J**
Total Petroleum Hydrocarbons (mg/kg)		
DIESEL RANGE	144	**880**
GASOLINE RANGE	12	**200**

Table B-16
Revetment Area Data
Focused Feasibility Study
Hamilton Army Airfield
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Revetment 23

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth							
		R23-AS1-05 03/29/95 RVT-23-AS1 0.5 ft	R23-AS1-15 03/29/95 RVT-23-AS1 1.5 ft	R23-AS2-05 03/29/95 RVT-23-AS2 0.5 ft	R23-AS2-15 03/29/95 RVT-23-AS2 1.5 ft	R23-AS3-15 03/29/95 RVT-23-AS3 1.5 ft	R23-AS4-05 03/29/95 RVT-23-AS4 0.5 ft	R23-AS4-15 03/29/95 RVT-23-AS4 1.5 ft	R23-AS5-05 03/29/95 RVT-23-AS5 0.5 ft
Metals (mg/kg)									
COPPER	68.1	58	58	**69.5**	**79.9**	**71.2**	50	**92.4**	38.4
LEAD	43.2	19.6	15.6	**53.2**	11.2	19.1	12.3	17	21.5
ZINC	158	82.1	82.1	110	97.9	89.7	92.5	117	78.9

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Revetment Area Data
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Hamilton Army Airfield
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Revetment 23

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth						
		R23-AS5-15 03/29/95 RVT-23-AS5 1.5 ft	R23-AS6-05 03/29/95 RVT-23-AS6 0.5 ft	RVT-TW5-1 05/01/95 RVT-TW5 3 ft	RVT-TW5-2 05/01/95 RVT-TW5 5 ft	RVT-TW5-3 05/01/95 RVT-TW5 7.5 ft	RVT-TW8-1 05/01/95 RVT-TW8 2.5 ft	RVT-TW8-2 05/01/95 RVT-TW8 7.5 ft
Metals (mg/kg)								
COPPER	68.1	**141**	48.1	35.5	32.8	34.3	20	29.2
LEAD	43.2	19.6	34.7	12.7	11.8	10.1	11	8.5
ZINC	158	143	98.9	50.8	83.8	78.7	40.8	62.5

Table B-16
Revetment Area Data
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Hamilton Army Airfield
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Revetment 24

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth HB-99-SO-24a 08/24/99 REVT 24 0 ft
Semivolatile Organic Hydrocarbons (mg/kg)		
BENZO(A)ANTHRACENE	0.412	0.087
BENZO(A)PYRENE	0.43	0.081
DIBENZ(A,H)ANTHRACENE	0.0634	0.027 J-
FLUORANTHENE	0.6	0.22
PHENANTHRENE	0.24	0.16
PYRENE	0.665	0.16

Table B-16
Revetment Area Data
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Revetment 25

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth HB-99-SO-25a 08/24/99 REVT 25 0 ft
Metals (mg/kg)		
BARIUM	190	**238**
Total Petroleum Hydrocarbons (mg/kg)		
DIESEL RANGE	144	**330**

Table B-16
Revetment Area Data
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Revetment 26

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth HB-99-SO-26a 08/24/99 REVT 26 0 ft
Metals (mg/kg)		
BARIUM	190	**379**
BORON	36.9	**58.3 J-**
COPPER	68.1	60.2
MANGANESE	943	**1130**
Total Petroleum Hydrocarbons (mg/kg)		
DIESEL RANGE	144	**290**
GASOLINE RANGE	12	**60**

Table B-16
Revetment Area Data
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Revetment 27

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth					
		HB-99-SO-27a 08/24/99 REVT 27 0 ft	RV033SS1 12/11/90 RVS-90021 0 ft	RV217SS1 08/19/92 RV-SB-09 3 ft	RV218SS1 08/19/92 RV-SB-09 4.5 ft	RV219SS1 08/19/92 RV-SB-10 3 ft	RV220DS1 08/19/92 RV-SB-10 4.5 ft
Metals (mg/kg)							
LEAD	43.2	14.8	38	15	11	29	15
Semivolatile Organic Hydrocarbons (mg/kg)							
FLUORANTHENE	0.6	<0.043 U	0.26	--	--	--	--
PHENANTHRENE	0.24	<0.043 U	0.18	--	--	--	--
PYRENE	0.665	<0.043 U	0.58	--	--	--	--

Table B-16
Revetment Area Data
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Hamilton Army Airfield
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Revetment 27

Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth					
		RV221SS1 08/19/92 RV-SB-11 3 ft	RV222SS1 08/19/92 RV-SB-11 5 ft	RV223SS1 08/19/92 RV-SB-12 3 ft	RV224SS1 08/19/92 RV-SB-12 5 ft	RVT-WC-20-AS272 05/09/95 RVT-AS272 2.5 ft	RVT-WC-25-AS271 05/09/95 RVT-AS271 3 ft
Metals (mg/kg)							
LEAD	43.2	17	14	**51**	26	--	--
Semivolatile Organic Hydrocarbons (mg/kg)							
FLUORANTHENE	0.6	--	--	--	--	0.15	0.14
PHENANTHRENE	0.24	--	--	--	--	--	--
PYRENE	0.665	--	--	--	--	0.15	0.14

Table B-17
Revetment 10 Area Data
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Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth								
		HB-6024 09/22/98 CS-RBPE-S01 6 ft	HB-6026 09/22/98 CS-RBPE-S03 6 ft	HB-6028 09/23/98 CS-RBPE-S04 6 ft	HB-6029 09/23/98 CS-RBPE-B05 7 ft	HB-6031 09/23/98 CS-RBPE-B06 7 ft	HB-6032 09/23/98 CS-RBPE-B07 7 ft	HB-6034 09/23/98 CS-RBPE-S08 6 ft	HB-6035 09/23/98 CS-RBPE-S09 6 ft	HB-6037 09/24/98 CS-RBPE-B10 7 ft
Metals (mg/kg)										
COPPER	68.1	32.2	30.8	30.6	34.4	31.5	32.7	31.6	35.7	37.4
SELENIUM	0.64	<0.62 U	<0.61 U	<0.60 U	<0.62 U	<0.63 U	<0.63 U	<0.62 U	<0.59 U	<0.63 U

Table B-17
Revetment 10 Area Data
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Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth								
		HB-6038 09/24/98 CS-RBPE-B11 6 ft	HB-6040 09/24/98 CS-RBPE-B13 7 ft	HB-6041 09/24/98 CS-RBPE-B14 6 ft	HB-6042 09/24/98 CS-RBPE-B15 6 ft	HB-6043 09/24/98 CS-RBPE-B16 6 ft	HB-6045 09/28/98 CS-RBPE-B17 5 ft	HB-6046 09/28/98 CS-RBPE-B18 5 ft	HB-6047 09/28/98 CS-RBPE-B19 5 ft	HB-6048 09/28/98 CS-RBPE-B19 5 ft
Metals (mg/kg)										
COPPER	68.1	32.9	19.3	34.5	27.0	26.7	32.3	22.6	35.5	
SELENIUM	0.64	<0.63 U	<0.59 U	*<0.70 U*	<0.55 U	<0.56 U	<0.63 U	<0.59 U		<0.57 U

Table B-17
Revetment 10 Area Data
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Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth								
		HB-6049 09/28/98 CS-RBPE-B20 5 ft	HB-6050 09/28/98 CS-RBPE-B21 5 ft	HB-6051 09/28/98 CS-RBPE-B22 5 ft	HB-6052 09/28/98 CS-RBPE-B23 5 ft	HB-6053 09/28/98 CS-RBPE-B24 5 ft	HB-6054 09/28/98 CS-RBPE-B25 5 ft	HB-6055 09/28/98 CS-RBPE-B26 5 ft	HB-6056 09/28/98 CS-RBPE-B27 5 ft	HB-6057 09/28/98 CS-RBPE-B28 5 ft
Metals (mg/kg)										
COPPER	68.1	33.4	21.8	19.8	29.2	28.4	30.7	26.5	32.8	19.7
SELENIUM	0.64	<0.58 U	<0.58 U	<0.58 U	<0.57 U	<0.59 U	<0.58 U	<0.59 U	<0.61 U	<0.58 U

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Revetment 10 Area Data
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Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth								
		HB-6058 09/28/98 CS-RBPE-B29 5 ft	HB-6063 09/29/98 CS-RBPE-S30 1 ft	HB-6064 09/29/98 CS-RBPE-S31 2.33 ft	HB-6065 09/29/98 CS-RBPE-S32 2.42 ft	HB-6066 09/29/98 CS-RBPE-S33 1 ft	HB-6067 09/29/98 CS-RBPE-S34 2 ft	HB-6068 09/29/98 CS-RBPE-S35 2.42 ft	HB-6069 09/29/98 CS-RBPE-S36 2.5 ft	HB-6074 10/05/98 CS-RBPE-B37 5 ft
Metals (mg/kg)										
COPPER	68.1	22.1	35.7	39.1	42.8	44.4	45.8	24.2	21.5	31.5
SELENIUM	0.64	<0.58 U	<0.43 U	<0.44 U	<0.46 U	0.43	<0.52 U	<0.45 U	<0.46 U	<0.59 U

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Revetment 10 Area Data
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Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth								
		HB-6075 10/05/98 CS-RBPE-B38 5 ft	HB-6076 10/05/98 CS-RBPE-B39 5 ft	HB-6077 10/05/98 CS-RBPE-B40 5 ft	HB-6079 10/05/98 CS-RBPE-B41 5 ft	HB-6080 10/05/98 CS-RBPE-B42 5 ft	HB-6081 10/05/98 CS-RBPE-B43 5 ft	HB-6086 10/06/98 CS-RBPE-B44 5 ft	HB-6087 10/06/98 CS-RBPE-B45 5 ft	HB-6088 10/06/98 CS-RBPE-B46 5 ft
Metals (mg/kg)										
COPPER	68.1	30.4	28.2	30.0	23.0	29.1	32.3	41.5	33.7	29.7
SELENIUM	0.64	<0.59 U	<0.59 U	<0.58 U	<0.43 U	<0.51 U	<0.50 U	<0.59 U	**0.65**	<0.55 U

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Revetment 10 Area Data
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Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth								
		HB-6089 10/06/98 CS-RBPE-B47 5 ft	HB-6090 10/06/98 CS-RBPE-S48 1 ft	HB-6091 10/06/98 CS-RBPE-S49 2 ft	HB-6093 10/06/98 CS-RBPE-S50 1.5 ft	HB-6094 10/06/98 CS-RBPE-S51 1 ft	HB-6095 10/06/98 CS-RBPE-S52 2 ft	HB-6096 10/06/98 CS-RBPE-S53 2 ft	HB-6097 10/06/98 CS-RBPE-S54 1 ft	HB-6098 10/06/98 CS-RBPE-S55 3 ft
Metals (mg/kg)										
COPPER	68.1	53.3	41.9	46.0	49.4	52.8	38.8	50.9	38.6	54.4
SELENIUM	0.64	<0.59 U	0.59	0.57	0.58	<0.43 U	<0.43 U	<0.46 U	<0.43 U	<0.49 U

Table B-17
Revetment 10 Area Data
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Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth								
		HB-6099 10/06/98 CS-RBPE-S56 1 ft	HB-6104 10/07/98 CS-RBPE-S57 2.5 ft	HB-6105 10/07/98 CS-RBPE-S58 2.5 ft	HB-6106 10/07/98 CS-RBPE-S59 1 ft	HB-6107 10/07/98 CS-RBPE-S60 1 ft	HB-6109 10/07/98 CS-RBPE-S61 1 ft	HB-6112 10/07/98 CS-RBPE-S63 1 ft	HB-6113 10/07/98 CS-RBPE-S64 1 ft	HB-88-3 06/17/86 HB-88 6 ft
Metals (mg/kg)										
COPPER	68.1	41.8	46.5	49.2	42.7	41.9	47.9	45.4	35.0	27.5
SELENIUM	0.64	<0.42 U	<0.43 UJ	<0.42 UJ	<0.42 UJ	<0.42 UJ	<0.43 UJ	<0.43 UJ	<0.44 UJ	*<1 U*

Table B-17
Revetment 10 Area Data
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Parameter	Comparison Value (mg/kg)	HB-88-4 06/17/86 HB-88 9 ft
COPPER	68.1	35.5
SELENIUM	0.64	*<1 U*

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Revetment 10 Area Data
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Parameter	Comparison Value (mg/kg)	Sample Number/Date/Location/Depth		
		HB-89-3 06/24/86 HB-89 6 ft	HB-90-3 06/24/86 HB-90 6 ft	HB-90-4 06/24/86 HB-90 9 ft
Metals (mg/kg)				
COPPER	68.1	23	22.5	27.5
SELENIUM	0.64	*<1 U*	*<1 U*	*<1 U*

Table B-18
Estimated Excavation Volumes
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Reference Sample within Excavation Area	Area (square feet)	Depth (feet below ground surface)	Volume (cubic feet)	Volume (cubic yards)
Fomer Sewage Treatment Plant				
FSTP-CS-001	580	4	2,320	86
FSTP-CS-003	740	4	2,960	110
CS-FSTP-B03	100	10.5	1,050	39
SB-FSTP-015	100	6.5	650	24
		Total	**6,980**	**259**
Building 26				
PH-B026-004	250	5	1,250	46
		Total	**1,250**	**46**
Building 35/39 Area				
B35E-CS-005 and 006	96	3.5	336	12
B-35E-CS-002	75	4.5	338	13
		Total	**674**	**25**
Building 41 Area				
CS-PSA4-S04	2,520	6.5	16,380	607
B41E-CS-003	750	9	6,750	250
SB-UST41-01	150	9	1,350	50
		Total	**24,480**	**907**
Building 82/87/92/94 Area and Building 86				
AM-MW-101	2,612	2.5	6,530	242
AM-MW-102	100	2	200	7
SB-SD1-01	6,100	12.5	76,250	2,824
AM-TP-03	1,500	5.5	8,250	306
SB-SD1-08	1,500	10	15,000	556
AM-TP-05	600	4	2,400	89
AM-MW-104	300	4	1,200	44
AM-SD-03	100	1	100	4
AM-SD-02	100	2.5	250	9
PH-AMSD-05Q	100	6	600	22
		Total	**110,780**	**4,103**
Perimeter Drainage Ditch (PDD)				
PDD-SD01	72,000	1.5	108,000	4,000
SS-PDUL-B01	6,000	3	18,000	667
HB-99-SD-28 and 29	260,000	1	260,000	9,630
		Total	**386,000**	**14,296**
PDD Spoils Piles				
Spoils Pile A	4,172	1	4,172	155
Spoils Pile B	57,674	1	57,674	2,136
Spoils Pile D	4,609	1	4,609	171
Spoils Pile E	4,273	1	4,273	158
Spoils Pile F	14,822	1	14,822	549
Spoils Pile G	5,302	1	5,302	196

Table B-18
Estimated Excavation Volumes
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Reference Sample within Excavation Area	Area (square feet)	Depth (feet below ground surface)	Volume (cubic feet)	Volume (cubic yards)
Spoils Pile I	2,905	1	2,905	108
Spoils Pile J	833	1	833	31
Spoils Pile K	2,222	1	2,222	82
Spoils Pile L	100	1	100	4
Spoils Pile M	10,354	1	10,354	383
Spoils Pile N	5,590	1	5,590	207
		Total	**112,856**	**4,180**
Onshore Fuel Line - 54-Inch Drain Line Segment				
54-SD-12	1,650	10	16,500	611
54-SD-14	1,800	11.5	20,700	767
54-SD-20	1,600	10	16,000	593
54-SD-17	500	3	1,500	56
		Total	**54,700**	**2,026**
Onshore Fuel Line - Hangar Segment				
ATG(B)-051	400	4	1,600	59
ATG(B)-067	400	7.5	3,000	111
ATG(G)-277	150	0.58	87	3
ATG(G)-280	200	3	600	22
ATG(G)-288	500	8	4,000	148
ATG(R)-044	900	4	3,600	133
ATG(R)-056	350	7.5	2,625	97
ATG(R)-059	250	3.5	875	32
ATG(R)-067	400	3	1,200	44
ATG(R)-072	800	7.5	6,000	222
ATG(R)-106	300	1.5	450	17
ATG(R)-114	500	7.5	3,750	139
ATG(R)-118	600	7.5	4,500	167
ATG-027	450	4.17	1,877	70
ATG-370	100	5	500	19
ATG-375	650	7.5	4,875	181
ATG-379	700	7.5	5,250	194
ATG-386	1,100	7.5	8,250	306
IT-003	400	7.5	3,000	111
ITLAT-04F	400	4	1,600	59
ITLAT-04B	100	4	400	15
		Total	**58,039**	**2,150**
Onshore Fuel Line - Northern Segment				
PRL-0305 to 325	5,000	4	20,000	741
PRL-0337	250	4	1,000	37
PRL-0471	300	4	1,200	44
PRL-0481	350	4	1,400	52
PRL-0491	350	4.5	1,575	58

Table B-18
Estimated Excavation Volumes
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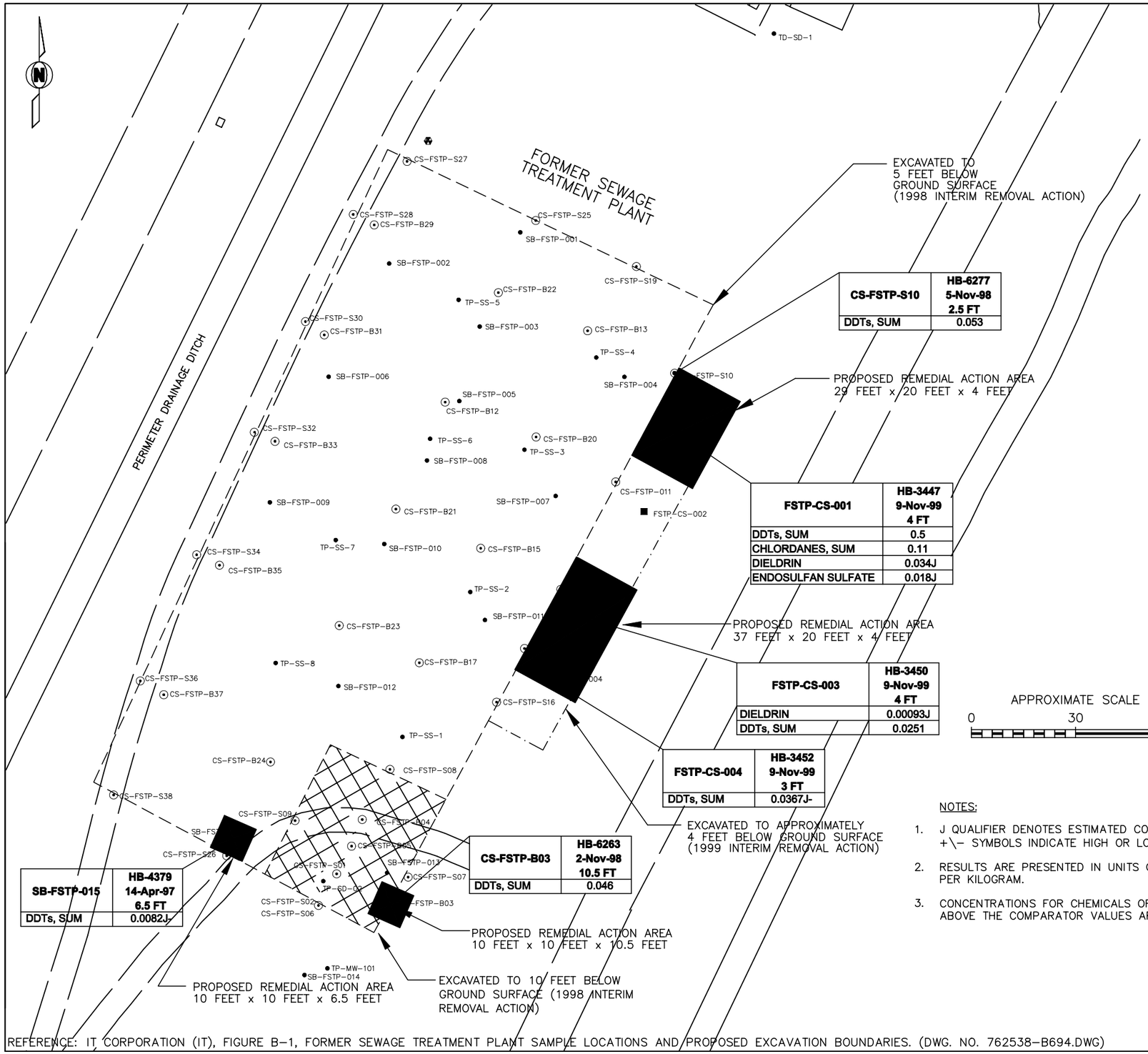
Reference Sample within Excavation Area	Area (square feet)	Depth (feet below ground surface)	Volume (cubic feet)	Volume (cubic yards)
PRL-0501	350	4	1,400	52
PRL-0511	250	3.5	875	32
PRL-0521	350	4	1,400	52
PRL-0531	400	4	1,600	59
PRL-0541	350	4	1,400	52
PRL-0550	350	4	1,400	52
PRL-0559	400	4	1,600	59
PRL-0568	350	4	1,400	52
PRL-0577	500	3.5	1,750	65
PRL-0586	500	3.5	1,750	65
PRL-0595	500	3.5	1,750	65
PRL-0604	200	4	800	30
PRL-0616	250	4	1,000	37
PRL-0617	500	4	2,000	74
PRL-0630	350	4.5	1,575	58
PRL-0639	350	4.5	1,575	58
PH-SEG1-00D	60	5.5	330	12
		Total	**48,780**	**1,807**
Northwest Runway Area				
SL23-TW-004	400	15	6,000	222
		Total	**6,000**	**222**
Revetment Areas				
Revetment 1	17,259	1	17,259	639
Revetment 2	11,490	1	11,490	426
Revetment 3	12,985	1	12,985	481
Revetment 4	18,721	1	18,721	693
Revetment 6	10,000	1	10,000	370
Revetment 7	4,967	1	4,967	184
Revetment 11 - RVT-11-AS1	100	1.5	150	6
Revetment 11 - RVT-11-AS2	100	1.5	150	6
Revetment 11 - RVT-11-AS4	556	1	556	21
Revetment 12 - RVT-12-AS2	100	1.5	150	6
Revetment 12 - RVT-12-AS3	100	1	100	4
Revetment 13	11,544	1	11,544	428
Revetment 14	13,274	1	13,274	492
Revetment 15	7,526	1	7,526	279
Revetment 16	13,154	1	13,154	487
Revetment 19	19,842	1	19,842	735
Revetment 20	13,746	1	13,746	509
Revetment 21	13,630	1	13,630	505
Revetment 22	12,458	1	12,458	461
Revetment 23	20,570	1	20,570	762

Table B-18
Estimated Excavation Volumes
(Page 47 of 47)

Reference Sample within Excavation Area	Area (square feet)	Depth (feet below ground surface)	Volume (cubic feet)	Volume (cubic yards)
Revetment 25	13,269	1	13,269	491
Revetment 26	12,549	1	12,549	465
		Total	**228,090**	**8,448**
TOTAL EXCAVATION VOLUME			1,038,628	38,468

Appendix B Figures



CS-FSTP-S10	HB-6277 5-Nov-98 2.5 FT
DDTs, SUM	0.053

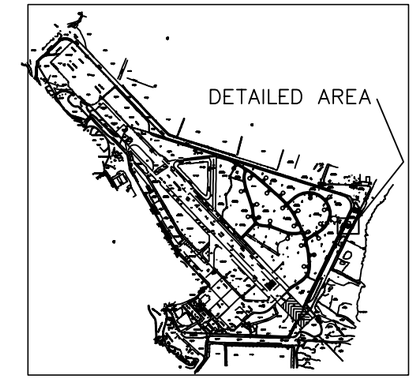
FSTP-CS-001	HB-3447 9-Nov-99 4 FT
DDTs, SUM	0.5
CHLORDANES, SUM	0.11
DIELDRIN	0.034J
ENDOSULFAN SULFATE	0.018J

FSTP-CS-003	HB-3450 9-Nov-99 4 FT
DIELDRIN	0.00093J
DDTs, SUM	0.0251

FSTP-CS-004	HB-3452 9-Nov-99 3 FT
DDTs, SUM	0.0367J-

CS-FSTP-B03	HB-6263 2-Nov-98 10.5 FT
DDTs, SUM	0.046

SB-FSTP-015	HB-4379 14-Apr-97 6.5 FT
DDTs, SUM	0.0082J-



KEY MAP

LEGEND:

- APPROXIMATE BOUNDARY OF 1999 INTERIM REMOVAL ACTION
- APPROXIMATE BOUNDARY OF 1998 INTERIM REMOVAL ACTION
- SURVEY HUB
- ABOVEGROUND STORAGE TANK (AST)
- 1999 INTERIM REMOVAL ACTION TO 10 FEET BELOW GROUND SURFACE
- PROPOSED REMEDIAL ACTION AREA
- FENCE
- SOIL SAMPLE LOCATION (IT, 1999a)
- 1998 INTERIM REMOVAL ACTION CONFIRMATION SAMPLE
- 1999 INTERIM REMOVAL ACTION CONFIRMATION SAMPLE

APPROXIMATE SCALE

0 30 60 FEET

NOTES:

1. J QUALIFIER DENOTES ESTIMATED CONCENTRATION. +\− SYMBOLS INDICATE HIGH OR LOW ESTIMATES.
2. RESULTS ARE PRESENTED IN UNITS OF MILLIGRAMS PER KILOGRAM.
3. CONCENTRATIONS FOR CHEMICALS OF CONCERN ABOVE THE COMPARATOR VALUES ARE PLOTTED.

FIGURE B−1

FORMER SEWAGE TREATMENT PLANT SAMPLE LOCATIONS AND PROPOSED REMEDIAL ACTION AREAS INBOARD AREA SITES

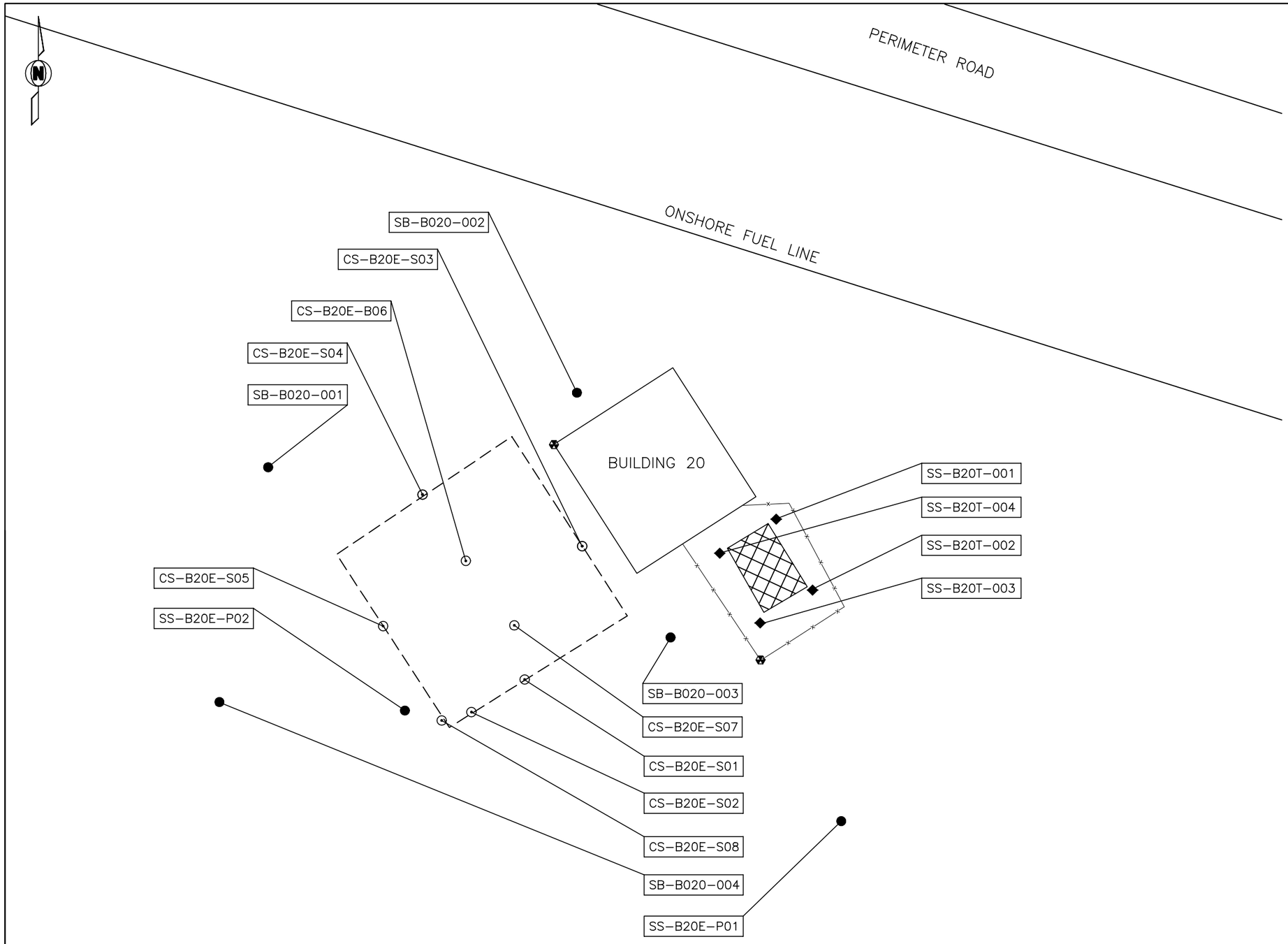
BRAC PROPERTY
HAMILTON ARMY AIRFIELD

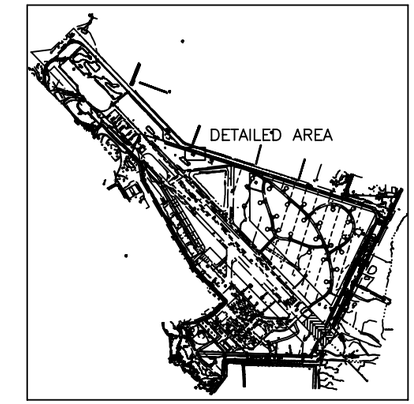
PREPARED FOR

USACE SACRAMENTO

CH2MHILL

REFERENCE: IT CORPORATION (IT), FIGURE B−1, FORMER SEWAGE TREATMENT PLANT SAMPLE LOCATIONS AND PROPOSED EXCAVATION BOUNDARIES. (DWG. NO. 762538−B694.DWG)





KEY MAP

LEGEND:

- 1998 INTERIM REMOVAL EXCAVATION BOUNDARY EXCAVATED TO 10 FEET BELOW GROUND SURFACE
- 1998 INTERIM REMOVAL ACTION CONFIRMATION SAMPLE LOCATION
- SURFACE SOIL SAMPLE LOCATION (APPROXIMATE) (IT, 1999a)
- SOIL SAMPLE LOCATION
- SURVEY HUB
- FENCE
- CS-B80E-S01 SAMPLE LOCATION
- TRANSFORMER PAD

APPROXIMATE SCALE

0 10 20 FEET

FIGURE B-2

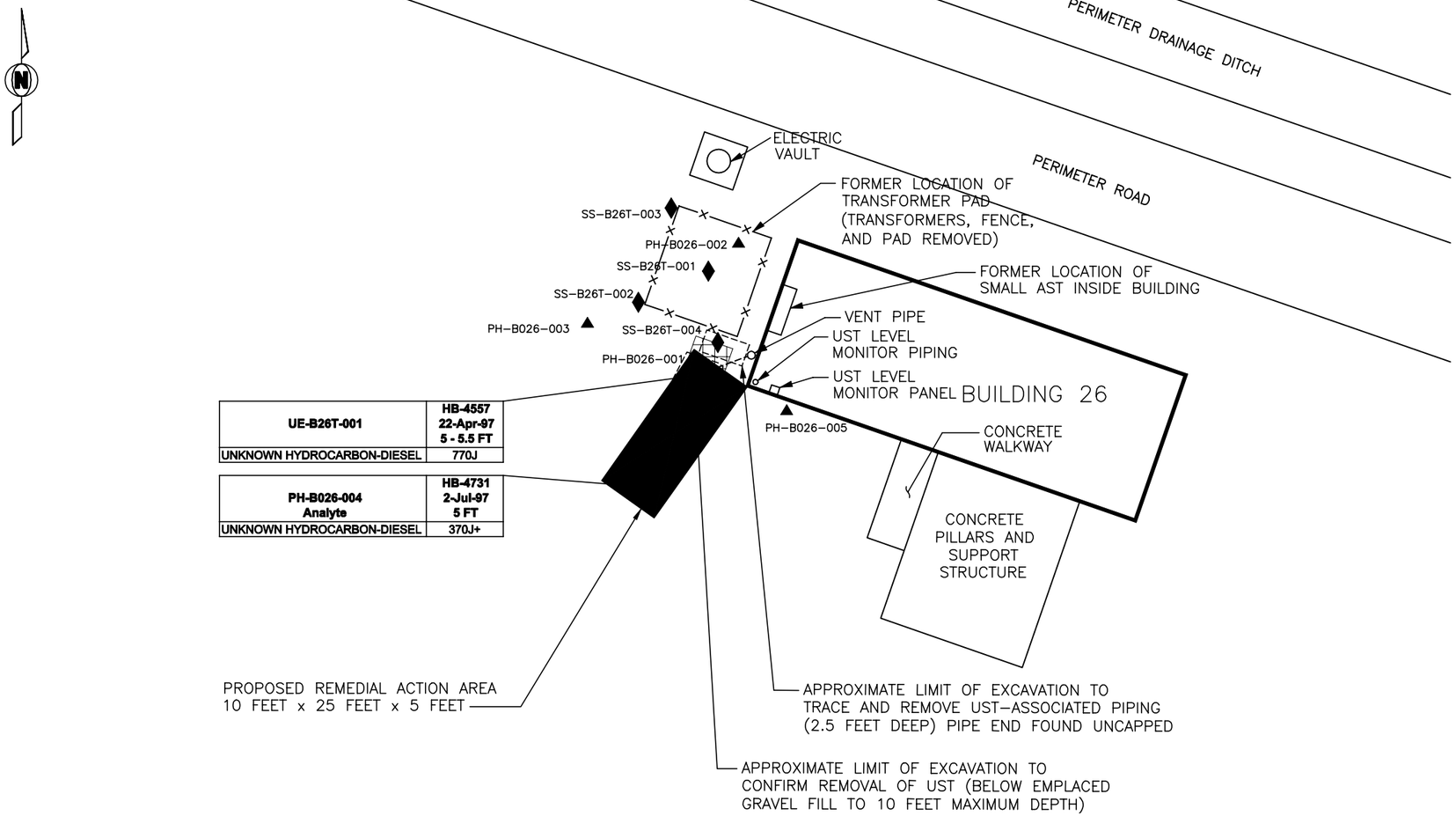
BUILDING 20
SAMPLE LOCATIONS
INBOARD AREA SITES
BRAC PROPERTY
HAMILTON ARMY AIRFIELD

PREPARED FOR

USACE SACRAMENTO

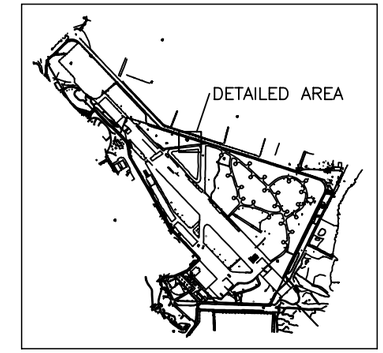
CH2MHILL

REFERENCE: IT CORPORATION (IT), FIGURE B-2, BUILDING 20 SAMPLE LOCATIONS. (DWG. NO. 762538-B703.DWG)



UE-B26T-001	HB-4557 22-Apr-97 5 - 5.5 FT
UNKNOWN HYDROCARBON-DIESEL	770J

PH-B026-004 Analyte	HB-4731 2-Jul-97 5 FT
UNKNOWN HYDROCARBON-DIESEL	370J+



KEY MAP

APPROXIMATE SCALE

0 20 40 FEET

1. J QUALIFIER DENOTES ESTIMATED CONCENTRATIONS. +/- SYMBOLS INDICATE HIGH OR LOW ESTIMATES.
2. RESULTS ARE PRESENTED IN UNITS OF MILLIGRAMS PER KILOGRAM (MG/KG).
3. CONCENTRATIONS FOR CHEMICALS OF CONCERN ABOVE THE COMPARATOR VALUES ARE PLOTTED.

LEGEND:

- APPROXIMATE LOCATION OF FORMER UNDERGROUND STORAGE TANK (UST) REMOVED DURING PREVIOUS INVESTIGATION (AREA FOUND SETTLED AND UNCOMPACTED)
- APPROXIMATE LIMITS OF EXPLORATORY EXCAVATION
- PROPOSED REMEDIAL ACTION AREA
- ▲ POTHOLE SOIL SAMPLE LOCATION (IT, 1999a)
- ♦ SURFACE SOIL SAMPLE LOCATION (IT, 1999a)
- ● UST EXCAVATION SOIL SAMPLE (IT, 1999a)

ACRONYMS:

UST UNDERGROUND STORAGE TANK

AST ABOVEGROUND STORAGE TANK

FIGURE B-3

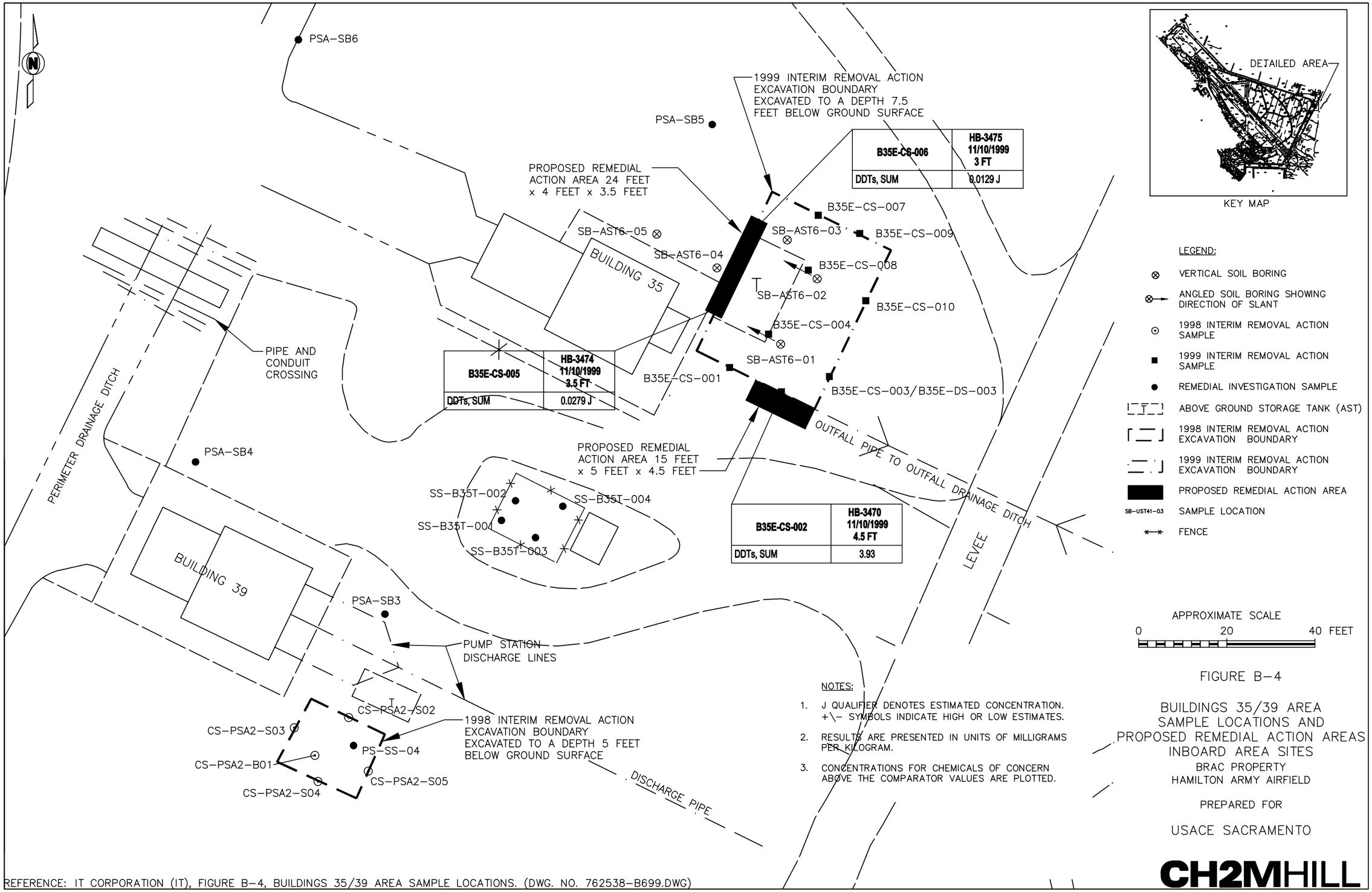
BUILDING 26
SAMPLE LOCATIONS AND
PROPOSED REMEDIAL ACTION AREAS
INBOARD AREA SITES
BRAC PROPERTY
HAMILTON ARMY AIRFIELD

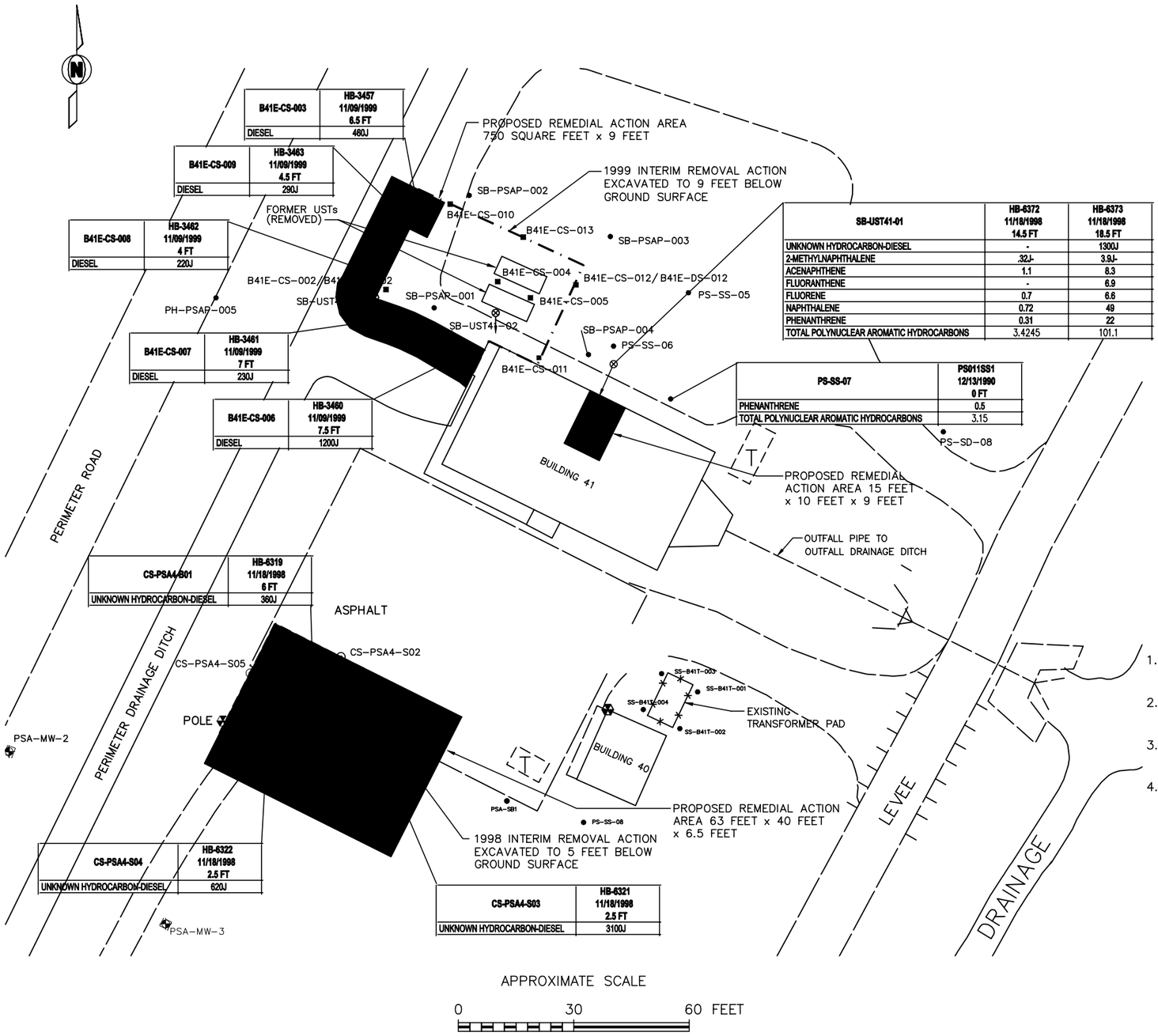
PREPARED FOR

USACE SACRAMENTO

CH2MHILL

REFERENCE: IT CORPORATION (IT), FIGURE B-3, BUILDING 26 SAMPLE LOCATIONS AND PROPOSED EXCAVATION BOUNDARIES. (DWG. NO. 762538-B696.DWG)


PSA-SB6
PSA-SB5
PSA-SB4
PSA-SB3
1999 INTERIM REMOVAL ACTION EXCAVATION BOUNDARY EXCAVATED TO A DEPTH 7.5 FEET BELOW GROUND SURFACE
PROPOSED REMEDIAL ACTION AREA 24 FEET x 4 FEET x 3.5 FEET
PROPOSED REMEDIAL ACTION AREA 15 FEET x 5 FEET x 4.5 FEET
B35E-CS-006 | HB-3475 11/10/1999 3 FT
DDTs, SUM | 0.0129 J
B35E-CS-005 | HB-3474 11/10/1999 3.5 FT
DDTs, SUM | 0.0279 J
B35E-CS-002 | HB-3470 11/10/1999 4.5 FT
DDTs, SUM | 3.93
B35E-CS-007
B35E-CS-009
B35E-CS-008
B35E-CS-010
B35E-CS-004
B35E-CS-001
B35E-CS-003/B35E-DS-003
SB-AST6-05
SB-AST6-04
SB-AST6-03
SB-AST6-02
SB-AST6-01
BUILDING 35
BUILDING 39
PIPE AND CONDUIT CROSSING
PERIMETER DRAINAGE DITCH
OUTFALL PIPE TO OUTFALL DRAINAGE DITCH
LEVEE
SS-B35T-002
SS-B35T-004
SS-B35T-001
SS-B35T-003
PUMP STATION DISCHARGE LINES
CS-PSA2-S02
CS-PSA2-S03
CS-PSA2-B01
CS-PSA2-S04
PS-SS-04
CS-PSA2-S05
1998 INTERIM REMOVAL ACTION EXCAVATION BOUNDARY EXCAVATED TO A DEPTH 5 FEET BELOW GROUND SURFACE
DISCHARGE PIPE
DETAILED AREA
KEY MAP
LEGEND:
VERTICAL SOIL BORING
ANGLED SOIL BORING SHOWING DIRECTION OF SLANT
1998 INTERIM REMOVAL ACTION SAMPLE
1999 INTERIM REMOVAL ACTION SAMPLE
REMEDIAL INVESTIGATION SAMPLE
ABOVE GROUND STORAGE TANK (AST)
1998 INTERIM REMOVAL ACTION EXCAVATION BOUNDARY
1999 INTERIM REMOVAL ACTION EXCAVATION BOUNDARY
PROPOSED REMEDIAL ACTION AREA
SB-UST41-03 SAMPLE LOCATION
FENCE
APPROXIMATE SCALE
0 20 40 FEET
NOTES:
1. J QUALIFIER DENOTES ESTIMATED CONCENTRATION. +\- SYMBOLS INDICATE HIGH OR LOW ESTIMATES.
2. RESULTS ARE PRESENTED IN UNITS OF MILLIGRAMS PER KILOGRAM.
3. CONCENTRATIONS FOR CHEMICALS OF CONCERN ABOVE THE COMPARATOR VALUES ARE PLOTTED.
FIGURE B-4
BUILDINGS 35/39 AREA SAMPLE LOCATIONS AND PROPOSED REMEDIAL ACTION AREAS INBOARD AREA SITES
BRAC PROPERTY
HAMILTON ARMY AIRFIELD
PREPARED FOR
USACE SACRAMENTO
CH2MHILL
REFERENCE: IT CORPORATION (IT), FIGURE B-4, BUILDINGS 35/39 AREA SAMPLE LOCATIONS. (DWG. NO. 762538-B699.DWG)



B41E-CS-003	HB-3457 11/09/1999 6.5 FT
DIESEL	460J

B41E-CS-009	HB-3463 11/09/1999 4.5 FT
DIESEL	290J

B41E-CS-008	HB-3462 11/09/1999 4 FT
DIESEL	220J

B41E-CS-007	HB-3461 11/09/1999 7 FT
DIESEL	230J

B41E-CS-006	HB-3460 11/09/1999 7.5 FT
DIESEL	1200J

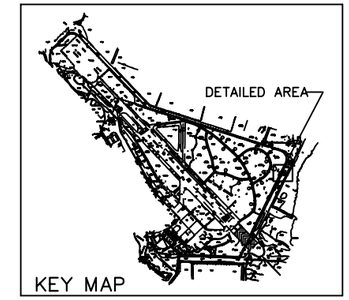
CS-PSA4-S01	HB-6319 11/18/1998 6 FT
UNKNOWN HYDROCARBON-DIESEL	360J

CS-PSA4-S04	HB-6322 11/18/1998 2.5 FT
UNKNOWN HYDROCARBON-DIESEL	620J

CS-PSA4-S03	HB-6321 11/18/1998 2.5 FT
UNKNOWN HYDROCARBON-DIESEL	3100J

SB-UST41-01	HB-6372 11/18/1998 14.5 FT	HB-6373 11/18/1998 18.5 FT
UNKNOWN HYDROCARBON-DIESEL	-	1300J
2-METHYLNAPHTHALENE	.32J-	3.9J-
ACENAPHTHENE	1.1	8.3
FLUORANTHENE	-	6.9
FLUORENE	0.7	6.6
NAPHTHALENE	0.72	49
PHENANTHRENE	0.31	22
TOTAL POLYNUCLEAR AROMATIC HYDROCARBONS	3.4245	101.1

PS-SS-07	PS011SS1 12/13/1990 0 FT
PHENANTHRENE	0.5
TOTAL POLYNUCLEAR AROMATIC HYDROCARBONS	3.15



LEGEND:

- ANGLED SOIL BORING SHOWING DIRECTION OF SLANT
- REMEDIAL INVESTIGATION SAMPLE (IT, 1999a)
- 1998 INTERIM REMOVAL ACTION SAMPLE
- 1999 INTERIM REMOVAL ACTION SAMPLE
- ABOVE GROUND STORAGE TANK (AST)
- SURVEY HUB
- PSA-MW-2 MONITORING WELL LOCATION
- 1998 INTERIM REMOVAL ACTION EXCAVATION BOUNDARY
- 1999 INTERIM REMOVAL ACTION EXCAVATION BOUNDARY
- PROPOSED REMEDIAL ACTION AREA

NOTES:

1. J QUALIFIER DENOTES THE ESTIMATED CONCENTRATIONS. +/- SYMBOLS INDICATE HIGH OR LOW ESTIMATES.
2. RESULTS ARE PRESENTED IN UNITS OF MILLIGRAMS PER KILOGRAM (MG/KG).
3. CONCENTRATIONS FOR CHEMICALS OF CONCERN ABOVE THE COMPARATOR VALUES ARE PLOTTED.
4. A DASHED LINE IN THE TABLE OF RESULTS INDICATES THAT THE RESULT WAS BELOW THE COMPARISON VALUE.

FIGURE B-5

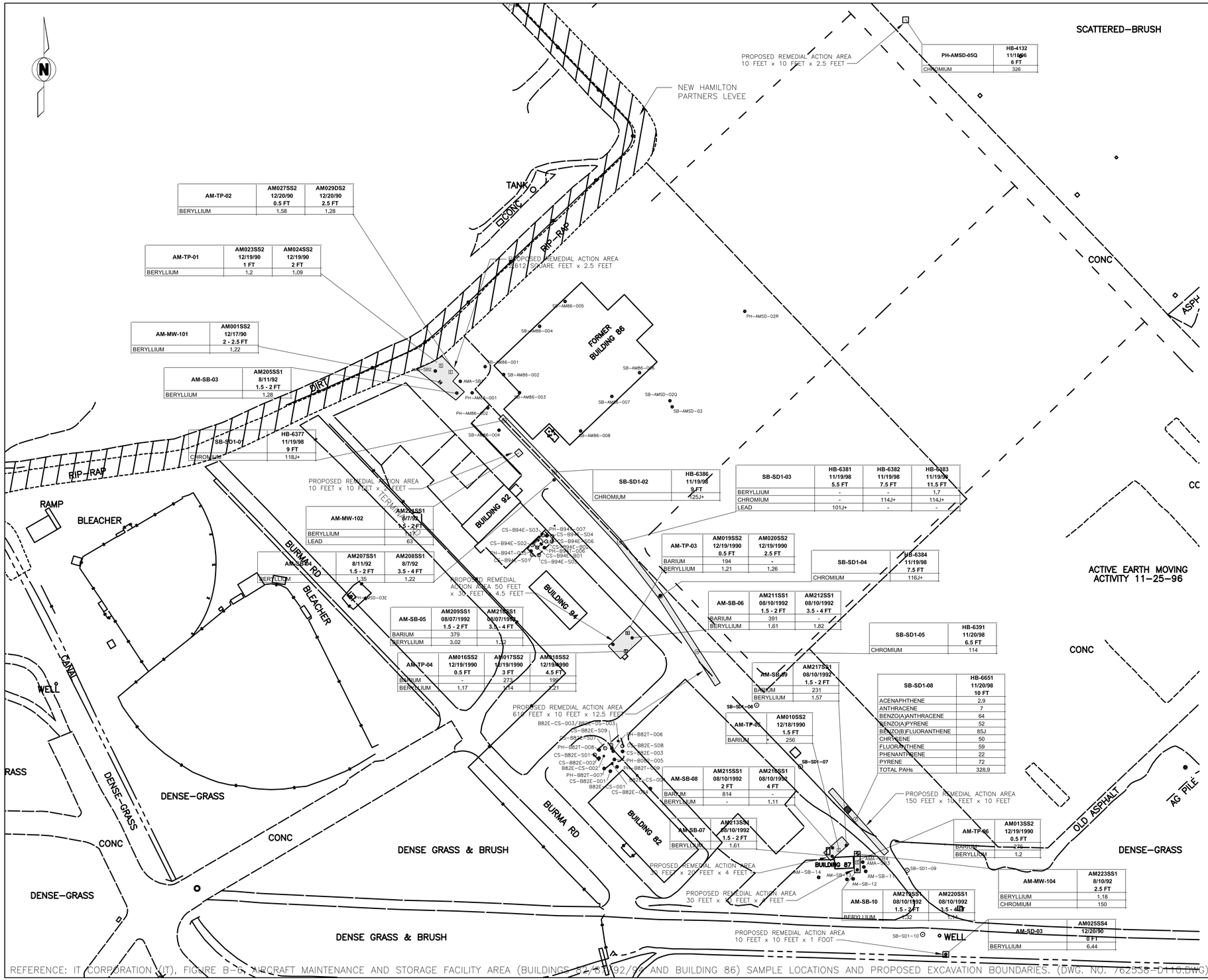
BUILDING 41 AREA
SAMPLE LOCATIONS
AND PROPOSED
REMEDIAL ACTION AREAS
INBOARD AREA SITES
BRAC PROPERTY
HAMILTON ARMY AIRFIELD

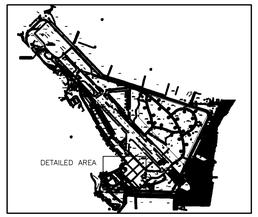
PREPARED FOR

USACE SACRAMENTO

CH2MHILL

REFERENCE: IT CORPORATION (IT), FIGURE B-5, BUILDING 41 AREA SAMPLE LOCATIONS AND PROPOSED EXCAVATION BOUNDARIES. (DWG. NO. 762538-B692.DWG)





KEY MAP

LEGEND:

- 1998 INTERIM REMOVAL ACTION SAMPLE
- REMEDIAL INVESTIGATION SAMPLE (IT, 1999a)
- TEST PIT AND SOIL SAMPLE LOCATION (IT, 1999a)
- ABOVEGROUND STORAGE TANK (AST)
- MONITORING WELL LOCATION (IT, 1999a)
- PROPOSED REMEDIAL ACTION AREA
- 1999 INTERIM REMOVAL ACTION EXCAVATION
- 1998 INTERIM REMOVAL ACTION EXCAVATION
- FENCE
- SB–UST41–03 SAMPLE LOCATION

NOTES:

1. RESULTS ARE PRESENTED IN UNITS OF MILLIGRAMS PER KILOGRAM (MG/KG).
2. CONCENTRATIONS FOR CHEMICALS OF CONCERN ABOVE THE COMPARATOR VALUES ARE PLOTTED.
3. A DASHED LINE IN THE TABLE OF RESULTS WAS BELOW THE COMPARISON VALUE.

QUALIFIERS:
J J QUALIFIER INDICATES ESTIMATED VALUE.
+/– INDICATES HIGH OR LOW ESTIMATION.

ACRONYMS:
PAHS POLYNUCLEAR AROMATIC HYDROCARBONS

APPROXIMATE SCALE
0 80 160 FEET

FIGURE B–6

AIRCRAFT MAINTENANCE AND STORAGE FACILITY AREA (BUILDINGS 82/87/92/94 AND BUILDING 86) SAMPLE LOCATIONS AND PROPOSED REMEDIAL ACTION AREAS INBOARD AREA SITES

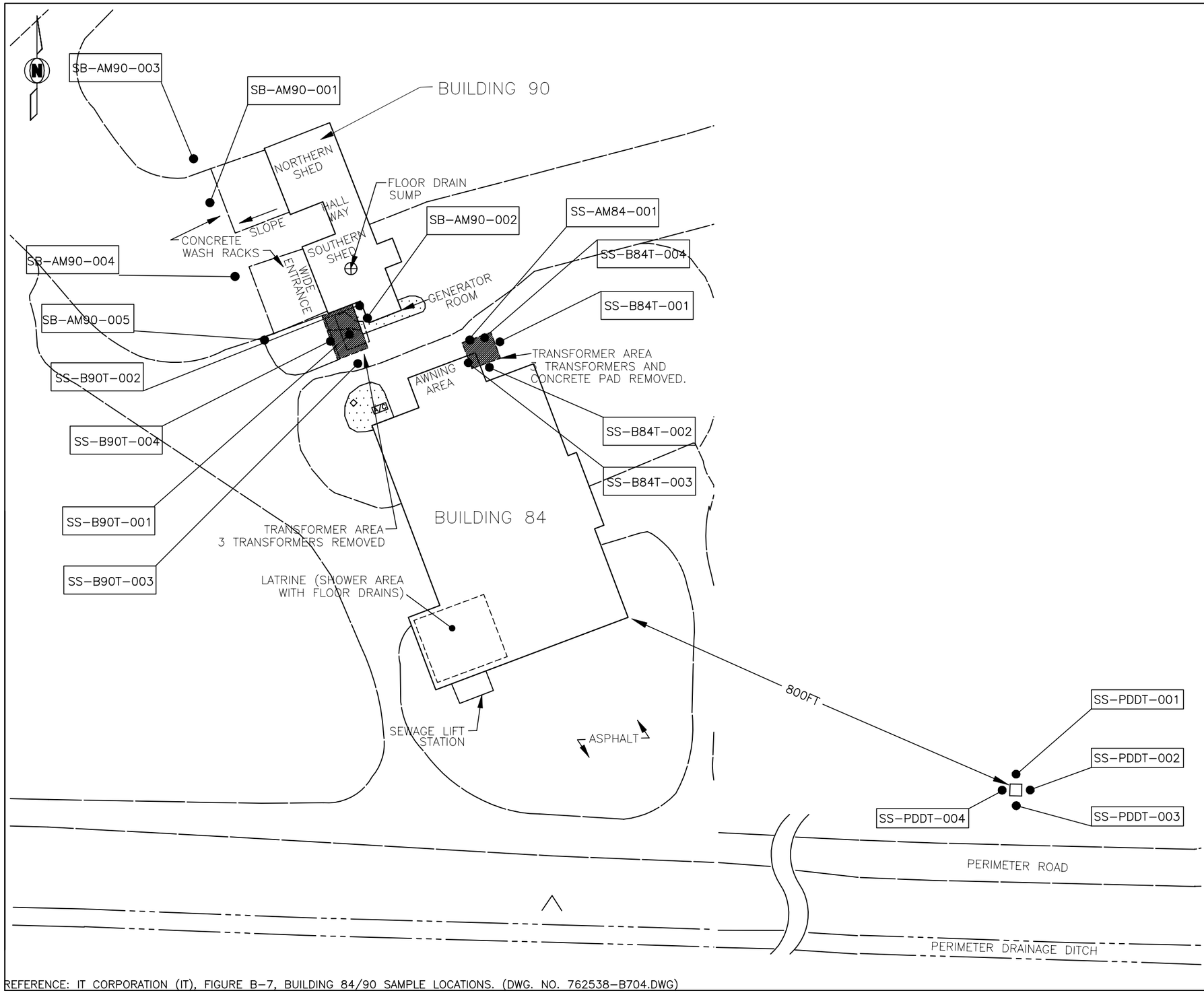
BRAC PROPERTY
HAMILTON ARMY AIRFIELD

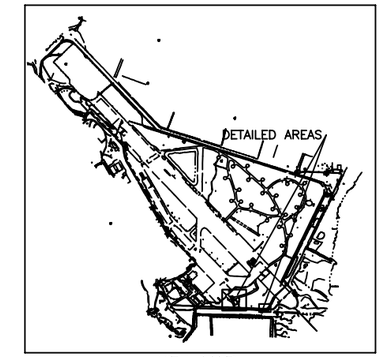
PREPARED FOR

USACE SACRAMENTO

CH2MHILL

REFERENCE: IT CORPORATION (IT), FIGURE B–6, AIRCRAFT MAINTENANCE AND STORAGE FACILITY AREA (BUILDINGS 82/87/92/94 AND BUILDING 86) SAMPLE LOCATIONS AND PROPOSED EXCAVATION BOUNDARIES. (DWG. NO. 762538-D110.DWG)





KEY MAP

LEGEND:

- ● REMEDIAL INVESTIGATION SAMPLE (IT, 1999a)
- ◇ HYDRANT
- SS-PDUL-S01W SAMPLE LOCATION

APPROXIMATE SCALE

0 50 100 FEET

FIGURE B-7

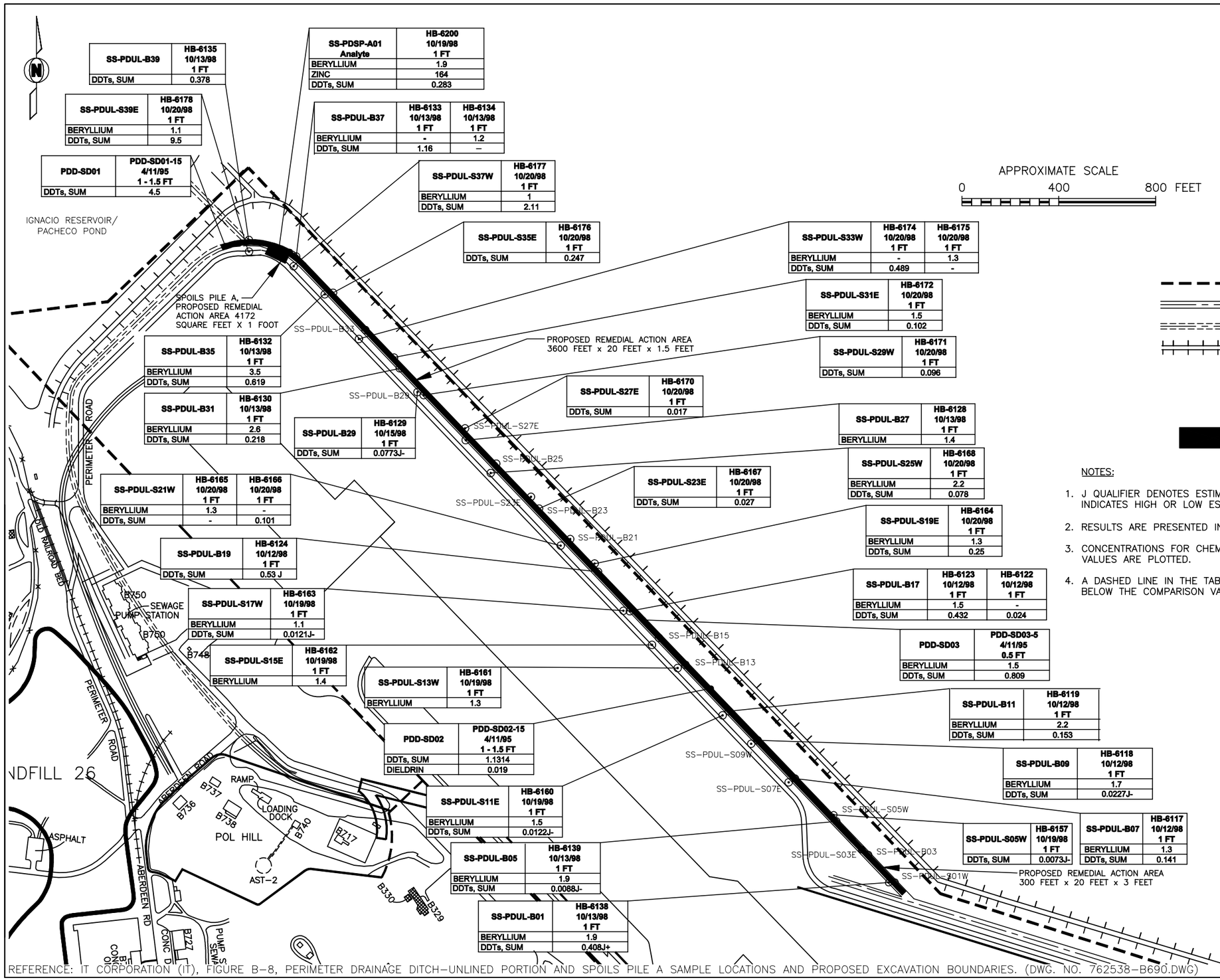
BUILDING 84/90
SAMPLE LOCATIONS
INBOARD AREA SITES
BRAC PROPERTY
HAMILTON ARMY AIRFIELD

PREPARED FOR

USACE SACRAMENTO

CH2MHILL

REFERENCE: IT CORPORATION (IT), FIGURE B-7, BUILDING 84/90 SAMPLE LOCATIONS. (DWG. NO. 762538-B704.DWG)



SS-PDUL-B39	HB-6135 10/13/98 1 FT
DDTs, SUM	0.378

SS-PDUL-S39E	HB-6178 10/20/98 1 FT
BERYLLIUM	1.1
DDTs, SUM	9.5

PDD-SD01	PDD-SD01-15 4/11/95 1 - 1.5 FT
DDTs, SUM	4.5

SS-PDSP-A01 Analyte	HB-6200 10/19/98 1 FT
BERYLLIUM	1.9
ZINC	164
DDTs, SUM	0.283

SS-PDUL-B37	HB-6133 10/13/98 1 FT	HB-6134 10/13/98 1 FT
BERYLLIUM	-	1.2
DDTs, SUM	1.16	–

SS-PDUL-S37W	HB-6177 10/20/98 1 FT
BERYLLIUM	1
DDTs, SUM	2.11

SS-PDUL-S35E	HB-6176 10/20/98 1 FT
DDTs, SUM	0.247

SS-PDUL-S33W	HB-6174 10/20/98 1 FT	HB-6175 10/20/98 1 FT
BERYLLIUM	-	1.3
DDTs, SUM	0.489	-

SS-PDUL-S31E	HB-6172 10/20/98 1 FT
BERYLLIUM	1.5
DDTs, SUM	0.102

SS-PDUL-S29W	HB-6171 10/20/98 1 FT
DDTs, SUM	0.096

SS-PDUL-B35	HB-6132 10/13/98 1 FT
BERYLLIUM	3.5
DDTs, SUM	0.619

SS-PDUL-B31	HB-6130 10/13/98 1 FT
BERYLLIUM	2.6
DDTs, SUM	0.218

SS-PDUL-B29	HB-6129 10/15/98 1 FT
DDTs, SUM	0.0773J-

SS-PDUL-S27E	HB-6170 10/20/98 1 FT
DDTs, SUM	0.017

SS-PDUL-B27	HB-6128 10/13/98 1 FT
BERYLLIUM	1.4

SS-PDUL-S25W	HB-6168 10/20/98 1 FT
BERYLLIUM	2.2
DDTs, SUM	0.078

SS-PDUL-S23E	HB-6167 10/20/98 1 FT
DDTs, SUM	0.027

SS-PDUL-S21W	HB-6165 10/20/98 1 FT	HB-6166 10/20/98 1 FT
BERYLLIUM	1.3	-
DDTs, SUM	-	0.101

SS-PDUL-S19E	HB-6164 10/20/98 1 FT
BERYLLIUM	1.3
DDTs, SUM	0.25

SS-PDUL-B19	HB-6124 10/12/98 1 FT
DDTs, SUM	0.53 J

SS-PDUL-B17	HB-6123 10/12/98 1 FT	HB-6122 10/12/98 1 FT
BERYLLIUM	1.5	-
DDTs, SUM	0.432	0.024

SS-PDUL-S17W	HB-6163 10/19/98 1 FT
BERYLLIUM	1.1
DDTs, SUM	0.0121J-

PDD-SD03	PDD-SD03-5 4/11/95 0.5 FT
BERYLLIUM	1.5
DDTs, SUM	0.809

SS-PDUL-S15E	HB-6162 10/19/98 1 FT
BERYLLIUM	1.4

SS-PDUL-S13W	HB-6161 10/19/98 1 FT
BERYLLIUM	1.3

SS-PDUL-B11	HB-6119 10/12/98 1 FT
BERYLLIUM	2.2
DDTs, SUM	0.153

PDD-SD02	PDD-SD02-15 4/11/95 1 - 1.5 FT
DDTs, SUM	1.1314
DIELDRIN	0.019

SS-PDUL-B09	HB-6118 10/12/98 1 FT
BERYLLIUM	1.7
DDTs, SUM	0.0227J-

SS-PDUL-S11E	HB-6160 10/19/98 1 FT
BERYLLIUM	1.5
DDTs, SUM	0.0122J-

SS-PDUL-S05W	HB-6157 10/19/98 1 FT
DDTs, SUM	0.0073J-

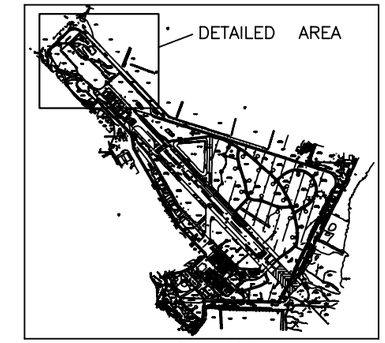
SS-PDUL-B07	HB-6117 10/12/98 1 FT
BERYLLIUM	1.3
DDTs, SUM	0.141

SS-PDUL-B05	HB-6139 10/13/98 1 FT
BERYLLIUM	1.9
DDTs, SUM	0.0088J-

SS-PDUL-B01	HB-6138 10/13/98 1 FT
BERYLLIUM	1.9
DDTs, SUM	0.408J+

APPROXIMATE SCALE

0 400 800 FEET



KEY MAP

LEGEND:

- BRAC PROPERTY BOUNDARY
- CONCRETE LINED PERIMETER DITCH
- UNDERGROUND CULVERT
- LEVEE
- REMEDIAL INVESTIGATION SAMPLE (IT, 1999a)
- 1998 INTERIM REMOVAL ACTION SAMPLE
- PROPOSED REMEDIAL ACTION AREA

NOTES:

1. J QUALIFIER DENOTES ESTIMATED CONCENTRATIONS. +/– SYMBOLS INDICATES HIGH OR LOW ESTIMATES.
2. RESULTS ARE PRESENTED IN UNITS OF MILLIGRAMS PER KILOGRAM (MG/KG).
3. CONCENTRATIONS FOR CHEMICALS OF CONCERN ABOVE THE COMPARATOR VALUES ARE PLOTTED.
4. A DASHED LINE IN THE TABLE OF RESULTS INDICATES THAT THE RESULT WAS BELOW THE COMPARISON VALUE.

FIGURE B–8a

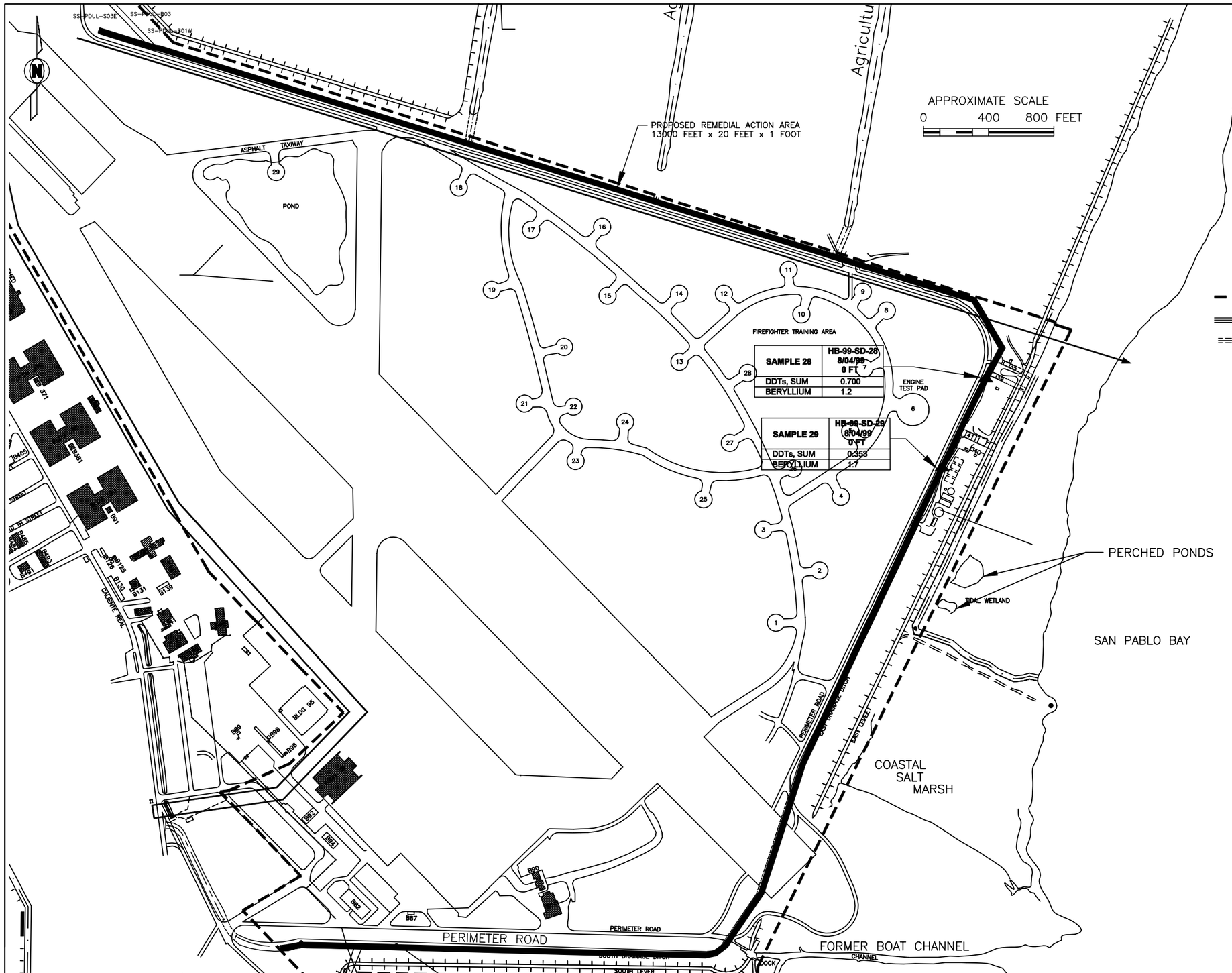
PERIMETER DRAINAGE DITCH–
UNLINED PORTION AND
SPOILS PILE A
SAMPLE LOCATIONS
AND PROPOSED
REMEDIAL ACTION AREAS
INBOARD AREA SITES
BRAC PROPERTY
HAMILTON ARMY AIRFIELD

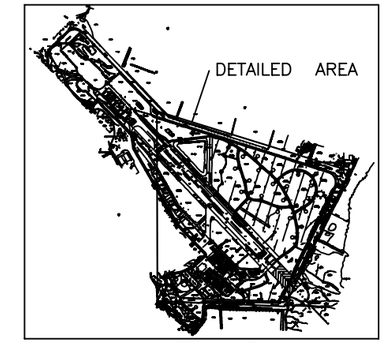
PREPARED FOR

USACE SACRAMENTO

CH2MHILL

REFERENCE: IT CORPORATION (IT), FIGURE B–8, PERIMETER DRAINAGE DITCH–UNLINED PORTION AND SPOILS PILE A SAMPLE LOCATIONS AND PROPOSED EXCAVATION BOUNDARIES. (DWG. NO. 762538–B690.DWG)





KEY MAP

LEGEND:

- BRAC PROPERTY BOUNDARY
- CONCRETE LINED PERIMETER DITCH
- UNDERGROUND CULVERT
- LEVEE
- REMEDIAL DESIGN INVESTIGATION SAMPLE
- PROPOSED REMEDIAL ACTION AREA

NOTES:

1. RESULTS ARE PRESENTED IN MILLIGRAMS PER KILOGRAM (MG/KG)
2. CONCENTRATIONS FOR CHEMICALS OF CONCERN ABOVE THE COMPARATOR VALUES ARE PLOTTED.

FIGURE B–8b

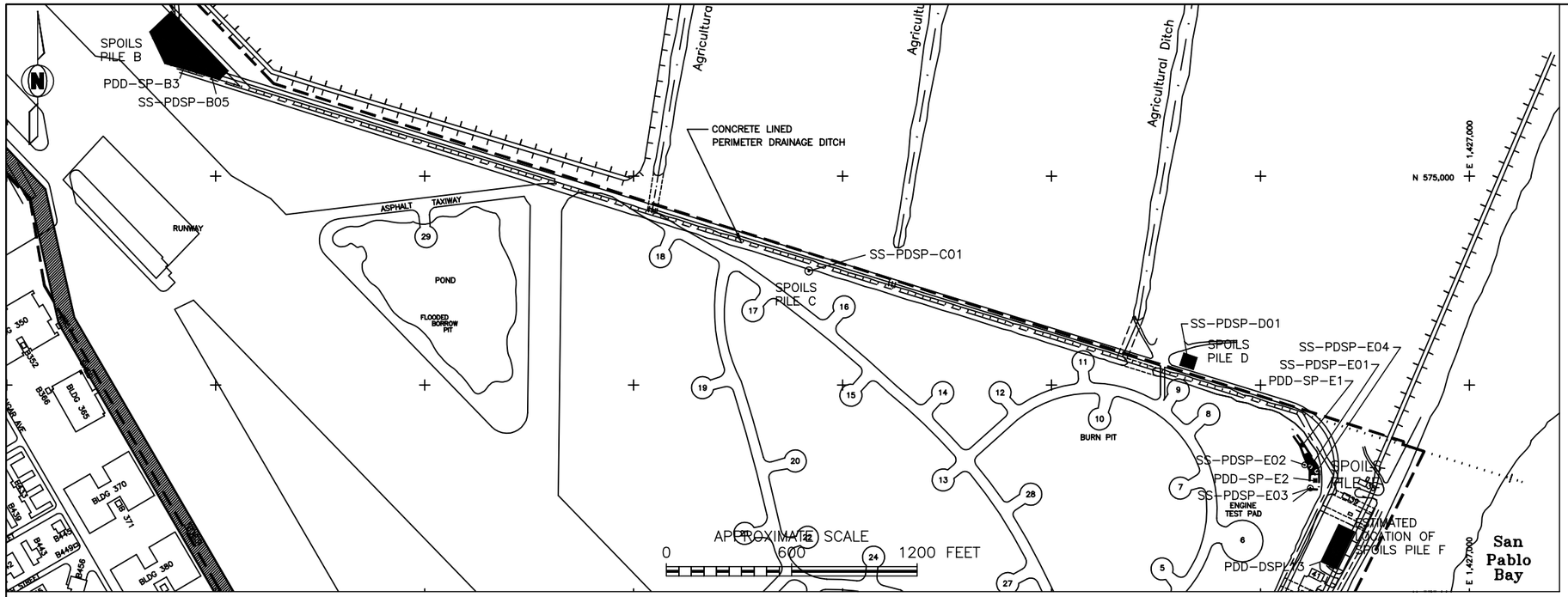
PERIMETER DRAINAGE DITCH–
LINED PORTION
SAMPLE LOCATIONS
AND PROPOSED
REMEDIAL ACTION AREA
INBOARD AREA SITES
BRAC PROPERTY
HAMILTON ARMY AIRFIELD

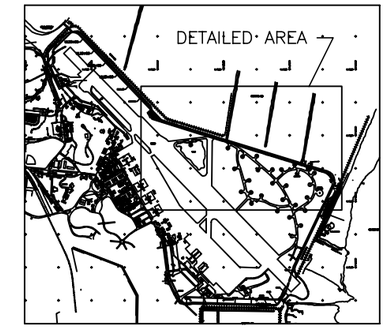
PREPARED FOR

USACE SACRAMENTO

CH2MHILL

REFERENCE: IT CORPORATION (IT), FIGURE B–8, PERIMETER DRAINAGE DITCH–UNLINED PORTION AND SPOILS PILE A SAMPLE LOCATIONS AND PROPOSED EXCAVATION BOUNDARIES. (DWG. NO. 762538–B690.DWG)

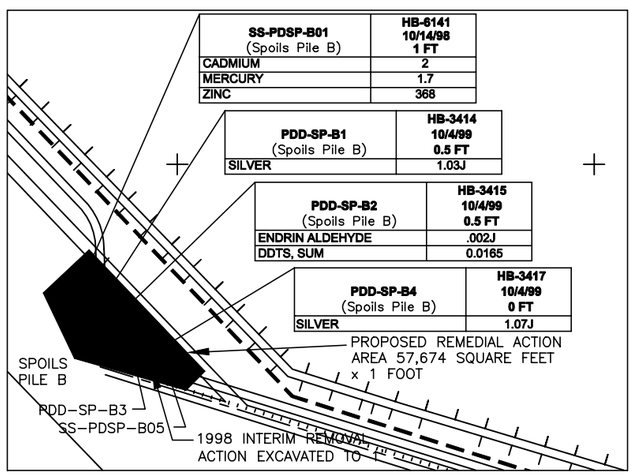




KEY MAP

LEGEND:

- 1998 INTERIM REMOVAL ACTION SAMPLE
- 1999 INTERIM REMOVAL ACTION SAMPLE
- SOIL SAMPLE (IT, 1999a)
- BRAC PROPERTY BOUNDARY
- CONCRETE LINED DITCH
- UNLINED DITCH
- UNDERGROUND CULVERT
- OUTFALL DRAINAGE DITCH
- LEVEE
- NEW HAMILTON PARTNERSHIP (NHP) LEVEE
- PROPOSED REMEDIAL ACTION AREA
- 1998 INTERIM REMOVAL ACTION EXCAVATION BOUNDARY
- 1999 INTERIM REMOVAL ACTION EXCAVATION BOUNDARY



SS-PDSP-B01 (Spoils Pile B)	HB-6141 10/14/98 1 FT
CADMIUM	2
MERCURY	1.7
ZINC	368

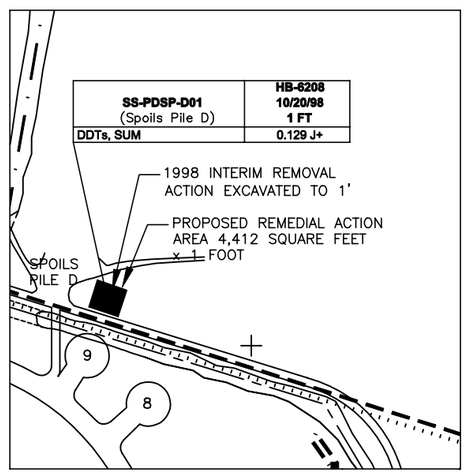
PDD-SP-B1 (Spoils Pile B)	HB-3414 10/4/99 0.5 FT
SILVER	1.03J

PDD-SP-B2 (Spoils Pile B)	HB-3415 10/4/99 0.5 FT
ENDRIN ALDEHYDE	.002J
DDTS, SUM	0.0165

PDD-SP-B4 (Spoils Pile B)	HB-3417 10/4/99 0 FT
SILVER	1.07J

SPOILS PILE B

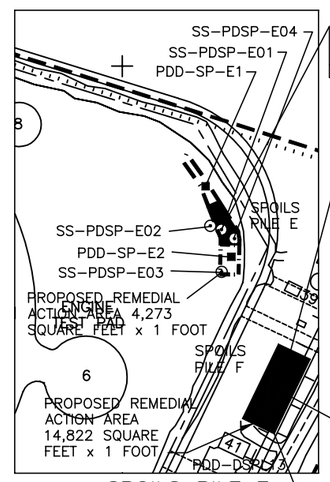
APPROXIMATE SCALE
0 350 FEET



SS-PDSP-D01 (Spoils Pile D)	HB-6208 10/20/98 1 FT
DDTs, SUM	0.129 J+

SPOILS PILE D

APPROXIMATE SCALE
0 350 FEET



SS-PDSP-E01 (Spoils Pile E)	HB-6147 10/14/98 1 FT	HB-6149 10/14/98 1 FT
DDTs, SUM	0.0169J	0.0291

PDD-DSPL12 (Spoils Pile F)	PDD-DSPL12 4/17/95 0.5 FT
ARSENIC	29.6
BERYLLIUM	4.8
CADMIUM	2.3
COBALT	61.1
LEAD	109
MANGANESE	1870
NICKEL	198
ZINC	224
DDTs, SUM	0.385
DIBENZOFURAN	1.2
ACENAPHTHENE	2.5
ANTHRACENE	0.85
BENZO(A)ANTHRACENE	3
BENZO(A)PYRENE	3
BENZO(B)FLUORANTHENE	6.5
BENZO(G,H,I)PERYLENE	1.2
CHRYSENE	3.1
FLUORANTHENE	5.7
FLUORENE	1.8
INDENO(1,2,3-CD)PYRENE	1.4
PHENANTHRENE	6.4
PYRENE	5.7
TOTAL POLYAROMATIC HYDROCARBONS	32.05

PDD-DSPL11 (Spoils Pile F)	PDD-DSPL11 4/17/95 0.5 FT
BERYLLIUM	1.2
LEAD	102
DDTs, SUM	0.641
BENZO(A)ANTHRACENE	0.54
BENZO(A)PYRENE	0.6
BENZO(B)FLUORANTHENE	0.95
BENZO(G,H,I)PERYLENE	0.46
CHRYSENE	0.66
FLUORANTHENE	1.3
INDENO(1,2,3-CD)PYRENE	0.51
PHENANTHRENE	1.1
PYRENE	1.2
TOTAL POLYAROMATIC HYDROCARBONS	6.06

PDD-DSPL13 (Spoils Pile F)	PDD-DSPL13 4/17/95 0.5 FT
DDTs, SUM	0.0211

SPOILS PILE F

APPROXIMATE SCALE
0 350 FEET

NOTES:

1. J QUALIFIER DENOTES THE ESTIMATED CONCENTRATIONS. +/- SYMBOLS INDICATES HIGH OR LOW ESTIMATES.
2. RESULTS ARE PRESENTED IN UNITS OF MILLIGRAMS PER KILOGRAM (MG/KG).
3. CONCENTRATIONS FOR CHEMICALS OF CONCERN ABOVE THE COMPARATOR VALUES ARE PLOTTED.

FIGURE B-9

PERIMETER DRAINAGE DITCH
SPOILS PILES
(NORTH SECTION)
SAMPLE LOCATIONS AND PROPOSED
REMEDIAL ACTION AREAS
INBOARD AREA SITES
BRAC PROPERTY
HAMILTON ARMY AIRFIELD

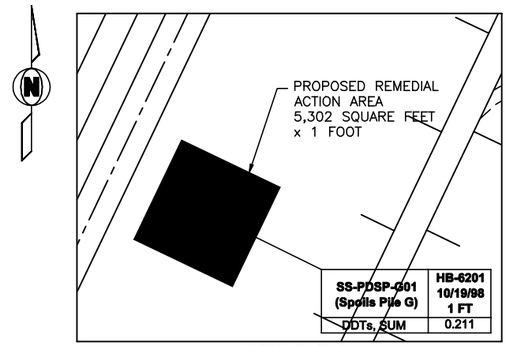
PREPARED FOR

USACE SACRAMENTO

CH2MHILL

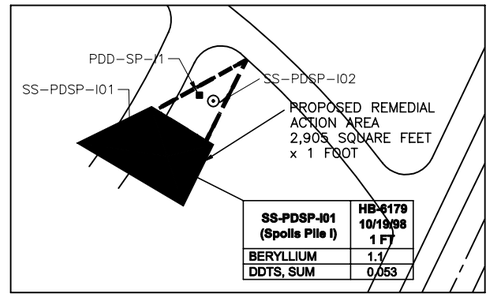
REFERENCE: IT CORPORATION (IT), FIGURE B-9, PERIMETER DRAINAGE DITCH SPOILS PILES (NORTH SECTION) SAMPLE LOCATIONS AND PROPOSED EXCAVATION BOUNDARIES. (DWG. NO. 762538-B691.DWG)

DRAWN BY	RDB	CHECKED BY	BH	2/6/01	DRAWING NUMBER	762538-B708
	2/6/01	APPROVED BY	CAL	2/6/01		



INSET PILE G

0 50 100 FEET

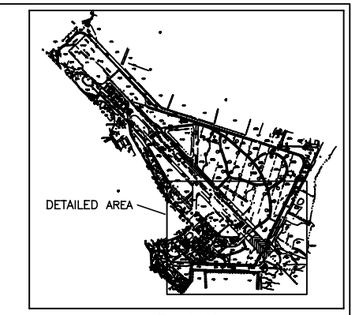


INSET PILE I

0 50 100 FEET

NOTES:

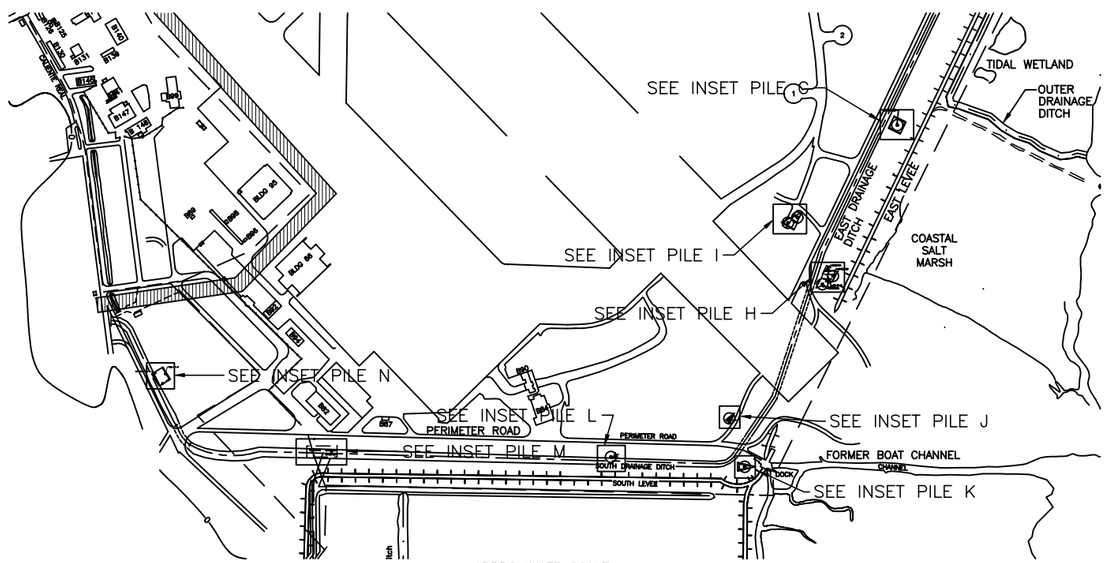
1. RESULTS ARE PRESENTED IN UNITS OF MILLIGRAMS PER KILOGRAM (MG/KG).
2. J QUALIFIER DENOTES THE ESTIMATED CONCENTRATIONS. +/− SYMBOLS INDICATES HIGH OR LOW ESTIMATES.
3. CONCENTRATIONS FOR CHEMICALS OF CONCERN ABOVE THE COMPARATOR VALUES ARE PLOTTED.



KEY MAP

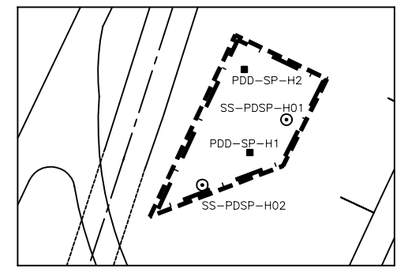
LEGEND:

- 1998 INTERIM REMOVAL ACTION CONFIRMATION SOIL SAMPLE
- 1999 INTERIM REMOVAL ACTION CONFIRMATION SOIL SAMPLE
- 1998 INTERIM REMOVAL ACTION EXCAVATION BOUNDARY
- 1999 INTERIM REMOVAL ACTION EXCAVATION BOUNDARY
- BRAC PROPERTY BOUNDARY
- CONCRETE LINED DITCH
- UNDERGROUND CULVERT
- OUTFALL DRAINAGE DITCH
- LEVEE
- NEW HAMILTON PARTNERSHIP (NHP) LEVEE
- PROPOSED REMEDIAL ACTION AREA



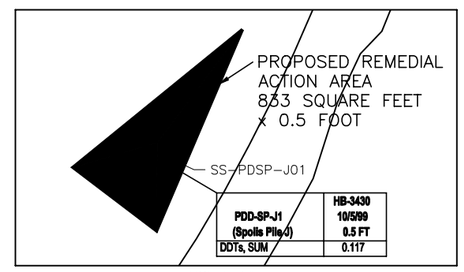
APPROXIMATE SCALE

0 400 800 FEET



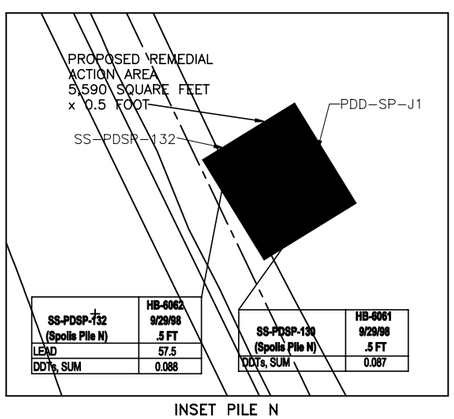
INSET PILE H

0 50 100 FEET



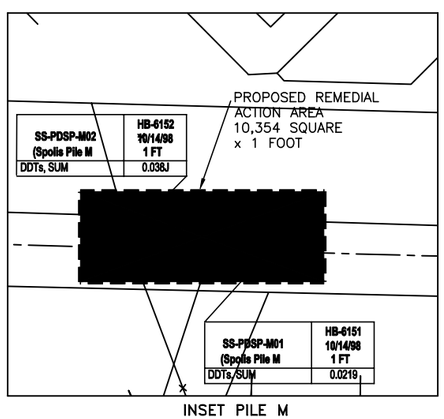
INSET PILE J

0 20 40 FEET



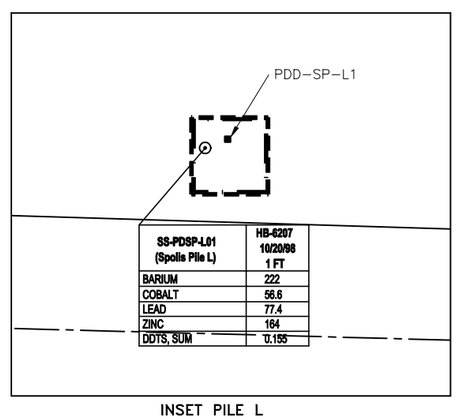
INSET PILE N

0 50 100 FEET



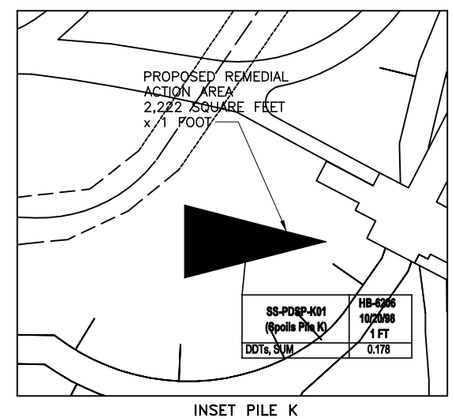
INSET PILE M

0 50 100 FEET



INSET PILE L

0 10 20 FEET



INSET PILE K

0 50 100 FEET

FIGURE B-10

PERIMETER DRAINAGE DITCH SPOILS PILES SAMPLE LOCATIONS AND PROPOSED REMEDIAL ACTION AREAS (SOUTH SECTION) INBOARD AREA SITES

BRAC PROPERTY
HAMILTON ARMY AIRFIELD

PREPARED FOR

USACE SACRAMENTO

CH2MHILL

REFERENCE: IT CORPORATION (IT), FIGURE B-10, PERIMETER DRAINAGE DITCH SPOILS PILES PESTICIDE AND PCB SOIL SAMPLE RESULTS (SOUTH SECTION). (DWG. NO. 762538-B708.DWG)

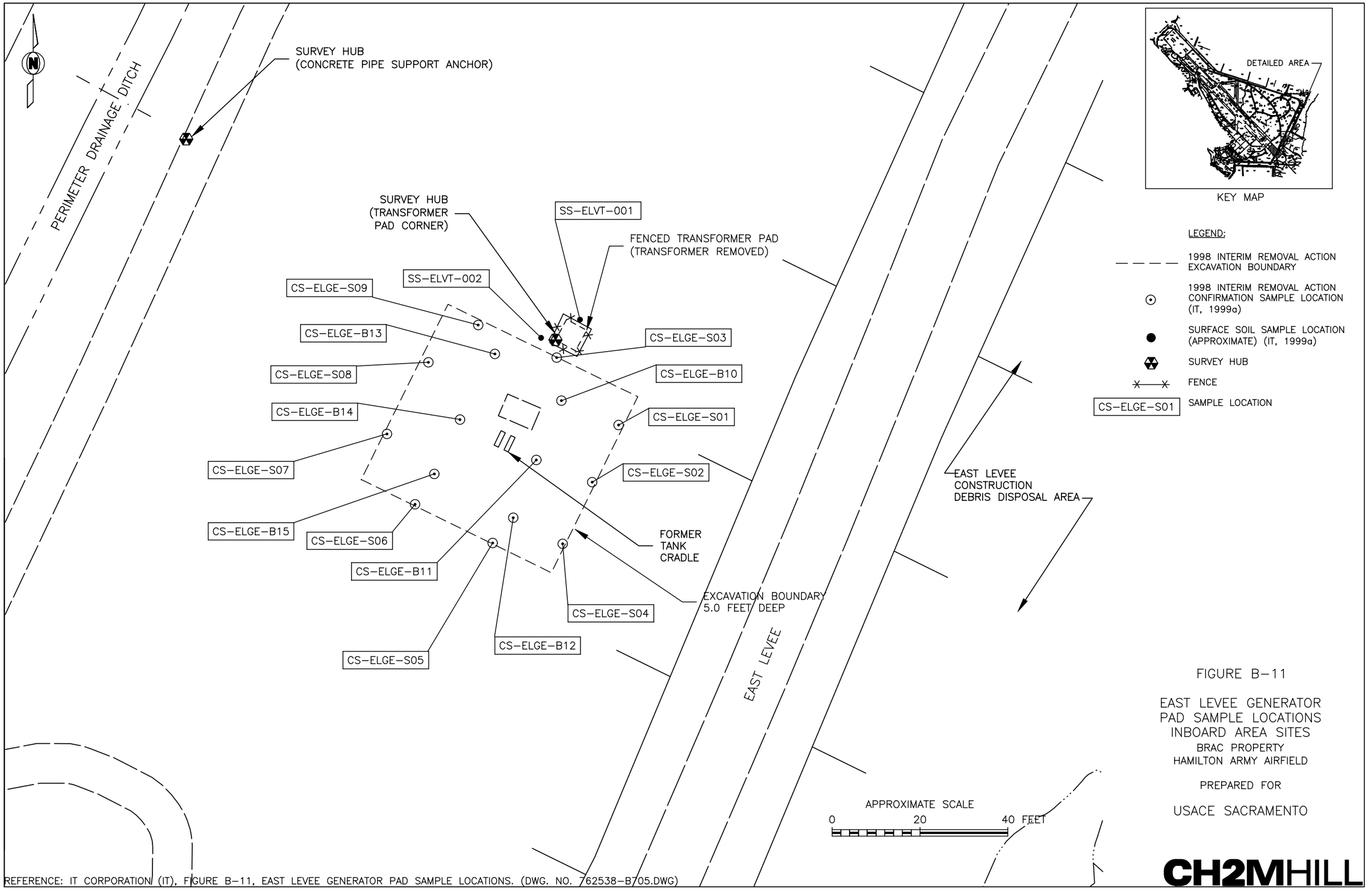
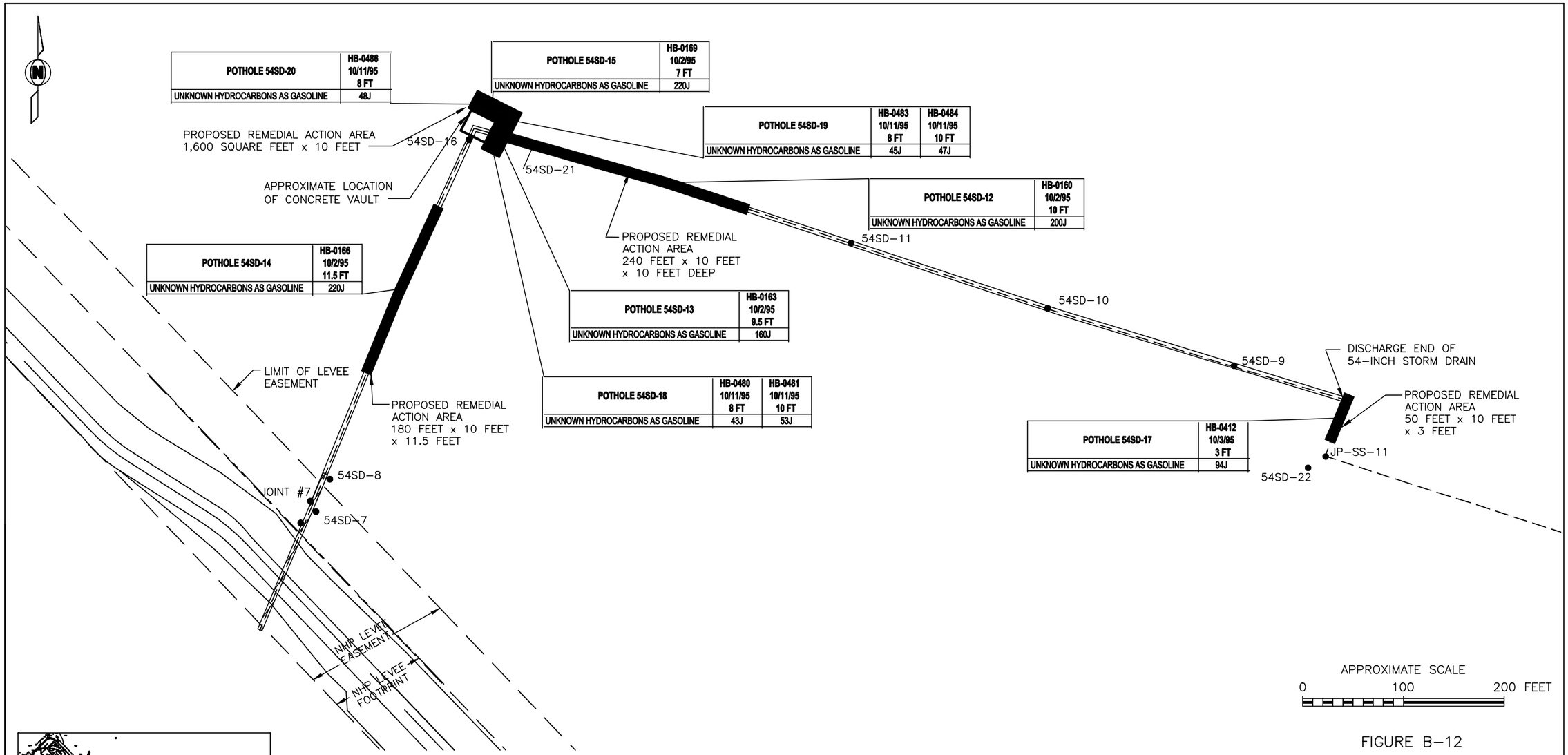


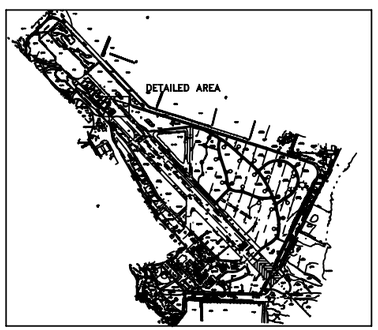
FIGURE B-11

EAST LEVEE GENERATOR
PAD SAMPLE LOCATIONS
INBOARD AREA SITES
BRAC PROPERTY
HAMILTON ARMY AIRFIELD

PREPARED FOR

USACE SACRAMENTO





KEY MAP

NOTES:

1. J QUALIFIER INDICATES ESTIMATED VALUE. +/– INDICATES HIGH OR LOW ESTIMATION.
2. RESULTS ARE PRESENTED IN UNITS OF MILLIGRAMS PER KILOGRAM (MG/KG).
3. CONCENTRATIONS FOR CHEMICALS OF CONCERN ABOVE THE COMPARATOR VALUES ARE PLOTTED.

LEGEND:

- ● SOIL SAMPLE LOCATION (IT, 1999a)
- SECTION OF 54-INCH STORM DRAIN REMOVED FOR LEVEE CONSTRUCTION
- PROPOSED REMDIAL ACTION AREA

FIGURE B-12

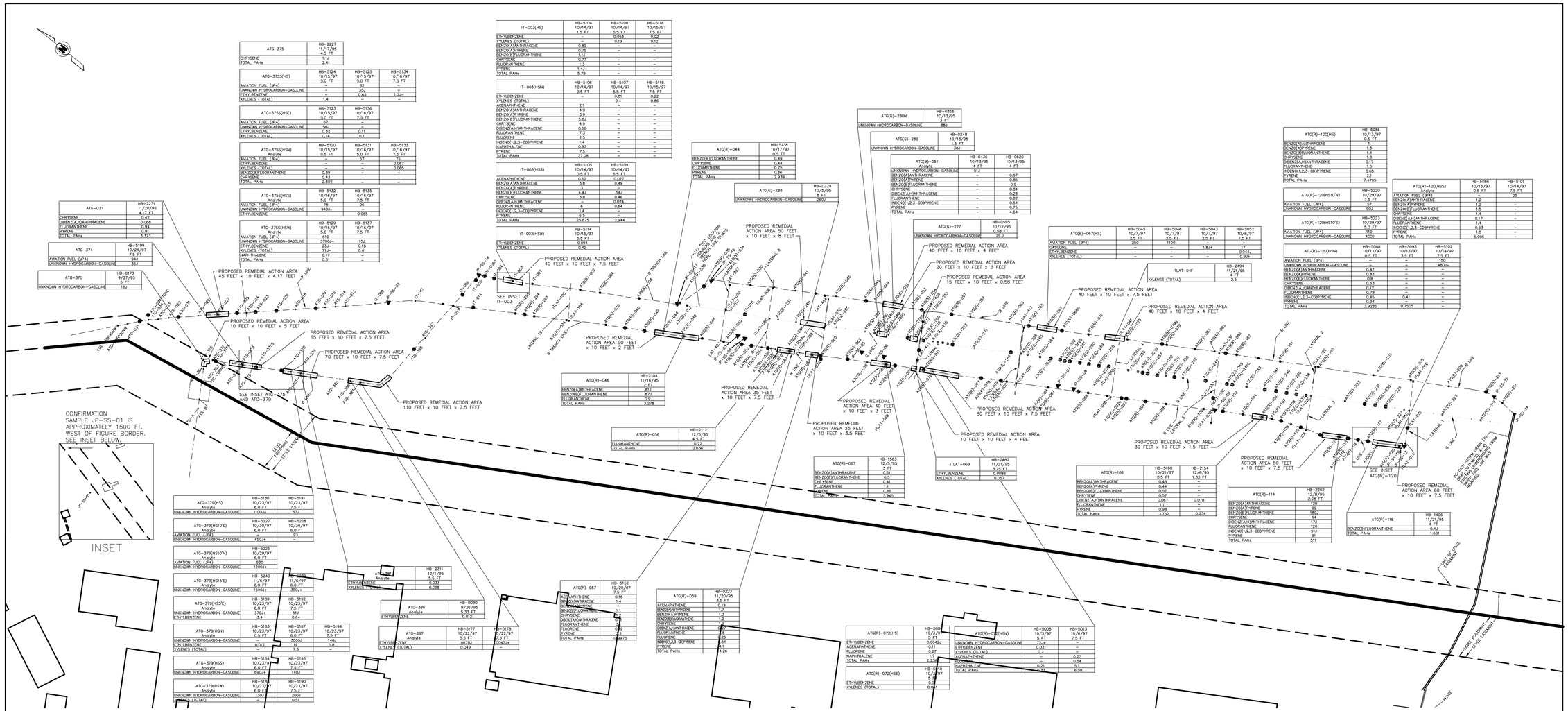
ONSHORE FUEL LINE
54-INCH DRAIN LINE SEGMENT
SAMPLE LOCATIONS AND PROPOSED
REMEDIAL ACTION AREAS
INBOARD AREA SITES
BRAC PROPERTY
HAMILTON ARMY AIRFIELD

PREPARED FOR

USACE SACRAMENTO

CH2MHILL

REFERENCE: IT CORPORATION (IT), FIGURE B-12, ONSHORE FUEL LINE 54-INCH DRAIN LINE SEGMENT SAMPLE LOCATIONS AND PROPOSED EXCAVATION BOUNDARIES. (DWG. NO. 762538-B697.DWG)



ATG-375	HB-2227 11/17/95 4.5 FT
CHRYSENE	1.1J
TOTAL PAHs	2.41

ATG-3750(HS)	HB-5124 10/15/97 5.0 FT	HB-5125 10/15/97 5.0 FT	HB-5134 10/16/97 7.5 FT
AVIATION FUEL (JP4)	–	82	–
UNKNOWN HYDROCARBON-GASOLINE	–	35J	–
ETHYLBENZENE	–	0.65	1.32J+
XYLENES (TOTAL)	1.4	–	–

ATG-3750(HSE)	HB-5123 10/15/97 5.0 FT	HB-5136 10/16/97 7.5 FT
AVIATION FUEL (JP4)	67	–
UNKNOWN HYDROCARBON-GASOLINE	58J	–
ETHYLBENZENE	0.32	0.11
XYLENES (TOTAL)	0.14	0.1

ATG-3750(HSN) Analyte	HB-5120 10/15/97 0.5 FT	HB-5131 10/16/97 5.0 FT	HB-5133 10/16/97 7.5 FT
AVIATION FUEL (JP4)	–	57	75
ETHYLBENZENE	–	–	0.067
XYLENES (TOTAL)	–	–	0.065
BENZO(B)FLUORANTHENE	0.39	–	–
CHRYSENE	0.43	–	–
TOTAL PAHs	2.302	–	–

ATG-3750(HSS) Analyte	HB-5132 10/16/97 5.0 FT	HB-5135 10/16/97 7.5 FT
AVIATION FUEL (JP4)	78	96
UNKNOWN HYDROCARBON-GASOLINE	940J+	–
ETHYLBENZENE	–	0.085

ATG-3750(HSW) Analyte	HB-5129 10/16/97 5.0 FT	HB-5137 10/16/97 7.5 FT
AVIATION FUEL (JP4)	610	–
UNKNOWN HYDROCARBON-GASOLINE	370J+	75J
ETHYLBENZENE	23J+	0.18
XYLENES (TOTAL)	77J+	0.41
NAPHTHALENE	0.17	–
TOTAL PAHs	0.31	–

ATG-027	HB-2231 11/20/95 4.5 FT
CHRYSENE	0.42
DIBENZ(A,H)ANTHRACENE	0.068
FLUORANTHENE	0.94
PYRENE	0.91
TOTAL PAHs	3.373

ATG-374	HB-5199 10/24/97 7.5 FT
AVIATION FUEL (JP4)	94J
UNKNOWN HYDROCARBON-GASOLINE	36J

ATG-370	HB-0173 9/27/95 5 FT
UNKNOWN HYDROCARBON-GASOLINE	18J

IT-003(HS)	HB-5104 10/14/97 1.5 FT	HB-5108 10/14/97 5.5 FT	HB-5116 10/15/97 7.5 FT
ETHYLBENZENE	–	0.053	0.02
XYLENES (TOTAL)	–	0.19	0.12
BENZO(A)ANTHRACENE	0.89	–	–
BENZO(A)PYRENE	0.75	–	–
BENZO(B)FLUORANTHENE	1.1J	–	–
CHRYSENE	0.77	–	–
FLUORANTHENE	1.3	–	–
PYRENE	1.4J+	–	–
TOTAL PAHs	5.79	–	–

IT-003(HSN)	HB-5106 10/14/97 0.5 FT	HB-5107 10/14/97 5.5 FT	HB-5118 10/15/97 7.5 FT
ETHYLBENZENE	–	0.81	0.22
XYLENES (TOTAL)	0.4	0.4	0.86
ACENAPHTHENE	2.1	–	–
BENZO(A)ANTHRACENE	4.9	–	–
BENZO(A)PYRENE	3.9	–	–
BENZO(B)FLUORANTHENE	5.8J	–	–
CHRYSENE	4.9	–	–
DIBENZ(A,H)ANTHRACENE	0.66	–	–
FLUORANTHENE	7.3	–	–
FLUORENE	2.5	–	–
INDENO(1,2,3-CD)PYRENE	1.4	–	–
NAPHTHALENE	0.92	–	–
PYRENE	7.5	–	–
TOTAL PAHs	37.08	–	–

IT-003(HSS)	HB-5105 10/14/97 0.5 FT	HB-5109 10/14/97 5.5 FT
ACENAPHTHENE	3.8	0.49
BENZO(A)ANTHRACENE	5.6	0.41
BENZO(A)PYRENE	3	–
BENZO(B)FLUORANTHENE	4.4J	54J
CHRYSENE	3.8	0.46
DIBENZ(A,H)ANTHRACENE	–	0.074
FLUORANTHENE	6	0.64
INDENO(1,2,3-CD)PYRENE	1.4	–
PYRENE	4.5	–
TOTAL PAHs	25.875	2.944

IT-003(HSW)	HB-5114 10/15/97 5.5 FT
ETHYLBENZENE	0.084
XYLENES (TOTAL)	0.42

ATG(R)-044	HB-5138 10/17/97 0.5 FT
BENZO(B)FLUORANTHENE	0.49
CHRYSENE	0.44
FLUORANTHENE	0.75
PYRENE	0.86
TOTAL PAHs	2.939

ATG(G)-288	HB-0229 10/5/95 8 FT
UNKNOWN HYDROCARBON-GASOLINE	260J

ATG(R)-046	HB-2104 11/16/95 2 FT
BENZO(A)ANTHRACENE	8J
BENZO(B)FLUORANTHENE	8J
FLUORANTHENE	0.9
TOTAL PAHs	3.278

ATG(R)-056	HB-2112 12/5/95 4.5 FT
FLUORANTHENE	0.72
TOTAL PAHs	2.636

ATG(R)-067	HB-1563 12/5/95 3 FT
BENZO(A)ANTHRACENE	0.61
BENZO(B)FLUORANTHENE	0.5
CHRYSENE	0.41
FLUORANTHENE	1.1
PYRENE	0.86
TOTAL PAHs	3.945

ATG(G)-280N	HB-0356 10/13/95 3 FT
UNKNOWN HYDROCARBON-GASOLINE	88J

ATG(G)-280	HB-0248 10/13/95 1.5 FT
UNKNOWN HYDROCARBON-GASOLINE	38J

ATG(B)-051 Analyte	HB-0436 10/13/95 4 FT	HB-0620 10/13/95 4 FT
UNKNOWN HYDROCARBON-GASOLINE	51J	–
BENZO(A)ANTHRACENE	–	0.67
BENZO(A)PYRENE	–	0.86
BENZO(B)FLUORANTHENE	–	0.9
CHRYSENE	–	0.84
DIBENZ(A,H)ANTHRACENE	–	0.22
FLUORANTHENE	–	0.54
INDENO(1,2,3-CD)PYRENE	–	0.54
PYRENE	–	0.75
TOTAL PAHs	–	4.64

ATG(G)-277	HB-0595 10/12/95 0.58 FT
UNKNOWN HYDROCARBON-GASOLINE	29J

ATG(B)-067(HS)	HB-5045 10/7/97 3.5 FT	HB-5046 10/7/97 3.5 FT	HB-5043 10/7/97 2.5 FT	HB-5052 10/8/97 7.5 FT
AVIATION FUEL (JP4)	250	1100	–	–
GASOLINE	–	–	1.8J+	17
ETHYLBENZENE	–	–	–	0.044J
XYLENES (TOTAL)	–	–	–	0.9J+

ITLAT-04F	HB-2494 11/21/95 2 FT
XYLENES (TOTAL)	2.5

ITLAT-06B	HB-2482 11/21/95 3.75 FT
ETHYLBENZENE	0.089
XYLENES (TOTAL)	0.057

ATG(R)-106	HB-5160 10/21/97 0.5 FT	HB-2154 12/6/95 1.33 FT
BENZO(A)ANTHRACENE	0.48	–
BENZO(A)PYRENE	0.44	–
BENZO(B)FLUORANTHENE	0.57	–
CHRYSENE	0.57	–
DIBENZ(A,H)ANTHRACENE	0.067	0.078
FLUORANTHENE	1.1	–
PYRENE	0.98	–
TOTAL PAHs	3.752	0.234

ATG(R)-114	HB-2202 12/6/95 3.08 FT
BENZO(A)ANTHRACENE	120
BENZO(A)PYRENE	99
BENZO(B)FLUORANTHENE	160J
CHRYSENE	64
DIBENZ(A,H)ANTHRACENE	17J
FLUORANTHENE	120
INDENO(1,2,3-CD)PYRENE	51J
PYRENE	91
TOTAL PAHs	511

ATG(R)-118	HB-1406 11/21/95 4 FT
BENZO(B)FLUORANTHENE	0.4J
TOTAL PAHs	1.601

ATG(R)-120(HS)	HB-5085 10/13/97 0.5 FT
BENZO(A)ANTHRACENE	1
BENZO(A)PYRENE	1.3
BENZO(B)FLUORANTHENE	1.4
CHRYSENE	1.3
DIBENZ(A,H)ANTHRACENE	0.17
FLUORANTHENE	1.5
INDENO(1,2,3-CD)PYRENE	0.65
PYRENE	2.1
TOTAL PAHs	7.4195

ATG(R)-120(HS10'N)	HB-5220 10/29/97 7.5 FT
AVIATION FUEL (JP4)	57
UNKNOWN HYDROCARBON-GASOLINE	90J

ATG(R)-120(HS10'S)	HB-5223 10/29/97 5.0 FT
AVIATION FUEL (JP4)	110
UNKNOWN HYDROCARBON-GASOLINE	400J

ATG(R)-120(HSN)	HB-5086 10/13/97 0.5 FT	HB-5101 10/14/97 7.5 FT
AVIATION FUEL (JP4)	–	25
BENZO(A)ANTHRACENE	1.2	–
BENZO(A)PYRENE	1.2	–
BENZO(B)FLUORANTHENE	1.5	–
CHRYSENE	1.4	–
DIBENZ(A,H)ANTHRACENE	0.17	–
FLUORANTHENE	1.4	–
INDENO(1,2,3-CD)PYRENE	0.53	–
PYRENE	1.9	–
TOTAL PAHs	8.995	–

ATG(R)-120(HSN)	HB-5088 10/13/97 0.5 FT	HB-5093 10/13/97 3.5 FT	HB-5102 10/14/97 7.5 FT
AVIATION FUEL (JP4)	–	–	150
UNKNOWN HYDROCARBON-GASOLINE	–	–	480J–
BENZO(A)ANTHRACENE	0.47	–	–
BENZO(A)PYRENE	0.83	–	–
BENZO(B)FLUORANTHENE	0.8	–	–
CHRYSENE	0.63	–	–
DIBENZ(A,H)ANTHRACENE	0.12	–	–
FLUORANTHENE	0.79	–	–
INDENO(1,2,3-CD)PYRENE	0.45	0.41	–
PYRENE	0.94	–	–
TOTAL PAHs	3.9285	0.7505	–

ATG(R)-072(HS)	HB-5009 10/3/97 5 FT
ETHYLBENZENE	0.004J
ACENAPHTHENE	0.11
FLUORENE	0.27
NAPHTHALENE	1.2
TOTAL PAHs	2.238

ATG(R)-072(HSE)	HB-5010 10/3/97 5 FT
ETHYLBENZENE	0.02
XYLENES (TOTAL)	0.18

ATG(R)-072(HSN)	HB-5008 10/3/97 5 FT	HB-5013 10/6/97 7.5 FT
UNKNOWN HYDROCARBON-GASOLINE	72J+	–
ETHYLBENZENE	0.03J	–
XYLENES (TOTAL)	0.2	–
ACENAPHTHENE	–	0.23
FLUORENE	–	0.54
NAPHTHALENE	0.21	5.1
TOTAL PAHs	0.41	6.581

ATG(R)-059	HB-0223 11/20/95 3.5 FT
ACENAPHTHENE	0.13
BENZO(A)ANTHRACENE	1.7
BENZO(A)PYRENE	1.3
BENZO(B)FLUORANTHENE	1.2
CHRYSENE	1.2
DIBENZ(A,H)ANTHRACENE	0.2
FLUORANTHENE	3.5
FLUORENE	0.26
INDENO(1,2,3-CD)PYRENE	0.54
PYRENE	3.1
TOTAL PAHs	4.26

ATG(R)-057	HB-5152 10/20/97 7.5 FT
ACENAPHTHENE	0.16
BENZO(A)ANTHRACENE	1.4
BENZO(A)PYRENE	1
BENZO(B)FLUORANTHENE	1.1
CHRYSENE	1.2
DIBENZ(A,H)ANTHRACENE	0.2
FLUORANTHENE	2.3
FLUORENE	0.29
PYRENE	2
TOTAL PAHs	10.8975

ATG-375N	HB-2227 11/17/95 4.5 FT
CHRYSENE	1.1J
TOTAL PAHs	2.41

ATG-379(HS) Analyte	HB-5186 10/23/97 6.0 FT	HB-5191 10/23/97 7.5 FT
UNKNOWN HYDROCARBON-GASOLINE	1100J+	57J

ATG-379(HS10'E) Analyte	HB-5227 10/30/97 6.0 FT	HB-5228 10/30/97 6.0 FT
AVIATION FUEL (JP4)	–	93
UNKNOWN HYDROCARBON-GASOLINE	450J+	–

ATG-379(HS10'N) Analyte	HB-5225 10/29/97 6.0 FT
AVIATION FUEL (JP4)	2000
UNKNOWN HYDROCARBON-GASOLINE	1200J+

ATG-379(HS15'E) Analyte	HB-5240 11/6/97 6.0 FT	HB-5242 11/6/97 6.0 FT
UNKNOWN HYDROCARBON-GASOLINE	1500J+	300J+

ATG-379(HS5'E) Analyte	HB-5189 10/23/97 6.0 FT	HB-5192 10/23/97 7.5 FT
UNKNOWN HYDROCARBON-GASOLINE	370J+	61J
ETHYLBENZENE	3.4	0.64

ATG-379(HSN) Analyte	HB-5183 10/23/97 3.5 FT	HB-5187 10/23/97 6.0 FT	HB-5194 10/23/97 7.5 FT
UNKNOWN HYDROCARBON-GASOLINE	–	300J	140J
ETHYLBENZENE	0.012	1.3	1.8
XYLENES (TOTAL)	–	7.3	–

ATG-379(HSS) Analyte	HB-5184 10/23/97 6.0 FT	HB-5193 10/23/97 7.5 FT
UNKNOWN HYDROCARBON-GASOLINE	690J+	140J

ATG-379(HSW) Analyte	HB-5188 10/23/97 6.0 FT	HB-5190 10/23/97 7.5 FT
UNKNOWN HYDROCARBON-GASOLINE	130J	200J
XYLENES (TOTAL)	–	0.5J

ATG-386 Analyte	HB-0090 9/26/95 5.33 FT
ETHYLBENZENE	0.012

ATG-387 Analyte	HB-5177 10/22/97 5.5 FT	HB-5178 10/22/97 7.5 FT
ETHYLBENZENE	.0078J	.0047J+
XYLENES (TOTAL)	0.049	–

NOTES:

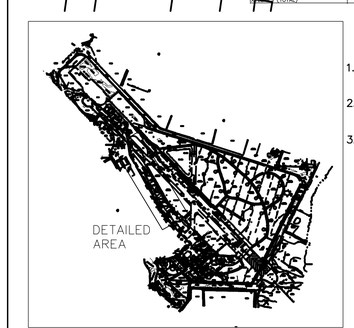
1. RESULTS ARE PRESENTED IN UNITS OF MILLIGRAMS PER KILOGRAM (MG/KG).
2. J QUALIFIER DENOTES THE ESTIMATED CONCENTRATIONS. +/– SYMBOLS INDICATES HIGH OR LOW ESTIMATES.
3. CONCENTRATIONS OF CHEMICALS OF CONCERN ABOVE COMPARATOR VALUES ARE PLOTTED.

LEGEND:

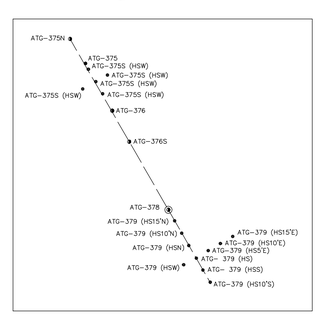
SAMPLE LOCATIONS:
- CONFIRMATION SAMPLE (IT, 1999a)
- FIELD SCREEN SAMPLE WITH PNA CONFIRMATION SAMPLE
- SOIL SAMPLE LOCATIONS
- LIMIT OF REMEDIAL EXCAVATION IN LEVEE EASEMENT
- BOUNDARY BETWEEN LEVEE FOOTPRINT AND EASEMENT
- LEVEE EASEMENT
- PROPOSED REMEDIAL ACTON AREA

ACRONYM:

PAH POLYNUCLEAR AROMATIC HYDROCARBONS

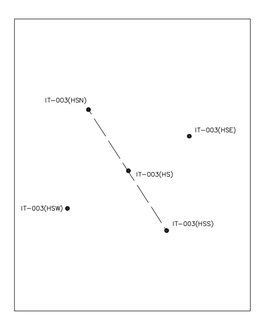


KEY MAP



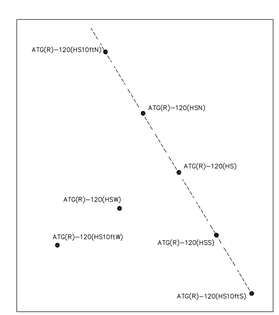
INSET ATG-375 AND ATG-379

APPROXIMATE SCALE 0 25 FEET



INSET IT-003

APPROXIMATE SCALE 0 50 FEET



INSET ATG(R)-120

APPROXIMATE SCALE 0 50 FEET

FIGURE B-13

ONSHORE FUEL LINE HANGAR AREA SAMPLE LOCATIONS AND PROPOSED REMEDIAL ACTION AREAS INBOARD AREA SITES

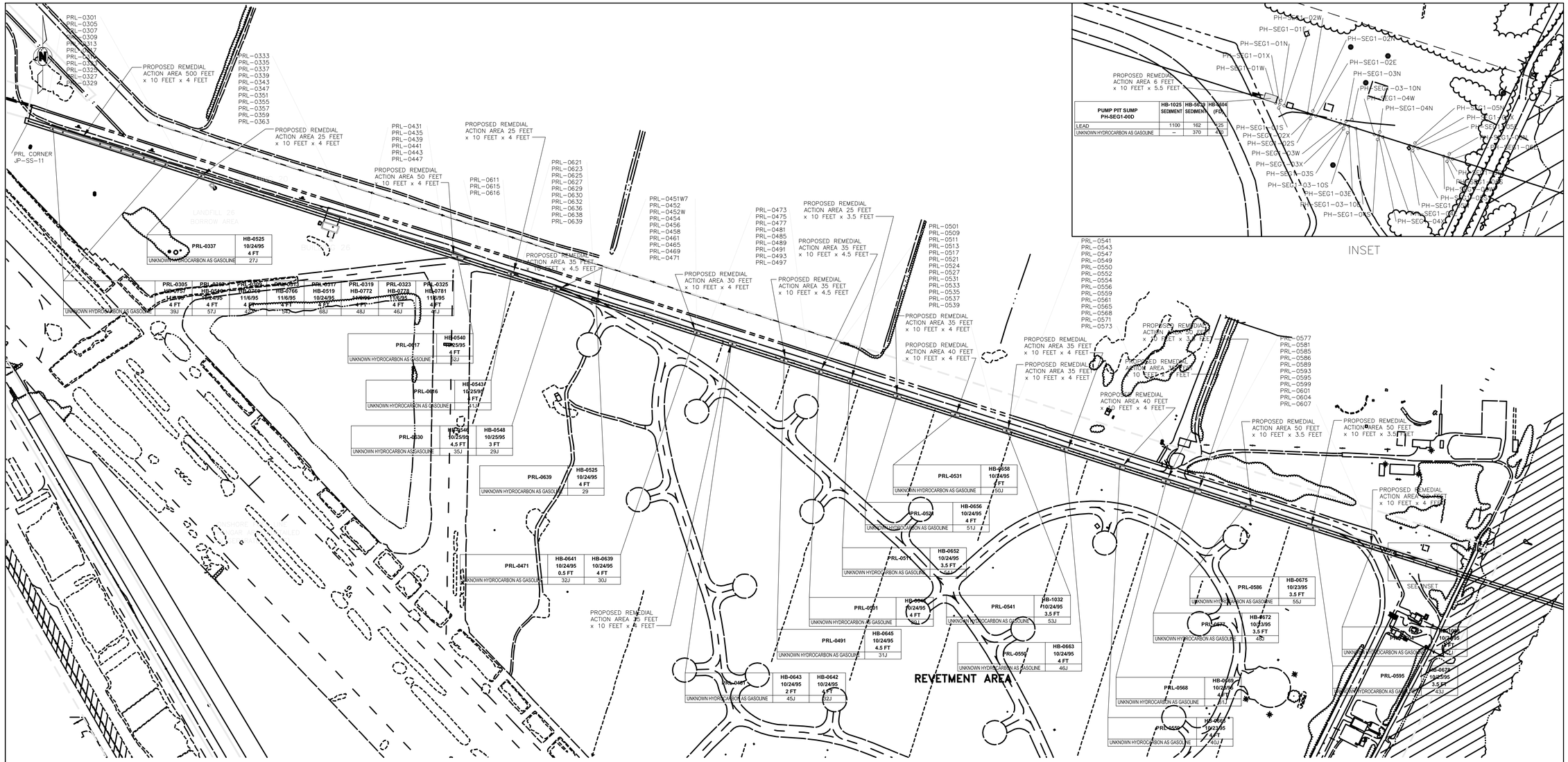
BRAC PROPERTY
HAMILTON ARMY AIRFIELD

PREPARED FOR

USACE SACRAMENTO

CH2MHILL

REFERENCE: IT CORPORATION (IT), FIGURE B-13, ONSHORE FUEL LINE HANGAR AREA SAMPLE LOCATIONS AND PROPOSED EXCAVATION BOUNDARIES. (DWG. NO. 762538-D109.DWG)



PUMP PIT SUMP PH-SEG1-00D	HB-1025 SEDIMENT	HB-0623 SEDIMENT	HB-0604 (FD)
LEAD	1100	162	125
UNKNOWN HYDROCARBON AS GASOLINE	--	370	420

PRL-0337	HB-0525 10/24/95 4 FT
UNKNOWN HYDROCARBON AS GASOLINE	27J

	PRL-0305	PRL-0309	PRL-0313	PRL-0317	PRL-0319	PRL-0323	PRL-0325
	HB-0767 11/6/95 4 FT	HB-0549 11/6/95 4 FT	HB-0766 11/6/95 4 FT	HB-0519 10/24/95 4 FT	HB-0772 11/6/95 4 FT	HB-0778 11/6/95 4 FT	HB-0781 11/6/95 4 FT
UNKNOWN HYDROCARBON AS GASOLINE	39J	57J	42J	68J	48J	46J	40J

PRL-0617	HB-0540 10/25/95 4 FT
UNKNOWN HYDROCARBON AS GASOLINE	32J

PRL-0616	HB-0543 10/25/95 4 FT
UNKNOWN HYDROCARBON AS GASOLINE	41J

PRL-0630	HB-0546 10/25/95 4.5 FT	HB-0548 10/25/95 3 FT
UNKNOWN HYDROCARBON AS GASOLINE	35J	29J

PRL-0639	HB-0525 10/24/95 4 FT
UNKNOWN HYDROCARBON AS GASOLINE	29

PRL-0471	HB-0641 10/24/95 0.5 FT	HB-0639 10/24/95 4 FT
UNKNOWN HYDROCARBON AS GASOLINE	32J	30J

PRL-0531	HB-0658 10/24/95 4 FT
UNKNOWN HYDROCARBON AS GASOLINE	50J

PRL-0521	HB-0656 10/24/95 4 FT
UNKNOWN HYDROCARBON AS GASOLINE	51J

PRL-0511	HB-0652 10/24/95 3.5 FT
UNKNOWN HYDROCARBON AS GASOLINE	54J

PRL-0501	HB-0654 10/24/95 4 FT
UNKNOWN HYDROCARBON AS GASOLINE	56J

PRL-0491	HB-0645 10/24/95 4.5 FT
UNKNOWN HYDROCARBON AS GASOLINE	31J

PRL-0481	HB-0643 10/24/95 2 FT	HB-0642 10/24/95 4 FT
UNKNOWN HYDROCARBON AS GASOLINE	45J	32J

PRL-0541	HB-1032 10/24/95 3.5 FT
UNKNOWN HYDROCARBON AS GASOLINE	53J

PRL-0551	HB-0663 10/24/95 4 FT
UNKNOWN HYDROCARBON AS GASOLINE	46J

PRL-0586	HB-0675 10/23/95 3.5 FT
UNKNOWN HYDROCARBON AS GASOLINE	55J

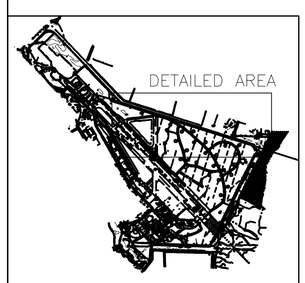
PRL-0577	HB-0672 10/23/95 3.5 FT
UNKNOWN HYDROCARBON AS GASOLINE	48J

PRL-0568	HB-0669 10/23/95 4 FT
UNKNOWN HYDROCARBON AS GASOLINE	41J

PRL-0559	HB-0666 10/23/95 4 FT
UNKNOWN HYDROCARBON AS GASOLINE	40UJ

PRL-0604	HB-1033 10/24/95 4 FT
UNKNOWN HYDROCARBON AS GASOLINE	50J

PRL-0595	HB-0678 10/23/95 3.5 FT
UNKNOWN HYDROCARBON AS GASOLINE	43J



KEY MAP

LEGEND:

- BRAC PROPERTY BOUNDARY
- PERIMETER DRAINAGE DITCH (CONCRETE LINED)
- PRL-0617 SAMPLE LOCATION (IT 1999a)
- PERIMETER LEVEES
- FORMER LOCATION OF FUEL LINE
- PROPOSED REMEDIAL ACTION AREA

NOTES:

1. J QUALIFIER DENOTES THE ESTIMATED CONCENTRATIONS. +/- SYMBOLS INDICATES HIGH OR LOW ESTIMATES.
2. RESULTS ARE PRESENTED IN UNITS OF MILLIGRAMS PER KILOGRAM (MG/KG).
3. CONCENTRATIONS FOR CHEMICALS OF CONCERN ABOVE THE COMPARATOR VALUES ARE PLOTTED.

FIGURE B-14

ONSHORE FUEL LINE NORTHERN SECTION SAMPLE LOCATIONS AND PROPOSED REMEDIAL ACTION AREAS INBOARD AREA SITES

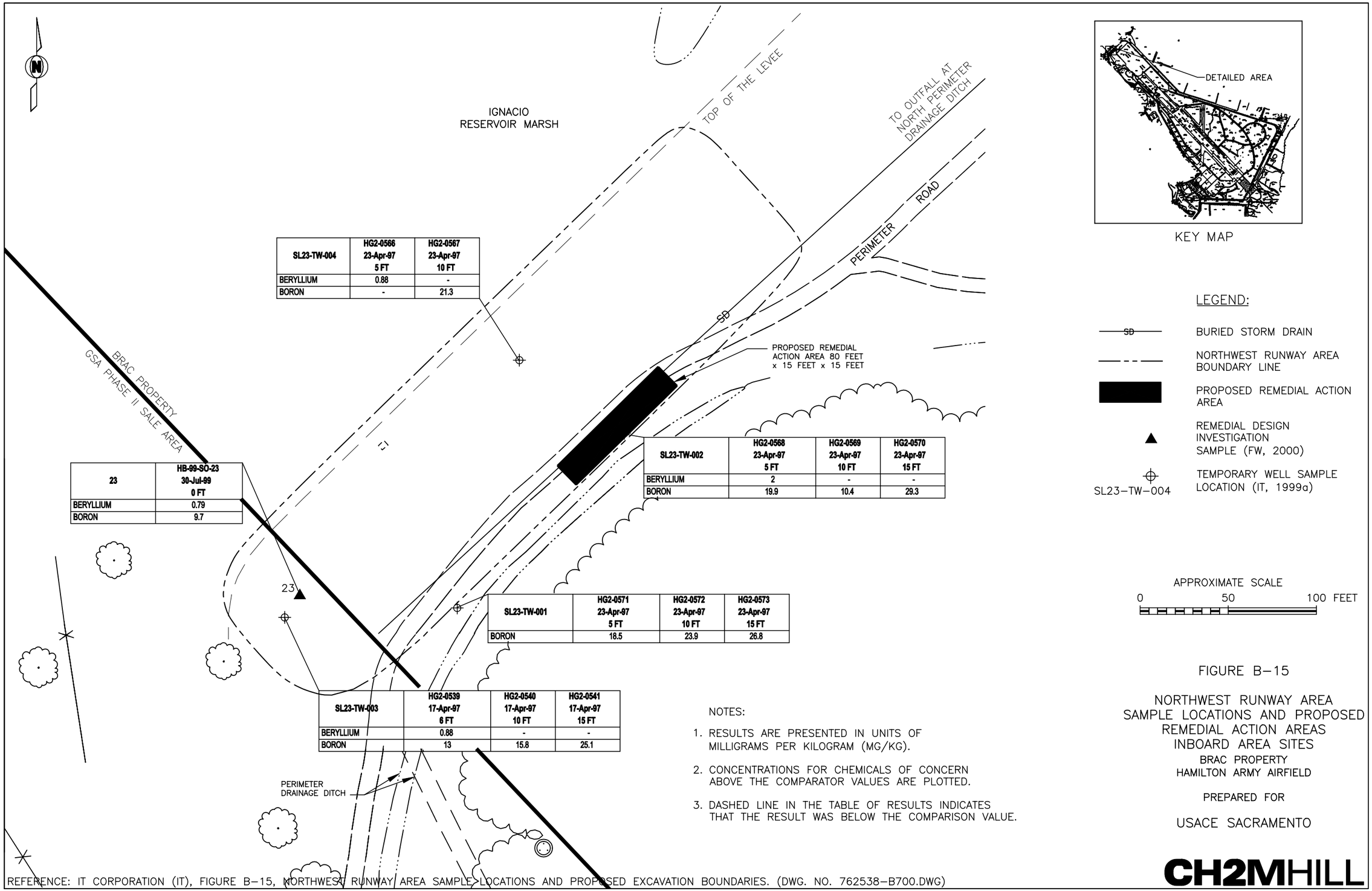
BRAC PROPERTY
HAMILTON ARMY AIRFIELD

PREPARED FOR

USACE SACRAMENTO

CH2MHILL

REFERENCE: IT CORPORATION (IT), FIGURE B-14, ONSHORE FUEL LINE NORTHERN SECTION SAMPLE LOCATIONS AND PROPOSED EXCAVATION BOUNDARIES. (DWG. NO. 762538-D108.DWG)



SL23-TW-004	HG2-0566 23-Apr-97 5 FT	HG2-0567 23-Apr-97 10 FT
BERYLLIUM	0.88	-
BORON	-	21.3

SL23-TW-002	HG2-0568 23-Apr-97 5 FT	HG2-0569 23-Apr-97 10 FT	HG2-0570 23-Apr-97 15 FT
BERYLLIUM	2	-	-
BORON	19.9	10.4	29.3

23	HB-99-SO-23 30-Jul-99 0 FT
BERYLLIUM	0.79
BORON	9.7

SL23-TW-001	HG2-0571 23-Apr-97 5 FT	HG2-0572 23-Apr-97 10 FT	HG2-0573 23-Apr-97 15 FT
BORON	18.5	23.9	26.8

SL23-TW-003	HG2-0539 17-Apr-97 6 FT	HG2-0540 17-Apr-97 10 FT	HG2-0541 17-Apr-97 15 FT
BERYLLIUM	0.88	-	-
BORON	13	15.8	25.1

NOTES:

1. RESULTS ARE PRESENTED IN UNITS OF MILLIGRAMS PER KILOGRAM (MG/KG).
2. CONCENTRATIONS FOR CHEMICALS OF CONCERN ABOVE THE COMPARATOR VALUES ARE PLOTTED.
3. DASHED LINE IN THE TABLE OF RESULTS INDICATES THAT THE RESULT WAS BELOW THE COMPARISON VALUE.

FIGURE B–15

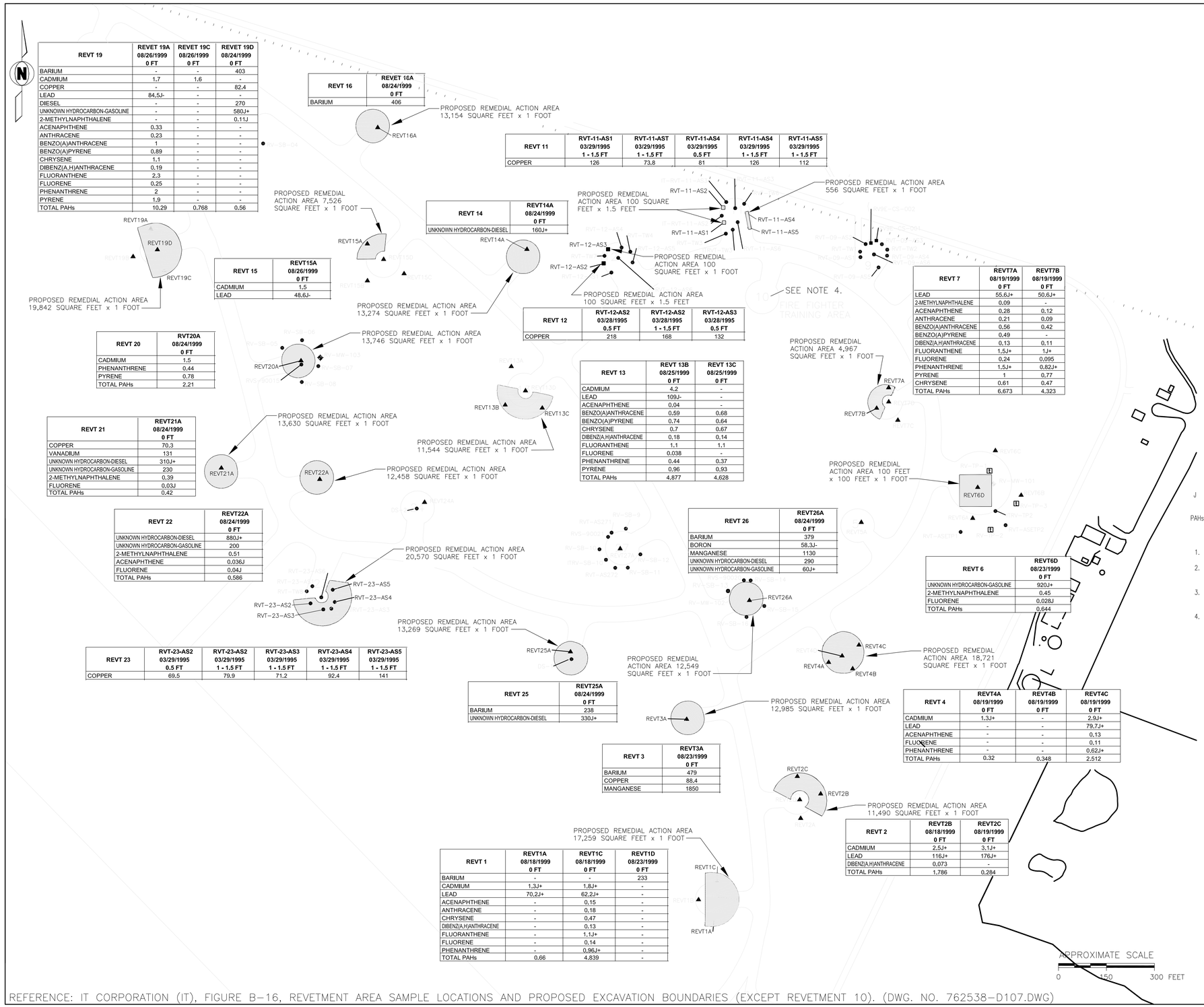
NORTHWEST RUNWAY AREA
SAMPLE LOCATIONS AND PROPOSED
REMEDIAL ACTION AREAS
INBOARD AREA SITES
BRAC PROPERTY
HAMILTON ARMY AIRFIELD

PREPARED FOR

USACE SACRAMENTO

CH2MHILL

REFERENCE: IT CORPORATION (IT), FIGURE B–15, NORTHWEST RUNWAY AREA SAMPLE LOCATIONS AND PROPOSED EXCAVATION BOUNDARIES. (DWG. NO. 762538–B700.DWG)



REVT 19	REVET 19A 08/26/1999 0 FT	REVET 19C 08/26/1999 0 FT	REVET 19D 08/24/1999 0 FT
BARIUM	-	-	403
CADMIUM	1.7	1.6	-
COPPER	-	-	82.4
LEAD	84.5J-	-	-
DIESEL	-	-	270
UNKNOWN HYDROCARBON-GASOLINE	-	-	580J+
2-METHYLNAPHTHALENE	-	-	0.11J
ACENAPHTHENE	0.33	-	-
ANTHRACENE	0.23	-	-
BENZO(A)ANTHRACENE	1	-	-
BENZO(A)PYRENE	0.89	-	-
CHRYSENE	1.1	-	-
DIBENZ(A,H)ANTHRACENE	0.19	-	-
FLUORANTHENE	2.3	-	-
FLUORENE	0.25	-	-
PHENANTHRENE	2	-	-
PYRENE	1.9	-	-
TOTAL PAHs	10.29	0.768	0.56

REVT 16	REVET 16A 08/24/1999 0 FT
BARIUM	406

REVT 11	RVT-11-AS1 03/29/1995 1 - 1.5 FT	RVT-11-AST 03/29/1995 1 - 1.5 FT	RVT-11-AS4 03/29/1995 0.5 FT	RVT-11-AS4 03/29/1995 1 - 1.5 FT	RVT-11-AS5 03/29/1995 1 - 1.5 FT
COPPER	126	73.8	81	126	112

REVT 14	REVT14A 08/24/1999 0 FT
UNKNOWN HYDROCARBON-DIESEL	160J+

REVT 15	REVT15A 08/26/1999 0 FT
CADMIUM	1.5
LEAD	48.6J-

REVT 12	RVT-12-AS2 03/28/1995 0.5 FT	RVT-12-AS2 03/28/1995 1 - 1.5 FT	RVT-12-AS3 03/28/1995 0.5 FT
COPPER	218	168	132

REVT 7	REVT7A 08/19/1999 0 FT	REVT7B 08/19/1999 0 FT
LEAD	55.6J+	50.6J+
2-METHYLNAPHTHALENE	0.09	-
ACENAPHTHENE	0.28	0.12
ANTHRACENE	0.21	0.09
BENZO(A)ANTHRACENE	0.56	0.42
BENZO(A)PYRENE	0.49	-
DIBENZ(A,H)ANTHRACENE	0.13	0.11
FLUORANTHENE	1.5J+	1J+
FLUORENE	0.24	0.095
PHENANTHRENE	1.5J+	0.82J+
PYRENE	1	0.77
CHRYSENE	0.61	0.47
TOTAL PAHs	6.673	4.323

REVT 20	RVT20A 08/24/1999 0 FT
CADMIUM	1.5
PHENANTHRENE	0.44
PYRENE	0.78
TOTAL PAHs	2.21

REVT 13	REVT 13B 08/25/1999 0 FT	REVT 13C 08/25/1999 0 FT
CADMIUM	4.2	-
LEAD	109J-	-
ACENAPHTHENE	0.04	-
BENZO(A)ANTHRACENE	0.59	0.68
BENZO(A)PYRENE	0.74	0.64
CHRYSENE	0.7	0.67
DIBENZ(A,H)ANTHRACENE	0.18	0.14
FLUORANTHENE	1.1	1.1
FLUORENE	0.038	-
PHENANTHRENE	0.44	0.37
PYRENE	0.96	0.93
TOTAL PAHs	4.877	4.628

REVT 21	REVT21A 08/24/1999 0 FT
COPPER	70.3
VANADIUM	131
UNKNOWN HYDROCARBON-DIESEL	310J+
UNKNOWN HYDROCARBON-GASOLINE	230
2-METHYLNAPHTHALENE	0.39
FLUORENE	0.03J
TOTAL PAHs	0.42

REVT 22	REVT22A 08/24/1999 0 FT
UNKNOWN HYDROCARBON-DIESEL	880J+
UNKNOWN HYDROCARBON-GASOLINE	200
2-METHYLNAPHTHALENE	0.51
ACENAPHTHENE	0.036J
FLUORENE	0.04J
TOTAL PAHs	0.586

REVT 26	REVT26A 08/24/1999 0 FT
BARIUM	379
BORON	58.3J-
MANGANESE	1130
UNKNOWN HYDROCARBON-DIESEL	290
UNKNOWN HYDROCARBON-GASOLINE	60J+

REVT 6	REVT6D 08/23/1999 0 FT
UNKNOWN HYDROCARBON-GASOLINE	920J+
2-METHYLNAPHTHALENE	0.45
FLUORENE	0.028J
TOTAL PAHs	0.644

REVT 23	RVT-23-AS2 03/29/1995 0.5 FT	RVT-23-AS2 03/29/1995 1 - 1.5 FT	RVT-23-AS3 03/29/1995 1 - 1.5 FT	RVT-23-AS4 03/29/1995 1 - 1.5 FT	RVT-23-AS5 03/29/1995 1 - 1.5 FT
COPPER	69.5	79.9	71.2	92.4	141

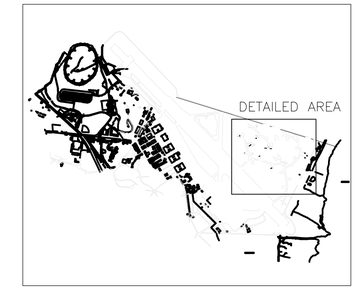
REVT 25	REVT25A 08/24/1999 0 FT
BARIUM	238
UNKNOWN HYDROCARBON-DIESEL	330J+

REVT 4	REVT4A 08/19/1999 0 FT	REVT4B 08/19/1999 0 FT	REVT4C 08/19/1999 0 FT
CADMIUM	1.3J+	-	2.9J+
LEAD	-	-	79.7J+
ACENAPHTHENE	-	-	0.13
FLUORENE	-	-	0.11
PHENANTHRENE	-	-	0.62J+
TOTAL PAHs	0.32	0.348	2.512

REVT 3	REVT3A 08/23/1999 0 FT
BARIUM	479
COPPER	88.4
MANGANESE	1850

REVT 2	REVT2B 08/18/1999 0 FT	REVT2C 08/19/1999 0 FT
CADMIUM	2.5J+	3.1J+
LEAD	116J+	176J+
DIBENZ(A,H)ANTHRACENE	0.073	-
TOTAL PAHs	1.786	0.284

REVT 1	REVT1A 08/18/1999 0 FT	REVT1C 08/18/1999 0 FT	REVT1D 08/23/1999 0 FT
BARIUM	-	-	233
CADMIUM	1.3J+	1.8J+	-
LEAD	70.2J+	62.2J+	-
ACENAPHTHENE	-	0.15	-
ANTHRACENE	-	0.18	-
CHRYSENE	-	0.47	-
DIBENZ(A,H)ANTHRACENE	-	0.13	-
FLUORANTHENE	-	1.1J+	-
FLUORENE	-	0.14	-
PHENANTHRENE	-	0.96J+	-
TOTAL PAHs	0.66	4.839	-



KEY MAP

LEGEND:

- 1999 INTERIM REMOVAL ACTION SAMPLE
- REMEDIAL INVESTIGATION SAMPLE (IT, 1999a)
- MONITORING WELL (IT, 1999a)
- TEST PIT AND SOIL SAMPLE LOCATION (IT, 1999a)
- REMEDIAL DESIGN INVESTIGATION SOIL SAMPLE (FW, 2000)
- PROPOSED REMEDIAL ACTION AREA

ACRONYMS:

J J QUALIFIER DENOTES ESTIMATED CONCENTRATIONS. +/− SYMBOLS INDICATES HIGH OR LOW ESTIMATION.

PAHs POLYNUCEAR AROMATIC HYDROCARBONS

NOTES:

1. RESULTS ARE PRESENTED IN UNITS OF MILLIGRAMS PER KILOGRAM (MG/KG).
2. CONCENTRATIONS FOR CHEMICALS OF CONCERN ABOVE THE COMPARATOR VALUES ARE PLOTTED.
3. A DASHED LINE IN THE TABLE OF RESULTS INDICATES THAT THE RESULT WAS BELOW THE COMPARISON VALUE.
4. ALL CONCENTRATIONS AT REVETMENT 10 ARE BELOW COMPARISON VALUES. SAMPLE LOCATIONS ARE NOT SHOWN DUE TO DENSITY OF SAMPLING AND SCALE OF DRAWING.

FIGURE B−16

REVETMENT AREA SAMPLE LOCATIONS AND PROPOSED REMEDIAL ACTION AREAS (EXCEPT REVETMENT 10) INBOARD AREA SITES

BRAC PROPERTY
HAMILTON ARMY AIRFIELD

PREPARED FOR

USACE SACRAMENTO

CH2MHILL

REFERENCE: IT CORPORATION (IT), FIGURE B−16, REVETMENT AREA SAMPLE LOCATIONS AND PROPOSED EXCAVATION BOUNDARIES (EXCEPT REVETMENT 10). (DWG. NO. 762538−D107.DWG)

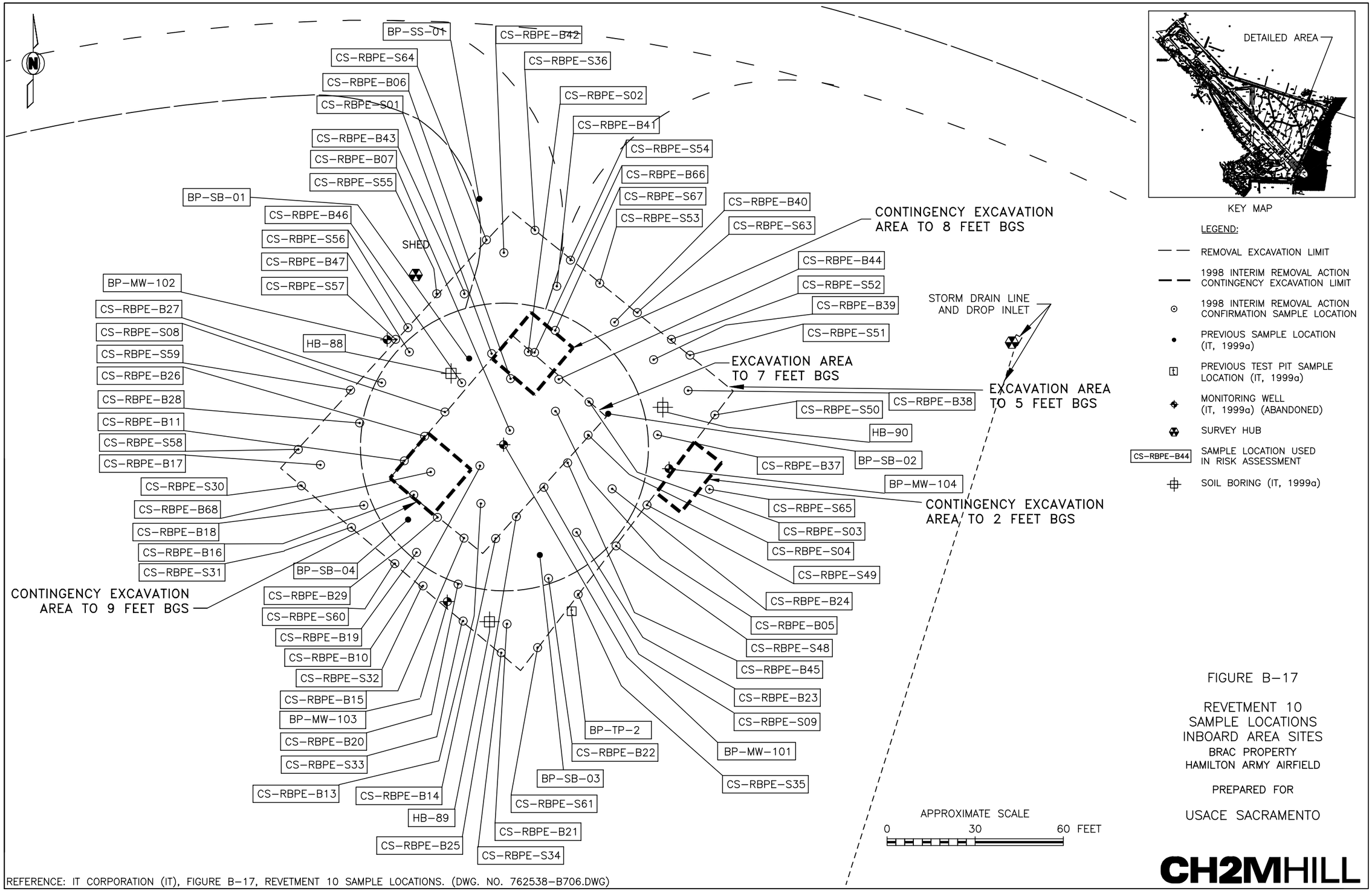


FIGURE B-17

REVETMENT 10
SAMPLE LOCATIONS
INBOARD AREA SITES
BRAC PROPERTY
HAMILTON ARMY AIRFIELD

PREPARED FOR

USACE SACRAMENTO

REFERENCE: IT CORPORATION (IT), FIGURE B-17, REVETMENT 10 SAMPLE LOCATIONS. (DWG. NO. 762538-B706.DWG)

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Revetment 26 – Excavation with Offsite Disposal
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APPENDIX C

Cost Estimates

Cost estimates were developed for each remedial alternative to compare costs within plus 50 percent to minus 30 percent accuracy. Cost estimates are based on generic cost units, vendor information, conventional cost-estimating guides, and prior similar estimates as modified by site specific information. No allowances for inflation have been included. Estimated costs for each site-specific remedial alternative are presented in Table C-1.

Site-specific information was utilized in developing the costs for the remedial alternatives. Areas and volumes of the impacted media were used for calculations involving treatment volumes, remediation system sizing, confirmation sampling, etc. Excavated volumes and areas for the Inboard Area sites are presented in Table C-2.

TABLE C-1
Base Realignment and Closure Property Remedial Alternative Costs

Site	Alternative	Cost
Former Sewage Treatment Plant	No Further Action	
	Institutional Controls	
	Excavation with Offsite Disposal	$61,217
	Excavation with Onsite Disposal	$17,752
Building 26	No Further Action	
	Institutional Controls	
	Excavation with Offsite Disposal	$23,610
	Excavation with Onsite Disposal	$9,696
Building 35/39	Area No Further Action	
	Institutional Controls	
	Excavation with Offsite Disposal	$17,384
	Excavation with Onsite Disposal	$9,947
Building 41 Area	No Further Action	
	Institutional Controls	
	Excavation with Offsite Disposal	$297,018
	Excavation with Onsite Disposal	$25,024
Building 82/87/92/94 Area and Building 86	No Further Action	
	Institutional Controls	
	Excavation with Offsite Disposal	$1,298,674
	Excavation with Onsite Disposal	$68,254
Perimeter Drainage Ditch	No Further Action	
	Institutional Controls	
	Excavation with Offsite Disposal	$4,502,006
	Excavation with Onsite Disposal	$214,879

TABLE C-1
Base Realignment and Closure Property Remedial Alternative Costs

Site	Alternative	Cost
Perimeter Drainage Ditch Spoils Pile A	No Further Action	
	Institutional Controls	
	Excavation with Offsite Disposal	$55,892
	Excavation with Onsite Disposal	$9,350
Perimeter Drainage Ditch Spoils Pile B	No Further Action	
	Institutional Controls	
	Excavation with Offsite Disposal	$123,374
	Excavation with Onsite Disposal	$11,817
Perimeter Drainage Ditch Spoils Pile D	No Further Action	
	Institutional Controls	
	Excavation with Offsite Disposal	$60,244
	Excavation with Onsite Disposal	$9,144
Perimeter Drainage Ditch Spoils Pile E	No Further Action	
	Institutional Controls	
	Excavation with Offsite Disposal	$56,507
	Excavation with Onsite Disposal	$7,697
Perimeter Drainage Ditch Spoils Pile F	No Further Action	
	Institutional Controls	
	Excavation with Offsite Disposal	$182,305
	Excavation with Onsite Disposal	$17,729
Perimeter Drainage Ditch Spoils Pile G	No Further Action	
	Institutional Controls	
	Excavation with Offsite Disposal	$68,213
	Excavation with Onsite Disposal	$9,436
Perimeter Drainage Ditch Spoils Pile I	No Further Action	
	Institutional Controls	
	Excavation with Offsite Disposal	$41,202
	Excavation with Onsite Disposal	$8,814
Perimeter Drainage Ditch Spoils Pile J	No Further Action	
	Institutional Controls	
	Excavation with Offsite Disposal	$16,915
	Excavation with Onsite Disposal	$7,559
Perimeter Drainage Ditch Spoils Pile K	No Further Action	
	Institutional Controls	
	Excavation with Offsite Disposal	$32,852
	Excavation with Onsite Disposal	$8,142
Perimeter Drainage Ditch Spoils Pile L	No Further Action	
	Institutional Controls	
	Excavation with Offsite Disposal	$9,811
	Excavation with Onsite Disposal	$8,611

TABLE C-1
Base Realignment and Closure Property Remedial Alternative Costs

Site	Alternative	Cost
Perimeter Drainage Ditch Spoils Pile M	No Further Action	
	Institutional Controls	
	Excavation with Offsite Disposal	$126,722
	Excavation with Onsite Disposal	$11,806
Perimeter Drainage Ditch Spoils Pile N	No Further Action	
	Institutional Controls	
	Excavation with Offsite Disposal	$72,078
	Excavation with Onsite Disposal	$9,942
Onshore Fuel Line – 54 Inch Line	No Further Action	
	Institutional Controls	
	Excavation with Offsite Disposal	$625,306
	Excavation with Onsite Disposal	$17,623
Onshore Fuel Line – Hangar Segment	No Further Action	
	Institutional Controls	
	Excavation with Offsite Disposal	$701,748
	Excavation with Onsite Disposal	$52,976
Onshore Fuel Line – Northern Segment	No Further Action	
	Institutional Controls	
	Excavation with Offsite Disposal	$571,294
	Excavation with Onsite Disposal	$29,346
Northwest Runway Area	No Further Action	
	Institutional Controls	
	Excavation with Offsite Disposal	$76,566
	Excavation with Onsite Disposal	$9,872
Revetment 1	No Further Action	
	Institutional Controls	
	Excavation with Offsite Disposal	$211,033
	Excavation with Onsite Disposal	$19,348
Revetment 2	No Further Action	
	Institutional Controls	
	Excavation with Offsite Disposal	$142,096
	Excavation with Onsite Disposal	$14,226
Revetment 3	No Further Action	
	Institutional Controls	
	Excavation with Offsite Disposal	$160,424
	Excavation with Onsite Disposal	$16,240
Revetment 4	No Further Action	
	Institutional Controls	
	Excavation with Offsite Disposal	$227,718
	Excavation with Onsite Disposal	$19,959

TABLE C-1
Base Realignment and Closure Property Remedial Alternative Costs

Site	Alternative	Cost
Revetment 6	No Further Action	
	Institutional Controls	
	Excavation with Offsite Disposal	$112,184
	Excavation with Onsite Disposal	$1,227
Revetment 7	No Further Action	
	Institutional Controls	
	Excavation with Offsite Disposal	$55,992
	Excavation with Onsite Disposal	$814
Revetment 11	No Further Action	
	Institutional Controls	
	Excavation with Offsite Disposal	$21,516
	Excavation with Onsite Disposal	$8,561
Revetment 12	No Further Action	
	Institutional Controls	
	Excavation with Offsite Disposal	$14,006
	Excavation with Onsite Disposal	$10,887
Revetment 13	No Further Action	
	Institutional Controls	
	Excavation with Offsite Disposal	$142,596
	Excavation with Onsite Disposal	$14,246
Revetment 14	No Further Action	
	Institutional Controls	
	Excavation with Offsite Disposal	$164,622
	Excavation with Onsite Disposal	$17,080
Revetment 15	No Further Action	
	Institutional Controls	
	Excavation with Offsite Disposal	$94,973
	Excavation with Onsite Disposal	$11,246
Revetment 16	No Further Action	
	Institutional Controls	
	Excavation with Offsite Disposal	$162,415
	Excavation with Onsite Disposal	$16,312
Revetment 19	No Further Action	
	Institutional Controls	
	Excavation with Offsite Disposal	$242,280
	Excavation with Onsite Disposal	$21,806
Revetment 20	No Further Action	
	Institutional Controls	
	Excavation with Offsite Disposal	$170,446
	Excavation with Onsite Disposal	$17,866

TABLE C-1
Base Realignment and Closure Property Remedial Alternative Costs

Site	Alternative	Cost
Revetment 21	No Further Action	
	Institutional Controls	
	Excavation with Offsite Disposal	$167,867
	Excavation with Onsite Disposal	$16,486
Revetment 22	No Further Action	
	Institutional Controls	
	Excavation with Offsite Disposal	$156,872
	Excavation with Onsite Disposal	$18,686
Revetment 23	No Further Action	
	Institutional Controls	
	Excavation with Offsite Disposal	$226,934
	Excavation with Onsite Disposal	$16,347
Revetment 25	No Further Action	
	Institutional Controls	
	Excavation with Offsite Disposal	$164,373
	Excavation with Onsite Disposal	$17,070
Revetment 26	No Further Action	
	Institutional Controls	
	Excavation with Offsite Disposal	$156,810
	Excavation with Onsite Disposal	$17,424

TABLE C-2
Base Realignment and Closure Property Excavation Areas and Volumes

Site	Chemical of Concern	Area (square feet)	Volume (cubic yard)
Former Sewage Treatment Plant	Pesticides	6,980	259
Building 26	Petroleum hydrocarbons	1,250	46
Building 35/39	Area Pesticides	674	25
Building 41	Area Petroleum hydrocarbons	24,480	907
	Polynuclear aromatic hydrocarbons (PAH)		
Building 82/87/92/94 Area and Building 86	Metals PAHs (Building 86)	110,780	4,103
Perimeter Drainage Ditch	Metals Pesticides	386,000	14,296
Perimeter Drainage Ditch Spoils Pile A	Metals Pesticides	4,172	155
Perimeter Drainage Ditch Spoils Pile B	Metals Pesticides	57,674	2,136

TABLE C-2
Base Realignment and Closure Property Excavation Areas and Volumes

Site	Chemical of Concern	Area (square feet)	Volume (cubic yard)
Perimeter Drainage Ditch Spoils Pile D	Pesticides	4,609	171
Spoils Pile E	Pesticides	4,273	158
Perimeter Drainage Ditch Spoils Pile F	Metals Pesticides SVOC PAHs	14,822	549
Perimeter Drainage Ditch Spoils Pile G	Pesticides	5,302	196
Perimeter Drainage Ditch Spoils Pile I	Metals Pesticides	2,905	108
Perimeter Drainage Ditch Spoils Pile J	Pesticides	833	31
Perimeter Drainage Ditch Spoils Pile K	Pesticides	2,222	82
Perimeter Drainage Ditch Spoils Pile L	Metals Pesticides	100	4
Perimeter Drainage Ditch Spoils Pile M	Pesticides	10,354	383
Perimeter Drainage Ditch Spoils Pile N	Metals Pesticides	5,590	207
Onshore Fuel Line – 54 Inch Line	Petroleum hydrocarbons	54,700	2,026
Onshore Fuel Line – Hangar Segment	Petroleum hydrocarbons PAHs	58,039	2,150
Onshore Fuel Line – Northern Segment	Petroleum hydrocarbons	48,780	1,807
Northwest Runway Area	Metals	6,000	222
Revetment 1	Metals PAHs	17,259	639
Revetment 2	Metals PAHs	11,490	426
Revetment 3	Metals	12,985	481
Revetment 4	Metals PAHs	18,721	693
Revetment 6	Petroleum hydrocarbons PAHs	10,000	370
Revetment 7	Metals PAHs	4,967	184
Revetment 11	Metals	856	33
Revetment 12	Metals	250	10
Revetment 13	Metals PAHs	11,544	428
Revetment 14	Petroleum hydrocarbons	13,274	492
Revetment 15	Metals	7,526	279
Revetment 16	Metals	13,154	487

TABLE C-2
Base Realignment and Closure Property Excavation Areas and Volumes

Site	Chemical of Concern	Area (square feet)	Volume (cubic yard)
Revetment 19	Metals Petroleum hydrocarbons PAHs	19,842	735
Revetment 20	Metals PAHs	13,746	509
Revetment 21	Metals Petroleum hydrocarbons PAHs	13,630	505
Revetment 22	Petroleum hydrocarbons PAHs	12,458	461
Revetment 23	Metals	20,570	762
Revetment 25	Metals Petroleum hydrocarbons	13,269	491
Revetment 26	Metals Petroleum hydrocarbons	12,549	465

1. EXCAVATION

EQUIPMENT (including operator):		$$/HOUR
1 - CATERPILLAR 315 EXCAVATOR		$181
2 - CATERPILLAR 966D LOADERS		$260
	TOTAL	$441

EXCAVATION RATE IN CUBIC YARDS PER HOUR =	180
LOADER RATE IN CUBIC YARDS PER HOUR (EACH) =	100
COST PER CUBIC YARD =	$2.31
MOBILIZATION/DEMOBILIZATION =	$1,500

2. ONSITE TRANSPORTATION

Assume: 2 mile haul distance (one way)
swell factor = 25%
use 40 cubic yard truck
50 minutes/hour

1. Loose measure = 2 loaders @ 100 cy/hour * 1.25 = 250 cy/hour / 60 minutes =		4.17	cy/min
2. Time to load a 40 cy truck			
40 cy / 4.17 cy/min =		9.6	minutes
3. Truck unload = 2 minutes			
4. Spot truck = 1 minutes			
5. Travel cycle (RT) = 15 minutes			
6. Fixed cycle = 1.0 min + 2.0 min + 9.6 min		12.6	minutes
50 min/hour / (12.6 min + 15 min)		1.81	loads per hour
1.81 loads/hour * 40 cy/truck		72.46	cy output
Equipment (including operator):	TOTAL	$131	
1 - 40 CY TRUCK			
Cost per cubic yard = $131/72.46 cubic yards		$1.81	

Assume: 1 mile haul distance (one way)
swell factor = 25%
use 40 cubic yard truck
50 minutes/hour

1. Loose measure = 2 loaders @ 100 cy/hour * 1.25 = 250 cy/hour / 60 minutes =		4.17	cy/min
2. Time to load a 40 cy truck			
40 cy / 4.17 cy/min =		9.6	minutes
3. Truck unload = 2 minutes			
4. Spot truck = 1 minutes			
5. Travel cycle (RT) = 7.5 minutes			
6. Fixed cycle = 1.0 min + 2.0 min + 9.6 min =		12.6	minutes
50 min/hour / (12.6 min + 7.5 min) =		2.49	loads/hour
2.49 loads/hour * 40 cy/truck =		99.50	cy output
Equipment (including operator):	TOTAL	$131	
1 - 40 cubic yard truck			
Cost per cubic yard = $131/99.5 cubic yards		$1.32	

3. OFFSITE TRANSPORTATION AND DISPOSAL	$$/CY Class I	$$/CY Class II	$$/CY Class III
Disposal Costs (assume 1.3 tons/cy) =	$405	$150	$150
County tax at 10%	$41	$15	$15
Transportation Costs =	$56	$14	$5
Cost per cubic yard =	$502	$179	$170
Waste Profile Fee (One time cost)	$300	$300	$300
Import of Backfill Material			$10.00
Includes material and delivery to site			

4. REGRADING

Equipment (including operator):		$$/HOUR
1 - 14-gal motor grader		$98
2 - 633D scrapers @ $320.00 each		$640
1 - 4000 gallon water truck		$47
1 - 825C roller dozer		$165
	TOTAL	$950

Regrading rate in cubic yards per hour =	265
Cost per cubic yard =	$3.58
Mobilization/Demobilization	$2,230

5. POST-EXCAVATION CONFIRMATION SAMPLING PROGRAM

Analytical costs per sample

Method	Method No	Cost
VOCs (Combo)	8010/8020	$235
Pesticides	8080	$210
TPH as Gasoline/JP-4	8015M	$105
TPH as Diesel	8015M	$115
PAHs	8270	$210
Total Metals	6010/7000	$240

Labor for sampling (per sample location)

Assume chargeout rate for 2-Sampling Technicians @ $52 per hour
Assume 2 hours/sample location for sampling, shipping

2 hour/sample location x 2 men x $52/hour = $208

Rental equipment for sampling (per sample location)

Assume rental of sampling equipment, shipping, etc. @ $250 per day
Assume 2 hours per sample location for sampling, etc.

(2 hours/sample location) / (8 hours/day) x $250/day = $63

Labor for data validation (per sample)

Assume 1 hour/sample
Assume chargeout rate for 1-Validation Chemist @ $55 per hour

1 hour/sample x $55/hour = $55

6. CAPPING

A. VEGETATIVE COVER OPTION

1. Vegetative cover construction materials

Vegetative cover of native grasses (per square foot) (includes seed, fertilizer, and mulch)			$0.025

2. Construction of vegetative cover

Equipment (w/operator)			$$/HOUR
2 - Caterpillar D8L Bulldozers @		$190 each	$380
1 - Caterpillar 825C Roller Dozer @			$104
1 - 4000 gal water truck			$63
		TOTAL	$547
Construction rate in cubic yards per hour			210
Cost per cubic yard =	$2.60		
Mobilization/Demobilization	$1,090		

CAPITAL COSTS:

B. ENGINEERED CAP OPTION

1. Engineered cap construction materials

Vegetative cover of native grasses (per square foot) (includes seed, fertilizer, and mulch)			$0.025

2. Construction of engineered cap

Equipment (w/operator)			$$/HOUR
2 - Caterpillar D8L Bulldozers @		$190 each	$380
1 - Caterpillar 825C Roller Dozer @		$104 each	$208
1 - 4000 gal water truck			$63
		TOTAL	$651
Construction rate in cubic yards per hour			210
Cost per cubic yard =	$3.10		
Mobilization/Demobilization	$1,090		

3. Installation of gas vent and monitoring wells

	$$/FOOT
Equipment and materials:	
Well installation/construction	$49
Labor:	
Well Site Geologist @ $55/hour and 40 feet/day	$11
TOTAL	$60

7. PREPARATION OF CONSOLIDATION SITE

Assume: Design of a Class II non-municipal solid waste landfill.
Landfill liner: liner requirements for a Class II landfill includes a leachate collection and removal system and a 2-foot thick clay liner compacted to 90 percent. A synthetic liner may also be used if it is less costly.
Water quality monitoring for detection of releases.
Closure cover system: 2 feet of a foundation layer (consists of general fill material), low hydraulic conductivity layer ($1x10^{-6}$ permeability or less), and a 1-foot erosion resistance layer (i.e., vegetative layer).
Preparation of a closure and post-closure maintenance plan.
Post-closure maintenance (including cover-integrity monitoring, cover maintenance, leak search, vegetative maintenance, leachate collection, and removal system operation).

A. Excavation (including operator)	**$119,594**
1 - Caterpillar 315 Excavator	$181
2 - Caterpillar 966D Loaders	$260
	$441
Excavation rate in cubic yards per hour =	180
Loader rate in cubic yards per hour =	100
Cost per cubic yard =	$2.31
Mobilization/Demobilization =	$1,500
Volume of soils (cubic yards) =	51,123
B. Geotextile Layer	**$6,720**
Assume area of consolidation site in square yards	40,000
Cost per square yard =	$0.08
Assume 4 days to install geotextile layer	4
Assume 2 men x 4 days x 8 hours/day x $55/hour =	$3,520
C. Labor for Writing Closure Plan	
Assume 3 man-weeks for maintenance plan	
Assume changeout rate for 2 - Engineers @ $55/hr =	$110
3 man-weeks x 40 hrs/week x 2 Engineers x $55/hr =	$13,200

SUB TOTAL CAPITAL COSTS	$126,314
15% BID CONTINGENCY	$18,947
15% SCOPE CONTINGENCY	$18,947
15% PERMITTING COSTS	$18,947
TOTAL CAPITAL COSTS	**$183,155**

8. CAPPING OF THE CONSOLIDATION SITE

Capital Costs:

ENGINEERED CAP	
1. Cap Materials	
A. Vegetative Cover (material and installation)	**$1,000**
Area in square feet	40,000
Cost per square foot	$0.025
B. Top Soil (available from local source)	
Layer thickness of 1 foot	**$164,534**
Volume of top soil in cubic yards	40,000
Excavation cost per cubic yard	$2.31
Transportation cost per cubic yard	$1.81
C. Impermeable Layer	
Layer thickness of 1 foot	**$164,534**
Volume of top soil in cubic yards	40,000
Excavation cost per cubic yard	$2.31
Transportation cost per cubic yard	$1.81
2. Cap Construction	**$249,090**
Cap construction includes re-working the soils to provide adequate foundation and placement of cap materials	
Volume of cap (cubic yards)	80,000
Construction cost per cubic yard	$3.10
3. Mobilization/Demobilization of Equipment =	**$1,090**
INSTALLATION OF GAS VENT AND MONITORING WELLS	**$4,800**
Assume number of vent wells	4
Assume average vent well depth (linear feet)	20
Cost per linear foot	$60

SUB TOTAL CAPITAL COSTS	$585,048
15% BID CONTINGENCY	$87,757
15% SCOPE CONTINGENCY	$87,757
15% PERMITTING COSTS	$87,757
TOTAL CAPITAL COSTS	**$848,320**

OPERATION AND MAINTENANCE COSTS (COSTS PER YEAR)

A. SAMPLING OF EXISTING GROUNDWATER WELLS

Assume 1.5 samples/well each sampling event (includes QA samples)
Assume Year 1-5: 4 samples/year
Assume Year 6-30: 2 samples/year
Assume sampling a total of 2 existing groundwater monitoring wells
Assume each sampling event includes:

Method	Method No.	Cost/sample
VOCs	8010/8020	$242
Total Lead	7420	$65
SWAT Metals	6010/7000	$164
Pesticides	608	$212
TPH as Gasoline/JP-4	8015M	$175
TPH as Diesel	8015M	$175
PAHs	8310	$180

Year 1-5: 4 sample events/year x 1.5 samples/well x 2 wells x $1213/sample event = 14,556

Year 6-30: 2 sample events/year x 1.5 samples/well x 2 wells x $1213/sample event = 7,278

B. LABOR (FOR GROUNDWATER WELL SAMPLING)

Assume chargeout rate for 2 - Sampling Technicians @ $44 hour
Assume 2 hour/well/sampling event for sampling, shipping etc.
Assume Year 1-5: 4 sample events/year
Assume Year 6-30: 2 sample events/year

Year 1-5: 2 hours/well x 2 wells x 4 sample events/year x $44/hour x 2 men = 1,408

Year 6-30: 2 hours/well x 2 wells x 2 sample events/year x $44/hour x 2 men = 704

C. RENTAL OF EQUIPMENT FOR GROUNDWATER WELL SAMPLING

Assume rental of sampling equipment, shipping, etc. @ $250 day
Assume 2 existing groundwater wells
Assume 2 hours per well for sampling, etc.
Assume Year 1-5: 4 sample events/year
Assume Year 6-30: 2 sample events/year

Year 1-5: (4 sample events/year x 2 wells x 2 hours/well/8 hours/day) x $250/day = 32,000

Year 6-30: (2 sample events/year x 2 wells x 2 hours/well/8 hours/day) x $250/day = 16,000

D. LABOR (FOR DATA ANALYSIS AND VALIDATION OF GROUNDWATER DATA)

Assume 1 man/week per sampling event
Assume chargeout rate for 1 - Validation Chemist @ $55 hour
Assume Year 1-5: 4 sample events/year
Assume Year 6-30: 2 sample events/year

Year 1-5: 4 sample events/year x $55/hour x 40 hours/sample event = 8,800

Year 6-30: 2 sample events/year x $55/hour x 40 hours/sample event = 4,400

E. SAMPLING OF LANDFILL GAS VENT WELLS

Assume 1 sample per well each sampling event
Assume Year 1-5: 4 sample events/year
Assume Year 6-30: 2 sample events/year
Assume sampling a total of 5 wells
Assume chargeout rate for 2 - Sampling Technicians $44 hour
Assume 2 hours per well per sampling event for sampling and calibration

Year 1-5: 4 sample events/year x 1 sample/well x 5 wells x 2 hours/well x $44/hour x 2 men = 3,520

Year 6-30: 2 sample events/year x 1 sample/well x 5 wells x 2 hours/well x $44/hour x 2 men = 1,760

F. RENTAL OF EQUIPMENT FOR GAS WELL SAMPLING

Assume rental of Foxboro OVA and associated equipment @ $275 day
Assume 3 days rental per sample event
Assume Year 1-5: 4 sample events/year
Assume Year 6-30: 2 sample events/year

Year 1-5: 3 days/sample event x 4 sample events/year x $275/day = 3,300

Year 6-30: 3 days/sample event x 2 sample events/year x $275/day = 1,650

G. MAINTENANCE OF CAP

Assume vegetation every 5 years	**$2,000**
Revegetate cap in year 5, 10, 15, 20, 25, and 30	
Assume area in square feet	80,000
Cost per square foot	$0.025

H. CAP REPAIRS

Assume 1 repair every 5 years	**$2,790**
Repair cap in year 5, 10, 15, 20, 25, and 30	
Assume each repair consists of reworking 10% of the cap soils (cubic yards)	900
Cost per cubic yard	$3.10

I. MISCELLANEOUS

Year 1-5: Miscellaneous services @ 10% of O&M costs = $6,837

Year 6-30: Miscellaneous services @ 10% of O&M costs = $3,493

Total O&M Costs	
Year 1-5	**$75,211**
Year 6-30	**$38,425**

9. ASPHALT/CONCRETE REMOVAL

1 - Backhoe	$150
Excavation rate in cubic yards per hour =	120
Cost per cubic yard =	$0.80
Mobilization/Demobilization =	$800
Offsite transportation and disposal Class III (per ton) =	$170

10. STRUCTURE SUPPORT

Import of backfill material (includes material and delivery) =		$10	cubic yards

Grading

Equipment (including operator):		$$/Hour
1 - Excavator		$181
1 - Roller Dozer		$165
	Total	$346

Rate in cubic yards per hour =	265
Cost per cubic yard =	$1.31
Mobilization/Demobilization =	$1,300

Former Sewage Treatment Plant - Excavation with Offsite Disposal

Capital Costs

1. Pre-design investigation borings		**$750**
Assume number of borings =	5	
Assume average depth (linear feet) =	10	
Cost per linear foot =	$15	
2. Excavation with Offbase Disposal		**$44,596**
A. Excavation of Soils		$2,097
Volume of Soils (cubic yards)		259
Excavation Costs per Cubic Yard		$2.31
Mobilization/Demobilization of Equipment		$1,500
B. Post Excavation Confirmation Sampling Program		$4,337
Number of Confirmation Samples		8
Number of QA Samples		1
Sampling Cost per Sample Location (labor and equipment)		$208
Data Validation Labor per Sample		$55
Sample Analysis (per sample, includes 15% for CLP)		$242
Pesticides 8080	$210	
C. Offbase Disposal to a Class II Hazardous Waste Landfill		$33,420
Volume of Soil--25% swell factor (cubic yards)		185
Transportation and Disposal Costs per Cubic Yard		$179
Waste Profile Fee (One time cost)		$300
D. Grading of Excavation Site (ditch will remain operational)		$2,892
Volume of Soil--25% swell factor (cubic yards)		185
Grading Cost per Cubic Yard		$3.58
Mobilization/Demobilization of Equipment		$2,230

E. Imported Backfill		$1,850
Cost per cubic yard =		$10
Volume of soil (cubic yards) =		$185
	SUBTOTAL CAPITAL COSTS	**$45,346**
	15% BID CONTINGENCY	**$6,802**
	15% SCOPE CONTINGENCY	**$6,802**
	5% PERMITTING COSTS	**$2,267**
	TOTAL CAPITAL COSTS	**$61,217**

O&M Costs

No O&M costs are associated with this alternative.

Former Sewage Treatment Plant - Excavation with Onsite Disposal

Capital Costs

1. Pre-design investigation borings			**$750**
Assume number of borings =		5	
Assume average depth (linear feet) =		10	
Cost per linear foot =		$15	
2. Excavation with Onbase Disposal			**$12,399**
A. Excavation of Sediments			$2,097
Volume of Sediments (cubic yards)			259
Excavation Costs per Cubic Yard			$2.31
Mobilization/Demobilization of Equipment			$1,500
B. Post Excavation Confirmation Sampling Program			$4,337
Number of Confirmation Samples			8
Number of QA Samples			1
Sampling Cost per Sample Location (labor and equipment)			$208
Data Validation Labor per Sample			$55
Sample Analysis (per sample, includes 15% for CLP)			$242
Pesticides	8080	$210	
C. Onbase Disposal			$726
Volume of Soil--25% swell factor (cubic yards)			324
Transportation and Disposal Costs per Cubic Yard			$1.32
Mobilization/Demobilization of Equipment			$300
D. Grading of Excavation Site			$3,389
Volume of Soil--25% swell factor (cubic yards)			324
Grading Cost per Cubic Yard			$3.58
Mobilization/Demobilization of Equipment			$2,230

E. Imported Backfill	$1,850
Cost per cubic yard =	$10
Volume of soil (cubic yards) =	$185

SUBTOTAL CAPITAL COSTS	**$13,149**
15% BID CONTINGENCY	**$1,972**
15% SCOPE CONTINGENCY	**$1,972**
5% PERMITTING COSTS	**$657**
TOTAL CAPITAL COSTS	**$17,752**

O&M Costs

No O&M costs are associated with this alternative.

Building 26 - Excavation with Offsite Disposal

Capital Costs

1. Pre-design investigation borings		**$600**
Assume number of borings =	4	
Assume average depth (linear feet) =	10	
Cost per linear foot =	$15	
2. Excavation with Offbase Disposal		**$16,889**
A. Excavation of Sediments		$1,606
Volume of Sediments (cubic yards)		46
Excavation Costs per Cubic Yard		$2.31
Mobilization/Demobilization of Equipment		$1,500
B. Post Excavation Confirmation Sampling Program		$2,162
Number of Confirmation Samples =		5
Number of QA Samples =		1
Sampling Cost per Sample Location (labor and equipment) =		$208
Data Validation Labor per Sample =		$55
Sample Analysis (per sample, includes 15% for CLP)		$132
TPH as Diesel 8015M	$115	
C. Offbase Disposal to a Class II Hazardous Waste Landfill		$10,683
Volume of Soil--25% swell factor (cubic yards)		58
Transportation and Disposal Costs per Cubic Yard		$179
Waste Profile Fee (One time cost)		$300
D. Grading of Excavation Site		$2,438
Volume of Soil--25% swell factor (cubic yards)		58
Grading Cost per Cubic Yard		$3.58
Mobilization/Demobilization of Equipment		$2,230

SUBTOTAL CAPITAL COSTS	**$17,489**
15% BID CONTINGENCY	**$2,623**
15% SCOPE CONTINGENCY	**$2,623**
5% PERMITTING COSTS	**$874**
TOTAL CAPITAL COSTS	**$23,610**

O&M Costs

No O&M costs are associated with this alternative.

Building 26 - Excavation with Onsite Disposal

Capital Costs

1. Pre-design investigation borings		**$600**
Assume number of borings =	4	
Assume average depth (linear feet) =	10	
Cost per linear foot =	$15	
2. Excavation with Onbase Disposal		**$6,582**
A. Excavation of Sediments		$1,606
Volume of Sediments (cubic yards)		46
Excavation Costs per Cubic Yard		$2.31
Mobilization/Demobilization of Equipment		$1,500
B. Post Excavation Confirmation Sampling Program		$2,162
Number of Confirmation Samples =		5
Number of QA Samples =		1
Sampling Cost per Sample Location (labor and equipment) =		$208
Data Validation Labor per Sample =		$55
Sample Analysis (per sample, includes 15% for CLP)		$132
TPH as Diesel 8015M	$115	
C. Onbase Disposal		$376
Volume of Soil--25% swell factor (cubic yards)		58
Transportation and Disposal Costs per Cubic Yard		$1.32
Mobilization/Demobilization of Equipment		$300
D. Grading of Excavation Site		$2,438
Volume of Soil--25% swell factor (cubic yards)		58
Grading Cost per Cubic Yard		$3.58
Mobilization/Demobilization of Equipment		$2,230

SUBTOTAL CAPITAL COSTS	**$7,182**
15% BID CONTINGENCY	**$1,077**
15% SCOPE CONTINGENCY	**$1,077**
5% PERMITTING COSTS	**$359**
TOTAL CAPITAL COSTS	**$9,696**

O&M Costs

No O&M costs are associated with this alternative.

Building 35/39 Area - Excavation with Offsite Disposal

Capital Costs

1. Excavation with Offbase Disposal			**$12,877**
A. Excavation of Sediments			$1,558
Volume of Sediments (cubic yards)			25
Excavation Costs per Cubic Yard			$2.31
Mobilization/Demobilization of Equipment			$1,500
B. Post Excavation Confirmation Sampling Program			$1,812
Number of Confirmation Samples =			3
Number of QA Samples			1
Sampling Cost per Sample Location (labor and equipment)			$208
Data Validation Labor per Sample			$55
Sample Analysis (per sample, includes 15% for CLP)			$242
Pesticides	8080	$210	
C. Offbase Disposal to a Class II Hazardous Waste Landfill			$5,850
Volume of Soil--25% swell factor (cubic yards)			31
Transportation and Disposal Costs per Cubic Yard			$179
Waste Profile Fee (One time cost)			$300
D. Grading of Excavation Site			$2,341
Volume of Soil--25% swell factor (cubic yards)			31
Grading Cost per Cubic Yard			$3.58
Mobilization/Demobilization of Equipment			$2,230
E. Support of Outfall Pipeline			$1,317
Volume required backfill (cubic yards) =			13
Cost per cubic yard =			$1.31
Mobilization/Demobilization =			$1,300
	SUBTOTAL CAPITAL COSTS		**$12,877**
	15% BID CONTINGENCY		**$1,932**
	15% SCOPE CONTINGENCY		**$1,932**
	5% PERMITTING COSTS		**$644**
	TOTAL CAPITAL COSTS		**$17,384**

O&M Costs

No O&M costs are associated with this alternative.

Building 35/39 Area - Excavation with Onsite Disposal

Capital Costs

1. Excavation with Onbase Disposal			**$7,368**
A. Excavation of Sediments			$1,558
Volume of Sediments (cubic yards)			25
Excavation Costs per Cubic Yard			$2.31
Mobilization/Demobilization of Equipment			$1,500
B. Post Excavation Confirmation Sampling Program			$1,812
Number of Confirmation Samples =			3
Number of QA Samples			1
Sampling Cost per Sample Location (labor and equipment)			$208
Data Validation Labor per Sample			$55
Sample Analysis (per sample, includes 15% for CLP)			$242
Pesticides	8080	$210	
C. Onbase Disposal			$341
Volume of Soil--25% swell factor (cubic yards)			31
Transportation and Disposal Costs per Cubic Yard			$1.32
Mobilization/Demobilization of Equipment			$300
D. Grading of Excavation Site			$2,341
Volume of Soil--25% swell factor (cubic yards)			31
Grading Cost per Cubic Yard			$3.58
Mobilization/Demobilization of Equipment			$2,230
E. Support of Outfall Pipeline			$1,317
Volume required backfill (cubic yards) =			13
Cost per cubic yard =			$1.31
Mobilization/Demobilization =			$1,300
	SUBTOTAL CAPITAL COSTS		**$7,368**
	15% BID CONTINGENCY		**$1,105**
	15% SCOPE CONTINGENCY		**$1,105**
	5% PERMITTING COSTS		**$368**
	TOTAL CAPITAL COSTS		**$9,947**

O&M Costs

No O&M costs are associated with this alternative.

Building 41 Area - Excavation with Offsite Disposal

Capital Costs

1. Pre-design investigation borings		**$1,080**
Assume number of borings =	6	
Assume average depth (linear feet) =	12	
Cost per linear foot =	$15	
2. Excavation with Offbase Disposal		**$218,934**
A. Excavation of Sediments		$3,591
Volume of Sediments (cubic yards)		907
Excavation Costs per Cubic Yard		$2.31
Mobilization/Demobilization of Equipment		$1,500
B. Post Excavation Confirmation Sampling Program		$4,888
Number of Confirmation Samples		7
Number of QA Samples		1
Sampling Cost per Sample Location (labor and equipment)		$208
Data Validation Labor per Sample		$55
Sample Analysis (per sample, includes 15% for CLP)		$374
TPH as Diesel 8015M	$115	
PAHs 8270	$210	
C. Offbase Disposal to a Class II Hazardous Waste Landfill		$203,270
Volume of Soil--25% swell factor (cubic yards)		1,134
Transportation and Disposal Costs per Cubic Yard		$179
Waste Profile Fee (One time cost)		$300
D. Grading of Excavation Site (ditch will remain operational)		$6,289
Volume of Soil--25% swell factor (cubic yards)		1,134
Grading Cost per Cubic Yard		$3.58
Mobilization/Demobilization of Equipment		$2,230

E. Asphalt/Concrete Removal	$896
Assume volume of concrete (cubic yards) =	120
Excavation costs per cubic yard =	$0.80
Mobilization/Demobilization of equipment =	$800

SUBTOTAL CAPITAL COSTS	**$220,014**
15% BID CONTINGENCY	**$33,002**
15% SCOPE CONTINGENCY	**$33,002**
5% PERMITTING COSTS	**$11,001**
TOTAL CAPITAL COSTS	**$297,018**

O&M Costs

No O&M costs are associated with this alternative.

Building 41 Area - Excavation with Onsite Disposal

Capital Costs

1. Pre-design investigation borings			**$1,080**
Assume number of borings =		6	
Assume average depth (linear feet) =		12	
Cost per linear foot =		$15	
2. Excavation with Onbase Disposal			**$17,457**
A. Excavation of Sediments			$3,591
Volume of Sediments (cubic yards)			907
Excavation Costs per Cubic Yard			$2.31
Mobilization/Demobilization of Equipment			$1,500
B. Post Excavation Confirmation Sampling Program			$4,888
Number of Confirmation Samples			7
Number of QA Samples			1
Sampling Cost per Sample Location (labor and equipment)			$208
Data Validation Labor per Sample			$55
Sample Analysis (per sample, includes 15% for CLP)			$374
TPH as Diesel	8015M	$115	
PAHs	8270	$210	
C. Onbase Disposal			$1,793
Volume of Soil--25% swell factor (cubic yards)			1,134
Transportation and Disposal Costs per Cubic Yard			$1.32
Mobilization/Demobilization of Equipment			$300
D. Grading of Excavation Site			$6,289
Volume of Soil--25% swell factor (cubic yards)			1,134
Grading Cost per Cubic Yard			$3.58
Mobilization/Demobilization of Equipment			$2,230

E. Asphalt/Concrete Removal		$896
Assume volume of concrete (cubic yards) =		120
Excavation costs per cubic yard =		$0.80
Mobilization/Demobilization of equipment =		$800
	SUBTOTAL CAPITAL COSTS	**$18,537**
	15% BID CONTINGENCY	**$2,780**
	15% SCOPE CONTINGENCY	**$2,780**
	5% PERMITTING COSTS	**$927**
	TOTAL CAPITAL COSTS	**$25,024**

O&M Costs

No O&M costs are associated with this alternative.

Building 82/87/92/94 Area and Building 86 - Excavation with Offsite Disposal

Capital Costs

1. Pre-design investigation borings			**$1,800**
Assume number of borings =		8	
Assume average depth (linear feet) =		15	
Cost per linear foot =		$15	
2. Excavation with Offbase Disposal			**$960,181**
A. Excavation of Soils			$10,960
Volume of Soils (cubic yards)			4,103
Excavation Costs per Cubic Yard			$2.31
Mobilization/Demobilization of Equipment			$1,500
B. Post Excavation Confirmation Sampling Program			$8,956
Number of Confirmation Samples			10
Number of QA Samples			2
Sampling Cost per Sample Location (labor and equipment)			$208
Data Validation Labor per Sample			$55
Sample Analysis (per sample, includes 15% for CLP)			$518
Total Metals	6010/7000	$240	
PAHs	8270	$210	
C. Offbase Disposal to a Class II Hazardous Waste Landfill			$918,474
Volume of Soil--25% swell factor (cubic yards)			5,129
Transportation and Disposal Costs per Cubic Yard			$179
Waste Profile Fee (One time cost)			$300
D. Grading of Excavation Site			$20,591
Volume of Soil--25% swell factor (cubic yards)			5,129
Grading Cost per Cubic Yard			$3.58
Mobilization/Demobilization of Equipment			$2,230

E. Asphalt/Concrete Removal		$1,200
Assume volume of concrete (cubic yards) =		500
Excavation costs per cubic yards per hour =		$0.80
Mobilization/Demobilization of equipment =		$800
	SUBTOTAL CAPITAL COSTS	**$961,981**
	15% BID CONTINGENCY	**$144,297**
	15% SCOPE CONTINGENCY	**$144,297**
	5% PERMITTING COSTS	**$48,099**
	TOTAL CAPITAL COSTS	**$1,298,674**

O&M Costs

No O&M costs are associated with this alternative.

Building 82/87/92/94 Area and Building 86 - Excavation with Onsite Disposal

Capital Costs

1. Pre-design investigation borings			**$1,800**
Assume number of borings =		8	
Assume average depth (linear feet) =		15	
Cost per linear foot =		$15	
2. Excavation with Onbase Disposal			**$48,759**
A. Excavation of Soils			$10,960
Volume of Soils (cubic yards)			4,103
Excavation Costs per Cubic Yard			$2.31
Mobilization/Demobilization of Equipment			$1,500
B. Post Excavation Confirmation Sampling Program			$8,956
Number of Confirmation Samples			10
Number of QA Samples			2
Sampling Cost per Sample Location (labor and equipment)			$208
Data Validation Labor per Sample			$55
Sample Analysis (per sample, includes 15% for CLP)			$518
Total Metals	6010/7000	$240	
PAHs	8270	$210	
C. Onbase Disposal			$7,052
Volume of Soil--25% swell factor (cubic yards)			5,129
Transportation and Disposal Costs per Cubic Yard			$1.32
Mobilization/Demobilization of Equipment			$300
D. Grading of Excavation Site			$20,591
Volume of Soil--25% swell factor (cubic yards)			5,129
Grading Cost per Cubic Yard			$3.58
Mobilization/Demobilization of Equipment			$2,230

E. Asphalt/Concrete Removal		$1,200
Assume volume of concrete (cubic yards) =		500
Excavation costs per cubic yards per hour =		$0.80
Mobilization/Demobilization of equipment =		$800
	SUBTOTAL CAPITAL COSTS	**$50,559**
	15% BID CONTINGENCY	**$7,584**
	15% SCOPE CONTINGENCY	**$7,584**
	5% PERMITTING COSTS	**$2,528**
	TOTAL CAPITAL COSTS	**$68,254**

O&M Costs

No O&M costs are associated with this alternative.

Perimeter Drainage Ditch - Excavation with Offsite Disposal

Capital Costs

1. Excavation with Offbase Disposal			**$3,334,820**
A. Excavation of Sediments			$34,460
Volume of Sediments (cubic yards)			14,296
Excavation Costs per Cubic Yard			$2.31
Mobilization/Demobilization of Equipment			$1,500
B. Post Excavation Confirmation Sampling Program			$34,678
Number of Confirmation Samples			40
Number of QA Samples			6
Sampling Cost per Sample Location (labor and equipment)			$208
Data Validation Labor per Sample			$55
Sample Analysis (per sample, includes 15% for CLP)			$518
Pesticides	8080	$210	
Total Metals	6010/7000	$240	
C. Offbase Disposal to a Class II Hazardous Waste Landfill			$3,199,477
Volume of Soil--25% swell factor (cubic yards)			17,870
Transportation and Disposal Costs per Cubic Yard			$179
Waste Profile Fee (One time cost)			$300
D. Grading of Excavation Site			$66,205
Volume of Soil--25% swell factor (cubic yards)			17,870
Grading Cost per Cubic Yard			$3.58
Mobilization/Demobilization of Equipment			$2,230

SUBTOTAL CAPITAL COSTS	**$3,334,820**
15% BID CONTINGENCY	**$500,223**
15% SCOPE CONTINGENCY	**$500,223**
5% PERMITTING COSTS	**$166,741**
TOTAL CAPITAL COSTS	**$4,502,006**

O&M Costs

No O&M costs are associated with this alternative.

Perimeter Drainage Ditch - Excavation with Onsite Disposal

Capital Costs

1. Excavation with Onbase Disposal			**$159,170**
A. Excavation of Sediments			$34,460
Volume of Sediments (cubic yards)			14,296
Excavation Costs per Cubic Yard			$2.31
Mobilization/Demobilization of Equipment			$1,500
B. Post Excavation Confirmation Sampling Program			$34,678
Number of Confirmation Samples			40
Number of QA Samples			6
Sampling Cost per Sample Location (labor and equipment)			$208
Data Validation Labor per Sample			$55
Sample Analysis (per sample, includes 15% for CLP)			$518
Pesticides	8080	$210	
Total Metals	6010/7000	$240	
C. Onbase Disposal			$23,827
Volume of Soil--25% swell factor (cubic yards)			17,870
Transportation and Disposal Costs per Cubic Yard			$1.32
Mobilization/Demobilization of Equipment			$300
D. Grading of Excavation Site			$66,205
Volume of Soil--25% swell factor (cubic yards)			17,870
Grading Cost per Cubic Yard			$3.58
Mobilization/Demobilization of Equipment			$2,230

SUBTOTAL CAPITAL COSTS	**$159,170**
15% BID CONTINGENCY	**$23,875**
15% SCOPE CONTINGENCY	**$23,875**
5% PERMITTING COSTS	**$7,958**
TOTAL CAPITAL COSTS	**$214,879**

O&M Costs

No O&M costs are associated with this alternative.

Perimeter Drainage Ditch Spoils Pile A - Excavation with Offsite Disposal

Capital Costs

1. Pre-design investigation borings		**$180**
Assume number of borings =	4	
Assume average depth (linear feet) =	3	
Cost per linear foot =	$15	
2. Excavation with Offbase Disposal		**$41,222**
A. Excavation of Sediments		$1,857
Volume of Sediments (cubic yards)		155
Excavation Costs per Cubic Yard		$2.31
Mobilization/Demobilization of Equipment		$1,500
B. Post Excavation Confirmation Sampling Program		$1,409
Number of Confirmation Samples		2
Number of QA Samples		1
Sampling Cost per Sample Location (labor and equipment)		$208
Data Validation Labor per Sample		$55
Sample Analysis (per sample, includes 15% for CLP)		$276
Total Metals 6010/7000	$240	
C. Offbase Disposal to a Class II Hazardous Waste Landfill		$35,031
Volume of Soil--25% swell factor (cubic yards)		194
Transportation and Disposal Costs per Cubic Yard		$179
Waste Profile Fee (One time cost)		$300
D. Grading of Excavation Site		$2,925
Volume of Soil--25% swell factor (cubic yards)		194
Grading Cost per Cubic Yard		$3.58
Mobilization/Demobilization of Equipment		$2,230

SUBTOTAL CAPITAL COSTS	**$41,402**
15% BID CONTINGENCY	**$6,210**
15% SCOPE CONTINGENCY	**$6,210**
5% PERMITTING COSTS	**$2,070**
TOTAL CAPITAL COSTS	**$55,892**

O&M Costs

No O&M costs are associated with this alternative.

Perimeter Drainage Ditch Spoils Pile A - Excavation with Onsite Disposal

Capital Costs

1. Pre-design investigation borings		**$180**
Assume number of borings =	4	
Assume average depth (linear feet) =	3	
Cost per linear foot =	$15	
2. Excavation with Onbase Disposal		**$6,746**
A. Excavation of Sediments		$1,857
Volume of Sediments (cubic yards)		155
Excavation Costs per Cubic Yard		$2.31
Mobilization/Demobilization of Equipment		$1,500
B. Post Excavation Confirmation Sampling Program		$1,409
Number of Confirmation Samples		2
Number of QA Samples		1
Sampling Cost per Sample Location (labor and equipment)		$208
Data Validation Labor per Sample		$55
Sample Analysis (per sample, includes 15% for CLP)		$276
Total Metals 6010/7000	$240	
C. Onbase Disposal		$555
Volume of Soil--25% swell factor (cubic yards)		194
Transportation and Disposal Costs per Cubic Yard		$1.32
Mobilization/Demobilization of Equipment		$300
D. Grading of Excavation Site		$2,925
Volume of Soil--25% swell factor (cubic yards)		194
Grading Cost per Cubic Yard		$3.58
Mobilization/Demobilization of Equipment		$2,230

SUBTOTAL CAPITAL COSTS	**$6,926**
15% BID CONTINGENCY	**$1,039**
15% SCOPE CONTINGENCY	**$1,039**
5% PERMITTING COSTS	**$346**
TOTAL CAPITAL COSTS	**$9,350**

O&M Costs

No O&M costs are associated with this alternative.

Perimeter Drainage Ditch Spoils Pile B - Excavation with Offsite Disposal

Capital Costs

1. Pre-design investigation borings		**$180**
Assume number of borings =	4	
Assume average depth (linear feet) =	3	
Cost per linear foot =	$15	
2. Excavation with Offbase Disposal		**$91,208**
A. Excavation of Sediments		$2,358
Volume of Sediments (cubic yards)		372
Excavation Costs per Cubic Yard		$2.31
Mobilization/Demobilization of Equipment		$1,500
B. Post Excavation Confirmation Sampling Program		$1,409
Number of Confirmation Samples		2
Number of QA Samples		1
Sampling Cost per Sample Location (labor and equipment)		$208
Data Validation Labor per Sample		$55
Sample Analysis (per sample, includes 15% for CLP)		$276
Total Metals 6010/7000	$240	
C. Offbase Disposal to a Class II Hazardous Waste Landfill		$83,547
Volume of Soil--25% swell factor (cubic yards)		465
Transportation and Disposal Costs per Cubic Yard		$179
Waste Profile Fee (One time cost)		$300
D. Grading of Excavation Site		$3,895
Volume of Soil--25% swell factor (cubic yards)		465
Grading Cost per Cubic Yard		$3.58
Mobilization/Demobilization of Equipment		$2,230

SUBTOTAL CAPITAL COSTS	**$91,388**
15% BID CONTINGENCY	**$13,708**
15% SCOPE CONTINGENCY	**$13,708**
5% PERMITTING COSTS	**$4,569**
TOTAL CAPITAL COSTS	**$123,374**

O&M Costs

No O&M costs are associated with this alternative.

Perimeter Drainage Ditch Spoils Pile B - Excavation with Onsite Disposal

Capital Costs

1. Pre-design investigation borings		**$180**
Assume number of borings =	4	
Assume average depth (linear feet) =	3	
Cost per linear foot =	$15	
2. Excavation with Onbase Disposal		**$8,574**
A. Excavation of Sediments		$2,358
Volume of Sediments (cubic yards)		372
Excavation Costs per Cubic Yard		$2.31
Mobilization/Demobilization of Equipment		$1,500
B. Post Excavation Confirmation Sampling Program		$1,409
Number of Confirmation Samples		2
Number of QA Samples		1
Sampling Cost per Sample Location (labor and equipment)		$208
Data Validation Labor per Sample		$55
Sample Analysis (per sample, includes 15% for CLP)		$276
Total Metals 6010/7000	$240	
C. Onbase Disposal		$912
Volume of Soil--25% swell factor (cubic yards)		465
Transportation and Disposal Costs per Cubic Yard		$1.32
Mobilization/Demobilization of Equipment		$300
D. Grading of Excavation Site		$3,895
Volume of Soil--25% swell factor (cubic yards)		465
Grading Cost per Cubic Yard		$3.58
Mobilization/Demobilization of Equipment		$2,230

SUBTOTAL CAPITAL COSTS	**$8,754**
15% BID CONTINGENCY	**$1,313**
15% SCOPE CONTINGENCY	**$1,313**
5% PERMITTING COSTS	**$438**
TOTAL CAPITAL COSTS	**$11,817**

O&M Costs

No O&M costs are associated with this alternative.

Perimeter Drainage Ditch Spoils Pile D - Excavation with Offsite Disposal

Capital Costs

1. Excavation with Offbase Disposal			**$44,625**
A. Excavation of Sediments			$1,894
Volume of Sediments (cubic yards)			171
Excavation Costs per Cubic Yard			$2.31
Mobilization/Demobilization of Equipment			$1,500
B. Post Excavation Verification Sampling Program			$1,307
Number of Verification Samples			2
Number of QA Samples			1
Sampling Cost per Sample Location (labor and equipment)			$208
Data Validation Labor per Sample			$55
Sample Analysis (per sample, includes 15% for CLP)			$242
Pesticides	8080	$210	
C. Offbase Disposal to a Class II Hazardous Waste Landfill			$38,432
Volume of Soil--25% swell factor (cubic yards)			213
Transportation and Disposal Costs per Cubic Yard			$179
Waste Profile Fee (One time cost)			$300
D. Grading of Excavation Site			$2,993
Volume of Soil--25% swell factor (cubic yards)			213
Grading Cost per Cubic Yard			$3.58
Mobilization/Demobilization of Equipment			$2,230

SUBTOTAL CAPITAL COSTS	**$44,625**
15% BID CONTINGENCY	**$6,694**
15% SCOPE CONTINGENCY	**$6,694**
5% PERMITTING COSTS	**$2,231**
TOTAL CAPITAL COSTS	**$60,244**

O&M Costs

No O&M costs are associated with this alternative.

Perimeter Drainage Ditch Spoils Pile D - Excavation with Onsite Disposal

Capital Costs

1. Excavation with Onbase Disposal			**$6,774**
A. Excavation of Sediments			$1,894
Volume of Sediments (cubic yards)			171
Excavation Costs per Cubic Yard			$2.31
Mobilization/Demobilization of Equipment			$1,500
B. Post Excavation Verification Sampling Program			$1,307
Total Excavated Area (Acres)			0.11
Number of Verification Samples			2
Number of QA Samples			1
Sampling Cost per Sample Location (labor and equipment)			$208
Data Validation Labor per Sample			$55
Sample Analysis (per sample, includes 15% for CLP)			$242
Pesticides	8080	$210	
C. Onbase Disposal			$580
Volume of Soil--25% swell factor (cubic yards)			213
Transportation and Disposal Costs per Cubic Yard			$1.32
Mobilization/Demobilization of Equipment			$300
D. Grading of Excavation Site			$2,993
Volume of Soil--25% swell factor (cubic yards)			213
Grading Cost per Cubic Yard			$3.58
Mobilization/Demobilization of Equipment			$2,230

SUBTOTAL CAPITAL COSTS	**$6,774**
15% BID CONTINGENCY	**$1,016**
15% SCOPE CONTINGENCY	**$1,016**
5% PERMITTING COSTS	**$339**
TOTAL CAPITAL COSTS	**$9,144**

O&M Costs

No O&M costs are associated with this alternative.

Perimeter Drainage Ditch Spoils Pile E - Excavation with Offsite Disposal

Capital Costs

1. Excavation with Offbase Disposal			**$41,857**
A. Excavation of Sediments			$1,864
Volume of Sediments (cubic yards)			158
Excavation Costs per Cubic Yard			$2.31
Mobilization/Demobilization of Equipment			$1,500
B. Post Excavation Confirmation Sampling Program			$1,307
Number of Confirmation Samples			2
Number of QA Samples			1
Sampling Cost per Sample Location (labor and equipment)			$208
Data Validation Labor per Sample			$55
Sample Analysis (per sample, includes 15% for CLP)			$242
Pesticides	8080	$210	
C. Offbase Disposal to a Class II Hazardous Waste Landfill			$35,747
Volume of Soil--25% swell factor (cubic yards)			198
Transportation and Disposal Costs per Cubic Yard			$179
Waste Profile Fee (One time cost)			$300
D. Grading of Excavation Site			$2,939
Volume of Soil--25% swell factor (cubic yards)			198
Grading Cost per Cubic Yard			$3.58
Mobilization/Demobilization of Equipment			$2,230

SUBTOTAL CAPITAL COSTS	**$41,857**
15% BID CONTINGENCY	**$6,279**
15% SCOPE CONTINGENCY	**$6,279**
5% PERMITTING COSTS	**$2,093**
TOTAL CAPITAL COSTS	**$56,507**

O&M Costs

No O&M costs are associated with this alternative.

Perimeter Drainage Ditch Spoils Pile E - Excavation with Onsite Disposal

Capital Costs

1. Excavation with Onsite Disposal		**$5,701**
A. Excavation of Sediments		$1,864
Volume of Sediments (cubic yards)		158
Excavation Costs per Cubic Yard		$2.31
Mobilization/Demobilization of Equipment		$1,500
B. Post Excavation Verification Sampling Program		$1,307
Total Excavated Area (Acres)		0.10
Number of Verification Samples		2
Number of QA Samples		1
Sampling Cost per Sample Location (labor and equipment)		$208
Data Validation Labor per Sample		$55
Sample Analysis (per sample, includes 15% for CLP)		$242
Pesticides 8080	$210	
C. Onsite Disposal		$300
Volume of Soil--25% swell factor (cubic yards)		0
Transportation and Disposal Costs per Cubic Yard		$1.32
Mobilization/Demobilization of Equipment		$300
D. Grading of Excavation Site		$2,230
Volume of Soil--25% swell factor (cubic yards)		0
Grading Cost per Cubic Yard		$3.58
Mobilization/Demobilization of Equipment		$2,230

SUBTOTAL CAPITAL COSTS	**$5,701**
15% BID CONTINGENCY	**$855**
15% SCOPE CONTINGENCY	**$855**
5% PERMITTING COSTS	**$285**
TOTAL CAPITAL COSTS	**$7,697**

O&M Costs

No O&M costs are associated with this alternative.

Perimeter Drainage Ditch Spoils Pile F - Excavation with Offsite Disposal

Capital Costs

1. Excavation with Offbase Disposal			**$135,041**
A. Excavation of Sediments			$2,766
Volume of Sediments (cubic yards)			549
Excavation Costs per Cubic Yard			$2.31
Mobilization/Demobilization of Equipment			$1,500
B. Post Excavation Confirmation Sampling Program			$4,478
Number of Confirmation Samples			5
Number of QA Samples			1
Sampling Cost per Sample Location (labor and equipment)			$208
Data Validation Labor per Sample			$55
Sample Analysis (per sample, includes 15% for CLP)			$518
Total Metals	6010/7000	$240	
Pesticides	8080	$210	
C. Offbase Disposal to a Class II Hazardous Waste Landfill			$123,111
Volume of Soil--25% swell factor (cubic yards)			686
Transportation and Disposal Costs per Cubic Yard			$179
Waste Profile Fee (One time cost)			$300
D. Grading of Excavation Site			$4,686
Volume of Soil--25% swell factor (cubic yards)			686
Grading Cost per Cubic Yard			$3.58
Mobilization/Demobilization of Equipment			$2,230

SUBTOTAL CAPITAL COSTS	**$135,041**
15% BID CONTINGENCY	**$20,256**
15% SCOPE CONTINGENCY	**$20,256**
5% PERMITTING COSTS	**$6,752**
TOTAL CAPITAL COSTS	**$182,305**

O&M Costs

No O&M costs are associated with this alternative.

Perimeter Drainage Ditch Spoils Pile F - Excavation with Onsite Disposal

Capital Costs

1. Excavation with Onbase Disposal			**$13,133**
A. Excavation of Sediments			$2,766
Volume of Sediments (cubic yards)			549
Excavation Costs per Cubic Yard			$2.31
Mobilization/Demobilization of Equipment			$1,500
B. Post Excavation Confirmation Sampling Program			$4,478
Number of Confirmation Samples			5
Number of QA Samples			1
Sampling Cost per Sample Location (labor and equipment)			$208
Data Validation Labor per Sample			$55
Sample Analysis (per sample, includes 15% for CLP)			$518
Total Metals	6010/7000	$240	
Pesticides	8080	$210	
C. Onbase Disposal			$1,203
Volume of Soil--25% swell factor (cubic yards)			686
Transportation and Disposal Costs per Cubic Yard			$1.32
Mobilization/Demobilization of Equipment			$300
D. Grading of Excavation Site			$4,686
Volume of Soil--25% swell factor (cubic yards)			686
Grading Cost per Cubic Yard			$3.58
Mobilization/Demobilization of Equipment			$2,230

SUBTOTAL CAPITAL COSTS	**$13,133**
15% BID CONTINGENCY	**$1,970**
15% SCOPE CONTINGENCY	**$1,970**
5% PERMITTING COSTS	**$657**
TOTAL CAPITAL COSTS	**$17,729**

O&M Costs

No O&M costs are associated with this alternative.

Perimeter Drainage Ditch Spoils Pile G - Excavation with Offsite Disposal

Capital Costs

1. Excavation with Offbase Disposal			**$50,528**
A. Excavation of Sediments			$1,953
Volume of Sediments (cubic yards)			196
Excavation Costs per Cubic Yard			$2.31
Mobilization/Demobilization of Equipment			$1,500
B. Post Excavation Confirmation Sampling Program			$1,307
Number of Confirmation Samples =			2
Number of QA Samples			1
Sampling Cost per Sample Location (labor and equipment)			$208
Data Validation Labor per Sample			$55
Sample Analysis (per sample, includes 15% for CLP)			$242
Pesticides	8080	$210	
C. Offbase Disposal to a Class II Hazardous Waste Landfill			$44,161
Volume of Soil--25% swell factor (cubic yards)			245
Transportation and Disposal Costs per Cubic Yard			$179
Waste Profile Fee (One time cost)			$300
D. Grading of Excavation Site			$3,107
Volume of Soil--25% swell factor (cubic yards)			245
Grading Cost per Cubic Yard			$3.58
Mobilization/Demobilization of Equipment			$2,230

SUBTOTAL CAPITAL COSTS	**$50,528**
15% BID CONTINGENCY	**$7,579**
15% SCOPE CONTINGENCY	**$7,579**
5% PERMITTING COSTS	**$2,526**
TOTAL CAPITAL COSTS	**$68,213**

O&M Costs

No O&M costs are associated with this alternative.

Perimeter Drainage Ditch Spoils Pile G - Excavation with Onsite Disposal

Capital Costs

1. Excavation with Onbase Disposal			**$6,989**
A. Excavation of Sediments			$1,953
Volume of Sediments (cubic yards)			196
Excavation Costs per Cubic Yard			$2.31
Mobilization/Demobilization of Equipment			$1,500
B. Post Excavation Confirmation Sampling Program			$1,307
Number of Confirmation Samples =			2
Number of QA Samples			1
Sampling Cost per Sample Location (labor and equipment)			$208
Data Validation Labor per Sample			$55
Sample Analysis (per sample, includes 15% for CLP)			$242
Pesticides	8080	$210	
C. Onbase Disposal			$623
Volume of Soil--25% swell factor (cubic yards)			245
Transportation and Disposal Costs per Cubic Yard			$1.32
Mobilization/Demobilization of Equipment			$300
D. Grading of Excavation Site			$3,107
Volume of Soil--25% swell factor (cubic yards)			245
Grading Cost per Cubic Yard			$3.58
Mobilization/Demobilization of Equipment			$2,230

SUBTOTAL CAPITAL COSTS	**$6,989**
15% BID CONTINGENCY	**$1,048**
15% SCOPE CONTINGENCY	**$1,048**
5% PERMITTING COSTS	**$349**
TOTAL CAPITAL COSTS	**$9,436**

O&M Costs

No O&M costs are associated with this alternative.

Perimeter Drainage Ditch Spoils Pile I - Excavation with Offsite Disposal

Capital Costs

1. Pre-design investigation borings		**$180**
Assume number of borings =	4	
Assume average depth (linear feet) =	3	
Cost per linear foot =	$15	
2. Excavation with Offbase Disposal		**$30,340**
A. Excavation of Sediments		$1,749
Volume of Sediments (cubic yards)		108
Excavation Costs per Cubic Yard		$2.31
Mobilization/Demobilization of Equipment		$1,500
B. Post Excavation Confirmation Sampling Program		$1,409
Number of Confirmation Samples		2
Number of QA Samples		1
Sampling Cost per Sample Location (labor and equipment)		$208
Data Validation Labor per Sample		$55
Sample Analysis (per sample, includes 15% for CLP)		$276
Total Metals 6010/7000	$240	
C. Offbase Disposal to a Class II Hazardous Waste Landfill		$24,468
Volume of Soil--25% swell factor (cubic yards)		135
Transportation and Disposal Costs per Cubic Yard		$179
Waste Profile Fee (One time cost)		$300
D. Grading of Excavation Site		$2,713
Volume of Soil--25% swell factor (cubic yards)		135
Grading Cost per Cubic Yard		$3.58
Mobilization/Demobilization of Equipment		$2,230

SUBTOTAL CAPITAL COSTS	**$30,520**
15% BID CONTINGENCY	**$4,578**
15% SCOPE CONTINGENCY	**$4,578**
5% PERMITTING COSTS	**$1,526**
TOTAL CAPITAL COSTS	**$41,202**

O&M Costs

No O&M costs are associated with this alternative.

Perimeter Drainage Ditch Spoils Pile I - Excavation with Onsite Disposal

Capital Costs

1. Pre-design investigation borings		**$180**
Assume number of borings =	4	
Assume average depth (linear feet) =	3	
Cost per linear foot =	$15	
2. Excavation with Onbase Disposal		**$6,349**
A. Excavation of Sediments		$1,749
Volume of Sediments (cubic yards)		108
Excavation Costs per Cubic Yard		$2.31
Mobilization/Demobilization of Equipment		$1,500
B. Post Excavation Confirmation Sampling Program		$1,409
Number of Confirmation Samples		2
Number of QA Samples		1
Sampling Cost per Sample Location (labor and equipment)		$208
Data Validation Labor per Sample		$55
Sample Analysis (per sample, includes 15% for CLP)		$276
Total Metals 6010/7000	$240	
C. Onbase Disposal		$478
Volume of Soil--25% swell factor (cubic yards)		135
Transportation and Disposal Costs per Cubic Yard		$1.32
Mobilization/Demobilization of Equipment		$300
D. Grading of Excavation Site		$2,713
Volume of Soil--25% swell factor (cubic yards)		135
Grading Cost per Cubic Yard		$3.58
Mobilization/Demobilization of Equipment		$2,230

SUBTOTAL CAPITAL COST	**$6,529**
15% BID CONTINGENCY	**$979**
15% SCOPE CONTINGENC	**$979**
5% PERMITTING COSTS	**$326**
TOTAL CAPITAL COSTS	**$8,814**

O&M Costs

No O&M costs are associated with this alternative.

Perimeter Drainage Ditch Spoils Pile J - Excavation with Offsite Disposal

Capital Costs

1. Excavation with Offbase Disposal			**$12,530**
A. Excavation of Sediments			$1,571
Volume of Sediments (cubic yards)			31
Excavation Costs per Cubic Yard			$2.31
Mobilization/Demobilization of Equipment			$1,500
B. Post Excavation Confirmation Sampling Program			$1,307
Number of Confirmation Samples =			2
Number of QA Samples			1
Sampling Cost per Sample Location (labor and equipment)			$208
Data Validation Labor per Sample			$55
Sample Analysis (per sample, includes 15% for CLP)			$242
Pesticides	8080	$210	
C. Offbase Disposal to a Class II Hazardous Waste Landfill			$7,282
Volume of Soil--25% swell factor (cubic yards)			39
Transportation and Disposal Costs per Cubic Yard			$179
Waste Profile Fee (One time cost)			$300
D. Grading of Excavation Site			$2,370
Volume of Soil--25% swell factor (cubic yards)			39
Grading Cost per Cubic Yard			$3.58
Mobilization/Demobilization of Equipment			$2,230

SUBTOTAL CAPITAL COSTS	**$12,530**
15% BID CONTINGENCY	**$1,879**
15% SCOPE CONTINGENCY	**$1,879**
5% PERMITTING COSTS	**$626**
TOTAL CAPITAL COSTS	**$16,915**

O&M Costs

No O&M costs are associated with this alternative.

Perimeter Drainage Ditch Spoils Pile J - Excavation with Onsite Disposal

Capital Costs

1. Excavation with Onbase Disposal			**$5,599**
A. Excavation of Sediments			$1,571
Volume of Sediments (cubic yards)			31
Excavation Costs per Cubic Yard			$2.31
Mobilization/Demobilization of Equipment			$1,500
B. Post Excavation Confirmation Sampling Program			$1,307
Number of Confirmation Samples =			2
Number of QA Samples			1
Sampling Cost per Sample Location (labor and equipment)			$208
Data Validation Labor per Sample			$55
Sample Analysis (per sample, includes 15% for CLP)			$242
Pesticides	8080	$210	
C. Onbase Disposal			$351
Volume of Soil--25% swell factor (cubic yards)			39
Transportation and Disposal Costs per Cubic Yard			$1.32
Mobilization/Demobilization of Equipment			$300
D. Grading of Excavation Site			$2,370
Volume of Soil--25% swell factor (cubic yards)			39
Grading Cost per Cubic Yard			$3.58
Mobilization/Demobilization of Equipment			$2,230

SUBTOTAL CAPITAL COSTS	**$5,599**
15% BID CONTINGENCY	**$840**
15% SCOPE CONTINGENCY	**$840**
5% PERMITTING COSTS	**$280**
TOTAL CAPITAL COSTS	**$7,559**

O&M Costs

No O&M costs are associated with this alternative.

Perimeter Drainage Ditch Spoils Pile K - Excavation with Offsite Disposal

Capital Costs

1. Excavation with Offbase Disposal			**$24,335**
A. Excavation of Sediments			$1,690
Volume of Sediments (cubic yards)			82
Excavation Costs per Cubic Yard			$2.31
Mobilization/Demobilization of Equipment			$1,500
B. Post Excavation Confirmation Sampling Program			$1,307
Number of Confirmation Samples =			2
Number of QA Samples			1
Sampling Cost per Sample Location (labor and equipment)			$208
Data Validation Labor per Sample			$55
Sample Analysis (per sample, includes 15% for CLP)			$242
Pesticides	8080	$210	
C. Offbase Disposal to a Class II Hazardous Waste Landfill			$18,740
Volume of Soil--25% swell factor (cubic yards)			103
Transportation and Disposal Costs per Cubic Yard			$179
Waste Profile Fee (One time cost)			$300
D. Grading of Excavation Site			$2,599
Volume of Soil--25% swell factor (cubic yards)			103
Grading Cost per Cubic Yard			$3.58
Mobilization/Demobilization of Equipment			$2,230

SUBTOTAL CAPITAL COSTS	**$24,335**
15% BID CONTINGENCY	**$3,650**
15% SCOPE CONTINGENCY	**$3,650**
5% PERMITTING COSTS	**$1,217**
TOTAL CAPITAL COSTS	**$32,852**

O&M Costs

No O&M costs are associated with this alternative.

Perimeter Drainage Ditch Spoils Pile K - Excavation with Onsite Disposal

Capital Costs

1. Excavation with Onbase Disposal			**$6,031**
A. Excavation of Sediments			$1,690
Volume of Sediments (cubic yards)			82
Excavation Costs per Cubic Yard			$2.31
Mobilization/Demobilization of Equipment			$1,500
B. Post Excavation Confirmation Sampling Program			$1,307
Number of Confirmation Samples =			2
Number of QA Samples			1
Sampling Cost per Sample Location (labor and equipment)			$208
Data Validation Labor per Sample			$55
Sample Analysis (per sample, includes 15% for CLP)			$242
Pesticides	8080	$210	
C. Onbase Disposal			$436
Volume of Soil--25% swell factor (cubic yards)			103
Transportation and Disposal Costs per Cubic Yard			$1.32
Mobilization/Demobilization of Equipment			$300
D. Grading of Excavation Site			$2,599
Volume of Soil--25% swell factor (cubic yards)			103
Grading Cost per Cubic Yard			$3.58
Mobilization/Demobilization of Equipment			$2,230

SUBTOTAL CAPITAL COSTS	**$6,031**
15% BID CONTINGENCY	**$905**
15% SCOPE CONTINGENCY	**$905**
5% PERMITTING COSTS	**$302**
TOTAL CAPITAL COSTS	**$8,142**

O&M Costs

No O&M costs are associated with this alternative.

Perimeter Drainage Ditch Spoils Pile L - Excavation with Offsite Disposal

Capital Costs

1. Pre-design investigation borings			**$180**
Assume number of borings =			4
Assume average depth (linear feet) =			3
Cost per linear foot =			$15
2. Excavation with Offbase Disposal			**$7,087**
A. Excavation of Sediments			$1,509
Volume of Sediments (cubic yards)			4
Excavation Costs per Cubic Yard			$2.31
Mobilization/Demobilization of Equipment			$1,500
B. Post Excavation Confirmation Sampling Program			$2,135
Number of Confirmation Samples			2
Number of QA Samples			1
Sampling Cost per Sample Location (labor and equipment)			$208
Data Validation Labor per Sample			$55
Sample Analysis (per sample, includes 15% for CLP)			$518
Total Metals	6010/7000	$240	
Pesticides	8080	$210	
C. Offbase Disposal to a Class II Hazardous Waste Landfill			$1,195
Volume of Soil--25% swell factor (cubic yards)			5
Transportation and Disposal Costs per Cubic Yard			$179
Waste Profile Fee (One time cost)			$300
D. Grading of Excavation Site			$2,248
Volume of Soil--25% swell factor (cubic yards)			5
Grading Cost per Cubic Yard			$3.58
Mobilization/Demobilization of Equipment			$2,230

SUBTOTAL CAPITAL COSTS	**$7,267**
15% BID CONTINGENCY	**$1,090**
15% SCOPE CONTINGENCY	**$1,090**
5% PERMITTING COSTS	**$363**
TOTAL CAPITAL COSTS	**$9,811**

O&M Costs

No O&M costs are associated with this alternative.

Perimeter Drainage Ditch Spoils Pile L - Excavation with Onsite Disposal

Capital Costs

1. Pre-design investigation borings			**$180**
Assume number of borings =		4	
Assume average depth (linear feet) =		3	
Cost per linear foot =		$15	
2. Excavation with Onbase Disposal			**$6,199**
A. Excavation of Sediments			$1,509
Volume of Sediments (cubic yards)			4
Excavation Costs per Cubic Yard			$2.31
Mobilization/Demobilization of Equipment			$1,500
B. Post Excavation Confirmation Sampling Program			$2,135
Number of Confirmation Samples			2
Number of QA Samples			1
Sampling Cost per Sample Location (labor and equipment)			$208
Data Validation Labor per Sample			$55
Sample Analysis (per sample, includes 15% for CLP)			$518
Total Metals	6010/7000	$240	
Pesticides	8080	$210	
C. Onbase Disposal			$307
Volume of Soil--25% swell factor (cubic yards)			5
Transportation and Disposal Costs per Cubic Yard			$1.32
Mobilization/Demobilization of Equipment			$300
D. Grading of Excavation Site			$2,248
Volume of Soil--25% swell factor (cubic yards)			5
Grading Cost per Cubic Yard			$3.58
Mobilization/Demobilization of Equipment			$2,230

SUBTOTAL CAPITAL COSTS	**$6,379**
15% BID CONTINGENCY	**$957**
15% SCOPE CONTINGENCY	**$957**
5% PERMITTING COSTS	**$319**
TOTAL CAPITAL COSTS	**$8,611**

O&M Costs

No O&M costs are associated with this alternative.

Perimeter Drainage Ditch Spoils Pile M - Excavation with Offsite Disposal

Capital Costs

1. Pre-design investigation borings		**$180**
Assume number of borings =	4	
Assume average depth (linear feet) =	3	
Cost per linear foot =	$15	
2. Excavation with Offbase Disposal		**$93,688**
A. Excavation of Sediments		$2,383
Volume of Sediments (cubic yards)		383
Excavation Costs per Cubic Yard		$2.31
Mobilization/Demobilization of Equipment		$1,500
B. Post Excavation Confirmation Sampling Program		$1,307
Number of Confirmation Samples		2
Number of QA Samples		1
Sampling Cost per Sample Location (labor and equipment)		$208
Data Validation Labor per Sample		$55
Sample Analysis (per sample, includes 15% for CLP)		$242
Pesticides 8080	$210	
C. Offbase Disposal to a Class II Hazardous Waste Landfill		$86,053
Volume of Soil--25% swell factor (cubic yards)		479
Transportation and Disposal Costs per Cubic Yard		$179
Waste Profile Fee (One time cost)		$300
D. Grading of Excavation Site		$3,945
Volume of Soil--25% swell factor (cubic yards)		479
Grading Cost per Cubic Yard		$3.58
Mobilization/Demobilization of Equipment		$2,230

SUBTOTAL CAPITAL COSTS	**$93,868**
15% BID CONTINGENCY	**$14,080**
15% SCOPE CONTINGENCY	**$14,080**
5% PERMITTING COSTS	**$4,693**
TOTAL CAPITAL COSTS	**$126,722**

O&M Costs

No O&M costs are associated with this alternative.

Perimeter Drainage Ditch Spoils Pile M - Excavation with Onsite Disposal

Capital Costs

1. Pre-design investigation borings			**$180**
Assume number of borings =		4	
Assume average depth (linear feet) =		3	
Cost per linear foot =		$15	
2. Excavation with Onbase Disposal			**$8,565**
A. Excavation of Sediments			$2,383
Volume of Sediments (cubic yards)			383
Excavation Costs per Cubic Yard			$2.31
Mobilization/Demobilization of Equipment			$1,500
B. Post Excavation Confirmation Sampling Program			$1,307
Number of Confirmation Samples			2
Number of QA Samples			1
Sampling Cost per Sample Location (labor and equipment)			$208
Data Validation Labor per Sample			$55
Sample Analysis (per sample, includes 15% for CLP)			$242
Pesticides	8080	$210	
C. Onbase Disposal			$931
Volume of Soil--25% swell factor (cubic yards)			479
Transportation and Disposal Costs per Cubic Yard			$1.32
Mobilization/Demobilization of Equipment			$300
D. Grading of Excavation Site			$3,945
Volume of Soil--25% swell factor (cubic yards)			479
Grading Cost per Cubic Yard			$3.58
Mobilization/Demobilization of Equipment			$2,230

SUBTOTAL CAPITAL COSTS	**$8,745**
15% BID CONTINGENCY	**$1,312**
15% SCOPE CONTINGENCY	**$1,312**
5% PERMITTING COSTS	**$437**
TOTAL CAPITAL COSTS	**$11,806**

O&M Costs

No O&M costs are associated with this alternative.

Perimeter Drainage Ditch Spoils Pile N - Excavation with Offsite Disposal

Capital Costs

1. Pre-design investigation borings		**$180**
Assume number of borings =	4	
Assume average depth (linear feet) =	3	
Cost per linear foot =	$15	
2. Excavation with Offbase Disposal		**$53,211**
A. Excavation of Sediments		$1,977
Volume of Sediments (cubic yards)		207
Excavation Costs per Cubic Yard		$2.31
Mobilization/Demobilization of Equipment		$1,500
B. Post Excavation Confirmation Sampling Program		$1,409
Number of Confirmation Samples		2
Number of QA Samples		1
Sampling Cost per Sample Location (labor and equipment)		$208
Data Validation Labor per Sample		$55
Sample Analysis (per sample, includes 15% for CLP)		$276
Total Metals 6010/7000	$240	
C. Offbase Disposal to a Class II Hazardous Waste Landfill		$46,667
Volume of Soil--25% swell factor (cubic yards)		259
Transportation and Disposal Costs per Cubic Yard		$179
Waste Profile Fee (One time cost)		$300
D. Grading of Excavation Site		$3,157
Volume of Soil--25% swell factor (cubic yards)		259
Grading Cost per Cubic Yard		$3.58
Mobilization/Demobilization of Equipment		$2,230

SUBTOTAL CAPITAL COSTS	**$53,391**
15% BID CONTINGENCY	**$8,009**
15% SCOPE CONTINGENCY	**$8,009**
5% PERMITTING COSTS	**$2,670**
TOTAL CAPITAL COSTS	**$72,078**

O&M Costs

No O&M costs are associated with this alternative.

Perimeter Drainage Ditch Spoils Pile N - Excavation with Onsite Disposal

Capital Costs

1. Pre-design investigation borings		**$180**
Assume number of borings =	4	
Assume average depth (linear feet) =	3	
Cost per linear foot =	$15	
2. Excavation with Onbase Disposal		**$7,184**
A. Excavation of Sediments		$1,977
Volume of Sediments (cubic yards)		207
Excavation Costs per Cubic Yard		$2.31
Mobilization/Demobilization of Equipment		$1,500
B. Post Excavation Confirmation Sampling Program		$1,409
Number of Confirmation Samples		2
Number of QA Samples		1
Sampling Cost per Sample Location (labor and equipment)		$208
Data Validation Labor per Sample		$55
Sample Analysis (per sample, includes 15% for CLP)		$276
Total Metals 6010/7000	$240	
C. Onbase Disposal		$641
Volume of Soil--25% swell factor (cubic yards)		259
Transportation and Disposal Costs per Cubic Yard		$1.32
Mobilization/Demobilization of Equipment		$300
D. Grading of Excavation Site		$3,157
Volume of Soil--25% swell factor (cubic yards)		259
Grading Cost per Cubic Yard		$3.58
Mobilization/Demobilization of Equipment		$2,230

SUBTOTAL CAPITAL COSTS	**$7,364**
15% BID CONTINGENCY	**$1,105**
15% SCOPE CONTINGENCY	**$1,105**
5% PERMITTING COSTS	**$368**
TOTAL CAPITAL COSTS	**$9,942**

O&M Costs

No O&M costs are associated with this alternative.

Onshore Fuel Line - 54 Inch Drain Line Segment - Excavation with Offsite Disposal

Capital Costs

1. Excavation with Offbase Disposal		**$463,189**
A. Excavation of Sediments		$6,171
Volume of Sediments (cubic yards)		2,026
Excavation Costs per Cubic Yard		$2.31
Mobilization/Demobilization of Equipment		$1,500
B. Post Excavation Confirmation Sampling Program		$3,248
Number of Confirmation Samples		8
Number of QA Samples		1
Sampling Cost per Sample Location (labor and equipment)		$208
Data Validation Labor per Sample		$55
Sample Analysis (per sample, includes 15% for CLP)		$121
TPH as Gasoline/JP-4 8015M	$105	
C. Offbase Disposal to a Class II Hazardous Waste Landfill		$453,770
Volume of Soil--25% swell factor (cubic yards)		2,533
Transportation and Disposal Costs per Cubic Yard		$179
Waste Profile Fee (One time cost)		$300

SUBTOTAL CAPITAL COSTS	**$463,189**
15% BID CONTINGENCY	**$69,478**
15% SCOPE CONTINGENCY	**$69,478**
5% PERMITTING COSTS	**$23,159**
TOTAL CAPITAL COSTS	**$625,306**

O&M Costs

No O&M costs are associated with this alternative.

Onshore Fuel Line - 54 Inch Drain Line Segment - Excavation with Onsite Disposal

Capital Costs

1. Excavation with Onbase Disposal		**$13,054**
A. Excavation of Sediments		$6,171
Volume of Sediments (cubic yards)		2,026
Excavation Costs per Cubic Yard		$2.31
Mobilization/Demobilization of Equipment		$1,500
B. Post Excavation Confirmation Sampling Program		$3,248
Number of Confirmation Samples		8
Number of QA Samples		1
Sampling Cost per Sample Location (labor and equipment)		$208
Data Validation Labor per Sample		$55
Sample Analysis (per sample, includes 15% for CLP)		$121
TPH as Gasoline/JP-4 8015M	$105	
C. Onbase Disposal		$3,635
Volume of Soil--25% swell factor (cubic yards)		2,533
Transportation and Disposal Costs per Cubic Yard		$1.32
Mobilization/Demobilization of Equipment		$300

SUBTOTAL CAPITAL COSTS	**$13,054**
15% BID CONTINGENCY	**$1,958**
15% SCOPE CONTINGENCY	**$1,958**
5% PERMITTING COSTS	**$653**
TOTAL CAPITAL COSTS	**$17,623**

O&M Costs

No O&M costs are associated with this alternative.

Onshore Fuel Line - Hangar Segment - Excavation with Offsite Disposal

Capital Costs

1. Excavation with Offbase Disposal			**$519,813**
A. Excavation of Sediments			$6,457
Volume of Sediments (cubic yards)			2,150
Excavation Costs per Cubic Yard			$2.31
Mobilization/Demobilization of Equipment			$1,500
B. Post Excavation Confirmation Sampling Program			$19,984
Number of Confirmation Samples			20
Number of QA Samples			3
Sampling Cost per Sample Location (labor and equipment)			$208
Data Validation Labor per Sample			$55
Sample Analysis (per sample, includes 15% for CLP)			$633
TPH as Gasoline/JP-4	8015M	$105	
PAHs	8270	$210	
VOCs (Combo)	8010/8020	$235	
C. Offbase Disposal to a Class II Hazardous Waste Landfill			$481,519
Volume of Soil--25% swell factor (cubic yards)			2,688
Transportation and Disposal Costs per Cubic Yard			$179
Waste Profile Fee (One time cost)			$300
D. Grading of Excavation Site			$11,853
Volume of Soil--25% swell factor (cubic yards)			2,688
Grading Cost per Cubic Yard			$3.58
Mobilization/Demobilization of Equipment			$2,230

SUBTOTAL CAPITAL COSTS	**$519,813**
15% BID CONTINGENCY	**$77,972**
15% SCOPE CONTINGENCY	**$77,972**
5% PERMITTING COSTS	**$25,991**
TOTAL CAPITAL COSTS	**$701,748**

O&M Costs

No O&M costs are associated with this alternative.

Onshore Fuel Line - Hangar Segment - Excavation with Onsite Disposal

Capital Costs

1. Excavation with Onbase Disposal			**$39,241**
A. Excavation of Sediments			$5,666
Volume of Sediments (cubic yards)			1,807
Excavation Costs per Cubic Yard			$2.31
Mobilization/Demobilization of Equipment			$1,500
B. Post Excavation Confirmation Sampling Program			$19,984
Number of Confirmation Samples			20
Number of QA Samples			3
Sampling Cost per Sample Location (labor and equipment)			$208
Data Validation Labor per Sample			$55
Sample Analysis (per sample, includes 15% for CLP)			$633
TPH as Gasoline/JP-4	8015M	$105	
PAHs	8270	$210	
VOCs (Combo)	8010/8020	$235	
C. Onbase Disposal			$3,274
Volume of Soil--25% swell factor (cubic yards)			2,259
Transportation and Disposal Costs per Cubic Yard			$1.32
Mobilization/Demobilization of Equipment			$300
D. Grading of Excavation Site			$10,317
Volume of Soil--25% swell factor (cubic yards)			2,259
Grading Cost per Cubic Yard			$3.58
Mobilization/Demobilization of Equipment			$2,230

SUBTOTAL CAPITAL COSTS	**$39,241**
15% BID CONTINGENCY	**$5,886**
15% SCOPE CONTINGENCY	**$5,886**
5% PERMITTING COSTS	**$1,962**
TOTAL CAPITAL COSTS	**$52,976**

O&M Costs

No O&M costs are associated with this alternative.

Onshore Fuel Line - Northern Segment - Excavation with Offsite Disposal

Capital Costs

1. Excavation with Offbase Disposal		**$423,181**
A. Excavation of Sediments		$5,666
Volume of Sediments (cubic yards)		1,807
Excavation Costs per Cubic Yard		$2.31
Mobilization/Demobilization of Equipment		$1,500
B. Post Excavation Confirmation Sampling Program		$2,480
Number of Confirmation Samples		6
Number of QA Samples		1
Sampling Cost per Sample Location (labor and equipment)		$208
Data Validation Labor per Sample		$55
Sample Analysis (per sample, includes 15% for CLP)		$121
TPH as Gasoline/JP 8015M	$105	
C. Offbase Disposal to a Class II Hazardous Waste Landfill		$404,717
Volume of Soil--25% swell factor (cubic yards)		2,259
Transportation and Disposal Costs per Cubic Yard		$179
Waste Profile Fee (One time cost)		$300
D. Grading of Excavation Site		$10,317
Volume of Soil--25% swell factor (cubic yards)		2,259
Grading Cost per Cubic Yard		$3.58
Mobilization/Demobilization of Equipment		$2,230

SUBTOTAL CAPITAL COSTS	**$423,181**
15% BID CONTINGENCY	**$63,477**
15% SCOPE CONTINGENCY	**$63,477**
5% PERMITTING COSTS	**$21,159**
TOTAL CAPITAL COSTS	**$571,294**

O&M Costs

No O&M costs are associated with this alternative.

Onshore Fuel Line - Northern Segment - Excavation with Onsite Disposal

Capital Costs

1. Excavation with Onbase Disposal		**$21,737**
A. Excavation of Sediments		$5,666
Volume of Sediments (cubic yards)		1,807
Excavation Costs per Cubic Yard		$2.31
Mobilization/Demobilization of Equipment		$1,500
B. Post Excavation Confirmation Sampling Program		$2,480
Number of Confirmation Samples		6
Number of QA Samples		1
Sampling Cost per Sample Location (labor and equipment)		$208
Data Validation Labor per Sample		$55
Sample Analysis (per sample, includes 15% for CLP)		$121
TPH as Gasoline/JP-4 8015M	$105	
C. Onbase Disposal		$3,274
Volume of Soil--25% swell factor (cubic yards)		2,259
Transportation and Disposal Costs per Cubic Yard		$1.32
Mobilization/Demobilization of Equipment		$300
D. Grading of Excavation Site		$10,317
Volume of Soil--25% swell factor (cubic yards)		2,259
Grading Cost per Cubic Yard		$3.58
Mobilization/Demobilization of Equipment		$2,230

SUBTOTAL CAPITAL COSTS	**$21,737**
15% BID CONTINGENCY	**$3,261**
15% SCOPE CONTINGENCY	**$3,261**
5% PERMITTING COSTS	**$1,087**
TOTAL CAPITAL COSTS	**$29,346**

O&M Costs

No O&M costs are associated with this alternative.

Northwest Runway Area - Excavation with Offsite Disposal

Capital Costs

1. Excavation with Offbase Disposal		**$56,716**
A. Excavation of Sediments		$2,012
Volume of Sediments (cubic yards)		222
Excavation Costs per Cubic Yard		$2.31
Mobilization/Demobilization of Equipment		$1,500
B. Post Excavation Confirmation Sampling Program		$1,409
Number of Confirmation Samples		2
Number of QA Samples		1
Sampling Cost per Sample Location (labor and equipment)		$208
Data Validation Labor per Sample		$55
Sample Analysis (per sample, includes 15% for CLP)		$276
Total Metals 6010/7000	$240	
C. Offbase Disposal to a Class II Hazardous Waste Landfill		$50,069
Volume of Soil--25% swell factor (cubic yards)		278
Transportation and Disposal Costs per Cubic Yard		$179
Waste Profile Fee (One time cost)		$300
D. Grading of Excavation Site		$3,225
Volume of Soil--25% swell factor (cubic yards)		278
Grading Cost per Cubic Yard		$3.58
Mobilization/Demobilization of Equipment		$2,230

SUBTOTAL CAPITAL COSTS	**$56,716**
15% BID CONTINGENCY	**$8,507**
15% SCOPE CONTINGENCY	**$8,507**
5% PERMITTING COSTS	**$2,836**
TOTAL CAPITAL COSTS	**$76,566**

O&M Costs

No O&M costs are associated with this alternative.

Northwest Runway Area - Excavation with Onsite Disposal

Capital Costs

1. Excavation with Onbase Disposal			**$7,313**
A. Excavation of Sediments			$2,012
Volume of Sediments (cubic yards)			222
Excavation Costs per Cubic Yard			$2.31
Mobilization/Demobilization of Equipment			$1,500
B. Post Excavation Confirmation Sampling Program			$1,409
Number of Confirmation Samples			2
Number of QA Samples			1
Sampling Cost per Sample Location (labor and equipment)			$208
Data Validation Labor per Sample			$55
Sample Analysis (per sample, includes 15% for CLP)			$276
Total Metals	6010/7000	$240	
C. Onbase Disposal			$666
Volume of Soil--25% swell factor (cubic yards)			278
Transportation and Disposal Costs per Cubic Yard			$1.32
Mobilization/Demobilization of Equipment			$300
D. Grading of Excavation Site			$3,225
Volume of Soil--25% swell factor (cubic yards)			278
Grading Cost per Cubic Yard			$3.58
Mobilization/Demobilization of Equipment			$2,230

SUBTOTAL CAPITAL COSTS	**$7,313**
15% BID CONTINGENCY	**$1,097**
15% SCOPE CONTINGENCY	**$1,097**
5% PERMITTING COSTS	**$366**
TOTAL CAPITAL COSTS	**$9,872**

O&M Costs

No O&M costs are associated with this alternative.

Revetment 1 - Excavation with Offsite Disposal

Capital Costs

1. Excavation with Offbase Disposal			**$156,321**
A. Excavation of Sediments			$2,973
Volume of Sediments (cubic yards)			639
Excavation Costs per Cubic Yard			$2.31
Mobilization/Demobilization of Equipment			$1,500
B. Post Excavation Confirmation Sampling Program			$2,916
Number of Confirmation Samples			3
Number of QA Samples			1
Sampling Cost per Sample Location (labor and equipment)			$208
Data Validation Labor per Sample			$55
Sample Analysis (per sample, includes 15% for CLP)			$518
Total Metals 6010/7000		$240	
PAHs 8270		$210	
C. Offbase Disposal to a Class II Hazardous Waste Landfill			$143,341
Volume of Soil--25% swell factor (cubic yards)			799
Transportation and Disposal Costs per Cubic Yard			$179
Waste Profile Fee (One time cost)			$300
D. Grading of Excavation Site			$5,090
Volume of Soil--25% swell factor (cubic yards)			799
Grading Cost per Cubic Yard			$3.58
Mobilization/Demobilization of Equipment			$2,230
E. Asphalt/Concrete Removal			$2,000
Assume volume of concrete (cubic yards) =			1,500
Excavation costs per cubic yard =			$0.80
Mobilization/Demobilization of equipment =			$800
SUBTOTAL CAPITAL COSTS			**$156,321**
15% BID CONTINGENCY			**$23,448**
15% SCOPE CONTINGENCY			**$23,448**
5% PERMITTING COSTS			**$7,816**
TOTAL CAPITAL COSTS			**$211,033**

O&M Costs

No O&M costs are associated with this alternative.

Revetment 1 - Excavation with Onsite Disposal

Capital Costs

1. Excavation with Onbase Disposal			**$14,332**
A. Excavation of Sediments			$2,973
Volume of Sediments (cubic yards)			639
Excavation Costs per Cubic Yard			$2.31
Mobilization/Demobilization of Equipment			$1,500
B. Post Excavation Confirmation Sampling Program			$2,916
Number of Confirmation Samples			3
Number of QA Samples			1
Sampling Cost per Sample Location (labor and equipment)			$208
Data Validation Labor per Sample			$55
Sample Analysis (per sample, includes 15% for CLP)			$518
Total Metals	6010/7000	$240	
PAHs	8270	$210	
C. Onbase Disposal			$1,352
Volume of Soil--25% swell factor (cubic yards)			799
Transportation and Disposal Costs per Cubic Yard			$1.32
Mobilization/Demobilization of Equipment			$300
D. Grading of Excavation Site			$5,090
Volume of Soil--25% swell factor (cubic yards)			799
Grading Cost per Cubic Yard			$3.58
Mobilization/Demobilization of Equipment			$2,230
E. Asphalt/Concrete Removal			$2,000
Assume volume of concrete (cubic yards) =			1,500
Excavation costs per cubic yard =			$0.80
Mobilization/Demobilization of equipment =			$800

SUBTOTAL CAPITAL COSTS	**$14,332**
15% BID CONTINGENCY	**$2,150**
15% SCOPE CONTINGENCY	**$2,150**
5% PERMITTING COSTS	**$717**
TOTAL CAPITAL COSTS	**$19,348**

O&M Costs

No O&M costs are associated with this alternative.

Revetment 2 - Excavation with Offsite Disposal

Capital Costs

1. Excavation with Offbase Disposal			**$105,257**
A. Excavation of Sediments			$2,482
Volume of Sediments (cubic yards)			426
Excavation Costs per Cubic Yard			$2.31
Mobilization/Demobilization of Equipment			$1,500
B. Post Excavation Confirmation Sampling Program			$2,916
Number of Confirmation Samples			3
Number of QA Samples			1
Sampling Cost per Sample Location (labor and equipment)			$208
Data Validation Labor per Sample			$55
Sample Analysis (per sample, includes 15% for CLP)			$518
Total Metals	6010/7000	$240	
PAHs	8270	$210	
C. Offbase Disposal to a Class II Hazardous Waste Landfill			$95,720
Volume of Soil--25% swell factor (cubic yards)			533
Transportation and Disposal Costs per Cubic Yard			$179
Waste Profile Fee (One time cost)			$300
D. Grading of Excavation Site			$4,138
Volume of Soil--25% swell factor (cubic yards)			533
Grading Cost per Cubic Yard			$3.58
Mobilization/Demobilization of Equipment			$2,230

SUBTOTAL CAPITAL COSTS	**$105,257**
15% BID CONTINGENCY	**$15,788**
15% SCOPE CONTINGENCY	**$15,788**
5% PERMITTING COSTS	**$5,263**
TOTAL CAPITAL COSTS	**$142,096**

O&M Costs

No O&M costs are associated with this alternative.

Revetment 2 - Excavation with Onsite Disposal

Capital Costs

1. Excavation with Onbase Disposal			**$10,538**
A. Excavation of Sediments			$2,482
Volume of Sediments (cubic yards)			426
Excavation Costs per Cubic Yard			$2.31
Mobilization/Demobilization of Equipment			$1,500
B. Post Excavation Confirmation Sampling Program			$2,916
Number of Confirmation Samples			3
Number of QA Samples			1
Sampling Cost per Sample Location (labor and equipment)			$208
Data Validation Labor per Sample			$55
Sample Analysis (per sample, includes 15% for CLP)			$518
Total Metals	6010/7000	$240	
PAHs	8270	$210	
C. Onbase Disposal			$1,002
Volume of Soil--25% swell factor (cubic yards)			533
Transportation and Disposal Costs per Cubic Yard			$1.32
Mobilization/Demobilization of Equipment			$300
D. Grading of Excavation Site			$4,138
Volume of Soil--25% swell factor (cubic yards)			533
Grading Cost per Cubic Yard			$3.58
Mobilization/Demobilization of Equipment			$2,230

SUBTOTAL CAPITAL COSTS	**$10,538**
15% BID CONTINGENCY	**$1,581**
15% SCOPE CONTINGENCY	**$1,581**
5% PERMITTING COSTS	**$527**
TOTAL CAPITAL COSTS	**$14,226**

O&M Costs

No O&M costs are associated with this alternative.

Revetment 3 - Excavation with Offsite Disposal

Capital Costs

1. Excavation with Offbase Disposal		**$118,833**
A. Excavation of Sediments		$2,609
Volume of Sediments (cubic yards)		481
Excavation Costs per Cubic Yard		$2.31
Mobilization/Demobilization of Equipment		$1,500
B. Post Excavation Confirmation Sampling Program		$1,948
Number of Confirmation Samples		3
Number of QA Samples		1
Sampling Cost per Sample Location (labor and equipment)		$208
Data Validation Labor per Sample		$55
Sample Analysis (per sample, includes 15% for CLP)		$276
Total Metals 6010/7000	$240	
C. Offbase Disposal to a Class II Hazardous Waste Landfill		$107,894
Volume of Soil--25% swell factor (cubic yards)		601
Transportation and Disposal Costs per Cubic Yard		$179
Waste Profile Fee (One time cost)		$300
D. Grading of Excavation Site		$4,382
Volume of Soil--25% swell factor (cubic yards)		601
Grading Cost per Cubic Yard		$3.58
Mobilization/Demobilization of Equipment		$2,230
E. Asphalt/Concrete Removal		$2,000
Assume volume of concrete (cubic yards) =		1,500
Excavation costs per cubic yard =		$0.80
Mobilization/Demobilization of equipment =		$800

SUBTOTAL CAPITAL COSTS	**$118,833**
15% BID CONTINGENCY	**$17,825**
15% SCOPE CONTINGENCY	**$17,825**
5% PERMITTING COSTS	**$5,942**
TOTAL CAPITAL COSTS	**$160,424**

O&M Costs

No O&M costs are associated with this alternative.

Revetment 3 - Excavation with Onsite Disposal

Capital Costs

1. Excavation with Onbase Disposal			**$12,030**
A. Excavation of Sediments			$2,609
Volume of Sediments (cubic yards)			481
Excavation Costs per Cubic Yard			$2.31
Mobilization/Demobilization of Equipment			$1,500
B. Post Excavation Confirmation Sampling Program			$1,948
Number of Confirmation Samples			3
Number of QA Samples			1
Sampling Cost per Sample Location (labor and equipment)			$208
Data Validation Labor per Sample			$55
Sample Analysis (per sample, includes 15% for CLP)			$276
Total Metals	6010/7000	$240	
C. Onbase Disposal			$1,091
Volume of Soil--25% swell factor (cubic yards)			601
Transportation and Disposal Costs per Cubic Yard			$1.32
Mobilization/Demobilization of Equipment			$300
D. Grading of Excavation Site			$4,382
Volume of Soil--25% swell factor (cubic yards)			601
Grading Cost per Cubic Yard			$3.58
Mobilization/Demobilization of Equipment			$2,230
E. Asphalt/Concrete Removal			$2,000
Assume volume of concrete (cubic yards) =			1,500
Excavation costs per cubic yard =			$0.80
Mobilization/Demobilization of equipment =			$800

SUBTOTAL CAPITAL COSTS	**$12,030**
15% BID CONTINGENCY	**$1,804**
15% SCOPE CONTINGENCY	**$1,804**
5% PERMITTING COSTS	**$601**
TOTAL CAPITAL COSTS	**$16,240**

O&M Costs

No O&M costs are associated with this alternative.

Revetment 4 - Excavation with Offsite Disposal

Capital Costs

1. Excavation with Offbase Disposal			**$168,680**
A. Excavation of Sediments			$3,098
Volume of Sediments (cubic yards)			693
Excavation Costs per Cubic Yard			$2.31
Mobilization/Demobilization of Equipment			$1,500
B. Post Excavation Confirmation Sampling Program			$2,916
Number of Confirmation Samples			3
Number of QA Samples			1
Sampling Cost per Sample Location (labor and equipment)			$208
Data Validation Labor per Sample			$55
Sample Analysis (per sample, includes 15% for CLP)			$518
Total Metals 6010/7000		$240	
PAHs 8270		$210	
C. Offbase Disposal to a Class II Hazardous Waste Landfill			$155,336
Volume of Soil--25% swell factor (cubic yards)			866
Transportation and Disposal Costs per Cubic Yard			$179
Waste Profile Fee (One time cost)			$300
D. Grading of Excavation Site			$5,330
Volume of Soil--25% swell factor (cubic yards)			866
Grading Cost per Cubic Yard			$3.58
Mobilization/Demobilization of Equipment			$2,230
E. Asphalt/Concrete Removal			$2,000
Assume volume of concrete (cubic yards) =			1,500
Excavation costs per cubic yard =			$0.80
Mobilization/Demobilization of equipment =			$800

SUBTOTAL CAPITAL COSTS	**$168,680**
15% BID CONTINGENCY	**$25,302**
15% SCOPE CONTINGENCY	**$25,302**
5% PERMITTING COSTS	**$8,434**
TOTAL CAPITAL COSTS	**$227,718**

O&M Costs

No O&M costs are associated with this alternative.

Revetment 4 - Excavation with Onsite Disposal

Capital Costs

1. Excavation with Onbase Disposal			**$14,784**
A. Excavation of Sediments			$3,098
Volume of Sediments (cubic yards)			693
Excavation Costs per Cubic Yard			$2.31
Mobilization/Demobilization of Equipment			$1,500
B. Post Excavation Confirmation Sampling Program			$2,916
Number of Confirmation Samples			3
Number of QA Samples			1
Sampling Cost per Sample Location (labor and equipment)			$208
Data Validation Labor per Sample			$55
Sample Analysis (per sample, includes 15% for CLP)			$518
Total Metals	6010/7000	$240	
PAHs	8270	$210	
C. Onbase Disposal			$1,440
Volume of Soil--25% swell factor (cubic yards)			866
Transportation and Disposal Costs per Cubic Yard			$1.32
Mobilization/Demobilization of Equipment			$300
D. Grading of Excavation Site			$5,330
Volume of Soil--25% swell factor (cubic yards)			866
Grading Cost per Cubic Yard			$3.58
Mobilization/Demobilization of Equipment			$2,230
E. Asphalt/Concrete Removal			$2,000
Assume volume of concrete (cubic yards) =			1,500
Excavation costs per cubic yard =			$0.80
Mobilization/Demobilization of equipment =			$800

SUBTOTAL CAPITAL COSTS	**$14,784**
15% BID CONTINGENCY	**$2,218**
15% SCOPE CONTINGENCY	**$2,218**
5% PERMITTING COSTS	**$739**
TOTAL CAPITAL COSTS	**$19,959**

O&M Costs

No O&M costs are associated with this alternative.

Revetment 6 - Excavation with Offsite Disposal

Capital Costs

1. Excavation with Offbase Disposal	**$83,099**
A. Excavation	$0
Will be conducted as part of wetland construction	
2. Offbase Disposal to a Class II Hazardous Waste Landfill	$83,099
Volume of Soil--25% swell factor (cubic yards)	463
Transportation and Disposal Costs per Cubic Yard	$179
Waste Profile Fee (One time cost)	$300

SUBTOTAL CAPITAL COSTS	**$83,099**
15% BID CONTINGENCY	**$12,465**
15% SCOPE CONTINGENCY	**$12,465**
5% PERMITTING COSTS	**$4,155**
TOTAL CAPITAL COSTS	**$112,184**

O&M Costs

No O&M costs are associated with this alternative.

Revetment 6 - Excavation with Onsite Disposal

Capital Costs

Capital Costs

1. Excavation with Offbase Disposal	**$909**
A. Excavation	$0
Will be conducted as part of wetland construction	
2. Onbase Disposal	$909
Volume of Soil--25% swell factor (cubic yards)	463
Transportation and Disposal Costs per Cubic Yard	$1.32
Mobilization/Demobilization of Equipment	$300

SUBTOTAL CAPITAL COSTS	**$909**
15% BID CONTINGENCY	**$136**
15% SCOPE CONTINGENCY	**$136**
5% PERMITTING COSTS	**$45**
TOTAL CAPITAL COSTS	**$1,227**

O&M Costs

No O&M costs are associated with this alternative.

Revetment 7 - Excavation with Offsite Disposal

Capital Costs

1. Excavation with Offbase Disposal	**$41,476**
A. Excavation	$0
Will be conducted as part of wetland construction	
2. Offbase Disposal to a Class II Hazardous Waste Landfill	$41,476
Volume of Soil--25% swell factor (cubic yards)	230
Transportation and Disposal Costs per Cubic Yard	$179
Waste Profile Fee (One time cost)	$300

SUBTOTAL CAPITAL COSTS	**$41,476**
15% BID CONTINGENCY	**$6,221**
15% SCOPE CONTINGENCY	**$6,221**
5% PERMITTING COSTS	**$2,074**
TOTAL CAPITAL COSTS	**$55,992**

O&M Costs

No O&M costs are associated with this alternative.

Revetment 7 - Excavation with Onsite Disposal

Capital Costs

1. Excavation with Offbase Disposal	**$603**
A. Excavation	$0
Will be conducted as part of wetland construction	
2. Onbase Disposal	$603
Volume of Soil--25% swell factor (cubic yards)	230
Transportation and Disposal Costs per Cubic Yard	$1.32
Mobilization/Demobilization of Equipment	$300

SUBTOTAL CAPITAL COSTS	**$603**
15% BID CONTINGENCY	**$90**
15% SCOPE CONTINGENCY	**$90**
5% PERMITTING COSTS	**$30**
TOTAL CAPITAL COSTS	**$814**

O&M Costs

No O&M costs are associated with this alternative.

Revetment 11 - Excavation with Offsite Disposal

Capital Costs

1. Excavation with Offbase Disposal		**$15,938**
A. Excavation of Sediments		$1,599
Volume of Sediments (cubic yards)		43
Excavation Costs per Cubic Yard		$2.31
Mobilization/Demobilization of Equipment		$1,500
B. Post Excavation Confirmation Sampling Program		$1,948
Number of Confirmation Samples		3
Number of QA Samples		1
Sampling Cost per Sample Location (labor and equipment)		$208
Data Validation Labor per Sample		$55
Sample Analysis (per sample, includes 15% for CLP)		$276
Total Metals 6010/7000	$240	
C. Offbase Disposal to a Class II Hazardous Waste Landfill		$9,967
Volume of Soil--25% swell factor (cubic yards)		54
Transportation and Disposal Costs per Cubic Yard		$179
Waste Profile Fee (One time cost)		$300
D. Grading of Excavation Site		$2,423
Volume of Soil--25% swell factor (cubic yards)		54
Grading Cost per Cubic Yard		$3.58
Mobilization/Demobilization of Equipment		$2,230

SUBTOTAL CAPITAL COSTS	**$15,938**
15% BID CONTINGENCY	**$2,391**
15% SCOPE CONTINGENCY	**$2,391**
5% PERMITTING COSTS	**$797**
TOTAL CAPITAL COSTS	**$21,516**

O&M Costs

No O&M costs are associated with this alternative.

Revetment 11 - Excavation with Onsite Disposal

Capital Costs

1. Excavation with Onbase Disposal			**$6,342**
A. Excavation of Sediments			$1,599
Volume of Sediments (cubic yards)			43
Excavation Costs per Cubic Yard			$2.31
Mobilization/Demobilization of Equipment			$1,500
B. Post Excavation Confirmation Sampling Program			$1,948
Number of Confirmation Samples			3
Number of QA Samples			1
Sampling Cost per Sample Location (labor and equipment)			$208
Data Validation Labor per Sample			$55
Sample Analysis (per sample, includes 15% for CLP)			$276
Total Metals	6010/7000	$240	
C. Onbase Disposal			$371
Volume of Soil--25% swell factor (cubic yards)			54
Transportation and Disposal Costs per Cubic Yard			$1.32
Mobilization/Demobilization of Equipment			$300
D. Grading of Excavation Site			$2,423
Volume of Soil--25% swell factor (cubic yards)			54
Grading Cost per Cubic Yard			$3.58
Mobilization/Demobilization of Equipment			$2,230

SUBTOTAL CAPITAL COSTS	**$6,342**
15% BID CONTINGENCY	**$951**
15% SCOPE CONTINGENCY	**$951**
5% PERMITTING COSTS	**$317**
TOTAL CAPITAL COSTS	**$8,561**

O&M Costs

No O&M costs are associated with this alternative.

Revetment 12 - Excavation with Offsite Disposal

Capital Costs

1. Excavation with Offbase Disposal		**$10,375**
A. Excavation of Sediments		$1,523
Volume of Sediments (cubic yards)		10
Excavation Costs per Cubic Yard		$2.31
Mobilization/Demobilization of Equipment		$1,500
B. Post Excavation Confirmation Sampling Program		$1,948
Number of Confirmation Samples		3
Number of QA Samples		1
Sampling Cost per Sample Location (labor and equipment)		$208
Data Validation Labor per Sample		$55
Sample Analysis (per sample, includes 15% for CLP)		$276
Total Metals 6010/7000	$240	
C. Offbase Disposal to a Class II Hazardous Waste Landfill		$2,627
Volume of Soil--25% swell factor (cubic yards)		13
Transportation and Disposal Costs per Cubic Yard		$179
Waste Profile Fee (One time cost)		$300
D. Grading of Excavation Site		$2,277
Volume of Soil--25% swell factor (cubic yards)		13
Grading Cost per Cubic Yard		$3.58
Mobilization/Demobilization of Equipment		$2,230
E. Asphalt/Concrete Removal		$2,000
Assume volume of concrete (cubic yards) =		1,500
Excavation costs per cubic yard =		$0.80
Mobilization/Demobilization of equipment =		$800

SUBTOTAL CAPITAL COSTS	**$10,375**
15% BID CONTINGENCY	**$1,556**
15% SCOPE CONTINGENCY	**$1,556**
5% PERMITTING COSTS	**$519**
TOTAL CAPITAL COSTS	**$14,006**

O&M Costs

No O&M costs are associated with this alternative.

Revetment 12 - Excavation with Onsite Disposal

Capital Costs

1. Excavation with Onbase Disposal			**$8,065**
A. Excavation of Sediments			$1,523
Volume of Sediments (cubic yards)			10
Excavation Costs per Cubic Yard			$2.31
Mobilization/Demobilization of Equipment			$1,500
B. Post Excavation Confirmation Sampling Program			$1,948
Number of Confirmation Samples			3
Number of QA Samples			1
Sampling Cost per Sample Location (labor and equipment)			$208
Data Validation Labor per Sample			$55
Sample Analysis (per sample, includes 15% for CLP)			$276
Total Metals	6010/7000	$240	
C. Onbase Disposal			$317
Volume of Soil--25% swell factor (cubic yards)			13
Transportation and Disposal Costs per Cubic Yard			$1.32
Mobilization/Demobilization of Equipment			$300
D. Grading of Excavation Site			$2,277
Volume of Soil--25% swell factor (cubic yards)			13
Grading Cost per Cubic Yard			$3.58
Mobilization/Demobilization of Equipment			$2,230
E. Asphalt/Concrete Removal			$2,000
Assume volume of concrete (cubic yards) =			1,500
Excavation costs per cubic yard =			$0.80
Mobilization/Demobilization of equipment =			$800

SUBTOTAL CAPITAL COSTS	**$8,065**
15% BID CONTINGENCY	**$1,210**
15% SCOPE CONTINGENCY	**$1,210**
5% PERMITTING COSTS	**$403**
TOTAL CAPITAL COSTS	**$10,887**

O&M Costs

No O&M costs are associated with this alternative.

Revetment 13 - Excavation with Offsite Disposal

Capital Costs

1. Excavation with Offbase Disposal			**$105,626**
A. Excavation of Sediments			$2,487
Volume of Sediments (cubic yards)			428
Excavation Costs per Cubic Yard			$2.31
Mobilization/Demobilization of Equipment			$1,500
B. Post Excavation Confirmation Sampling Program			$2,916
Number of Confirmation Samples			3
Number of QA Samples			1
Sampling Cost per Sample Location (labor and equipment)			$208
Data Validation Labor per Sample			$55
Sample Analysis (per sample, includes 15% for CLP)			$518
Total Metals	6010/7000	$240	
PAHs	8270	$210	
C. Offbase Disposal to a Class II Hazardous Waste Landfill			$96,078
Volume of Soil--25% swell factor (cubic yards)			535
Transportation and Disposal Costs per Cubic Yard			$179
Waste Profile Fee (One time cost)			$300
D. Grading of Excavation Site			$4,145
Volume of Soil--25% swell factor (cubic yards)			535
Grading Cost per Cubic Yard			$3.58
Mobilization/Demobilization of Equipment			$2,230

SUBTOTAL CAPITAL COSTS	**$105,626**
15% BID CONTINGENCY	**$15,844**
15% SCOPE CONTINGENCY	**$15,844**
5% PERMITTING COSTS	**$5,281**
TOTAL CAPITAL COSTS	**$142,596**

O&M Costs

No O&M costs are associated with this alternative.

Revetment 13 - Excavation with Onsite Disposal

Capital Costs

1. Excavation with Onbase Disposal			**$10,552**
A. Excavation of Sediments			$2,487
Volume of Sediments (cubic yards)			428
Excavation Costs per Cubic Yard			$2.31
Mobilization/Demobilization of Equipment			$1,500
B. Post Excavation Confirmation Sampling Program			$2,916
Number of Confirmation Samples			3
Number of QA Samples			1
Sampling Cost per Sample Location (labor and equipment)			$208
Data Validation Labor per Sample			$55
Sample Analysis (per sample, includes 15% for CLP)			$518
Total Metals	6010/7000	$240	
PAHs	8270	$210	
C. Onbase Disposal			$1,004
Volume of Soil--25% swell factor (cubic yards)			535
Transportation and Disposal Costs per Cubic Yard			$1.32
Mobilization/Demobilization of Equipment			$300
D. Grading of Excavation Site			$4,145
Volume of Soil--25% swell factor (cubic yards)			535
Grading Cost per Cubic Yard			$3.58
Mobilization/Demobilization of Equipment			$2,230

SUBTOTAL CAPITAL COSTS	**$10,552**
15% BID CONTINGENCY	**$1,583**
15% SCOPE CONTINGENCY	**$1,583**
5% PERMITTING COSTS	**$528**
TOTAL CAPITAL COSTS	**$14,246**

O&M Costs

No O&M costs are associated with this alternative.

Revetment 14 - Excavation with Offsite Disposal

Capital Costs

1. Excavation with Offbase Disposal		**$121,942**
A. Excavation of Sediments		$2,634
Volume of Sediments (cubic yards)		492
Excavation Costs per Cubic Yard		$2.31
Mobilization/Demobilization of Equipment		$1,500
B. Post Excavation Confirmation Sampling Program		$2,476
Number of Confirmation Samples		3
Number of QA Samples		1
Sampling Cost per Sample Location (labor and equipment)		$208
Data Validation Labor per Sample		$55
Sample Analysis (per sample, includes 15% for CLP)		$408
Total Metals 6010/7000	$240	
TPH as Diesel 8015M	$115	
C. Offbase Disposal to a Class II Hazardous Waste Landfill		$110,400
Volume of Soil--25% swell factor (cubic yards)		615
Transportation and Disposal Costs per Cubic Yard		$179
Waste Profile Fee (One time cost)		$300
D. Grading of Excavation Site		$4,432
Volume of Soil--25% swell factor (cubic yards)		615
Grading Cost per Cubic Yard		$3.58
Mobilization/Demobilization of Equipment		$2,230
E. Asphalt/Concrete Removal		$2,000
Assume volume of concrete (cubic yards) =		1,500
Excavation costs per cubic yard =		$0.80
Mobilization/Demobilization of equipment =		$800

SUBTOTAL CAPITAL COSTS	**$121,942**
15% BID CONTINGENCY	**$18,291**
15% SCOPE CONTINGENCY	**$18,291**
5% PERMITTING COSTS	**$6,097**
TOTAL CAPITAL COSTS	**$164,622**

O&M Costs

No O&M costs are associated with this alternative.

Revetment 14 - Excavation with Onsite Disposal

Capital Costs

1. Excavation with Onbase Disposal			**$12,652**
A. Excavation of Sediments			$2,634
Volume of Sediments (cubic yards)			492
Excavation Costs per Cubic Yard			$2.31
Mobilization/Demobilization of Equipment			$1,500
B. Post Excavation Confirmation Sampling Program			$2,476
Number of Confirmation Samples			3
Number of QA Samples			1
Sampling Cost per Sample Location (labor and equipment)			$208
Data Validation Labor per Sample			$55
Sample Analysis (per sample, includes 15% for CLP)			$408
Total Metals	6010/7000	$240	
TPH as Diesel	8015M	$115	
C. Onbase Disposal			$1,110
Volume of Soil--25% swell factor (cubic yards)			615
Transportation and Disposal Costs per Cubic Yard			$1.32
Mobilization/Demobilization of Equipment			$300
D. Grading of Excavation Site			$4,432
Volume of Soil--25% swell factor (cubic yards)			615
Grading Cost per Cubic Yard			$3.58
Mobilization/Demobilization of Equipment			$2,230
E. Asphalt/Concrete Removal			$2,000
Assume volume of concrete (cubic yards) =			1,500
Excavation costs per cubic yard =			$0.80
Mobilization/Demobilization of equipment =			$800

SUBTOTAL CAPITAL COSTS	**$12,652**
15% BID CONTINGENCY	**$1,898**
15% SCOPE CONTINGENCY	**$1,898**
5% PERMITTING COSTS	**$633**
TOTAL CAPITAL COSTS	**$17,080**

O&M Costs

No O&M costs are associated with this alternative.

Revetment 15 - Excavation with Offsite Disposal

Capital Costs

1. Excavation with Offbase Disposal		**$70,350**
A. Excavation of Sediments		$2,143
Volume of Sediments (cubic yards)		279
Excavation Costs per Cubic Yard		$2.31
Mobilization/Demobilization of Equipment		$1,500
B. Post Excavation Confirmation Sampling Program		$1,948
Number of Confirmation Samples		3
Number of QA Samples		1
Sampling Cost per Sample Location (labor and equipment)		$208
Data Validation Labor per Sample		$55
Sample Analysis (per sample, includes 15% for CLP)		$276
Total Metals 6010/7000	$240	
C. Offbase Disposal to a Class II Hazardous Waste Landfill		$62,780
Volume of Soil--25% swell factor (cubic yards)		349
Transportation and Disposal Costs per Cubic Yard		$179
Waste Profile Fee (One time cost)		$300
D. Grading of Excavation Site		$3,479
Volume of Soil--25% swell factor (cubic yards)		349
Grading Cost per Cubic Yard		$3.58
Mobilization/Demobilization of Equipment		$2,230

SUBTOTAL CAPITAL COSTS	**$70,350**
15% BID CONTINGENCY	**$10,553**
15% SCOPE CONTINGENCY	**$10,553**
5% PERMITTING COSTS	**$3,518**
TOTAL CAPITAL COSTS	**$94,973**

O&M Costs

No O&M costs are associated with this alternative.

Revetment 15 - Excavation with Onsite Disposal

Capital Costs

1. Excavation with Onbase Disposal			**$8,330**
A. Excavation of Sediments			$2,143
Volume of Sediments (cubic yards)			279
Excavation Costs per Cubic Yard			$2.31
Mobilization/Demobilization of Equipment			$1,500
B. Post Excavation Confirmation Sampling Program			$1,948
Number of Confirmation Samples			3
Number of QA Samples			1
Sampling Cost per Sample Location (labor and equipment)			$208
Data Validation Labor per Sample			$55
Sample Analysis (per sample, includes 15% for CLP)			$276
Total Metals	6010/7000	$240	
C. Onbase Disposal			$759
Volume of Soil--25% swell factor (cubic yards)			349
Transportation and Disposal Costs per Cubic Yard			$1.32
Mobilization/Demobilization of Equipment			$300
D. Grading of Excavation Site			$3,479
Volume of Soil--25% swell factor (cubic yards)			349
Grading Cost per Cubic Yard			$3.58
Mobilization/Demobilization of Equipment			$2,230

SUBTOTAL CAPITAL COSTS	**$8,330**
15% BID CONTINGENCY	**$1,250**
15% SCOPE CONTINGENCY	**$1,250**
5% PERMITTING COSTS	**$417**
TOTAL CAPITAL COSTS	**$11,246**

O&M Costs

No O&M costs are associated with this alternative.

Revetment 16 - Excavation with Offsite Disposal

Capital Costs

1. Excavation with Offbase Disposal		**$120,307**
A. Excavation of Sediments		$2,623
Volume of Sediments (cubic yards)		487
Excavation Costs per Cubic Yard		$2.31
Mobilization/Demobilization of Equipment		$1,500
B. Post Excavation Confirmation Sampling Program		$1,948
Number of Confirmation Samples		3
Number of QA Samples		1
Sampling Cost per Sample Location (labor and equipment)		$208
Data Validation Labor per Sample		$55
Sample Analysis (per sample, includes 15% for CLP)		$276
Total Metals 6010/7000	$240	
C. Offbase Disposal to a Class II Hazardous Waste Landfill		$109,326
Volume of Soil--25% swell factor (cubic yards)		609
Transportation and Disposal Costs per Cubic Yard		$179
Waste Profile Fee (One time cost)		$300
D. Grading of Excavation Site		$4,410
Volume of Soil--25% swell factor (cubic yards)		609
Grading Cost per Cubic Yard		$3.58
Mobilization/Demobilization of Equipment		$2,230
E. Asphalt/Concrete Removal		$2,000
Assume volume of concrete (cubic yards) =		1,500
Excavation costs per cubic yard =		$0.80
Mobilization/Demobilization of equipment =		$800

SUBTOTAL CAPITAL COSTS	**$120,307**
15% BID CONTINGENCY	**$18,046**
15% SCOPE CONTINGENCY	**$18,046**
5% PERMITTING COSTS	**$6,015**
TOTAL CAPITAL COSTS	**$162,415**

O&M Costs

No O&M costs are associated with this alternative.

Revetment 16 - Excavation with Onsite Disposal

Capital Costs

1. Excavation with Onbase Disposal			**$12,083**
A. Excavation of Sediments			$2,623
Volume of Sediments (cubic yards)			487
Excavation Costs per Cubic Yard			$2.31
Mobilization/Demobilization of Equipment			$1,500
B. Post Excavation Confirmation Sampling Program			$1,948
Number of Confirmation Samples			3
Number of QA Samples			1
Sampling Cost per Sample Location (labor and equipment)			$208
Data Validation Labor per Sample			$55
Sample Analysis (per sample, includes 15% for CLP)			$276
Total Metals	6010/7000	$240	
C. Onbase Disposal			$1,102
Volume of Soil--25% swell factor (cubic yards)			609
Transportation and Disposal Costs per Cubic Yard			$1.32
Mobilization/Demobilization of Equipment			$300
D. Grading of Excavation Site			$4,410
Volume of Soil--25% swell factor (cubic yards)			609
Grading Cost per Cubic Yard			$3.58
Mobilization/Demobilization of Equipment			$2,230
E. Asphalt/Concrete Removal			$2,000
Assume volume of concrete (cubic yards) =			1,500
Excavation costs per cubic yard =			$0.80
Mobilization/Demobilization of equipment =			$800

SUBTOTAL CAPITAL COSTS	**$12,083**
15% BID CONTINGENCY	**$1,812**
15% SCOPE CONTINGENCY	**$1,812**
5% PERMITTING COSTS	**$604**
TOTAL CAPITAL COSTS	**$16,312**

O&M Costs

No O&M costs are associated with this alternative.

Revetment 19 - Excavation with Offsite Disposal

Capital Costs

1. Excavation with Offbase Disposal			**$179,467**
A. Excavation of Sediments			$3,195
Volume of Sediments (cubic yards)			735
Excavation Costs per Cubic Yard			$2.31
Mobilization/Demobilization of Equipment			$1,500
B. Post Excavation Confirmation Sampling Program			$3,928
Number of Confirmation Samples			3
Number of QA Samples			1
Sampling Cost per Sample Location (labor and equipment)			$208
Data Validation Labor per Sample			$55
Sample Analysis (per sample, includes 15% for CLP)			$771
Total Metals	6010/7000	$240	
PAHs	8270	$210	
TPH as Gasoline/JP-4	8015M	$105	
TPH as Diesel	8015M	$115	
C. Offbase Disposal to a Class II Hazardous Waste Landfill			$164,824
Volume of Soil--25% swell factor (cubic yards)			919
Transportation and Disposal Costs per Cubic Yard			$179
Waste Profile Fee (One time cost)			$300
D. Grading of Excavation Site			$5,520
Volume of Soil--25% swell factor (cubic yards)			919
Grading Cost per Cubic Yard			$3.58
Mobilization/Demobilization of Equipment			$2,230
E. Asphalt/Concrete Removal			$2,000
Assume volume of concrete (cubic yards) =			1,500
Excavation costs per cubic yard =			$0.80
Mobilization/Demobilization of equipment =			$800
		SUBTOTAL CAPITAL COSTS	**$179,467**
		15% BID CONTINGENCY	**$26,920**
		15% SCOPE CONTINGENCY	**$26,920**
		5% PERMITTING COSTS	**$8,973**
		TOTAL CAPITAL COSTS	**$242,280**

O&M Costs

No O&M costs are associated with this alternative.

Revetment 19 - Excavation with Onsite Disposal

Capital Costs

1. Excavation with Onbase Disposal			**$16,153**
A. Excavation of Sediments			$3,195
Volume of Sediments (cubic yards)			735
Excavation Costs per Cubic Yard			$2.31
Mobilization/Demobilization of Equipment			$1,500
B. Post Excavation Confirmation Sampling Program			$3,928
Number of Confirmation Samples			3
Number of QA Samples			1
Sampling Cost per Sample Location (labor and equipment)			$208
Data Validation Labor per Sample			$55
Sample Analysis (per sample, includes 15% for CLP)			$771
Total Metals	6010/7000	$240	
PAHs	8270	$210	
TPH as Gasoline/JP-4	8015M	$105	
TPH as Diesel	8015M	$115	
C. Onbase Disposal			$1,510
Volume of Soil--25% swell factor (cubic yards)			919
Transportation and Disposal Costs per Cubic Yard			$1.32
Mobilization/Demobilization of Equipment			$300
D. Grading of Excavation Site			$5,520
Volume of Soil--25% swell factor (cubic yards)			919
Grading Cost per Cubic Yard			$3.58
Mobilization/Demobilization of Equipment			$2,230
E. Asphalt/Concrete Removal			$2,000
Assume volume of concrete (cubic yards) =			1,500
Excavation costs per cubic yard =			$0.80
Mobilization/Demobilization of equipment =			$800
		SUBTOTAL CAPITAL COSTS	**$16,153**
		15% BID CONTINGENCY	**$2,423**
		15% SCOPE CONTINGENCY	**$2,423**
		5% PERMITTING COSTS	**$808**
		TOTAL CAPITAL COSTS	**$21,806**

O&M Costs

No O&M costs are associated with this alternative.

Revetment 20 - Excavation with Offsite Disposal

Capital Costs

1. Excavation with Offbase Disposal			**$126,256**
A. Excavation of Sediments			$2,674
Volume of Sediments (cubic yards)			509
Excavation Costs per Cubic Yard			$2.31
Mobilization/Demobilization of Equipment			$1,500
B. Post Excavation Confirmation Sampling Program			$2,916
Number of Confirmation Samples			3
Number of QA Samples			1
Sampling Cost per Sample Location (labor and equipment)			$208
Data Validation Labor per Sample			$55
Sample Analysis (per sample, includes 15% for CLP)			$518
Total Metals	6010/7000	$240	
PAHs	8270	$210	
C. Offbase Disposal to a Class II Hazardous Waste Landfill			$114,160
Volume of Soil--25% swell factor (cubic yards)			636
Transportation and Disposal Costs per Cubic Yard			$179
Waste Profile Fee (One time cost)			$300
D. Grading of Excavation Site			$4,507
Volume of Soil--25% swell factor (cubic yards)			636
Grading Cost per Cubic Yard			$3.58
Mobilization/Demobilization of Equipment			$2,230
E. Asphalt/Concrete Removal			$2,000
Assume volume of concrete (cubic yards) =			1,500
Excavation costs per cubic yard =			$0.80
Mobilization/Demobilization of equipment =			$800

SUBTOTAL CAPITAL COSTS	**$126,256**
15% BID CONTINGENCY	**$18,938**
15% SCOPE CONTINGENCY	**$18,938**
5% PERMITTING COSTS	**$6,313**
TOTAL CAPITAL COSTS	**$170,446**

O&M Costs

No O&M costs are associated with this alternative.

Revetment 20 - Excavation with Onsite Disposal

Capital Costs

1. Excavation with Onbase Disposal			**$13,234**
A. Excavation of Sediments			$2,674
Volume of Sediments (cubic yards)			509
Excavation Costs per Cubic Yard			$2.31
Mobilization/Demobilization of Equipment			$1,500
B. Post Excavation Confirmation Sampling Program			$2,916
Number of Confirmation Samples			3
Number of QA Samples			1
Sampling Cost per Sample Location (labor and equipment)			$208
Data Validation Labor per Sample			$55
Sample Analysis (per sample, includes 15% for CLP)			$518
Total Metals	6010/7000	$240	
PAHs	8270	$210	
C. Onbase Disposal			$1,137
Volume of Soil--25% swell factor (cubic yards)			636
Transportation and Disposal Costs per Cubic Yard			$1.32
Mobilization/Demobilization of Equipment			$300
D. Grading of Excavation Site			$4,507
Volume of Soil--25% swell factor (cubic yards)			636
Grading Cost per Cubic Yard			$3.58
Mobilization/Demobilization of Equipment			$2,230
E. Asphalt/Concrete Removal			$2,000
Assume volume of concrete (cubic yards) =			1,500
Excavation costs per cubic yard =			$0.80
Mobilization/Demobilization of equipment =			$800

SUBTOTAL CAPITAL COSTS	**$13,234**
15% BID CONTINGENCY	**$1,985**
15% SCOPE CONTINGENCY	**$1,985**
5% PERMITTING COSTS	**$662**
TOTAL CAPITAL COSTS	**$17,866**

O&M Costs

No O&M costs are associated with this alternative.

Revetment 21 - Excavation with Offsite Disposal

Capital Costs

1. Excavation with Offbase Disposal			**$124,346**
A. Excavation of Sediments			$2,664
Volume of Sediments (cubic yards)			505
Excavation Costs per Cubic Yard			$2.31
Mobilization/Demobilization of Equipment			$1,500
B. Post Excavation Confirmation Sampling Program			$3,928
Number of Confirmation Samples			3
Number of QA Samples			1
Sampling Cost per Sample Location (labor and equipment)			$208
Data Validation Labor per Sample			$55
Sample Analysis (per sample, includes 15% for CLP)			$771
Total Metals	6010/7000	$240	
PAHs	8270	$210	
TPH as Gasoline/JP-4	8015M	$105	
TPH as Diesel	8015M	$115	
C. Offbase Disposal to a Class II Hazardous Waste Landfill			$113,265
Volume of Soil--25% swell factor (cubic yards)			631
Transportation and Disposal Costs per Cubic Yard			$179
Waste Profile Fee (One time cost)			$300
D. Grading of Excavation Site			$4,489
Volume of Soil--25% swell factor (cubic yards)			631
Grading Cost per Cubic Yard			$3.58
Mobilization/Demobilization of Equipment			$2,230

SUBTOTAL CAPITAL COSTS	**$124,346**
15% BID CONTINGENCY	**$18,652**
15% SCOPE CONTINGENCY	**$18,652**
5% PERMITTING COSTS	**$6,217**
TOTAL CAPITAL COSTS	**$167,867**

O&M Costs

No O&M costs are associated with this alternative.

Revetment 21 - Excavation with Onsite Disposal

Capital Costs

1. Excavation with Onbase Disposal			**$12,212**
A. Excavation of Sediments			$2,664
Volume of Sediments (cubic yards)			505
Excavation Costs per Cubic Yard			$2.31
Mobilization/Demobilization of Equipment			$1,500
B. Post Excavation Confirmation Sampling Program			$3,928
Number of Confirmation Samples			3
Number of QA Samples			1
Sampling Cost per Sample Location (labor and equipment)			$208
Data Validation Labor per Sample			$55
Sample Analysis (per sample, includes 15% for CLP)			$771
Total Metals	6010/7000	$240	
PAHs	8270	$210	
TPH as Gasoline/JP-4	8015M	$105	
TPH as Diesel	8015M	$115	
C. Onbase Disposal			$1,131
Volume of Soil--25% swell factor (cubic yards)			631
Transportation and Disposal Costs per Cubic Yard			$1.32
Mobilization/Demobilization of Equipment			$300
D. Grading of Excavation Site			$4,489
Volume of Soil--25% swell factor (cubic yards)			631
Grading Cost per Cubic Yard			$3.58
Mobilization/Demobilization of Equipment			$2,230

SUBTOTAL CAPITAL COSTS	**$12,212**
15% BID CONTINGENCY	**$1,832**
15% SCOPE CONTINGENCY	**$1,832**
5% PERMITTING COSTS	**$611**
TOTAL CAPITAL COSTS	**$16,486**

O&M Costs

No O&M costs are associated with this alternative.

Revetment 22 - Excavation with Offsite Disposal

Capital Costs

1. Excavation with Offbase Disposal			**$116,201**
A. Excavation of Sediments			$2,563
Volume of Sediments (cubic yards)			461
Excavation Costs per Cubic Yard			$2.31
Mobilization/Demobilization of Equipment			$1,500
B. Post Excavation Confirmation Sampling Program			$3,928
Number of Confirmation Samples			3
Number of QA Samples			1
Sampling Cost per Sample Location (labor and equipment)			$208
Data Validation Labor per Sample			$55
Sample Analysis (per sample, includes 15% for CLP)			$771
PAHs	8270	$210	
TPH as Gasoline/JP-4	8015M	$105	
TPH as Diesel	8015M	$115	
Total Metals	6010/7000	$240	
C. Offbase Disposal to a Class II Hazardous Waste Landfill			$103,418
Volume of Soil--25% swell factor (cubic yards)			576
Transportation and Disposal Costs per Cubic Yard			$179
Waste Profile Fee (One time cost)			$300
D. Grading of Excavation Site			$4,292
Volume of Soil--25% swell factor (cubic yards)			576
Grading Cost per Cubic Yard			$3.58
Mobilization/Demobilization of Equipment			$2,230
E. Asphalt/Concrete Removal			$2,000
Assume volume of concrete (cubic yards) =			1,500
Excavation costs per cubic yard =			$0.80
Mobilization/Demobilization of equipment =			$800
		SUBTOTAL CAPITAL COSTS	**$116,201**
		15% BID CONTINGENCY	**$17,430**
		15% SCOPE CONTINGENCY	**$17,430**
		5% PERMITTING COSTS	**$5,810**
		TOTAL CAPITAL COSTS	**$156,872**

O&M Costs

No O&M costs are associated with this alternative.

Revetment 22 - Excavation with Onsite Disposal

Capital Costs

1. Excavation with Onbase Disposal			**$13,841**
A. Excavation of Sediments			$2,563
Volume of Sediments (cubic yards)			461
Excavation Costs per Cubic Yard			$2.31
Mobilization/Demobilization of Equipment			$1,500
B. Post Excavation Confirmation Sampling Program			$3,928
Number of Confirmation Samples			3
Number of QA Samples			1
Sampling Cost per Sample Location (labor and equipment)			$208
Data Validation Labor per Sample			$55
Sample Analysis (per sample, includes 15% for CLP)			$771
PAHs	8270	$210	
TPH as Gasoline/JP-4	8015M	$105	
TPH as Diesel	8015M	$115	
Total Metals	6010/7000	$240	
C. Onbase Disposal			$1,058
Volume of Soil--25% swell factor (cubic yards)			576
Transportation and Disposal Costs per Cubic Yard			$1.32
Mobilization/Demobilization of Equipment			$300
D. Grading of Excavation Site			$4,292
Volume of Soil--25% swell factor (cubic yards)			576
Grading Cost per Cubic Yard			$3.58
Mobilization/Demobilization of Equipment			$2,230
E. Asphalt/Concrete Removal			$2,000
Assume volume of concrete (cubic yards) =			1,500
Excavation costs per cubic yard =			$0.80
Mobilization/Demobilization of equipment =			$800
	SUBTOTAL CAPITAL COSTS		**$13,841**
	15% BID CONTINGENCY		**$2,076**
	15% SCOPE CONTINGENCY		**$2,076**
	5% PERMITTING COSTS		**$692**
	TOTAL CAPITAL COSTS		**$18,686**

O&M Costs

No O&M costs are associated with this alternative.

Revetment 23 - Excavation with Offsite Disposal

Capital Costs

1. Excavation with Offbase Disposal		**$168,100**
A. Excavation of Sediments		$3,257
Volume of Sediments (cubic yards)		762
Excavation Costs per Cubic Yard		$2.31
Mobilization/Demobilization of Equipment		$1,500
B. Post Excavation Verification Sampling Program		$1,656
Total Excavated Area (Acres)		0.47
Number of Verification Samples		5
Number of QA Samples		1
Sampling Cost per Sample Location (labor and equipment)		$0
Data Validation Labor per Sample		$0
Sample Analysis (per sample, includes 15% for CLP)		$276
Total Metals 6010/7000	$240	
C. Offbase Disposal to a Class II Hazardous Waste Landfill		$157,545
Volume of Soil--25% swell factor (cubic yards)		953
Transportation and Disposal Costs per Cubic Yard		$165
Waste Profile Fee (One time cost)		$300
D. Grading of Excavation Site		$5,642
Volume of Soil--25% swell factor (cubic yards)		953
Grading Cost per Cubic Yard		$3.58
Mobilization/Demobilization of Equipment		$2,230

SUBTOTAL CAPITAL COSTS	**$168,100**
15% BID CONTINGENCY	**$25,215**
15% SCOPE CONTINGENCY	**$25,215**
5% PERMITTING COSTS	**$8,405**
TOTAL CAPITAL COSTS	**$226,934**

O&M Costs

No O&M costs are associated with this alternative.

Revetment 23 - Excavation with Onsite Disposal

Capital Costs

1. Excavation with Onbase Disposal			**$12,109**
A. Excavation of Sediments			$3,257
Volume of Sediments (cubic yards)			762
Excavation Costs per Cubic Yard			$2.31
Mobilization/Demobilization of Equipment			$1,500
B. Post Excavation Verification Sampling Program			$1,656
Total Excavated Area (Acres)			0.47
Number of Verification Samples			5
Number of QA Samples			1
Sampling Cost per Sample Location (labor and equipment)			$0
Data Validation Labor per Sample			$0
Sample Analysis (per sample, includes 15% for CLP)			$276
Total Metals	6010/7000	$240	
C. Onbase Disposal			$1,555
Volume of Soil--25% swell factor (cubic yards)			953
Transportation and Disposal Costs per Cubic Yard			$1.32
Mobilization/Demobilization of Equipment			$300
D. Grading of Excavation Site			$5,642
Volume of Soil--25% swell factor (cubic yards)			953
Grading Cost per Cubic Yard			$3.58
Mobilization/Demobilization of Equipment			$2,230

SUBTOTAL CAPITAL COSTS	**$12,109**
15% BID CONTINGENCY	**$1,816**
15% SCOPE CONTINGENCY	**$1,816**
5% PERMITTING COSTS	**$605**
TOTAL CAPITAL COSTS	**$16,347**

O&M Costs

No O&M costs are associated with this alternative.

Revetment 25 - Excavation with Offsite Disposal

Capital Costs

1. Excavation with Offbase Disposal			**$121,757**
A. Excavation of Sediments			$2,632
Volume of Sediments (cubic yards)			491
Excavation Costs per Cubic Yard			$2.31
Mobilization/Demobilization of Equipment			$1,500
B. Post Excavation Confirmation Sampling Program			$2,476
Number of Confirmation Samples			3
Number of QA Samples			1
Sampling Cost per Sample Location (labor and equipment)			$208
Data Validation Labor per Sample			$55
Sample Analysis (per sample, includes 15% for CLP)			$408
Total Metals	6010/7000	$240	
TPH as Diesel	8015M	$115	
C. Offbase Disposal to a Class II Hazardous Waste Landfill			$110,221
Volume of Soil--25% swell factor (cubic yards)			614
Transportation and Disposal Costs per Cubic Yard			$179
Waste Profile Fee (One time cost)			$300
D. Grading of Excavation Site			$4,428
Volume of Soil--25% swell factor (cubic yards)			614
Grading Cost per Cubic Yard			$3.58
Mobilization/Demobilization of Equipment			$2,230
E. Asphalt/Concrete Removal			$2,000
Assume volume of concrete (cubic yards) =			1,500
Excavation costs per cubic yard =			$0.80
Mobilization/Demobilization of equipment =			$800

SUBTOTAL CAPITAL COSTS	**$121,757**
15% BID CONTINGENCY	**$18,264**
15% SCOPE CONTINGENCY	**$18,264**
5% PERMITTING COSTS	**$6,088**
TOTAL CAPITAL COSTS	**$164,373**

O&M Costs

No O&M costs are associated with this alternative.

Revetment 25 - Excavation with Onsite Disposal

Capital Costs

1. Excavation with Onbase Disposal			**$12,645**
A. Excavation of Sediments			$2,632
Volume of Sediments (cubic yards)			491
Excavation Costs per Cubic Yard			$2.31
Mobilization/Demobilization of Equipment			$1,500
B. Post Excavation Confirmation Sampling Program			$2,476
Number of Confirmation Samples			3
Number of QA Samples			1
Sampling Cost per Sample Location (labor and equipment)			$208
Data Validation Labor per Sample			$55
Sample Analysis (per sample, includes 15% for CLP)			$408
Total Metals	6010/7000	$240	
TPH as Diesel	8015M	$115	
C. Onbase Disposal			$1,108
Volume of Soil--25% swell factor (cubic yards)			614
Transportation and Disposal Costs per Cubic Yard			$1.32
Mobilization/Demobilization of Equipment			$300
D. Grading of Excavation Site			$4,428
Volume of Soil--25% swell factor (cubic yards)			614
Grading Cost per Cubic Yard			$3.58
Mobilization/Demobilization of Equipment			$2,230
E. Asphalt/Concrete Removal			$2,000
Assume volume of concrete (cubic yards) =			1,500
Excavation costs per cubic yard =			$0.80
Mobilization/Demobilization of equipment =			$800

SUBTOTAL CAPITAL COSTS	**$12,645**
15% BID CONTINGENCY	**$1,897**
15% SCOPE CONTINGENCY	**$1,897**
5% PERMITTING COSTS	**$632**
TOTAL CAPITAL COSTS	**$17,070**

O&M Costs

No O&M costs are associated with this alternative.

Revetment 26 - Excavation with Offsite Disposal

Capital Costs

1. Excavation with Offbase Disposal			**$116,156**
A. Excavation of Sediments			$2,572
Volume of Sediments (cubic yards)			465
Excavation Costs per Cubic Yard			$2.31
Mobilization/Demobilization of Equipment			$1,500
B. Post Excavation Confirmation Sampling Program			$2,960
Number of Confirmation Samples			3
Number of QA Samples			1
Sampling Cost per Sample Location (labor and equipment)			$208
Data Validation Labor per Sample			$55
Sample Analysis (per sample, includes 15% for CLP)			$529
Total Metals	6010/7000	$240	
TPH as Gasoline/JP-4	8015M	$105	
TPH as Diesel	8015M	$115	
C. Offbase Disposal to a Class II Hazardous Waste Landfill			$104,314
Volume of Soil--25% swell factor (cubic yards)			581
Transportation and Disposal Costs per Cubic Yard			$179
Waste Profile Fee (One time cost)			$300
D. Grading of Excavation Site			$4,310
Volume of Soil--25% swell factor (cubic yards)			581
Grading Cost per Cubic Yard			$3.58
Mobilization/Demobilization of Equipment			$2,230
E. Asphalt/Concrete Removal			$2,000
Assume volume of concrete (cubic yards) =			1,500
Excavation costs per cubic yard =			$0.80
Mobilization/Demobilization of equipment =			$800

SUBTOTAL CAPITAL COSTS	**$116,156**
15% BID CONTINGENCY	**$17,423**
15% SCOPE CONTINGENCY	**$17,423**
5% PERMITTING COSTS	**$5,808**
TOTAL CAPITAL COSTS	**$156,810**

O&M Costs

No O&M costs are associated with this alternative.

Revetment 26 - Excavation with Onsite Disposal

Capital Costs

1. Excavation with Onbase Disposal			**$12,907**
A. Excavation of Sediments			$2,572
Volume of Sediments (cubic yards)			465
Excavation Costs per Cubic Yard			$2.31
Mobilization/Demobilization of Equipment			$1,500
B. Post Excavation Confirmation Sampling Program			$2,960
Number of Confirmation Samples			3
Number of QA Samples			1
Sampling Cost per Sample Location (labor and equipment)			$208
Data Validation Labor per Sample			$55
Sample Analysis (per sample, includes 15% for CLP)			$529
Total Metals	6010/7000	$240	
TPH as Gasoline/JP-4	8015M	$105	
TPH as Diesel	8015M	$115	
C. Onbase Disposal			$1,065
Volume of Soil--25% swell factor (cubic yards)			581
Transportation and Disposal Costs per Cubic Yard			$1.32
Mobilization/Demobilization of Equipment			$300
D. Grading of Excavation Site			$4,310
Volume of Soil--25% swell factor (cubic yards)			581
Grading Cost per Cubic Yard			$3.58
Mobilization/Demobilization of Equipment			$2,230
E. Asphalt/Concrete Removal			$2,000
Assume volume of concrete (cubic yards) =			1,500
Excavation costs per cubic yard =			$0.80
Mobilization/Demobilization of equipment =			$800

SUBTOTAL CAPITAL COSTS	**$12,907**
15% BID CONTINGENCY	**$1,936**
15% SCOPE CONTINGENCY	**$1,936**
5% PERMITTING COSTS	**$645**
TOTAL CAPITAL COSTS	**$17,424**

O&M Costs

No O&M costs are associated with this alternative.

Appendix D

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List of Acronyms

AMSF	Aircraft Maintenance and Storage Facility Area
BRAC	Base Realignment and Closure
BTEX	benzene, toluene, ethylbenzene, and xylenes
cm/sec	centimeter(s) per second
ESI	Engineering-Science, Inc.
ft	foot (feet)
IT	IT Corporation
mg/L	milligram(s) per liter
msl	mean sea level
ONSFL	Onshore Fuel Line
PAH	polynuclear aromatic hydrocarbon
PCB	polychlorinated biphenyl
SVOC	semivolatile organic compound
TPH	total petroleum hydrocarbon
TRPH	total recoverable petroleum hydrocarbon
USACE	U.S. Army Corps of Engineers
VOC	volatile organic compound
WCFS	Woodward-Clyde Federal Services
µg/L	microgram(s) per liter

1.0 Introduction

The purpose of this appendix is to describe the hydrogeologic conditions at the Base Realignment and Closure (BRAC) Property and summarize the previous investigative groundwater results. The majority of groundwater data generated for the BRAC Property are from previous investigations presented in the following three reports:

- Final Environmental Investigation Report, Hamilton Army Airfield, Volumes I and II (ESI, 1993)
- Additional Environmental Investigation of BRAC Property, Final Report, Hamilton Army Airfield (WCFS, 1996)
- Comprehensive Remedial Investigation Report for the BRAC Property, Hamilton Army Airfield (IT, 1999).

This appendix is organized into the following sections:

- Section 1.0 – Introduction
- Section 2.0 – Hydrogeologic Conditions
- Section 3.0 – Previous Investigation Activities
- Section 4.0 – Groundwater Analytical Results
- Section 5.0 – References

This appendix only summarizes the key findings of the previous investigations; however, further details regarding the hydrogeologic and groundwater analytical data can be referenced from the three reports listed above.

2.0 Hydrogeologic Conditions

There are three shallow hydrogeologic units that occur within the BRAC Property airfield parcel: fill, desiccated Bay Mud, and soft Bay Mud. Measurement data for key properties of the fill material and Bay Mud, compiled during previous investigations for all BRAC Property parcels including outparcels and cantonment tracts that are not a part of the airfield, are presented in Table 2-1 (ESI, 1993; WCFS, 1996; USACE, 1994; and IT, 1999). Each hydrogeologic unit is described in the subsections below followed by a discussion of the typical groundwater parameters for key areas.

2.1 Artificial Fill

Artificial Fill present on the BRAC Property originates from two sources. The vast majority of the fill was placed during construction on the BRAC Property beginning with late nineteenth century reclamation of San Francisco Bay margin wetlands for agriculture. Its clay-rich composition closely resembles the Bay Mud (described below) from which it was largely derived by dredging. Reclamation fill is distributed widely throughout the shallow subsurface of the airfield portion of the BRAC Property. Its thickness typically ranges from 0 to 3 feet (ft). Greater depths of fill are present in topographic low areas. Although the fill was likely unstratified when originally placed, the fill now exhibits horizontal and vertical anisotropy acquired by compaction and subsidence over the last 80 to 100 years. Reclamation fill horizontal groundwater conductivities range widely from 10^{-5} to 10^{-8} centimeters per second (cm/s) (ESI, 1993). The corresponding vertical conductivities fall in the narrower range from 10^{-7} to 10^{-8} cm/s (WCFS, 1996; IT, 1999). A second type of fill are materials placed for engineering purposes, such as structural bridging material to support building foundations, road metal, and bedding material for underground conduits such as some sewers and presumably the Onshore Fuel Line (ONSFL). These fill materials, which are typically well graded (poorly sorted) but unstratified, range in size from gravel to clay and have moderate to low permeabilities in the range of 10^{-4} to 10^{-8} cm/s (ESI, 1993). The engineering fill is limited in aerial extent, being confined primarily to areas formerly occupied by airfield buildings in the portions of the aircraft maintenance area or westernmost BRAC Property parcels now protected by the New Hamilton Partnership levee.

TABLE 2-1
Properties of Fill and Bay Mud on Base Realignment and Closure Property

Property	Fill	Desiccated Bay Mud	Soft Bay Mud	Reference
pH (standard units)	NM[a]	4	8	WCFS, 1996[b]
Liquidity Index (%)	NM	NM	1	WCFS, 1996
Plasticity Index (%)	NM	NM	40 - 50.1	WCFS, 1996
Organic Content (%)	NM	11 - 11.4	10.67 - 14.18	WCFS, 1996
Specific Gravity	2.66 - 2.70	2.62 - 2.71	2.64 - 2.74	WCFS, 1996
	2.45 - 2.71		2.39 - 2.67	IT, 1999[c]
Wet Bulk Density (%)	1.46 - 2.07	1.38 - 1.55	1.41 - 1.73	WCFS, 1996
Dry Density (pcf[d])	59.1 - 128.9	NM	44.9 - 63.4	IT, 1999
Water Content (%)	14 - 47	65 - 96	54 - 99	WCFS, 1996
	13.3 - 71.4		62.6 - 88.0	IT, 1999
Porosity (%)	33.5 - 55	58.3 - 66.1	60 - 73	WCFS, 1996
Hydraulic Conductivity (cm/sec[e])				
Horizontal	$3.7x10^{-8}$ - $1.5x10^{-3}$	$1x10^{-7}$ - $9.3x10^{-2}$ [f]	$2.9x10^{-8}$ - $3.1x10^{-4}$	slug tests, USACE, 1994[g]
	NM	$8.2x10^{-8}$	$3.4x10^{-8}$ - $2.2x10^{-6}$	lab tests, ESI, 1993[h]
Vertical	$2.3x10^{-8}$ - $2.2x10^{-6}$	NM	NM	lab tests, ESI, 1993
	$3.6x10^{-8}$ - $3.7x10^{-7}$	NM	$5.5x10^{-8}$ - $1.2x10^{-7}$	lab tests, IT, 1999

a Not measured.
b Woodward-Clyde Federal Services (WCFS), 1996, Additional Environmental Investigation of BRAC Property, Hamilton Army Airfield, Oakland, California.
c IT Corporation (IT), 1999, Comprehensive Remedial Investigation Report, BRAC Property, Hamilton Army Airfield, Novato, California, Martinez, California.
d Pounds per cubic foot.
e Centimeters per second.
f Described as "Desiccated Bay Mud/Soft Bay Mud."
g U.S. Army Corps of Engineers (USACE), 1994, Supplemental to the Final Environmental Investigation Report, Hamilton Army Airfield, Sacramento, California.
h Engineering-Science, Inc. (ESI), 1993, Final Environmental Investigation Report, Hamilton Army Airfield, Alameda, California.

2.2 Bay Mud

The Bay Mud typically consists of semi-consolidated to unconsolidated, highly plastic, silty clays containing variable amounts of organic material and numerous small shell fragments (WCFS, 1996). The Bay Mud is soft and plastic when it is wet, and shrinks, hardens, and becomes brittle when it dries. The desiccated Bay Mud corresponds to the seasonal influenced, partially desaturated to desiccated near-surface deposits. The soft Bay Mud corresponds to the underlying saturated deposits. The soft Bay Mud acts as an aquitard. Airfield wells penetrating soft Bay Mud exhibit slug test conductivities in the typical range of 10^{-6} to 10^{-8} cm/s. Vertical conductivities of soft Bay Mud range from 10^{-7} to 10^{-8} cm/s in the same areas (WCFS, 1996 and IT, 1999).

The desiccated Bay Mud has low matrix permeability, but may have some fracture permeability extending from the surface to depths of a few to several centimeters. Preferential flow is probably vertical through desiccation cracks. Slug tests of airfield wells within the desiccated Bay Mud indicated horizontal hydraulic conductivities of 10^{-4} to 10^{-7} cm/sec. Laboratory measurements of desiccated Bay Mud vertical conductivities fall within the 10^{-6} to 10^{-8} range which is consistent with silty clay matrix (IT, 1999 and WCFS, 1996).

2.3. Groundwater

The groundwater at the BRAC Property is considered part of the Novato Creek Basin, which has several potential beneficial uses as defined by the Water Quality Control Plan for the San Francisco Bay (RWQCB, 1995). These uses, within the basin, include agricultural, industrial service, industrial process, and municipal and domestic water supply. The groundwater within the BRAC Property, however, is unsuitable as a drinking water source (human beneficial use) because of the elevated total dissolved solids content in excess of the drinking water threshold of 3,000 milligrams per liter (mg/L). The total dissolved solid concentrations on the BRAC Property ranged from 819 to 18,270 mg/L as shown on Table 2-2 (IT, 1999). Furthermore, the groundwater is not a likely source of industrial groundwater because of its very low sustainable yield in the impermeable Bay Mud. An evaluation of the beneficial use of the shallow groundwater beneath the general lowland site areas was performed during studies for the adjacent General Services Administration Phase I Sale Area in 1995. This study (WCFS, 1995) indicated that the groundwater should not be considered a source for domestic or municipal water supplies.

The depth to groundwater ranges from approximately 2 to 10 ft below grade in the fill and Bay Mud (WCFS, 1996). Based on data from 1996 and 1997, groundwater was encountered in the monitoring wells at depths from 3.6 ft above mean sea level (msl) to 13.4 ft below msl. The depth varies seasonally because of high evapotranspiration rates in the summer and fall and recharge during winter and spring.

TABLE 2-2
Total Dissolved Solids in Groundwater

Well Number	Well Purpose	Conductivity[a] µS/cm[b]	TDS[c], mg/L[d]	TDS, ppt[e]
BKG-MW1	background	8,200	5,166	5
BKG-MW2	background	29,000	18,270	18
BKG-MW4	background	2,050	1,292	1
BKG-MW5	background	4,200	2,646	3
JFL-MW1	characterization	1,500	945	1
JFL-MW3	characterization	13,500	8,505	9
PSA-MW1	characterization	5,990	3,774	4
PSA-MW2	characterization	3,920	2,470	2
PSA-MW3	characterization	11,000	6,930	7
PSA-MW4	characterization	1,300	819	1
RVT-MW1	characterization	2,350	1,481	1
RVT-MW2	characterization	1,600	1,008	1
RVT-MW3	characterization	2,500	1,575	2
AM-MW-101[f]	characterization	11,400	7,182	7
TP-MW-101[f]	characterization	18,100	11,403	11
Average		7,036	4,898	5
Minimum		1,300	819	1
Maximum		29,000	18,270	18
Standard Deviation		7,543	4,920	5
Geometric Mean of All Wells Listed		4,521	3,124	3
Geometric Mean of Background Wells		6,701	4,238	4
Geometric Mean of Characterization Wells		6,651	2,797	3

[a] Conductivity data taken from field purge records; lowest measurement used.
[b] Microsiemens per centimeter.
[c] Total dissolved solids, calculated as TDS = 0.63x(electrical conductivity); equation developed from correlation of electrical conductivity with total dissolved solids (IT, 1999).
[d] Milligrams per liter.
[e] Parts per thousand, calculated as milligrams per liter x 0.001. [f] Sampled by IT Corporation in July 1997; all others sampled by Woodward-Clyde Federal Services in April 1995

2.4 Potential Preferred Groundwater Pathways

Diverse hydrogeologic units and site factors combine to present a number of potential preferential groundwater migration paths. Preferential migration pathways are a concern with regard to contaminant transport because of the possibility that contamination breakthrough, the point at which groundwater contamination exceeds levels of acceptable risk, will occur sooner

than predicted. Of particular concern at Hamilton Army Airfield (HAAF) is any potential threat to future wetlands receptors from contamination conveyed by groundwater to exposure points at excavated or eroded channels or in the existing coastal salt marsh or San Pablo Bay.

Preferential pathways can be divided into two general groups, those that short circuit expected transport routes, and those through which transport occurs at an accelerated rate. Examples of first group at HAAF are fissures in desiccated clay soils, bedrock fractures, and open conduits, such as drain lines. Desiccation cracks or fissures tend to short-circuit the normal pathway through the porous matrix only for short distances at the exposed surface of the unit. Desiccation cracks tend to anneal at depth due to normal hydrostatic pressures and the difficulty of maintaining unsupported void space at depth. It is possible that fissures may be filled with non-matrix soil material, but even if such material is relatively permeable, the fissures themselves are discontinuous and do not form, interconnected networks for distances much greater than several centimeters. Bedrock units are not a factor for the Hamilton airfield although fractured bedrock is a consideration for a BRAC Property outparcel. Bedrock plunges from outcrop areas to the west of the airfield too many meters deep beneath the airfield. Fractures, if present at depth, are separated from potential receptors of the shallower zones by several meters of soft Bay Mud and other fine grained units.

More problematic than naturally occurring voids are the existing storm water drainage system conduits. These pipes range in size from less than 1 ft to as much as 54-inches in diameter. In general, the lines are distributed in three areas. One network drains the mid-airfield just north of the revetment area. Another network drains the revetment area itself, while a third drains the aircraft maintenance area to the west of the revetments. The revetment area network is of special interest because it is the most likely to intersect with tidal channels that will be excavated or that may erode as part of the HAAF wetlands. The component lines in each network span various distances and lie at various depths, usually no deeper than 3 to 5 ft below current grade. One cannot rule out the possibility of groundwater seepage into the drain lines through gaps, joints, or other breaks in the lines. Fortunately, in the case of the mid-airfield and revetment area networks, the drains themselves do not approach closely to any known sites with quantities of buried contamination to serve as a source to groundwater. The drains in the Aircraft Maintenance and Storage Facility Area (AMSF) pass through some areas where inorganic chemicals of concern are encountered in the subsurface. However, these drain lines convey water to discharge into the perimeter drainage ditch to the west of the central portion of the airfield. Hence, they do not pose a potential threat to future critical habitat areas subject to channel formation. Additionally, recent monitoring of wells in this area indicates that groundwater is relatively free of contamination. More discussion about groundwater quality in this area is contained in Section 4.2.

The second type of preferred pathway may include interbeds of relatively permeable units, such as sand or gravel lenses within otherwise fine-grained units, engineering fill materials, or organic rich, peat layers. Engineering fill may have extended along the ONSFL and possibly beneath airfield drains or other buried conduits. However, during the period of construction of the airfield, modern filter fabrics and other siltation controls were not widely used. It is likely that gravel or other material used for bedding or drainage silted up as early as within a few to several months after placement depending on soil moisture conditions. In the specific case of the ONSFL, any potential longitudinal preferred pathway for groundwater migration was removed or otherwise interrupted in 1995 when the pipeline itself and over 6,000 cubic yards of

inline and proximal contaminated soils were removed (ATG, 1995). A potential concern might be raised over near subsurface road metal and pavement underlayment. For example, the paved revetments appear to lie upon gravel bedding. While this bedding is potentially a preferred pathway for horizontal transport, the practical observation is that revetments with known, shallow subsurface contamination at their centers typically do not exhibit elevated levels in perimeter samples. Either migration under transient saturated conditions (infiltration of rainwater) does not appear to take place, or the gravel itself contains enough fine matrix to block transport. A coarse grained bridging layer underlies portions of the AMSF in the vicinity of Building 82. However, an open excavation created to remove residual soil contamination penetrated the layer at approximately 7-ft below ground surface. The coarser material, which appears to be distributed in surrounding areas as well, only produced water for about one day. Beyond that point, the water level in the open excavation began to decline, indicating the bridging layer is likely a perched zone with limited permeability extent.

Along with engineering fill of various origins, naturally occurring zones of increased permeability are known to exist at HAAF. The Bay Mud contains interbedded fluvial deposits of sand and silt ranging in thickness from 1 inch to 3 ft. These deposits are more characteristic of the Bay Mud where it lies near the flanks of upland areas such as Petroleum, Oil, and Lubricant Hill, Ammo Hill, or the Coast Guard housing area. The interbedded units are lenseatic in nature and do not form through going aquifers. The origin for the sediment contained in the lenses is likely the adjacent bedrock. The zone containing fluvial sediments interfingers with bay sediments as distance from the upland sources increases (WCFS, 1996). In a vertical sense, the depth zone containing medium to coarse-grained interbeds plunges along with the bedrock surface beneath the shallower, exclusively fine grained units encountered in airfield borings, excavations, and wells. Under these considerations the presence of high permeability, coarse grained units as preferred pathways for groundwater is very unlikely for extended distances. Another consideration is the potential presence of peat or other organic rich permeable layers. While such features are an important component of the airfield's Reyes-type soils, they too form discontinuous lenses, particularly in the reclamation fill. Hence, it is concluded that through going, high permeability units, either naturally occurring or of man-made origin do not form preferred pathways for groundwater contaminant migration beneath the Hamilton airfield.

2.5 Conditions for Horizontal Groundwater Transport of Contamination.

Groundwater gradients were found to vary from 0.001 beneath the revetment area to 0.051 near the Pump Station Area and east levee, which are closer to tidal influences from San Pablo Bay. Groundwater elevations, contours, and inferred flows generally agree with those found during previous investigations (WCFS, 1996). The recent historic flow direction is generally from the north and western areas toward a low null point in the east-central portion of the airfield (IT, 1999).

The null point is a region where the gradient becomes flat, a flow stagnation point. It was concluded in the previous section that there are no continuous aquifer units beneath the Hamilton airfield. The absence of an aquifer does not preclude advective flow. However, the low conductivities, even in the horizontal dimension, coupled with the small natural gradient

culminating in a stagnation point result in very slow rates of movement. An estimate of the Darcy velocity is derived from the following revetment area parameters:

$$Vd = k\ i = 10^{-4} \times 0.0014 = 1.4 \times 10^{-7}\ cm/s$$

Assuming the soils have only 20 percent porosity (low for clay-rich units that might be twice that number), the rate of groundwater movement is on the order of 22 centimeters per year. This calculation is based upon the assumption that historic gradients will be sustained. The gradient condition should persist up to the point when the site is restored to wetlands habitat. For a brief period of years during construction, transient conditions will exist during which the primary transport mechanism will be vertically downward as dredge materials dewater and infiltration processes proceed. As placement cells are loaded, the water table may rise a negligible amount toward the infiltration front a negligible amount due to incremental increases in pore pressure. After the transition period, the airfield will ultimately be saturated by San Pablo Bay water. The horizontal flow regime after inundation may follow the same direction as the current one; however, the gradient will not likely change magnitude in a significant way because the airfield will still be essentially flat. The existing unsaturated zone will eventually disappear. Once Bay water infiltrating from the surface merges with groundwater, a standard hydrostatic condition of uniform pressure increase with depth will exist everywhere in the saturated subsurface. At that point, diffusion will be the only mechanism for contaminant transport in the vertical direction (USACE, 2001), and depending on the position and extent of stagnation, it may also become the primary mechanism for horizontal transport.

In summary, HAAF may contain limited areas of contamination in-place and hence pose a theoretical threat to groundwater. But consideration of the impermeable hydrogeologic units and small gradients, the limited extent of areas at risk for preferential flow, and the flat lying nature of Bay plane areas, it is concluded that groundwater is not a potential threat to a restored wetlands or existing habitats.

3.0 Previous Investigation Activities

Although numerous environmental investigations dating back to 1985 have been conducted on the BRAC Property, the majority of the groundwater investigations were conducted under three major efforts in 1993 (ESI, 1993), 1996 (WCFS, 1996), and 1998 (IT, 1999). The following sections describe the groundwater investigation activities conducted under each investigation.

3.1 Environmental Investigation

The investigation by Engineering-Sciences, Inc. (ESI) in 1993 defined the distribution, type, and concentrations of contaminants at the Base and assessed the risk associated with the contaminants (1993). The investigation included installation and sample collection of 19 groundwater monitoring wells at six sites (the revetment area, Revetment 10 firefighter training area, AMSF, pump station area, former sewage treatment plant, and the east levee construction debris disposal area). Groundwater samples from the ESI investigation were analyzed for volatile organic compounds (VOC); benzene, toluene, ethylbenzene, and xylenes (BTEX); semivolatile organic compounds (SVOC); total recoverable petroleum hydrocarbons (TRPH); metals; pesticides/polychlorinated biphenyls (PCB); and general chemistry parameters. In general, the study found no contamination from organic chemicals in groundwater.

3.2 Additional Environmental Investigation

The investigation conducted by Woodward-Clyde Federal Services (WCFS) in 1995 and 1996 provided additional environmental investigation data for the BRAC Property. The additional investigation report described the investigation for several areas of the BRAC Property and summarized information from previous investigations (WCFS, 1996). There were 17 groundwater monitoring wells installed at five sites (revetment area, jet [onshore] fuel lines, pump station area, AMSF, and background locations). The five background wells were installed at locations away from known artificial or natural drainage features to evaluate the background groundwater quality on the BRAC Property. Groundwater samples were collected and analyzed for VOCs, SVOCs, polynuclear aromatic hydrocarbons (PAH), total petroleum hydrocarbons (TPH) (measured as gasoline, diesel, and JP-4), BTEX, metals, pesticides, herbicides, oil and grease, and total organic carbon. Organic chemicals were detected at low levels. Most wells detected a number of metals on par with the corresponding values observed in the background wells.

3.3 Remedial Investigation

The Remedial Investigation conducted by IT Corporation (IT) in 1997 and 1998 evaluated conditions at specific sites within the BRAC Property. Data from previous investigations were evaluated during the Remedial Investigation and additional samples were collected at specific sites and analyzed to aid in characterizing and determining background chemical conditions.

Groundwater samples were collected from five sites (Building 15, Building 20, Building 86, Building 84, Building 90, and Former Sewage Treatment Plant Sludge Drying Beds) during the Remedial Investigation. The groundwater samples were analyzed for TPH (measured as gasoline, diesel, and JP-4), VOCs, BTEX, PAHs, metals, PCBs, pesticides, and dissolved organic carbon.

Both organic and inorganic chemicals were detected at low levels.

The results of these investigations are summarized further on a site-specific basis in the following section.

4.0 Groundwater Analytical Results

The groundwater results from the various investigations indicated that groundwater does not appear to be significantly impacted by site activities. In general, detections in groundwater well samples appear to be limited to the vicinity of a single well and are not representative of general site conditions or as part of a contaminant plume.

Maximum values for metals detected in the BRAC Property airfield parcel groundwater samples collected during previous investigations are listed in Table 4-1. Fourteen metals occurred in some or all of the groundwater samples from previous investigations by ESI (1993) and WCFS (1996).

The maximum concentrations of organic analytes detected in the BRAC Property airfield parcel groundwater samples collected during previous investigations are listed in Table 4-2. Three of the detected compounds (acetone, methylene chloride, and butyl benzyl phthalate), each common laboratory contaminants, were detected sporadically at low levels and were interpreted in the Remedial Investigation (IT, 1999) to be investigation-related contaminants rather than related to *in situ* groundwater conditions. Pesticides and PCBs were not detected in any groundwater samples in which they were analyzed for. Benzyl alcohol and butyl benzyl phthalate were detected in the background monitoring well samples.

The Remedial Investigation (IT, 1999) summarized the previous investigative results for groundwater by dividing the inboard BRAC Property into five areas: the AMSF, the Former Sewage Treatment Plant, the Pump Station Area, the Revetment Area, and the ONSFL. In addition, five background wells, which were installed as part of the Additional Investigation conducted in 1995, were evaluated. A discussion of the analytical results for the background groundwater wells and inboard BRAC Property monitoring wells excerpted from the Remedial Investigation is presented in the subsections below.

4.1 Background Monitoring Wells

The five background monitoring wells (BKG-MW1 through BKG-MW5) were placed throughout the inboard BRAC Property as part of the site wide groundwater investigation conducted for the Additional Investigation in 1995. One background well, monitoring well BKG-MW1 was located on the northern end of the BRAC Property on the runway panhandle. The other four background wells were located on both sides of the runway south of the Revetment Area.

Total metals (in unfiltered samples) were detected in all five background wells. The maximum concentrations of metals are shown on Table 4-1. The only organic constituents detected (Table 4-2) were benzyl alcohol (at a concentration of 32 micrograms per liter [μg/L]) and butyl benzyl phthalate (at a concentration of 44 μg/L) in groundwater recovered from well BKG-MW1. These constituents were judged to be laboratory contaminants. Volatile organic compounds, oil and grease, PAHs, and TPH measured as diesel and JP-4 were not detected in any of the wells. Total petroleum hydrocarbon measured as gasoline was not analyzed. The lack of organic chemical detections and the persistent detections of metals in all wells is consistent with the interpretation of these wells as representative of background.

TABLE 4-1
Metals Detected in Groundwater

Site/Area	Source	Maximum Detections of Metals[a] Detected in Groundwater Samples, µg/L[b]													
		Sb	As	Ba	Be	B	Cr	Co	Cu	Pb	Mn	Hg	Ni	V	Zn
Surface Water Criteria	RWQCB, 2000[c]	30	36	3.9	5.1	1.6	180	3.0	2.4	3.2		0.012	8.2	19	23
Background	WCFS, 1996[d]		13	47	2.7	2000	120	160	49	15	10300	0.24	880	98	210
Aircraft Maintenance and Storage Facility	ESI, 1993[e]	86.3	29.6	170	20	2380	52.4		60.9	11.6	13200		40.5		90.9
	WCFS, 1996					550	28	23		3.8	3100		79	20	57
	IT, 1999[f]			100		1500	18			13	1170				37.3
Former Sewage Treatment Plant	ESI, 1993	101	15.6	144	1.8							0.338	57.6		26.8
	IT, 1999		33	120		390	5.3					0.72			
Pump Station Area	ESI, 1993			109			32.5				4360		38.6		35.8
	WCFS, 1996		28	180	2.1	2800	290	53	130	24	3800	0.27	290	250	310
	IT, 1999		44	120		2200	18			11			170		
Revetment Area	ESI, 1993		7.28	70.5					30.9	9.13	1050				
	WCFS, 1996		6.8			850	66	24	32	7.7	2200		110	57	93
ONSFL[g]	WCFS, 1996		21			3700	20	15	21		2400			13	110

[a] Metals listed are antimony (Sb), arsenic (As), barium (Ba), beryllium (Be), boron (B), chromium (Cr), cobalt (Co), copper (Cu), lead (Pb), manganese (Mn), mercury (Hg), nickel (Ni), vanadium (V), and zinc (Zn).
[b] Micrograms per liter.
[c] Regional Water Quality Control Board (RWQCB), 2000, *Application of Risk-Based Screening Levels and Decision Making to Sites with Impacted Soil and Groundwater*, Interim Final, August, San Francisco, California.
[d] Woodward-Clyde Federal Services (WCFS), 1996, *Additional Environmental Investigation of BRAC Property*, Oakland, California.
[e] Engineering-Science, Inc. (ESI), 1993, *Final Environmental Investigation Report, Hamilton Army Airfield*, Alameda, California.
[f] IT Corporation (IT), 1999, *Comprehensive Remedial Investigation Report, BRAC Property, Hamilton Army Airfield, Novato, California,* Martinez, California.
[g] Onshore fuel line (referred to as "jet fuel line" in WCFS 1996 report).

TABLE 4-2
Organic Chemicals Detected in Groundwater

Site	Analyte	Maximum Detection (μg/L)[a], by Investigation					Surface Water Criteria (μg/L)
		1991[b]	1992[c]	1994[d]	1995[e]	1997/ 1998[f]	RWQCB, 2000[g]
Background Wells	Benzyl alcohol				32		
	Butyl benzyl phthalate				44		
	Unknown Hydrocarbon				False Positive		640
Aircraft Maintenance and Storage Facility	1,2-Dichloroethylene	5.4					590
	Benzene	1.2					46
	Chloromethane		8.5				6,400
	Naphthalene		2.0				24
	Unknown Hydrocarbon (diesel)					190	640
Former Sewage Treatment Plant	1,3-Dimethylbenzene	2.8					
	1,4-Dichlorobenzene	15		11.6		13	15
	2-Methylnaphthalene	3.7					2.1
	4-Methylphenol	22					
	Acetone	200					1,500
	Benzene	1.4				1.8	46
	Chlorobenzene	20		15.5		15	50
	Dichlorobenzene (non-specific)	13					14
	Methyl ethyl ketone	76					
	Methyl isobutyl ketone	11					14,000
	Methylene chloride			17.1			170
	Naphthalene	5.2					2,200
	Phenol	230		58.4			24
	Pyrene			58.4			2,560
	Toluene	1.7					0.40
	Xylenes (total)	3.2		2.4		1.1	130
	Gasoline					3.3	13
	Unknown Hydrocarbon (diesel)					180	500
						360	640
Pump Station Area	Cyanide	18.5					1.0
	Methyl ethyl ketone	32					14,000
	Methylene chloride			102			2,200
	Toluene				0.55		130
	Unknown Hydrocarbon (diesel)					94	640
Revetment Area	Cyanide	12.6					1.0
Revetment 10 (Burn Pit)	Methyl ethyl ketone	30					14,000

TABLE 4-2
Organic Chemicals Detected in Groundwater

Site	Analyte	Maximum Detection (μg/L)[a], by Investigation					Surface Water Criteria (μg/L)
		1991[b]	1992[c]	1994[d]	1995[e]	1997/ 1998[f]	RWQCB, 2000[g]
Jet Fuel Pipeline	Benzyl alcohol				27		
	Butyl benzyl phthalate				130		
	Unknown Hydrocarbon (unspecified)				620		640

[a] Micrograms per liter.
[b] Woodward-Clyde Federal Services (WCFS) (1987), *Confirmation Study for Hazardous Waste, Hamilton AFB, Novato, California, Final Report*, Omaha, Nebraska.
[c] Engineering-Science, Inc. (ESI) (1993), *Final Environmental Investigation Report, Hamilton Army Airfield*, Alameda, California.
[d] U.S. Army Corps of Engineers (USACE) (1994), *Supplement to the Final Environmental Investigation Report, Hamilton Army Airfield, California*, Sacramento, California.
[e] Woodward-Clyde Federal Services (WCFS) (1996), *Additional Environmental Investigation of BRAC Property*, Oakland, California.
[f] IT Corporation (IT) (1999), *Comprehensive Remedial Investigation Report, BRAC Property, Hamilton Army Airfield, Novato, California*, Martinez, California.
[g] Regional Water Quality Control Board (RWQCB), 2000, *Application of Risk-Based Screening Levels and Decision Making to Sites with Impacted Soil and Groundwater*, Interim Final, August, San Francisco, California

4.2 Aircraft Maintenance and Storage Facility (includes the Building 82/87/92/94 Area and Building 86)

As part of a previous investigation, ESI installed four groundwater monitoring wells (1993) in the former Aircraft Maintenance and Storage Facility located on the south end of the runway. Wells AM-MW-101, -102, and -103 were located on the northwest and southwest sides of Building 86, and Monitoring Well AM-MW-104 was placed alongside Building 87. Groundwater samples collected from the four monitoring wells were filtered through 45-micron filters in the field and analyzed for VOCs, SVOCs, and metals. Thirteen metals were detected in some or all of the four wells (Table 4-1). Five organic compounds were reported since 1991, including 1,2-dichloroethene (5.4 μg/L), benzene (1.2 μg/L), chloromethane (8.5 μg/L), naphthalene (2.0 μg/L), and degraded diesel (190 μg/L) (Table 4-2).

In 1995, WCFS installed monitoring wells AMA-MW1 and -MW2 alongside Perimeter Road, east of Building 87 and ESI's well AM-MW-104. Groundwater samples from the two new wells were analyzed for metals; PAHs, oil and grease, BTEX, and TPH measured as gasoline, diesel, and JP-4. Analytical results showed trace or background detections of eight metals, four of which had previously been reported in AM-MW-104 (Table 4-1). No organic compounds were detected in the WCFS wells (1996) nor were any reported for AM-MW-104 (ESI, 1993).

During the Remedial Investigation, IT collected a groundwater sample from existing Monitoring Well AM-MW-101 and analyzed the sample for TPH measured as gasoline, diesel, motor oil, and JP-4, VOCs, BTEX, PAHs, pesticides, PCBs, and metals. The groundwater sample did not contain any detections of organic compounds, with the exception of unknown

extractable petroleum hydrocarbons at 190 μg/L, well below the lowest aquatic life protection value of 640 μg/L. The sample also contained five metals, four of which had previously been reported in groundwater from this well as shown on Table 4-1. It should be noted that samples in general have not been filtered before analysis, suggesting values might be substantially lower if particulates were removed from the water samples.

4.3 Building 84/90

During the Remedial Investigation, five soil borings were drilled at Building 90. Soil boring SB-AM90-002 was drilled near a small sump at the southern end of the building. The sump was the receiving structure for a floor drain inside the southern shed of Building 90. Soil borings SB-AM90-001 and SB-AM90-003 through SB-AM90-005 were drilled west of the building, adjacent to the edge of the wash racks. Only one boring, SBAM90-001, had sufficient groundwater yield for sample collection; the groundwater from this boring was sampled and analyzed for TPH measured as gasoline, diesel, motor oil, and JP-4, BTEX, VOCs, PAHs, and lead. Again, none of the organic analytes were detected; lead was the only constituent detected in the groundwater sample at a concentration of 13 μg/L which is less than the background wells.

4.4 Former Sewage Treatment Plant

The groundwater in the vicinity of the Former Sewage Treatment Plant was initially characterized by a monitoring well located to the south of the former drying beds. Monitoring well TP-MW-101 was installed in December 1990 (ESI, 1993), approximately 50 ft south of the former sludge drying beds and midway between the East Levee and Perimeter Road. The well was screened within the Bay Mud from 4.8 to 14.8 ft below ground surface. Water-level measurements by ESI (1993) indicated artesian conditions, and two seeps were reported in the area. Groundwater elevation measurements from TP-MW-101 and other wells indicated that shallow groundwater flows on a very steep gradient from the coastal salt marsh into the airfield in this vicinity.

A groundwater sample was collected from TP-MW-101 by ESI (1993) and analyzed for VOCs, SVOCs, metals, and general chemistry parameters. The well was found to be saline (8,000 mg/L of chloride) and high in dissolved ions. Nine VOCs and five SVOCs were also detected in the groundwater sample as shown on Table 4-2. All values for volatiles were below the chronic and acute surface water criteria except for 2-Methylnapthalene at 3.7 μg/L compared to the published value of 2.1 μg/L and Pyrene at 58.4 μg/L as compared to 0.40 μg/L.

In 1994, the U.S. Army Corps of Engineers (USACE) further evaluated the TP-MW-101 area and installed and sampled four temporary groundwater wells. Three wells were placed hydraulically downgradient (west) of the former sludge drying beds. One was placed next to a seep southwest of monitoring well TP-MW-101. Groundwater in well TP-MW-101 was also resampled. The samples were analyzed for VOCs, SVOCs, TRPH, TPH measured as diesel, and lead. Methylene chloride was detected in all of the samples although evaluation of the results indicated that this detection was probably associated with sample collection practices or, more likely, with laboratory contamination. The groundwater sample from TP-MW-101 also contained chlorobenzene, xylenes, 4-dichlorobenzene, and phenol as shown on Table 4-2.

In 1997 and 1998, as part of the Remedial Investigation, two additional samples were collected from Monitoring Well TP-MW-101 to provide more recent groundwater quality data and assess conditions in saturated portions of the fill and Bay Mud. One sample was collected on June 27, 1997 and the other sample was collected on October 23, 1998. The samples were analyzed for TPH measured as gasoline, diesel, motor oil, and JP-4, BTEX, PAHs, VOCs, PCBs, pesticides, and metals (total and dissolved). The groundwater results from both sampling events indicated the presence of gasoline (maximum concentration of 180 μg/L), unknown hydrocarbons (360 μg/L), benzene (1.8 μg/L), toluene (1.1 μg/L), xylenes (3.3 μg/L), 1,4-dichlorobenzene (13 μg/L), chlorobenzene (15 μg/L), and metals. The concentrations of organic constituents were comparable for both sampling events as shown in Table 4-3.

Monitoring Well TP-MW-101 was abandoned in 1998 in preparation for the interim removal actions conducted at the Former Sewage Treatment Plant.

4.5 Pump Station Area (includes Buildings 35/39 and Building 41)

The Pump Station Area located in the northeast portion of the BRAC Property has been monitored as part of the initial Environmental Investigation conducted in 1993 and again in 1997 and 1998 as part of the Remedial Investigation. The Pump Station Area consists of several buildings that house the pumps used to dewater the BRAC Property, including Building 35/39 and Building 41 Areas.

TABLE 4-3
Comparison of Detected Concentrations at Monitoring Well TP-MW-101 *(Concentrations in micrograms per liter)*
Former Sewage Treatment Plant

Parameter	27-Jun-97	23-Oct-98
Benzene	1.8	ND[a]
Toluene	1.1	ND
Xylene (total)	3.3	ND
Unknown hydrocarbon	340	360
Gasoline	180	140
1,4-dichlorobenzene	13	10
Chlorobenzene	15	11
Arsenic – dissolved	28	32
Arsenic – total	31	33
Barium – dissolved	120	84
Barium – total	120	90
Boron – dissolved	290	390
Boron – total	340	390
Chromium – dissolved	5.3	ND
Iron – total	1100	ND
Mercury – dissolved	0.68	ND
Mercury – total	0.72	0.5

[a] Not detected.

During the Environmental Investigation, ESI (1993) collected a groundwater sample from Monitoring Well PS-MW-101 installed to the northeast of Building 35. The groundwater was analyzed it for TRPH, VOCs, SVOCs, and metals. Five metals were detected as shown on Table 4-1. The only organic analyte detected was methyl ethyl ketone, a common laboratory contaminant as shown on Table 4-2. The well was resampled during the USACE supplemental investigation (1994). Methylene chloride, a common laboratory contaminant, was the only organic constituent detected in that investigation (Table 4-2). No metals were analyzed except lead, which was not detected.

During the Remedial Investigation in 1997, IT collected a groundwater sample from Monitoring Well PS-MW-101 and analyzed for TPH measured as gasoline, diesel, motor oil, and JP-4, metals, and VOCs. Only metals were detected in the sample (IT, 1999) as shown on Table 4-1. In general, the metal detections were consistent with background wells.

Four monitoring wells, PSA-MW1 through PSA-MW4, were installed by WCFS (1996) in the vicinity of Building 41. Groundwater samples from the wells were analyzed for TPH measured as gasoline, diesel, motor oil, and JP-4, BTEX, herbicides, pesticides, oil and grease, SVOCs, and metals; only toluene (in one sample at 0.55 µg/L) and 13 metals were detected (Tables 4-1 and 4-2).

In 1998, an additional groundwater sample was collected from Monitoring Well PSA-MW3 located southwest of Building 41. The sample was analyzed for TPH measured as gasoline, diesel, motor oil, and JP-4, pesticides, VOCs, PAHs, and metals. The results indicated the presence of UHE (0.094 mg/L), barium (0.11 mg/L), and boron (2.2 mg/L) (IT, 1999). The organic chemical detections fall below aquatic life protection levels and the inorganic detections are consistent with background wells.

4.6 Revetment Area

Features of groundwater in the revetment area have been evaluated in the Environmental Investigation (ESI, 1993) and for the Additional Environmental Investigation (WCFS, 1996). One well (RV-MW-101) was installed near Revetment 6 (the former engine test pad) in 1990 by an earlier contractor and two monitoring wells were installed by ESI at Revetment 20 (RV MW-103) and Revetment 26 (RV-MW-102). Well RV-MW-102 could not be sampled because recharge was insufficient; however, two rounds of groundwater samples from wells RV-MW-101 and RV-MW-103 were analyzed for TRPH, BTEX, and lead. Detections included five metals, but no organic compounds as shown on Tables 4-1 and 4-2. Metal detections were on par with background wells.

In addition to these Revetment Area wells, four monitoring wells (BP-MW-101 through BP-MW-104) were installed by ESI (1993) around the edge of the Revetment 10, which had previously been used as a firefighter training area. Groundwater samples from the wells were analyzed for VOCs, SVOCs, TRPH (using U.S. Environmental Protection Agency Method 418.1), and lead. Methyl ethyl ketone (a common laboratory contaminant) and lead were the only analytes detected. The lead level was consistent with lead in background wells.

Additional groundwater samples were collected in the Revetment Area as part of the Additional Environmental Investigation conducted in 1996. Eight temporary monitoring wells (RVT-TW1 through RVT-TW8) were installed in direct-push borings placed throughout the

Revetment Area (WCFS, 1996). Groundwater samples were collected from each temporary well and analyzed for TPH (measured as gasoline, diesel, and JP-4), BTEX, and PAHs. Only xylenes were detected at Revetments 9 and 12. Ethylbenzene was detected at Revetment 12.

Woodward-Clyde Federal Services (1996) also installed three monitoring wells (RVT-MW1 through RVT-MW3) around a catch basin next to Revetment 5. The samples were analyzed for TPH (measured as gasoline, diesel, and JP-4), oil and grease, PAHs, VOCs, BTEX, pesticides, herbicides, and metals. Detections included 10 metals as presented on Table 4-1 but no organic constituents were found. All metals were in the range of background wells.

4.7 Onshore Fuel Line

The ONSFL was investigated as part of the Additional Environmental Investigations conducted by WCFS (1996). Three groundwater monitoring wells (JFL-MW1, JFL-MW2, and JFL-MW3) were installed by WCFS near a 90-degree bend in the 54-inch storm drain line that contained the north perimeter fuel line. Groundwater samples collected from these wells were analyzed for BTEX, PAHs, TPH as diesel and JP-4, oil and grease, and lead. All three wells had what were termed false positive detections of unknown hydrocarbons at concentrations of 140, 290, and 620 μg/L. Additionally, common laboratory contaminants benzyl alcohol at a concentration of 27 μg/L and butyl benzyl phthalate at a concentration of 130 μg/L were measured in Monitoring Well JFL-MW1. Several metals were also detected in the three wells, including arsenic, boron, chromium, cobalt, copper, manganese, vanadium, and zinc. Of these only cobalt and zinc were found at concentrations above the surface water criteria. Maximum concentrations detected are shown on Table 4-1.

5.0 Groundwater Assessment

The U.S. Army in consultation with the San Francisco Regional Water Quality Control Board selected six wells on the Hamilton Inboard Area for review of groundwater quality and comparison to selected surface water quality objectives. The wells were selected based on their proximity to areas of potential scour within channels of the future wetland proposed for the Inboard Area of the Hamilton BRAC property. The locations of these channels and scour areas have been determined by mathematical modeling. The intent of the groundwater quality review was to compare groundwater quality to selected surface water quality objectives in areas where groundwater might come in contact with surface water in the development and maturation of the wetland. The surface water quality objectives that were used for comparison include the "4 day average continuous concentration for salt water aquatic life protection in enclosed bays and estuaries" as specified in the California Water Quality Goals document by Jon Marshack of the California Regional Water Quality Control Board and the Regional Monitoring Program values provided by the San Francisco Estuary Institute. The goal of the comparison is to determine whether groundwater is expected to pose a potential risk to aquatic receptors if the groundwater should combine with surface water in the development and maturation of the wetland.

One of the six, selected wells, RV-MW-102, had no data available other than a notation in a report (ESI, July 1993) that the results of a soil sample collected from the well boring was non-detect. It is reasoned that groundwater was not collected from this well due to the lack of a source of contamination in the overlying soil. In a second well, RV-MW-103, only a simple volatile organic compound (VOC) analysis (for benzene, ethyl benzene, toluene, and xylenes (BTEX)) of the water sample was performed. No VOCs were detected. Due to the lack of analyses, these two wells were not included in the groundwater quality review. The data from a cluster of three other wells located in the general vicinity of the two wells were substituted. The water sample data presented in Table 5-1 include the following wells:

- BKG-MW-2, BKG-MW-4, BKG-MW-5
- RV-MW-101
- RVT-MW1, RVT-MW2, RVT-MW3

Review of the data (Table 5-1) indicates that metals were detected at concentrations at, or below the ambient metals concentrations in soil (see the Human Health and Ecological Risk Assessment, U.S. Army 2001). The table indicates although concentrations of copper, lead, nickel, and zinc exceed the values for "4 day average continuous concentration for salt water aquatic life protection in enclosed bays and estuaries", the concentrations detected are consistent with ambient conditions. All reported data for volatile and semi-volatile organic compounds, pesticides, herbicides, polynuclear aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), and petroleum hydrocarbons indicate these analytes were not detected. A reasonable conclusion is that since there is no groundwater contamination at the wells reviewed, no groundwater contamination could be contributed if or when surface water contacts groundwater as the wetland develops. Therefore, the groundwater does not pose a threat to surface water or aquatic receptors.

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TABLE 5-1
Groundwater Data Of Select Wells Within Potential Scour Area Inboard Area
Hamilton Army Airfield BRAC Property

Well Identification ►	WQG 08/ 2000 mg/L †	RMP 1999 mg/L‡	BKG-MW-2 mg/L	BKG-MW-4 mg/L	BKG-MW-5 mg/L	RV-MW-101 mg/L	RVT-MW1 mg/L	RVT-MW2 mg/L	RVT-MW3 mg/L
Chemical ▼									
INORGANICS									
ALUMINUM				6.0	12.4	<0.112U			
ANTIMONY				<0.06U	<0.06U	<0.06U			
ARSENIC	0. 036	0.00195	<0.005U	<0.005U	<0.005U	0.00728	0.0067	0.0068	<0.005U
BARIUM				0.047	0.042	0.0705			
BERYLLIUM	0.0088		<0.002U	0.0022	0.0027	<0.00112U	<0.002U	<0.002U	<0.002U
BORON			0.97	1.5	1.7		0.83	0.76	0.85
CADMIUM	0.0093		<0.005U	<0.005U	<0.005U	<0.00678U	<0.005U	<0.005U	<0.005U
CALCIUM				101	127	230			
CHROMIUM			<0.01U	0.011	0.026	<0.0168U	0.048	0.066	0.013
CHROMIUM (VI)	0.05					<0.025U			
COBALT			0.066	0.11	0.16	0.0309	0.024	0.013	0.012
COPPER	0.0031	0.0042	<0.02U	<0.02U	0.021	0.489	0.024	0.032	<0.02U
CYANIDE	0.001					0.0126			
IRON				5.9	11.1				
LEAD	0.0081	0.00129	<0.0032U	0.0084	0.0051	0.00823	0.007	0.0077	<0.0032U
MAGNESIUM				148	241	680			
MANGANESE			3.8	6.1	10.3	1.05	2.2	0.98	1.3
MERCURY	0.00094	0.0155	<0.0002U	<0.0002U	<0.0002U	<0.0001U	<0.0002U	<0.0002U	<0.0002U
MOLYBDENUM				<0.02U	<0.02U				
NICKEL	0.0082	0.0082	0.47	0.66	0.88	<0.0321U	0.11	0.079	0.058
POTASSIUM				53.8	69.9	201			
SELENIUM	0.071	0.00009	<0.005U	<0.005U	<0.005U	<0.00253U	<0.025UJ	<0.025UJ	<0.005UJ
SILVER		0.0000110	<0.01U	<0.01U	<0.01U	<0.01U	<0.01U	<0.01U	<0.01U
SODIUM				524	914	4500			
THALLIUM				<2U	<2U	<0.125U			
TIN				<0.1U	<0.1U				
VADIUM			<0.01U	<0.01U	0.021	<0.0276U	0.04	0.057	0.012
ZINC	0.081	0.0063	0.086	0.16	0.21	<0.018U	0.071	0.093	0.043

† Water Quality Goals (WQG), Values are 4-Day Average Continuous Concentration for Salt Water Aquatic Life Protection in Enclosed Bays and Estuaries, California Toxics Rule Criteria (USEPA) A Compilation from Jon B. Marshack, D.ENV, California EPA, Regional Water Quality Control Board, Central Valley Region.
‡ Regional Monitoring Program (RMP), Total values collected in 1999 from Station BD20 San Pablo Bay for trace metals, PCBs, PAHs, and Pesticides , San Francisco Estuary Institute.
U Analyte was not detected and the detection limit is given.
Note Where data are not presented, analysis for these chemicals was not performed.

TABLE 5-1
Groundwater Data Of Select Wells Within Potential Scour Area Inboard Area
Hamilton Army Airfield BRAC Property

Well Identification ►	WQG 08/ 2000 mg/L †	RMP 1999 mg/L‡	BKG-MW-2 mg/L	BKG-MW-4 mg/L	BKG-MW-5 mg/L	RV-MW-101 mg/L	RVT-MW1 mg/L	RVT-MW2 mg/L	RVT-MW3 mg/L
Chemical ▼									
1,2,3-TRICHLOROBENZENE						<0.0058U			
1,2,4-TRICHLOROBENZENE						<0.0024U			<0.01U
1,2-DICHLOROBENZENE						<0.0012U			<0.01U
1,3-DICHLOROBENZENE						<0.0034U			<0.01U
1,3-DIMETHYLBENZENE						<0.001U			
1,4-DICHLOROBENZENE						<0.0015U	<0.0024U	<0.0024U	<0.0024U
2,3,6-TRICHLOROPHENOL						<0.0017U			
2,4,5-TRICHLOROPHENOL						<0.0028U			<0.01U
2,4,6-TRICHLOROPHENOL						<0.0036U			<0.01U
2,4-DICHLOROPHENOL						<0.0084U			<0.01U
2,4-DIMETHYLPHENOL						<0.0044U			<0.01U
2,4-DINITROPHENOL						<0.18U			<0.01U
2,4-DINITROTOLUENE						<0.0058U			<0.01U
2,6-DINITROANILINE						<0.0088U			
2,6-DINITROTOLUENE						<0.0067U			<0.01U
2-CHLOROPHTHALENE						<0.0026U			<0.01U
2-CHLOROPHENOL						<0.0028U			<0.01U
2-METHYLPHTHALENE						<0.0013U			<0.01U
2-METHYLPHENOL						<0.0036U			<0.01U
2-NITROANILINE						<0.031U			<0.05U
2-NITROPHENOL						<0.0082U			<0.01U
3,3'-DICHLOROBENZIDINE						<0.005U			<0.02U
3,5-DINITROANILINE						<0.021U			
3-NITROANILINE						<0.015U			<0.05U
3-NITROTOLUENE						<0.0029U			
4,6-DINITRO-2-METHYLPHENOL									<0.05U
4-BROMOPHENYL PHENYL ETHER						<0.022U			<0.01U

† Water Quality Goals (WQG), Values are 4-Day Average Continuous Concentration for Salt Water Aquatic Life Protection in Enclosed Bays and Estuaries, California Toxics Rule Criteria (USEPA) A Compilation from Jon B. Marshack, D.ENV, California EPA, Regional Water Quality Control Board, Central Valley Region.

‡ Regional Monitoring Program (RMP), Total values collected in 1999 from Station BD20 San Pablo Bay for trace metals, PCBs, PAHs, and Pesticides , San Francisco Estuary Institute.

U Analyte was not detected and the detection limit is given.

TABLE 5-1
Groundwater Data Of Select Wells Within Potential Scour Area Inboard Area
Hamilton Army Airfield BRAC Property

Well Identification ►	WQG 08/ 2000 mg/L †	RMP 1999 mg/L‡	BKG-MW-2 mg/L	BKG-MW-4 mg/L	BKG-MW-5 mg/L	RV-MW-101 mg/L	RVT-MW1 mg/L	RVT-MW2 mg/L	RVT-MW3 mg/L
Chemical ▼									
4-CHLORO-3-METHYLPHENOL						<0.0085U			<0.01U
4-CHLOROANILINE						<0.001U			<0.01U
4-CHLOROPHENYL PHENYL ETHER						<0.023U			<0.01U
4-METHYLPHENOL						<0.0028U			<0.01U
4-NITROANILINE						<0.031U			<0.05U
4-NITROPHENOL						<0.096U			<0.05U
Sum PAHs		1.6E-6							
ACEPHTHENE		ND	<0.01U	<0.01U	<0.01U	<0.0058U	<0.01U	<0.01U	<0.01U
ACEPHTHYLENE		ND				<0.0051U			
ANTHRACENE		0.18E-6	<0.01U	<0.01U	<0.01U	<0.0052U	<0.01U	<0.01U	<0.01U
ATRAZINE						<0.0059U			
BENZO(A)ANTHRACENE		4.3E-6	<0.01U	<0.01U	<0.01U	<0.0098U	<0.01U	<0.01U	<0.01U
BENZO(A)PYRENE			<0.01U	<0.01U	<0.01U	<0.014U	<0.01U	<0.01U	<0.01U
BENZO(B)FLUORANTHENE		3.4E-6	<0.01U	<0.01U	<0.01U	<0.01U	<0.01U	<0.01U	<0.01U
BENZO(G,H,I)PERYLENE						<0.015U			
BENZO(K)FLUORANTHENE		1.1E-6	<0.01U	<0.01U	<0.01U	<0.01U	<0.01U	<0.01U	<0.01U
BENZOIC ACID						<0.0031U			<0.05U
BENZYL ALCOHOL						<0.004U			<0.01U
BIS (2-CHLOROETHOXY) METHANE						<0.017U			<0.01U
BIS (2-CHLOROETHYL) ETHER						<0.0068U			<0.01U
BIS (2-CHLOROISOPROPYL) ETHER						<0.005U			<0.01U
BIS (2-ETHYLHEXYL)PHTHALATE						<0.0077U			<0.01U
BROMACIL						<0.0029U			<0.01U
BUTYL BENZYL PHTHALATE						<0.028U			<0.01U
CHLORDANE	4E-6	115E-6				<0.037U			<0.01U
CHRYSENE		1.8E-6	<0.01U	<0.01U	<0.01U	<0.0074U	<0.01U	<0.01U	<0.01U

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‡ Regional Monitoring Program (RMP), Total values collected in 1999 from Station BD20 San Pablo Bay for trace metals, PCBs, PAHs, and Pesticides , San Francisco Estuary Institute.

U Analyte was not detected and the detection limit is given.

Well Identification ►	WQG 08/2000 mg/L †	RMP 1999 mg/L‡	BKG-MW-2 mg/L	BKG-MW-4 mg/L	BKG-MW-5 mg/L	RV-MW-101 mg/L	RVT-MW1 mg/L	RVT-MW2 mg/L	RVT-MW3 mg/L
Chemical ▼									
DI-N-BUTYL PHTHALATE						<0.033U			<0.01U
DI-N-OCTYL PHTHALATE						<0.0015U			<0.01U
DIBENZ(A,H)ANTHRACENE			<0.01U	<0.01U	<0.01U	<0.012U	<0.01U	<0.01U	<0.01U
DIBENZOFURAN						<0.0051U			<0.01U
DIETHYL PHTHALATE						<0.0059U			<0.01U
DIMETHYL PHTHALATE						<0.0022U			<0.01U
FLUORANTHENE			<0.01U	<0.01U	<0.01U	<0.024U	<0.01U	<0.01U	<0.01U
FLUORENE		0.43E-6	<0.01U	<0.01U	<0.01U	<0.0092U	<0.01U	<0.01U	<0.01U
HEXACHLOROBENZENE						<0.012U			<0.01U
HEXACHLOROBUTADIENE						<0.0087U			<0.01U
HEXACHLOROCYCLOPENTADIENE						<0.054U			<0.01U
HEXACHLOROETHANE						<0.0083U			<0.01U
INDENO(1,2,3-CD)PYRENE			<0.01U	<0.01U	<0.01U	<0.021U	<0.01U	<0.01U	<0.01U
ISOPHORONE						<0.0097U			<0.01U
N-NITROSO-DI-N-PROPYLAMINE						<0.0068U			<0.01U
N-NITROSODIPHENYLAMINE						<0.0037U			<0.01U
PHTHALENE			<0.01U	<0.01U	<0.01U	<0.0005U	<0.01U	<0.01U	<0.01U
NITROBENZENE						<0.0037U			<0.01U
PENTACHLOROPHENOL						<0.0091U			<0.01U
PHENTHRENE						<0.0099U			<0.01U
PHENOL						<0.0022U			<0.01U
PYRENE		5.6E-6	<0.01U	<0.01U	<0.01U	<0.017U	<0.01U	<0.01U	<0.01U
1,3-DIMETHYLBENZENE						<0.00132U			
BENZENE			<0.0005U	<0.0005J	<0.0005J	<0.00105U	0.0005R	0.0005R	<0.0005UJ
CHLOROBENZENE			<0.0005U	<0.0005J	<0.0005J		0.0005R	0.0005R	<0.0005UJ
ETHYLBENZENE			<0.0005U	<0.0005J	<0.0005J	<0.00137U	0.0005R	0.0005R	<0.0005UJ
TOLUENE			<0.0005U	<0.0005J	<0.0005J	<0.00147U	0.0005R	0.0005R	<0.0005UJ
XYLENES (TOTAL)			<0.0005U	<0.0005J	<0.0005J	<0.00136U	0.0005R	0.0005R	<0.0005UJ
OIL AND GREASE			<1U	<1U	<1U	<0.1U	<0.1U	<0.1U	<0.1U
AVIATION FUEL (JP4)			<0.1U	<0.1U	<0.1U		<0.1U	<0.1U	<0.1U
DIESEL FUEL			<0.05U	<0.05U	<0.05U		<0.05U	<0.05U	<0.05U
UNKNOWN HYDROCARBON-DIESEL			<0.05U	<0.05U	<0.05U		<0.05U	<0.05U	<0.05U
GASOLINE				0.05R	<0.05UJ		<0.05U	<0.05U	<0.05U
UNKNOWN HYDROCARBON-GASOLINE				0.05R	<0.05UJ		<0.05U	<0.05U	<0.05U

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‡ Regional Monitoring Program (RMP), Total values collected in 1999 from Station BD20 San Pablo Bay for trace metals, PCBs, PAHs, and Pesticides , San Francisco Estuary Institute.

U Analyte was not detected and the detection limit is given. R Data with the R qualifier were rejected. J Data with the J qualifier were estimates.

TABLE 5-1
Groundwater Data Of Select Wells Within Potential Scour Area Inboard Area
Hamilton Army Airfield BRAC Property

Well Identification ►	WQG 8/2000 mg/L †	RMP 1999 mg/L‡	BKG-MW-2 mg/L	BKG-MW-4 mg/L	BKG-MW-5 mg/L	RV-MW-101 mg/L	RVT-MW1 mg/L	RVT-MW2 mg/L	RVT-MW3 mg/L
Chemical ▼									
1,1,1-TRICHLOROETHANE			<0.0003U	<0.0003U	<0.0003U	<0.012U	<0.0003U	<0.0003U	<0.0003U
1,1,2,2-TETRACHLOROETHANE			<0.0005U	<0.0005U	<0.0005U	<0.0015U	<0.0005U	<0.0005U	<0.0005U
1,1,2-TRICHLOROETHANE			<0.0005U	<0.0005U	<0.0005U	<0.001U	<0.0005U	<0.0005U	<0.0005U
1,1-DICHLOROETHANE			<0.0005U	<0.0005U	<0.0005U	<0.001U	<0.0005U	<0.0005U	<0.0005U
1,1-DICHLOROETHENE			<0.0005U	<0.0005U	<0.0005U	<0.001U	<0.0005U	<0.0005U	<0.0005U
1,2-DIBROMOETHANE			<0.002U	<0.002U	<0.002U		<0.002U	<0.002U	<0.002U
1,2-DICHLOROBENZENE			<0.0015U	<0.0015U	<0.0015U		<0.0015U	<0.0015U	<0.0015U
1,2-DICHLOROETHANE			<0.0003U	<0.0003U	<0.0003U	<0.001U	<0.0003U	<0.0003U	<0.0003U
1,2-DICHLOROPROPANE			<0.0004U	<0.0004U	<0.0004U	<0.005U	<0.0004U	<0.0004U	<0.0004U
1,3-DICHLOROBENZENE			<0.0032U	<0.0032U	<0.0032U	<0.001U	<0.0032U	<0.0032U	<0.0032U
1,3-DICHLOROPROPANE						<0.0048U			
1,4-DICHLOROBENZENE			<0.0024U	<0.0024U	<0.0024U	<0.001U			
2-CHLOROETHYL VINYL ETHER			<0.0013U	<0.0013U	<0.0013U	<0.0048U	<0.0013U	<0.0013U	<0.0013U
BROMODICHLOROMETHANE			<0.001U	<0.001U	<0.001U	<0.012U	<0.001U	<0.001U	<0.001U
BROMOFORM			<0.002U	<0.002U	<0.002U	<0.0015U	<0.002U	<0.002U	<0.002U
BROMOMETHANE			<0.005U	<0.005U	<0.005U	<0.001U	<0.005U	<0.005U	<0.005U
CARBON TETRACHLORIDE			<0.0005U	<0.0005U	<0.0005U	<0.001U	<0.0005U	<0.0005U	<0.0005U
CHLOROBENZENE			<0.002U	<0.002U	<0.002U	<0.001U	<0.002U	<0.002U	<0.002U
CHLOROETHANE			<0.005U	<0.005U	<0.005U	<0.008U	<0.005U	<0.005U	<0.005U
CHLOROFORM			<0.0005U	<0.0005U	<0.0005U	<0.001U	<0.0005U	<0.0005U	<0.0005U
CHLOROMETHANE			<0.001U	<0.001U	<0.001U	<0.0012U			
CIS-1,2-DICHLOROETHENE			<0.0005U				<0.0005U	<0.0005U	<0.0005U
CIS-1,3-DICHLOROPROPENE			<0.0005U	<0.0005U	<0.0005U	<0.005U	<0.0005U	<0.0005U	<0.0005U
DIBROMOCHLOROMETHANE			<0.0009U	<0.0009U	<0.0009U	<0.001U	<0.0009U	<0.0009U	<0.0009U
DICHLORODIFLUOROMETHANE			<0.01U	<0.01U	<0.01U		<0.001U	<0.001U	<0.001U
METHYLENE CHLORIDE			<0.0045U	<0.0045U	<0.0045U	<0.001U	<0.0045U	<0.0045U	<0.0045U
STYRENE						<0.005U			
TETRACHLOROETHENE			<0.0003U	<0.0003U	<0.0003U	<0.001U	<0.0003U	<0.0003U	<0.0003U
TRANS-1,2-DICHLOROETHENE			<0.0005U	<0.0005U	<0.0005U		<0.0005U	<0.0005U	<0.0005U
TRANS-1,3-DICHLOROPROPENE			<0.0005U	<0.0005U	<0.0005U	<0.005U	<0.0005U	<0.0005U	<0.0005U
TRICHLOROETHENE			<0.0005U	<0.0005U	<0.0005U	<0.001U	<0.0005U	<0.0005U	<0.0005U
TRICHLOROFLUOROMETHANE			<0.01U	<0.01U	<0.01U	<0.001U	<0.001U	<0.001U	<0.001U
TRICHLOROTRIFLUOROETHANE			<0.005U	<0.005U	<0.005U		<0.005U	<0.005U	<0.005U
VINYL ACETATE						<0.01U			
VINYL CHLORIDE			<0.0005U	<0.0005U	<0.0005U		<0.0005U	<0.0005U	<0.0005U

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‡ Regional Monitoring Program (RMP), Total values collected in 1999 from Station BD20 San Pablo Bay for trace metals, PCBs, PAHs, and Pesticides , San Francisco Estuary Institute.
U Analyte was not detected and the detection limit is given.

TABLE 5-1
Groundwater Data Of Select Wells Within Potential Scour Area Inboard Area
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Well Identification ►	WQG 8/2000 mg/L †	RMP 1999 mg/L‡	BKG-MW-2 mg/L	BKG-MW-4 mg/L	BKG-MW-5 mg/L	RV-MW-101 mg/L	RVT-MW1 mg/L	RVT-MW2 mg/L	RVT-MW3 mg/L
Chemical ▼									
4,4'-DDD		188E-6				<0.018U			
4,4'-DDE		239E-6				<0.014U			
4,4'-DDT	1E-6	49E-6				<0.018U			
ALDRIN						<0.013U			
ALPHA-BHC						<0.0053U			
ALPHA-CHLORDANE									
PCB TOTAL	30E-6	0.398E-6							
AROCLOR-1016						<0.0091U			
AROCLOR-1221						<0.0072U			
AROCLOR-1232						<0.0099U			
AROCLOR-1242						<0.0052U			
AROCLOR-1248						<0.038U			
AROCLOR-1254						<0.033U			
AROCLOR-1260						<0.013U			
BETA-BHC						<0.017U			
DELTA-BHC						<0.033			
DIELDRIN	1.9E-6	98E-6				<0.026U			
ENDOSULFAN I	8.7E-6					<0.023U			
ENDOSULFAN II						<0.042U			
ENDOSULFAN SULFATE						<0.05U			
ENDRIN	2.3E-6	13E-6				<0.018U			
ENDRIN ALDEHYDE						<0.005U			
ENDRIN KETONE						<0.006U			
GAMMA-BHC (LINDANE)						<0.0072U			
GAMMA-CHLORDANE						<0.038U			
HEPTACHLOR	3.6E-6	4.04E-6				<0.028U			
HEPTACHLOR EPOXIDE	3.6E-6	3E-6							
METHOXYCHLOR						<0.011U			
MIREX						<0.024U			
N,N-DIMETHYLANILINE						<0.0097U			
N-NITROSO-DI-N-PROPYLAMINE						<0.0068U			
N-NITROSODIPHENYLAMINE						<0.0037U			

† Water Quality Goals (WQG), Values are 4-Day Average Continuous Concentration for Salt Water Aquatic Life Protection in Enclosed Bays and Estuaries, California Toxics Rule Criteria (USEPA) A Compilation from Jon B. Marshack, D.ENV, California EPA, Regional Water Quality Control Board, Central Valley Region.
‡ Regional Monitoring Program (RMP), Total values collected in 1999 from Station BD20 San Pablo Bay for trace metals, PCBs, PAHs, and Pesticides , San Francisco Estuary Institute.
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Well Identification ►	WQG 08/ 2000 mg/L †	RMP 1999 mg/L‡	BKG-MW-2 mg/L	BKG-MW-4 mg/L	BKG-MW-5 mg/L	RV-MW-101 mg/L	RVT-MW1 mg/L	RVT-MW2 mg/L	RVT-MW3 mg/L
Chemical ▼									
PHTHALENE						<0.0005U			
NITROBENZENE						<0.0037U			
P-CHLOROPHENYLMETHYL SULFATE						<0.015U			
P-CHLOROPHENYLMETHYL SULFIDE						<0.01U			
P-CHLOROPHENYLMETHYL SULFOXIDE						<0.0053U			
PARATHION						<0.037U			
PENTACHLOROPHENOL						<0.0091U			
PHENTHRENE						<0.0099U			
PHENOL						<0.0022U			
PYRENE						<0.017U			
SUPO						<0.019U			
TOXAPHENE		0.2E-6				<0.017U			
			RV-MW-102	RV-MW-103					
1,3-DIMETHYLBENZENE				<0.00132U					
BENZENE									
ETHYLBENZENE				<0.00137U					
TOLUENE				<0.00147U					
XYLENES (TOTAL)				<0.00136U					
OIL AND GREASE				<0.1U					

† Water Quality Goals (WQG), Values are 4-Day Average Continuous Concentration for Salt Water Aquatic Life Protection in Enclosed Bays and Estuaries, California Toxics Rule Criteria (USEPA) A Compilation from Jon B. Marshack, D.ENV, California EPA, Regional Water Quality Control Board, Central Valley Region.
‡ Regional Monitoring Program (RMP), Total values collected in 1999 from Station BD20 San Pablo Bay for trace metals, PCBs, PAHs, and Pesticides , San Francisco Estuary Institute.
U Analyte was not detected and the detection limit is given.
Note There were no data for well RV-MW-102. Only limited VOC analyses were performed on the RV-MW-103 water sample. These data are presented on this page.

6.0 References

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U.S. Army Corps of Engineers (USACE), 2001, Fate and Transport Analysis, Hamilton Army Airfield, Novato, California, Sacramento, California.

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Appendix E

APPENDIX E

Fate and Transport Analysis Summary

Background

The fate and transport of dissolved contaminants was examined for the Inboard Area sites selected for the institutional control alternative. Proposed institutional controls involve preservation of existing cover or placement of new cover material over areas where it is necessary to protect human health and the environment from exposure to contaminants in soil. Material imported and used as cover to protect from contamination will exhibit similar physical characteristics as existing site soils. A fate and transport analysis was completed to determine the depth of cover necessary for needed protection. The analysis concluded that one (1) foot of cover would prevent exposure to receptors at all sites.

Model Application

Fate and transport mechanisms consist of advection and diffusion. Advection transport was modeled using the traditional Darcy's equation with site specific parameters as input. Advection can be described mathematically as v=K*i/n where v is the groundwater velocity, K is the hydraulic conductivity, i is the gradient, and n the porosity. Values utilized included 0.003 ft/day for K (average site-wide horizontal value), 0.002 ft/ft for i (average site-wide horizontal component of the gradient), and a porosity of 0.33 was chosen (average site-wide value). Advection was determined to be 1.82×10^{-5} ft/day using Darcy's equation. This means for a typical Inboard site, it takes an estimated 151 years for groundwater to travel one foot. Under typical conditions of low groundwater gradients and very low hydraulic conductivities, transport of contaminants by advection is extremely slow and not a significant component of contaminant migration for the Inboard sites.

Where advection transport is negligible, diffusion transport mechanisms are the most important component of hydrodynamic dispersion. Diffusion can occur in any direction and is primarily driven by the chemical concentration gradient rather than ground water flow direction. Because diffusion is omni-directional, a one-dimensional model is all that is needed to predict transport in any given direction of interest. A one-dimensional form of the advection-dispersion equation was solved for BRAC site conditions (Groundwater, Freeze and Cherry, 1979). Conservative assumptions such as no degradation and constant source concentration were incorporated. Essentially, the resulting equation reduces to Fick's second law. The Fick's model states that C/Co=erfc(x/2*SQRT(D*t/R)), where C/Co is the ratio of concentration to initial concentration (or normalized concentration), erfc is the complementary error function, x is distance, SQRT is the square root, D is the diffusion coefficient, t is time, and R is the retardation coefficient. The retardation coefficient accounts for adsorption of contaminants to soil, thus retarding contaminant migration rates. There is no retardation when R=1. Contaminants such as pesticides, polychlorinated biphenyls, polynuclear aromatic hydrocarbons, and others typically encountered at the Inboard Area sites have R values ranging from 1,000 to over 100,000. The equation models diffusion and

C/Co represents breakthrough. Breakthrough can be defined as a normalized contaminant concentration at a given time and location, or simply the arrival of contaminants at some distance in the future. This normalized value can be compared to contaminant levels at specific sites to determine what concentration is likely to exist at a chosen distance and time. For example, if 0.3 m (approximately one foot) is chosen for a distance, 30 years for time, and using values of $D=1.65x10^{-10}$ m^2 /sec and R=100, then the model predicts that C/Co is $6.4x10^{-8}$. This result can then multiplied by an actual observed concentration to predict a site concentration for a desired time and distance (or thickness) of concern. The predicted site concentration can then be compared to target concentrations.

Model Results

Diffusion is the dominant transport mechanism for contamination located at the Inboard Area sites. Conservative assumptions (constant source and no degradation) were made and the mathematical modeling determined that one (1) foot of cover would prevent exposure to receptors at all sites to be addressed by the application of cover.

References

Fetter, C. W., 1993, *Contaminant Hydrogeology*, Prentice Hall.

Freeze, Allan R. and John A. Cherry, 1979, *Groundwater*, Prentice-Hall, Inc.

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Appendix F

DTSC Comments On the
Focused Feasibility Study for Hamilton Army Airfield Inboard Sites (February 26, 2001)

No.	Comments	Responses
DTSC Comments		
	Introduction Page 2, Last Paragraph: Commentor states, "The FFS relies on elements of the proposed conversion of Hamilton into a wetland to complete the remediation by mitigating the risk to future wetland receptors from residual contamination."	The Hamilton Wetland Restoration Plan (Plan) is not one of the CERCLA based documents and is not relied upon by the Army in making any decisions regarding the remedial actions at the site. The Army does not rely on the conversion of the wetland for any remediation. The site does not currently pose a risk to receptors. The potential risks that could exist through completion of the wetland restoration will also be mitigated by the wetland and the performance criteria for the wetland established by Army decision documents. The Army's decision is to remove the pathway of exposure to future receptors thereby mitigating potential risk during the development and maturation of the wetland. Performance criteria for the final design are set forth by the Army as institutional controls which will ensure protection of human health and the environment.
	General Issues	
A	Hamilton Wetlands VS BRAC FS The 1998 HWRP indicates the Hamilton property will be provided to the SCC in a condition that is suitable for implementation of the wetland restoration. The HWRP also indicates the final cleanup action has not been determined, but that contaminants may be left on site. Consistent with the HWRP, alternatives are being considered that include a combination of on-site consolidation of contaminated soils, and in-situ management of contaminated soils underneath three feet of stable cover material. Based on recent discussions, a	The FFS has been revised to more clearly describe the performance criteria that have been established to ensure that the wetland design will provide, monitor, and protect three feet of stable cover for each area requiring remedial action. The specific relationship between the wetland design and the placement, monitoring, and protection of cover can only be adequately understood and planned for following completion of the final wetland design. The Alternative proposed by the Army is performance criteria for the final wetland design. The remedial action

No.	Comments	Responses
	minimum of three feet of stable, clean soil would be placed over contaminated areas prior to breaching of the flood control levee. We understand remediation would be implemented as follows: 1. Modeling of the wetland design would be relied on to establish the areas where erosion may occur, and the maximum depth of erosion into the native soils. Preliminary results are contained in Attachment E [Figure E, Predicted Long-Term Potential Scour (and depth of Cover) into (or above) Existing Ground Surface Elevation, Complete Fill Alternative]. The wetland design and associated modeling would need to be finalized prior to preparation of the Implementation Plan. 2. Soils potentially subject to erosion, as described in Item 1 above, would be characterized prior to excavation. 1. If concentrations are found to be hazardous, excavated soils would be disposed off-site in a Class I landfill. 2. If concentrations are found to be non-hazardous, excavated soils would be consolidated on-site in an approved, stable location (i.e., a non-tidal area above the projected groundwater table). 3. Excavation of soils potentially subject to erosion, as described in Item 1 above, would occur to remove contaminated soils so that a minimum of three feet of stable cover could be placed, based on the analysis in Item 1 above. 4. Confirmation sampling would be conducted following excavation of soils potentially subject to erosion, as described in Item 1 above, to determine if all contaminated soils had been removed, or if cover is still needed. 5. A minimum of three feet of stable cover would be placed	proposed is the implementation of the institutional control. The institutional controls establish performance criteria that require three feet of stable cover on areas where residual contamination is present above comparator values or the removal of residual contamination above comparator values. If the performance criteria of three feet of stable cover is not practical or can't be met, then confirmation sampling is not required. However, if Alternatives 3 or 4 (excavation with offsite or onsite disposal, respectively) is required, then confirmation sampling is required. The FFS has been revised to indicate that confirmation sampling will be conducted either prior to excavation or post excavation to determine that RAOs can be met for those sites where excavation is the preferred alternative. Since performance controls will dictate limitations placed on the design, completion of the design is not necessary for the FFS. The design will not be incorporated into the FFS. The FFS has been revised to better describe the monitoring requirements and objectives under Alternative 2.

No.	Comments	Responses
	over the identified contaminated areas. This cover would need to be maintained over all contaminated areas throughout the life of the wetlands	
B	Area-Wide Pesticides Analytical data provided by the Army suggests there is widespread residual soil contamination of DDT (and its derivatives) on the BRAC parcel (both inboard and outboard areas). This contamination extends over most areas of Hamilton at levels 10 to 1000 times greater than anticipated cleanup levels of 6-7 ppb. In the outboard area, contamination above 1 ppm (approximately three orders of magnitude above cleanup levels) has been found over a relatively wide area, at depths of at least 30 inches. The analytical data suggests contamination may extend into the soils of San Pablo Bay. This contamination is located in the area where the levee is to be breached to allow bay waters to enter the wetlands. Soils to a depth of 10 feet below sea level can be expected to be washed into the wetlands following breaching of the levee. The Army is currently preparing a work plan for collection of samples at 12 locations at three depths. The sampling plan is scheduled for submission by June 18, 2001, with sample collection and results to be available before October 1, 2001. The HWRP (Vol. III, Page 2-9) indicates remediation of the BRAC parcel will include the elimination or reduction of potential impacts associated with pesticides found on-site. Although not addressed in either the FFS or the risk assessment, all parties agree the DDT contamination is a potential threat to the health of the wetlands.	The site-wide DDT concentrations are the result of the legal application of pesticides. The Army has determined that the DDT concentrations do not constitute a CERCLA release and are therefore not examined in the CERCLA process. DTSC opinion is that the residual DDT should be addressed under CERCLA. The Army has agreed to include a discussion of them in the ROD/RAP. The Army does agree that residual DDT is a potential exposure point risk to some future wetland receptors. To date there are no clean up levels developed or anticipated for HAAF. Comparator values are established in the FFS for screening purposes. These values are used to determine when further evaluation in the FFS was required. The FFS established that when residual chemical of concern (COC) concentrations are below their comparator values the site would not be a concern and conversely if the 95 UCL concentrations (or maximum in some cases) were above the comparator values then the site required further evaluation in the FFS. The remedial actions evaluated will mitigate potential risk by eliminating potential pathways (exposure) to receptors. The Army has no data suggesting that Army activities have generated contamination in soils that extend into San Pablo Bay. The Army's current proposals of removal of residual contamination or institutional controls will ensure that residual contamination above comparator values will not mobilize into the environment.

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		As discussed with the RART representatives, the Army will prepare separate FFS and RAPs for the outboard sites. The upcoming outboard site activities will include collecting additional samples to characterize the proposed channel cut area. The work plan for this effort is being prepared and will be provided for regulatory review as soon as possible. However, the work plan was not scheduled for distribution on June 18 as stated.
C	Hydrologic Modeling and Cover Requirements Several wetland conceptual design presentations have been made over the last few months to aid in the integration of the wetland design with measures for managing contaminated soils in-place. The hydrologic modeling presented by the SF-USACE on April 30, 2001, indicates the following: 6. Scour of the current native soils in primary and secondary channels is likely, and secondary channels where present are likely to meander throughout the site. This suggests wastes left in-place in areas subject to tidal action would be allowed to erode and be redeposited on-site or carried into San Pablo Bay. 7. The SF-USACE has indicated the area north of the runway is likely to erode. Additional areas may also erode. 8. Internal levees proposed for use in covering contaminated sites and for control of channel formation and direction are anticipated to erode over time. Their suitability for stabilizing contaminated soils is unclear. At least three feet of stable cover should be provided, or contaminated soils removed from the area completely or to a depth at which three feet of stable cover can be maintained. 9. Preliminary modeling (See Attachment E) indicates "erosion" of non-erodible materials (e.g., concrete runway) is	The information that has been presented indicated that maximum scour potential was likely to impact current native soil. Using conservative assumptions, the modeling predicted the potential impact to the current soil would only occur in the primary and secondary channels. The information presented also indicated that once established the primary and secondary channels will be very stable and will not meander throughout the site. For these reasons, the Army believes the performance criteria solution will be protective of human health and the environment. The performance criteria will not allow for erosion of existing sites where residual contamination of COCs is present above comparator values. The modeling shows that areas where erosion is likely to occur are in the primary and secondary channels. The modeling also shows that only minimal erosion of internal berms is expected. Erosion would take place primarily at the end of the berms where higher water velocities would be expected. Sites that will be addressed by institutional controls do not require the final design to be completed prior to completing the FFS. The performance criteria specified in the

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	likely to occur, suggesting the model does not properly deal with the non-erodibility of hard surfaces and that, in the real environment, adjacent erodible surfaces may actually erode more than indicated. Additional modeling is necessary to further clarify this issue. The SF-USACE and SCC have also stated there is no guarantee regarding the quantity of dredge spoil material that would be provided. Contingency plans should be made to provide three feet of stable cover material from alternate sources, or for excavation and either off-site disposal or placement of contaminated soils in areas not influenced by tidal action.	institutional control will dictate that the final design meet the remedial action objectives by ensuring that three feet of stable cover is present and monitored to protect human health and the environment. The final wetland design will address any issues regarding the availability of dredge material. Therefore, no contingency plan is addressed in the FFS.
D	Post Remediation Monitoring and Maintenance Additional monitoring and maintenance activities beyond those identified in the HWRP would be needed in the event residual contamination is managed on-site. These need to be identified and discussed in the FFS, including: 10. Measurements to determine subtle changes in topography, including: 1. Pin studies, consisting of placing stakes in the ground in a grid pattern at a standard height above pre-breach topography; 2. Periodic visual observation of the site (with photographs from standard locations) to aid in determining the rate of sedimentation or erosion; and 3. Aerial topographic surveys conducted monthly during the first year, quarterly for the next 2 years, and possibly annually thereafter. 11. Monitoring of sediment and water quality at several locations within the wetlands and the breach area. Sampling should be conducted monthly during the first year, and	The Army agrees that long term monitoring is a key to tracking both the effectiveness of the alternatives selected and the physical development of the wetland. The Army believes that it may not be necessary to add additional monitoring requirements beyond those already planned for the wetland restoration project. However, additional goals may need to be added to the program to meet objectives that are beyond those of the wetland restoration monitoring project. To be effective, the monitoring plan must consider the specifics of the final design. The FFS has been revised to provide additional information on the types of activities such as chemical, physical and biological monitoring that should be considered in the monitoring plan. The FFS also includes examples of the types of monitoring that should be considered. The monitoring plan will be prepared by the USACE, San Francisco District and SCC in consultation with the Army. Details of the plan will be dependent upon the final wetland design. Through a formal process, the regulatory agencies would ensure that the final wetland design and the grading plans for the final wetland design

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	quarterly for the next 4 years. Sampling should be conducted more often if requested by the RART. 12. Monitoring of flora and fauna for contaminant uptake. This should include placement of a California Department of Fish and Game Mussel Watch Station near the breach location, and collection of additional samples for analysis. 13. Computer modeling updated quarterly to predict changes in topography and potential for scour of the three feet of cover and/or the underlying contaminants. 14. For future reference and as part of the institutional controls, a map showing the contaminated areas with three feet or more of stable cover material, including the concentrations and elevation of the soils being covered. 15. Contingency Plans ("Adaptive Management") in the event the remedy fails. Development of contingency plans is hampered by the need to allow the wetlands to develop naturally. The SCC, SF-USACE, and trustee agencies have indicated the wetlands is expected to develop with little or no disturbance (e.g., dredging or other earth moving activities) once the levee has been breached. Selection of the remedial action should limit, to the extent feasible, the quantity of contaminated materials moved to on-site stabilization areas that are subject to tidal action.	meet the specified performance criteria and are protective of the future wetland receptors. The FFS and ROD/RAP will reference the legislation that requires the wetland design to include an adaptive management plan in the wetland restoration project.
E	Environmental Analysis As discussed above, the 1998 HWRP anticipated residual contamination may be managed on-site as part of the wetland design, construction and operation. The HWRP did not provide any details on how that on-site management would be incorporated into the design, as that information was not available at that time. DTSC is considering preparation of a supplement to the HWRP which would integrate the wetlands	Under CERCLA, there is no NEPA document requirement for decision documents regarding remedial actions. An EIR/EIS does exist for the wetland restoration project. The proposed actions in the FFS do provide a description of the project and proposed actions to be conducted. The HWRP is not a part of the CERCLA process and is not addressed in the ROD/RAP or FFS. Comments on the HWRP

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	project design with the contaminant management needs. The Army should provide a project description which integrates the wetlands project design with the contaminant management needs. DTSC will determine the appropriate administrative approach for compliance with the California Environmental Quality Act based in large part on the project description. This is critical to moving the project forward. In addition, as part of the decision process, an EIS or other equivalent NEPA document is necessary to obtain approval for the federal portion of the project.	are outside the scope of this document.
F	Preliminary Assessment On May 31, 2001, Congresswoman Lynn Woolsey visited HAAF, and presentations were made by representatives of the Army, Navy, and the USACE. The Army provided an update on its efforts to address the potential landfill identified in a May 11, 2001 letter from Mr. Robert T. Foley (Attachment F). Mr. Foley's letter indicates he conducted environmental compliance inspections on behalf of the Army throughout northern California and Nevada in the late 1980s, including two at Hamilton. These reports or information contained in them has only recently been included in work at Hamilton, as indicated in the enclosed Army briefing document (Attachment G). The Army is currently reviewing historic aerial photographs, conducting an archive search of all Army reports on Hamilton, and interviewing former Hamilton employees. The summary presented in Attachment G suggests the Army's review of aerial photographs has found at least a portion of the area identified as a potential landfill by Mr. Foley may have once been excavated. Review of aerial photographs and historical records, and interviews with former employees are essential elements of a preliminary assessment, and should be conducted for the	Mr. Foley's memo of May 11, 2001 states that he was "conducting logistics evaluation inspections" not environmental compliance inspections. The review of aerial photographs indicated the site features have not changed since 1946. As shown in the referenced Army briefing document (Attachment G), the Army review of aerial photographs did not indicate that a portion of the potential landfill had been excavated but that "...at least a portion of the area in question has <u>not</u> been excavated." The Army is investigating Mr. Foleys accusations, however the Army is not preparing a PA for the entire BRAC property. Information gathered in the Army's efforts to evaluate this site will be documented in a report expected to be available for distribution in September 2001. The Army has agreed to forward all radiological reports to DHS for review. The HWRP indicates that if certain storm events (i.e. a 100 year flood) were to occur, it is possible that the PDD could overflow into the BMK-V parcel. There is no information suggesting that the PDD has ever overflowed into the BMK-V parcel. Under existing conditions, storm water from the

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	entire Hamilton installation. Any additional release areas or relevant site features identified through this process should be documented in a draft preliminary assessment, and referenced in the FFS. Stereoscopic pairs of all Hamilton aerial photographs, notes from aerial photograph review, and copies of the interview notes should be provided to the RART and placed in a permanent information repository. Radiological issues also need to be reevaluated. In a memorandum dated January 18, 1994, (Attachment H) the California State Department of Health Services (DHS) commented on the Draft Community Environmental Response Facilitation Act (CERFA) Report, November 1, 1993. The DHS expressed concerns regarding the need to identify potential radiological handling activities, and identify potential release areas. The revised CERFA Report (April 1994) indicates that, with the exception of the low-level radiological waste cylinders removed from the site in 1988, there were no records available regarding the use, storage, or disposal of radiological materials at Hamilton. In contrast, the Foley letter indicates boxes of radium dials and compasses were found stored near Building 86, and reportedly disposed at the North Antenna Field. It is recommended the PA currently being conducted address the issues raised in the DHS memorandum and Mr. Foley's letter. The HWRP indicates the Perimeter Drainage Ditch (PDD) overflows into the adjacent Bell Marin Keys Unit V (BMK-V) parcel during certain storm events. (Volume I, Page 17 and Figure 2-6). Given the contamination in the PDD, this could certainly impact BMK-V. Review of the May 5, 2000, Phase I Preliminary Site Assessment for California Quartet Property, Bell Marin Keys Unit V, does not contain any information to suggest the BMK-V ditch and pump station area were sampled. Impacts to the BMK-V parcel should be addressed in the FFS. It is recommended the sampling being conducted to	BMK-V parcel flows onto the BRAC property or is pumped via its own pump station. The ditch was sampled by the SCC.

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	assess contamination of the outboard area in the vicinity of the breach be expanded to include characterization of the BMK-V ditch and pump station area.	
	Specific Comments	
1	Table ES-1, *Preferred Remedial Alternative Summary*, identifies the sites considered in the FFS, and the Army's recommended remedial alternative for each site. None of the following areas were evaluated in the Human Health and Ecological Risk Assessment (HHERA) or the FFS. These release areas appear to be at risk from erosion or might otherwise adversely impact the wetlands. Incorporation of this information into the site conceptual model and evaluation of impacts from these areas is needed. 1. Areas with known contamination omitted from the FFS include: 1. Perimeter Drainage Ditch (PDD), Lined Portion; 2. GSA Phase 1 remediation soils that are stored in piles on the runway; and 3. The regional pesticide and polynuclear aromatic hydrocarbon (PNA) contamination identified in DTSC's February 15, 2001 letter, Hamilton BRAC; Retraction of CERFA Concurrence Due to Pesticide and Polynuclear Armotic Hydrocabon Contamination 2. Additional potential release areas include: 1. The potential landfill and waste storage are as (including radionuclides) identified in the May 11, 2001 letter from Mr. Robert T. Foley; 2. The PDD dredge spoil pile between Revetments 7 and 10 that disappeared after being identified in the April	**PDD Lined Portion –** This area was remediated in 1998 by removal of all sediments and materials. Visual inspection confirmed that all materials had been removed. In 1999 samples collected from cracks in the lining detected pesticide concentrations that were in the range of site-wide detections. The Army has agreed to address the lined portion of the PDD in the FFS and ROD/RAP. The human heath and ecological risk assessment evaluated the unlined portion of the PDD. Since that time, the lined portion of the PDD was combined with the unlined portion for evaluation in the FFS and ROD/RAP. Because the comparator values developed in the FFS for the PDD are not risk driven, the Army believes that the comparator values established in the FFS are appropriate for the entire PDD (lined and unlined portions). **GSA Phase I Remediation Soil Piles**. The soil piles on the runway contain soil that was removed from petroleum sites on BRAC and GSA property. Decision documents were prepared for these petroleum sites. The petroleum contaminated soil is exempt from CERCLA and is therefore not included in the FFS. The Army has agreed to work with the RWQCB on determining the final disposition of the soil piles. **Regional PNAs and DDT.** As stated in a letter to Tony Landis, Cal EPA DTSC, dated March 13, 2001, the Army asserts that the site-wide DDT concentrations are the result of the legal application of pesticides. As stated in this letter, no

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	1994 CERFA report (disposition of these soils needs to be determined); 3. Subsurface contamination associated with Storm Drains within the revetment areas: 4. The Radiologic Cyclinders removed near the north end of the runway, adjacento to Ignacio Reservoir; 5. The runway as potential source of PNAs; 6. Ordance and Explosives; 7. The Precision Radar facility; 8. Building 48 and nearby "Taxiway;" 9. Building 16; 10. Building 46; and 11. Revetment 29 (current site of "Nina's Lake").	pesticide mixing or storage areas have been identified on the BRAC property. The PNA issue for soil near the runway is the result of the weathering of the tar-like sealer on runway surfaces. The Army has determined that the legal application of pesticides and weathering of the runway surface do not constitute CERCLA releases. Therefore, they are not included in the FFS. DTSC's opinion is that these should be included. The Army has agreed to include them in the ROD/RAP. **Landfill and Waste Storage**. Based on the Army's review of current sampling data directly from these areas, there is no eminent risk to human health or the environment from these alleged areas. Once the interviews with former employees and the archives records search report are complete, the Army, as the lead agency, will determine if physical sampling or additional action is required at this site. If additional action is required, the CERCLA process will be followed. **PDD Spoils Pile.** The Army believes that a spoils pile was never present between Revetments 7 and 10. There appears to be an error on the CERFA map. Based on interviews with persons familiar with the site, a review of aerial photographs and the history of the area, there is no indication a pile was located in this area. The Army has agreed to provide documentation to the RART to support this determination. **Storm Drains.** A camera survey of the storm drains in conjunction with the Aircraft Maintenance and Storage Area was conducted. All sediment was cleaned from storm drains in the Aircraft Maintenance and Storage Area and revetment area. The data for this area was reviewed by the RART in their review of the Comprehensive RI. After reviewing this data, the RART did not indicate that contamination

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		associated with this area required any further evaluation. **Radiologic Cylinders.** A formal report was prepared regarding the removal actions that were conducted to remove cylinders containing radiological substances. The Army has agreed to provide all information related to the removal to DHS. Instrumentation used at the time of the removal action did not detect releases. All items of concern were contained in steel cylinders. Radiological sites with no issues of concern are not considered sites for inclusion in the FFS. **Runway as a Potential Source of PNAs.** The Army does not consider grouting materials on the runway containing PNAs to be a release to the environment. Therefore, this area is not addressed in the FFS. This issue will be addressed by the wetland restoration project team. **Ordnance and Explosives.** Based on existing records and available information there is no evidence of either unexploded ordnance or explosives on BRAC property at HAAF. The newspaper article cited in the CERFA report was unsubstantiated. **Radar Facility.** The precision radar facility was located near Building 20. No environmental concerns are associated with this facility. The soil in this area was removed and used for construction of the wetland creation project at the northern end of the runway. **Building 16.** This building was a shack located on top of Revetment 22. No environmental concerns were identified in association with the building. Soil beneath and adjacent to Revetment 22 has been sampled and the revetment is evaluated in the FFS. **Buildings 46 and 48**. These sheds had no environmental

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		concerns. **Revetment 29.** This area was characterized to determine if it was suitable material for constructing the cap on Landfill 26. The material was extensively tested and determined to be suitable for cap material. The entire revetment area was excavated an used as borrow material for the landfill.
2	The Perimeter Drainage Ditch, Lined Portion, underwent remediation to remove contaminated sediments. As discussed at a previous RART meeting, and as presented in the *Remedial Design Investigation, Final Data Report*, February 2000, sample numbers 28 and 29 were subsequently collected from the cracks in the lined portion of the PDD between the pump stations. These samples contained DDTs (and its derivatives) at concentrations of 0.70 and 0.35 ppm, respectively. Most of the text in FFS Section 1.7.9 describes the lined portion of the drainage ditch, but the FFS does not actually consider the lined portion of the PDD to be a site. The discussion of the PDD should be revised to include the results of sampling of the site, and discussion of remedial alternatives for the site. In particular, detailed information on the following should be provided: the date the PDD was lined and for what areas; changes to the PDD associated with the construction of the Landfill 26 cap; history of PDD dredging and disposition of the dredge spoils; hydraulic connections to adjacent parcels and groundwater (e.g., the groundwater dewatering system referenced in the HWRP); information associated with the area of the PDD to be breached, including preferential erosion around the concrete lining of the PDD; and results of sample analyses.	**PDD Lined Portion –** This area was remediated in 1998 by removal of all sediments and materials. Visual inspection confirmed that all materials had been removed. In 1999 samples collected from cracks in the lining detected concentrations of pesticides within the range of concentrations observed for the site wide pesticides. Therefore, the lined portion of the PDD was not considered a site for inclusion in the FFS. The FFS has been revised to include the lined portion of the PDD. A portion of the PDD lined ditch is expected to be removed as part of the wetland restoration project to make way for a channel cut. The ROD/RAP will address the lined portion of the PDD. The BEC has reviewed completion reports for the PDD in the archives in Washington D.C. The report indicates the PDD lining was complete in November 1940. The Army is currently reviewing documents to determine whether changes to the portion of the lined PDD on BRAC property occurred as result of activity near the Landfill 26. There is no documentation that the dredge piles were used for any purpose at HAAF. Based on Army experience and available data, the hydraulic conductivity measurements show negligible groundwater movement in the areas of Bay mud. There are also no known

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		conduits that would suggest a hydraulic connection to adjacent parcels.
3	GSA Phase 1 Soils: Soils from remediation of the GSA Phase 1 parcel are being stored on the runway. Authorization for use of these materials in the wetlands has not been provided, and would need to be included in the RAP with supporting documentation in the FFS. Historically, the PDD, which has been shown to be contaminated with metals, pesticides, and other contaminants, continued into the GSA Phase 1 parcel between Caliente Real and Casa Avenue, and ended at Building 145. Please revise the FFS to include information on the nature of the remediation of the GSA Phase 1 parcel, the results of analyses of the wastes on the runway, and comparison of the analyses performed to the contaminants known to be present in the PDD.	**GSA Phase I Remediation Soil Piles**. See previous responses. The soil on the runway originated from excavation of fuel impacted soils from GSA and BRAC out parcels. These soils are not related to the PDD in any way. The Army has also agreed to work with the RWQCB to determine the final disposition of the soil piles.
4	The Army has insisted on several occasions, and most recently at the June 5, 2001 meeting, that the pesticide contamination is associated with the legal application of pesticides and therefore not subject to CERCLA. DTSC has reviewed this matter, and can find no supporting documentation from the Army on the assertion that it was legally applied. It may, however, be associated with disposal of contaminated PDD dredge spoils. Therefore, DTSC requests the Army amend the FFS to address the pesticide contamination, or provide appropriate supporting documentation. Consistent with other sites proposed for excavation, pre-design borings and confirmation sampling is needed to establish the depth of excavation, and for determining whether soils could be managed on-site or must be disposed off-site in a Class I landfill. This information is also needed to identify areas requiring three feet of stable cover.	The DTSC retraction of CERFA is a policy issue that needs to be addressed outside of the FFS and ROD/RAP process. As stated in the Army's letter dated March 13, 2001 the Army asserts that the site wide pesticide contamination is the result of historic legal application of pesticides to control mosquitoes. DDT was widely used as a legal remedy for mosquito control. Analytical results for the BRAC property do not identify mixing, storage or hot spot areas that could be considered CERCLA releases. The Army has found no documentation to support the speculation that PDD dredge spoils were used on site for any purpose.
	Similarly, the cause of the PNA contamination adjacent to the	Language in the FFS has been revised to indicate this area

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	runway has not been demonstrated. Draft FFS Section B.3.1.1, *Base Realignment and Closure Property Sitewide Ambient Data*, provides a discussion of the sampling conducted to determine the ambient levels of various pollutants. One of the samples, HB-99-SO-1, was collected in a "high impact" area adjacent to the runway, and was found to have high PNA concentrations. As outlined on page B-16 of the Draft FFS, contaminant concentrations in High Impact Areas were expected to exceed ambient concentrations, and would be considered for further remediation. Remedial alternatives for this contamination were not evaluated in either the draft FFS or the FFS. The FFS should be amended to include remediation alternatives for the PNA contamination, including the use of three feet of stable cover. It should also be noted the HWRP (Volume II, Page 3-8) indicates the PNAs associated with pavement will be addressed through the State oversight process. The HWRP also indicates those areas where asphalt could interfere with channel development and be released in the environment would be removed. Consistent with other sites proposed for excavation, pre-design borings and confirmation sampling is needed to establish the depth of excavation, and for determining whether soils could be managed on-site or must be disposed off-site in a Class I landfill. This information is also needed to identify areas requiring three feet of stable cover.	was not identified as a high impact area. The designation potential high, medium, and low impact areas was developed as part of the original sampling plan for pesticides. The designations were used to anticipate probable use areas and ensure that the sampling adequately addressed all types of areas. This area is not included in the FFS because the Army does not consider it to be a CERCLA release. The Army has agreed to discuss this area in the ROD/RAP. The wetland restoration team will address contamination associated with pavement. Portion of comment related to HWRP is outside the scope of the FFS and the CERCLA process.
5	Revetment 29, the current site of "Nina's Lake," was not addressed in the FFS. DTSC recognizes the revetment has been removed, and surrounding soils used to construct the wetland mitigation project at the north end of the runway and for the Landfill 26 cap. Even so, it will be necessary to discuss the analytical results associated with this revetment in the FFS so that the site can be closed out in the final RAP.	Revetment 29 was excavated and used for borrow material to construct the cap on Landfill 26. The borrow material was tested for chemical contamination prior to use at the landfill. The Environmental Baseline Survey for the Main BRAC property will provide documentation indicating this area is not a site.

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6	RADIOLOGICAL ISSUES: At least one site on the Hamilton BRAC property (i.e., pipes located near Ignacio Reservoir) underwent remediation for radiological contamination. The nature of the remediation, including the radiological levels left behind, needs to be included in the revised FFS. DHS should be contacted to determine whether the cleanup meets DHS' standards, so that the site can be closed out in the final RAP.	The site was remediated to remove the cylinders containing radiological substances. No releases of radiation were detected at the site. A formal report was prepared regarding the actions that were conducted to remove cylinders containing radiological substances. The Army has agreed to provide all information related to the removal to DHS. Instrumentation used at the time of the removal action did not detect releases or the presence of any radiological substances. All items of concern were contained in steel cylinders. Radiological sites with no issues of concern are not considered sites for inclusion in the FFS.
7	ORDNANCE ISSUES: As outlined in DTSC's March 2, 2000 Letter, *Hamilton Army Airfield, Ordnance Archive Search Report* (OASR), there is information suggesting ordnance may have been buried at Hamilton Army Airfield in the outboard area near the proposed levee breach. An OASR is being prepared by the Sacramento office of the USACE for the entire Hamilton Facility. DTSC understands preliminary information from the OASR should have been available in early June 2001. Information regarding ordnance and explosive wastes should be included in the revised FFS.	Based on existing records and available information, there is no evidence of either unexploded ordnance or explosives on the BRAC property at HAAF. As a result of DTSC's March 2, 2000 letter to the Formerly Used Defense Sites (FUDS) project manager, USACE, Sacramento District is preparing an OSAR for the FUDS property. This document will not pertain to any BRAC property. In response to the May 11, 2001 letter from Mr. Foley, the Army is conducting an archives search report (ASR) for the Army BRAC property. The Army will determine if any issues are identified in the ASR that need to be addressed through the CERCLA process. The ASR is expected to be released to the regulators in September 2001.
8	Section 1.1, *Purpose and Scope,* indicates the scope of the FFS is limited to sites inboard of the flood control levee. During the March 20, 2001 meeting of the Army and DTSC, it was agreed the entire BRAC parcel would be considered as a single entity, and remediated accordingly. Please develop a feasibility study to address contamination of the outboard area, including pesticide contamination, and a schedule. Please also develop a	The Army has indicated on several occasions that the outboard sites will be evaluated in an FFS and ROD/RAP that are separate from the Inboard Area sites. The agreement to treat the Main BRAC property as a single area pertains to transfer of the property. In accordance with agreements with DTSC, the Army is

No.	Comments	Responses
	RAP for the outboard area. This information is needed in order to support a finding that all necessary response actions will be taken, and to identify the schedules for investigation and completion of all necessary response actions.	proceeding with early transfer the Main BRAC 644-acre parcel in one effort. In accordance with early transfer procedures, the Army is not required to clean up or make all decisions prior to transfer.
9	Section 1.1, *Purpose and Scope,* summarizes the methodology used to make recommendations regarding further action for the sites listed in the FFS. The FFS relies in large part on the HHERA. On February 16, 2001, the Army provided updated portions of the HHERA, including Appendices A, E, F, and H, and Sections 3 and 7 tables. As indicated in the trustee and regulatory agencies' comments on the HHERA (see the enclosures accompanying DTSC's July 19, 2000 letter), there were a number of concerns regarding the HHERA. Most notable is the absence of risk analyses for several identified sites, including base-wide pesticide contamination, the PDD Dredge Spoil pile that was located between Revetments 7 and 10, and contamination associated with the lined portion of the PDD (See Specific Comment 1 for additional areas of concern). The revised HHERA does not adequately address those concerns. Rather than direct the Army to revise the HHERA, the trustee and regulatory agencies have been working with the Army and others to identify appropriate cleanup levels for various pollutants and, based on that analysis, determine the appropriate mitigation actions (e.g., stabilization with three feet of stable cover). There are also significant issues regarding site characterization, as discussed elsewhere in these comments. The FFS should be revised to indicate the HHERA can not be relied on to identify those sites that require no further actions, those sites that require remedies, and the determination of proper remedies for the subject sites.	The FFS relies primarily on the comparator values negotiated with the RART, and not the HHERA. Comparator values represent screening levels in the FFS (agreed to by the RART) used to determine if further evaluation was required or if no action was required. Target values from HHERA used only when comparator values were not available. No clean up levels have been negotiated for Hamilton. Army plans to finalize the HHERA to fully integrate the update the report that was provided in February. DTSC and regulator concerns regarding the HHERA will be addressed in the revisions to the risk assessment and not the FFS. Please see previous comments regarding the inclusion of additional sites in the FFS. The Army understands the RART generally agrees that the HHERA is a very conservative document that can be used to identify NFA sites and can identify sites that require further evaluation in the FFS.
10	Section 1.1, *Purpose and Scope,* describes the scope of the FFS in terms of the remedial actions that could be implemented based	The FFS has been revised to indicate that short-term and long-term impacts to both human and ecological receptors

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	on the anticipated wetlands end-use of the property, rather than an evaluation of potential impacts over the life of the project. Section 1.1 should be revised to include evaluation of short-term and long-term impacts to ecological receptors, on-site personnel, and the public from the present through completion of the wetlands project. Additionally, the long-term risk to ecological receptors, onsite personnel and the public also should be identified, discussed, and evaluated for each alternative.	were considered. The FFS has been revised to clearly state that the evaluation considered workers, public, and receptors through construction, development, and maturation of the wetland. Note: The wetland receptors will not be present until the mature wetland develops.
11	FFS Section 1.4.1, *Existing Hydrogeological Setting*, indicates organic contaminants are not present in groundwater throughout the sites and, based on the lack of suitability of the groundwater for drinking water purposes, concludes that groundwater is not adversely affected at Hamilton. In contrast, HWRP Volume II, Chapter 5 (page 5-9) indicates there is groundwater contaminated with petroleum hydrocarbons and solvents, and that groundwater discharges to the PDD. This section referred the reader to Chapter 10, *Hazardous Substances, Wastes, and Site Remediation*, for more detail. Chapter 10 contains no references to groundwater, petroleum hydrocarbons, or solvents. It is apparent the FFS and HWRP will need to be revised to adequately address the groundwater contamination. This analysis would include: 1. Groundwater contour maps with posted analytical data and geologic cross-sections to support conclusions about the quality, occurrence, and movement of groundwater; 2. An understanding of sources and sinks (e.g., the PDD and the subsurface groundwater control system mentioned in HWRP Volume 1, page 7, paragraph 3); 3. Utility maps and other original sources of information; 4. A fate and transport analysis; and	Comments regarding the HWRP are outside of the FFS scope. The Army has decided not to comment on revisions to details regarding the wetland restoration project. It should be noted the HWRP was developed prior to the completion of several key studies including the BRAC Interim Removal Report and the Remedial Design Investigation. As a result, the HWRP did not have the benefit of the information contained in these reports which provide more current and comprehensive information regarding the site. During the FFS, a review was completed for data collected from groundwater wells located in the vicinity of the Inboard Area sites where potential scour within channels may occur (based on mathematical modeling) during the development and maturation of the wetland (see Appendix D, Section 5.0). The review compared groundwater quality to selected surface water quality objectives in areas where groundwater might come into contact with surface water during the development and maturation of the wetland. The results of this review concluded that groundwater does not pose a threat to surface water or aquatic receptors.

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	5. The FFS notes the RWQCB's Basin Plan indicates the existing and potential beneficial uses of groundwater include rare and endangered species preservation, and freshwater wildlife habitats. Conversion of Hamilton into a wetland would likely result in the site also providing saltwater wildlife habitat. The FFS and HWRP should be amended to discuss the water quality criteria associated with these types of habitat, and quantitative comparison to the available analytical data.	
12	Section 1.5, *Previous Investigations*, and Section 1.6, *Nature and Extent of Contamination*, provide a list of references for analytical data and a brief discussion of the nature and extent of contamination, respectively. Select analytical data is posted on Figures B-1 through B-17 in FFS Appendix B. In response to our comments on the draft FFS, the Army posted all the soil analytical data on a set of maps of the base. As previously discussed, these maps need to be made part of the administrative record, and incorporated into the FFS.	Since the information plotted on the maps was used in preparation of the risk assessment, the maps will be provided in the revised risk assessment.
13	FFS Section 1.7.9, *Perimeter Drainage Ditch - Unlined Portion*, should be revised to discuss the changes made to the PDD as the result of construction of the cap on Landfill 26, and Figure B-8 should be revised to show the original alignment of the ditch. Historic maps show the underground piping to be limited to a single straight section perpendicular to the runway. The ditch originated at POL Hill, near Building 736, and proceeded north by northwest between Landfill 26 and Building 750. Figure B-8 should also be revised to include the results of analyses of the sample collected immediately upstream of the original culvert.	See previous comment and response on the PDD, Specific Comment #2. Data provided on the figures only includes concentrations of COCs that exceed their comparator values.
14	FFS Section 2.1, Chemicals of Concern, indicates the RWQCB's Draft Staff Report, Beneficial Reuse of Dredged Materials: Sediment Screening and Testing Guidelines, May 2000, was	The Army will include the RWQCB's Draft Staff Report, Beneficial Reuse of Dredged Materials: Sediment Screening and Testing Guidelines, May 2000 as a TBC (see RWQCB

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	relied on, in part, for identifying comparator values (i.e., remediation goals). However, the guidance, which has been incorporated into waste discharge requirements for projects involving the beneficial reuse of dredge material for wetlands creation, is not referenced in FFS Section 2.2, Applicable or Relevant and Appropriate Requirements (ARARs), or otherwise utilized in the identification or comparison of alternatives. Stabilization of contaminated sediments in-situ with three feet of stable fill materials, which is consistent with the methodology outlined in the RWQCB guidance, is currently under consideration.	comment 7g). Note, the comparator values were relied upon in part to establish remedial action objectives not remedial goals.
15	FFS Section 2.2, *Applicable or Relevant and Appropriate Requirements*, contains a brief summary of the applicable or relevant and appropriate requirements (ARARs) for the project, and a table identifying the sections of laws and regulations believed by the Army to be ARARs (Table 2-8). A number of references are made to statutes contained in Title 22, Division 4.5, California Health and Safety Code. Table 2-8 indicates the provisions of Title 22 are potentially relevant and appropriate to the proposed actions. Table 2-8 should be revised to indicate these statutes would be applicable to the indicated activity. The FFS should also be revised to indicate how the proposed actions would be consistent with the ARARs.	The Army believes that Title 22, Division 4.5 of the California Health and Safety Code is relevant and appropriate. During the 1998 and 1999 removal actions, the most contaminated soil remaining at HAAF was removed and disposed of at a Class II disposal facility. Therefore, it is not anticipated that waste generated during excavations would result in the generation of hazardous waste. Section 4.3 addresses compliance with ARARs. The final wetland design will provide more detail regarding how the ARARs will be achieved.
16	FFS Section 4.4, *Comparative Analysis*, provides a summary of the remediation alternatives analyses conducted in FFS Sections 4.1 through 4.3. A total of four alternatives were evaluated in the FFS: Alternative 1 - No Further Action; Alternative 2 - Institutional Controls; Alternative 3 - Excavation and Offbase Disposal; and Alternative 4 - Excavation and Onbase Disposal. Each of these alternatives is discussed below.	**Alternative 1.** The FFS does not establish clean-up goals. The remedial action objectives provided in the FFS are based on comparator values which are not intended as clean-up goals. The Army acknowledges that the comparator value for DDTs proposed by the RART was rescinded. The Army will default to the process used to develop all comparators and will base the new comparator value for DDT on the RWQCB criteria for dredge material (RWQCB's Draft Staff Report, Beneficial Reuse of Dredged Materials: Sediment Screening and Testing

No.	Comments	Responses
	A. Alternative 1 - No Further Action: The site screening process was conducted based on preliminary calculations of the cleanup goals for DDT and its breakdown products. Due to a conversion factor error, these values are expected to be revised to be approximately an order of magnitude more stringent than presented in the FFS (see Attachment I, a March 8, 2001 e-mail message to Mr. Ed Keller, for additional information). Additional cleanup levels may change as they proceed through the review process. It is recommended that decisions regarding which sites are no further action (NFA) sites be deferred until such time as that review process is completed. B. Alternative 2 - Institutional Controls (ICs): ICs are prohibitions on specific activities that might alter the remedy, or result in risks that would otherwise not be present. An example of an IC that should be included in the FFS is a prohibition on soil excavation or erosion in areas of contamination in excess of cleanup goals. Additional ICs should be identified in the FFS. The FFS identifies certain active remediation methods as part of ICs. Active remediation methods (e.g., covering with three feet of stable soils to achieve in-situ stabilization) are distinct from ICs. C. Alternative 3 - Excavation and Off-base Disposal: This alternative includes pre-design borings to determine the extent of excavation activities and the disposition of the soils. DTSC agrees this is a viable alternative, but it should be noted contamination beyond that identified in the FFS could significantly increase the cost of this alternative. D. Alternative 4 - Excavation and Onbase Disposal: As with Alternative 3, there is uncertainty regarding the area and depth requiring excavation. However, the uncertainty in	Guidelines, May 2000). This new comparator value for DDTs will be used in conjunction with comparator values for other analytes to identify no further action sites. The Army is not aware of any other reviews taking place and will proceed with this task. **Alternative 2.** The FFS text has been revised to clearly state that Alternative 2 establishes performance criteria that require the final wetland design to specify that erosion and excavation will be prohibited in areas where COCs will remain in place and be covered. The alternative also requires that the final design develop a specific monitoring plan to monitor the effectiveness of the remedial action throughout the development and physical maturation of the wetland. The text has also been revised to clearly state that Alternative 2 is the performance criteria for the wetland design. Actions that are taken to meet the performance criteria, such as actual placement of cover or monitoring of cover are not a part of the alternative. These actions would take place as part of the wetland restoration project. This alternative eliminates the need to develop goals by eliminating exposure pathways for receptors or by removing soil with concentrations above comparator values. No clean-up goals have been negotiated for Hamilton. **Alternative 3.** The RART agreed in the July 5, 2001 meeting that confirmation sampling could be conducted prior to or following excavation. Some uncertainty regarding the specific volume of soil that will be excavated is expected. The cost evaluation considers the potential for costs to vary by 30% on the low side and 50% on the high side. The cost

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	costs can be more easily managed for Alternative 4. The substantive requirements for on-site consolidation of soils should be revised to indicate alternative construction standards may be used for on-site consolidation based on contaminant concentrations and site-specific conditions (e.g., placing of wastes above groundwater and covering with three feet of stable soils). It should also be noted soils with concentrations above hazardous waste levels would need to be disposed off-site at an appropriate facility. During the June 5 meeting, the Army proposed placement of the soils in Nina's Lake, which is located within the area anticipated to be subject to tidal action. DTSC is concerned this approach may result in failure of the remedy due to the release of contaminated soils into the wetlands. It is recommended soils instead be placed in the more stable upland portions of the site, in areas not subject to tidal action. E. Monitoring and Contingency Measures: For all actions involving leaving wastes on-site, the FFS should identify the monitoring activities necessary to determine whether the chosen alternative is effective (see pages 5 and 6 above for examples). The FFS should also identify contingency measures that can be implemented in the event the chosen alternative is found to be ineffective (e.g., excavation and off-site disposal; reconstruction of cover). The feasibility of implementing contingency measures is of particular concern. For example, placement of soils in Nina's Lake would make implementation of contingency measures infeasible.	estimates were based on conservative volumes that were developed with DTSC input. **Alternative 4.** See response for Alternative 3. The Army has recommended that soil removal at sites identified in the FFS should be disposed of offsite in accordance with Alternative 3. During the June 5, 2001 meeting, the Army proposed that soils impacted by site-wide pesticides and PNAs from the runway be used onsite in areas that could meet the requirement for three feet of stable cover. **Monitoring.** The Army is using CERCLA to identify the best remedial alternatives. Since the process looks at the effectiveness of the remedy, the Army will only propose actions that will be effective in protecting human health and the environment. Therefore, no contingency plans will be included in the FFS. Also, the FFS includes examples of the types of monitoring that should be considered. The monitoring plan will be prepared by the USACE, San Francisco District and SCC in consultation with the Army. Details of the plan will be dependent upon the final wetland design. Through a formal process, the regulatory agencies would ensure that the final wetland design and the grading plans for the final wetland design meet the specified performance criteria and are protective of the future wetland receptors.
17	FFS Section B.1.0, *Area and Volume Calculations*, presents a number of assumptions regarding the extent of contamination and estimates of the volume of soils that would need to be excavated in order to achieve the cleanup objectives. The FFS	The FFS has been revised to state that where excavation is planned, confirmation samples will ensure that RAOs will be met. The RAOs can be met either by excavation of COCs or

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	concludes that "...if excavations were conducted, all potentially-contaminated soil would be removed from the site." In virtually all cases, there is insufficient analytical data to conclude with any certainty the volume of soils that would need to be removed to meet this standard. Based on our discussions, it is recommended the conclusions in the FFS be clarified to indicate that, if a site is excavated, all contaminated soil will be removed down to an elevation where there could be three feet of stable cover material or all contamination will be removed. Confirmatory sampling should also be conducted. The FFS should also be revised to discuss the degree of uncertainty associated with the volume estimates.	placement of three feet of stable cover.
18	Section 5.7, *Conclusions*, *Perimeter Drainage Ditch Spoils Piles, Spoils Pile F*, recommends the removal of the top 6 inches of soil in the approximate location of Spoils Pile F. However, there is significant uncertainty about the current location of the soils from Spoils Pile F. Removal of contaminated soils is recommended, with site characterization prior to the removal.	This section has been revised to indicate that excavation will be conducted in accordance with Alternative 3. That is, pre or post excavation borings will be conducted to guide the action. RAOs can be met at this site through excavation, or excavation followed by placement of three feet of stable cover. The previous reference to removing six inches of soil was based on sampling results and was used for cost estimating purposes.

EPA, NOAA, and RWQCB Comments On the Focused Feasibility Study for Hamilton Army Airfield Inboard Sites (February 26, 2001)

No.	Comments	Responses
EPA Comments, no date		
1	Estimates of exposure. A major factor in the completion of the CERCLA process at this site involves the incorporation of the future land use plans into the remedial investigation (RI) and the feasibility study (FS). The remedial investigation efforts have shown a significant level of risk in various locations of the site in the direct area of the proposed wetlands. While the Army suggested that the deposition of dredge spoils at Hamilton would reduce if not eliminate the exposure pathway in the construction of the wetlands, there were little if any data to support the notion that all of the sites with significant risk would be eliminated by this assumption. There still remains questions about the final design of the wetlands and how many of the contaminated sites will be exposed to future receptors of the wetlands.	The Army has consistently advocated that residual contamination at sites that pose a significant risk be removed and disposed of offsite. The Army believes that no sites which pose a significant risk will remain in the project and all potential risks are addressed by the alternatives selected.
2	Estimates of toxicity/impact. Questions raised of actual risk is complicated by uncertainty involving accurate measures of exposure especially in light of the final wetlands design. The best estimates of toxicity relationships between exposure concentrations and effects on important receptors include uncertainty that cannot be minimized with the available site specific data. Risk levels at locations where contaminants are proposed for leaving in place can range from low level manageable risk to high level significant risk depending upon the components of the estimates. The range of possible acute toxicity is highly uncertain depending upon the contaminant and the receptor. The toxicity tests performed did not sufficiently satisfy the questions of residual or future toxicity. The predictions of upper trophic level impacts include	Uncertainties associated with the accuracy of the measures of exposure are recognized and discussed in the Risk Assessment report. The Army agrees that the risk assessment has significant uncertainties and therefore, has conservatism built in. Since the date that the original FFS was prepared, the RART has agreed that three feet of cover would be protective of biological receptors and will prevent exposure. The FFS has been revised to describe performance criteria that the final wetland design must meet to place cover, monitor the cover and protect against erosion or excavation. Long-term monitoring will ensure that the alternatives selected meet RAOs and are protective of human health and the environment. The FFS has been revised

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	uncertainty in the estimates of all the components of contaminant doses that can only be reduced by site specific observations.	to include a discussion of long-term monitoring (see also response to DTSC comments).
3	The footprint of the wetland channels and berms. Discussions have taken place recently that contribute to the understanding of the overall plan, but the Army has been unable to provide any definitive information. While it is common understanding among the project members that the actual footprint of the wetland may vary, it is also common belief among the RART that sufficient information has not been presented to show that significant risk levels will be reduced by the footprint of the wetlands. This is an important assumption that must be demonstrated in a way to reassure the RART and the public that the wetlands is part of an overall plan that will provide direct benefit as well as reducing risk from contaminants. The footprint of the wetlands must show that scouring of areas left exposed in the final design will not result in significant exposure of contaminant to receptors.	See Response to Comment 1. In addition, the performance criteria for the wetland final design will specify that the design must provide a map of the residual contamination, the level of cover that will be provided, and the channel and scour areas. The design must meet the RAOs either by providing for cover or by eliminating COCs that exceed the chemical-specific RAOs. The Army will ensure that the final wetland design and the grading plans for the final wetland design meet the specified performance criteria and are protective of the future wetland receptors. Through a formal process, the regulatory agencies will review these plans. Areas that pose significant risk have been recommended for removal versus management on site.
4	EPA recommends that the Army Corps of Engineers San Francisco District provide the footprint of the wetlands with the best estimates of movement of channels and berms.	This map will be provided as part of the final design as noted in the response to Comment #3. The performance criteria specified in Alternative 2 ensure that any channels, berms, movement of sediment etc, will meet the minimum requirements for cover necessary to protect human health and/or the environment at each site requiring action during the development and maturation of the wetland.
5	EPA recommends that the Army Corps of Engineers Sacramento District remove any contaminants in the area of the wetlands that will be exposed to receptors (less than 3 feet of cover) that is expected to result in a significant risk to future site receptors.	The FFS has been revised to indicate that if the performance criteria specified in Alternative 2 are not practical (i.e. three feet of cover, erosion protection, monitoring, and prevention of excavation), then residual contamination greater than chemical-specific RAOs should be removed and disposed of offsite in accordance with Alternative 3.
6	EPA recommends that the Army provide a monitoring plan of the site (to be jointly defined by agency and Army personnel)	The Army agrees that a monitoring plan is needed. The Army will work with the Wetland Restoration Team to develop a

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	to insure that contaminant levels remaining on the site are not impacting the overall biological productivity of the wetlands.	monitoring plan that meets the requirements of the performance criteria specified in Alternative 2. Significant monitoring will occur as part of the wetland restoration program. To be effective, the monitoring plan must be developed following the selection of a final design. See response to comment 2.
7	EPA recommends that this monitoring plan include contingency plans for stepping out as well as corrective actions.	The FFS has been revised to include examples of the types of actions that should be considered in the monitoring plan.

No.	Comments	Responses
RWQCB Comments, April 27, 2001		
A	**General Comments** The Army presented its conclusions regarding the selected alternative for individual inboard sites in Section 5.0 of the report, and in summary at Table ES-1 (Table 5-1) entitled Preferred Remedial Alternative Summary. In general, Board staff agrees with the Army's conclusions regarding those sites identified as no further action (NFA). Board staff also agrees with the Army's conclusions regarding those sites identified for excavation. However, in some cases the excavation areas identified may need further delineation (see specific comments provided below in comment number 8). There are a few sites where the remaining contamination is somewhat elevated and Board staff is advising the Army to reconsider excavation. Those sites include: Building 35/39, near the area of the proposed channel opening, due to DDT and its metabolites, DDD and DDE (DDTs) contamination along the pump station outfall pipe; the most northern section of the Perimeter Drainage Ditch (PDD) due to DDTs contamination (4.5 to 9.5 ppm); and select locations along the onshore fuel line (incomplete data reported on figure B-13 precludes staff from making specific recommendations). The alternative selected	With respect to the two specific areas mentioned in this comment, the Building 35/39 pump station outfall pipe and the most northern portion of the Perimeter Drainage Ditch, the Army believes that Alternative 2 will meet RAOs and be protective of human health and the environment. The definition of Alternative 2 has been re-stated in the FFS to indicate if the performance criteria for cover cannot be met, then Alternative 2, Institutional Controls, requires that the sites be excavated in accordance with Alternative 3. If Alternative 3 is selected, then the FFS indicates that confirmation sampling would be conducted either prior to excavation activities or following excavation activities to ensure that RAOs can be met. The data posted on Figure B-13 was checked. All COCs with concentrations above comparator values have been posted.

No.	Comments	Responses
	for the remaining sites is Alternative 2 – institutional controls. In general, Board staff does not have major objections to the selection of this alternative for many of these sites. However, there are a few general issues that staff would like to see addressed in the FFS. Those issues are discussed below.	
B	The FFS is missing one major element, a discussion of the scour/erosion potential for soils left in-place for Alternative 2 – institutional controls. In particular there is concern regarding the design constraints associated with reducing scour/erosion in the area where the channel is expected to develop. This is especially true with respect to the area where the revetments are located. More information needs to be provided regarding the institutional controls and their potential impacts on the resulting habitat values established in the wetland.	Additional text has been added into the FFS to discuss the relationship between the final wetland design and the performance criteria for the placement, monitoring, and protection of three feet of stable cover. The performance criteria specified in the FFS are designed to provide flexibility to the final wetland design so that particular habitat values can be established within the wetland. In particular, scour/erosion control and excavation protection will be instituted to protect the minimum cover depth wherever, residual COC contamination is known to exist above the comparator values.
C	The discussion of Alternative 2 includes language that states "Exposure point concentrations would be reduced to acceptable levels through the placement of dredge material over the impacted areas" (see Table 4-1). For some of these sites the contamination is already buried at depth on the site and there is no complete exposure pathway for ecological receptors. A complete exposure pathway would only exist where significant scour or erosion is expected to occur. Board staff is concerned about unnecessarily burdening the wetlands design team and the restoration project with requirements for placement of fill.	The FFS has been revised to reflect the fact that some contamination is already buried at depth. The performance criteria for the final design does not require the design team to place additional cover in areas where the three feet of cover criteria is currently met and the requirements for control of erosion and excavation can be met in the final design. In addition, the performance criteria does not require cover on areas such as revetments that are currently covered by concrete. Erosion protection and monitoring is required for these areas however. This adjustment in the FFS should not place a burden on the design team.
D	Another concern regarding the FFS is that it does not discuss the area-wide DDTs contamination. The FFS only addresses DDTs found in accumulation areas. However, DDTs are the major risk driver for many of the sites screened through the FFS Alternative Selection Process (Figure 1-2), where Alternative 2 – institutional controls is recommended. Those sites include the Former Sewage Treatment Plant, Building	Area-wide DDT contamination is a result of years of legal application and is not considered to be a CERCLA release by the Army. Since the FFS includes only CERCLA releases, the area-wide DDTs are not addressed. This issue will be addressed in the ROD/RAP.

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	35/39 Area, Perimeter Drainage Ditch – unlined portion, and Spoils Pile A, D, G, J, and K. BRAC soils contaminated with DDTs need to be addressed for the whole site and not in a piecemeal fashion. In addition, the PDD is connected to a storm drain line at the northern end of the runway that has not been fully investigated for possible DDTs contamination.	
E	It would be helpful to have all data related to contaminants of concern (COCs), as identified in the FFS, added to the Figures provided in Volume 2.	The FFS figures show all the data where the 95 UCL concentrations of COPCs exceed the corresponding comparator values (i.e. the figures show COCs). Posting all of residual concentrations that are below the comparator values would make the figures extremely difficult to read and interpret. Since the COC values are used to determine the areas requiring action, these figures should be useful to understanding the basis for remedial action.
1	**Specific Comments** **Figure 1-2:** This flow chart seems to indicate that if the risk assessment indicates an exceedance of an ecological receptor HQ for any one constituent, but not an exceedance for human health risk, that No Further Action (NFA) will be recommended. The text differs from what is presented in Figure 1-2. Please edit the Figure to reflect the text in section 1.10. Figure 2-1 also needs to be modified.	The figure and text have been revised to address this comment and clarify the information presented. Figure 1-2 has been renamed Figure 1-3 in the current version of the FFS.
2	**Section 1.4.1 Existing Hydrogeological Setting:** Board staff agree that groundwater beneath the BRAC property is not now, nor is likely in the future to be used for drinking water, based on low yield and high TDS. However, groundwater at the site should meet surface water quality objectives where there is a likelihood of discharge to the San Francisco Bay. A better discussion of the available analytical data for groundwater and a comparison to surface water quality objectives needs to be provided somewhere in the document. Board staff has reviewed the available groundwater data presented in the Comprehensive Remedial Investigation	Groundwater issues at the site have been addressed in three separate studies including the Final Environmental Investigation Report , Volumes I and II (ESI, 1993); Additional Environmental Investigation of BRAC Property, Final Report (WCFS, 1996); and the Comprehensive Remedial Investigation Report for the BRAC Property, Final Report (IT, 1999a). All of these reports have been reviewed by the RART and it was agreed during that time that further groundwater studies or long term monitoring of groundwater conditions was not warranted.

No.	Comments	Responses
	Report (RIR), dated April 1999. While the available data do not indicate that significant potential impacts to groundwater have occurred, there are some concerns about the lack of adequate data. For example, no site was monitored over consecutive quarterly monitoring events and little dissolved metals data exist.	Groundwater at HAAF was impacted by Army activities. Isolated detections of contaminants were identified during site investigations at nine Parcel A Sites (FSTP, Building 35/39 Area, Building 41 Area, Building 82/87/92/94, Building 86, Northwest Runway Area, and Revetment 6, 12, and 26) and six Parcel B sites (Building 20, Building 84/90, Revetments 5, 9, 10, and Revetment 18/Building 15 area). However, the contamination at these sites did not indicate the presence of groundwater plumes. During the FFS, a review was completed for data collected from groundwater wells located in the vicinity of the Inboard Area sites where potential scour within channels may occur (based on mathematical modeling) during the development and maturation of the wetland (see Appendix D, Section 5.0). The review compared groundwater quality to selected surface water quality objectives in areas where groundwater might come into contact with surface water during the development and maturation of the wetland. The results of this review concluded that groundwater does not pose a threat to surface water or aquatic receptors. Groundwater beneath the property is not now, nor is likely to be, used for drinking water. There are 11 production wells within a 2-mile radius of HAAF and 1 well is within 1 mile of the site boundary. The majority of the wells are used for domestic or irrigation supply, and wells appear to be outside the influence of historical HAAF activities.
3	**Section 1.7 Description of Base Realignment and Closure Sites:** How will the seasonal wetland be dealt with outside of this Army cleanup process? The ball field area (location of pile N) is a Navy parcel, yet it is being addressed in the Army's FFS.	The seasonal wetlands is already on transferred FUDS property and will not be included in the BRAC documentation. Further any actions necessary for this site are the responsibility of the FUDS program. Spoil Pile N will continue to be included in the Army BRAC documentation.

No.	Comments	Responses
4	**Section 1.7.6 Building 82:** Your discussion of building 82 did not include a discussion of the follow-up work being conducted with regard to the groundwater. In September of 2000, the Army advised that a work plan for this area was being prepared. To date, Board staff has not received a work plan.	The workplan is currently being prepared by the Army concurrently with other tasks being completed as part of the BRAC process.
5	**Table 2-2:** Footnote m is incorrect – the TEL is a Threshold Effects Level and not Tetra ethyl lead. Footnote k should read, based on cleanup values for sediment for the Saltwater Ecological Protection Zone at the Presidio of San Francisco. Both the values for diesel/motor oil and gasoline should have the same footnote.	The footnotes were changed in Table 1-3 (Table 2-2 was renamed Table 1-3 during revisions of the FFS) in accordance with this comment.
6	**Table 2-3** – Upland screening values for TPH. The values used for the inboard "to be wetland" sites are protective of benthic invertebrates which are directly exposed to the sediments. Upland soils would not have the same ecological receptors, thus the screening numbers presented are not appropriate. Appropriate screening numbers for the upland sites would be TPH-gasolines at 400 ppm; TPH middle distillates at 500 ppm and TPH residual fuels at 1,000 ppm, xylenes at 1.0 ppm and ethylbenzene at 24 ppm (RWQCB, Application of Risk-Based Screening Levels and Decision Making to Sites With Impacted Soil and Groundwater, Revision Interim Final August, 2000). These numbers would also apply to contamination in surface soils at depths greater than three feet below the ground surface, where erosion is not a concern.	There is currently one upland site anticipated in the current wetland design, the Northwest Runway area. This site does not have TPH or VOC concerns (e.g. TPH constituents are not COCs). For the Inboard Area sites, the Army proposes to use the more conservative comparator values. The comparator values are more conservative and will ensure protection of human health and the environment in the final wetland design. The Army also proposes to use the more conservative comparator values for areas where residual contamination is found at a depth greater than 3 feet bgs. The Army has chosen this approach to provide flexibility for the final wetland design to meet RAOs.
7a	**Table 2-8: State-Specific Applicable or Relevant and Appropriate Requirements.** **Regarding SWRCB Resolution 68-16:** Please add the following language to the description: "This resolution requires that high quality surface and ground waters be maintained to the maximum extent possible." Another example is that of in-situ cleanup levels for contaminated soils.	The text in Table 2-3 (Table 2-8 was renamed Table 2-3 during revisions of the FFS) has been revised to include the suggested language.

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	Such cleanup levels must be set so that ground waters and surface waters will not be degraded, unless degradation is consistent with the maximum benefit of the people of the state.	
7b	**Regarding SWRCB Resolution 88-63**: Please list some of these exceptions, e.g. TDS > 3000 ppm, well yield < 200 gallons per day.	Additional text describing the exceptions in Resolution 88-63 have been added to Table 2-3 (Table 2-8 was renamed Table 2-3 during revisions of the FFS). In addition, text has been added to explain that groundwater below HAAF meets these exceptions and therefore may not be considered suitable for municipal or domestic water supply.
7c	**Regarding ARAR, Title 27 CCR 20090 (d)/23 CCR 2511 (d).** Please edit the description. It should read, "Actions taken by or at the direction of public agencies to cleanup unauthorized releases are exempt from Title 27/ Title 23, except that wastes removed from immediate place of release and discharged to land must be managed in accordance with classification (Title 27 CCR, Section 20200/ Title 23 CCR, Section 2520) and siting requirements of Title 27 or Title 23. Wastes contained or left in place must comply with Title 27 or Title 23 to the extent feasible."	The text in Table 2-3 (Table 2-8 was renamed Table 2-3 during revisions of the FFS) has been revised to include the suggested language.
7d	**Re 23 CCR 2521 through 23 CCR 2524**: Sections 2523 through 2524 have been repealed. These waste classifications are addressed in Title 27, CCR section 20200(c), 20210, 20220 and 20230. Sections 20200(c), 20210 require that designated waste be discharged to Class I or Class II waste management units. Section 20200 (c) and 20220 require that nonhazardous solid waste be discharged to a classified waste management unit. Section 20230 states that inert waste does not need to be discharged at classified units.	Table 2-3 (Table 2-8 was renamed Table 2-3 during revisions of the FFS) has been corrected to include the proper Title 27 citations.
7e	**Re Title 27, Chapter 3, subchapter 2:** These regulations may be applicable requirements. However, the waste needs to be characterized for placement in a waste management	A discussion on the classification of the soil and the class of unit required to manage the waste has been added to Table 2-3 (Table 2-8 was renamed Table 2-3 during revisions of the FFS) of

No.	Comments	Responses
	unit. Leachability tests would need to be conducted to determine whether the waste would cause degradation of waters of the state. Comments regarding the classification of the soil and the Class of waste management unit required should be included in the text portion of the FS and not in the ARAR table itself.	the document. The ARARs table has been be revised to include only those requirements that pertain to the waste management unit that is appropriate for the soil based on its classification.
7f	**The Interim Final Sediment Screening Criteria and Testing Requirements for Wetland Creation and Upland Beneficial Reuse dated December 1992**. By Resolution No. 92-145 (referenced in the San Francisco Bay Region Water Quality Control Plan, approved in 1995) the Regional Board established screening criteria to be used to evaluate the appropriateness of using dredged material for beneficial purposes. These screening criteria are considered an ARAR.	Resolution 92-145 has been added to the table as a TBC. The Army has determined that this document is not an ARAR because the HAAF is not reusing dredged sediments from the San Francisco Bay area. This document is, however, a TBC because the screening criteria presented in this Resolution were considered as guidelines.
7g	**The Draft Staff Report entitled Beneficial Reuse of Dredged Materials: Sediment Screening and Testing Guidelines dated May, 2000** is an update of the December 1992 document described above. These guidelines fall into the category of "to be considered" (TBC). Note that the screening values presented in this document are guidelines and are not intended as cleanup goals.	This draft report has been added to the ARARs table as a TBC document.
8a	**Excavation Areas: Table 2-49 (also Table B-18) and associated Figures B-1 through B-21 (see volume 2) comments.** **Building 26:** Please recheck the two sample locations on Figure B-3, HB-4731 and HB-4557. Based on the April 1999 RIR, Figure 5-4, these sampling locations should be reversed.	Figure B-3 has been revised to reflect correct sample locations.
8b	**Building 35/39 Area:** the area identified for excavation does not include the possible extent of contamination along the pump station outfall pipe.	It is unlikely that the area along the outfall pipe would be designated for excavation due to stability issues associated with the levee and out fall pipeline. Alternative 2 (Institutional Controls) is the preferred alternative for this site.

No.	Comments	Responses
8c	**Building 41 Area:** the area identified for excavation under building 41 may underestimate the total extent of contamination. The source and possible extent of the contamination adjacent to the asphalt area is also unclear.	The highlighted areas on the FFS figures (B-1 through B-17) are based upon existing data and represent areas where residual contamination of COCs has been detected above the comparator values. Excavation in these areas will be completed to a limit where remaining soils satisfy the chemical-specific RAOs or the exposure-specific RAOs . If excavation is selected, the amount of material is not limited to the amount used in the FFS evaluation. The actual amount may be more or less than what is depicted on the FFS figures, depending upon the objectives of the final design.
8d	**Aircraft Maintenance and Storage Facility Area:** Much of the area identified for excavation is based on sampling conducted adjacent to the storm drain, at depths greater than 6.5 feet below ground surface. Applying the RART screening values to this contamination as cleanup levels would be relevant only if the area will be subject to significant erosion and scour. Other areas are included in this site due to beryllium contamination, at greater than background concentrations. The source of the beryllium is not well defined and many of the risk-based target concentrations calculated by the Army are higher than the concentrations identified in soils. Much of the site is also overlain with asphalt/concrete and thus exposure pathways are incomplete. The amount of excavation required at this site should be less than indicated and/or no fill may be required. Additionally, please check to make sure that all potentially relevant data have been posted on Figure B-6. For example, chromium of 142 mg/kg at sample location AM-SB-7 (3.5 – 4 ft) is not posted on the figure.	For the reasons stated, excavation was not recommended. The Army's recommendation is to prohibit scour by using Alternative 2, institutional controls. The FFS text has been modified to explain the decision process that will occur as the result of existing conditions and the wetland design requirements. The decision process is intended to allow flexibility for the wetland designers while still providing the required degree of protection for potential human and ecological receptors. Where excavation and removal of the affected soils does not occur, the institutional controls (i.e., cover or excavation prevention and/or erosion control) will adequately address risks associated with site contaminants. Data posted on the figures in Appendix B only include COC values. Where the COCs are greater than the chemical-specific RAOs, the specific analyte results are posted. Since chromium is not a COC at the Building 82/87/92/94 Area, the detection noted is not listed. The analysis here is somewhat confusing since the FFS evaluates COCs for Building 86 separately from the Building 82/87/92/94 Area but combines these sites for the evaluation of alternatives. Thus chromium is a COC for Building 86 but is not a COC for the Building 82/87/92/94 Area.
8e	Spoils Piles**:** Spoils Pile F is not included on Table 2-49.	Area and volume estimates for Spoils Pile F have been added to

No.	Comments	Responses
	Figure B-10 does not include sampling data results for Spoils Pile K.	Tables 4-1 (Table 2-49 was renamed Table 4-1 during revisions of the FFS) and B-18 based on historical estimates of the potential size of Spoils Pile F. Analytical results for Spoils Pile K have been added to Figure B-10.
8f	Onshore Fuel Line – 54 inch and Northern Segment: Much of the area identified for excavation is based on data collected at depths greater than 3 feet below ground surface. Applying surface sediment risk-based screening values to this contamination may not be relevant. The RIR identified two additional areas that are of more concern than those presented on Figure B-14. Samples taken at the pump pit sump indicated lead levels of 1100 mg/kg in sediment and TPH gasoline at 370–470 mg/kg. One sample identified as Pipe envelope HB-4941, (at 1 ft) indicates unknown hydrocarbons –diesel at 2900 mg/kg. (See Figures 5-83 and 5-84). Other than these locations, the remaining areas of contamination should be considered NFA.	The Pump Pit Sump has been added as a highlighted area that requires action in Figure B-14 because analytical results showed lead and gasoline levels greater than the comparator values for these two COCs. The second area corresponding to sample HB-4941 in the pipe envelope was not added because diesel was not a COC for this site.
8g	Onshore Fuel Line – Hangar Segment: Soil sample HB-5238 has not been included on Figure B-13. This sample represents the highest contaminant levels for TPH for the onshore fuel line. Other COCs are missing from the tables, e.g., Unknown hydrocarbon-diesel at 1500J at HB-5106 (0.5ft), lead at sample location HB-5129 (5 ft) and motor oil (0.5 ft) at HB-5120. Please recheck the figure to make sure all COC relevant sampling data have been posted.	Figure B-13 has been cross-checked with data table to confirm that all relevant data (i.e., COCs that were detected above comparator values) were posted. The figure is correct as shown. Diesel and lead are not COCs for this site and so those data were not posted on the figure.
8h	Northwest Runway Area: This site needs to be addressed for area-wide pesticides. The contaminants identified as being of concern by the Army present minimal risks to ecological receptors.	Refer to the first general comment response for the Army's position on site-wide pesticides.
8i	Revetments 6 and 7: The area of excavation should include all of revetment 6.	See response to comment 8c. The specific area requiring excavation will be determined in the final wetland design. RAOs can be met by partial excavation if exposure-specific

No.	Comments	Responses
		RAOs can then be met. The area estimated in the FFS was used to develop a reasonable basis for evaluation and cost estimating.
8j	Remaining Revetments: Excavation may be important on this portion of the BRAC Airfield, for those revetments located within the planned major wetland channel. However, areas of excavation for some revetments are driven by low levels of COCs or by COCs located underneath the revetment. A better discussion of the erosion/scour potential of the preferred wetlands design would help in evaluating the adequacy of the areas identified for excavation.	We agree that excavation may be important on this portion of the BRAC Airfield, for those revetments located within the planned major wetland channel. Additional clarification has been provided to explain how the performance criteria for the final wetland design will require that three feet of stable cover is maintained and monitored and that erosion and excavation are prohibited in areas where Alternative 2 is implemented.
10	**Section 3.4 Alternative 4 – Excavation and On-base Disposal:** this alternative would also require that the waste be classified prior to determining what type of waste management unit would be required.	Text has been added to reflect that any soils designated for excavation would be characterized to determine the type of waste management unit that would be required. Non-hazardous wastes would be evaluated for their suitability for containment within an onsite disposal area.
11	**Appendix C, Cost Estimates and Assumptions:** Board staff did a limited review of Appendix C, Cost Estimates and Assumptions. The FFS states that costs associated with implementing the Institutional Controls Alternative 2 are minimal. The discussion of Alternative 2 in Section 3.0 states that the Army will develop a monitoring profile tailored to each specific control. It is unclear what this means. Costs associated with short and long-term monitoring should be included in the FFS and be detailed in Appendix C.	Because long-term monitoring will be conducted by the wetland development team to monitor the physical development of the wetland, it is not expected that the incremental costs to monitor for environmental remediation under CERCLA will be significant. Therefore, costs for the monitoring program were not included.
12	**Editorial Comments:** Section 2.3 et seq. refers to potential completed exposure pathways. This should read "Potentially complete exposure pathways…." The term comparator may confuse the public. Screening value or preliminary remediation goal would be more appropriate and would not create a new noun without meaning in this process.	The phrase 'potential completed exposure pathways' has been replaced with 'potentially complete exposure pathways' or has been replaced entirely. The term comparator has become a standard term to the RART. Random House defines the word comparator as a noun meaning any of various instruments for making comparisons. To avoid confusion and coin yet another term, we recommend

No.	Comments	Responses
		using comparator value.

No.	Comments	Responses
NOAA Comments, no date		
1.	General comments: Over the last few months, the Regulators and Resource Trustees (RART) team have listened to several presentations on hyrdrologic and geomorphic modeling results for a potentially modified wetland design. This modified design was a result of the desire of the Army to ascertain whether the wetland could be designed to modify future exposure of ecological receptors to remaining contamination on site. However, it is NOAA's position that we have not had a full discussion on the effects of this modified design on habitat value to fisheries species and other NOAA trust estuarine resources. It is important to NOAA that the design allows for a fully functioning tidal wetland, without undue restraint put on tidal channel development, of importance to NOAA's trust resources. For that reason, there are several sites, given the large uncertainty, where NOAA advocates removal, rather than the institutional controls option based on our understanding of the project to date. Knowing that the wetland design is a still-evolving process, NOAA is willing to discuss and possibly modify the comments given below with further information.	The Army's intent was to determine if minor changes in the wetland design could mitigate potential risks from remaining residual contamination. Alternative 2 provides flexibility to the design in it allows either cover or removal depending upon which works best for the habitat values necessary.
2.	In general, NOAA agrees that sites that are highly likely to be depositional environments in the future wetland environment, with clean dredged material placement, are good candidates for leaving in place, with appropriate controls. However, where cover or lack of scour is identified as a remedial action, monitoring will be necessary to ensure the effectiveness of the remedy and to assist when preparing for 5-year and future reviews required by CERCLA. Monitoring and resulting potential future response actions should be considered as part	The FFS has been revised to include monitoring in the description of Alternative 2.

No.	Comments	Responses
	of the cost of the institutional controls option. NOAA is happy to offer assistance on any monitoring plan needed.	
3.	NOAA's specific comments for the FFS take into account the lack of a site-specific ecological risk assessment for the inboard site. Because site toxicity tests were not performed for various reasons, the remaining sediment contamination cleanup targets ("comparators") rely exclusively on literature values—that is, Regional Water Quality Control Board (RWQCB) beneficial reuse numbers, Long & Morgan (1995) sediment quality guidelines, or similarly derived numbers. RWQCB draft beneficial reuse numbers, while potentially useful for dredge material management, are not risk-based numbers and were not derived for the purpose that are used in the FFS. Other numbers, such as Long and Morgan ER-Ls, which are based on effects-based studies, are not numbers that NOAA would normally advocate for cleanup at any site. Normally, NOAA's approach for Long and Morgan numbers is to use them to identify areas where site-specific biological testing should be done to arrive at site-specific cleanup numbers. In the case of Hamilton, because of the lack of site-derived numbers, we are forced to defer to these non site-specific literature values, with high site-specific uncertainty as to future risk to aquatic receptors. However, since the FFS uses rather more conservative numbers such as the ER-Ls (which are roughly the same magnitude as the RWQCB surface reuse numbers) rather than the ER-M, it is likely that the comparators err on the side of protection of aquatic species that will eventually occupy the site.	Comment is informational – no response required.
1.	**Specific Comments** The following table constitutes NOAA's comments on the Army's proposal given in the FFS, reflecting potential concern to NOAAs trust resources (estuarine and anadromous species) that will eventually occupy the site. NOAA's comments and	Specific comments are provided in the attached NOAA Table.

No.	Comments	Responses
	recommendations are given despite the lack of the good information regarding where potential channels and potential erosional areas overlap with areas of elevated contamination. NOAA's analysis is a best-effort using limited tools, but is based on the hydrology modeling results from maps given to the RART to date. NOAA is happy to discuss areas of disagreement with the RART, the Army, and the restoration team, particularly where remedial concerns conflict with future habitat value.	
2.	NOAA's disagreements with the Army are mainly to move sites away from institutional controls and into either removal or no further action.	The Army believes that the institutional controls will meet RAOs to protect human health and the environment. And looks forward to discussing each individual site with NOAA.
3.	For areas of only TPH diesel or gas exceedances, NOAA will defer to the RWQCB's judgement regarding whether remedial action is needed (see table on revetments), but NOAA notes where areas appear to be likely to scour.	No response needed.
4.	For PAH hits around the runway and the runway as a source: NOAA is unwilling to agree to future PAH exposure from sealant or other sources from the runway, and urges a design to accommodate both a minimal exposure, yet allow the maximum development of the site as a fully functioning wetland. Although this is not addressed in the FFS, it needs to be addressed through the future use. NOAA is happy to work with the Army on this issue.	The Army does not consider the presence of grouting materials containing PAHs to be a CERCLA release. The Army also does not consider weathering of these materials to be a CERCLA release. Therefore, the soil along the margins of the runway containing PAHs are not addressed in the FFS. This issue will be addressed in the ROD/RAP. The issue of grouting materials on the runway will be addressed by the Coastal Conservancy.
5.	Regarding the sitewide DDT issue, it should be noted that the DDT issue is primarily due to risk to natural resources that are not in NOAA's primary trusteeship. However, NOAA believes that every effort should be made to ensure that DDTs are not transported to SF Bay from this project and that exposure to future site receptors is minimized. NOAA's comments in the table below generally support conducting removals at BRAC sites that have elevated DDTS, with the thought that those removals would remove the more elevated	The site-wide DDT concentrations are the result of the legal application of pesticides. The Army has determined that the DDT concentrations do not constitute a CERCLA release and are therefore, not examined in the CERCLA process. The Army has agreed to include a discussion of them in the ROD/RAP.

No.	Comments	Responses
	potential future sources to the wetland and to the bay. Further, NOAA suggests that an estimate of total mass of sitewide DDTs be calculated, with a thought towards strategic removals of surface soils in the future to minimize potential risk.	
4[sic]	Finally, NOAA did not review the Army's cost estimates, and so is not offering any comment on the costs presented	Comment is informational - no response needed.

EPA, NOAA, and RWQCB Comments On the
Focused Feasibility Study for Hamilton Army Airfield Inboard Sites (February 26, 2001)
NOAA Comment Table

Site	Army proposal	Basis	NOAA Comment	Army Response
Former Sewage Treatment Plant	Institutional controls, prevention of scour in wetland construction Army estimates cost of excavation/offsite disposal $60,872 for 148 cy	based on ecological for DDTs, dieldrin, chlordane; HH for dieldrin and chlordane.	Disagree Suggest excavating 1 area (near CS-001). The area around CS-001 should be removed only for DDTs. This would also likely remove the spot of high mercury and silver (which was not identified in the FFS). Wetland design concept appears to indicate that this site is close to the breach, and may be subject to erosion. Removal would reduce the potential for loadings of DDTs to SF Bay and other parts of the wetland.	The FFS has been revised to indicate that if the performance criteria specified in Alternative 2 cannot be met (i.e. three feet of cover, erosion protection, prevention of excavation) then residual COCs should be removed and disposed of offsite in accordance with Alternative 3. The Army is currently revising the comparator value for DDT and will make appropriate changes. The FFS did not post the data referred to by the commentor because the chemicals were not COCs for the site. The area around CS-001 is highlighted as an area that will meet the RAOs either by excavation or by providing a minimum of three feet of cover (together with excavation/erosion protection) depending on the requirements of the Wetland Restoration Plan. The performance criteria specified in Alternative 2 will ensure that three feet of cover is maintained.
Revetment 18/Building 15	NFA	Minimal risk	Concur	No response required.
Building 20	NFA	Minimal risk	Concur	No response required.

Site	Army proposal	Basis	NOAA Comment	Army Response
Building 26	Institutional controls, prevention of scour during wetland construction	Potential ecological risk to aquatic receptors for TPH-diesel	Defer to RWQCB. TPH contamination is ~5 feet below current grade, but area could be in erosive area.	Based on the performance criteria requiring three feet of cover and protection against erosion or excavation, the wetland final design will consider the erosion potential for each site and will provide adequate cover and monitoring to ensure that three feet of cover is maintained.
Building 35/39 Area	Institutional controls, prevention of scour Army estimates cost of excavation/offsite disposal $13,649 for 13cy	Total DDT hit > 3 ppm.	Disagree Suggest excavating deeper than proposed 5 foot (sample taken at 4.5 feet) This site also had some elevated PAHs relative to comparators. This is not noted in the text but should be added to your consideration. Wetland design concept appears to indicate that this site is close to the breach, and may be subject to erosion. Removal would reduce the potential for loadings of DDTs to SF Bay and other parts of the wetland.	As shown in Table 1-3, PAHs were not considered to be COCs for this site based on the human and ecological risk assessment which compared the 95% UCL concentration of these analytes to comparator values. PAHs are elevated at specific sample locations at this site, but the 95% UCL concentrations for those chemicals did not exceed the comparator value and so PAHs were not listed as COCs for this site. As previously discussed, development of the wetland design will be done so that RAOs for each site are met by providing a minimum of 3 feet of cover together with excavation/erosion protection. In addition, there will be an adaptive management plan developed in conjunction with the Wetland Restoration Plan to assure that adequate protection is maintained.
Building 41	Excavation and off base disposal	Risk to aquatic life	Concur	No response required.

Site	Army proposal	Basis	NOAA Comment	Army Response
Building 82/87/92/94 Area and Building 86	Institutional controls, prevention of scour Cost of excavation/disposal ~$1.3M 4103 cy	Beryllium, barium, chromium risks to eco receptors. Significant PAH risk to both human and eco receptors at one location	Barium and beryllium were not identified by the regulators and trustees as contaminants to develop a target concentration, so they shouldn't drive cleanup. Chromium exceedances minimal. These contaminants at these levels are not a concern for NOAA's resources However, PAH sample had very high levels of PAHs, at levels of concern for NOAA's trust resources.	Similar to the situation for Building 35/39 discussed above, PAHs are elevated at specific sample locations at this site, but the 95% UCL concentrations for those chemicals did not exceed the comparator value and so PAHs were not listed as COCs for the Building 82/87/92/94 Area. PAHs were listed as COCs for the Building 86 Area. PAHs listed as COCs for the Building 86 sample locations that exceed comparator values are identified in Figure B-6. As previously discussed, development of the Wetland Design will be done so that RAOs for each site are met by providing a minimum of three feet of cover together with excavation/erosion protection. In addition, there will be an adaptive management plan developed in conjunction with the Wetland Restoration Plan to assure that adequate protection is maintained.
Building 84/90	NFA	Minimal risk	Concur	No response required.
PDD, unlined/Spoils Pile A	Institutional controls, prevention of scour Excavation/disposal costs ~$1.5M for 4667 cy	Relatively high levels of DDTs depending on exposure to receptors	Likely habitat is freshwater or upland and is not likely to affect NOAA's resources. However, this is the highest levels of DDTs found on the site. The removal would reduce the total mass of DDTs on site.	Spoils Pile A is highlighted in Figure B-8a as an area where RAOs will be achieved by having a minimum of three feet of cover together with excavation/erosion protection. In addition, there will be an adaptive management plan developed in conjunction with the Wetland Restoration Plan to assure that adequate protection is maintained.
Spoils Pile B	Institutional Controls (no scour)	Ecological risk from Cd, Hg, Ag	Based on presentations from wetland design group, area seems unlikely to erode, thus will likely be buried	No response required.

Site	Army proposal	Basis	NOAA Comment	Army Response
Spoils Pile C	NFA	Minimal risk	Concur	No response required.
Spoils Pile D	Institutional controls, prevention of scour, placement of 2 feet dredge material	Risk from DDT	Not clear what current elevation is, but should be covered and not scoured. If restoration plans change and the Novato sewer line is moved, this area may have to be excavated. Why is this pile not discussed in the FFS (page 1-23, page 4-59)?	Spoils Pile D is highlighted in Figure B-9 as an area where RAOs will be achieved by having a minimum of three feet of cover together with excavation/erosion protection. In addition, there will be an adaptive management plan developed in conjunction with the Wetland Restoration Plan to assure that adequate protection is maintained. The performance criteria in Alternative 2 provide the flexibility to excavate this area as the final design dictates as long as the RAOs are met following either Alternative 2 or 3. The discussions on these pages describe 1999 removal activities at Spoils Piles B, C, E, H, I, J, and L. There were no 1999 removal activities at Spoils Pile D, therefore, it is not discussed here.
Spoils Pile E	NFA	Minimal risk	Concur	No response required.
Spoils Pile F	Excavation/offsite disposal Cost of Excavation/disposal unknown	Ecological risk from metals and PAHs	Concur	No response required.

Site	Army proposal	Basis	NOAA Comment	Army Response
Spoils Pile G	Institutional controls, prevention of scour Army estimates excavation/ offsite disposal $68,213 for 196 cy	DDTs	Why is this pile not discussed in the FFS (page 1-23, page 4-59)?	See response for Spoils Pile D above.
Spoils Pile H	NFA	Minimal risk	Concur	No response required.
Spoils Pile I	NFA	Site management consideration	The regulators and trustees did not identify a cleanup number for beryllium	No response required.
Spoils Pile J	Institutional controls, prevention of scour, placement of 2 feet dredge material	DDTs	Need to ID cost of monitoring this site	Because long-term monitoring will be conducted by the wetland development team to monitor the physical development of the wetland, it is not expected that the incremental costs to monitor for environmental remediation under CERCLA will be significant. Therefore, costs for the monitoring program were not included.
Spoils Pile K	Institutional controls, prevention of scour, placement of 2 feet dredge material	DDTs	Concur with the following caveat: the FFS says that a minimum of 2 feet dredge material be placed on the pile. NOAA recommends 3 ft (as already discussed among RART group in the past)	As agreed during subsequent discussions with the RART, a minimum of three feet of cover will be applied to achieve RAOs. The cover material may consist either of dredge material or onsite borrow material.
Spoils Pile L	NFA	Low risk from metals	Magnitude of exceedance for metals is low	No response required.
Spoils Pile M	NFA	Minimal risk	Concur	No response required.
Spoils Pile N	NFA	Site management considerations	Lower levels (10s of ppb level DDTs	No response required. The comparator value for DDT has been revised.
East Levee Generator Pad	NFA	Minimal risk	Concur	No response required.

Site	Army proposal	Basis	NOAA Comment	Army Response
Onshore Fuel Line- 54-inch Line	Institutional controls, prevention of scour, placement of 1-2 feet dredge material	TPH gasoline risk to aquatic organisms	Concur	No response required
Onshore Fuel Line-Hangar Segment	Institutional controls, prevention of scour, placement of 1-2 feet dredge material Excavation of all areas identified is estimated at $701748 for 2150 cy	TPH and PAH contamination with potential risk to aquatic organisms. Exposure lessened with 1-2 feet of dredge material placement	FFS (page 4-77) states that there would be no threats to ecological receptors if contamination were left in place (approximately 5 feet bgs) and that 1 - 2 feet of dredge material would be sufficientaly protective. NOAA does not agree--- (1) many of the most contaminated areas are less than 2 feet bgs, and so we believe that 1-2 feet of dredge material is not sufficient. (2) PAH levels are sufficiently high to have potential human and ecological risk that NOAA believes some of the shallower and more elevated PAH contamination should be removed while in some areas the leave-in-place option may be sufficient (3) where a leave-in-place option is used, greater than 1-2 feet of fill will be needed, and (4) NOAA's main concern at this location is potential exposure of aquatic receptors to PAHs. The ~4 ppm "comparator" value is considered by NOAA to be on the edge of acceptability, with no site-specific information. Any leave-in-place option must have monitoring, both for contaminants and for depth of fill.	The samples with elevated PAHs mentioned by the commentor are highlighted in Figure B-13 as areas where RAOs will be acheived by having a minimum of three feet of cover together with excavation/erosion protection. The final disposition of these sites will be dictated by the requirements of the wetland final design and the performance criteria specified in Alternative 2. In addition, there will be an adaptive management plan developed in conjunction with the Wetland Restoration Plan to assure that adequate protection is maintained.

Site	Army proposal	Basis	NOAA Comment	Army Response
Onshore Fuel Line-- Northern Segment	Institutional controls, prevention of scour, placement of 1-2 feet dredge material	Risk driven by TPH gasoline	Concur	No response required.
Northwest runway area	Institutional controls, prevention of scour, placement of 1-2 feet dredge material	beryllium, boron, 1 DDT hit	Samples used against the comparator say they are from temporary well locations. Are these water samples? If these were soil samples I would recommend NFA for this site—noting that NOAA's resources are not likely to be affected at this site.	No response required. The action proposed by the Army will be more protective than NFA suggested by the commentor.
Tarmac east of outparcel A	NFA	Minimal risk	Not enough information about where site is to concur Text incorrectly states that the site has an HI < 1. Amphipod HI = 4.4	The text has been revised to state that this site is proposed for no further action because it does not have any COCs.
Revetment 1	Institutional controls, minimum of 3 ft dredge material over impacted revetments, with 4 feet of dredge material in non concrete areas with exceedances Excavation/disposal $211,033 for 693 cy	metals and PAH risk to birds and aquatic receptors	Disagree Partial excavation needed, but mainly around sample 1c for PAH exceedance With the best available information at hand, Revetment 1 appears to be within the channel footprint in a no fill alternative, potentially remobilizing PAH contamination. Primary NOAA concern here is PAH	As discussed in previous responses, RAOs will be achieved by having a minimum of three feet of cover together with excavation/erosion protection. The final disposition of this site will be dictated by the requirements of the wetland final design and the performance criteria specified in Alternative 2.

Site	Army proposal	Basis	NOAA Comment	Army Response
Revetment 2	Institutional controls, minimum of 3 ft dredge material over impacted revetments, with 4 feet of dredge material in non concrete areas with exceedances Excavation/disposal $142,096 for 426 cy	Metals and some PAH risk to birds and aquatic receptors	Concur Revetment appears to be out of the channel footprint for both the no fill and fill alternatives	No response required.
Revetment 3	Institutional controls, minimum of 3 ft dredge material over impacted revetments, with 4 feet of dredge material in non concrete areas with exceedances Excavation/disposal $160,424 for 481 cy	Barium, copper, manganese elevations	Concur, with reservations Only concern is for copper. Revetment appears to be within the channel footprint in a no fill option, or very close to the channel in the fill option. If habitat value is lower because of increased use of berms, suggest conducting removal here.	RAOs will be achieved by having a minimum of three feet of cover together with excavation/erosion protection. The final disposition of this site will be dictated by the requirements of the wetland final design and the performance criteria specified in Alternative 2. The performance criteria allows for excavation to occur in accordance with Alternative 3 if the final design determines that excavation is required.
Revetment 4	Institutional controls, minimum of 3 ft dredge material over impacted revetments, with 4 feet of dredge material in non concrete areas with exceedances Excavation/disposal $227,718 for 693cy	Aquatic risk from metals some PAH	Disagree. Should be NFA Low enough levels to conclude that risk is minimal	No response required. The action proposed by the Army will be more protective than NFA suggested by the commentor.
Revetment 5	NFA	minimal risk	Concur	No response required.

Site	Army proposal	Basis	NOAA Comment	Army Response
Revetment 6	Excavation/disposal $112,184 for 370 cy	Aquatic risk from TPH-gasoline	Concur	No response required.
Revetment 7	Excavation/disposal $55,992 for 184 cy	Aquatic risk PAHs	Concur	No response required.
Revetment 8, 9, 10	NFA	Minimal risk	Concur	No response required.
Revetment 11	Institutional controls, minimum of 3 ft dredge material over impacted revetments, with 4 feet of dredge material in non concrete areas with exceedances Excavation/disposal $21,516 for 27cy	Some aquatic risk from subsurface copper	Concur Risk would be reduced by removing the area around RVT11-ASA4 Army estimates 21 cy, but should be deeper than 1 foot	As discussed in previous responses, RAOs will be achieved by having a minimum of three feet of cover together with excavation/erosion protection. The final disposition of this site will be dictated by the requirements of the wetland final design and the performance criteria specified in Alternative 2. For the purposes of preparing a cost estimate in the FFS, EPA guidelines state that the accuracy of the cost estimate should be within plus 50% to minus 30%. Thus, the use of one foot provides a reasonable cost estimate for the purposes of the FFS.

Site	Army proposal	Basis	NOAA Comment	Army Response
Revetment 12	Institutional controls, minimum of 3 ft dredge material over impacted revetments, with 4 feet of dredge material in non concrete areas with exceedances Army estimated excavation and disposal $14,006 for 10 cy	Some aquatic risk from subsurface copper	Disagree. Suggest excavation Revetment 12 potentially in channel in no fill alternative. Suggest removal Army estimated excavation and disposal $14,006 for 10 cy (may suggest more)	RAOs will be achieved by having a minimum of three feet of cover together with excavation/erosion protection. The final disposition of this site will be dictated by the requirements of the wetland final design and the performance criteria specified in Alternative 2.
Revetment 13	Institutional controls, minimum of 3 ft dredge material over impacted revetments, with 4 feet of dredge material in non concrete areas with exceedances Army estimates excavation/disposal $142,596 for 428 cy	Aquatic Risk from metals, PAHs, HH risk from PAHs	Disagree Propose excavation Revetment 13 appears to be located in the middle of the channel footprint for either the fill or no fill alternative, and thus should be removed. Army estimates excavation/disposal $142,596 for 428 cy	RAOs will be achieved by having a minimum of three feet of cover together with excavation/erosion protection. The final disposition of this site will be dictated by the requirements of the Wetland final design and the performance criteria specified in Alternative 2.
Revetment 14	Institutional controls, minimum of 3 ft dredge material over impacted revetments, with 4 feet of dredge material in non concrete areas with exceedances	Aquatic Risk from diesel	Disagree NFA Lower level TPH diesel, no metal exceedances	No response required. The action proposed by the Army will be more protective than NFA suggested by the commentor.
Revetment 15	NFA	Minimal risk	Concur	No response required.

Site	Army proposal	Basis	NOAA Comment	Army Response
Revetment 16	Institutional controls, minimum of 3 ft dredge material over impacted revetments, with 4 feet of dredge material in non concrete areas with exceedances	Barium exceedances	Disagree Site should be NFA	No response required. The action proposed by the Army will be more protective than NFA suggested by the commentor.
Revetment 17	NFA	Minimal risk	Concur	No response required.
Revetment 19	Institutional controls, minimum of 3 ft dredge material over impacted revetments, with 4 feet of dredge material in non concrete areas with exceedances Army estimates excavation and disposal to be $242,280 for 735 cy	Aquatic Risk from PAHs and metals. HH risk	Disagree Excavation/offsite disposal for at least part of the area-- consider be a smaller area around Sample 19A Army estimates excavation and disposal to be $242,280 for 735 cy (most of the revetment) Revetment 19 appears to be located in the main channel for both the fill and no fill alternatives. Uncertainty is too high that dredge material would be left in place here.	RAOs will be achieved by having a minimum of three feet of cover together with excavation/erosion protection. The final disposition of this site will be dictated by the requirements of the wetland final design and the performance criteria specified in Alternative 2.

Site	Army proposal	Basis	NOAA Comment	Army Response
Revetment 20	NFA	Risk management considerations	Need more information. Revetment 20 does not appear to be a high risk area, although there are a few PAHs and cadmium greater than ERLS. However, the revetment is likely to be in the middle of the channel, so it appears that it will be removed anyway. Suggest that the material from this area NOT be used for surface material, but perhaps may be suitable for levee material or foundation materials.	RAOs will be achieved by having a minimum of three feet of cover together with excavation/erosion protection. The final disposition of this site will be dictated by the requirements of the wetland final design and the performance criteria specified in Alternative 2.
Revetment 21	Institutional controls, minimum of 3 ft dredge material over impacted revetments, with 4 feet of dredge material in non concrete areas with exceedances Army estimates excavation and disposal to be $167,867 for 505 cy	Aquatic risk from copper, TPH	Disagree Excavate. Army estimates excavation and disposal to be $167,867 for 505 cy Volume based on one sample estimate. Revetment 21 potentially very close to wetland main channel, so uncertainty regarding erosion and cover high. One sample used to characterize the area gives higher uncertainty.	The final disposition of this site will be dictated by the requirements of the wetland final design and the performance criteria specified in Alternative 2. The performance criteria allows for excavation to occur in accordance with Alternative 3 if the final design determines that excavation is required. Alternative 3 includes pre- or post- excavation sampling to determine the excavation boundaries.

Site	Army proposal	Basis	NOAA Comment	Army Response
Revetment 22	Institutional controls, minimum of 3 ft dredge material over impacted revetments, with 4 feet of dredge material in non concrete areas with exceedances Army estimates excavation and disposal to be $156,872 for 461 cy	Aquatic risk from TPH	Defer to RWQCB Revetment 22 very close to wetland main channel, so uncertainty regarding erosion and cover high.	The final disposition of this site will be dictated by the requirements of the wetland final design and the performance criteria specified in Alternative 2. The performance criteria allows for excavation to occur in accordance with Alternative 3 if the final design determines that excavation is required.
Revetment 23	Institutional controls, minimum of 3 ft dredge material over impacted revetments, with 4 feet of dredge material in non concrete areas with exceedances Army estimates excavation and disposal to be $226,934 for 762 cy	Aquatic Risk from copper (subsurface)	Disagree Excavate. Army estimates excavation and disposal to be $226,934 for 762 cy Revetment appears to be in an area with potential to scour.	The final disposition of this site will be dictated by the requirements of the wetland final design and the performance criteria specified in Alternative 2. The performance criteria allows for excavation to occur in accordance with Alternative 3 if the final design determines that excavation is required.
Revetment 24	NFA	Minimal risk	Concur	No response required.

Site	Army proposal	Basis	NOAA Comment	Army Response
Revetment 25	Institutional controls, minimum of 3 ft dredge material over impacted revetments, with 4 feet of dredge material in non concrete areas with exceedances Army estimates excavation and disposal to be $164,373 for 491 cy cy	Aquatic risk from diesel	Defer to RWQCB Revetment appears to be in an area with potential to scour In an no fill alternative, this revetment appears to be in the channel One sample used to characterize the area gives higher uncertainty.	The final disposition of this site will be dictated by the requirements of the wetland final design and the performance criteria specified in Alternative 2. The performance criteria allows for excavation to occur in accordance with Alternative 3 if the final design determines that excavation is required. Alternative 3 includes pre- or post- excavation sampling to determine the excavation boundaries.
Revetment 26	Institutional controls, minimum of 3 ft dredge material over impacted revetments, with 4 feet of dredge material in non concrete areas with exceedances Army estimates excavation and disposal to be $156,810 for 465 cy cy	Risk from diesel and gasoline	Defer to RWQCB In a no fill option, this revetment appears to be in the channel One sample used to characterize the area gives higher uncertainty.	The final disposition of this site will be dictated by the requirements of the wetland final design and the performance criteria specified in Alternative 2. The performance criteria allows for excavation to occur in accordance with Alternative 3 if the final design determines that excavation is required. Alternative 3 includes pre- or post- excavation sampling to determine the excavation boundaries.
Revetment 27	NFA	minimal risk	Concur	No response required.
Revetment 28	NFA	minimal risk	Concur	No response required.