Previous

HHRA RISK TABLES

Central Tendency Exposure
Site 23
Alameda Point, Alameda, California

TABLE H2-7.5.1.CTE
EPA RAGS PART D TABLE 7b
CALCULATION OF CTE CHEMICAL NONCANCER HAZARDS
CURRENT INDUSTRIAL WORKER
SITE 23, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future
Receptor Population:	Industrial Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units	
Soil (0-2)	Soil	Site Soil	Ingestion	Arsenic	3.17E+00	mg/kg	1.4E-06	mg/kg-day	3.0E-04	mg/kg-day	4.5E-03
				Benz(a)anthracene	3.99E-02	mg/kg	1.7E-08	mg/kg-day	--	--	--
				Benzo(a)pyrene	4.44E-02	mg/kg	1.9E-08	mg/kg-day	--	--	--
				Benzo(b)fluoranthene	4.58E-02	mg/kg	2.0E-08	mg/kg-day	--	--	--
				Benzo(k)fluoranthene	3.90E-02	mg/kg	1.7E-08	mg/kg-day	--	--	--
				Dibenz(a,h)anthracene	2.17E-02	mg/kg	9.3E-09	mg/kg-day	--	--	--
				Indeno(1,2,3-cd)pyrene	3.83E-02	mg/kg	1.6E-08	mg/kg-day	--	--	--
			Exp. Route Total								4.5E-03
			Dermal	Arsenic	3.17E+00	mg/kg	5.4E-08	mg/kg-day	3.0E-04	mg/kg-day	1.8E-04
				Benz(a)anthracene	3.99E-02	mg/kg	2.9E-09	mg/kg-day	--	--	--
				Benzo(a)pyrene	4.44E-02	mg/kg	3.3E-09	mg/kg-day	--	--	--
				Benzo(b)fluoranthene	4.58E-02	mg/kg	3.4E-09	mg/kg-day	--	--	--
				Benzo(k)fluoranthene	3.90E-02	mg/kg	2.9E-09	mg/kg-day	--	--	--
				Dibenz(a,h)anthracene	2.17E-02	mg/kg	1.6E-09	mg/kg-day	--	--	--
				Indeno(1,2,3-cd)pyrene	3.83E-02	mg/kg	2.8E-09	mg/kg-day	--	--	--
			Exp. Route Total								1.8E-04
		Exposure Point Total									4.7E-03
	Exposure Medium Total										4.7E-03
	Air	Outdoor Air	Inhalation (particulates)	Arsenic	3.17E+00	mg/kg	5.1E-11	mg/kg-day	--	--	--
				Benz(a)anthracene	3.99E-02	mg/kg	6.5E-13	mg/kg-day	--	--	--
				Benzo(a)pyrene	4.44E-02	mg/kg	7.2E-13	mg/kg-day	--	--	--
				Benzo(b)fluoranthene	4.58E-02	mg/kg	7.4E-13	mg/kg-day	--	--	--
				Benzo(k)fluoranthene	3.90E-02	mg/kg	6.3E-13	mg/kg-day	--	--	--
				Dibenz(a,h)anthracene	2.17E-02	mg/kg	3.5E-13	mg/kg-day	--	--	--
				Indeno(1,2,3-cd)pyrene	3.83E-02	mg/kg	6.2E-13	mg/kg-day	--	--	--
			Exp. Route Total								0.0E+00
		Exposure Point Total									0.0E+00
	Exposure Medium Total										0.0E+00
Medium Total											4.7E-03
										Total of Receptor Hazards Across All Media	4.7E-03

Notes:

EPC	Exposure point concentration
mg/kg	Milligram per kilogram
mg/kg-day	Milligram per kilogram per day
RfD	Reference dose
RfC	Reference concentration
CTE	Central tendency exposure
--	Not Applicable or Not Available

TABLE H2-7.5.2.CTE
EPA RAGS PART D TABLE 7b
CALCULATION OF CTE CHEMICAL NONCANCER HAZARDS
CURRENT CONSTRUCTION WORKER
SITE 23, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units	
Soil (0-2)	Soil	Site Soil	Ingestion	Arsenic	3.17E+00	mg/kg	7.4E-07	mg/kg-day	3.0E-04	mg/kg-day	2.5E-03
				Benz(a)anthracene	3.99E-02	mg/kg	9.4E-09	mg/kg-day	--	--	--
				Benzo(a)pyrene	4.44E-02	mg/kg	1.0E-08	mg/kg-day	--	--	--
				Benzo(b)fluoranthene	4.58E-02	mg/kg	1.1E-08	mg/kg-day	--	--	--
				Benzo(k)fluoranthene	3.90E-02	mg/kg	9.2E-09	mg/kg-day	--	--	--
				Dibenz(a,h)anthracene	2.17E-02	mg/kg	5.1E-09	mg/kg-day	--	--	--
				Indeno(1,2,3-cd)pyrene	3.83E-02	mg/kg	9.0E-09	mg/kg-day	--	--	--
			Exp. Route Total								2.5E-03
			Dermal	Arsenic	3.17E+00	mg/kg	7.4E-08	mg/kg-day	3.0E-04	mg/kg-day	2.5E-04
				Benz(a)anthracene	3.99E-02	mg/kg	4.0E-09	mg/kg-day	--	--	--
				Benzo(a)pyrene	4.44E-02	mg/kg	4.5E-09	mg/kg-day	--	--	--
				Benzo(b)fluoranthene	4.58E-02	mg/kg	4.6E-09	mg/kg-day	--	--	--
				Benzo(k)fluoranthene	3.90E-02	mg/kg	3.9E-09	mg/kg-day	--	--	--
				Dibenz(a,h)anthracene	2.17E-02	mg/kg	2.2E-09	mg/kg-day	--	--	--
				Indeno(1,2,3-cd)pyrene	3.83E-02	mg/kg	3.9E-09	mg/kg-day	--	--	--
			Exp. Route Total								2.5E-04
		Exposure Point Total									2.7E-03
	Exposure Medium Total										2.7E-03
	Air	Outdoor Air	Inhalation (particulates)	Arsenic	3.17E+00	mg/kg	1.1E-10	mg/kg-day	--	--	--
				Benz(a)anthracene	3.99E-02	mg/kg	1.4E-12	mg/kg-day	--	--	--
				Benzo(a)pyrene	4.44E-02	mg/kg	1.6E-12	mg/kg-day	--	--	--
				Benzo(b)fluoranthene	4.58E-02	mg/kg	1.6E-12	mg/kg-day	--	--	--
				Benzo(k)fluoranthene	3.90E-02	mg/kg	1.4E-12	mg/kg-day	--	--	--
				Dibenz(a,h)anthracene	2.17E-02	mg/kg	7.7E-13	mg/kg-day	--	--	--
				Indeno(1,2,3-cd)pyrene	3.83E-02	mg/kg	1.4E-12	mg/kg-day	--	--	--
			Exp. Route Total								0.0E+00
		Exposure Point Total									0.0E+00
	Exposure Medium Total										0.0E+00
Medium Total											2.7E-03
										Total of Receptor Hazards Across All Media	2.7E-03

Notes:

EPC	Exposure point concentration
mg/kg	Milligram per kilogram
mg/kg-day	Milligram per kilogram per day
RfD	Reference dose
RfC	Reference concentration
CTE	Central tendency exposure
--	Not Applicable or Not Available

TABLE H2-7.5.3.CTE
EPA RAGS PART D TABLE 7b
CALCULATION OF CTE CHEMICAL NONCANCER HAZARDS
CURRENT ADULT RESIDENT
SITE 23, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future
Receptor Population:	Resident
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units	
Soil (0-2)	Soil	Site Soil	Ingestion	Arsenic	3.17E+00	mg/kg	2.2E-06	mg/kg-day	3.0E-04	mg/kg-day	7.2E-03
				Benz(a)anthracene	3.99E-02	mg/kg	2.7E-08	mg/kg-day	--	--	--
				Benzo(a)pyrene	4.44E-02	mg/kg	3.0E-08	mg/kg-day	--	--	--
				Benzo(b)fluoranthene	4.58E-02	mg/kg	3.1E-08	mg/kg-day	--	--	--
				Benzo(k)fluoranthene	3.90E-02	mg/kg	2.7E-08	mg/kg-day	--	--	--
				Dibenz(a,h)anthracene	2.17E-02	mg/kg	1.5E-08	mg/kg-day	--	--	--
				Indeno(1,2,3-cd)pyrene	3.83E-02	mg/kg	2.6E-08	mg/kg-day	--	--	--
			Exp. Route Total								7.2E-03
			Dermal	Arsenic	3.17E+00	mg/kg	7.4E-08	mg/kg-day	3.0E-04	mg/kg-day	2.5E-04
				Benz(a)anthracene	3.99E-02	mg/kg	4.1E-09	mg/kg-day	--	--	--
				Benzo(a)pyrene	4.44E-02	mg/kg	4.5E-09	mg/kg-day	--	--	--
				Benzo(b)fluoranthene	4.58E-02	mg/kg	4.6E-09	mg/kg-day	--	--	--
				Benzo(k)fluoranthene	3.90E-02	mg/kg	4.0E-09	mg/kg-day	--	--	--
				Dibenz(a,h)anthracene	2.17E-02	mg/kg	2.2E-09	mg/kg-day	--	--	--
				Indeno(1,2,3-cd)pyrene	3.83E-02	mg/kg	3.9E-09	mg/kg-day	--	--	--
			Exp. Route Total								2.5E-04
		Exposure Point Total									7.5E-03
	Exposure Medium Total										7.5E-03
	Homegrown Produce	Homegrown Produce	Ingestion	Arsenic	3.17E+00	mg/kg	3.0E-06	mg/kg-day	3.0E-04	mg/kg-day	9.9E-03
				Benz(a)anthracene	3.99E-02	mg/kg	3.4E-08	mg/kg-day	--	--	--
				Benzo(a)pyrene	4.44E-02	mg/kg	2.9E-08	mg/kg-day	--	--	--
				Benzo(b)fluoranthene	4.58E-02	mg/kg	2.7E-08	mg/kg-day	--	--	--
				Benzo(k)fluoranthene	3.90E-02	mg/kg	2.3E-08	mg/kg-day	--	--	--
				Dibenz(a,h)anthracene	2.17E-02	mg/kg	2.1E-08	mg/kg-day	--	--	--
				Indeno(1,2,3-cd)pyrene	3.83E-02	mg/kg	1.8E-08	mg/kg-day	--	--	--
			Exp. Route Total								9.9E-03
		Exposure Point Total									9.9E-03
	Exposure Medium Total										9.9E-03
	Air	Outdoor Air	Inhalation (particulates)	Arsenic	3.17E+00	mg/kg	2.7E-11	mg/kg-day	--	--	--
				Benz(a)anthracene	3.99E-02	mg/kg	3.4E-13	mg/kg-day	--	--	--
				Benzo(a)pyrene	4.44E-02	mg/kg	3.8E-13	mg/kg-day	--	--	--
				Benzo(b)fluoranthene	4.58E-02	mg/kg	3.9E-13	mg/kg-day	--	--	--
				Benzo(k)fluoranthene	3.90E-02	mg/kg	3.4E-13	mg/kg-day	--	--	--
				Dibenz(a,h)anthracene	2.17E-02	mg/kg	1.9E-13	mg/kg-day	--	--	--

TABLE H2-7.5.3.CTE
EPA RAGS PART D TABLE 7b
CALCULATION OF CTE CHEMICAL NONCANCER HAZARDS
CURRENT ADULT RESIDENT
SITE 23, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future
Receptor Population:	Resident
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units	
				Indeno(1,2,3-cd)pyrene	3.83E-02	mg/kg	3.3E-13	mg/kg-day	--	--	--
			Exp. Route Total								0.0E+00
		Exposure Point Total									0.0E+00
	Exposure Medium Total										0.0E+00
Medium Total											1.7E-02
Groundwater	Groundwater	Tap	Ingestion	1,2,4-Trimethylbenzene	6.54E-02	mg/L	1.3E-03	mg/kg-day	5.0E-02	mg/kg-day	2.5E-02
				2-Butanone	2.13E-01	mg/L	4.1E-03	mg/kg-day	6.0E-01	mg/kg-day	6.8E-03
				2-Methylnaphthalene	7.85E-03	mg/L	1.5E-04	mg/kg-day	9.0E-03	mg/kg-day	1.7E-02
				Arsenic	6.24E-03	mg/L	1.2E-04	mg/kg-day	3.0E-04	mg/kg-day	4.0E-01
				Benzene	1.00E-03	mg/L	1.9E-05	mg/kg-day	4.0E-03	mg/kg-day	4.8E-03
				Benzo(a)pyrene	6.00E-04	mg/L	1.2E-05	mg/kg-day	--	--	--
				Benzo(b)fluoranthene	8.00E-04	mg/L	1.5E-05	mg/kg-day	--	--	--
				Chrysene	9.00E-04	mg/L	1.7E-05	mg/kg-day	--	--	--
				Ethylbenzene	1.50E-02	mg/L	2.9E-04	mg/kg-day	1.0E-01	mg/kg-day	2.9E-03
				Isopropylbenzene	7.52E-02	mg/L	1.4E-03	mg/kg-day	1.0E-01	mg/kg-day	1.4E-02
				Naphthalene	3.89E-02	mg/L	7.5E-04	mg/kg-day	2.0E-02	mg/kg-day	3.7E-02
				sec-Butylbenzene	7.51E-02	mg/L	1.4E-03	mg/kg-day	4.0E-02	mg/kg-day	3.6E-02
				Thallium	1.27E-03	mg/L	2.4E-05	mg/kg-day	6.6E-05	mg/kg-day	3.7E-01
				Xylene (Total)	3.52E-02	mg/L	6.8E-04	mg/kg-day	2.0E-01	mg/kg-day	3.4E-03
			Exp. Route Total								9.2E-01
			Dermal (bathing/ showering)	1,2,4-Trimethylbenzene	6.54E-02	mg/L	3.4E-04	mg/kg-day	5.0E-02	mg/kg-day	6.7E-03
				2-Butanone	2.13E-01	mg/L	1.3E-05	mg/kg-day	6.0E-01	mg/kg-day	2.1E-05
				2-Methylnaphthalene	7.85E-03	mg/L	2.3E-05	mg/kg-day	9.0E-03	mg/kg-day	2.5E-03
				Arsenic	6.24E-03	mg/L	3.8E-07	mg/kg-day	3.0E-04	mg/kg-day	1.3E-03
				Benzene	1.00E-03	mg/L	1.3E-06	mg/kg-day	4.0E-03	mg/kg-day	3.2E-04
				Benzo(a)pyrene	6.00E-04	mg/L	2.6E-05	mg/kg-day	--	--	--
				Benzo(b)fluoranthene	8.00E-04	mg/L	3.5E-05	mg/kg-day	--	--	--
				Chrysene	9.00E-04	mg/L	2.6E-05	mg/kg-day	--	--	--
				Ethylbenzene	1.50E-02	mg/L	4.5E-05	mg/kg-day	1.0E-01	mg/kg-day	4.5E-04
				Isopropylbenzene	7.52E-02	mg/L	4.1E-04	mg/kg-day	1.0E-01	mg/kg-day	4.1E-03
				Naphthalene	3.89E-02	mg/L	1.1E-04	mg/kg-day	2.0E-02	mg/kg-day	5.6E-03
				sec-Butylbenzene	7.51E-02	mg/L	8.2E-04	mg/kg-day	4.0E-02	mg/kg-day	2.0E-02
				Thallium	1.27E-03	mg/L	7.8E-08	mg/kg-day	6.6E-05	mg/kg-day	1.2E-03
				Xylene (Total)	3.52E-02	mg/L	1.2E-04	mg/kg-day	2.0E-01	mg/kg-day	5.8E-04

TABLE H2-7.5.3.CTE
EPA RAGS PART D TABLE 7b
CALCULATION OF CTE CHEMICAL NONCANCER HAZARDS
CURRENT ADULT RESIDENT
SITE 23, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future
Receptor Population:	Resident
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units	
			Exp. Route Total								4.3E-02
			Inhalation (bathing/ showering)	1,2,4-Trimethylbenzene	6.54E-02	mg/L	3.9E-06	mg/kg-day	1.7E-03	mg/kg-day	2.3E-03
				2-Butanone	2.13E-01	mg/L	1.3E-05	mg/kg-day	2.9E-01	mg/kg-day	4.3E-05
				2-Methylnaphthalene	7.85E-03	mg/L	4.6E-07	mg/kg-day	8.6E-04	mg/kg-day	5.4E-04
				Benzene	1.00E-03	mg/L	5.9E-08	mg/kg-day	8.6E-03	mg/kg-day	6.9E-06
				Ethylbenzene	1.50E-02	mg/L	8.9E-07	mg/kg-day	2.9E-01	mg/kg-day	3.1E-06
				Isopropylbenzene	7.52E-02	mg/L	4.5E-06	mg/kg-day	1.1E-01	mg/kg-day	4.0E-05
				Naphthalene	3.89E-02	mg/L	2.3E-06	mg/kg-day	8.6E-04	mg/kg-day	2.7E-03
				sec-Butylbenzene	7.51E-02	mg/L	4.4E-06	mg/kg-day	4.0E-02	mg/kg-day	1.1E-04
				Xylene (Total)	3.52E-02	mg/L	2.1E-06	mg/kg-day	2.9E-02	mg/kg-day	7.2E-05
			Exp. Route Total								5.8E-03
		Exposure Point Total									9.6E-01
	Exposure Medium Total										9.6E-01
Medium Total											9.6E-01
										Total of Receptor Hazards Across All Media	9.8E-01

Notes:

EPC	Exposure point concentration
mg/kg	Milligram per kilogram
mg/kg-day	Milligram per kilogram per day
RfD	Reference dose
RfC	Reference concentration
CTE	Central tendency exposure
--	Not Applicable or Not Available

TABLE H2-7.5.4.CTE
EPA RAGS PART D TABLE 7b
CALCULATION OF CTE CHEMICAL NONCANCER HAZARDS
CURRENT CHILD RESIDENT
SITE 23, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future
Receptor Population:	Resident
Receptor Age:	Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units	
Soil (0-2)	Soil	Site Soil	Ingestion	Arsenic	3.17E+00	mg/kg	2.0E-05	mg/kg-day	3.0E-04	mg/kg-day	6.7E-02
				Benz(a)anthracene	3.99E-02	mg/kg	2.6E-07	mg/kg-day	--	--	--
				Benzo(a)pyrene	4.44E-02	mg/kg	2.8E-07	mg/kg-day	--	--	--
				Benzo(b)fluoranthene	4.58E-02	mg/kg	2.9E-07	mg/kg-day	--	--	--
				Benzo(k)fluoranthene	3.90E-02	mg/kg	2.5E-07	mg/kg-day	--	--	--
				Dibenz(a,h)anthracene	2.17E-02	mg/kg	1.4E-07	mg/kg-day	--	--	--
				Indeno(1,2,3-cd)pyrene	3.83E-02	mg/kg	2.4E-07	mg/kg-day	--	--	--
			Exp. Route Total								6.7E-02
			Dermal	Arsenic	3.17E+00	mg/kg	6.8E-07	mg/kg-day	3.0E-04	mg/kg-day	2.3E-03
				Benz(a)anthracene	3.99E-02	mg/kg	3.7E-08	mg/kg-day	--	--	--
				Benzo(a)pyrene	4.44E-02	mg/kg	4.1E-08	mg/kg-day	--	--	--
				Benzo(b)fluoranthene	4.58E-02	mg/kg	4.3E-08	mg/kg-day	--	--	--
				Benzo(k)fluoranthene	3.90E-02	mg/kg	3.6E-08	mg/kg-day	--	--	--
				Dibenz(a,h)anthracene	2.17E-02	mg/kg	2.0E-08	mg/kg-day	--	--	--
				Indeno(1,2,3-cd)pyrene	3.83E-02	mg/kg	3.6E-08	mg/kg-day	--	--	--
			Exp. Route Total								2.3E-03
		Exposure Point Total									7.0E-02
	Exposure Medium Total										7.0E-02
	Homegrown Produce	Homegrown Produce	Ingestion	Arsenic	3.17E+00	mg/kg	3.0E-06	mg/kg-day	3.0E-04	mg/kg-day	9.8E-03
				Benz(a)anthracene	3.99E-02	mg/kg	3.4E-08	mg/kg-day	--	--	--
				Benzo(a)pyrene	4.44E-02	mg/kg	2.9E-08	mg/kg-day	--	--	--
				Benzo(b)fluoranthene	4.58E-02	mg/kg	2.7E-08	mg/kg-day	--	--	--
				Benzo(k)fluoranthene	3.90E-02	mg/kg	2.3E-08	mg/kg-day	--	--	--
				Dibenz(a,h)anthracene	2.17E-02	mg/kg	2.1E-08	mg/kg-day	--	--	--
				Indeno(1,2,3-cd)pyrene	3.83E-02	mg/kg	1.8E-08	mg/kg-day	--	--	--
			Exp. Route Total								9.8E-03
		Exposure Point Total									9.8E-03
	Exposure Medium Total										9.8E-03
	Air	Outdoor Air	Inhalation (particulates)	Arsenic	3.17E+00	mg/kg	6.4E-11	mg/kg-day	--	--	--
				Benz(a)anthracene	3.99E-02	mg/kg	8.1E-13	mg/kg-day	--	--	--
				Benzo(a)pyrene	4.44E-02	mg/kg	9.0E-13	mg/kg-day	--	--	--
				Benzo(b)fluoranthene	4.58E-02	mg/kg	9.3E-13	mg/kg-day	--	--	--
				Benzo(k)fluoranthene	3.90E-02	mg/kg	7.9E-13	mg/kg-day	--	--	--
				Dibenz(a,h)anthracene	2.17E-02	mg/kg	4.4E-13	mg/kg-day	--	--	--

TABLE H2-7.5.4.CTE
EPA RAGS PART D TABLE 7b
CALCULATION OF CTE CHEMICAL NONCANCER HAZARDS
CURRENT CHILD RESIDENT
SITE 23, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future
Receptor Population:	Resident
Receptor Age:	Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units	
				Indeno(1,2,3-cd)pyrene	3.83E-02	mg/kg	7.8E-13	mg/kg-day	--	--	--
			Exp. Route Total								0.0E+00
		Exposure Point Total									0.0E+00
	Exposure Medium Total										0.0E+00
Medium Total											8.0E-02
Groundwater	Groundwater	Tap	Ingestion	1,2,4-Trimethylbenzene	6.54E-02	mg/L	4.2E-03	mg/kg-day	5.0E-02	mg/kg-day	8.4E-02
				2-Butanone	2.13E-01	mg/L	1.4E-02	mg/kg-day	6.0E-01	mg/kg-day	2.3E-02
				2-Methylnaphthalene	7.85E-03	mg/L	5.0E-04	mg/kg-day	9.0E-03	mg/kg-day	5.6E-02
				Arsenic	6.24E-03	mg/L	4.0E-04	mg/kg-day	3.0E-04	mg/kg-day	1.3E+00
				Benzene	1.00E-03	mg/L	6.4E-05	mg/kg-day	4.0E-03	mg/kg-day	1.6E-02
				Benzo(a)pyrene	6.00E-04	mg/L	3.8E-05	mg/kg-day	--	--	--
				Benzo(b)fluoranthene	8.00E-04	mg/L	5.1E-05	mg/kg-day	--	--	--
				Chrysene	9.00E-04	mg/L	5.8E-05	mg/kg-day	--	--	--
				Ethylbenzene	1.50E-02	mg/L	9.6E-04	mg/kg-day	1.0E-01	mg/kg-day	9.6E-03
				Isopropylbenzene	7.52E-02	mg/L	4.8E-03	mg/kg-day	1.0E-01	mg/kg-day	4.8E-02
				Naphthalene	3.89E-02	mg/L	2.5E-03	mg/kg-day	2.0E-02	mg/kg-day	1.2E-01
				sec-Butylbenzene	7.51E-02	mg/L	4.8E-03	mg/kg-day	4.0E-02	mg/kg-day	1.2E-01
				Thallium	1.27E-03	mg/L	8.1E-05	mg/kg-day	6.6E-05	mg/kg-day	1.2E+00
				Xylene (Total)	3.52E-02	mg/L	2.3E-03	mg/kg-day	2.0E-01	mg/kg-day	1.1E-02
			Exp. Route Total								3.1E+00
			Dermal (bathing/ showering)	1,2,4-Trimethylbenzene	6.54E-02	mg/L	7.6E-04	mg/kg-day	5.0E-02	mg/kg-day	1.5E-02
				2-Butanone	2.13E-01	mg/L	2.8E-05	mg/kg-day	6.0E-01	mg/kg-day	4.7E-05
				2-Methylnaphthalene	7.85E-03	mg/L	5.1E-05	mg/kg-day	9.0E-03	mg/kg-day	5.7E-03
				Arsenic	6.24E-03	mg/L	8.7E-07	mg/kg-day	3.0E-04	mg/kg-day	2.9E-03
				Benzene	1.00E-03	mg/L	2.9E-06	mg/kg-day	4.0E-03	mg/kg-day	7.3E-04
				Benzo(a)pyrene	6.00E-04	mg/L	5.8E-05	mg/kg-day	--	--	--
				Benzo(b)fluoranthene	8.00E-04	mg/L	7.8E-05	mg/kg-day	--	--	--
				Chrysene	9.00E-04	mg/L	5.9E-05	mg/kg-day	--	--	--
				Ethylbenzene	1.50E-02	mg/L	1.0E-04	mg/kg-day	1.0E-01	mg/kg-day	1.0E-03
				Isopropylbenzene	7.52E-02	mg/L	9.2E-04	mg/kg-day	1.0E-01	mg/kg-day	9.2E-03
				Naphthalene	3.89E-02	mg/L	2.5E-04	mg/kg-day	2.0E-02	mg/kg-day	1.3E-02
				sec-Butylbenzene	7.51E-02	mg/L	1.8E-03	mg/kg-day	4.0E-02	mg/kg-day	4.6E-02
				Thallium	1.27E-03	mg/L	1.8E-07	mg/kg-day	6.6E-05	mg/kg-day	2.7E-03
				Xylene (Total)	3.52E-02	mg/L	2.6E-04	mg/kg-day	2.0E-01	mg/kg-day	1.3E-03

TABLE H2-7.5.4.CTE
EPA RAGS PART D TABLE 7b
CALCULATION OF CTE CHEMICAL NONCANCER HAZARDS
CURRENT CHILD RESIDENT
SITE 23, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future
Receptor Population:	Resident
Receptor Age:	Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units	
			Exp. Route Total								9.8E-02
			Inhalation (bathing/ showering)	1,2,4-Trimethylbenzene	6.54E-02	mg/L	1.2E-05	mg/kg-day	1.7E-03	mg/kg-day	7.1E-03
				2-Butanone	2.13E-01	mg/L	3.9E-05	mg/kg-day	2.9E-01	mg/kg-day	1.4E-04
				2-Methylnaphthalene	7.85E-03	mg/L	1.4E-06	mg/kg-day	8.6E-04	mg/kg-day	1.7E-03
				Benzene	1.00E-03	mg/L	1.8E-07	mg/kg-day	8.6E-03	mg/kg-day	2.1E-05
				Ethylbenzene	1.50E-02	mg/L	2.8E-06	mg/kg-day	2.9E-01	mg/kg-day	9.5E-06
				Isopropylbenzene	7.52E-02	mg/L	1.4E-05	mg/kg-day	1.1E-01	mg/kg-day	1.3E-04
				Naphthalene	3.89E-02	mg/L	7.2E-06	mg/kg-day	8.6E-04	mg/kg-day	8.3E-03
				sec-Butylbenzene	7.51E-02	mg/L	1.4E-05	mg/kg-day	4.0E-02	mg/kg-day	3.5E-04
				Xylene (Total)	3.52E-02	mg/L	6.5E-06	mg/kg-day	2.9E-02	mg/kg-day	2.2E-04
			Exp. Route Total								1.8E-02
		Exposure Point Total									3.2E+00
	Exposure Medium Total										3.2E+00
Medium Total											3.2E+00
										Total of Receptor Hazards Across All Media	3.2E+00

Notes:

EPC	Exposure point concentration
mg/kg	Milligram per kilogram
mg/kg-day	Milligram per kilogram per day
RfD	Reference dose
RfC	Reference concentration
CTE	Central tendency exposure
--	Not Applicable or Not Available

TABLE H2-7.5.5.CTE
EPA RAGS PART D TABLE 7b
CALCULATION OF CTE CHEMICAL NONCANCER HAZARDS
FUTURE DEVELOPED CONSTRUCTION WORKER
SITE 23, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future-Developed
Receptor Population:	Construction Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units	
Soil (0-8)	Soil	Site Soil	Ingestion	2-Methylnaphthalene	6.37E-02	mg/kg	1.5E-08	mg/kg-day	9.0E-03	mg/kg-day	1.7E-06
				Arsenic	3.82E+00	mg/kg	9.0E-07	mg/kg-day	3.0E-04	mg/kg-day	3.0E-03
				Benz(a)anthracene	2.55E-02	mg/kg	6.0E-09	mg/kg-day	–	–	–
				Benzo(a)pyrene	3.00E-02	mg/kg	7.0E-09	mg/kg-day	–	–	–
				Benzo(b)fluoranthene	4.92E-03	mg/kg	1.2E-09	mg/kg-day	–	–	–
				Benzo(k)fluoranthene	3.16E-02	mg/kg	7.4E-09	mg/kg-day	–	–	–
				Dibenz(a,h)anthracene	1.59E-02	mg/kg	3.7E-09	mg/kg-day	–	–	–
				Indeno(1,2,3-cd)pyrene	2.44E-02	mg/kg	5.7E-09	mg/kg-day	–	–	–
			Exp. Route Total								3.0E-03
			Dermal	2-Methylnaphthalene	6.37E-02	mg/kg	–	mg/kg-day	9.0E-03	mg/kg-day	–
				Arsenic	3.82E+00	mg/kg	8.9E-08	mg/kg-day	3.0E-04	mg/kg-day	3.0E-04
				Benz(a)anthracene	2.55E-02	mg/kg	2.6E-09	mg/kg-day	–	–	–
				Benzo(a)pyrene	3.00E-02	mg/kg	3.0E-09	mg/kg-day	–	–	–
				Benzo(b)fluoranthene	4.92E-03	mg/kg	5.0E-10	mg/kg-day	–	–	–
				Benzo(k)fluoranthene	3.16E-02	mg/kg	3.2E-09	mg/kg-day	–	–	–
				Dibenz(a,h)anthracene	1.59E-02	mg/kg	1.6E-09	mg/kg-day	–	–	–
				Indeno(1,2,3-cd)pyrene	2.44E-02	mg/kg	2.5E-09	mg/kg-day	–	–	–
			Exp. Route Total								3.0E-04
		Exposure Point Total									3.3E-03
	Exposure Medium Total										3.3E-03
	Air	Outdoor Air	Inhalation (particulates)	2-Methylnaphthalene	6.37E-02	mg/kg	2.3E-12	mg/kg-day	8.6E-04	mg/kg-day	2.6E-09
				Arsenic	3.82E+00	mg/kg	1.4E-10	mg/kg-day	–	–	–
				Benz(a)anthracene	2.55E-02	mg/kg	9.1E-13	mg/kg-day	–	–	–
				Benzo(a)pyrene	3.00E-02	mg/kg	1.1E-12	mg/kg-day	–	–	–
				Benzo(b)fluoranthene	4.92E-03	mg/kg	1.8E-13	mg/kg-day	–	–	–
				Benzo(k)fluoranthene	3.16E-02	mg/kg	1.1E-12	mg/kg-day	–	–	–
				Dibenz(a,h)anthracene	1.59E-02	mg/kg	5.7E-13	mg/kg-day	–	–	–
				Indeno(1,2,3-cd)pyrene	2.44E-02	mg/kg	8.7E-13	mg/kg-day	–	–	–
			Exp. Route Total								2.6E-09
			Inhalation (VOCs)	2-Methylnaphthalene	6.37E-02	mg/kg	7.0E-08	mg/kg-day	8.6E-04	mg/kg-day	8.1E-05
			Exp. Route Total								8.1E-05
		Exposure Point Total									8.1E-05
	Exposure Medium Total										8.1E-05
Medium Total											3.4E-03
										Total of Receptor Hazards Across All Media	3.4E-03

Notes:

EPC	Exposure point concentration
mg/kg	Milligram per kilogram
mg/kg-day	Milligram per kilogram per day
RfD	Reference dose
RfC	Reference concentration
CTE	Central tendency exposure
–	Not Applicable or Not Available

TABLE H2-7.5.6.CTE
EPA RAGS PART D TABLE 7b
CALCULATION OF CTE CHEMICAL NONCANCER HAZARDS
FUTURE REDEVELOPED ADULT RESIDENT
SITE 23, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future-Redeveloped
Receptor Population:	Resident
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units	
Soil (0-8)	Soil	Site Soil	Ingestion	2-Methylnaphthalene	6.37E-02	mg/kg	4.4E-08	mg/kg-day	9.0E-03	mg/kg-day	4.8E-06
				Arsenic	3.82E+00	mg/kg	2.6E-06	mg/kg-day	3.0E-04	mg/kg-day	8.7E-03
				Benz(a)anthracene	2.55E-02	mg/kg	1.7E-08	mg/kg-day	--	--	--
				Benzo(a)pyrene	3.00E-02	mg/kg	2.1E-08	mg/kg-day	--	--	--
				Benzo(b)fluoranthene	4.92E-03	mg/kg	3.4E-09	mg/kg-day	--	--	--
				Benzo(k)fluoranthene	3.16E-02	mg/kg	2.2E-08	mg/kg-day	--	--	--
				Dibenz(a,h)anthracene	1.59E-02	mg/kg	1.1E-08	mg/kg-day	--	--	--
				Indeno(1,2,3-cd)pyrene	2.44E-02	mg/kg	1.7E-08	mg/kg-day	--	--	--
			Exp. Route Total								8.7E-03
			Dermal	2-Methylnaphthalene	6.37E-02	mg/kg	--	mg/kg-day	9.0E-03	mg/kg-day	--
				Arsenic	3.82E+00	mg/kg	9.0E-08	mg/kg-day	3.0E-04	mg/kg-day	3.0E-04
				Benz(a)anthracene	2.55E-02	mg/kg	2.6E-09	mg/kg-day	--	--	--
				Benzo(a)pyrene	3.00E-02	mg/kg	3.0E-09	mg/kg-day	--	--	--
				Benzo(b)fluoranthene	4.92E-03	mg/kg	5.0E-10	mg/kg-day	--	--	--
				Benzo(k)fluoranthene	3.16E-02	mg/kg	3.2E-09	mg/kg-day	--	--	--
				Dibenz(a,h)anthracene	1.59E-02	mg/kg	1.6E-09	mg/kg-day	--	--	--
				Indeno(1,2,3-cd)pyrene	2.44E-02	mg/kg	2.5E-09	mg/kg-day	--	--	--
			Exp. Route Total								3.0E-04
		Exposure Point Total									9.0E-03
	Exposure Medium Total										9.0E-03
	Homegrown Produce	Homegrown Produce	Ingestion	2-Methylnaphthalene	6.37E-02	mg/kg	--	mg/kg-day	9.0E-03	mg/kg-day	--
				Arsenic	3.82E+00	mg/kg	3.6E-06	mg/kg-day	3.0E-04	mg/kg-day	1.2E-02
				Benz(a)anthracene	2.55E-02	mg/kg	2.2E-08	mg/kg-day	--	--	--
				Benzo(a)pyrene	3.00E-02	mg/kg	1.9E-08	mg/kg-day	--	--	--
				Benzo(b)fluoranthene	4.92E-03	mg/kg	2.9E-09	mg/kg-day	--	--	--
				Benzo(k)fluoranthene	3.16E-02	mg/kg	1.9E-08	mg/kg-day	--	--	--
				Dibenz(a,h)anthracene	1.59E-02	mg/kg	1.6E-08	mg/kg-day	--	--	--
				Indeno(1,2,3-cd)pyrene	2.44E-02	mg/kg	1.1E-08	mg/kg-day	--	--	--
			Exp. Route Total								1.2E-02
		Exposure Point Total									1.2E-02
	Exposure Medium Total										1.2E-02
	Air	Outdoor Air	Inhalation (particulates)	2-Methylnaphthalene	6.37E-02	mg/kg	5.5E-13	mg/kg-day	8.6E-04	mg/kg-day	6.4E-10
				Arsenic	3.82E+00	mg/kg	3.3E-11	mg/kg-day	--	--	--
				Benz(a)anthracene	2.55E-02	mg/kg	2.2E-13	mg/kg-day	--	--	--

TABLE H2-7.5.6.CTE
EPA RAGS PART D TABLE 7b
CALCULATION OF CTE CHEMICAL NONCANCER HAZARDS
FUTURE REDEVELOPED ADULT RESIDENT
SITE 23, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future-Redeveloped
Receptor Population:	Resident
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units	
				Benzo(a)pyrene	3.00E-02	mg/kg	2.6E-13	mg/kg-day	--	--	--
				Benzo(b)fluoranthene	4.92E-03	mg/kg	4.2E-14	mg/kg-day	--	--	--
				Benzo(k)fluoranthene	3.16E-02	mg/kg	2.7E-13	mg/kg-day	--	--	--
				Dibenz(a,h)anthracene	1.59E-02	mg/kg	1.4E-13	mg/kg-day	--	--	--
				Indeno(1,2,3-cd)pyrene	2.44E-02	mg/kg	2.1E-13	mg/kg-day	--	--	--
			Exp. Route Total								6.4E-10
			Inhalation (VOCs)	2-Methylnaphthalene	6.37E-02	mg/kg	1.7E-08	mg/kg-day	8.6E-04	mg/kg-day	2.0E-05
			Exp. Route Total								2.0E-05
		Exposure Point Total									2.0E-05
	Exposure Medium Total										2.0E-05
Medium Total											2.1E-02
Groundwater	Groundwater	Tap	Ingestion	1,2,4-Trimethylbenzene	6.54E-02	mg/L	1.3E-03	mg/kg-day	5.0E-02	mg/kg-day	2.5E-02
				2-Butanone	2.13E-01	mg/L	4.1E-03	mg/kg-day	6.0E-01	mg/kg-day	6.8E-03
				2-Methylnaphthalene	7.85E-03	mg/L	1.5E-04	mg/kg-day	9.0E-03	mg/kg-day	1.7E-02
				Arsenic	6.24E-03	mg/L	1.2E-04	mg/kg-day	3.0E-04	mg/kg-day	4.0E-01
				Benzene	1.00E-03	mg/L	1.9E-05	mg/kg-day	4.0E-03	mg/kg-day	4.8E-03
				Benzo(a)pyrene	6.00E-04	mg/L	1.2E-05	mg/kg-day	--	--	--
				Benzo(b)fluoranthene	8.00E-04	mg/L	1.5E-05	mg/kg-day	--	--	--
				Chrysene	9.00E-04	mg/L	1.7E-05	mg/kg-day	--	--	--
				Ethylbenzene	1.50E-02	mg/L	2.9E-04	mg/kg-day	1.0E-01	mg/kg-day	2.9E-03
				Isopropylbenzene	7.52E-02	mg/L	1.4E-03	mg/kg-day	1.0E-01	mg/kg-day	1.4E-02
				Naphthalene	3.89E-02	mg/L	7.5E-04	mg/kg-day	2.0E-02	mg/kg-day	3.7E-02
				sec-Butylbenzene	7.51E-02	mg/L	1.4E-03	mg/kg-day	4.0E-02	mg/kg-day	3.6E-02
				Thallium	1.27E-03	mg/L	2.4E-05	mg/kg-day	6.6E-05	mg/kg-day	3.7E-01
				Xylene (Total)	3.52E-02	mg/L	6.8E-04	mg/kg-day	2.0E-01	mg/kg-day	3.4E-03
			Exp. Route Total								9.2E-01
			Dermal (bathing/ showering)	1,2,4-Trimethylbenzene	6.54E-02	mg/L	3.4E-04	mg/kg-day	5.0E-02	mg/kg-day	6.7E-03
				2-Butanone	2.13E-01	mg/L	1.3E-05	mg/kg-day	6.0E-01	mg/kg-day	2.1E-05
				2-Methylnaphthalene	7.85E-03	mg/L	2.3E-05	mg/kg-day	9.0E-03	mg/kg-day	2.5E-03
				Arsenic	6.24E-03	mg/L	3.8E-07	mg/kg-day	3.0E-04	mg/kg-day	1.3E-03
				Benzene	1.00E-03	mg/L	1.3E-06	mg/kg-day	4.0E-03	mg/kg-day	3.2E-04
				Benzo(a)pyrene	6.00E-04	mg/L	2.6E-05	mg/kg-day	--	--	--
				Benzo(b)fluoranthene	8.00E-04	mg/L	3.5E-05	mg/kg-day	--	--	--

TABLE H2-7.5.6.CTE
EPA RAGS PART D TABLE 7b
CALCULATION OF CTE CHEMICAL NONCANCER HAZARDS
FUTURE REDEVELOPED ADULT RESIDENT
SITE 23, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future-Redeveloped
Receptor Population:	Resident
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units	
				Chrysene	9.00E-04	mg/L	2.6E-05	mg/kg-day	--	--	--
				Ethylbenzene	1.50E-02	mg/L	4.5E-05	mg/kg-day	1.0E-01	mg/kg-day	4.5E-04
				Isopropylbenzene	7.52E-02	mg/L	4.1E-04	mg/kg-day	1.0E-01	mg/kg-day	4.1E-03
				Naphthalene	3.89E-02	mg/L	1.1E-04	mg/kg-day	2.0E-02	mg/kg-day	5.6E-03
				sec-Butylbenzene	7.51E-02	mg/L	8.2E-04	mg/kg-day	4.0E-02	mg/kg-day	2.0E-02
				Thallium	1.27E-03	mg/L	7.8E-08	mg/kg-day	6.6E-05	mg/kg-day	1.2E-03
				Xylene (Total)	3.52E-02	mg/L	1.2E-04	mg/kg-day	2.0E-01	mg/kg-day	5.8E-04
			Exp. Route Total								4.3E-02
			Inhalation (bathing/ showering)	1,2,4-Trimethylbenzene	6.54E-02	mg/L	3.9E-06	mg/kg-day	1.7E-03	mg/kg-day	2.3E-03
				2-Butanone	2.13E-01	mg/L	1.3E-05	mg/kg-day	2.9E-01	mg/kg-day	4.3E-05
				2-Methylnaphthalene	7.85E-03	mg/L	4.6E-07	mg/kg-day	8.6E-04	mg/kg-day	5.4E-04
				Benzene	1.00E-03	mg/L	5.9E-08	mg/kg-day	8.6E-03	mg/kg-day	6.9E-06
				Ethylbenzene	1.50E-02	mg/L	8.9E-07	mg/kg-day	2.9E-01	mg/kg-day	3.1E-06
				Isopropylbenzene	7.52E-02	mg/L	4.5E-06	mg/kg-day	1.1E-01	mg/kg-day	4.0E-05
				Naphthalene	3.89E-02	mg/L	2.3E-06	mg/kg-day	8.6E-04	mg/kg-day	2.7E-03
				sec-Butylbenzene	7.51E-02	mg/L	4.4E-06	mg/kg-day	4.0E-02	mg/kg-day	1.1E-04
				Xylene (Total)	3.52E-02	mg/L	2.1E-06	mg/kg-day	2.9E-02	mg/kg-day	7.2E-05
			Exp. Route Total								5.8E-03
		Exposure Point Total									9.6E-01
	Exposure Medium Total										9.6E-01
Medium Total											9.6E-01
										Total of Receptor Hazards Across All Media	9.9E-01

Notes:

EPC	Exposure point concentration
mg/kg	Milligram per kilogram
mg/kg-day	Milligram per kilogram per day
RfD	Reference dose
RfC	Reference concentration
CTE	Central tendency exposure
--	Not Applicable or Not Available

TABLE H2-7.5.7.CTE
EPA RAGS PART D TABLE 7b
CALCULATION OF CTE CHEMICAL NONCANCER HAZARDS
FUTURE REDEVELOPED CHILD RESIDENT
SITE 23, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future-Redeveloped
Receptor Population:	Resident
Receptor Age:	Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units	
Soil (0-8)	Soil	Site Soil	Ingestion	2-Methylnaphthalene	6.37E-02	mg/kg	4.07E-07	mg/kg-day	9.00E-03	mg/kg-day	4.52E-05
				Arsenic	3.82E+00	mg/kg	2.44E-05	mg/kg-day	3.00E-04	mg/kg-day	8.15E-02
				Benz(a)anthracene	2.55E-02	mg/kg	1.63E-07	mg/kg-day	--	--	--
				Benzo(a)pyrene	3.00E-02	mg/kg	1.92E-07	mg/kg-day	--	--	--
				Benzo(b)fluoranthene	4.92E-03	mg/kg	3.14E-08	mg/kg-day	--	--	--
				Benzo(k)fluoranthene	3.16E-02	mg/kg	2.02E-07	mg/kg-day	--	--	--
				Dibenz(a,h)anthracene	1.59E-02	mg/kg	1.02E-07	mg/kg-day	--	--	--
				Indeno(1,2,3-cd)pyrene	2.44E-02	mg/kg	1.56E-07	mg/kg-day	--	--	--
			Exp. Route Total								**8.15E-02**
			Dermal	2-Methylnaphthalene	6.37E-02	mg/kg	--	mg/kg-day	9.00E-03	mg/kg-day	--
				Arsenic	3.82E+00	mg/kg	8.2E-07	mg/kg-day	3.00E-04	mg/kg-day	2.74E-03
				Benz(a)anthracene	2.55E-02	mg/kg	2.4E-08	mg/kg-day	--	--	--
				Benzo(a)pyrene	3.00E-02	mg/kg	2.8E-08	mg/kg-day	--	--	--
				Benzo(b)fluoranthene	4.92E-03	mg/kg	4.6E-09	mg/kg-day	--	--	--
				Benzo(k)fluoranthene	3.16E-02	mg/kg	2.9E-08	mg/kg-day	--	--	--
				Dibenz(a,h)anthracene	1.59E-02	mg/kg	1.5E-08	mg/kg-day	--	--	--
				Indeno(1,2,3-cd)pyrene	2.44E-02	mg/kg	2.3E-08	mg/kg-day	--	--	--
			Exp. Route Total								**2.74E-03**
		Exposure Point Total									**8.42E-02**
	Exposure Medium Total										**8.42E-02**
	Homegrown Produce	Homegrown Produce	Ingestion	2-Methylnaphthalene	6.37E-02	mg/kg	--	mg/kg-day	9.00E-03	mg/kg-day	--
				Arsenic	3.82E+00	mg/kg	3.57E-06	mg/kg-day	3.00E-04	mg/kg-day	1.19E-02
				Benz(a)anthracene	2.55E-02	mg/kg	2.15E-08	mg/kg-day	--	--	--
				Benzo(a)pyrene	3.00E-02	mg/kg	1.93E-08	mg/kg-day	--	--	--
				Benzo(b)fluoranthene	4.92E-03	mg/kg	2.92E-09	mg/kg-day	--	--	--
				Benzo(k)fluoranthene	3.16E-02	mg/kg	1.87E-08	mg/kg-day	--	--	--
				Dibenz(a,h)anthracene	1.59E-02	mg/kg	1.55E-08	mg/kg-day	--	--	--
				Indeno(1,2,3-cd)pyrene	2.44E-02	mg/kg	1.14E-08	mg/kg-day	--	--	--
			Exp. Route Total								**1.19E-02**
		Exposure Point Total									**1.19E-02**
	Exposure Medium Total										**1.19E-02**
	Air	Outdoor Air	Inhalation (particulates)	2-Methylnaphthalene	6.37E-02	mg/kg	1.3E-12	mg/kg-day	8.60E-04	mg/kg-day	1.51E-09
				Arsenic	3.82E+00	mg/kg	7.8E-11	mg/kg-day	--	--	--
				Benz(a)anthracene	2.55E-02	mg/kg	5.2E-13	mg/kg-day	--	--	--

TABLE H2-7.5.7.CTE
EPA RAGS PART D TABLE 7b
CALCULATION OF CTE CHEMICAL NONCANCER HAZARDS
FUTURE REDEVELOPED CHILD RESIDENT
SITE 23, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future-Redeveloped
Receptor Population:	Resident
Receptor Age:	Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units	
				Benzo(a)pyrene	3.00E-02	mg/kg	6.1E-13	mg/kg-day	--	--	--
				Benzo(b)fluoranthene	4.92E-03	mg/kg	1.0E-13	mg/kg-day	--	--	--
				Benzo(k)fluoranthene	3.16E-02	mg/kg	6.4E-13	mg/kg-day	--	--	--
				Dibenz(a,h)anthracene	1.59E-02	mg/kg	3.2E-13	mg/kg-day	--	--	--
				Indeno(1,2,3-cd)pyrene	2.44E-02	mg/kg	5.0E-13	mg/kg-day	--	--	--
			Exp. Route Total								1.51E-09
			Inhalation (VOCs)	2-Methylnaphthalene	6.37E-02	mg/kg	3.98E-08	mg/kg-day	8.60E-04	mg/kg-day	4.62E-05
			Exp. Route Total								4.62E-05
		Exposure Point Total									4.63E-05
	Exposure Medium Total										4.63E-05
Medium Total											9.62E-02
Groundwater	Groundwater	Tap	Ingestion	1,2,4-Trimethylbenzene	6.54E-02	mg/L	4.18E-03	mg/kg-day	5.00E-02	mg/kg-day	8.36E-02
				2-Butanone	2.13E-01	mg/L	1.36E-02	mg/kg-day	6.00E-01	mg/kg-day	2.27E-02
				2-Methylnaphthalene	7.85E-03	mg/L	5.02E-04	mg/kg-day	9.00E-03	mg/kg-day	5.58E-02
				Arsenic	6.24E-03	mg/L	3.99E-04	mg/kg-day	3.00E-04	mg/kg-day	1.33E+00
				Benzene	1.00E-03	mg/L	6.39E-05	mg/kg-day	4.00E-03	mg/kg-day	1.60E-02
				Benzo(a)pyrene	6.00E-04	mg/L	3.84E-05	mg/kg-day	--	--	--
				Benzo(b)fluoranthene	8.00E-04	mg/L	5.11E-05	mg/kg-day	--	--	--
				Chrysene	9.00E-04	mg/L	5.75E-05	mg/kg-day	--	--	--
				Ethylbenzene	1.50E-02	mg/L	9.59E-04	mg/kg-day	1.00E-01	mg/kg-day	9.59E-03
				Isopropylbenzene	7.52E-02	mg/L	4.81E-03	mg/kg-day	1.00E-01	mg/kg-day	4.81E-02
				Naphthalene	3.89E-02	mg/L	2.49E-03	mg/kg-day	2.00E-02	mg/kg-day	1.24E-01
				sec-Butylbenzene	7.51E-02	mg/L	4.80E-03	mg/kg-day	4.00E-02	mg/kg-day	1.20E-01
				Thallium	1.27E-03	mg/L	8.12E-05	mg/kg-day	6.60E-05	mg/kg-day	1.23E+00
				Xylene (Total)	3.52E-02	mg/L	2.25E-03	mg/kg-day	2.00E-01	mg/kg-day	1.13E-02
			Exp. Route Total								3.05E+00
			Dermal (bathing/ showering)	1,2,4-Trimethylbenzene	6.54E-02	mg/L	7.62E-04	mg/kg-day	5.00E-02	mg/kg-day	1.52E-02
				2-Butanone	2.13E-01	mg/L	2.85E-05	mg/kg-day	6.00E-01	mg/kg-day	4.75E-05
				2-Methylnaphthalene	7.85E-03	mg/L	5.14E-05	mg/kg-day	9.00E-03	mg/kg-day	5.71E-03
				Arsenic	6.24E-03	mg/L	8.69E-07	mg/kg-day	3.00E-04	mg/kg-day	2.90E-03
				Benzene	1.00E-03	mg/L	2.92E-06	mg/kg-day	4.00E-03	mg/kg-day	7.31E-04
				Benzo(a)pyrene	6.00E-04	mg/L	5.85E-05	mg/kg-day	--	--	--
				Benzo(b)fluoranthene	8.00E-04	mg/L	7.80E-05	mg/kg-day	--	--	--

TABLE H2-7.5.7.CTE
EPA RAGS PART D TABLE 7b
CALCULATION OF CTE CHEMICAL NONCANCER HAZARDS
FUTURE REDEVELOPED CHILD RESIDENT
SITE 23, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future-Redeveloped
Receptor Population:	Resident
Receptor Age:	Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units	
				Chrysene	9.00E-04	mg/L	5.89E-05	mg/kg-day	--	--	--
				Ethylbenzene	1.50E-02	mg/L	1.02E-04	mg/kg-day	1.00E-01	mg/kg-day	1.02E-03
				Isopropylbenzene	7.52E-02	mg/L	9.17E-04	mg/kg-day	1.00E-01	mg/kg-day	9.17E-03
				Naphthalene	3.89E-02	mg/L	2.55E-04	mg/kg-day	2.00E-02	mg/kg-day	1.27E-02
				sec-Butylbenzene	7.51E-02	mg/L	1.85E-03	mg/kg-day	4.00E-02	mg/kg-day	4.61E-02
				Thallium	1.27E-03	mg/L	1.77E-07	mg/kg-day	6.60E-05	mg/kg-day	2.68E-03
				Xylene (Total)	3.52E-02	mg/L	2.60E-04	mg/kg-day	2.00E-01	mg/kg-day	1.30E-03
			Exp. Route Total								9.77E-02
			Inhalation (bathing/ showering)	1,2,4-Trimethylbenzene	6.54E-02	mg/L	1.21E-05	mg/kg-day	1.70E-03	mg/kg-day	7.10E-03
				2-Butanone	2.13E-01	mg/L	3.93E-05	mg/kg-day	2.90E-01	mg/kg-day	1.36E-04
				2-Methylnaphthalene	7.85E-03	mg/L	1.45E-06	mg/kg-day	8.60E-04	mg/kg-day	1.68E-03
				Benzene	1.00E-03	mg/L	1.85E-07	mg/kg-day	8.60E-03	mg/kg-day	2.15E-05
				Ethylbenzene	1.50E-02	mg/L	2.77E-06	mg/kg-day	2.90E-01	mg/kg-day	9.55E-06
				Isopropylbenzene	7.52E-02	mg/L	1.39E-05	mg/kg-day	1.10E-01	mg/kg-day	1.26E-04
				Naphthalene	3.89E-02	mg/L	7.18E-06	mg/kg-day	8.60E-04	mg/kg-day	8.35E-03
				sec-Butylbenzene	7.51E-02	mg/L	1.39E-05	mg/kg-day	4.00E-02	mg/kg-day	3.47E-04
				Xylene (Total)	3.52E-02	mg/L	6.50E-06	mg/kg-day	2.90E-02	mg/kg-day	2.24E-04
			Exp. Route Total								1.80E-02
		Exposure Point Total									3.17E+00
	Exposure Medium Total										3.17E+00
Medium Total											3.17E+00
										Total of Receptor Hazards Across All Media	3.26E+00

Notes:

EPC	Exposure point concentration
mg/kg	Milligram per kilogram
mg/kg-day	Milligram per kilogram per day
RfD	Reference dose
RfC	Reference concentration
CTE	Central tendency exposure
--	Not Applicable or Not Available

HHRA RISK TABLES

Central Tendency Exposure
Site 09
Alameda Point, Alameda, California

TABLE H2-8.1.1.CTE
EPA RAGS PART D TABLE 7a
CALCULATION OF CTE CHEMICAL CANCER RISKS
CURRENT INDUSTRIAL WORKER
SITE 09, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future
Receptor Population:	Industrial Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk
							Value	Units	Value	Units	
Soil (0-2)	Soil	Site Soil	Ingestion	Arsenic	2.45E+00	mg/kg	6.7E-08	mg/kg-day	1.5E+00	(mg/kg-day)-1	1.0E-07
			Exp. Route Total								1.0E-07
			Dermal	Arsenic	2.45E+00	mg/kg	2.7E-09	mg/kg-day	1.5E+00	(mg/kg-day)-1	4.0E-09
			Exp. Route Total								4.0E-09
		Exposure Point Total									1.1E-07
	Exposure Medium Total										1.1E-07
	Air	Outdoor Air	Inhalation (particulates)	Arsenic	2.45E+00	mg/kg	2.6E-12	mg/kg-day	1.5E+01	(mg/kg-day)-1	3.8E-11
			Exp. Route Total								3.8E-11
		Exposure Point Total									3.8E-11
	Exposure Medium Total										3.8E-11
Medium Total											1.1E-07
Groundwater	Groundwater	Indoor Air (Vapor Intrusion)	Inhalation	Benzene	7.90E-02	(a) ug/m^3	1.1E-07	mg/kg-day	2.7E-02	(mg/kg-day)-1	2.9E-09
				Vinyl chloride	8.90E-01	(a) ug/m^3	1.2E-06	mg/kg-day	1.6E-02	(mg/kg-day)-1	2.0E-08
			Exp. Route Total								2.3E-08
		Exposure Point Total									2.3E-08
	Exposure Medium Total										2.3E-08
Medium Total											2.3E-08
										Total of Receptor Risks Across All Media	1.3E-07

Notes:

CSF	Cancer slope factor
EPC	Exposure point concentration
mg/kg	Milligram per kilogram
mg/kg-day	Milligram per kilogram per day
(mg/kg-day)-1	1/(Milligram per kilogram per day)
mg/l	Milligrams per liter
CTE	Central tendency exposure

(a) See the Vapor Intrusion to Indoor Air Evaluation for determination of the modeled indoor air concentration.

TABLE H2-8.1.2.CTE
EPA RAGS PART D TABLE 7a
CALCULATION OF CTE CHEMICAL CANCER RISKS
CURRENT CONSTRUCTION WORKER
SITE 09, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk
							Value	Units	Value	Units	
Soil (0-2)	Soil	Site Soil	Ingestion	Arsenic	2.45E+00	mg/kg	8.2E-09	mg/kg-day	1.5E+00	(mg/kg-day)-1	1.2E-08
			Exp. Route Total								1.2E-08
			Dermal	Arsenic	2.45E+00	mg/kg	8.1E-10	mg/kg-day	1.5E+00	(mg/kg-day)-1	1.2E-09
			Exp. Route Total								1.2E-09
		Exposure Point Total									1.4E-08
	Exposure Medium Total										1.4E-08
	Air	Outdoor Air	Inhalation (particulates)	Arsenic	2.45E+00	mg/kg	1.2E-12	mg/kg-day	1.5E+01	(mg/kg-day)-1	1.9E-11
			Exp. Route Total								1.9E-11
		Exposure Point Total									1.9E-11
	Exposure Medium Total										1.9E-11
Medium Total											1.4E-08
										Total of Receptor Risks Across All Media	1.4E-08

Notes:

CSF	Cancer slope factor
EPC	Exposure point concentration
mg/kg	Milligram per kilogram
mg/kg-day	Milligram per kilogram per day
(mg/kg-day)-1	1/(Milligram per kilogram per day)
CTE	Central tendency exposure

TABLE H2-8.1.3.CTE
EPA RAGS PART D TABLE 7a
CALCULATION OF CTE CHEMICAL CANCER RISKS
CURRENT ADULT RESIDENT
SITE 09, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future
Receptor Population:	Resident
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk
							Value	Units	Value	Units	
Soil (0-2)	Soil	Site Soil	Ingestion	Arsenic	2.45E+00	mg/kg	2.2E-07	mg/kg-day	1.5E+00	(mg/kg-day)-1	3.2E-07
			Exp. Route Total								3.2E-07
			Dermal	Arsenic	2.45E+00	mg/kg	7.4E-09	mg/kg-day	1.5E+00	(mg/kg-day)-1	1.1E-08
			Exp. Route Total								1.1E-08
		Exposure Point Total									3.3E-07
	Exposure Medium Total										3.3E-07
	Homegrown Produce	Homegrown Produce	Ingestion	Arsenic	2.45E+00	mg/kg	2.9E-07	mg/kg-day	1.5E+00	(mg/kg-day)-1	4.4E-07
			Exp. Route Total								4.4E-07
		Exposure Point Total									4.4E-07
	Exposure Medium Total										4.4E-07
	Air	Outdoor Air	Inhalation (particulates)	Arsenic	2.45E+00	mg/kg	2.7E-12	mg/kg-day	1.5E+01	(mg/kg-day)-1	4.1E-11
			Exp. Route Total								4.1E-11
		Exposure Point Total									4.1E-11
	Exposure Medium Total										4.1E-11
Medium Total											7.8E-07
Groundwater	Air	Indoor Air (Vapor Intrusion)	Inhalation	Benzene	7.90E-01	(a) ug/m^3	1.2E-06	mg/kg-day	2.7E-02	(mg/kg-day)-1	3.1E-08
				Vinyl chloride	8.90E+00	(a) ug/m^3	1.3E-05	mg/kg-day	3.1E-02	(mg/kg-day)-1	4.0E-07
			Exp. Route Total								4.3E-07
		Exposure Point Total									4.3E-07
		Tap	Ingestion	1,1-Dichloroethane	5.06E-03	mg/L	1.2E-05	mg/kg-day	--	--	--
				1,2-Dichloroethane	6.00E-04	mg/L	1.5E-06	mg/kg-day	9.1E-02	(mg/kg-day)-1	1.3E-07
				1,2-Dichloroethene (Total)	9.47E-02	mg/L	2.3E-04	mg/kg-day	--	--	--
				1,2-Dichloropropane	2.00E-03	mg/L	4.9E-06	mg/kg-day	6.8E-02	(mg/kg-day)-1	3.4E-07
				1,2,3-Trichloropropane	3.00E-04	mg/L	7.4E-07	mg/kg-day	2.0E+00	(mg/kg-day)-1	1.5E-06
				1,3-Dichloropropane	6.72E-04	mg/L	1.7E-06	mg/kg-day	6.8E-02	(mg/kg-day)-1	1.1E-07
				2,2'-Oxybis(1-chloropropane)	7.00E-04	mg/L	1.7E-06	mg/kg-day	--	--	--
				2-Methylnaphthalene	1.80E-01	mg/L	4.4E-04	mg/kg-day	--	--	--
				4-Methylphenol	2.38E-01	mg/L	5.9E-04	mg/kg-day	--	--	--
				Antimony	4.17E-03	mg/L	1.0E-05	mg/kg-day	--	--	--
				Arsenic	1.32E-02	mg/L	3.3E-05	mg/kg-day	1.5E+00	(mg/kg-day)-1	4.9E-05
				Benzene	1.89E-03	mg/L	4.7E-06	mg/kg-day	5.5E-02	(mg/kg-day)-1	2.6E-07
				Benz(a)anthracene	1.00E-03	mg/L	2.5E-06	mg/kg-day	7.3E-01	(mg/kg-day)-1	1.8E-06

TABLE H2-8.1.3.CTE
EPA RAGS PART D TABLE 7a
CALCULATION OF CTE CHEMICAL CANCER RISKS
CURRENT ADULT RESIDENT
SITE 09, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future
Receptor Population:	Resident
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk
							Value	Units	Value	Units	
				Benzo(a)pyrene	2.00E-03	mg/L	4.9E-06	mg/kg-day	7.3E+00	(mg/kg-day)-1	3.6E-05
				Benzo(b)fluoranthene	2.00E-03	mg/L	4.9E-06	mg/kg-day	7.3E-01	(mg/kg-day)-1	3.6E-06
				Benzo(k)fluoranthene	8.00E-04	mg/L	2.0E-06	mg/kg-day	7.3E-02	(mg/kg-day)-1	1.4E-07
				Chloroethane	3.70E-03	mg/L	9.1E-06	mg/kg-day	2.9E-03	(mg/kg-day)-1	2.6E-08
				Chrysene	1.00E-03	mg/L	2.5E-06	mg/kg-day	7.3E-03	(mg/kg-day)-1	1.8E-08
				Ethylbenzene	6.57E-03	mg/L	1.6E-05	mg/kg-day	3.9E-03	(mg/kg-day)-1	6.2E-08
				Indeno(1,2,3-cd)pyrene	1.00E-03	mg/L	2.5E-06	mg/kg-day	7.3E-01	(mg/kg-day)-1	1.8E-06
				Lead	1.67E-03	mg/L	4.1E-06	mg/kg-day	--	(mg/kg-day)-1	--
				Manganese	1.23E+00	mg/L	3.0E-03	mg/kg-day	--	(mg/kg-day)-1	--
				Methyl-t-butyl ether	4.76E-03	mg/L	1.2E-05	mg/kg-day	3.3E-03	(mg/kg-day)-1	3.9E-08
				Naphthalene	6.32E-01	mg/L	1.6E-03	mg/kg-day	--	(mg/kg-day)-1	--
				Pentachlorophenol	2.00E-03	mg/L	4.9E-06	mg/kg-day	1.2E-01	(mg/kg-day)-1	5.9E-07
				Tetrachloroethene	1.98E-03	mg/L	4.9E-06	mg/kg-day	5.2E-02	(mg/kg-day)-1	2.5E-07
				Trichloroethene	2.37E-03	mg/L	5.8E-06	mg/kg-day	4.0E-01	(mg/kg-day)-1	2.3E-06
				Vinyl chloride	7.74E-03	mg/L	1.9E-05	mg/kg-day	1.5E+00	(mg/kg-day)-1	2.9E-05
				Xylene (Total)	5.18E-02	mg/L	1.3E-04	mg/kg-day	--	(mg/kg-day)-1	--
			Exp. Route Total								1.3E-04
			Dermal (bathing/ showering)	1,1-Dichloroethane	5.06E-03	mg/L	2.7E-07	mg/kg-day	--	--	--
				1,2-Dichloroethane	6.00E-04	mg/L	2.0E-08	mg/kg-day	9.1E-02	(mg/kg-day)-1	1.8E-09
				1,2-Dichloroethene (Total)	9.47E-02	mg/L	5.8E-06	mg/kg-day	--	--	--
				1,2-Dichloropropane	2.00E-03	mg/L	1.2E-07	mg/kg-day	6.8E-02	(mg/kg-day)-1	8.4E-09
				1,2,3-Trichloropropane	3.00E-04	mg/L	1.8E-08	mg/kg-day	2.0E+00	(mg/kg-day)-1	3.5E-08
				1,3-Dichloropropane	6.72E-04	mg/L	4.2E-08	mg/kg-day	6.8E-02	(mg/kg-day)-1	2.8E-09
				2,2'-Oxybis(1-chloropropane)	7.00E-04	mg/L	4.2E-08	mg/kg-day	--	--	--
				2-Methylnaphthalene	1.80E-01	mg/L	6.7E-05	mg/kg-day	--	--	--
				4-Methylphenol	2.38E-01	mg/L	1.4E-05	mg/kg-day	--	--	--
				Antimony	4.17E-03	mg/L	3.3E-08	mg/kg-day	--	--	--
				Arsenic	1.32E-02	mg/L	1.0E-07	mg/kg-day	1.5E+00	(mg/kg-day)-1	1.6E-07
				Benzene	1.89E-03	mg/L	3.1E-07	mg/kg-day	5.5E-02	(mg/kg-day)-1	1.7E-08
				Benz(a)anthracene	1.00E-03	mg/L	3.7E-06	mg/kg-day	7.3E-01	(mg/kg-day)-1	2.7E-06
				Benzo(a)pyrene	2.00E-03	mg/L	1.1E-05	mg/kg-day	7.3E+00	(mg/kg-day)-1	8.1E-05
				Benzo(b)fluoranthene	2.00E-03	mg/L	1.1E-05	mg/kg-day	7.3E-01	(mg/kg-day)-1	8.1E-06
				Benzo(k)fluoranthene	8.00E-04	mg/L	1.4E-06	mg/kg-day	7.3E-02	(mg/kg-day)-1	1.0E-07
				Chloroethane	3.70E-03	mg/L	1.8E-07	mg/kg-day	2.9E-03	(mg/kg-day)-1	5.2E-10

TABLE H2-8.1.3.CTE
EPA RAGS PART D TABLE 7a
CALCULATION OF CTE CHEMICAL CANCER RISKS
CURRENT ADULT RESIDENT
SITE 09, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future
Receptor Population:	Resident
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk
							Value	Units	Value	Units	
				Chrysene	1.00E-03	mg/L	3.7E-06	mg/kg-day	7.3E-03	(mg/kg-day)-1	2.7E-08
				Ethylbenzene	6.57E-03	mg/L	2.6E-06	mg/kg-day	3.9E-03	(mg/kg-day)-1	9.8E-09
				Indeno(1,2,3-cd)pyrene	1.00E-03	mg/L	7.9E-06	mg/kg-day	7.3E-01	(mg/kg-day)-1	5.8E-06
				Lead	1.67E-03	mg/L	1.3E-08	mg/kg-day	--	(mg/kg-day)-1	--
				Manganese	1.23E+00	mg/L	9.7E-06	mg/kg-day	--	(mg/kg-day)-1	--
				Methyl-t-butyl ether	4.76E-03	mg/L	8.0E-08	mg/kg-day	3.3E-03	(mg/kg-day)-1	2.6E-10
				Naphthalene	6.32E-01	mg/L	2.4E-04	mg/kg-day	--	(mg/kg-day)-1	--
				Pentachlorophenol	2.00E-03	mg/L	6.2E-06	mg/kg-day	1.2E-01	(mg/kg-day)-1	7.4E-07
				Tetrachloroethene	1.98E-03	mg/L	5.2E-07	mg/kg-day	5.2E-02	(mg/kg-day)-1	2.7E-08
				Trichloroethene	2.37E-03	mg/L	2.3E-07	mg/kg-day	4.0E-01	(mg/kg-day)-1	9.0E-08
				Vinyl chloride	7.74E-03	mg/L	3.4E-07	mg/kg-day	1.5E+00	(mg/kg-day)-1	5.2E-07
				Xylene (Total)	5.18E-02	mg/L	2.2E-05	mg/kg-day	--	(mg/kg-day)-1	--
			Exp. Route Total								9.9E-05
			Inhalation (bathing/ showering)	1,1-Dichloroethane	5.06E-03	mg/L	3.9E-08	mg/kg-day	--	--	--
				1,2-Dichloroethane	6.00E-04	mg/L	4.6E-09	mg/kg-day	9.1E-02	(mg/kg-day)-1	4.2E-10
				1,2-Dichloroethene (Total)	9.47E-02	mg/L	7.2E-07	mg/kg-day	--	--	--
				1,2-Dichloropropane	2.00E-03	mg/L	1.5E-08	mg/kg-day	6.8E-02	(mg/kg-day)-1	1.0E-09
				1,2,3-Trichloropropane	3.00E-04	mg/L	2.3E-09	mg/kg-day	2.0E+00	(mg/kg-day)-1	4.6E-09
				1,3-Dichloropropane	6.72E-04	mg/L	5.1E-09	mg/kg-day	6.8E-02	(mg/kg-day)-1	3.5E-10
				2,2'-Oxybis(1-chloropropane)	7.00E-04	mg/L	5.3E-09	mg/kg-day	--	--	--
				2-Methylnaphthalene	1.80E-01	mg/L	1.4E-06	mg/kg-day	--	(mg/kg-day)-1	--
				Benzene	1.89E-03	mg/L	1.4E-08	mg/kg-day	2.7E-02	(mg/kg-day)-1	3.9E-10
				Chloroethane	3.70E-03	mg/L	2.8E-08	mg/kg-day	2.9E-03	(mg/kg-day)-1	8.2E-11
				Ethylbenzene	6.57E-03	mg/L	5.0E-08	mg/kg-day	3.9E-03	(mg/kg-day)-1	1.9E-10
				Methyl-t-butyl ether	4.76E-03	mg/L	3.6E-08	mg/kg-day	3.5E-04	(mg/kg-day)-1	1.3E-11
				Naphthalene	6.32E-01	mg/L	4.8E-06	mg/kg-day	--	(mg/kg-day)-1	--
				Tetrachloroethene	1.98E-03	mg/L	1.5E-08	mg/kg-day	1.0E-02	(mg/kg-day)-1	1.5E-10
				Trichloroethene	2.37E-03	mg/L	1.8E-08	mg/kg-day	4.0E-01	(mg/kg-day)-1	7.2E-09
				Vinyl chloride	7.74E-03	mg/L	5.9E-08	mg/kg-day	3.1E-02	(mg/kg-day)-1	1.8E-09
				Xylene (Total)	5.18E-02	mg/L	3.9E-07	mg/kg-day	--	(mg/kg-day)-1	--
			Exp. Route Total								1.6E-08
		Exposure Point Total									2.3E-04
	Exposure Medium Total										2.3E-04

TABLE H2-8.1.3.CTE
EPA RAGS PART D TABLE 7a
CALCULATION OF CTE CHEMICAL CANCER RISKS
CURRENT ADULT RESIDENT
SITE 09, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future
Receptor Population:	Resident
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk
							Value	Units	Value	Units	
Medium Total											2.3E-04
										Total of Receptor Risks Across All Media	2.3E-04

Notes:

–	Not Applicable or Not Available
CSF	Cancer slope factor
EPC	Exposure point concentration
mg/kg	Milligram per kilogram
mg/kg-day	Milligram per kilogram per day
(mg/kg-day)-1	1/(Milligram per kilogram per day)
CTE	Central tendency exposure

(a) See the Vapor Intrusion to Indoor Air Evaluation for determination of the modeled indoor air concentration.

TABLE H2-8.1.4.CTE
EPA RAGS PART D TABLE 7a
CALCULATION OF CTE CHEMICAL CANCER RISKS
CURRENT CHILD RESIDENT
SITE 09, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future
Receptor Population:	Resident
Receptor Age:	Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk
							Value	Units	Value	Units	
Soil (0-2)	Soil	Site Soil	Ingestion	Arsenic	2.45E+00	mg/kg	1.3E-06	mg/kg-day	1.5E+00	(mg/kg-day)-1	2.0E-06
			Exp. Route Total								2.0E-06
			Dermal	Arsenic	2.45E+00	mg/kg	4.5E-08	mg/kg-day	1.5E+00	(mg/kg-day)-1	6.8E-08
			Exp. Route Total								6.8E-08
		Exposure Point Total									2.1E-06
	Exposure Medium Total										2.1E-06
	Homegrown Produce	Homegrown Produce	Ingestion	Arsenic	2.45E+00	mg/kg	2.0E-07	mg/kg-day	1.5E+00	(mg/kg-day)-1	2.9E-07
			Exp. Route Total								2.9E-07
		Exposure Point Total									2.9E-07
	Exposure Medium Total										2.9E-07
	Air	Outdoor Air	Inhalation (particulates)	Arsenic	2.45E+00	mg/kg	4.3E-12	mg/kg-day	1.5E+01	(mg/kg-day)-1	6.4E-11
			Exp. Route Total								6.4E-11
		Exposure Point Total									6.4E-11
	Exposure Medium Total										6.4E-11
Medium Total											2.4E-06
Groundwater	Groundwater	Indoor Air (Vapor Intrusion)	Inhalation	Benzene	7.90E-01	(a) ug/m^3	1.8E-06	mg/kg-day	2.7E-02	(mg/kg-day)-1	4.9E-08
				Vinyl chloride	8.90E+00	(a) ug/m^3	2.0E-05	mg/kg-day	3.1E-02	(mg/kg-day)-1	6.3E-07
			Exp. Route Total								6.8E-07
		Exposure Point Total									6.8E-07
		Tap	Ingestion	1,1-Dichloroethane	5.06E-03	mg/L	2.8E-05	mg/kg-day	--	--	--
				1,2-Dichloroethane	6.00E-04	mg/L	3.3E-06	mg/kg-day	9.1E-02	(mg/kg-day)-1	3.0E-07
				1,2-Dichloroethene (Total)	9.47E-02	mg/L	5.2E-04	mg/kg-day	--	--	--
				1,2-Dichloropropane	2.00E-03	mg/L	1.1E-05	mg/kg-day	6.8E-02	(mg/kg-day)-1	7.5E-07
				1,2,3-Trichloropropane	3.00E-04	mg/L	1.6E-06	mg/kg-day	2.0E+00	(mg/kg-day)-1	3.3E-06
				1,3-Dichloropropane	6.72E-04	mg/L	3.7E-06	mg/kg-day	6.8E-02	(mg/kg-day)-1	2.5E-07
				2,2'-Oxybis(1-chloropropane)	7.00E-04	mg/L	3.8E-06	mg/kg-day	--	--	--
				2-Methylnaphthalene	1.80E-01	mg/L	9.9E-04	mg/kg-day	--	--	--
				4-Methylphenol	2.38E-01	mg/L	1.3E-03	mg/kg-day	--	--	--
				Antimony	4.17E-03	mg/L	2.3E-05	mg/kg-day	--	--	--
				Arsenic	1.32E-02	mg/L	7.2E-05	mg/kg-day	1.5E+00	(mg/kg-day)-1	1.1E-04
				Benzene	1.89E-03	mg/L	1.0E-05	mg/kg-day	5.5E-02	(mg/kg-day)-1	5.7E-07
				Benz(a)anthracene	1.00E-03	mg/L	5.5E-06	mg/kg-day	7.3E-01	(mg/kg-day)-1	4.0E-06

TABLE H2-8.1.4.CTE
EPA RAGS PART D TABLE 7a
CALCULATION OF CTE CHEMICAL CANCER RISKS
CURRENT CHILD RESIDENT
SITE 09, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future
Receptor Population:	Resident
Receptor Age:	Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk
							Value	Units	Value	Units	
				Benzo(a)pyrene	2.00E-03	mg/L	1.1E-05	mg/kg-day	7.3E+00	(mg/kg-day)-1	8.0E-05
				Benzo(b)fluoranthene	2.00E-03	mg/L	1.1E-05	mg/kg-day	7.3E-01	(mg/kg-day)-1	8.0E-06
				Benzo(k)fluoranthene	8.00E-04	mg/L	4.4E-06	mg/kg-day	7.3E-02	(mg/kg-day)-1	3.2E-07
				Chloroethane	3.70E-03	mg/L	2.0E-05	mg/kg-day	2.9E-03	(mg/kg-day)-1	5.9E-08
				Chrysene	1.00E-03	mg/L	5.5E-06	mg/kg-day	7.3E-03	(mg/kg-day)-1	4.0E-08
				Ethylbenzene	6.57E-03	mg/L	3.6E-05	mg/kg-day	3.9E-03	(mg/kg-day)-1	1.4E-07
				Indeno(1,2,3-cd)pyrene	1.00E-03	mg/L	5.5E-06	mg/kg-day	7.3E-01	(mg/kg-day)-1	4.0E-06
				Lead	1.67E-03	mg/L	9.2E-06	mg/kg-day	--	(mg/kg-day)-1	--
				Manganese	1.23E+00	mg/L	6.7E-03	mg/kg-day	--	(mg/kg-day)-1	--
				Methyl-t-butyl ether	4.76E-03	mg/L	2.6E-05	mg/kg-day	3.3E-03	(mg/kg-day)-1	8.6E-08
				Naphthalene	6.32E-01	mg/L	3.5E-03	mg/kg-day	--	(mg/kg-day)-1	--
				Pentachlorophenol	2.00E-03	mg/L	1.1E-05	mg/kg-day	1.2E-01	(mg/kg-day)-1	1.3E-06
				Tetrachloroethene	1.98E-03	mg/L	1.1E-05	mg/kg-day	5.2E-02	(mg/kg-day)-1	5.6E-07
				Trichloroethene	2.37E-03	mg/L	1.3E-05	mg/kg-day	4.0E-01	(mg/kg-day)-1	5.2E-06
				Vinyl chloride	7.74E-03	mg/L	4.2E-05	mg/kg-day	1.5E+00	(mg/kg-day)-1	6.4E-05
				Xylene (Total)	5.18E-02	mg/L	2.8E-04	mg/kg-day	--	(mg/kg-day)-1	--
			Exp. Route Total								2.8E-04
			Dermal (bathing/ showering)	1,1-Dichloroethane	5.06E-03	mg/L	4.0E-07	mg/kg-day	--	--	--
				1,2-Dichloroethane	6.00E-04	mg/L	3.0E-08	mg/kg-day	9.1E-02	(mg/kg-day)-1	2.7E-09
				1,2-Dichloroethene (Total)	9.47E-02	mg/L	8.7E-06	mg/kg-day	--	--	--
				1,2-Dichloropropane	2.00E-03	mg/L	1.9E-07	mg/kg-day	6.8E-02	(mg/kg-day)-1	1.3E-08
				1,2,3-Trichloropropane	3.00E-04	mg/L	2.7E-08	mg/kg-day	2.0E+00	(mg/kg-day)-1	5.3E-08
				1,3-Dichloropropane	6.72E-04	mg/L	6.3E-08	mg/kg-day	6.8E-02	(mg/kg-day)-1	4.3E-09
				2,2'-Oxybis(1-chloropropane)	7.00E-04	mg/L	6.3E-08	mg/kg-day	--	--	--
				2-Methylnaphthalene	1.80E-01	mg/L	1.0E-04	mg/kg-day	--	--	--
				4-Methylphenol	2.38E-01	mg/L	2.1E-05	mg/kg-day	--	--	--
				Antimony	4.17E-03	mg/L	5.0E-08	mg/kg-day	--	--	--
				Arsenic	1.32E-02	mg/L	1.6E-07	mg/kg-day	1.5E+00	(mg/kg-day)-1	2.4E-07
				Benzene	1.89E-03	mg/L	4.7E-07	mg/kg-day	5.5E-02	(mg/kg-day)-1	2.6E-08
				Benz(a)anthracene	1.00E-03	mg/L	5.6E-06	mg/kg-day	7.3E-01	(mg/kg-day)-1	4.1E-06
				Benzo(a)pyrene	2.00E-03	mg/L	1.7E-05	mg/kg-day	7.3E+00	(mg/kg-day)-1	1.2E-04
				Benzo(b)fluoranthene	2.00E-03	mg/L	1.7E-05	mg/kg-day	7.3E-01	(mg/kg-day)-1	1.2E-05
				Benzo(k)fluoranthene	8.00E-04	mg/L	2.1E-06	mg/kg-day	7.3E-02	(mg/kg-day)-1	1.5E-07
				Chloroethane	3.70E-03	mg/L	2.7E-07	mg/kg-day	2.9E-03	(mg/kg-day)-1	7.8E-10

TABLE H2-8.1.4.CTE
EPA RAGS PART D TABLE 7a
CALCULATION OF CTE CHEMICAL CANCER RISKS
CURRENT CHILD RESIDENT
SITE 09, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future
Receptor Population:	Resident
Receptor Age:	Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk
							Value	Units	Value	Units	
				Chrysene	1.00E-03	mg/L	5.6E-06	mg/kg-day	7.3E-03	(mg/kg-day)-1	4.1E-08
				Ethylbenzene	6.57E-03	mg/L	3.8E-06	mg/kg-day	3.9E-03	(mg/kg-day)-1	1.5E-08
				Indeno(1,2,3-cd)pyrene	1.00E-03	mg/L	1.2E-05	mg/kg-day	7.3E-01	(mg/kg-day)-1	8.7E-06
				Lead	1.67E-03	mg/L	2.0E-08	mg/kg-day	--	(mg/kg-day)-1	--
				Manganese	1.23E+00	mg/L	1.5E-05	mg/kg-day	--	(mg/kg-day)-1	--
				Methyl-t-butyl ether	4.76E-03	mg/L	1.2E-07	mg/kg-day	3.3E-03	(mg/kg-day)-1	4.0E-10
				Naphthalene	6.32E-01	mg/L	3.5E-04	mg/kg-day	--	(mg/kg-day)-1	--
				Pentachlorophenol	2.00E-03	mg/L	9.3E-06	mg/kg-day	1.2E-01	(mg/kg-day)-1	1.1E-06
				Tetrachloroethene	1.98E-03	mg/L	7.8E-07	mg/kg-day	5.2E-02	(mg/kg-day)-1	4.1E-08
				Trichloroethene	2.37E-03	mg/L	3.4E-07	mg/kg-day	4.0E-01	(mg/kg-day)-1	1.4E-07
				Vinyl chloride	7.74E-03	mg/L	5.2E-07	mg/kg-day	1.5E+00	(mg/kg-day)-1	7.8E-07
				Xylene (Total)	5.18E-02	mg/L	3.3E-05	mg/kg-day	--	(mg/kg-day)-1	--
			Exp. Route Total								1.5E-04
			Inhalation (bathing/ showering)	1,1-Dichloroethane	5.06E-03	mg/L	8.0E-08	mg/kg-day	--	--	--
				1,2-Dichloroethane	6.00E-04	mg/L	9.5E-09	mg/kg-day	9.1E-02	(mg/kg-day)-1	8.6E-10
				1,2-Dichloroethene (Total)	9.47E-02	mg/L	1.5E-06	mg/kg-day	--	--	--
				1,2-Dichloropropane	2.00E-03	mg/L	3.2E-08	mg/kg-day	6.8E-02	(mg/kg-day)-1	2.2E-09
				1,2,3-Trichloropropane	3.00E-04	mg/L	4.7E-09	mg/kg-day	2.0E+00	(mg/kg-day)-1	9.5E-09
				1,3-Dichloropropane	6.72E-04	mg/L	1.1E-08	mg/kg-day	6.8E-02	(mg/kg-day)-1	7.2E-10
				2,2'-Oxybis(1-chloropropane)	7.00E-04	mg/L	1.1E-08	mg/kg-day	--	--	--
				2-Methylnaphthalene	1.80E-01	mg/L	2.8E-06	mg/kg-day	--	(mg/kg-day)-1	--
				Benzene	1.89E-03	mg/L	3.0E-08	mg/kg-day	2.7E-02	(mg/kg-day)-1	8.1E-10
				Chloroethane	3.70E-03	mg/L	5.9E-08	mg/kg-day	2.9E-03	(mg/kg-day)-1	1.7E-10
				Ethylbenzene	6.57E-03	mg/L	1.0E-07	mg/kg-day	3.9E-03	(mg/kg-day)-1	4.0E-10
				Methyl-t-butyl ether	4.76E-03	mg/L	7.5E-08	mg/kg-day	3.5E-04	(mg/kg-day)-1	2.6E-11
				Naphthalene	6.32E-01	mg/L	1.0E-05	mg/kg-day	--	(mg/kg-day)-1	--
				Tetrachloroethene	1.98E-03	mg/L	3.1E-08	mg/kg-day	1.0E-02	(mg/kg-day)-1	3.1E-10
				Trichloroethene	2.37E-03	mg/L	3.7E-08	mg/kg-day	4.0E-01	(mg/kg-day)-1	1.5E-08
				Vinyl chloride	7.74E-03	mg/L	1.2E-07	mg/kg-day	3.1E-02	(mg/kg-day)-1	3.8E-09
				Xylene (Total)	5.18E-02	mg/L	8.2E-07	mg/kg-day	--	(mg/kg-day)-1	--
			Exp. Route Total								3.4E-08
		Exposure Point Total									4.3E-04
	Exposure Medium Total										4.3E-04

TABLE H2-8.1.4.CTE
EPA RAGS PART D TABLE 7a
CALCULATION OF CTE CHEMICAL CANCER RISKS
CURRENT CHILD RESIDENT
SITE 09, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future
Receptor Population:	Resident
Receptor Age:	Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk
							Value	Units	Value	Units	
Medium Total											4.3E-04
										Total of Receptor Risks Across All Media	4.3E-04

Notes:

--	Not Applicable or Not Available
CSF	Cancer slope factor
EPC	Exposure point concentration
mg/kg	Milligram per kilogram
mg/kg-day	Milligram per kilogram per day
(mg/kg-day)-1	1/(Milligram per kilogram per day)
CTE	Central tendency exposure

(a) See the Vapor Intrusion to Indoor Air Evaluation for determination of the modeled indoor air concentration.

TABLE H2-8.1.5.CTE
EPA RAGS PART D TABLE 7a
CALCULATION OF CTE CHEMICAL CANCER RISKS
FUTURE DEVELOPED CONSTRUCTION WORKER
SITE 09, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future-Developed
Receptor Population:	Construction Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk
							Value	Units	Value	Units	
Soil (0-8)	Soil	Site Soil	Ingestion	Arsenic	2.78E+00	mg/kg	9.3E-09	mg/kg-day	1.5E+00	(mg/kg-day)-1	1.4E-08
			Exp. Route Total								1.4E-08
			Dermal	Arsenic	2.78E+00	mg/kg	9.2E-10	mg/kg-day	1.5E+00	(mg/kg-day)-1	1.4E-09
			Exp. Route Total								1.4E-09
		Exposure Point Total									1.5E-08
	Exposure Medium Total										1.5E-08
	Air	Outdoor Air	Inhalation (particulates)	Arsenic	2.78E+00	mg/kg	1.4E-12	mg/kg-day	1.5E+01	(mg/kg-day)-1	2.1E-11
			Exp. Route Total								2.1E-11
		Exposure Point Total									2.1E-11
	Exposure Medium Total										2.1E-11
Medium Total											1.5E-08
										Total of Receptor Risks Across All Media	1.5E-08

Notes:

CSF	Cancer slope factor
EPC	Exposure point concentration
mg/kg	Milligram per kilogram
mg/kg-day	Milligram per kilogram per day
(mg/kg-day)-1	1/(Milligram per kilogram per day)
CTE	Central tendency exposure

TABLE H2-8.1.6.CTE
EPA RAGS PART D TABLE 7a
CALCULATION OF CTE CHEMICAL CANCER RISKS
FUTURE REDEVELOPED ADULT RESIDENT
SITE 09, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe: Future-Redeveloped
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk
							Value	Units	Value	Units	
Soil (0-8)	Soil	Site Soil	Ingestion	Arsenic	2.78E+00	mg/kg	2.4E-07	mg/kg-day	1.5E+00	(mg/kg-day)-1	3.7E-07
			Exp. Route Total								3.7E-07
			Dermal	Arsenic	2.78E+00	mg/kg	8.4E-09	mg/kg-day	1.5E+00	(mg/kg-day)-1	1.3E-08
			Exp. Route Total								1.3E-08
		Exposure Point Total									3.8E-07
	Exposure Medium Total										3.8E-07
	Homegrown Produce	Homegrown Produce	Ingestion	Arsenic	2.78E+00	mg/kg	3.3E-07	mg/kg-day	1.5E+00	(mg/kg-day)-1	5.0E-07
			Exp. Route Total								5.0E-07
		Exposure Point Total									5.0E-07
	Exposure Medium Total										5.0E-07
	Air	Outdoor Air	Inhalation (particulates)	Arsenic	2.78E+00	mg/kg	3.1E-12	mg/kg-day	1.5E+01	(mg/kg-day)-1	4.6E-11
			Exp. Route Total								4.6E-11
		Exposure Point Total									4.6E-11
	Exposure Medium Total										4.6E-11
Medium Total											8.8E-07
Groundwater	Groundwater	Indoor Air (Vapor Intrusion)	Inhalation	Benzene	7.90E-01	(a) ug/m^3	1.2E-06	mg/kg-day	2.7E-02	(mg/kg-day)-1	3.1E-08
				Vinyl chloride	8.90E+00	(a) ug/m^3	1.3E-05	mg/kg-day	3.1E-02	(mg/kg-day)-1	4.0E-07
			Exp. Route Total								4.3E-07
		Exposure Point Total									4.3E-07
		Tap	Ingestion	1,1-Dichloroethane	5.06E-03	mg/L	1.2E-05	mg/kg-day	--	--	--
				1,2-Dichloroethane	6.00E-04	mg/L	1.5E-06	mg/kg-day	9.1E-02	(mg/kg-day)-1	1.3E-07
				1,2-Dichloroethene (Total)	9.47E-02	mg/L	2.3E-04	mg/kg-day	--	--	--
				1,2-Dichloropropane	2.00E-03	mg/L	4.9E-06	mg/kg-day	6.8E-02	(mg/kg-day)-1	3.4E-07
				1,2,3-Trichloropropane	3.00E-04	mg/L	7.4E-07	mg/kg-day	2.0E+00	(mg/kg-day)-1	1.5E-06
				1,3-Dichloropropane	6.72E-04	mg/L	1.7E-06	mg/kg-day	6.8E-02	(mg/kg-day)-1	1.1E-07
				2,2'-Oxybis(1-chloropropane)	7.00E-04	mg/L	1.7E-06	mg/kg-day	--	--	--
				2-Methylnaphthalene	1.80E-01	mg/L	4.4E-04	mg/kg-day	--	--	--
				4-Methylphenol	2.38E-01	mg/L	5.9E-04	mg/kg-day	--	--	--
				Antimony	4.17E-03	mg/L	1.0E-05	mg/kg-day	--	--	--
				Arsenic	1.32E-02	mg/L	3.3E-05	mg/kg-day	1.5E+00	(mg/kg-day)-1	4.9E-05
				Benzene	1.89E-03	mg/L	4.7E-06	mg/kg-day	5.5E-02	(mg/kg-day)-1	2.6E-07
				Benz(a)anthracene	1.00E-03	mg/L	2.5E-06	mg/kg-day	7.3E-01	(mg/kg-day)-1	1.8E-06

TABLE H2-8.1.6.CTE
EPA RAGS PART D TABLE 7a
CALCULATION OF CTE CHEMICAL CANCER RISKS
FUTURE REDEVELOPED ADULT RESIDENT
SITE 09, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future-Redeveloped
Receptor Population:	Resident
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk
							Value	Units	Value	Units	
				Benzo(a)pyrene	2.00E-03	mg/L	4.9E-06	mg/kg-day	7.3E+00	(mg/kg-day)-1	3.6E-05
				Benzo(b)fluoranthene	2.00E-03	mg/L	4.9E-06	mg/kg-day	7.3E-01	(mg/kg-day)-1	3.6E-06
				Benzo(k)fluoranthene	8.00E-04	mg/L	2.0E-06	mg/kg-day	7.3E-02	(mg/kg-day)-1	1.4E-07
				Chloroethane	3.70E-03	mg/L	9.1E-06	mg/kg-day	2.9E-03	(mg/kg-day)-1	2.6E-08
				Chrysene	1.00E-03	mg/L	2.5E-06	mg/kg-day	7.3E-03	(mg/kg-day)-1	1.8E-08
				Ethylbenzene	6.57E-03	mg/L	1.6E-05	mg/kg-day	3.9E-03	(mg/kg-day)-1	6.2E-08
				Indeno(1,2,3-cd)pyrene	1.00E-03	mg/L	2.5E-06	mg/kg-day	7.3E-01	(mg/kg-day)-1	1.8E-06
				Lead	1.67E-03	mg/L	4.1E-06	mg/kg-day	--	(mg/kg-day)-1	--
				Manganese	1.23E+00	mg/L	3.0E-03	mg/kg-day	--	(mg/kg-day)-1	--
				Methyl-t-butyl ether	4.76E-03	mg/L	1.2E-05	mg/kg-day	3.3E-03	(mg/kg-day)-1	3.9E-08
				Naphthalene	6.32E-01	mg/L	1.6E-03	mg/kg-day	--	(mg/kg-day)-1	--
				Pentachlorophenol	2.00E-03	mg/L	4.9E-06	mg/kg-day	1.2E-01	(mg/kg-day)-1	5.9E-07
				Tetrachloroethene	1.98E-03	mg/L	4.9E-06	mg/kg-day	5.2E-02	(mg/kg-day)-1	2.5E-07
				Trichloroethene	2.37E-03	mg/L	5.8E-06	mg/kg-day	4.0E-01	(mg/kg-day)-1	2.3E-06
				Vinyl chloride	7.74E-03	mg/L	1.9E-05	mg/kg-day	1.5E+00	(mg/kg-day)-1	2.9E-05
				Xylene (Total)	5.18E-02	mg/L	1.3E-04	mg/kg-day	--	(mg/kg-day)-1	--
			Exp. Route Total								1.3E-04
			Dermal	1,1-Dichloroethane	5.06E-03	mg/L	2.7E-07	mg/kg-day	--	--	--
			(bathing/	1,2-Dichloroethane	6.00E-04	mg/L	2.0E-08	mg/kg-day	9.1E-02	(mg/kg-day)-1	1.8E-09
			showering)	1,2-Dichloroethene (Total)	9.47E-02	mg/L	5.8E-06	mg/kg-day	--	--	--
				1,2-Dichloropropane	2.00E-03	mg/L	1.2E-07	mg/kg-day	6.8E-02	(mg/kg-day)-1	8.4E-09
				1,2,3-Trichloropropane	3.00E-04	mg/L	1.8E-08	mg/kg-day	2.0E+00	(mg/kg-day)-1	3.5E-08
				1,3-Dichloropropane	6.72E-04	mg/L	4.2E-08	mg/kg-day	6.8E-02	(mg/kg-day)-1	2.8E-09
				2,2'-Oxybis(1-chloropropane)	7.00E-04	mg/L	4.2E-08	mg/kg-day	--	--	--
				2-Methylnaphthalene	1.80E-01	mg/L	6.7E-05	mg/kg-day	--	--	--
				4-Methylphenol	2.38E-01	mg/L	1.4E-05	mg/kg-day	--	--	--
				Antimony	4.17E-03	mg/L	3.3E-08	mg/kg-day	--	--	--
				Arsenic	1.32E-02	mg/L	1.0E-07	mg/kg-day	1.5E+00	(mg/kg-day)-1	1.6E-07
				Benzene	1.89E-03	mg/L	3.1E-07	mg/kg-day	5.5E-02	(mg/kg-day)-1	1.7E-08
				Benz(a)anthracene	1.00E-03	mg/L	3.7E-06	mg/kg-day	7.3E-01	(mg/kg-day)-1	2.7E-06
				Benzo(a)pyrene	2.00E-03	mg/L	1.1E-05	mg/kg-day	7.3E+00	(mg/kg-day)-1	8.1E-05
				Benzo(b)fluoranthene	2.00E-03	mg/L	1.1E-05	mg/kg-day	7.3E-01	(mg/kg-day)-1	8.1E-06
				Benzo(k)fluoranthene	8.00E-04	mg/L	1.4E-06	mg/kg-day	7.3E-02	(mg/kg-day)-1	1.0E-07
				Chloroethane	3.70E-03	mg/L	1.8E-07	mg/kg-day	2.9E-03	(mg/kg-day)-1	5.2E-10

TABLE H2-8.1.6.CTE
EPA RAGS PART D TABLE 7a
CALCULATION OF CTE CHEMICAL CANCER RISKS
FUTURE REDEVELOPED ADULT RESIDENT
SITE 09, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future-Redeveloped
Receptor Population:	Resident
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk
							Value	Units	Value	Units	
				Chrysene	1.00E-03	mg/L	3.7E-06	mg/kg-day	7.3E-03	(mg/kg-day)-1	2.7E-08
				Ethylbenzene	6.57E-03	mg/L	2.6E-06	mg/kg-day	3.9E-03	(mg/kg-day)-1	9.8E-09
				Indeno(1,2,3-cd)pyrene	1.00E-03	mg/L	7.9E-06	mg/kg-day	7.3E-01	(mg/kg-day)-1	5.8E-06
				Lead	1.67E-03	mg/L	1.3E-08	mg/kg-day	--	(mg/kg-day)-1	--
				Manganese	1.23E+00	mg/L	9.7E-06	mg/kg-day	--	(mg/kg-day)-1	--
				Methyl-t-butyl ether	4.76E-03	mg/L	8.0E-08	mg/kg-day	3.3E-03	(mg/kg-day)-1	2.6E-10
				Naphthalene	6.32E-01	mg/L	2.4E-04	mg/kg-day	--	(mg/kg-day)-1	--
				Pentachlorophenol	2.00E-03	mg/L	6.2E-06	mg/kg-day	1.2E-01	(mg/kg-day)-1	7.4E-07
				Tetrachloroethene	1.98E-03	mg/L	5.2E-07	mg/kg-day	5.2E-02	(mg/kg-day)-1	2.7E-08
				Trichloroethene	2.37E-03	mg/L	2.3E-07	mg/kg-day	4.0E-01	(mg/kg-day)-1	9.0E-08
				Vinyl chloride	7.74E-03	mg/L	3.4E-07	mg/kg-day	1.5E+00	(mg/kg-day)-1	5.2E-07
				Xylene (Total)	5.18E-02	mg/L	2.2E-05	mg/kg-day	--	(mg/kg-day)-1	--
			Exp. Route Total								9.9E-05
			Inhalation (bathing/ showering)	1,1-Dichloroethane	5.06E-03	mg/L	3.9E-08	mg/kg-day	--	--	--
				1,2-Dichloroethane	6.00E-04	mg/L	4.6E-09	mg/kg-day	9.1E-02	(mg/kg-day)-1	4.2E-10
				1,2-Dichloroethene (Total)	9.47E-02	mg/L	7.2E-07	mg/kg-day	--	--	--
				1,2-Dichloropropane	2.00E-03	mg/L	1.5E-08	mg/kg-day	6.8E-02	(mg/kg-day)-1	1.0E-09
				1,2,3-Trichloropropane	3.00E-04	mg/L	2.3E-09	mg/kg-day	2.0E+00	(mg/kg-day)-1	4.6E-09
				1,3-Dichloropropane	6.72E-04	mg/L	5.1E-09	mg/kg-day	6.8E-02	(mg/kg-day)-1	3.5E-10
				2,2'-Oxybis(1-chloropropane)	7.00E-04	mg/L	5.3E-09	mg/kg-day	--	--	--
				2-Methylnaphthalene	1.80E-01	mg/L	1.4E-06	mg/kg-day	--	(mg/kg-day)-1	--
				Benzene	1.89E-03	mg/L	1.4E-08	mg/kg-day	2.7E-02	(mg/kg-day)-1	3.9E-10
				Chloroethane	3.70E-03	mg/L	2.8E-08	mg/kg-day	2.9E-03	(mg/kg-day)-1	8.2E-11
				Ethylbenzene	6.57E-03	mg/L	5.0E-08	mg/kg-day	3.9E-03	(mg/kg-day)-1	1.9E-10
				Methyl-t-butyl ether	4.76E-03	mg/L	3.6E-08	mg/kg-day	3.5E-04	(mg/kg-day)-1	1.3E-11
				Naphthalene	6.32E-01	mg/L	4.8E-06	mg/kg-day	--	(mg/kg-day)-1	--
				Tetrachloroethene	1.98E-03	mg/L	1.5E-08	mg/kg-day	1.0E-02	(mg/kg-day)-1	1.5E-10
				Trichloroethene	2.37E-03	mg/L	1.8E-08	mg/kg-day	4.0E-01	(mg/kg-day)-1	7.2E-09
				Vinyl chloride	7.74E-03	mg/L	5.9E-08	mg/kg-day	3.1E-02	(mg/kg-day)-1	1.8E-09
				Xylene (Total)	5.18E-02	mg/L	3.9E-07	mg/kg-day	--	(mg/kg-day)-1	--
			Exp. Route Total								1.6E-08
		Exposure Point Total									2.3E-04
	Exposure Medium Total										2.3E-04

TABLE H2-8.1.6.CTE
EPA RAGS PART D TABLE 7a
CALCULATION OF CTE CHEMICAL CANCER RISKS
FUTURE REDEVELOPED ADULT RESIDENT
SITE 09, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future-Redeveloped
Receptor Population:	Resident
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk
							Value	Units	Value	Units	
Medium Total											2.3E-04
										Total of Receptor Risks Across All Media	2.3E-04

Notes:

--	Not Applicable or Not Available
CSF	Cancer slope factor
EPC	Exposure point concentration
mg/kg	Milligram per kilogram
mg/kg-day	Milligram per kilogram per day
(mg/kg-day)-1	1/(Milligram per kilogram per day)
CTE	Central tendency exposure

(a) See the Vapor Intrusion to Indoor Air Evaluation for determination of the modeled indoor air concentration.

TABLE H2-8.1.7.CTE
EPA RAGS PART D TABLE 7b
CALCULATION OF CTE CHEMICAL CANCER RISKS
FUTURE REDEVELOPED CHILD RESIDENT
SITE 09, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future-Redeveloped
Receptor Population:	Resident
Receptor Age:	Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk
							Value	Units	Value	Units	
Soil (0-8)	Soil	Site Soil	Ingestion	Arsenic	2.78E+00	mg/kg	1.5E-06	mg/kg-day	1.5E+00	(mg/kg-day)-1	2.3E-06
			Exp. Route Total								2.3E-06
			Dermal	Arsenic	2.78E+00	mg/kg	5.1E-08	mg/kg-day	1.5E+00	(mg/kg-day)-1	7.7E-08
			Exp. Route Total								7.7E-08
		Exposure Point Total									2.4E-06
	Exposure Medium Total										2.4E-06
	Homegrown Produce	Homegrown Produce	Ingestion	Arsenic	2.78E+00	mg/kg	2.2E-07	mg/kg-day	1.5E+00	(mg/kg-day)-1	3.3E-07
			Exp. Route Total								3.3E-07
		Exposure Point Total									3.3E-07
	Exposure Medium Total										3.3E-07
	Air	Outdoor Air	Inhalation (particulates)	Arsenic	2.78E+00	mg/kg	4.8E-12	mg/kg-day	1.5E+01	(mg/kg-day)-1	7.3E-11
			Exp. Route Total								7.3E-11
		Exposure Point Total									7.3E-11
	Exposure Medium Total										7.3E-11
Medium Total											2.7E-06
Groundwater	Groundwater	Indoor Air (Vapor Intrusion)	Inhalation	Benzene	7.90E-01	(a) ug/m³	1.8E-06	mg/kg-day	2.7E-02	(mg/kg-day)-1	4.9E-08
				Vinyl chloride	8.90E+00	(a) ug/m³	2.0E-05	mg/kg-day	3.1E-02	(mg/kg-day)-1	6.3E-07
			Exp. Route Total								6.8E-07
		Exposure Point Total									6.8E-07
		Tap	Ingestion	1,1-Dichloroethane	5.06E-03	mg/L	2.8E-05	mg/kg-day	--	--	--
				1,2-Dichloroethane	6.00E-04	mg/L	3.3E-06	mg/kg-day	9.1E-02	(mg/kg-day)-1	3.0E-07
				1,2-Dichloroethene (Total)	9.47E-02	mg/L	5.2E-04	mg/kg-day	--	--	--
				1,2-Dichloropropane	2.00E-03	mg/L	1.1E-05	mg/kg-day	6.8E-02	(mg/kg-day)-1	7.5E-07
				1,2,3-Trichloropropane	3.00E-04	mg/L	1.6E-06	mg/kg-day	2.0E+00	(mg/kg-day)-1	3.3E-06
				1,3-Dichloropropane	6.72E-04	mg/L	3.7E-06	mg/kg-day	6.8E-02	(mg/kg-day)-1	2.5E-07
				2,2'-Oxybis(1-chloropropane)	7.00E-04	mg/L	3.8E-06	mg/kg-day	--	--	--
				2-Methylnaphthalene	1.80E-01	mg/L	9.9E-04	mg/kg-day	--	--	--
				4-Methylphenol	2.38E-01	mg/L	1.3E-03	mg/kg-day	--	--	--
				Antimony	4.17E-03	mg/L	2.3E-05	mg/kg-day	--	--	--
				Arsenic	1.32E-02	mg/L	7.2E-05	mg/kg-day	1.5E+00	(mg/kg-day)-1	1.1E-04
				Benzene	1.89E-03	mg/L	1.0E-05	mg/kg-day	5.5E-02	(mg/kg-day)-1	5.7E-07
				Benz(a)anthracene	1.00E-03	mg/L	5.5E-06	mg/kg-day	7.3E-01	(mg/kg-day)-1	4.0E-06

TABLE H2-8.1.7.CTE
EPA RAGS PART D TABLE 7b
CALCULATION OF CTE CHEMICAL CANCER RISKS
FUTURE REDEVELOPED CHILD RESIDENT
SITE 09, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future-Redeveloped
Receptor Population:	Resident
Receptor Age:	Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk
							Value	Units	Value	Units	
				Benzo(a)pyrene	2.00E-03	mg/L	1.1E-05	mg/kg-day	7.3E+00	(mg/kg-day)-1	8.0E-05
				Benzo(b)fluoranthene	2.00E-03	mg/L	1.1E-05	mg/kg-day	7.3E-01	(mg/kg-day)-1	8.0E-06
				Benzo(k)fluoranthene	8.00E-04	mg/L	4.4E-06	mg/kg-day	7.3E-02	(mg/kg-day)-1	3.2E-07
				Chloroethane	3.70E-03	mg/L	2.0E-05	mg/kg-day	2.9E-03	(mg/kg-day)-1	5.9E-08
				Chrysene	1.00E-03	mg/L	5.5E-06	mg/kg-day	7.3E-03	(mg/kg-day)-1	4.0E-08
				Ethylbenzene	6.57E-03	mg/L	3.6E-05	mg/kg-day	3.9E-03	(mg/kg-day)-1	1.4E-07
				Indeno(1,2,3-cd)pyrene	1.00E-03	mg/L	5.5E-06	mg/kg-day	7.3E-01	(mg/kg-day)-1	4.0E-06
				Lead	1.67E-03	mg/L	9.2E-06	mg/kg-day	--	(mg/kg-day)-1	--
				Manganese	1.23E+00	mg/L	6.7E-03	mg/kg-day	--	(mg/kg-day)-1	--
				Methyl-t-butyl ether	4.76E-03	mg/L	2.6E-05	mg/kg-day	3.3E-03	(mg/kg-day)-1	8.6E-08
				Naphthalene	6.32E-01	mg/L	3.5E-03	mg/kg-day	--	(mg/kg-day)-1	--
				Pentachlorophenol	2.00E-03	mg/L	1.1E-05	mg/kg-day	1.2E-01	(mg/kg-day)-1	1.3E-06
				Tetrachloroethene	1.98E-03	mg/L	1.1E-05	mg/kg-day	5.2E-02	(mg/kg-day)-1	5.6E-07
				Trichloroethene	2.37E-03	mg/L	1.3E-05	mg/kg-day	4.0E-01	(mg/kg-day)-1	5.2E-06
				Vinyl chloride	7.74E-03	mg/L	4.2E-05	mg/kg-day	1.5E+00	(mg/kg-day)-1	6.4E-05
				Xylene (Total)	5.18E-02	mg/L	2.8E-04	mg/kg-day	--	(mg/kg-day)-1	--
			Exp. Route Total								2.8E-04
			Dermal (bathing/ showering)	1,1-Dichloroethane	5.06E-03	mg/L	4.0E-07	mg/kg-day	--	--	--
				1,2-Dichloroethane	6.00E-04	mg/L	3.0E-08	mg/kg-day	9.1E-02	(mg/kg-day)-1	2.7E-09
				1,2-Dichloroethene (Total)	9.47E-02	mg/L	8.7E-06	mg/kg-day	--	--	--
				1,2-Dichloropropane	2.00E-03	mg/L	1.9E-07	mg/kg-day	6.8E-02	(mg/kg-day)-1	1.3E-08
				1,2,3-Trichloropropane	3.00E-04	mg/L	2.7E-08	mg/kg-day	2.0E+00	(mg/kg-day)-1	5.3E-08
				1,3-Dichloropropane	6.72E-04	mg/L	6.3E-08	mg/kg-day	6.8E-02	(mg/kg-day)-1	4.3E-09
				2,2'-Oxybis(1-chloropropane)	7.00E-04	mg/L	6.3E-08	mg/kg-day	--	--	--
				2-Methylnaphthalene	1.80E-01	mg/L	1.0E-04	mg/kg-day	--	--	--
				4-Methylphenol	2.38E-01	mg/L	2.1E-05	mg/kg-day	--	--	--
				Antimony	4.17E-03	mg/L	5.0E-08	mg/kg-day	--	--	--
				Arsenic	1.32E-02	mg/L	1.6E-07	mg/kg-day	1.5E+00	(mg/kg-day)-1	2.4E-07
				Benzene	1.89E-03	mg/L	4.7E-07	mg/kg-day	5.5E-02	(mg/kg-day)-1	2.6E-08
				Benz(a)anthracene	1.00E-03	mg/L	5.6E-06	mg/kg-day	7.3E-01	(mg/kg-day)-1	4.1E-06
				Benzo(a)pyrene	2.00E-03	mg/L	1.7E-05	mg/kg-day	7.3E+00	(mg/kg-day)-1	1.2E-04
				Benzo(b)fluoranthene	2.00E-03	mg/L	1.7E-05	mg/kg-day	7.3E-01	(mg/kg-day)-1	1.2E-05
				Benzo(k)fluoranthene	8.00E-04	mg/L	2.1E-06	mg/kg-day	7.3E-02	(mg/kg-day)-1	1.5E-07
				Chloroethane	3.70E-03	mg/L	2.7E-07	mg/kg-day	2.9E-03	(mg/kg-day)-1	7.8E-10

TABLE H2-8.1.7.CTE
EPA RAGS PART D TABLE 7b
CALCULATION OF CTE CHEMICAL CANCER RISKS
FUTURE REDEVELOPED CHILD RESIDENT
SITE 09, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future-Redeveloped
Receptor Population:	Resident
Receptor Age:	Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk
							Value	Units	Value	Units	
				Chrysene	1.00E-03	mg/L	5.6E-06	mg/kg-day	7.3E-03	(mg/kg-day)-1	4.1E-08
				Ethylbenzene	6.57E-03	mg/L	3.8E-06	mg/kg-day	3.9E-03	(mg/kg-day)-1	1.5E-08
				Indeno(1,2,3-cd)pyrene	1.00E-03	mg/L	1.2E-05	mg/kg-day	7.3E-01	(mg/kg-day)-1	8.7E-06
				Lead	1.67E-03	mg/L	2.0E-08	mg/kg-day	--	(mg/kg-day)-1	--
				Manganese	1.23E+00	mg/L	1.5E-05	mg/kg-day	--	(mg/kg-day)-1	--
				Methyl-t-butyl ether	4.76E-03	mg/L	1.2E-07	mg/kg-day	3.3E-03	(mg/kg-day)-1	4.0E-10
				Naphthalene	6.32E-01	mg/L	3.5E-04	mg/kg-day	--	(mg/kg-day)-1	--
				Pentachlorophenol	2.00E-03	mg/L	9.3E-06	mg/kg-day	1.2E-01	(mg/kg-day)-1	1.1E-06
				Tetrachloroethene	1.98E-03	mg/L	7.8E-07	mg/kg-day	5.2E-02	(mg/kg-day)-1	4.1E-08
				Trichloroethene	2.37E-03	mg/L	3.4E-07	mg/kg-day	4.0E-01	(mg/kg-day)-1	1.4E-07
				Vinyl chloride	7.74E-03	mg/L	5.2E-07	mg/kg-day	1.5E+00	(mg/kg-day)-1	7.8E-07
				Xylene (Total)	5.18E-02	mg/L	3.3E-05	mg/kg-day	--	(mg/kg-day)-1	--
			Exp. Route Total								1.5E-04
			Inhalation (bathing/ showering)	1,1-Dichloroethane	5.06E-03	mg/L	8.0E-08	mg/kg-day	--	--	--
				1,2-Dichloroethane	6.00E-04	mg/L	9.5E-09	mg/kg-day	9.1E-02	(mg/kg-day)-1	8.6E-10
				1,2-Dichloroethene (Total)	9.47E-02	mg/L	1.5E-06	mg/kg-day	--	--	--
				1,2-Dichloropropane	2.00E-03	mg/L	3.2E-08	mg/kg-day	6.8E-02	(mg/kg-day)-1	2.2E-09
				1,2,3-Trichloropropane	3.00E-04	mg/L	4.7E-09	mg/kg-day	2.0E+00	(mg/kg-day)-1	9.5E-09
				1,3-Dichloropropane	6.72E-04	mg/L	1.1E-08	mg/kg-day	6.8E-02	(mg/kg-day)-1	7.2E-10
				2,2'-Oxybis(1-chloropropane)	7.00E-04	mg/L	1.1E-08	mg/kg-day	--	--	--
				2-Methylnaphthalene	1.80E-01	mg/L	2.8E-06	mg/kg-day	--	(mg/kg-day)-1	--
				Benzene	1.89E-03	mg/L	3.0E-08	mg/kg-day	2.7E-02	(mg/kg-day)-1	8.1E-10
				Chloroethane	3.70E-03	mg/L	5.9E-08	mg/kg-day	2.9E-03	(mg/kg-day)-1	1.7E-10
				Ethylbenzene	6.57E-03	mg/L	1.0E-07	mg/kg-day	3.9E-03	(mg/kg-day)-1	4.0E-10
				Methyl-t-butyl ether	4.76E-03	mg/L	7.5E-08	mg/kg-day	3.5E-04	(mg/kg-day)-1	2.6E-11
				Naphthalene	6.32E-01	mg/L	1.0E-05	mg/kg-day	--	(mg/kg-day)-1	--
				Tetrachloroethene	1.98E-03	mg/L	3.1E-08	mg/kg-day	1.0E-02	(mg/kg-day)-1	3.1E-10
				Trichloroethene	2.37E-03	mg/L	3.7E-08	mg/kg-day	4.0E-01	(mg/kg-day)-1	1.5E-08
				Vinyl chloride	7.74E-03	mg/L	1.2E-07	mg/kg-day	3.1E-02	(mg/kg-day)-1	3.8E-09
				Xylene (Total)	5.18E-02	mg/L	8.2E-07	mg/kg-day	--	(mg/kg-day)-1	--
			Exp. Route Total								3.4E-08
		Exposure Point Total									4.3E-04
	Exposure Medium Total										4.3E-04

TABLE H2-8.1.7.CTE
EPA RAGS PART D TABLE 7b
CALCULATION OF CTE CHEMICAL CANCER RISKS
FUTURE REDEVELOPED CHILD RESIDENT
SITE 09, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future-Redeveloped
Receptor Population:	Resident
Receptor Age:	Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk
							Value	Units	Value	Units	
Medium Total											4.3E-04
										Total of Receptor Risks Across All Media	4.3E-04

Notes:

–	Not Applicable or Not Available
CSF	Cancer slope factor
EPC	Exposure point concentration
mg/kg	Milligram per kilogram
mg/kg-day	Milligram per kilogram per day
(mg/kg-day)-1	1/(Milligram per kilogram per day)
CTE	Central tendency exposure

(a) See the Vapor Intrusion to Indoor Air Evaluation for determination of the modeled indoor air concentration.

HHRA RISK TABLES

Central Tendency Exposure
Site 13
Alameda Point, Alameda, California

TABLE H2-8.2.1.CTE
EPA RAGS PART D TABLE 7a
CALCULATION OF CTE CHEMICAL CANCER RISKS
CURRENT INDUSTRIAL WORKER
SITE 13, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future
Receptor Population:	Industrial Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk
							Value	Units	Value	Units	
Soil (0-2)	Soil	Site Soil	Ingestion	Arsenic	5.40E+00	mg/kg	1.5E-07	mg/kg-day	1.5E+00	(mg/kg-day)-1	2.2E-07
				Benz(a)anthracene	4.57E-02	mg/kg	1.3E-09	mg/kg-day	7.3E-01	(mg/kg-day)-1	9.2E-10
				Benzo(a)pyrene	4.23E-02	mg/kg	1.2E-09	mg/kg-day	7.3E+00	(mg/kg-day)-1	8.5E-09
				Benzo(b)fluoranthene	4.24E-02	mg/kg	1.2E-09	mg/kg-day	7.3E-01	(mg/kg-day)-1	8.5E-10
				Benzo(k)fluoranthene	3.30E-02	mg/kg	9.1E-10	mg/kg-day	7.3E-02	(mg/kg-day)-1	6.6E-11
				Chromium	3.47E+01	mg/kg	9.5E-07	mg/kg-day	--	--	--
				Dibenz(a,h)anthracene	2.04E-02	mg/kg	5.6E-10	mg/kg-day	7.3E+00	(mg/kg-day)-1	4.1E-09
				Indeno(1,2,3-cd)pyrene	3.43E-02	mg/kg	9.5E-10	mg/kg-day	7.3E-01	(mg/kg-day)-1	6.9E-10
				Lead	5.39E+01	mg/kg	1.5E-06	mg/kg-day	--	--	--
			Exp. Route Total								2.4E-07
			Dermal	Arsenic	5.40E+00	mg/kg	5.9E-09	mg/kg-day	1.5E+00	(mg/kg-day)-1	8.8E-09
				Benz(a)anthracene	4.57E-02	mg/kg	2.2E-10	mg/kg-day	7.3E-01	(mg/kg-day)-1	1.6E-10
				Benzo(a)pyrene	4.23E-02	mg/kg	2.0E-10	mg/kg-day	7.3E+00	(mg/kg-day)-1	1.5E-09
				Benzo(b)fluoranthene	4.24E-02	mg/kg	2.0E-10	mg/kg-day	7.3E-01	(mg/kg-day)-1	1.5E-10
				Benzo(k)fluoranthene	3.30E-02	mg/kg	1.6E-10	mg/kg-day	7.3E-02	(mg/kg-day)-1	1.1E-11
				Chromium	3.47E+01	mg/kg	1.3E-08	mg/kg-day	--	--	--
				Dibenz(a,h)anthracene	2.04E-02	mg/kg	9.6E-11	mg/kg-day	7.3E+00	(mg/kg-day)-1	7.0E-10
				Indeno(1,2,3-cd)pyrene	3.43E-02	mg/kg	1.6E-10	mg/kg-day	7.3E-01	(mg/kg-day)-1	1.2E-10
				Lead	5.39E+01	mg/kg	2.0E-08	mg/kg-day	--	--	--
			Exp. Route Total								1.1E-08
		Exposure Point Total									2.5E-07
	Exposure Medium Total										2.5E-07
	Air	Outdoor Air	Inhalation (particulates)	Arsenic	5.40E+00	mg/kg	5.6E-12	mg/kg-day	1.5E+01	(mg/kg-day)-1	8.5E-11
				Benz(a)anthracene	4.57E-02	mg/kg	4.8E-14	mg/kg-day	7.3E-01	(mg/kg-day)-1	3.5E-14
				Benzo(a)pyrene	4.23E-02	mg/kg	4.4E-14	mg/kg-day	7.3E+00	(mg/kg-day)-1	3.2E-13
				Benzo(b)fluoranthene	4.24E-02	mg/kg	4.4E-14	mg/kg-day	7.3E-01	(mg/kg-day)-1	3.2E-14
				Benzo(k)fluoranthene	3.30E-02	mg/kg	3.4E-14	mg/kg-day	7.3E-02	(mg/kg-day)-1	2.5E-15
				Chromium	3.47E+01	mg/kg	3.6E-11	mg/kg-day	--	--	--
				Dibenz(a,h)anthracene	2.04E-02	mg/kg	2.1E-14	mg/kg-day	7.3E+00	(mg/kg-day)-1	1.6E-13
				Indeno(1,2,3-cd)pyrene	3.43E-02	mg/kg	3.6E-14	mg/kg-day	7.3E-01	(mg/kg-day)-1	2.6E-14
				Lead	5.39E+01	mg/kg	5.6E-11	mg/kg-day	--	--	--
			Exp. Route Total								8.5E-11
		Exposure Point Total									8.5E-11
	Exposure Medium Total										8.5E-11

TABLE H2-8.2.1.CTE
EPA RAGS PART D TABLE 7a
CALCULATION OF CTE CHEMICAL CANCER RISKS
CURRENT INDUSTRIAL WORKER
SITE 13, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	*Future*
Receptor Population:	Industrial Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk
							Value	Units	Value	Units	
Medium Total											2.5E-07
										Total of Receptor Risks Across All Media	2.5E-07

Notes:

--	Not Applicable or Not Available
CSF	Cancer slope factor
EPC	Exposure point concentration
mg/kg	Milligram per kilogram
mg/kg-day	Milligram per kilogram per day
(mg/kg-day)-1	1/(Milligram per kilogram per day)
CTE	Central tendency exposure

TABLE H2-8.2.2.CTE
EPA RAGS PART D TABLE 7a
CALCULATION OF CTE CHEMICAL CANCER RISKS
CURRENT CONSTRUCTION WORKER
SITE 13, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk
							Value	Units	Value	Units	
Soil (0-2)	Soil	Site Soil	Ingestion	Arsenic	5.40E+00	mg/kg	1.8E-08	mg/kg-day	1.5E+00	(mg/kg-day)-1	2.7E-08
				Benz(a)anthracene	4.57E-02	mg/kg	1.5E-10	mg/kg-day	7.3E-01	(mg/kg-day)-1	1.1E-10
				Benzo(a)pyrene	4.23E-02	mg/kg	1.4E-10	mg/kg-day	7.3E+00	(mg/kg-day)-1	1.0E-09
				Benzo(b)fluoranthene	4.24E-02	mg/kg	1.4E-10	mg/kg-day	7.3E-01	(mg/kg-day)-1	1.0E-10
				Benzo(k)fluoranthene	3.30E-02	mg/kg	1.1E-10	mg/kg-day	7.3E-02	(mg/kg-day)-1	8.1E-12
				Chromium	3.47E+01	mg/kg	1.2E-07	mg/kg-day	--	--	--
				Dibenz(a,h)anthracene	2.04E-02	mg/kg	6.8E-11	mg/kg-day	7.3E+00	(mg/kg-day)-1	5.0E-10
				Indeno(1,2,3-cd)pyrene	3.43E-02	mg/kg	1.2E-10	mg/kg-day	7.3E-01	(mg/kg-day)-1	8.4E-11
				Lead	5.39E+01	mg/kg	1.8E-07	mg/kg-day	--	--	--
			Exp. Route Total								2.9E-08
			Dermal	Arsenic	5.40E+00	mg/kg	1.8E-09	mg/kg-day	1.5E+00	(mg/kg-day)-1	2.7E-09
				Benz(a)anthracene	4.57E-02	mg/kg	6.6E-11	mg/kg-day	7.3E-01	(mg/kg-day)-1	4.8E-11
				Benzo(a)pyrene	4.23E-02	mg/kg	6.1E-11	mg/kg-day	7.3E+00	(mg/kg-day)-1	4.4E-10
				Benzo(b)fluoranthene	4.24E-02	mg/kg	6.1E-11	mg/kg-day	7.3E-01	(mg/kg-day)-1	4.5E-11
				Benzo(k)fluoranthene	3.30E-02	mg/kg	4.7E-11	mg/kg-day	7.3E-02	(mg/kg-day)-1	3.5E-12
				Chromium	3.47E+01	mg/kg	3.8E-09	mg/kg-day	--	--	--
				Dibenz(a,h)anthracene	2.04E-02	mg/kg	2.9E-11	mg/kg-day	7.3E+00	(mg/kg-day)-1	2.1E-10
				Indeno(1,2,3-cd)pyrene	3.43E-02	mg/kg	4.9E-11	mg/kg-day	7.3E-01	(mg/kg-day)-1	3.6E-11
				Lead	5.39E+01	mg/kg	6.0E-09	mg/kg-day	--	--	--
			Exp. Route Total								3.5E-09
		Exposure Point Total									3.3E-08
	Exposure Medium Total										3.3E-08
	Air	Outdoor Air	Inhalation (particulates)	Arsenic	5.40E+00	mg/kg	2.7E-12	mg/kg-day	1.5E+01	(mg/kg-day)-1	4.1E-11
				Benz(a)anthracene	4.57E-02	mg/kg	2.3E-14	mg/kg-day	7.3E-01	(mg/kg-day)-1	1.7E-14
				Benzo(a)pyrene	4.23E-02	mg/kg	2.2E-14	mg/kg-day	7.3E+00	(mg/kg-day)-1	1.6E-13
				Benzo(b)fluoranthene	4.24E-02	mg/kg	2.2E-14	mg/kg-day	7.3E-01	(mg/kg-day)-1	1.6E-14
				Benzo(k)fluoranthene	3.30E-02	mg/kg	1.7E-14	mg/kg-day	7.3E-02	(mg/kg-day)-1	1.2E-15
				Chromium	3.47E+01	mg/kg	1.8E-11	mg/kg-day	--	--	--
				Dibenz(a,h)anthracene	2.04E-02	mg/kg	1.0E-14	mg/kg-day	7.3E+00	(mg/kg-day)-1	7.6E-14
				Indeno(1,2,3-cd)pyrene	3.43E-02	mg/kg	1.7E-14	mg/kg-day	7.3E-01	(mg/kg-day)-1	1.3E-14
				Lead	5.39E+01	mg/kg	2.7E-11	mg/kg-day	--	--	--
			Exp. Route Total								4.1E-11
		Exposure Point Total									4.1E-11
	Exposure Medium Total										4.1E-11

TABLE H2-8.2.2.CTE
EPA RAGS PART D TABLE 7a
CALCULATION OF CTE CHEMICAL CANCER RISKS
CURRENT CONSTRUCTION WORKER
SITE 13, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk
							Value	Units	Value	Units	
Medium Total											3.3E-08
										Total of Receptor Risks Across All Media	3.3E-08

Notes:

–	Not Applicable or Not Available
CSF	Cancer slope factor
EPC	Exposure point concentration
mg/kg	Milligram per kilogram
mg/kg-day	Milligram per kilogram per day
(mg/kg-day)-1	1/(Milligram per kilogram per day)
CTE	Central tendency exposure

TABLE H2-8.2.3.CTE
EPA RAGS PART D TABLE 7a
CALCULATION OF CTE CHEMICAL CANCER RISKS
CURRENT ADULT RESIDENT
SITE 13, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future
Receptor Population:	Resident
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk
							Value	Units	Value	Units	
Soil (0-2)	Soil	Site Soil	Ingestion	Arsenic	5.40E+00	mg/kg	4.8E-07	mg/kg-day	1.5E+00	(mg/kg-day)-1	7.1E-07
				Benz(a)anthracene	4.57E-02	mg/kg	4.0E-09	mg/kg-day	7.3E-01	(mg/kg-day)-1	2.9E-09
				Benzo(a)pyrene	4.23E-02	mg/kg	3.7E-09	mg/kg-day	7.3E+00	(mg/kg-day)-1	2.7E-08
				Benzo(b)fluoranthene	4.24E-02	mg/kg	3.7E-09	mg/kg-day	7.3E-01	(mg/kg-day)-1	2.7E-09
				Benzo(k)fluoranthene	3.30E-02	mg/kg	2.9E-09	mg/kg-day	7.3E-02	(mg/kg-day)-1	2.1E-10
				Chromium	3.47E+01	mg/kg	3.1E-06	mg/kg-day	--	--	--
				Dibenz(a,h)anthracene	2.04E-02	mg/kg	1.8E-09	mg/kg-day	7.3E+00	(mg/kg-day)-1	1.3E-08
				Indeno(1,2,3-cd)pyrene	3.43E-02	mg/kg	3.0E-09	mg/kg-day	7.3E-01	(mg/kg-day)-1	2.2E-09
				Lead	5.39E+01	mg/kg	4.7E-06	mg/kg-day	--	--	--
			Exp. Route Total								7.6E-07
			Dermal	Arsenic	5.40E+00	mg/kg	1.6E-08	mg/kg-day	1.5E+00	(mg/kg-day)-1	2.4E-08
				Benz(a)anthracene	4.57E-02	mg/kg	6.0E-10	mg/kg-day	7.3E-01	(mg/kg-day)-1	4.4E-10
				Benzo(a)pyrene	4.23E-02	mg/kg	5.5E-10	mg/kg-day	7.3E+00	(mg/kg-day)-1	4.0E-09
				Benzo(b)fluoranthene	4.24E-02	mg/kg	5.5E-10	mg/kg-day	7.3E-01	(mg/kg-day)-1	4.0E-10
				Benzo(k)fluoranthene	3.30E-02	mg/kg	4.3E-10	mg/kg-day	7.3E-02	(mg/kg-day)-1	3.1E-11
				Chromium	3.47E+01	mg/kg	3.5E-08	mg/kg-day	--	--	--
				Dibenz(a,h)anthracene	2.04E-02	mg/kg	2.7E-10	mg/kg-day	7.3E+00	(mg/kg-day)-1	1.9E-09
				Indeno(1,2,3-cd)pyrene	3.43E-02	mg/kg	4.5E-10	mg/kg-day	7.3E-01	(mg/kg-day)-1	3.3E-10
				Lead	5.39E+01	mg/kg	5.4E-08	mg/kg-day	--	--	--
			Exp. Route Total								3.2E-08
		Exposure Point Total									7.9E-07
	Exposure Medium Total										7.9E-07
	Homegrown Produce	Homegrown Produce	Ingestion	Arsenic	5.40E+00	mg/kg	6.5E-07	mg/kg-day	1.5E+00	(mg/kg-day)-1	9.8E-07
				Benz(a)anthracene	4.57E-02	mg/kg	5.0E-09	mg/kg-day	7.3E-01	(mg/kg-day)-1	3.6E-09
				Benzo(a)pyrene	4.23E-02	mg/kg	3.5E-09	mg/kg-day	7.3E+00	(mg/kg-day)-1	2.6E-08
				Benzo(b)fluoranthene	4.24E-02	mg/kg	3.2E-09	mg/kg-day	7.3E-01	(mg/kg-day)-1	2.4E-09
				Benzo(k)fluoranthene	3.30E-02	mg/kg	2.5E-09	mg/kg-day	7.3E-02	(mg/kg-day)-1	1.8E-10
				Chromium	3.47E+01	mg/kg	--	mg/kg-day	--	--	--
				Dibenz(a,h)anthracene	2.04E-02	mg/kg	2.6E-09	mg/kg-day	7.3E+00	(mg/kg-day)-1	1.9E-08
				Indeno(1,2,3-cd)pyrene	3.43E-02	mg/kg	2.1E-09	mg/kg-day	7.3E-01	(mg/kg-day)-1	1.5E-09
				Lead	5.39E+01	mg/kg	--	mg/kg-day	--	--	--
			Exp. Route Total								1.0E-06
		Exposure Point Total									1.0E-06
	Exposure Medium Total										1.0E-06

TABLE H2-8.2.3.CTE
EPA RAGS PART D TABLE 7a
CALCULATION OF CTE CHEMICAL CANCER RISKS
CURRENT ADULT RESIDENT
SITE 13, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future
Receptor Population:	Resident
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk
							Value	Units	Value	Units	
	Air	Outdoor Air	Inhalation (particulates)	Arsenic	5.40E+00	mg/kg	6.0E-12	mg/kg-day	1.5E+01	(mg/kg-day)-1	9.0E-11
				Benz(a)anthracene	4.57E-02	mg/kg	5.1E-14	mg/kg-day	7.3E-01	(mg/kg-day)-1	3.7E-14
				Benzo(a)pyrene	4.23E-02	mg/kg	4.7E-14	mg/kg-day	7.3E+00	(mg/kg-day)-1	3.4E-13
				Benzo(b)fluoranthene	4.24E-02	mg/kg	4.7E-14	mg/kg-day	7.3E-01	(mg/kg-day)-1	3.4E-14
				Benzo(k)fluoranthene	3.30E-02	mg/kg	3.7E-14	mg/kg-day	7.3E-02	(mg/kg-day)-1	2.7E-15
				Chromium	3.47E+01	mg/kg	3.8E-11	mg/kg-day	--	--	--
				Dibenz(a,h)anthracene	2.04E-02	mg/kg	2.3E-14	mg/kg-day	7.3E+00	(mg/kg-day)-1	1.6E-13
				Indeno(1,2,3-cd)pyrene	3.43E-02	mg/kg	3.8E-14	mg/kg-day	7.3E-01	(mg/kg-day)-1	2.8E-14
				Lead	5.39E+01	mg/kg	6.0E-11	mg/kg-day	--	--	--
			Exp. Route Total								9.0E-11
		Exposure Point Total									9.0E-11
	Exposure Medium Total										9.0E-11
Medium Total											1.8E-06
Groundwater	Groundwater	Tap	Ingestion	1,2-Dichloroethane	2.74E-04	mg/L	6.8E-07	mg/kg-day	9.1E-02	(mg/kg-day)-1	6.1E-08
				2-Methylnaphthalene	5.97E-03	mg/L	1.5E-05	mg/kg-day	--	--	--
				Arsenic	7.72E-03	mg/L	1.9E-05	mg/kg-day	1.5E+00	(mg/kg-day)-1	2.9E-05
				Benzene	1.30E-03	mg/L	3.2E-06	mg/kg-day	5.5E-02	(mg/kg-day)-1	1.8E-07
				Ethylbenzene	6.00E-04	mg/L	1.5E-06	mg/kg-day	3.9E-03	(mg/kg-day)-1	5.7E-09
				Manganese	7.80E+00	mg/L	1.9E-02	mg/kg-day	--	--	--
				Naphthalene	1.24E-02	mg/L	3.1E-05	mg/kg-day	--	--	--
				Pentachlorophenol	7.00E-03	mg/L	1.7E-05	mg/kg-day	1.2E-01	(mg/kg-day)-1	2.1E-06
				Thallium	1.25E-03	mg/L	3.1E-06	mg/kg-day	--	--	--
				Trichloroethene	5.36E-04	mg/L	1.3E-06	mg/kg-day	4.0E-01	(mg/kg-day)-1	5.3E-07
			Exp. Route Total								3.1E-05
			Dermal (bathing/ showering)	1,2-Dichloroethane	2.74E-04	mg/L	9.1E-09	mg/kg-day	9.1E-02	(mg/kg-day)-1	8.3E-10
				2-Methylnaphthalene	5.97E-03	mg/L	2.2E-06	mg/kg-day	--	--	--
				Arsenic	7.72E-03	mg/L	6.1E-08	mg/kg-day	1.5E+00	(mg/kg-day)-1	9.2E-08
				Benzene	1.30E-03	mg/L	2.2E-07	mg/kg-day	5.5E-02	(mg/kg-day)-1	1.2E-08
				Ethylbenzene	6.00E-04	mg/L	2.3E-07	mg/kg-day	3.9E-03	(mg/kg-day)-1	9.0E-10
				Manganese	7.80E+00	mg/L	6.2E-05	mg/kg-day	--	--	--
				Naphthalene	1.24E-02	mg/L	4.6E-06	mg/kg-day	--	--	--
				Pentachlorophenol	7.00E-03	mg/L	2.2E-05	mg/kg-day	1.2E-01	(mg/kg-day)-1	2.6E-06

TABLE H2-8.2.3.CTE
EPA RAGS PART D TABLE 7a
CALCULATION OF CTE CHEMICAL CANCER RISKS
CURRENT ADULT RESIDENT
SITE 13, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future
Receptor Population:	Resident
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk
							Value	Units	Value	Units	
				Thallium	1.25E-03	mg/L	9.9E-09	mg/kg-day	--	--	--
				Trichloroethene	5.36E-04	mg/L	5.1E-08	mg/kg-day	4.0E-01	(mg/kg-day)-1	2.0E-08
			Exp. Route Total								2.7E-06
			Inhalation (bathing/ showering)	1,2-Dichloroethane	2.74E-04	mg/L	2.1E-09	mg/kg-day	9.1E-02	(mg/kg-day)-1	1.9E-10
				2-Methylnaphthalene	5.97E-03	mg/L	4.5E-08	mg/kg-day	--	--	--
				Benzene	1.30E-03	mg/L	9.9E-09	mg/kg-day	2.7E-02	(mg/kg-day)-1	2.7E-10
				Ethylbenzene	6.00E-04	mg/L	4.6E-09	mg/kg-day	3.9E-03	(mg/kg-day)-1	1.8E-11
				Naphthalene	1.24E-02	mg/L	9.4E-08	mg/kg-day	--	--	--
				Trichloroethene	5.36E-04	mg/L	4.1E-09	mg/kg-day	4.0E-01	(mg/kg-day)-1	1.6E-09
			Exp. Route Total								2.1E-09
		Exposure Point Total									3.4E-05
	Exposure Medium Total										3.4E-05
Medium Total											3.4E-05
										Total of Receptor Risks Across All Media	3.6E-05

Notes:

	Notes:
--	Not Applicable or Not Available
CSF	Cancer slope factor
EPC	Exposure point concentration
mg/kg	Milligram per kilogram
mg/kg-day	Milligram per kilogram per day
(mg/kg-day)-1	1/(Milligram per kilogram per day)
CTE	Central tendency exposure

TABLE H2-8.2.4.CTE
EPA RAGS PART D TABLE 7a
CALCULATION OF CTE CHEMICAL CANCER RISKS
CURRENT CHILD RESIDENT
SITE 13, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future
Receptor Population:	Resident
Receptor Age:	Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk
							Value	Units	Value	Units	
Soil (0-2)	Soil	Site Soil	Ingestion	Arsenic	5.40E+00	mg/kg	3.0E-06	mg/kg-day	1.5E+00	(mg/kg-day)-1	4.4E-06
				Benz(a)anthracene	4.57E-02	mg/kg	2.5E-08	mg/kg-day	7.3E-01	(mg/kg-day)-1	1.8E-08
				Benzo(a)pyrene	4.23E-02	mg/kg	2.3E-08	mg/kg-day	7.3E+00	(mg/kg-day)-1	1.7E-07
				Benzo(b)fluoranthene	4.24E-02	mg/kg	2.3E-08	mg/kg-day	7.3E-01	(mg/kg-day)-1	1.7E-08
				Benzo(k)fluoranthene	3.30E-02	mg/kg	1.8E-08	mg/kg-day	7.3E-02	(mg/kg-day)-1	1.3E-09
				Chromium	3.47E+01	mg/kg	1.9E-05	mg/kg-day	--	--	--
				Dibenz(a,h)anthracene	2.04E-02	mg/kg	1.1E-08	mg/kg-day	7.3E+00	(mg/kg-day)-1	8.2E-08
				Indeno(1,2,3-cd)pyrene	3.43E-02	mg/kg	1.9E-08	mg/kg-day	7.3E-01	(mg/kg-day)-1	1.4E-08
				Lead	5.39E+01	mg/kg	3.0E-05	mg/kg-day	--	--	--
			Exp. Route Total								4.7E-06
			Dermal	Arsenic	5.40E+00	mg/kg	1.0E-07	mg/kg-day	1.5E+00	(mg/kg-day)-1	1.5E-07
				Benz(a)anthracene	4.57E-02	mg/kg	3.6E-09	mg/kg-day	7.3E-01	(mg/kg-day)-1	2.7E-09
				Benzo(a)pyrene	4.23E-02	mg/kg	3.4E-09	mg/kg-day	7.3E+00	(mg/kg-day)-1	2.5E-08
				Benzo(b)fluoranthene	4.24E-02	mg/kg	3.4E-09	mg/kg-day	7.3E-01	(mg/kg-day)-1	2.5E-09
				Benzo(k)fluoranthene	3.30E-02	mg/kg	2.6E-09	mg/kg-day	7.3E-02	(mg/kg-day)-1	1.9E-10
				Chromium	3.47E+01	mg/kg	2.1E-07	mg/kg-day	--	--	--
				Dibenz(a,h)anthracene	2.04E-02	mg/kg	1.6E-09	mg/kg-day	7.3E+00	(mg/kg-day)-1	1.2E-08
				Indeno(1,2,3-cd)pyrene	3.43E-02	mg/kg	2.7E-09	mg/kg-day	7.3E-01	(mg/kg-day)-1	2.0E-09
				Lead	5.39E+01	mg/kg	3.3E-07	mg/kg-day	--	--	--
			Exp. Route Total								1.9E-07
		Exposure Point Total									4.9E-06
	Exposure Medium Total										4.9E-06
	Homegrown Produce	Homegrown Produce	Ingestion	Arsenic	5.40E+00	mg/kg	4.3E-07	mg/kg-day	1.5E+00	(mg/kg-day)-1	6.5E-07
				Benz(a)anthracene	4.57E-02	mg/kg	3.3E-09	mg/kg-day	7.3E-01	(mg/kg-day)-1	2.4E-09
				Benzo(a)pyrene	4.23E-02	mg/kg	2.3E-09	mg/kg-day	7.3E+00	(mg/kg-day)-1	1.7E-08
				Benzo(b)fluoranthene	4.24E-02	mg/kg	2.2E-09	mg/kg-day	7.3E-01	(mg/kg-day)-1	1.6E-09
				Benzo(k)fluoranthene	3.30E-02	mg/kg	1.7E-09	mg/kg-day	7.3E-02	(mg/kg-day)-1	1.2E-10
				Chromium	3.47E+01	mg/kg	--	mg/kg-day	--	--	--
				Dibenz(a,h)anthracene	2.04E-02	mg/kg	1.7E-09	mg/kg-day	7.3E+00	(mg/kg-day)-1	1.2E-08
				Indeno(1,2,3-cd)pyrene	3.43E-02	mg/kg	1.4E-09	mg/kg-day	7.3E-01	(mg/kg-day)-1	1.0E-09
				Lead	5.39E+01	mg/kg	--	mg/kg-day	--	--	--
			Exp. Route Total								6.8E-07
		Exposure Point Total									6.8E-07
	Exposure Medium Total										6.8E-07

TABLE H2-8.2.4.CTE
EPA RAGS PART D TABLE 7a
CALCULATION OF CTE CHEMICAL CANCER RISKS
CURRENT CHILD RESIDENT
SITE 13, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future
Receptor Population:	Resident
Receptor Age:	Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk
							Value	Units	Value	Units	
	Air	Outdoor Air	Inhalation (particulates)	Arsenic	5.40E+00	mg/kg	9.4E-12	mg/kg-day	1.5E+01	(mg/kg-day)-1	1.4E-10
				Benz(a)anthracene	4.57E-02	mg/kg	8.0E-14	mg/kg-day	7.3E-01	(mg/kg-day)-1	5.8E-14
				Benzo(a)pyrene	4.23E-02	mg/kg	7.4E-14	mg/kg-day	7.3E+00	(mg/kg-day)-1	5.4E-13
				Benzo(b)fluoranthene	4.24E-02	mg/kg	7.4E-14	mg/kg-day	7.3E-01	(mg/kg-day)-1	5.4E-14
				Benzo(k)fluoranthene	3.30E-02	mg/kg	5.8E-14	mg/kg-day	7.3E-02	(mg/kg-day)-1	4.2E-15
				Chromium	3.47E+01	mg/kg	6.0E-11	mg/kg-day	–	–	–
				Dibenz(a,h)anthracene	2.04E-02	mg/kg	3.6E-14	mg/kg-day	7.3E+00	(mg/kg-day)-1	2.6E-13
				Indeno(1,2,3-cd)pyrene	3.43E-02	mg/kg	6.0E-14	mg/kg-day	7.3E-01	(mg/kg-day)-1	4.4E-14
				Lead	5.39E+01	mg/kg	9.4E-11	mg/kg-day	–	–	–
			Exp. Route Total								1.4E-10
		Exposure Point Total									1.4E-10
	Exposure Medium Total										1.4E-10
Medium Total											5.6E-06
Groundwater	Groundwater	Tap	Ingestion	1,2-Dichloroethane	2.74E-04	mg/L	1.5E-06	mg/kg-day	9.1E-02	(mg/kg-day)-1	1.4E-07
				2-Methylnaphthalene	5.97E-03	mg/L	3.3E-05	mg/kg-day	–	–	–
				Arsenic	7.72E-03	mg/L	4.2E-05	mg/kg-day	1.5E+00	(mg/kg-day)-1	6.3E-05
				Benzene	1.30E-03	mg/L	7.1E-06	mg/kg-day	5.5E-02	(mg/kg-day)-1	3.9E-07
				Ethylbenzene	6.00E-04	mg/L	3.3E-06	mg/kg-day	3.9E-03	(mg/kg-day)-1	1.3E-08
				Manganese	7.80E+00	mg/L	4.3E-02	mg/kg-day	–	–	–
				Naphthalene	1.24E-02	mg/L	6.8E-05	mg/kg-day	–	–	–
				Pentachlorophenol	7.00E-03	mg/L	3.8E-05	mg/kg-day	1.2E-01	(mg/kg-day)-1	4.6E-06
				Thallium	1.25E-03	mg/L	6.8E-06	mg/kg-day	–	–	–
				Trichloroethene	5.36E-04	mg/L	2.9E-06	mg/kg-day	4.0E-01	(mg/kg-day)-1	1.2E-06
			Exp. Route Total								7.0E-05
			Dermal (bathing/ showering)	1,2-Dichloroethane	2.74E-04	mg/L	1.4E-08	mg/kg-day	9.1E-02	(mg/kg-day)-1	1.2E-09
				2-Methylnaphthalene	5.97E-03	mg/L	3.3E-06	mg/kg-day	–	–	–
				Arsenic	7.72E-03	mg/L	9.2E-08	mg/kg-day	1.5E+00	(mg/kg-day)-1	1.4E-07
				Benzene	1.30E-03	mg/L	3.3E-07	mg/kg-day	5.5E-02	(mg/kg-day)-1	1.8E-08
				Ethylbenzene	6.00E-04	mg/L	3.5E-07	mg/kg-day	3.9E-03	(mg/kg-day)-1	1.4E-09
				Manganese	7.80E+00	mg/L	9.3E-05	mg/kg-day	–	–	–
				Naphthalene	1.24E-02	mg/L	7.0E-06	mg/kg-day	–	–	–
				Pentachlorophenol	7.00E-03	mg/L	3.3E-05	mg/kg-day	1.2E-01	(mg/kg-day)-1	3.9E-06

TABLE H2-8.2.4.CTE
EPA RAGS PART D TABLE 7a
CALCULATION OF CTE CHEMICAL CANCER RISKS
CURRENT CHILD RESIDENT
SITE 13, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future
Receptor Population:	Resident
Receptor Age:	Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk
							Value	Units	Value	Units	
				Thallium	1.25E-03	mg/L	1.5E-08	mg/kg-day	–	–	–
				Trichloroethene	5.36E-04	mg/L	7.7E-08	mg/kg-day	4.0E-01	(mg/kg-day)-1	3.1E-08
			Exp. Route Total								4.1E-06
			Inhalation (bathing/ showering)	1,2-Dichloroethane	2.74E-04	mg/L	4.3E-09	mg/kg-day	9.1E-02	(mg/kg-day)-1	3.9E-10
				2-Methylnaphthalene	5.97E-03	mg/L	9.4E-08	mg/kg-day	–	–	–
				Benzene	1.30E-03	mg/L	2.1E-08	mg/kg-day	2.7E-02	(mg/kg-day)-1	5.6E-10
				Ethylbenzene	6.00E-04	mg/L	9.5E-09	mg/kg-day	3.9E-03	(mg/kg-day)-1	3.7E-11
				Naphthalene	1.24E-02	mg/L	2.0E-07	mg/kg-day	–	–	–
				Trichloroethene	5.36E-04	mg/L	8.5E-09	mg/kg-day	4.0E-01	(mg/kg-day)-1	3.4E-09
			Exp. Route Total								4.4E-09
		Exposure Point Total									7.4E-05
	Exposure Medium Total										7.4E-05
Medium Total											7.4E-05
										Total of Receptor Risks Across All Media	7.9E-05

Notes:

–	Not Applicable or Not Available
CSF	Cancer slope factor
EPC	Exposure point concentration
mg/kg	Milligram per kilogram
mg/kg-day	Milligram per kilogram per day
(mg/kg-day)-1	1/(Milligram per kilogram per day)
CTE	Central tendency exposure

TABLE H2-8.2.5.CTE
EPA RAGS PART D TABLE 7a
CALCULATION OF CTE CHEMICAL CANCER RISKS
FUTURE DEVELOPED CONSTRUCTION WORKER
SITE 13, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future-Developed
Receptor Population:	Construction Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk
							Value	Units	Value	Units	
Soil (0-8)	Soil	Site Soil	Ingestion	2-Methylnaphthalene	8.62E-01	mg/kg	2.9E-09	mg/kg-day	--	--	--
				Arsenic	4.45E+00	mg/kg	1.5E-08	mg/kg-day	1.5E+00	(mg/kg-day)-1	2.2E-08
				Benzene	2.10E-02	mg/kg	7.0E-11	mg/kg-day	5.5E-02	(mg/kg-day)-1	3.9E-12
				Benz(a)anthracene	5.34E-02	mg/kg	1.8E-10	mg/kg-day	7.3E-01	(mg/kg-day)-1	1.3E-10
				Benzo(a)pyrene	4.88E-02	mg/kg	1.6E-10	mg/kg-day	7.3E+00	(mg/kg-day)-1	1.2E-09
				Benzo(b)fluoranthene	4.63E-02	mg/kg	1.6E-10	mg/kg-day	7.3E-01	(mg/kg-day)-1	1.1E-10
				Benzo(k)fluoranthene	4.08E-02	mg/kg	1.4E-10	mg/kg-day	7.3E-02	(mg/kg-day)-1	1.0E-11
				Chromium	3.37E+01	mg/kg	1.1E-07	mg/kg-day	--	--	--
				Chrysene	8.48E-02	mg/kg	2.8E-10	mg/kg-day	7.3E-03	(mg/kg-day)-1	2.1E-12
				Dibenz(a,h)anthracene	2.41E-02	mg/kg	8.1E-11	mg/kg-day	7.3E+00	(mg/kg-day)-1	5.9E-10
				Indeno(1,2,3-cd)pyrene	4.06E-02	mg/kg	1.4E-10	mg/kg-day	7.3E-01	(mg/kg-day)-1	9.9E-11
				Lead	2.49E+01	mg/kg	8.4E-08	mg/kg-day	--	--	--
				Vanadium	2.66E+01	mg/kg	8.9E-08	mg/kg-day	--	--	--
			Exp. Route Total								2.5E-08
			Dermal	2-Methylnaphthalene	8.62E-01	mg/kg	--	mg/kg-day	--	--	--
				Arsenic	4.45E+00	mg/kg	1.5E-09	mg/kg-day	1.5E+00	(mg/kg-day)-1	2.2E-09
				Benzene	2.10E-02	mg/kg	--	mg/kg-day	5.5E-02	(mg/kg-day)-1	--
				Benz(a)anthracene	5.34E-02	mg/kg	7.7E-11	mg/kg-day	7.3E-01	(mg/kg-day)-1	5.6E-11
				Benzo(a)pyrene	4.88E-02	mg/kg	7.0E-11	mg/kg-day	7.3E+00	(mg/kg-day)-1	5.1E-10
				Benzo(b)fluoranthene	4.63E-02	mg/kg	6.7E-11	mg/kg-day	7.3E-01	(mg/kg-day)-1	4.9E-11
				Benzo(k)fluoranthene	4.08E-02	mg/kg	5.9E-11	mg/kg-day	7.3E-02	(mg/kg-day)-1	4.3E-12
				Chromium	3.37E+01	mg/kg	3.7E-09	mg/kg-day	--	--	--
				Chrysene	8.48E-02	mg/kg	1.2E-10	mg/kg-day	7.3E-03	(mg/kg-day)-1	8.9E-13
				Dibenz(a,h)anthracene	2.41E-02	mg/kg	3.5E-11	mg/kg-day	7.3E+00	(mg/kg-day)-1	2.5E-10
				Indeno(1,2,3-cd)pyrene	4.06E-02	mg/kg	5.8E-11	mg/kg-day	7.3E-01	(mg/kg-day)-1	4.3E-11
				Lead	2.49E+01	mg/kg	2.8E-09	mg/kg-day	--	--	--
				Vanadium	2.66E+01	mg/kg	2.9E-09	mg/kg-day	--	--	--
			Exp. Route Total								3.1E-09
		Exposure Point Total									2.8E-08
	Exposure Medium Total										2.8E-08
	Air	Outdoor Air	Inhalation (particulates)	2-Methylnaphthalene	8.62E-01	mg/kg	4.4E-13	mg/kg-day	--	--	--
				Arsenic	4.45E+00	mg/kg	2.3E-12	mg/kg-day	1.5E+01	(mg/kg-day)-1	3.4E-11
				Benzene	2.10E-02	mg/kg	1.1E-14	mg/kg-day	2.7E-02	(mg/kg-day)-1	2.9E-16
				Benz(a)anthracene	5.34E-02	mg/kg	2.7E-14	mg/kg-day	7.3E-01	(mg/kg-day)-1	2.0E-14
				Benzo(a)pyrene	4.88E-02	mg/kg	2.5E-14	mg/kg-day	7.3E+00	(mg/kg-day)-1	1.8E-13

TABLE H2-8.2.5.CTE
EPA RAGS PART D TABLE 7a
CALCULATION OF CTE CHEMICAL CANCER RISKS
FUTURE DEVELOPED CONSTRUCTION WORKER
SITE 13, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future-Developed
Receptor Population:	Construction Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk
							Value	Units	Value	Units	
				Benzo(b)fluoranthene	4.63E-02	mg/kg	2.4E-14	mg/kg-day	7.3E-01	(mg/kg-day)-1	1.7E-14
				Benzo(k)fluoranthene	4.08E-02	mg/kg	2.1E-14	mg/kg-day	7.3E-02	(mg/kg-day)-1	1.5E-15
				Chromium	3.37E+01	mg/kg	1.7E-11	mg/kg-day	–	–	–
				Chrysene	8.48E-02	mg/kg	4.3E-14	mg/kg-day	7.3E-03	(mg/kg-day)-1	3.1E-16
				Dibenz(a,h)anthracene	2.41E-02	mg/kg	1.2E-14	mg/kg-day	7.3E+00	(mg/kg-day)-1	8.9E-14
				Indeno(1,2,3-cd)pyrene	4.06E-02	mg/kg	2.1E-14	mg/kg-day	7.3E-01	(mg/kg-day)-1	1.5E-14
				Lead	2.49E+01	mg/kg	1.3E-11	mg/kg-day	–	–	–
				Vanadium	2.66E+01	mg/kg	1.4E-11	mg/kg-day	–	–	–
			Exp. Route Total								**3.4E-11**
			Inhalation (VOCs)	2-Methylnaphthalene	8.62E-01	mg/kg	1.3E-08	mg/kg-day	–	–	–
				Benzene	2.10E-02	mg/kg	5.2E-09	mg/kg-day	2.7E-02	(mg/kg-day)-1	1.4E-10
			Exp. Route Total								**1.4E-10**
		Exposure Point Total									**1.8E-10**
	Exposure Medium Total										**1.8E-10**
Medium Total											**2.8E-08**
										Total of Receptor Risks Across All Media	**2.8E-08**

Notes:

–	Not Applicable or Not Available
CSF	Cancer slope factor
EPC	Exposure point concentration
mg/kg	Milligram per kilogram
mg/kg-day	Milligram per kilogram per day
(mg/kg-day)-1	1/(Milligram per kilogram per day)
CTE	Central tendency exposure
VOC	Volatile organic compound

TABLE H2-8.2.6.CTE
EPA RAGS PART D TABLE 7a
CALCULATION OF CTE CHEMICAL CANCER RISKS
FUTURE REDEVELOPED ADULT RESIDENT
SITE 13, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future-Redeveloped
Receptor Population:	Resident
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk
							Value	Units	Value	Units	
Soil (0-8)	Soil	Site Soil	Ingestion	2-Methylnaphthalene	8.62E-01	mg/kg	7.6E-08	mg/kg-day	--	--	--
				Arsenic	4.45E+00	mg/kg	3.9E-07	mg/kg-day	1.5E+00	(mg/kg-day)-1	5.9E-07
				Benzene	2.10E-02	mg/kg	1.8E-09	mg/kg-day	5.5E-02	(mg/kg-day)-1	1.0E-10
				Benz(a)anthracene	5.34E-02	mg/kg	4.7E-09	mg/kg-day	7.3E-01	(mg/kg-day)-1	3.4E-09
				Benzo(a)pyrene	4.88E-02	mg/kg	4.3E-09	mg/kg-day	7.3E+00	(mg/kg-day)-1	3.1E-08
				Benzo(b)fluoranthene	4.63E-02	mg/kg	4.1E-09	mg/kg-day	7.3E-01	(mg/kg-day)-1	3.0E-09
				Benzo(k)fluoranthene	4.08E-02	mg/kg	3.6E-09	mg/kg-day	7.3E-02	(mg/kg-day)-1	2.6E-10
				Chromium	3.37E+01	mg/kg	3.0E-06	mg/kg-day	--	--	--
				Chrysene	8.48E-02	mg/kg	7.5E-09	mg/kg-day	7.3E-03	(mg/kg-day)-1	5.5E-11
				Dibenz(a,h)anthracene	2.41E-02	mg/kg	2.1E-09	mg/kg-day	7.3E+00	(mg/kg-day)-1	1.5E-08
				Indeno(1,2,3-cd)pyrene	4.06E-02	mg/kg	3.6E-09	mg/kg-day	7.3E-01	(mg/kg-day)-1	2.6E-09
				Lead	2.49E+01	mg/kg	2.2E-06	mg/kg-day	--	--	--
				Vanadium	2.66E+01	mg/kg	2.3E-06	mg/kg-day	--	--	--
			Exp. Route Total								6.4E-07
			Dermal	2-Methylnaphthalene	8.62E-01	mg/kg	--	mg/kg-day	--	--	--
				Arsenic	4.45E+00	mg/kg	1.3E-08	mg/kg-day	1.5E+00	(mg/kg-day)-1	2.0E-08
				Benzene	2.10E-02	mg/kg	--	mg/kg-day	5.5E-02	(mg/kg-day)-1	--
				Benz(a)anthracene	5.34E-02	mg/kg	7.0E-10	mg/kg-day	7.3E-01	(mg/kg-day)-1	5.1E-10
				Benzo(a)pyrene	4.88E-02	mg/kg	6.4E-10	mg/kg-day	7.3E+00	(mg/kg-day)-1	4.6E-09
				Benzo(b)fluoranthene	4.63E-02	mg/kg	6.0E-10	mg/kg-day	7.3E-01	(mg/kg-day)-1	4.4E-10
				Benzo(k)fluoranthene	4.08E-02	mg/kg	5.3E-10	mg/kg-day	7.3E-02	(mg/kg-day)-1	3.9E-11
				Chromium	3.37E+01	mg/kg	3.4E-08	mg/kg-day	--	--	--
				Chrysene	8.48E-02	mg/kg	1.1E-09	mg/kg-day	7.3E-03	(mg/kg-day)-1	8.1E-12
				Dibenz(a,h)anthracene	2.41E-02	mg/kg	3.1E-10	mg/kg-day	7.3E+00	(mg/kg-day)-1	2.3E-09
				Indeno(1,2,3-cd)pyrene	4.06E-02	mg/kg	5.3E-10	mg/kg-day	7.3E-01	(mg/kg-day)-1	3.9E-10
				Lead	2.49E+01	mg/kg	2.5E-08	mg/kg-day	--	--	--
				Vanadium	2.66E+01	mg/kg	2.7E-08	mg/kg-day	--	--	--
			Exp. Route Total								2.6E-08
		Exposure Point Total									6.7E-07
	Exposure Medium Total										6.7E-07
	Homegrown Produce	Homegrown Produce	Ingestion	2-Methylnaphthalene	8.62E-01	mg/kg	--	mg/kg-day	--	--	--
				Arsenic	4.45E+00	mg/kg	5.4E-07	mg/kg-day	1.5E+00	(mg/kg-day)-1	8.0E-07
				Benzene	2.10E-02	mg/kg	--	mg/kg-day	5.5E-02	(mg/kg-day)-1	--
				Benz(a)anthracene	5.34E-02	mg/kg	5.8E-09	mg/kg-day	7.3E-01	(mg/kg-day)-1	4.2E-09
				Benzo(a)pyrene	4.88E-02	mg/kg	4.0E-09	mg/kg-day	7.3E+00	(mg/kg-day)-1	3.0E-08

TABLE H2-8.2.6.CTE
EPA RAGS PART D TABLE 7a
CALCULATION OF CTE CHEMICAL CANCER RISKS
FUTURE REDEVELOPED ADULT RESIDENT
SITE 13, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future-Redeveloped
Receptor Population:	Resident
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk
							Value	Units	Value	Units	
				Benzo(b)fluoranthene	4.63E-02	mg/kg	3.5E-09	mg/kg-day	7.3E-01	(mg/kg-day)-1	2.6E-09
				Benzo(k)fluoranthene	4.08E-02	mg/kg	3.1E-09	mg/kg-day	7.3E-02	(mg/kg-day)-1	2.3E-10
				Chromium	3.37E+01	mg/kg	--	mg/kg-day	--	--	--
				Chrysene	8.48E-02	mg/kg	8.3E-09	mg/kg-day	7.3E-03	(mg/kg-day)-1	6.0E-11
				Dibenz(a,h)anthracene	2.41E-02	mg/kg	3.0E-09	mg/kg-day	7.3E+00	(mg/kg-day)-1	2.2E-08
				Indeno(1,2,3-cd)pyrene	4.06E-02	mg/kg	2.4E-09	mg/kg-day	7.3E-01	(mg/kg-day)-1	1.8E-09
				Lead	2.49E+01	mg/kg	--	mg/kg-day	--	--	--
				Vanadium	2.66E+01	mg/kg	--	mg/kg-day	--	--	--
			Exp. Route Total								8.7E-07
		Exposure Point Total									8.7E-07
	Exposure Medium Total										8.7E-07
	Air	Outdoor Air	Inhalation (particulates)	2-Methylnaphthalene	8.62E-01	mg/kg	9.5E-13	mg/kg-day	--	--	--
				Arsenic	4.45E+00	mg/kg	4.9E-12	mg/kg-day	1.5E+01	(mg/kg-day)-1	7.4E-11
				Benzene	2.10E-02	mg/kg	2.3E-14	mg/kg-day	2.7E-02	(mg/kg-day)-1	6.3E-16
				Benz(a)anthracene	5.34E-02	mg/kg	5.9E-14	mg/kg-day	7.3E-01	(mg/kg-day)-1	4.3E-14
				Benzo(a)pyrene	4.88E-02	mg/kg	5.4E-14	mg/kg-day	7.3E+00	(mg/kg-day)-1	3.9E-13
				Benzo(b)fluoranthene	4.63E-02	mg/kg	5.1E-14	mg/kg-day	7.3E-01	(mg/kg-day)-1	3.7E-14
				Benzo(k)fluoranthene	4.08E-02	mg/kg	4.5E-14	mg/kg-day	7.3E-02	(mg/kg-day)-1	3.3E-15
				Chromium	3.37E+01	mg/kg	3.7E-11	mg/kg-day	--	--	--
				Chrysene	8.48E-02	mg/kg	9.4E-14	mg/kg-day	7.3E-03	(mg/kg-day)-1	6.9E-16
				Dibenz(a,h)anthracene	2.41E-02	mg/kg	2.7E-14	mg/kg-day	7.3E+00	(mg/kg-day)-1	1.9E-13
				Indeno(1,2,3-cd)pyrene	4.06E-02	mg/kg	4.5E-14	mg/kg-day	7.3E-01	(mg/kg-day)-1	3.3E-14
				Lead	2.49E+01	mg/kg	2.8E-11	mg/kg-day	--	--	--
				Vanadium	2.66E+01	mg/kg	2.9E-11	mg/kg-day	--	--	--
			Exp. Route Total								7.4E-11
			Inhalation (VOCs)	2-Methylnaphthalene	8.62E-01	mg/kg	2.9E-08	mg/kg-day	--	--	--
				Benzene	2.10E-02	mg/kg	1.1E-08	mg/kg-day	2.7E-02	(mg/kg-day)-1	3.1E-10
			Exp. Route Total								3.1E-10
		Exposure Point Total									3.8E-10
	Exposure Medium Total										3.8E-10
Medium Total											1.5E-06
Groundwater	Groundwater	Tap	Ingestion	1,2-Dichloroethane	2.74E-04	mg/L	6.8E-07	mg/kg-day	9.1E-02	(mg/kg-day)-1	6.1E-08
				2-Methylnaphthalene	5.97E-03	mg/L	1.5E-05	mg/kg-day	--	--	--

TABLE H2-8.2.6.CTE
EPA RAGS PART D TABLE 7a
CALCULATION OF CTE CHEMICAL CANCER RISKS
FUTURE REDEVELOPED ADULT RESIDENT
SITE 13, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future-Redeveloped
Receptor Population:	Resident
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk
							Value	Units	Value	Units	
				Arsenic	7.72E-03	mg/L	1.9E-05	mg/kg-day	1.5E+00	(mg/kg-day)-1	2.9E-05
				Benzene	1.30E-03	mg/L	3.2E-06	mg/kg-day	5.5E-02	(mg/kg-day)-1	1.8E-07
				Ethylbenzene	6.00E-04	mg/L	1.5E-06	mg/kg-day	3.9E-03	(mg/kg-day)-1	5.7E-09
				Manganese	7.80E+00	mg/L	1.9E-02	mg/kg-day	--	--	--
				Naphthalene	1.24E-02	mg/L	3.1E-05	mg/kg-day	--	--	--
				Pentachlorophenol	7.00E-03	mg/L	1.7E-05	mg/kg-day	1.2E-01	(mg/kg-day)-1	2.1E-06
				Thallium	1.25E-03	mg/L	3.1E-06	mg/kg-day	--	--	--
				Trichloroethene	5.36E-04	mg/L	1.3E-06	mg/kg-day	4.0E-01	(mg/kg-day)-1	5.3E-07
			Exp. Route Total								3.1E-05
			Dermal (bathing/ showering)	1,2-Dichloroethane	2.74E-04	mg/L	9.1E-09	mg/kg-day	9.1E-02	(mg/kg-day)-1	8.3E-10
				2-Methylnaphthalene	5.97E-03	mg/L	2.2E-06	mg/kg-day	--	--	--
				Arsenic	7.72E-03	mg/L	6.1E-08	mg/kg-day	1.5E+00	(mg/kg-day)-1	9.2E-08
				Benzene	1.30E-03	mg/L	2.2E-07	mg/kg-day	5.5E-02	(mg/kg-day)-1	1.2E-08
				Ethylbenzene	6.00E-04	mg/L	2.3E-07	mg/kg-day	3.9E-03	(mg/kg-day)-1	9.0E-10
				Manganese	7.80E+00	mg/L	6.2E-05	mg/kg-day	--	--	--
				Naphthalene	1.24E-02	mg/L	4.6E-06	mg/kg-day	--	--	--
				Pentachlorophenol	7.00E-03	mg/L	2.2E-05	mg/kg-day	1.2E-01	(mg/kg-day)-1	2.6E-06
				Thallium	1.25E-03	mg/L	9.9E-09	mg/kg-day	--	--	--
				Trichloroethene	5.36E-04	mg/L	5.1E-08	mg/kg-day	4.0E-01	(mg/kg-day)-1	2.0E-08
			Exp. Route Total								2.7E-06
			Inhalation (bathing/ showering)	1,2-Dichloroethane	2.74E-04	mg/L	2.1E-09	mg/kg-day	9.1E-02	(mg/kg-day)-1	1.9E-10
				2-Methylnaphthalene	5.97E-03	mg/L	4.5E-08	mg/kg-day	--	--	--
				Benzene	1.30E-03	mg/L	9.9E-09	mg/kg-day	2.7E-02	(mg/kg-day)-1	2.7E-10
				Ethylbenzene	6.00E-04	mg/L	4.6E-09	mg/kg-day	3.9E-03	(mg/kg-day)-1	1.8E-11
				Naphthalene	1.24E-02	mg/L	9.4E-08	mg/kg-day	--	--	--
				Trichloroethene	5.36E-04	mg/L	4.1E-09	mg/kg-day	4.0E-01	(mg/kg-day)-1	1.6E-09
			Exp. Route Total								2.1E-09
		Exposure Point Total									3.4E-05
	Exposure Medium Total										3.4E-05
Medium Total											3.4E-05
										Total of Receptor Risks Across All Media	3.6E-05

Notes:

-- Not Applicable or Not Available

TABLE H2-8.2.6.CTE
EPA RAGS PART D TABLE 7a
CALCULATION OF CTE CHEMICAL CANCER RISKS
FUTURE REDEVELOPED ADULT RESIDENT
SITE 13, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future-Redeveloped
Receptor Population:	Resident
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk
							Value	Units	Value	Units	

CSF	Cancer slope factor
EPC	Exposure point concentration
mg/kg	Milligram per kilogram
mg/kg-day	Milligram per kilogram per day
(mg/kg-day)-1	1/(Milligram per kilogram per day)
CTE	Central tendency exposure
VOC	Volatile organic compound

TABLE H2-8.2.7.CTE
EPA RAGS PART D TABLE 7b
CALCULATION OF CTE CHEMICAL CANCER RISKS
FUTURE REDEVELOPED CHILD RESIDENT
SITE 13, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future-Redeveloped
Receptor Population:	Resident
Receptor Age:	Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk
							Value	Units	Value	Units	
Soil (0-8)	Soil	Site Soil	Ingestion	2-Methylnaphthalene	8.62E-01	mg/kg	4.7E-07	mg/kg-day	--	--	--
				Arsenic	4.45E+00	mg/kg	2.4E-06	mg/kg-day	1.5E+00	(mg/kg-day)-1	3.7E-06
				Benzene	2.10E-02	mg/kg	1.1E-08	mg/kg-day	5.5E-02	(mg/kg-day)-1	6.3E-10
				Benz(a)anthracene	5.34E-02	mg/kg	2.9E-08	mg/kg-day	7.3E-01	(mg/kg-day)-1	2.1E-08
				Benzo(a)pyrene	4.88E-02	mg/kg	2.7E-08	mg/kg-day	7.3E+00	(mg/kg-day)-1	2.0E-07
				Benzo(b)fluoranthene	4.63E-02	mg/kg	2.5E-08	mg/kg-day	7.3E-01	(mg/kg-day)-1	1.9E-08
				Benzo(k)fluoranthene	4.08E-02	mg/kg	2.2E-08	mg/kg-day	7.3E-02	(mg/kg-day)-1	1.6E-09
				Chromium	3.37E+01	mg/kg	1.8E-05	mg/kg-day	--	--	--
				Chrysene	8.48E-02	mg/kg	4.6E-08	mg/kg-day	7.3E-03	(mg/kg-day)-1	3.4E-10
				Dibenz(a,h)anthracene	2.41E-02	mg/kg	1.3E-08	mg/kg-day	7.3E+00	(mg/kg-day)-1	9.6E-08
				Indeno(1,2,3-cd)pyrene	4.06E-02	mg/kg	2.2E-08	mg/kg-day	7.3E-01	(mg/kg-day)-1	1.6E-08
				Lead	2.49E+01	mg/kg	1.4E-05	mg/kg-day	--	--	--
				Vanadium	2.66E+01	mg/kg	1.5E-05	mg/kg-day	--	--	--
			Exp. Route Total								4.0E-06
			Dermal	2-Methylnaphthalene	8.62E-01	mg/kg	--	mg/kg-day	--	--	--
				Arsenic	4.45E+00	mg/kg	8.2E-08	mg/kg-day	1.5E+00	(mg/kg-day)-1	1.2E-07
				Benzene	2.10E-02	mg/kg	--	mg/kg-day	5.5E-02	(mg/kg-day)-1	--
				Benz(a)anthracene	5.34E-02	mg/kg	4.3E-09	mg/kg-day	7.3E-01	(mg/kg-day)-1	3.1E-09
				Benzo(a)pyrene	4.88E-02	mg/kg	3.9E-09	mg/kg-day	7.3E+00	(mg/kg-day)-1	2.8E-08
				Benzo(b)fluoranthene	4.63E-02	mg/kg	3.7E-09	mg/kg-day	7.3E-01	(mg/kg-day)-1	2.7E-09
				Benzo(k)fluoranthene	4.08E-02	mg/kg	3.3E-09	mg/kg-day	7.3E-02	(mg/kg-day)-1	2.4E-10
				Chromium	3.37E+01	mg/kg	2.1E-07	mg/kg-day	--	--	--
				Chrysene	8.48E-02	mg/kg	6.8E-09	mg/kg-day	7.3E-03	(mg/kg-day)-1	4.9E-11
				Dibenz(a,h)anthracene	2.41E-02	mg/kg	1.9E-09	mg/kg-day	7.3E+00	(mg/kg-day)-1	1.4E-08
				Indeno(1,2,3-cd)pyrene	4.06E-02	mg/kg	3.2E-09	mg/kg-day	7.3E-01	(mg/kg-day)-1	2.4E-09
				Lead	2.49E+01	mg/kg	1.5E-07	mg/kg-day	--	--	--
				Vanadium	2.66E+01	mg/kg	1.6E-07	mg/kg-day	--	--	--
			Exp. Route Total								1.7E-07
		Exposure Point Total									4.2E-06
	Exposure Medium Total										4.2E-06
	Homegrown Produce	Homegrown Produce	Ingestion	2-Methylnaphthalene	8.62E-01	mg/kg	--	mg/kg-day	--	--	--
				Arsenic	4.45E+00	mg/kg	3.6E-07	mg/kg-day	1.5E+00	(mg/kg-day)-1	5.3E-07
				Benzene	2.10E-02	mg/kg	--	mg/kg-day	5.5E-02	(mg/kg-day)-1	--
				Benz(a)anthracene	5.34E-02	mg/kg	3.9E-09	mg/kg-day	7.3E-01	(mg/kg-day)-1	2.8E-09

TABLE H2-8.2.7.CTE
EPA RAGS PART D TABLE 7b
CALCULATION OF CTE CHEMICAL CANCER RISKS
FUTURE REDEVELOPED CHILD RESIDENT
SITE 13, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future-Redeveloped
Receptor Population:	Resident
Receptor Age:	Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk
							Value	Units	Value	Units	
				Benzo(a)pyrene	4.88E-02	mg/kg	2.7E-09	mg/kg-day	7.3E+00	(mg/kg-day)-1	2.0E-08
				Benzo(b)fluoranthene	4.63E-02	mg/kg	2.4E-09	mg/kg-day	7.3E-01	(mg/kg-day)-1	1.7E-09
				Benzo(k)fluoranthene	4.08E-02	mg/kg	2.1E-09	mg/kg-day	7.3E-02	(mg/kg-day)-1	1.5E-10
				Chromium	3.37E+01	mg/kg	--	mg/kg-day	--	--	--
				Chrysene	8.48E-02	mg/kg	5.5E-09	mg/kg-day	7.3E-03	(mg/kg-day)-1	4.0E-11
				Dibenz(a,h)anthracene	2.41E-02	mg/kg	2.0E-09	mg/kg-day	7.3E+00	(mg/kg-day)-1	1.5E-08
				Indeno(1,2,3-cd)pyrene	4.06E-02	mg/kg	1.6E-09	mg/kg-day	7.3E-01	(mg/kg-day)-1	1.2E-09
				Lead	2.49E+01	mg/kg	--	mg/kg-day	--	--	--
				Vanadium	2.66E+01	mg/kg	--	mg/kg-day	--	--	--
			Exp. Route Total								5.7E-07
		Exposure Point Total									5.7E-07
	Exposure Medium Total										5.7E-07
	Air	Outdoor Air	Inhalation (particulates)	2-Methylnaphthalene	8.62E-01	mg/kg	1.5E-12	mg/kg-day	--	--	--
				Arsenic	4.45E+00	mg/kg	7.8E-12	mg/kg-day	1.5E+01	(mg/kg-day)-1	1.2E-10
				Benzene	2.10E-02	mg/kg	3.7E-14	mg/kg-day	2.7E-02	(mg/kg-day)-1	9.9E-16
				Benz(a)anthracene	5.34E-02	mg/kg	9.3E-14	mg/kg-day	7.3E-01	(mg/kg-day)-1	6.8E-14
				Benzo(a)pyrene	4.88E-02	mg/kg	8.5E-14	mg/kg-day	7.3E+00	(mg/kg-day)-1	6.2E-13
				Benzo(b)fluoranthene	4.63E-02	mg/kg	8.1E-14	mg/kg-day	7.3E-01	(mg/kg-day)-1	5.9E-14
				Benzo(k)fluoranthene	4.08E-02	mg/kg	7.1E-14	mg/kg-day	7.3E-02	(mg/kg-day)-1	5.2E-15
				Chromium	3.37E+01	mg/kg	5.9E-11	mg/kg-day	--	--	--
				Chrysene	8.48E-02	mg/kg	1.5E-13	mg/kg-day	7.3E-03	(mg/kg-day)-1	1.1E-15
				Dibenz(a,h)anthracene	2.41E-02	mg/kg	4.2E-14	mg/kg-day	7.3E+00	(mg/kg-day)-1	3.1E-13
				Indeno(1,2,3-cd)pyrene	4.06E-02	mg/kg	7.1E-14	mg/kg-day	7.3E-01	(mg/kg-day)-1	5.2E-14
				Lead	2.49E+01	mg/kg	4.3E-11	mg/kg-day	--	--	--
				Vanadium	2.66E+01	mg/kg	4.6E-11	mg/kg-day	--	--	--
			Exp. Route Total								1.2E-10
			Inhalation (VOCs)	2-Methylnaphthalene	8.62E-01	mg/kg	4.6E-08	mg/kg-day	--	--	--
				Benzene	2.10E-02	mg/kg	1.8E-08	mg/kg-day	2.7E-02	(mg/kg-day)-1	4.8E-10
			Exp. Route Total								4.8E-10
		Exposure Point Total									6.0E-10
	Exposure Medium Total										6.0E-10
Medium Total											4.8E-06

TABLE H2-8.2.7.CTE
EPA RAGS PART D TABLE 7b
CALCULATION OF CTE CHEMICAL CANCER RISKS
FUTURE REDEVELOPED CHILD RESIDENT
SITE 13, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	*Future-Redeveloped*
Receptor Population:	Resident
Receptor Age:	Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk
							Value	Units	Value	Units	
Groundwater	Groundwater	Tap	Ingestion	1,2-Dichloroethane	2.74E-04	mg/L	1.5E-06	mg/kg-day	9.1E-02	(mg/kg-day)-1	1.4E-07
				2-Methylnaphthalene	5.97E-03	mg/L	3.3E-05	mg/kg-day	--	--	--
				Arsenic	7.72E-03	mg/L	4.2E-05	mg/kg-day	1.5E+00	(mg/kg-day)-1	6.3E-05
				Benzene	1.30E-03	mg/L	7.1E-06	mg/kg-day	5.5E-02	(mg/kg-day)-1	3.9E-07
				Ethylbenzene	6.00E-04	mg/L	3.3E-06	mg/kg-day	3.9E-03	(mg/kg-day)-1	1.3E-08
				Manganese	7.80E+00	mg/L	4.3E-02	mg/kg-day	--	--	--
				Naphthalene	1.24E-02	mg/L	6.8E-05	mg/kg-day	--	--	--
				Pentachlorophenol	7.00E-03	mg/L	3.8E-05	mg/kg-day	1.2E-01	(mg/kg-day)-1	4.6E-06
				Thallium	1.25E-03	mg/L	6.8E-06	mg/kg-day	--	--	--
				Trichloroethene	5.36E-04	mg/L	2.9E-06	mg/kg-day	4.0E-01	(mg/kg-day)-1	1.2E-06
			Exp. Route Total								7.0E-05
			Dermal (bathing/ showering)	1,2-Dichloroethane	2.74E-04	mg/L	1.4E-08	mg/kg-day	9.1E-02	(mg/kg-day)-1	1.2E-09
				2-Methylnaphthalene	5.97E-03	mg/L	3.3E-06	mg/kg-day	--	--	--
				Arsenic	7.72E-03	mg/L	9.2E-08	mg/kg-day	1.5E+00	(mg/kg-day)-1	1.4E-07
				Benzene	1.30E-03	mg/L	3.3E-07	mg/kg-day	5.5E-02	(mg/kg-day)-1	1.8E-08
				Ethylbenzene	6.00E-04	mg/L	3.5E-07	mg/kg-day	3.9E-03	(mg/kg-day)-1	1.4E-09
				Manganese	7.80E+00	mg/L	9.3E-05	mg/kg-day	--	--	--
				Naphthalene	1.24E-02	mg/L	7.0E-06	mg/kg-day	--	--	--
				Pentachlorophenol	7.00E-03	mg/L	3.3E-05	mg/kg-day	1.2E-01	(mg/kg-day)-1	3.9E-06
				Thallium	1.25E-03	mg/L	1.5E-08	mg/kg-day	--	--	--
				Trichloroethene	5.36E-04	mg/L	7.7E-08	mg/kg-day	4.0E-01	(mg/kg-day)-1	3.1E-08
			Exp. Route Total								4.1E-06
			Inhalation (bathing/ showering)	1,2-Dichloroethane	2.74E-04	mg/L	4.3E-09	mg/kg-day	9.1E-02	(mg/kg-day)-1	3.9E-10
				2-Methylnaphthalene	5.97E-03	mg/L	9.4E-08	mg/kg-day	--	--	--
				Benzene	1.30E-03	mg/L	2.1E-08	mg/kg-day	2.7E-02	(mg/kg-day)-1	5.6E-10
				Ethylbenzene	6.00E-04	mg/L	9.5E-09	mg/kg-day	3.9E-03	(mg/kg-day)-1	3.7E-11
				Naphthalene	1.24E-02	mg/L	2.0E-07	mg/kg-day	--	--	--
				Trichloroethene	5.36E-04	mg/L	8.5E-09	mg/kg-day	4.0E-01	(mg/kg-day)-1	3.4E-09
			Exp. Route Total								4.4E-09
		Exposure Point Total									7.4E-05
	Exposure Medium Total										7.4E-05

TABLE H2-8.2.7.CTE
EPA RAGS PART D TABLE 7b
CALCULATION OF CTE CHEMICAL CANCER RISKS
FUTURE REDEVELOPED CHILD RESIDENT
SITE 13, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future-Redeveloped
Receptor Population:	Resident
Receptor Age:	Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk
							Value	Units	Value	Units	
Medium Total											7.4E-05
										Total of Receptor Risks Across All Media	7.9E-05

Notes:

–	Not Applicable or Not Available
CSF	Cancer slope factor
EPC	Exposure point concentration
mg/kg	Milligram per kilogram
mg/kg-day	Milligram per kilogram per day
(mg/kg-day)-1	1/(Milligram per kilogram per day)
CTE	Central tendency exposure
VOC	Volatile organic compound

HHRA RISK TABLES

Central Tendency Exposure
Site 19
Alameda Point, Alameda, California

TABLE H2-8.3.1.CTE
EPA RAGS PART D TABLE 7a
CALCULATION OF CTE CHEMICAL CANCER RISKS
CURRENT INDUSTRIAL WORKER
SITE 19, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Current/Future
Receptor Population:	Industrial Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk
							Value	Units	Value	Units	
Soil (0-2)	Soil	Site Soil	Ingestion	Arsenic	4.33E+00	mg/kg	1.2E-07	mg/kg-day	1.5E+00	(mg/kg-day)-1	1.8E-07
				Benzo(a)pyrene	2.00E-02	mg/kg	5.5E-10	mg/kg-day	7.3E+00	(mg/kg-day)-1	4.0E-09
			Exp. Route Total								1.8E-07
			Dermal	Arsenic	4.33E+00	mg/kg	4.7E-09	mg/kg-day	1.5E+00	(mg/kg-day)-1	7.1E-09
				Benzo(a)pyrene	2.00E-02	mg/kg	9.5E-11	mg/kg-day	7.3E+00	(mg/kg-day)-1	6.9E-10
			Exp. Route Total								7.8E-09
		Exposure Point Total									1.9E-07
	Exposure Medium Total										1.9E-07
	Air	Outdoor Air	Inhalation (particulates)	Arsenic	4.33E+00	mg/kg	4.5E-12	mg/kg-day	1.5E+01	(mg/kg-day)-1	6.8E-11
				Benzo(a)pyrene	2.00E-02	mg/kg	2.1E-14	mg/kg-day	7.3E+00	(mg/kg-day)-1	1.5E-13
			Exp. Route Total								6.8E-11
		Exposure Point Total									6.8E-11
	Exposure Medium Total										6.8E-11
Medium Total											1.9E-07
										Total of Receptor Risks Across All Media	1.9E-07

Notes:

CSF	Cancer slope factor
EPC	Exposure point concentration
mg/kg	Milligram per kilogram
mg/kg-day	Milligram per kilogram per day
(mg/kg-day)-1	1/(Milligram per kilogram per day)
CTE	Central tendency exposure

TABLE H2-8.3.2.CTE
EPA RAGS PART D TABLE 7a
CALCULATION OF CTE CHEMICAL CANCER RISKS
CURRENT CONSTRUCTION WORKER
SITE 19, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Current/Future
Receptor Population:	Construction Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk
							Value	Units	Value	Units	
Soil (0-2)	Soil	Site Soil	Ingestion	Arsenic	4.33E+00	mg/kg	1.5E-08	mg/kg-day	1.5E+00	(mg/kg-day)-1	2.2E-08
				Benzo(a)pyrene	2.00E-02	mg/kg	6.7E-11	mg/kg-day	7.3E+00	(mg/kg-day)-1	4.9E-10
			Exp. Route Total								2.2E-08
			Dermal	Arsenic	4.33E+00	mg/kg	1.4E-09	mg/kg-day	1.5E+00	(mg/kg-day)-1	2.2E-09
				Benzo(a)pyrene	2.00E-02	mg/kg	2.9E-11	mg/kg-day	7.3E+00	(mg/kg-day)-1	2.1E-10
			Exp. Route Total								2.4E-09
		Exposure Point Total									2.5E-08
	Exposure Medium Total										2.5E-08
	Air	Outdoor Air	Inhalation (particulates)	Arsenic	4.33E+00	mg/kg	2.2E-12	mg/kg-day	1.5E+01	(mg/kg-day)-1	3.3E-11
				Benzo(a)pyrene	2.00E-02	mg/kg	1.0E-14	mg/kg-day	7.3E+00	(mg/kg-day)-1	7.4E-14
			Exp. Route Total								3.3E-11
		Exposure Point Total									3.3E-11
	Exposure Medium Total										3.3E-11
Medium Total											2.5E-08
										Total of Receptor Risks Across All Media	2.5E-08

Notes:

CSF	Cancer slope factor
EPC	Exposure point concentration
mg/kg	Milligram per kilogram
mg/kg-day	Milligram per kilogram per day
(mg/kg-day)-1	1/(Milligram per kilogram per day)
CTE	Central tendency exposure

TABLE H2-8.3.3.CTE
EPA RAGS PART D TABLE 7a
CALCULATION OF CTE CHEMICAL CANCER RISKS
CURRENT ADULT RESIDENT
SITE 19, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Current/Future
Receptor Population:	Resident
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk
							Value	Units	Value	Units	
Soil (0-2)	Soil	Site Soil	Ingestion	Arsenic	4.33E+00	mg/kg	3.8E-07	mg/kg-day	1.5E+00	(mg/kg-day)-1	5.7E-07
				Benzo(a)pyrene	2.00E-02	mg/kg	1.8E-09	mg/kg-day	7.3E+00	(mg/kg-day)-1	1.3E-08
			Exp. Route Total								5.8E-07
			Dermal	Arsenic	4.33E+00	mg/kg	1.3E-08	mg/kg-day	1.5E+00	(mg/kg-day)-1	2.0E-08
				Benzo(a)pyrene	2.00E-02	mg/kg	2.6E-10	mg/kg-day	7.3E+00	(mg/kg-day)-1	1.9E-09
			Exp. Route Total								2.1E-08
		Exposure Point Total									6.1E-07
	Exposure Medium Total										6.1E-07
	Homegrown Produce	Homegrown Produce	Ingestion	Arsenic	4.33E+00	mg/kg	5.2E-07	mg/kg-day	1.5E+00	(mg/kg-day)-1	7.8E-07
				Benzo(a)pyrene	2.00E-02	mg/kg	1.7E-09	mg/kg-day	7.3E+00	(mg/kg-day)-1	1.2E-08
			Exp. Route Total								7.9E-07
		Exposure Point Total									7.9E-07
	Exposure Medium Total										7.9E-07
	Air	Outdoor Air	Inhalation	Arsenic	4.33E+00	mg/kg	4.8E-12	mg/kg-day	1.5E+01	(mg/kg-day)-1	7.2E-11
				Benzo(a)pyrene	2.00E-02	mg/kg	2.2E-14	mg/kg-day	7.3E+00	(mg/kg-day)-1	1.6E-13
			Exp. Route Total								7.2E-11
		Exposure Point Total									7.2E-11
	Exposure Medium Total										7.2E-11
Medium Total											1.4E-06
Groundwater	Groundwater	Tap	Ingestion	1,1-Dichloroethane	5.90E-03	mg/L	1.5E-05	mg/kg-day	--	--	--
				1,2-Dichloroethane	2.66E-04	mg/L	6.6E-07	mg/kg-day	9.1E-02	(mg/kg-day)-1	6.0E-08
				1,2-Dichloropropane	5.70E-04	mg/L	1.4E-06	mg/kg-day	6.8E-02	(mg/kg-day)-1	9.6E-08
				Arsenic	3.31E-03	mg/L	8.2E-06	mg/kg-day	1.5E+00	(mg/kg-day)-1	1.2E-05
				Benzene	3.33E-04	mg/L	8.2E-07	mg/kg-day	5.5E-02	(mg/kg-day)-1	4.5E-08
				Manganese	5.17E+00	mg/L	1.3E-02	mg/kg-day	--	--	--
				Tetrachloroethene	4.07E-03	mg/L	1.0E-05	mg/kg-day	5.2E-02	(mg/kg-day)-1	5.2E-07
				Trichloroethene	1.26E-03	mg/L	3.1E-06	mg/kg-day	4.0E-01	(mg/kg-day)-1	1.2E-06
			Exp. Route Total								1.4E-05
			Dermal (bathing/ showering)	1,1-Dichloroethane	5.90E-03	mg/L	3.1E-07	mg/kg-day	--	--	--
				1,2-Dichloroethane	2.66E-04	mg/L	8.9E-09	mg/kg-day	9.1E-02	(mg/kg-day)-1	8.1E-10
				1,2-Dichloropropane	5.70E-04	mg/L	3.5E-08	mg/kg-day	6.8E-02	(mg/kg-day)-1	2.4E-09
				Arsenic	3.31E-03	mg/L	2.6E-08	mg/kg-day	1.5E+00	(mg/kg-day)-1	3.9E-08

TABLE H2-8.3.3.CTE
EPA RAGS PART D TABLE 7a
CALCULATION OF CTE CHEMICAL CANCER RISKS
CURRENT ADULT RESIDENT
SITE 19, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Current/Future
Receptor Population:	Resident
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk
							Value	Units	Value	Units	
				Benzene	3.33E-04	mg/L	5.5E-08	mg/kg-day	5.5E-02	(mg/kg-day)-1	3.0E-09
				Manganese	5.17E+00	mg/L	4.1E-05	mg/kg-day	--	--	--
				Tetrachloroethene	4.07E-03	mg/L	1.1E-06	mg/kg-day	5.2E-02	(mg/kg-day)-1	5.5E-08
				Trichloroethene	1.26E-03	mg/L	1.2E-07	mg/kg-day	4.0E-01	(mg/kg-day)-1	4.8E-08
			Exp. Route Total								1.5E-07
			Inhalation (bathing/ showering)	1,1-Dichloroethane	5.90E-03	mg/L	4.5E-08	mg/kg-day	--	--	--
				1,2-Dichloroethane	2.66E-04	mg/L	2.0E-09	mg/kg-day	9.1E-02	(mg/kg-day)-1	1.8E-10
				1,2-Dichloropropane	5.70E-04	mg/L	4.3E-09	mg/kg-day	6.8E-02	(mg/kg-day)-1	3.0E-10
				Benzene	3.33E-04	mg/L	2.5E-09	mg/kg-day	2.7E-02	(mg/kg-day)-1	6.8E-11
				Tetrachloroethene	4.07E-03	mg/L	3.1E-08	mg/kg-day	1.0E-02	(mg/kg-day)-1	3.1E-10
				Trichloroethene	1.26E-03	mg/L	9.6E-09	mg/kg-day	4.0E-01	(mg/kg-day)-1	3.8E-09
			Exp. Route Total								4.7E-09
		Exposure Point Total									1.4E-05
	Exposure Medium Total										1.4E-05
Medium Total											1.4E-05
										Total of Receptor Risks Across All Media	1.6E-05

Notes:

CSF	Cancer slope factor
EPC	Exposure point concentration
mg/kg	Milligram per kilogram
mg/kg-day	Milligram per kilogram per day
(mg/kg-day)-1	1/(Milligram per kilogram per day)
CTE	Central tendency exposure
--	Not Applicable or Not Available

TABLE H2-8.3.4.CTE
EPA RAGS PART D TABLE 7a
CALCULATION OF CTE CHEMICAL CANCER RISKS
CURRENT CHILD RESIDENT
SITE 19, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Current/Future
Receptor Population:	Resident
Receptor Age:	Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk
							Value	Units	Value	Units	
Soil (0-2)	Soil	Site Soil	Ingestion	Arsenic	4.33E+00	mg/kg	2.4E-06	mg/kg-day	1.5E+00	(mg/kg-day)-1	3.6E-06
				Benzo(a)pyrene	2.00E-02	mg/kg	1.1E-08	mg/kg-day	7.3E+00	(mg/kg-day)-1	8.0E-08
			Exp. Route Total								3.6E-06
			Dermal	Arsenic	4.33E+00	mg/kg	8.0E-08	mg/kg-day	1.5E+00	(mg/kg-day)-1	1.2E-07
				Benzo(a)pyrene	2.00E-02	mg/kg	1.6E-09	mg/kg-day	7.3E+00	(mg/kg-day)-1	1.2E-08
			Exp. Route Total								1.3E-07
		Exposure Point Total									3.8E-06
	Exposure Medium Total										3.8E-06
	Homegrown Produce	Homegrown Produce	Ingestion	Arsenic	4.33E+00	mg/kg	3.5E-07	mg/kg-day	1.5E+00	(mg/kg-day)-1	5.2E-07
				Benzo(a)pyrene	2.00E-02	mg/kg	1.1E-09	mg/kg-day	7.3E+00	(mg/kg-day)-1	8.0E-09
			Exp. Route Total								5.3E-07
		Exposure Point Total									5.3E-07
	Exposure Medium Total										5.3E-07
	Air	Outdoor Air	Inhalation (particulates)	Arsenic	4.33E+00	mg/kg	7.5E-12	mg/kg-day	1.5E+01	(mg/kg-day)-1	1.1E-10
				Benzo(a)pyrene	2.00E-02	mg/kg	3.5E-14	mg/kg-day	7.3E+00	(mg/kg-day)-1	2.5E-13
			Exp. Route Total								1.1E-10
		Exposure Point Total									1.1E-10
	Exposure Medium Total										1.1E-10
Medium Total											4.3E-06
Groundwater	Groundwater	Tap	Ingestion	1,1-Dichloroethane	5.90E-03	mg/L	3.2E-05	mg/kg-day	–	–	–
				1,2-Dichloroethane	2.66E-04	mg/L	1.5E-06	mg/kg-day	9.1E-02	(mg/kg-day)-1	1.3E-07
				1,2-Dichloropropane	5.70E-04	mg/L	3.1E-06	mg/kg-day	6.8E-02	(mg/kg-day)-1	2.1E-07
				Arsenic	3.31E-03	mg/L	1.8E-05	mg/kg-day	1.5E+00	(mg/kg-day)-1	2.7E-05
				Benzene	3.33E-04	mg/L	1.8E-06	mg/kg-day	5.5E-02	(mg/kg-day)-1	1.0E-07
				Manganese	5.17E+00	mg/L	2.8E-02	mg/kg-day	–	–	–
				Tetrachloroethene	4.07E-03	mg/L	2.2E-05	mg/kg-day	5.2E-02	(mg/kg-day)-1	1.2E-06
				Trichloroethene	1.26E-03	mg/L	6.9E-06	mg/kg-day	4.0E-01	(mg/kg-day)-1	2.8E-06
			Exp. Route Total								3.2E-05
			Dermal (bathing/ showering)	1,1-Dichloroethane	5.90E-03	mg/L	4.7E-07	mg/kg-day	–	–	–
				1,2-Dichloroethane	2.66E-04	mg/L	1.3E-08	mg/kg-day	9.1E-02	(mg/kg-day)-1	1.2E-09
				1,2-Dichloropropane	5.70E-04	mg/L	5.3E-08	mg/kg-day	6.8E-02	(mg/kg-day)-1	3.6E-09
				Arsenic	3.31E-03	mg/L	4.0E-08	mg/kg-day	1.5E+00	(mg/kg-day)-1	5.9E-08

TABLE H2-8.3.4.CTE
EPA RAGS PART D TABLE 7a
CALCULATION OF CTE CHEMICAL CANCER RISKS
CURRENT CHILD RESIDENT
SITE 19, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Current/Future
Receptor Population:	Resident
Receptor Age:	Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk
							Value	Units	Value	Units	
				Benzene	3.33E-04	mg/L	8.3E-08	mg/kg-day	5.5E-02	(mg/kg-day)-1	4.6E-09
				Manganese	5.17E+00	mg/L	6.2E-05	mg/kg-day	--	--	--
				Tetrachloroethene	4.07E-03	mg/L	1.6E-06	mg/kg-day	5.2E-02	(mg/kg-day)-1	8.3E-08
				Trichloroethene	1.26E-03	mg/L	1.8E-07	mg/kg-day	4.0E-01	(mg/kg-day)-1	7.2E-08
			Exp. Route Total								2.2E-07
			Inhalation (bathing/ showering)	1,1-Dichloroethane	5.90E-03	mg/L	9.3E-08	mg/kg-day	--	--	--
				1,2-Dichloroethane	2.66E-04	mg/L	4.2E-09	mg/kg-day	9.1E-02	(mg/kg-day)-1	3.8E-10
				1,2-Dichloropropane	5.70E-04	mg/L	9.0E-09	mg/kg-day	6.8E-02	(mg/kg-day)-1	6.1E-10
				Benzene	3.33E-04	mg/L	5.3E-09	mg/kg-day	2.7E-02	(mg/kg-day)-1	1.4E-10
				Tetrachloroethene	4.07E-03	mg/L	6.4E-08	mg/kg-day	1.0E-02	(mg/kg-day)-1	6.4E-10
				Trichloroethene	1.26E-03	mg/L	2.0E-08	mg/kg-day	4.0E-01	(mg/kg-day)-1	8.0E-09
			Exp. Route Total								9.8E-09
		Exposure Point Total									3.2E-05
	Exposure Medium Total										3.2E-05
Medium Total											3.2E-05
										Total of Receptor Risks Across All Media	3.6E-05

Notes:

CSF	Cancer slope factor
EPC	Exposure point concentration
mg/kg	Milligram per kilogram
mg/kg-day	Milligram per kilogram per day
(mg/kg-day)-1	1/(Milligram per kilogram per day)
CTE	Central tendency exposure
--	Not Applicable or Not Available

TABLE H2-8.3.5.CTE
EPA RAGS PART D TABLE 7a
CALCULATION OF CTE CHEMICAL CANCER RISKS
FUTURE DEVELOPED CONSTRUCTION WORKER
SITE 19, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future-Developed
Receptor Population:	Construction Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk
							Value	Units	Value	Units	
Soil (0-8)	Soil	Site Soil	Ingestion	Arsenic	5.25E+00	mg/kg	1.8E-08	mg/kg-day	1.5E+00	(mg/kg-day)-1	2.6E-08
				Benzo(a)pyrene	1.87E-02	mg/kg	6.3E-11	mg/kg-day	7.3E+00	(mg/kg-day)-1	4.6E-10
				Lead	9.17E+00	mg/kg	3.1E-08	mg/kg-day	--	--	--
			Exp. Route Total								2.7E-08
			Dermal	Arsenic	5.25E+00	mg/kg	1.7E-09	mg/kg-day	1.5E+00	(mg/kg-day)-1	2.6E-09
				Benzo(a)pyrene	1.87E-02	mg/kg	2.7E-11	mg/kg-day	7.3E+00	(mg/kg-day)-1	2.0E-10
				Lead	9.17E+00	mg/kg	1.0E-09	mg/kg-day	--	--	--
			Exp. Route Total								2.8E-09
		Exposure Point Total									3.0E-08
	Exposure Medium Total										3.0E-08
	Air	Outdoor Air	Inhalation (particulates)	Arsenic	5.25E+00	mg/kg	2.7E-12	mg/kg-day	1.5E+01	(mg/kg-day)-1	4.0E-11
				Benzo(a)pyrene	1.87E-02	mg/kg	9.5E-15	mg/kg-day	7.3E+00	(mg/kg-day)-1	6.9E-14
				Lead	9.17E+00	mg/kg	4.7E-12	mg/kg-day	--	--	--
			Exp. Route Total								4.0E-11
		Exposure Point Total									4.0E-11
	Exposure Medium Total										4.0E-11
Medium Total											3.0E-08
										Total of Receptor Risks Across All Media	3.0E-08

Notes:

CSF	Cancer slope factor
EPC	Exposure point concentration
mg/kg	Milligram per kilogram
mg/kg-day	Milligram per kilogram per day
(mg/kg-day)-1	1/(Milligram per kilogram per day)
CTE	Central tendency exposure
--	Not Applicable or Not Available

TABLE H2-8.3.6.CTE
EPA RAGS PART D TABLE 7a
CALCULATION OF CTE CHEMICAL CANCER RISKS
FUTURE REDEVELOPED ADULT RESIDENT
SITE 19, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future-Redeveloped
Receptor Population:	Resident
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk
							Value	Units	Value	Units	
Soil (0-8)	Soil	Site Soil	Ingestion	Arsenic	5.25E+00	mg/kg	4.6E-07	mg/kg-day	1.5E+00	(mg/kg-day)-1	6.9E-07
				Benzo(a)pyrene	1.87E-02	mg/kg	1.6E-09	mg/kg-day	7.3E+00	(mg/kg-day)-1	1.2E-08
				Lead	9.17E+00	mg/kg	8.1E-07	mg/kg-day	--	--	--
			Exp. Route Total								7.1E-07
			Dermal	Arsenic	5.25E+00	mg/kg	1.6E-08	mg/kg-day	1.5E+00	(mg/kg-day)-1	2.4E-08
				Benzo(a)pyrene	1.87E-02	mg/kg	2.4E-10	mg/kg-day	7.3E+00	(mg/kg-day)-1	1.8E-09
				Lead	9.17E+00	mg/kg	9.2E-09	mg/kg-day	--	--	--
			Exp. Route Total								2.5E-08
		Exposure Point Total									7.3E-07
	Exposure Medium Total										7.3E-07
	Homegrown Produce	Homegrown Produce	Ingestion	Arsenic	5.25E+00	mg/kg	6.3E-07	mg/kg-day	1.5E+00	(mg/kg-day)-1	9.5E-07
				Benzo(a)pyrene	1.87E-02	mg/kg	1.6E-09	mg/kg-day	7.3E+00	(mg/kg-day)-1	1.1E-08
				Lead	9.17E+00	mg/kg	--	mg/kg-day	--	--	--
			Exp. Route Total								9.6E-07
		Exposure Point Total									9.6E-07
	Exposure Medium Total										9.6E-07
	Air	Outdoor Air	Inhalation (particulates)	Arsenic	5.25E+00	mg/kg	5.8E-12	mg/kg-day	1.5E+01	(mg/kg-day)-1	8.7E-11
				Benzo(a)pyrene	1.87E-02	mg/kg	2.1E-14	mg/kg-day	7.3E+00	(mg/kg-day)-1	1.5E-13
				Lead	9.17E+00	mg/kg	1.0E-11	mg/kg-day	--	--	--
			Exp. Route Total								8.7E-11
		Exposure Point Total									8.7E-11
	Exposure Medium Total										8.7E-11
Medium Total											1.7E-06
Groundwater	Groundwater	Tap	Ingestion	1,1-Dichloroethane	5.90E-03	mg/L	1.5E-05	mg/kg-day	--	--	--
				1,2-Dichloroethane	2.66E-04	mg/L	6.6E-07	mg/kg-day	9.1E-02	(mg/kg-day)-1	6.0E-08
				1,2-Dichloropropane	5.70E-04	mg/L	1.4E-06	mg/kg-day	6.8E-02	(mg/kg-day)-1	9.6E-08
				Arsenic	3.31E-03	mg/L	8.2E-06	mg/kg-day	1.5E+00	(mg/kg-day)-1	1.2E-05
				Benzene	3.33E-04	mg/L	8.2E-07	mg/kg-day	5.5E-02	(mg/kg-day)-1	4.5E-08
				Manganese	5.17E+00	mg/L	1.3E-02	mg/kg-day	--	--	--
				Tetrachloroethene	4.07E-03	mg/L	1.0E-05	mg/kg-day	5.2E-02	(mg/kg-day)-1	5.2E-07
				Trichloroethene	1.26E-03	mg/L	3.1E-06	mg/kg-day	4.0E-01	(mg/kg-day)-1	1.2E-06
			Exp. Route Total								1.4E-05

TABLE H2-8.3.6.CTE
EPA RAGS PART D TABLE 7a
CALCULATION OF CTE CHEMICAL CANCER RISKS
FUTURE REDEVELOPED ADULT RESIDENT
SITE 19, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future-Redeveloped
Receptor Population:	Resident
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk
							Value	Units	Value	Units	
			Dermal (bathing/ showering)	1,1-Dichloroethane	5.90E-03	mg/L	3.1E-07	mg/kg-day	--	--	--
				1,2-Dichloroethane	2.66E-04	mg/L	8.9E-09	mg/kg-day	9.1E-02	(mg/kg-day)-1	8.1E-10
				1,2-Dichloropropane	5.70E-04	mg/L	3.5E-08	mg/kg-day	6.8E-02	(mg/kg-day)-1	2.4E-09
				Arsenic	3.31E-03	mg/L	2.6E-08	mg/kg-day	1.5E+00	(mg/kg-day)-1	3.9E-08
				Benzene	3.33E-04	mg/L	5.5E-08	mg/kg-day	5.5E-02	(mg/kg-day)-1	3.0E-09
				Manganese	5.17E+00	mg/L	4.1E-05	mg/kg-day	--	--	--
				Tetrachloroethene	4.07E-03	mg/L	1.1E-06	mg/kg-day	5.2E-02	(mg/kg-day)-1	5.5E-08
				Trichloroethene	1.26E-03	mg/L	1.2E-07	mg/kg-day	4.0E-01	(mg/kg-day)-1	4.8E-08
			Exp. Route Total								1.5E-07
			Inhalation (bathing/ showering)	1,1-Dichloroethane	5.90E-03	mg/L	4.5E-08	mg/kg-day	--	--	--
				1,2-Dichloroethane	2.66E-04	mg/L	2.0E-09	mg/kg-day	9.1E-02	(mg/kg-day)-1	1.8E-10
				1,2-Dichloropropane	5.70E-04	mg/L	4.3E-09	mg/kg-day	6.8E-02	(mg/kg-day)-1	3.0E-10
				Benzene	3.33E-04	mg/L	2.5E-09	mg/kg-day	2.7E-02	(mg/kg-day)-1	6.8E-11
				Tetrachloroethene	4.07E-03	mg/L	3.1E-08	mg/kg-day	1.0E-02	(mg/kg-day)-1	3.1E-10
				Trichloroethene	1.26E-03	mg/L	9.6E-09	mg/kg-day	4.0E-01	(mg/kg-day)-1	3.8E-09
			Exp. Route Total								4.7E-09
		Exposure Point Total									1.4E-05
	Exposure Medium Total										1.4E-05
Medium Total											1.4E-05
										Total of Receptor Risks Across All Media	1.6E-05

Notes:

CSF	Cancer slope factor
EPC	Exposure point concentration
mg/kg	Milligram per kilogram
mg/kg-day	Milligram per kilogram per day
(mg/kg-day)-1	1/(Milligram per kilogram per day)
CTE	Central tendency exposure
--	Not Applicable or Not Available

TABLE H2-8.3.7.CTE
EPA RAGS PART D TABLE 7b
CALCULATION OF CTE CHEMICAL CANCER RISKS
FUTURE REDEVELOPED CHILD RESIDENT
SITE 19, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future-Redeveloped
Receptor Population:	Resident
Receptor Age:	Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk
							Value	Units	Value	Units	
Soil (0-8)	Soil	Site Soil	Ingestion	Arsenic	5.25E+00	mg/kg	2.9E-06	mg/kg-day	1.5E+00	(mg/kg-day)-1	4.3E-06
				Benzo(a)pyrene	1.87E-02	mg/kg	1.0E-08	mg/kg-day	7.3E+00	(mg/kg-day)-1	7.5E-08
				Lead	9.17E+00	mg/kg	5.0E-06	mg/kg-day	--	--	--
			Exp. Route Total								4.4E-06
			Dermal	Arsenic	5.25E+00	mg/kg	9.7E-08	mg/kg-day	1.5E+00	(mg/kg-day)-1	1.4E-07
				Benzo(a)pyrene	1.87E-02	mg/kg	1.5E-09	mg/kg-day	7.3E+00	(mg/kg-day)-1	1.1E-08
				Lead	9.17E+00	mg/kg	5.6E-08	mg/kg-day	--	--	--
			Exp. Route Total								1.6E-07
		Exposure Point Total									4.5E-06
	Exposure Medium Total										4.5E-06
	Homegrown Produce	Homegrown Produce	Ingestion	Arsenic	5.25E+00	mg/kg	4.2E-07	mg/kg-day	1.5E+00	(mg/kg-day)-1	6.3E-07
				Benzo(a)pyrene	1.87E-02	mg/kg	1.0E-09	mg/kg-day	7.3E+00	(mg/kg-day)-1	7.5E-09
				Lead	9.17E+00	mg/kg	--	mg/kg-day	--	--	--
			Exp. Route Total								6.4E-07
		Exposure Point Total									6.4E-07
	Exposure Medium Total										6.4E-07
	Air	Outdoor Air	Inhalation (particulates)	Arsenic	5.25E+00	mg/kg	9.1E-12	mg/kg-day	1.5E+01	(mg/kg-day)-1	1.4E-10
				Benzo(a)pyrene	1.87E-02	mg/kg	3.3E-14	mg/kg-day	7.3E+00	(mg/kg-day)-1	2.4E-13
				Lead	9.17E+00	mg/kg	1.6E-11	mg/kg-day	--	--	--
			Exp. Route Total								1.4E-10
		Exposure Point Total									1.4E-10
	Exposure Medium Total										1.4E-10
Medium Total											5.2E-06
Groundwater	Groundwater	Tap	Ingestion	1,1-Dichloroethane	5.90E-03	mg/L	3.2E-05	mg/kg-day	--	--	--
				1,2-Dichloroethane	2.66E-04	mg/L	1.5E-06	mg/kg-day	9.1E-02	(mg/kg-day)-1	1.3E-07
				1,2-Dichloropropane	5.70E-04	mg/L	3.1E-06	mg/kg-day	6.8E-02	(mg/kg-day)-1	2.1E-07
				Arsenic	3.31E-03	mg/L	1.8E-05	mg/kg-day	1.5E+00	(mg/kg-day)-1	2.7E-05
				Benzene	3.33E-04	mg/L	1.8E-06	mg/kg-day	5.5E-02	(mg/kg-day)-1	1.0E-07
				Manganese	5.17E+00	mg/L	2.8E-02	mg/kg-day	--	--	--
				Tetrachloroethene	4.07E-03	mg/L	2.2E-05	mg/kg-day	5.2E-02	(mg/kg-day)-1	1.2E-06
				Trichloroethene	1.26E-03	mg/L	6.9E-06	mg/kg-day	4.0E-01	(mg/kg-day)-1	2.8E-06
			Exp. Route Total								3.2E-05

TABLE H2-8.3.7.CTE
EPA RAGS PART D TABLE 7b
CALCULATION OF CTE CHEMICAL CANCER RISKS
FUTURE REDEVELOPED CHILD RESIDENT
SITE 19, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future-Redeveloped
Receptor Population:	Resident
Receptor Age:	Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk
							Value	Units	Value	Units	
			Dermal (bathing/ showering)	1,1-Dichloroethane	5.90E-03	mg/L	4.7E-07	mg/kg-day	--	--	--
				1,2-Dichloroethane	2.66E-04	mg/L	1.3E-08	mg/kg-day	9.1E-02	(mg/kg-day)-1	1.2E-09
				1,2-Dichloropropane	5.70E-04	mg/L	5.3E-08	mg/kg-day	6.8E-02	(mg/kg-day)-1	3.6E-09
				Arsenic	3.31E-03	mg/L	4.0E-08	mg/kg-day	1.5E+00	(mg/kg-day)-1	5.9E-08
				Benzene	3.33E-04	mg/L	8.3E-08	mg/kg-day	5.5E-02	(mg/kg-day)-1	4.6E-09
				Manganese	5.17E+00	mg/L	6.2E-05	mg/kg-day	--	--	--
				Tetrachloroethene	4.07E-03	mg/L	1.6E-06	mg/kg-day	5.2E-02	(mg/kg-day)-1	8.3E-08
				Trichloroethene	1.26E-03	mg/L	1.8E-07	mg/kg-day	4.0E-01	(mg/kg-day)-1	7.2E-08
			Exp. Route Total								**2.2E-07**
			Inhalation (bathing/ showering)	1,1-Dichloroethane	5.90E-03	mg/L	9.3E-08	mg/kg-day	--	--	--
				1,2-Dichloroethane	2.66E-04	mg/L	4.2E-09	mg/kg-day	9.1E-02	(mg/kg-day)-1	3.8E-10
				1,2-Dichloropropane	5.70E-04	mg/L	9.0E-09	mg/kg-day	6.8E-02	(mg/kg-day)-1	6.1E-10
				Benzene	3.33E-04	mg/L	5.3E-09	mg/kg-day	2.7E-02	(mg/kg-day)-1	1.4E-10
				Tetrachloroethene	4.07E-03	mg/L	6.4E-08	mg/kg-day	1.0E-02	(mg/kg-day)-1	6.4E-10
				Trichloroethene	1.26E-03	mg/L	2.0E-08	mg/kg-day	4.0E-01	(mg/kg-day)-1	8.0E-09
			Exp. Route Total								**9.8E-09**
		Exposure Point Total									**3.2E-05**
	Exposure Medium Total										**3.2E-05**
Medium Total											**3.2E-05**
										Total of Receptor Risks Across All Media	**3.7E-05**

Notes:

CSF	Cancer slope factor
EPC	Exposure point concentration
mg/kg	Milligram per kilogram
mg/kg-day	Milligram per kilogram per day
(mg/kg-day)-1	1/(Milligram per kilogram per day)
CTE	Central tendency exposure
--	Not Applicable or Not Available

HHRA RISK TABLES

Central Tendency Exposure
Site 22
Alameda Point, Alameda, California

TABLE H2-8.4.1.CTE
EPA RAGS PART D TABLE 7a
CALCULATION OF CTE CHEMICAL CANCER RISKS
CURRENT INDUSTRIAL WORKER
SITE 22, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Current
Receptor Population:	Industrial Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk
							Value	Units	Value	Units	
Soil (0-2)	Soil	Site Soil	Ingestion	2-Methylnaphthalene	9.76E-02	mg/kg	2.7E-09	mg/kg-day	--	--	--
				Arsenic	4.58E+00	mg/kg	1.3E-07	mg/kg-day	1.5E+00	(mg/kg-day)-1	1.9E-07
				Benzo(a)pyrene	2.73E-02	mg/kg	7.5E-10	mg/kg-day	7.3E+00	(mg/kg-day)-1	5.5E-09
				Lead	1.18E+02	mg/kg	3.2E-06	mg/kg-day	--	--	--
			Exp. Route Total								1.9E-07
			Dermal	2-Methylnaphthalene	9.76E-02	mg/kg	--	mg/kg-day	--	--	--
				Arsenic	4.58E+00	mg/kg	5.0E-09	mg/kg-day	1.5E+00	(mg/kg-day)-1	7.5E-09
				Benzo(a)pyrene	2.73E-02	mg/kg	1.3E-10	mg/kg-day	7.3E+00	(mg/kg-day)-1	9.4E-10
				Lead	1.18E+02	mg/kg	4.3E-08	mg/kg-day	--	--	--
			Exp. Route Total								8.4E-09
		Exposure Point Total									2.0E-07
	Exposure Medium Total										2.0E-07
	Air	Outdoor Air	Inhalation (particulates)	2-Methylnaphthalene	9.76E-02	mg/kg	1.0E-13	mg/kg-day	--	--	--
				Arsenic	4.58E+00	mg/kg	4.8E-12	mg/kg-day	1.5E+01	(mg/kg-day)-1	7.2E-11
				Benzo(a)pyrene	2.73E-02	mg/kg	2.8E-14	mg/kg-day	7.3E+00	(mg/kg-day)-1	2.1E-13
				Lead	1.18E+02	mg/kg	1.2E-10	mg/kg-day	--	--	--
			Exp. Route Total								7.2E-11
		Exposure Point Total									7.2E-11
	Exposure Medium Total										7.2E-11
Medium Total											2.0E-07
Groundwater	Groundwater	Indoor Air (Vapor Intrusion)	Inhalation	Benzene	1.40E+00	(a) ug/m3	1.9E-06	mg/kg-day	2.7E-02	(mg/kg-day)-1	5.2E-08
				Ethylbenzene	1.10E+00	(a) ug/m3	1.5E-06	mg/kg-day	3.9E-03	(mg/kg-day)-1	5.8E-09
				o-Xylene	2.60E+00	(a) ug/m3	3.6E-06	mg/kg-day	--	--	--
				m-Xylene	4.70E-01	(a) ug/m3	6.5E-07	mg/kg-day	--	--	--
				Toluene	2.90E+00	(a) ug/m3	4.0E-06	mg/kg-day	--	--	--
			Exp. Route Total								5.8E-08
		Exposure Point Total									5.8E-08
	Exposure Medium Total										5.8E-08
Medium Total											5.8E-08
										Total of Receptor Risks Across All Media	2.6E-07

Notes:

CSF Cancer slope factor

TABLE H2-8.4.1.CTE
EPA RAGS PART D TABLE 7a
CALCULATION OF CTE CHEMICAL CANCER RISKS
CURRENT INDUSTRIAL WORKER
SITE 22, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Current
Receptor Population:	Industrial Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk
							Value	Units	Value	Units	

EPC	Exposure point concentration
mg/kg	Milligram per kilogram
mg/kg-day	Milligram per kilogram per day
(mg/kg-day)-1	1/(Milligram per kilogram per day)
CTE	Central tendency exposure
--	Not Applicable or Not Available

TABLE H2-8.4.2.CTE
EPA RAGS PART D TABLE 7a
CALCULATION OF CTE CHEMICAL CANCER RISKS
CURRENT CONSTRUCTION WORKER
SITE 22, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	*Current*
Receptor Population:	Construction Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk
							Value	Units	Value	Units	
Soil (0-2)	Soil	Site Soil	Ingestion	2-Methylnaphthalene	9.76E-02	mg/kg	3.3E-10	mg/kg-day	--	--	--
				Arsenic	4.58E+00	mg/kg	1.5E-08	mg/kg-day	1.5E+00	(mg/kg-day)-1	2.3E-08
				Benzo(a)pyrene	2.73E-02	mg/kg	9.2E-11	mg/kg-day	7.3E+00	(mg/kg-day)-1	6.7E-10
				Lead	1.18E+02	mg/kg	3.9E-07	mg/kg-day	--	--	--
			Exp. Route Total								2.4E-08
			Dermal	2-Methylnaphthalene	9.76E-02	mg/kg	--	mg/kg-day	--	--	--
				Arsenic	4.58E+00	mg/kg	1.5E-09	mg/kg-day	1.5E+00	(mg/kg-day)-1	2.3E-09
				Benzo(a)pyrene	2.73E-02	mg/kg	3.9E-11	mg/kg-day	7.3E+00	(mg/kg-day)-1	2.9E-10
				Lead	1.18E+02	mg/kg	1.3E-08	mg/kg-day	--	--	--
			Exp. Route Total								2.6E-09
		Exposure Point Total									2.6E-08
	Exposure Medium Total										2.6E-08
	Air	Outdoor Air	Inhalation (particulates)	2-Methylnaphthalene	9.76E-02	mg/kg	5.0E-14	mg/kg-day	--	--	--
				Arsenic	4.58E+00	mg/kg	2.3E-12	mg/kg-day	1.5E+01	(mg/kg-day)-1	3.5E-11
				Benzo(a)pyrene	2.73E-02	mg/kg	1.4E-14	mg/kg-day	7.3E+00	(mg/kg-day)-1	1.0E-13
				Lead	1.18E+02	mg/kg	6.0E-11	mg/kg-day	--	--	--
			Exp. Route Total								3.5E-11
		Exposure Point Total									3.5E-11
	Exposure Medium Total										3.5E-11
Medium Total											2.6E-08
										Total of Receptor Risks Across All Media	2.6E-08

Notes:

CSF	Cancer slope factor
EPC	Exposure point concentration
mg/kg	Milligram per kilogram
mg/kg-day	Milligram per kilogram per day
(mg/kg-day)-1	1/(Milligram per kilogram per day)
CTE	Central tendency exposure
--	Not Applicable or Not Available

TABLE H2-8.4.3.CTE
EPA RAGS PART D TABLE 7a
CALCULATION OF CTE CHEMICAL CANCER RISKS
CURRENT ADULT RESIDENT
SITE 22, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future
Receptor Population:	Resident
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk
							Value	Units	Value	Units	
Soil (0-2)	Soil	Site Soil	Ingestion	2-Methylnaphthalene	9.76E-02	mg/kg	8.6E-09	mg/kg-day	--	--	--
				Arsenic	4.58E+00	mg/kg	4.0E-07	mg/kg-day	1.5E+00	(mg/kg-day)-1	6.1E-07
				Benzo(a)pyrene	2.73E-02	mg/kg	2.4E-09	mg/kg-day	7.3E+00	(mg/kg-day)-1	1.8E-08
				Lead	1.18E+02	mg/kg	1.0E-05	mg/kg-day	--	--	--
			Exp. Route Total								6.2E-07
			Dermal	2-Methylnaphthalene	9.76E-02	mg/kg	--	mg/kg-day	--	--	--
				Arsenic	4.58E+00	mg/kg	1.4E-08	mg/kg-day	1.5E+00	(mg/kg-day)-1	2.1E-08
				Benzo(a)pyrene	2.73E-02	mg/kg	3.6E-10	mg/kg-day	7.3E+00	(mg/kg-day)-1	2.6E-09
				Lead	1.18E+02	mg/kg	1.2E-07	mg/kg-day	--	--	--
			Exp. Route Total								2.3E-08
		Exposure Point Total									6.5E-07
	Exposure Medium Total										6.5E-07
	Homegrown Produce	Homegrown Produce	Ingestion	2-Methylnaphthalene	9.76E-02	mg/kg	--	mg/kg-day	--	--	--
				Arsenic	4.58E+00	mg/kg	5.5E-07	mg/kg-day	1.5E+00	(mg/kg-day)-1	8.3E-07
				Benzo(a)pyrene	2.73E-02	mg/kg	2.3E-09	mg/kg-day	7.3E+00	(mg/kg-day)-1	1.7E-08
				Lead	1.18E+02	mg/kg	--	mg/kg-day	--	--	--
			Exp. Route Total								8.4E-07
		Exposure Point Total									8.4E-07
	Exposure Medium Total										8.4E-07
	Air	Outdoor Air	Inhalation (particulates)	2-Methylnaphthalene	9.76E-02	mg/kg	1.1E-13	mg/kg-day	--	--	--
				Arsenic	4.58E+00	mg/kg	5.1E-12	mg/kg-day	1.5E+01	(mg/kg-day)-1	7.6E-11
				Benzo(a)pyrene	2.73E-02	mg/kg	3.0E-14	mg/kg-day	7.3E+00	(mg/kg-day)-1	2.2E-13
				Lead	1.18E+02	mg/kg	1.3E-10	mg/kg-day	--	--	--
			Exp. Route Total								7.6E-11
		Exposure Point Total									7.6E-11
	Exposure Medium Total										7.6E-11
Medium Total											1.5E-06
Groundwater	Groundwater	Indoor Air (Vapor Intrusion)	Inhalation	Benzene	1.40E+01	(a) ug/m3	2.0E-05	mg/kg-day	2.7E-02	(mg/kg-day)-1	5.5E-07
				Ethylbenzene	1.10E+01	(a) ug/m3	1.6E-05	mg/kg-day	3.9E-03	(mg/kg-day)-1	6.2E-08
				o-Xylene	2.60E+01	(a) ug/m3	3.8E-05	mg/kg-day	--	--	--
				m-Xylene	4.70E+00	(a) ug/m3	6.9E-06	mg/kg-day	--	--	--
				Toluene	2.90E+01	(a) ug/m3	4.2E-05	mg/kg-day	--	--	--

TABLE H2-8.4.3.CTE
EPA RAGS PART D TABLE 7a
CALCULATION OF CTE CHEMICAL CANCER RISKS
CURRENT ADULT RESIDENT
SITE 22, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future
Receptor Population:	Resident
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk
							Value	Units	Value	Units	
			Exp. Route Total								6.1E-07
		Exposure Point Total									6.1E-07
		Tap	Ingestion	1,2-Dichloroethane	2.05E-03	mg/L	5.1E-06	mg/kg-day	9.1E-02	(mg/kg-day)-1	4.6E-07
				2-Methylnaphthalene	1.02E-02	mg/L	2.5E-05	mg/kg-day	--	--	--
				Arsenic	1.24E-02	mg/L	3.1E-05	mg/kg-day	1.5E+00	(mg/kg-day)-1	4.6E-05
				Benzene	5.39E-01	mg/L	1.3E-03	mg/kg-day	5.5E-02	(mg/kg-day)-1	7.3E-05
				Chloroform	2.24E-03	mg/L	5.5E-06	mg/kg-day	--	--	--
				Ethylbenzene	1.21E-01	mg/L	3.0E-04	mg/kg-day	3.9E-03	(mg/kg-day)-1	1.1E-06
				Manganese	5.09E+00	mg/L	1.3E-02	mg/kg-day	--	--	--
				Naphthalene	8.42E-02	mg/L	2.1E-04	mg/kg-day	--	--	--
				n-Propylbenzene	1.34E-01	mg/L	3.3E-04	mg/kg-day	--	--	--
				Tetrachloroethene	1.92E-03	mg/L	4.7E-06	mg/kg-day	5.2E-02	(mg/kg-day)-1	2.5E-07
				Thallium	1.83E-03	mg/L	4.5E-06	mg/kg-day	--	--	--
				Toluene	2.95E-01	mg/L	7.3E-04	mg/kg-day	--	--	--
				Trichloroethene	2.37E-03	mg/L	5.8E-06	mg/kg-day	4.0E-01	(mg/kg-day)-1	2.3E-06
				Xylene (Total)	3.87E-01	mg/L	9.5E-04	mg/kg-day	--	--	--
			Exp. Route Total								1.2E-04
			Dermal (bathing/ showering)	1,2-Dichloroethane	2.05E-03	mg/L	6.8E-08	mg/kg-day	9.1E-02	(mg/kg-day)-1	6.2E-09
				2-Methylnaphthalene	1.02E-02	mg/L	3.8E-06	mg/kg-day	--	--	--
				Arsenic	1.24E-02	mg/L	9.8E-08	mg/kg-day	1.5E+00	(mg/kg-day)-1	1.5E-07
				Benzene	5.39E-01	mg/L	9.0E-05	mg/kg-day	5.5E-02	(mg/kg-day)-1	4.9E-06
				Chloroform	2.24E-03	mg/L	1.2E-07	mg/kg-day	--	--	--
				Ethylbenzene	1.21E-01	mg/L	4.7E-05	mg/kg-day	3.9E-03	(mg/kg-day)-1	1.8E-07
				Manganese	5.09E+00	mg/L	4.0E-05	mg/kg-day	--	--	--
				Naphthalene	8.42E-02	mg/L	3.1E-05	mg/kg-day	--	--	--
				n-Propylbenzene	1.34E-01	mg/L	9.7E-05	mg/kg-day	--	--	--
				Tetrachloroethene	1.92E-03	mg/L	5.0E-07	mg/kg-day	5.2E-02	(mg/kg-day)-1	2.6E-08
				Thallium	1.83E-03	mg/L	1.5E-08	mg/kg-day	--	--	--
				Toluene	2.95E-01	mg/L	7.2E-05	mg/kg-day	--	--	--
				Trichloroethene	2.37E-03	mg/L	2.3E-07	mg/kg-day	4.0E-01	(mg/kg-day)-1	9.0E-08
				Xylene (Total)	3.87E-01	mg/L	1.6E-04	mg/kg-day	--	--	--
			Exp. Route Total								5.4E-06

TABLE H2-8.4.3.CTE
EPA RAGS PART D TABLE 7a
CALCULATION OF CTE CHEMICAL CANCER RISKS
CURRENT ADULT RESIDENT
SITE 22, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future
Receptor Population:	Resident
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk
							Value	Units	Value	Units	
			Inhalation (bathing/ showering)	1,2-Dichloroethane	2.05E-03	mg/L	1.6E-08	mg/kg-day	9.1E-02	(mg/kg-day)-1	1.4E-09
				2-Methylnaphthalene	1.02E-02	mg/L	7.8E-08	mg/kg-day	--	--	--
				Benzene	5.39E-01	mg/L	4.1E-06	mg/kg-day	2.7E-02	(mg/kg-day)-1	1.1E-07
				Chloroform	2.24E-03	mg/L	1.7E-08	mg/kg-day	8.1E-02	(mg/kg-day)-1	1.4E-09
				Ethylbenzene	1.21E-01	mg/L	9.2E-07	mg/kg-day	3.9E-03	(mg/kg-day)-1	3.5E-09
				Naphthalene	8.42E-02	mg/L	6.4E-07	mg/kg-day	--	--	--
				n-Propylbenzene	1.34E-01	mg/L	1.0E-06	mg/kg-day	--	--	--
				Tetrachloroethene	1.92E-03	mg/L	1.5E-08	mg/kg-day	1.0E-02	(mg/kg-day)-1	1.5E-10
				Toluene	2.95E-01	mg/L	2.2E-06	mg/kg-day	--	--	--
				Trichloroethene	2.37E-03	mg/L	1.8E-08	mg/kg-day	4.0E-01	(mg/kg-day)-1	7.2E-09
				Xylene (Total)	3.87E-01	mg/L	2.9E-06	mg/kg-day	--	--	--
			Exp. Route Total								1.2E-07
		Exposure Point Total									1.3E-04
	Exposure Medium Total										1.3E-04
Medium Total											1.3E-04
										Total of Receptor Risks Across All Media	1.3E-04

Notes:

CSF	Cancer slope factor
EPC	Exposure point concentration
mg/kg	Milligram per kilogram
mg/kg-day	Milligram per kilogram per day
(mg/kg-day)-1	1/(Milligram per kilogram per day)
CTE	Central tendency exposure
--	Not Applicable or Not Available

(a) See the Vapor Intrusion to Indoor Air Evaluation for determination of the modeled indoor air concentration.

TABLE H2-8.4.4.CTE
EPA RAGS PART D TABLE 7a
CALCULATION OF CTE CHEMICAL CANCER RISKS
CURRENT CHILD RESIDENT
SITE 22, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future
Receptor Population:	Resident
Receptor Age:	Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk
							Value	Units	Value	Units	
Soil (0-2)	Soil	Site Soil	Ingestion	2-Methylnaphthalene	9.76E-02	mg/kg	5.3E-08	mg/kg-day	--	--	--
				Arsenic	4.58E+00	mg/kg	2.5E-06	mg/kg-day	1.5E+00	(mg/kg-day)-1	3.8E-06
				Benzo(a)pyrene	2.73E-02	mg/kg	1.5E-08	mg/kg-day	7.3E+00	(mg/kg-day)-1	1.1E-07
				Lead	1.18E+02	mg/kg	6.4E-05	mg/kg-day	--	--	--
			Exp. Route Total								3.9E-06
			Dermal	2-Methylnaphthalene	9.76E-02	mg/kg	--	mg/kg-day	--	--	--
				Arsenic	4.58E+00	mg/kg	8.4E-08	mg/kg-day	1.5E+00	(mg/kg-day)-1	1.3E-07
				Benzo(a)pyrene	2.73E-02	mg/kg	2.2E-09	mg/kg-day	7.3E+00	(mg/kg-day)-1	1.6E-08
				Lead	1.18E+02	mg/kg	7.2E-07	mg/kg-day	--	--	--
			Exp. Route Total								1.4E-07
		Exposure Point Total									4.0E-06
	Exposure Medium Total										4.0E-06
	Homegrown Produce	Homegrown Produce	Ingestion	2-Methylnaphthalene	9.76E-02	mg/kg	--	mg/kg-day	--	--	--
				Arsenic	4.58E+00	mg/kg	3.7E-07	mg/kg-day	1.5E+00	(mg/kg-day)-1	5.5E-07
				Benzo(a)pyrene	2.73E-02	mg/kg	1.5E-09	mg/kg-day	7.3E+00	(mg/kg-day)-1	1.1E-08
				Lead	1.18E+02	mg/kg	--	mg/kg-day	--	--	--
			Exp. Route Total								5.6E-07
		Exposure Point Total									5.6E-07
	Exposure Medium Total										5.6E-07
	Air	Outdoor Air	Inhalation (particulates)	2-Methylnaphthalene	9.76E-02	mg/kg	1.7E-13	mg/kg-day	--	--	--
				Arsenic	4.58E+00	mg/kg	8.0E-12	mg/kg-day	1.5E+01	(mg/kg-day)-1	1.2E-10
				Benzo(a)pyrene	2.73E-02	mg/kg	4.8E-14	mg/kg-day	7.3E+00	(mg/kg-day)-1	3.5E-13
				Lead	1.18E+02	mg/kg	2.1E-10	mg/kg-day	--	--	--
			Exp. Route Total								1.2E-10
		Exposure Point Total									1.2E-10
	Exposure Medium Total										1.2E-10
Medium Total											4.6E-06
Groundwater	Groundwater	Indoor Air (Vapor Intrusion)	Inhalation	Benzene	1.40E+01	(a) ug/m3	3.2E-05	mg/kg-day	2.7E-02	(mg/kg-day)-1	8.7E-07
				Ethylbenzene	1.10E+01	(a) ug/m3	2.5E-05	mg/kg-day	3.9E-03	(mg/kg-day)-1	9.7E-08
				o-Xylene	2.60E+01	(a) ug/m3	6.0E-05	mg/kg-day	--	--	--
				m-Xylene	4.70E+00	(a) ug/m3	1.1E-05	mg/kg-day	--	--	--
				Toluene	2.90E+01	(a) ug/m3	6.7E-05	mg/kg-day	--	--	--

TABLE H2-8.4.4.CTE
EPA RAGS PART D TABLE 7a
CALCULATION OF CTE CHEMICAL CANCER RISKS
CURRENT CHILD RESIDENT
SITE 22, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future
Receptor Population:	Resident
Receptor Age:	Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk
							Value	Units	Value	Units	
			Exp. Route Total								9.7E-07
		Exposure Point Total									9.7E-07
		Tap	Ingestion	1,2-Dichloroethane	2.05E-03	mg/L	1.1E-05	mg/kg-day	9.1E-02	(mg/kg-day)-1	1.0E-06
				2-Methylnaphthalene	1.02E-02	mg/L	5.6E-05	mg/kg-day	--	--	--
				Arsenic	1.24E-02	mg/L	6.8E-05	mg/kg-day	1.5E+00	(mg/kg-day)-1	1.0E-04
				Benzene	5.39E-01	mg/L	3.0E-03	mg/kg-day	5.5E-02	(mg/kg-day)-1	1.6E-04
				Chloroform	2.24E-03	mg/L	1.2E-05	mg/kg-day	--	--	--
				Ethylbenzene	1.21E-01	mg/L	6.6E-04	mg/kg-day	3.9E-03	(mg/kg-day)-1	2.6E-06
				Manganese	5.09E+00	mg/L	2.8E-02	mg/kg-day	--	--	--
				Naphthalene	8.42E-02	mg/L	4.6E-04	mg/kg-day	--	--	--
				n-Propylbenzene	1.34E-01	mg/L	7.3E-04	mg/kg-day	--	--	--
				Tetrachloroethene	1.92E-03	mg/L	1.1E-05	mg/kg-day	5.2E-02	(mg/kg-day)-1	5.5E-07
				Thallium	1.83E-03	mg/L	1.0E-05	mg/kg-day	--	--	--
				Toluene	2.95E-01	mg/L	1.6E-03	mg/kg-day	--	--	--
				Trichloroethene	2.37E-03	mg/L	1.3E-05	mg/kg-day	4.0E-01	(mg/kg-day)-1	5.2E-06
				Xylene (Total)	3.87E-01	mg/L	2.1E-03	mg/kg-day	--	--	--
			Exp. Route Total								2.7E-04
			Dermal (bathing/ showering)	1,2-Dichloroethane	2.05E-03	mg/L	1.0E-07	mg/kg-day	9.1E-02	(mg/kg-day)-1	9.4E-09
				2-Methylnaphthalene	1.02E-02	mg/L	5.7E-06	mg/kg-day	--	--	--
				Arsenic	1.24E-02	mg/L	1.5E-07	mg/kg-day	1.5E+00	(mg/kg-day)-1	2.2E-07
				Benzene	5.39E-01	mg/L	1.4E-04	mg/kg-day	5.5E-02	(mg/kg-day)-1	7.4E-06
				Chloroform	2.24E-03	mg/L	1.8E-07	mg/kg-day	--	--	--
				Ethylbenzene	1.21E-01	mg/L	7.1E-05	mg/kg-day	3.9E-03	(mg/kg-day)-1	2.7E-07
				Manganese	5.09E+00	mg/L	6.1E-05	mg/kg-day	--	--	--
				Naphthalene	8.42E-02	mg/L	4.7E-05	mg/kg-day	--	--	--
				n-Propylbenzene	1.34E-01	mg/L	1.5E-04	mg/kg-day	--	--	--
				Tetrachloroethene	1.92E-03	mg/L	7.6E-07	mg/kg-day	5.2E-02	(mg/kg-day)-1	3.9E-08
				Thallium	1.83E-03	mg/L	2.2E-08	mg/kg-day	--	--	--
				Toluene	2.95E-01	mg/L	1.1E-04	mg/kg-day	--	--	--
				Trichloroethene	2.37E-03	mg/L	3.4E-07	mg/kg-day	4.0E-01	(mg/kg-day)-1	1.4E-07
				Xylene (Total)	3.87E-01	mg/L	2.4E-04	mg/kg-day	--	--	--
			Exp. Route Total								8.1E-06

TABLE H2-8.4.4.CTE
EPA RAGS PART D TABLE 7a
CALCULATION OF CTE CHEMICAL CANCER RISKS
CURRENT CHILD RESIDENT
SITE 22, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future
Receptor Population:	Resident
Receptor Age:	Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk
							Value	Units	Value	Units	
			Inhalation (bathing/ showering)	1,2-Dichloroethane	2.05E-03	mg/L	3.2E-08	mg/kg-day	9.1E-02	(mg/kg-day)-1	3.0E-09
				2-Methylnaphthalene	1.02E-02	mg/L	1.6E-07	mg/kg-day	--	--	--
				Benzene	5.39E-01	mg/L	8.5E-06	mg/kg-day	2.7E-02	(mg/kg-day)-1	2.3E-07
				Chloroform	2.24E-03	mg/L	3.5E-08	mg/kg-day	8.1E-02	(mg/kg-day)-1	2.9E-09
				Ethylbenzene	1.21E-01	mg/L	1.9E-06	mg/kg-day	3.9E-03	(mg/kg-day)-1	7.4E-09
				Naphthalene	8.42E-02	mg/L	1.3E-06	mg/kg-day	--	--	--
				n-Propylbenzene	1.34E-01	mg/L	2.1E-06	mg/kg-day	--	--	--
				Tetrachloroethene	1.92E-03	mg/L	3.0E-08	mg/kg-day	1.0E-02	(mg/kg-day)-1	3.0E-10
				Toluene	2.95E-01	mg/L	4.7E-06	mg/kg-day	--	--	--
				Trichloroethene	2.37E-03	mg/L	3.7E-08	mg/kg-day	4.0E-01	(mg/kg-day)-1	1.5E-08
				Xylene (Total)	3.87E-01	mg/L	6.1E-06	mg/kg-day	--	--	--
			Exp. Route Total								2.6E-07
		Exposure Point Total									2.8E-04
	Exposure Medium Total										2.8E-04
Medium Total											2.8E-04
										Total of Receptor Risks Across All Media	2.9E-04

Notes:

CSF	Cancer slope factor
EPC	Exposure point concentration
mg/kg	Milligram per kilogram
mg/kg-day	Milligram per kilogram per day
(mg/kg-day)-1	1/(Milligram per kilogram per day)
CTE	Central tendency exposure
--	Not Applicable or Not Available

(a) See the Vapor Intrusion to Indoor Air Evaluation for determination of the modeled indoor air concentration.

TABLE H2-8.4.5.CTE
EPA RAGS PART D TABLE 7a
CALCULATION OF CTE CHEMICAL CANCER RISKS
FUTURE DEVELOPED CONSTRUCTION WORKER
SITE 22, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future-Developed
Receptor Population:	Construction Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk
							Value	Units	Value	Units	
Soil (0-8)	Soil	Site Soil	Ingestion	2-Methylnaphthalene	1.84E+00	mg/kg	6.2E-09	mg/kg-day	--	--	--
				Arsenic	4.31E+00	mg/kg	1.4E-08	mg/kg-day	1.5E+00	(mg/kg-day)-1	2.2E-08
				Benzene	5.81E-01	mg/kg	1.9E-09	mg/kg-day	5.5E-02	(mg/kg-day)-1	1.1E-10
				Benzo(a)pyrene	3.56E-02	mg/kg	1.2E-10	mg/kg-day	7.3E+00	(mg/kg-day)-1	8.7E-10
				Ethylbenzene	5.40E+00	mg/kg	1.8E-08	mg/kg-day	3.9E-03	(mg/kg-day)-1	7.0E-11
				Lead	2.99E+01	mg/kg	1.0E-07	mg/kg-day	--	--	--
				Toluene	6.41E+00	mg/kg	2.2E-08	mg/kg-day	--	--	--
				Xylene (Total)	3.49E+01	mg/kg	1.2E-07	mg/kg-day	--	--	--
			Exp. Route Total								2.3E-08
			Dermal	2-Methylnaphthalene	1.84E+00	mg/kg	--	mg/kg-day	--	--	--
				Arsenic	4.31E+00	mg/kg	1.4E-09	mg/kg-day	1.5E+00	(mg/kg-day)-1	2.1E-09
				Benzene	5.81E-01	mg/kg	--	mg/kg-day	5.5E-02	(mg/kg-day)-1	--
				Benzo(a)pyrene	3.56E-02	mg/kg	5.1E-11	mg/kg-day	7.3E+00	(mg/kg-day)-1	3.7E-10
				Ethylbenzene	5.40E+00	mg/kg	--	mg/kg-day	3.9E-03	(mg/kg-day)-1	--
				Lead	2.99E+01	mg/kg	3.3E-09	mg/kg-day	--	--	--
				Toluene	6.41E+00	mg/kg	--	mg/kg-day	--	--	--
				Xylene (Total)	3.49E+01	mg/kg	--	mg/kg-day	--	--	--
			Exp. Route Total								2.5E-09
		Exposure Point Total									2.5E-08
	Exposure Medium Total										2.5E-08
	Air	Outdoor Air	Inhalation (particulates)	2-Methylnaphthalene	1.84E+00	mg/kg	9.4E-13	mg/kg-day	--	--	--
				Arsenic	4.31E+00	mg/kg	2.2E-12	mg/kg-day	1.5E+01	(mg/kg-day)-1	3.3E-11
				Benzene	5.81E-01	mg/kg	3.0E-13	mg/kg-day	2.7E-02	(mg/kg-day)-1	8.0E-15
				Benzo(a)pyrene	5.40E+00	mg/kg	2.7E-12	mg/kg-day	7.3E+00	(mg/kg-day)-1	2.0E-11
				Ethylbenzene	2.99E+01	mg/kg	1.5E-11	mg/kg-day	3.9E-03	(mg/kg-day)-1	5.8E-14
				Lead	1.54E+00	mg/kg	7.8E-13	mg/kg-day	--	--	--
				Toluene	6.41E+00	mg/kg	3.3E-12	mg/kg-day	--	--	--
				Xylene (Total)	6.41E+00	mg/kg	3.3E-12	mg/kg-day	--	--	--
			Exp. Route Total								5.3E-11

TABLE H2-8.4.5.CTE
EPA RAGS PART D TABLE 7a
CALCULATION OF CTE CHEMICAL CANCER RISKS
FUTURE DEVELOPED CONSTRUCTION WORKER
SITE 22, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future-Developed
Receptor Population:	Construction Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk
							Value	Units	Value	Units	
			Inhalation (VOCs)	2-Methylnaphthalene	1.84E+00	mg/kg	2.9E-08	mg/kg-day	--	--	--
				Benzene	5.81E-01	mg/kg	1.4E-07	mg/kg-day	2.7E-02	(mg/kg-day)-1	3.9E-09
				Ethylbenzene	5.40E+00	mg/kg	6.7E-07	mg/kg-day	3.9E-03	(mg/kg-day)-1	2.6E-09
				Toluene	6.41E+00	mg/kg	1.1E-06	mg/kg-day	--	--	--
				Xylene (Total)	3.49E+01	mg/kg	3.8E-06	mg/kg-day	--	--	--
			Exp. Route Total								6.5E-09
		Exposure Point Total									6.5E-09
	Exposure Medium Total										6.5E-09
Medium Total											3.2E-08
										Total of Receptor Risks Across All Media	3.2E-08

Notes:

CSF	Cancer slope factor
EPC	Exposure point concentration
mg/kg	Milligram per kilogram
mg/kg-day	Milligram per kilogram per day
(mg/kg-day)-1	1/(Milligram per kilogram per day)
CTE	Central tendency exposure
VOC	Volatile organic compound
--	Not Applicable or Not Available

TABLE H2-8.4.6.CTE
EPA RAGS PART D TABLE 7a
CALCULATION OF CTE CHEMICAL CANCER RISKS
FUTURE REDEVELOPED ADULT RESIDENT
SITE 22, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future-Redeveloped
Receptor Population:	Resident
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk
							Value	Units	Value	Units	
Soil (0-8)	Soil	Site Soil	Ingestion	2-Methylnaphthalene	1.84E+00	mg/kg	1.6E-07	mg/kg-day	--	--	--
				Arsenic	4.31E+00	mg/kg	3.8E-07	mg/kg-day	1.5E+00	(mg/kg-day)-1	5.7E-07
				Benzene	5.81E-01	mg/kg	5.1E-08	mg/kg-day	5.5E-02	(mg/kg-day)-1	2.8E-09
				Benzo(a)pyrene	3.56E-02	mg/kg	3.1E-09	mg/kg-day	7.3E+00	(mg/kg-day)-1	2.3E-08
				Ethylbenzene	5.40E+00	mg/kg	4.8E-07	mg/kg-day	3.9E-03	(mg/kg-day)-1	1.8E-09
				Lead	2.99E+01	mg/kg	2.6E-06	mg/kg-day	--	--	--
				Toluene	6.41E+00	mg/kg	5.6E-07	mg/kg-day	--	--	--
				Xylene (Total)	3.49E+01	mg/kg	3.1E-06	mg/kg-day	--	--	--
			Exp. Route Total								6.0E-07
			Dermal	2-Methylnaphthalene	1.84E+00	mg/kg	--	mg/kg-day	--	--	--
				Arsenic	4.31E+00	mg/kg	1.3E-08	mg/kg-day	1.5E+00	(mg/kg-day)-1	1.9E-08
				Benzene	5.81E-01	mg/kg	--	mg/kg-day	5.5E-02	(mg/kg-day)-1	--
				Benzo(a)pyrene	3.56E-02	mg/kg	4.6E-10	mg/kg-day	7.3E+00	(mg/kg-day)-1	3.4E-09
				Ethylbenzene	5.40E+00	mg/kg	--	mg/kg-day	3.9E-03	(mg/kg-day)-1	--
				Lead	2.99E+01	mg/kg	3.0E-08	mg/kg-day	--	--	--
				Toluene	6.41E+00	mg/kg	--	mg/kg-day	--	--	--
				Xylene (Total)	3.49E+01	mg/kg	--	mg/kg-day	--	--	--
			Exp. Route Total								2.3E-08
		Exposure Point Total									6.2E-07
	Exposure Medium Total										6.2E-07
	Homegrown Produce	Homegrown Produce	Ingestion	2-Methylnaphthalene	1.84E+00	mg/kg	--	mg/kg-day	--	--	--
				Arsenic	4.31E+00	mg/kg	5.2E-07	mg/kg-day	1.5E+00	(mg/kg-day)-1	7.8E-07
				Benzene	5.81E-01	mg/kg	--	mg/kg-day	5.5E-02	(mg/kg-day)-1	--
				Benzo(a)pyrene	3.56E-02	mg/kg	3.0E-09	mg/kg-day	7.3E+00	(mg/kg-day)-1	2.2E-08
				Ethylbenzene	5.40E+00	mg/kg	--	mg/kg-day	3.9E-03	(mg/kg-day)-1	--
				Lead	2.99E+01	mg/kg	--	mg/kg-day	--	--	--
				Toluene	6.41E+00	mg/kg	--	mg/kg-day	--	--	--
				Xylene (Total)	3.49E+01	mg/kg	--	mg/kg-day	--	--	--
			Exp. Route Total								8.0E-07
		Exposure Point Total									8.0E-07
	Exposure Medium Total										8.0E-07
	Air	Outdoor Air	Inhalation (particulates)	2-Methylnaphthalene	1.84E+00	mg/kg	2.0E-12	mg/kg-day	--	--	--
				Arsenic	4.31E+00	mg/kg	4.8E-12	mg/kg-day	1.5E+01	(mg/kg-day)-1	7.2E-11
				Benzene	5.81E-01	mg/kg	6.4E-13	mg/kg-day	2.7E-02	(mg/kg-day)-1	1.7E-14

TABLE H2-8.4.6.CTE
EPA RAGS PART D TABLE 7a
CALCULATION OF CTE CHEMICAL CANCER RISKS
FUTURE REDEVELOPED ADULT RESIDENT
SITE 22, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future-Redeveloped
Receptor Population:	Resident
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk
							Value	Units	Value	Units	
				Benzo(a)pyrene	5.40E+00	mg/kg	6.0E-12	mg/kg-day	7.3E+00	(mg/kg-day)-1	4.4E-11
				Ethylbenzene	2.99E+01	mg/kg	3.3E-11	mg/kg-day	3.9E-03	(mg/kg-day)-1	1.3E-13
				Lead	1.54E+00	mg/kg	1.7E-12	mg/kg-day	--	--	--
				Toluene	6.41E+00	mg/kg	7.1E-12	mg/kg-day	--	--	--
				Xylene (Total)	6.41E+00	mg/kg	7.1E-12	mg/kg-day	--	--	--
			Exp. Route Total								1.2E-10
			Inhalation	2-Methylnaphthalene	1.84E+00	mg/kg	6.3E-08	mg/kg-day	--	--	--
			(VOCs)	Benzene	5.81E-01	mg/kg	3.1E-07	mg/kg-day	2.7E-02	(mg/kg-day)-1	8.5E-09
				Ethylbenzene	5.40E+00	mg/kg	1.5E-06	mg/kg-day	3.9E-03	(mg/kg-day)-1	5.6E-09
				Toluene	6.41E+00	mg/kg	2.3E-06	mg/kg-day	--	--	--
				Xylene (Total)	3.49E+01	mg/kg	8.4E-06	mg/kg-day	--	--	--
			Exp. Route Total								1.4E-08
		Exposure Point Total									1.4E-08
	Exposure Medium Total										1.4E-08
Medium Total											1.4E-06
Groundwater	Groundwater	Indoor Air	Inhalation	Benzene	1.40E+01	(a) ug/m3	2.0E-05	mg/kg-day	2.7E-02	(mg/kg-day)-1	5.5E-07
		(Vapor Intrusion)		Ethylbenzene	1.10E+01	(a) ug/m3	1.6E-05	mg/kg-day	3.9E-03	(mg/kg-day)-1	6.2E-08
				o-Xylene	2.60E+01	(a) ug/m3	3.8E-05	mg/kg-day	--	--	--
				m-Xylene	4.70E+00	(a) ug/m3	6.9E-06	mg/kg-day	--	--	--
				Toluene	2.90E+01	(a) ug/m3	4.2E-05	mg/kg-day	--	--	--
			Exp. Route Total								6.1E-07
		Exposure Point Total									6.1E-07
		Tap	Ingestion	1,2-Dichloroethane	2.05E-03	mg/L	5.1E-06	mg/kg-day	9.1E-02	(mg/kg-day)-1	4.6E-07
				2-Methylnaphthalene	1.02E-02	mg/L	2.5E-05	mg/kg-day	--	--	--
				Arsenic	1.24E-02	mg/L	3.1E-05	mg/kg-day	1.5E+00	(mg/kg-day)-1	4.6E-05
				Benzene	5.39E-01	mg/L	1.3E-03	mg/kg-day	5.5E-02	(mg/kg-day)-1	7.3E-05
				Chloroform	2.24E-03	mg/L	5.5E-06	mg/kg-day	--	--	--
				Ethylbenzene	1.21E-01	mg/L	3.0E-04	mg/kg-day	3.9E-03	(mg/kg-day)-1	1.1E-06
				Manganese	5.09E+00	mg/L	1.3E-02	mg/kg-day	--	--	--
				Naphthalene	8.42E-02	mg/L	2.1E-04	mg/kg-day	--	--	--
				n-Propylbenzene	1.34E-01	mg/L	3.3E-04	mg/kg-day	--	--	--
				Tetrachloroethene	1.92E-03	mg/L	4.7E-06	mg/kg-day	5.2E-02	(mg/kg-day)-1	2.5E-07

TABLE H2-8.4.6.CTE
EPA RAGS PART D TABLE 7a
CALCULATION OF CTE CHEMICAL CANCER RISKS
FUTURE REDEVELOPED ADULT RESIDENT
SITE 22, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future-Redeveloped
Receptor Population:	Resident
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk
							Value	Units	Value	Units	
				Thallium	1.83E-03	mg/L	4.5E-06	mg/kg-day	--	--	--
				Toluene	2.95E-01	mg/L	7.3E-04	mg/kg-day	--	--	--
				Trichloroethene	2.37E-03	mg/L	5.8E-06	mg/kg-day	4.0E-01	(mg/kg-day)-1	2.3E-06
				Xylene (Total)	3.87E-01	mg/L	9.5E-04	mg/kg-day	--	--	--
			Exp. Route Total								1.2E-04
			Dermal (bathing/ showering)	1,2-Dichloroethane	2.05E-03	mg/L	6.8E-08	mg/kg-day	9.1E-02	(mg/kg-day)-1	6.2E-09
				2-Methylnaphthalene	1.02E-02	mg/L	3.8E-06	mg/kg-day	--	--	--
				Arsenic	1.24E-02	mg/L	9.8E-08	mg/kg-day	1.5E+00	(mg/kg-day)-1	1.5E-07
				Benzene	5.39E-01	mg/L	9.0E-05	mg/kg-day	5.5E-02	(mg/kg-day)-1	4.9E-06
				Chloroform	2.24E-03	mg/L	1.2E-07	mg/kg-day	--	--	--
				Ethylbenzene	1.21E-01	mg/L	4.7E-05	mg/kg-day	3.9E-03	(mg/kg-day)-1	1.8E-07
				Manganese	5.09E+00	mg/L	4.0E-05	mg/kg-day	--	--	--
				Naphthalene	8.42E-02	mg/L	3.1E-05	mg/kg-day	--	--	--
				n-Propylbenzene	1.34E-01	mg/L	9.7E-05	mg/kg-day	--	--	--
				Tetrachloroethene	1.92E-03	mg/L	5.0E-07	mg/kg-day	5.2E-02	(mg/kg-day)-1	2.6E-08
				Thallium	1.83E-03	mg/L	1.5E-08	mg/kg-day	--	--	--
				Toluene	2.95E-01	mg/L	7.2E-05	mg/kg-day	--	--	--
				Trichloroethene	2.37E-03	mg/L	2.3E-07	mg/kg-day	4.0E-01	(mg/kg-day)-1	9.0E-08
				Xylene (Total)	3.87E-01	mg/L	1.6E-04	mg/kg-day	--	--	--
			Exp. Route Total								5.4E-06
			Inhalation (bathing/ showering)	1,2-Dichloroethane	2.05E-03	mg/L	1.6E-08	mg/kg-day	9.1E-02	(mg/kg-day)-1	1.4E-09
				2-Methylnaphthalene	1.02E-02	mg/L	7.8E-08	mg/kg-day	--	--	--
				Benzene	5.39E-01	mg/L	4.1E-06	mg/kg-day	2.7E-02	(mg/kg-day)-1	1.1E-07
				Chloroform	2.24E-03	mg/L	1.7E-08	mg/kg-day	8.1E-02	(mg/kg-day)-1	1.4E-09
				Ethylbenzene	1.21E-01	mg/L	9.2E-07	mg/kg-day	3.9E-03	(mg/kg-day)-1	3.5E-09
				Naphthalene	8.42E-02	mg/L	6.4E-07	mg/kg-day	--	--	--
				n-Propylbenzene	1.34E-01	mg/L	1.0E-06	mg/kg-day	--	--	--
				Tetrachloroethene	1.92E-03	mg/L	1.5E-08	mg/kg-day	1.0E-02	(mg/kg-day)-1	1.5E-10
				Toluene	2.95E-01	mg/L	2.2E-06	mg/kg-day	--	--	--
				Trichloroethene	2.37E-03	mg/L	1.8E-08	mg/kg-day	4.0E-01	(mg/kg-day)-1	7.2E-09
				Xylene (Total)	3.87E-01	mg/L	2.9E-06	mg/kg-day	--	--	--
			Exp. Route Total								1.2E-07

TABLE H2-8.4.6.CTE
EPA RAGS PART D TABLE 7a
CALCULATION OF CTE CHEMICAL CANCER RISKS
FUTURE REDEVELOPED ADULT RESIDENT
SITE 22, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future-Redeveloped
Receptor Population:	Resident
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk
							Value	Units	Value	Units	
		Exposure Point Total									1.3E-04
	Exposure Medium Total										1.3E-04
Medium Total											1.3E-04
										Total of Receptor Risks Across All Media	1.3E-04

Notes:

CSF	Cancer slope factor
EPC	Exposure point concentration
mg/kg	Milligram per kilogram
mg/kg-day	Milligram per kilogram per day
(mg/kg-day)-1	1/(Milligram per kilogram per day)
CTE	Central tendency exposure
VOC	Volatile organic compound
--	Not Applicable or Not Available

(a) See the Vapor Intrusion to Indoor Air Evaluation for determination of the modeled indoor air concentration.

TABLE H2-8.4.7.CTE
EPA RAGS PART D TABLE 7b
CALCULATION OF CTE CHEMICAL CANCER RISKS
FUTURE REDEVELOPED CHILD RESIDENT
SITE 22, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future-Redeveloped
Receptor Population:	Resident
Receptor Age:	Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk
							Value	Units	Value	Units	
Soil (0-8)	Soil	Site Soil	Ingestion	2-Methylnaphthalene	1.84E+00	mg/kg	1.0E-06	mg/kg-day	--	--	--
				Arsenic	4.31E+00	mg/kg	2.4E-06	mg/kg-day	1.5E+00	(mg/kg-day)-1	3.5E-06
				Benzene	5.81E-01	mg/kg	3.2E-07	mg/kg-day	5.5E-02	(mg/kg-day)-1	1.8E-08
				Benzo(a)pyrene	3.56E-02	mg/kg	2.0E-08	mg/kg-day	7.3E+00	(mg/kg-day)-1	1.4E-07
				Ethylbenzene	5.40E+00	mg/kg	3.0E-06	mg/kg-day	3.9E-03	(mg/kg-day)-1	1.1E-08
				Lead	2.99E+01	mg/kg	1.6E-05	mg/kg-day	--	--	--
				Toluene	6.41E+00	mg/kg	3.5E-06	mg/kg-day	--	--	--
				Xylene (Total)	3.49E+01	mg/kg	1.9E-05	mg/kg-day	--	--	--
			Exp. Route Total								3.7E-06
			Dermal	2-Methylnaphthalene	1.84E+00	mg/kg	--	mg/kg-day	--	--	--
				Arsenic	4.31E+00	mg/kg	7.9E-08	mg/kg-day	1.5E+00	(mg/kg-day)-1	1.2E-07
				Benzene	5.81E-01	mg/kg	--	mg/kg-day	5.5E-02	(mg/kg-day)-1	--
				Benzo(a)pyrene	3.56E-02	mg/kg	2.8E-09	mg/kg-day	7.3E+00	(mg/kg-day)-1	2.1E-08
				Ethylbenzene	5.40E+00	mg/kg	--	mg/kg-day	3.9E-03	(mg/kg-day)-1	--
				Lead	2.99E+01	mg/kg	1.8E-07	mg/kg-day	--	--	--
				Toluene	6.41E+00	mg/kg	--	mg/kg-day	--	--	--
				Xylene (Total)	3.49E+01	mg/kg	--	mg/kg-day	--	--	--
			Exp. Route Total								1.4E-07
		Exposure Point Total									3.9E-06
	Exposure Medium Total										3.9E-06
	Homegrown Produce	Homegrown Produce	Ingestion	2-Methylnaphthalene	1.84E+00	mg/kg	--	mg/kg-day	--	--	--
				Arsenic	4.31E+00	mg/kg	3.4E-07	mg/kg-day	1.5E+00	(mg/kg-day)-1	5.2E-07
				Benzene	5.81E-01	mg/kg	--	mg/kg-day	5.5E-02	(mg/kg-day)-1	--
				Benzo(a)pyrene	3.56E-02	mg/kg	2.0E-09	mg/kg-day	7.3E+00	(mg/kg-day)-1	1.4E-08
				Ethylbenzene	5.40E+00	mg/kg	--	mg/kg-day	3.9E-03	(mg/kg-day)-1	--
				Lead	2.99E+01	mg/kg	--	mg/kg-day	--	--	--
				Toluene	6.41E+00	mg/kg	--	mg/kg-day	--	--	--
				Xylene (Total)	3.49E+01	mg/kg	--	mg/kg-day	--	--	--
			Exp. Route Total								5.3E-07
		Exposure Point Total									5.3E-07
	Exposure Medium Total										5.3E-07
	Air	Outdoor Air	Inhalation (particulates)	2-Methylnaphthalene	1.84E+00	mg/kg	3.2E-12	mg/kg-day	--	--	--
				Arsenic	4.31E+00	mg/kg	7.5E-12	mg/kg-day	1.5E+01	(mg/kg-day)-1	1.1E-10
				Benzene	5.81E-01	mg/kg	1.0E-12	mg/kg-day	2.7E-02	(mg/kg-day)-1	2.7E-14

TABLE H2-8.4.7.CTE
EPA RAGS PART D TABLE 7b
CALCULATION OF CTE CHEMICAL CANCER RISKS
FUTURE REDEVELOPED CHILD RESIDENT
SITE 22, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future-Redeveloped
Receptor Population:	Resident
Receptor Age:	Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk
							Value	Units	Value	Units	
				Benzo(a)pyrene	3.56E-02	mg/kg	6.2E-14	mg/kg-day	7.3E+00	(mg/kg-day)-1	4.5E-13
				Ethylbenzene	5.40E+00	mg/kg	9.4E-12	mg/kg-day	3.9E-03	(mg/kg-day)-1	3.6E-14
				Lead	2.99E+01	mg/kg	5.2E-11	mg/kg-day	--	--	--
				Toluene	6.41E+00	mg/kg	1.1E-11	mg/kg-day	--	--	--
				Xylene (Total)	3.49E+01	mg/kg	6.1E-11	mg/kg-day	--	--	--
			Exp. Route Total								1.1E-10
			Inhalation (VOCs)	2-Methylnaphthalene	1.84E+00	mg/kg	9.8E-08	mg/kg-day	--	--	--
				Benzene	5.81E-01	mg/kg	5.0E-07	mg/kg-day	2.7E-02	(mg/kg-day)-1	1.3E-08
				Ethylbenzene	5.40E+00	mg/kg	2.3E-06	mg/kg-day	3.9E-03	(mg/kg-day)-1	8.9E-09
				Toluene	6.41E+00	mg/kg	3.7E-06	mg/kg-day	--	--	--
				Xylene (Total)	3.49E+01	mg/kg	1.3E-05	mg/kg-day	--	--	--
			Exp. Route Total								2.2E-08
		Exposure Point Total									2.2E-08
	Exposure Medium Total										2.2E-08
Medium Total											4.4E-06
Groundwater	Groundwater	Indoor Air (Vapor Intrusion)	Inhalation	Benzene	1.40E+01	(a) ug/m3	3.2E-05	mg/kg-day	2.7E-02	(mg/kg-day)-1	8.7E-07
				Ethylbenzene	1.10E+01	(a) ug/m3	2.5E-05	mg/kg-day	3.9E-03	(mg/kg-day)-1	9.7E-08
				o-Xylene	2.60E+01	(a) ug/m3	6.0E-05	mg/kg-day	--	(mg/kg-day)-1	--
				m-Xylene	4.70E+00	(a) ug/m3	1.1E-05	mg/kg-day	--	(mg/kg-day)-1	--
				Toluene	2.90E+01	(a) ug/m3	6.7E-05	mg/kg-day	--	(mg/kg-day)-1	--
			Exp. Route Total								9.7E-07
		Exposure Point Total									9.7E-07
		Tap	Ingestion	1,2-Dichloroethane	2.05E-03	mg/L	1.1E-05	mg/kg-day	9.1E-02	(mg/kg-day)-1	1.0E-06
				2-Methylnaphthalene	1.02E-02	mg/L	5.6E-05	mg/kg-day	--	--	--
				Arsenic	1.24E-02	mg/L	6.8E-05	mg/kg-day	1.5E+00	(mg/kg-day)-1	1.0E-04
				Benzene	5.39E-01	mg/L	3.0E-03	mg/kg-day	5.5E-02	(mg/kg-day)-1	1.6E-04
				Chloroform	2.24E-03	mg/L	1.2E-05	mg/kg-day	--	--	--
				Ethylbenzene	1.21E-01	mg/L	6.6E-04	mg/kg-day	3.9E-03	(mg/kg-day)-1	2.6E-06
				Manganese	5.09E+00	mg/L	2.8E-02	mg/kg-day	--	--	--
				Naphthalene	8.42E-02	mg/L	4.6E-04	mg/kg-day	--	--	--
				n-Propylbenzene	1.34E-01	mg/L	7.3E-04	mg/kg-day	--	--	--
				Tetrachloroethene	1.92E-03	mg/L	1.1E-05	mg/kg-day	5.2E-02	(mg/kg-day)-1	5.5E-07

TABLE H2-8.4.7.CTE
EPA RAGS PART D TABLE 7b
CALCULATION OF CTE CHEMICAL CANCER RISKS
FUTURE REDEVELOPED CHILD RESIDENT
SITE 22, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	*Future-Redeveloped*
Receptor Population:	Resident
Receptor Age:	Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk
							Value	Units	Value	Units	
				Thallium	1.83E-03	mg/L	1.0E-05	mg/kg-day	--	--	--
				Toluene	2.95E-01	mg/L	1.6E-03	mg/kg-day	--	--	--
				Trichloroethene	2.37E-03	mg/L	1.3E-05	mg/kg-day	4.0E-01	(mg/kg-day)-1	5.2E-06
				Xylene (Total)	3.87E-01	mg/L	2.1E-03	mg/kg-day	--	--	--
			Exp. Route Total								2.7E-04
			Dermal (bathing/ showering)	1,2-Dichloroethane	2.05E-03	mg/L	1.0E-07	mg/kg-day	9.1E-02	(mg/kg-day)-1	9.4E-09
				2-Methylnaphthalene	1.02E-02	mg/L	5.7E-06	mg/kg-day	--	--	--
				Arsenic	1.24E-02	mg/L	1.5E-07	mg/kg-day	1.5E+00	(mg/kg-day)-1	2.2E-07
				Benzene	5.39E-01	mg/L	1.4E-04	mg/kg-day	5.5E-02	(mg/kg-day)-1	7.4E-06
				Chloroform	2.24E-03	mg/L	1.8E-07	mg/kg-day	--	--	--
				Ethylbenzene	1.21E-01	mg/L	7.1E-05	mg/kg-day	3.9E-03	(mg/kg-day)-1	2.7E-07
				Manganese	5.09E+00	mg/L	6.1E-05	mg/kg-day	--	--	--
				Naphthalene	8.42E-02	mg/L	4.7E-05	mg/kg-day	--	--	--
				n-Propylbenzene	1.34E-01	mg/L	1.5E-04	mg/kg-day	--	--	--
				Tetrachloroethene	1.92E-03	mg/L	7.6E-07	mg/kg-day	5.2E-02	(mg/kg-day)-1	3.9E-08
				Thallium	1.83E-03	mg/L	2.2E-08	mg/kg-day	--	--	--
				Toluene	2.95E-01	mg/L	1.1E-04	mg/kg-day	--	--	--
				Trichloroethene	2.37E-03	mg/L	3.4E-07	mg/kg-day	4.0E-01	(mg/kg-day)-1	1.4E-07
				Xylene (Total)	3.87E-01	mg/L	2.4E-04	mg/kg-day	--	--	--
			Exp. Route Total								8.1E-06
			Inhalation (bathing/ showering)	1,2-Dichloroethane	2.05E-03	mg/L	3.2E-08	mg/kg-day	9.1E-02	(mg/kg-day)-1	3.0E-09
				2-Methylnaphthalene	1.02E-02	mg/L	1.6E-07	mg/kg-day	--	--	--
				Benzene	5.39E-01	mg/L	8.5E-06	mg/kg-day	2.7E-02	(mg/kg-day)-1	2.3E-07
				Chloroform	2.24E-03	mg/L	3.5E-08	mg/kg-day	8.1E-02	(mg/kg-day)-1	2.9E-09
				Ethylbenzene	1.21E-01	mg/L	1.9E-06	mg/kg-day	3.9E-03	(mg/kg-day)-1	7.4E-09
				Naphthalene	8.42E-02	mg/L	1.3E-06	mg/kg-day	--	--	--
				n-Propylbenzene	1.34E-01	mg/L	2.1E-06	mg/kg-day	--	--	--
				Tetrachloroethene	1.92E-03	mg/L	3.0E-08	mg/kg-day	1.0E-02	(mg/kg-day)-1	3.0E-10
				Toluene	2.95E-01	mg/L	4.7E-06	mg/kg-day	--	--	--
				Trichloroethene	2.37E-03	mg/L	3.7E-08	mg/kg-day	4.0E-01	(mg/kg-day)-1	1.5E-08
				Xylene (Total)	3.87E-01	mg/L	6.1E-06	mg/kg-day	--	--	--
			Exp. Route Total								2.6E-07

TABLE H2-8.4.7.CTE
EPA RAGS PART D TABLE 7b
CALCULATION OF CTE CHEMICAL CANCER RISKS
FUTURE REDEVELOPED CHILD RESIDENT
SITE 22, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future-Redeveloped
Receptor Population:	Resident
Receptor Age:	Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk
							Value	Units	Value	Units	
		Exposure Point Total									2.8E-04
	Exposure Medium Total										2.8E-04
Medium Total											2.8E-04
										Total of Receptor Risks Across All Media	2.9E-04

Notes:

CSF	Cancer slope factor
EPC	Exposure point concentration
mg/kg	Milligram per kilogram
mg/kg-day	Milligram per kilogram per day
(mg/kg-day)-1	1/(Milligram per kilogram per day)
CTE	Central tendency exposure
VOC	Volatile organic compound
--	Not Applicable or Not Available

(a) See the Vapor Intrusion to Indoor Air Evaluation for determination of the modeled indoor air concentration.

HHRA RISK TABLES

Central Tendency Exposure
Site 23
Alameda Point, Alameda, California

TABLE H2-8.5.1.CTE
EPA RAGS PART D TABLE 7a
CALCULATION OF CTE CHEMICAL CANCER RISKS
CURRENT INDUSTRIAL WORKER
SITE 23, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future
Receptor Population:	Industrial Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk
							Value	Units	Value	Units	
Soil (0-2)	Soil	Site Soil	Ingestion	Arsenic	3.17E+00	mg/kg	8.7E-08	mg/kg-day	1.5E+00	(mg/kg-day)-1	1.3E-07
				Benz(a)anthracene	3.99E-02	mg/kg	1.1E-09	mg/kg-day	7.3E-01	(mg/kg-day)-1	8.0E-10
				Benzo(a)pyrene	4.44E-02	mg/kg	1.2E-09	mg/kg-day	7.3E+00	(mg/kg-day)-1	8.9E-09
				Benzo(b)fluoranthene	4.58E-02	mg/kg	1.3E-09	mg/kg-day	7.3E-01	(mg/kg-day)-1	9.2E-10
				Benzo(k)fluoranthene	3.90E-02	mg/kg	1.1E-09	mg/kg-day	7.3E-02	(mg/kg-day)-1	7.8E-11
				Dibenz(a,h)anthracene	2.17E-02	mg/kg	6.0E-10	mg/kg-day	7.3E+00	(mg/kg-day)-1	4.4E-09
				Indeno(1,2,3-cd)pyrene	3.83E-02	mg/kg	1.1E-09	mg/kg-day	7.3E-01	(mg/kg-day)-1	7.7E-10
			Exp. Route Total								1.5E-07
			Dermal	Arsenic	3.17E+00	mg/kg	3.5E-09	mg/kg-day	1.5E+00	(mg/kg-day)-1	5.2E-09
				Benz(a)anthracene	3.99E-02	mg/kg	1.9E-10	mg/kg-day	7.3E-01	(mg/kg-day)-1	1.4E-10
				Benzo(a)pyrene	4.44E-02	mg/kg	2.1E-10	mg/kg-day	7.3E+00	(mg/kg-day)-1	1.5E-09
				Benzo(b)fluoranthene	4.58E-02	mg/kg	2.2E-10	mg/kg-day	7.3E-01	(mg/kg-day)-1	1.6E-10
				Benzo(k)fluoranthene	3.90E-02	mg/kg	1.8E-10	mg/kg-day	7.3E-02	(mg/kg-day)-1	1.3E-11
				Dibenz(a,h)anthracene	2.17E-02	mg/kg	1.0E-10	mg/kg-day	7.3E+00	(mg/kg-day)-1	7.5E-10
				Indeno(1,2,3-cd)pyrene	3.83E-02	mg/kg	1.8E-10	mg/kg-day	7.3E-01	(mg/kg-day)-1	1.3E-10
			Exp. Route Total								7.9E-09
		Exposure Point Total									1.5E-07
	Exposure Medium Total										1.5E-07
	Air	Outdoor Air	Inhalation (particulates)	Arsenic	3.17E+00	mg/kg	3.3E-12	mg/kg-day	1.5E+01	(mg/kg-day)-1	5.0E-11
				Benz(a)anthracene	3.99E-02	mg/kg	4.2E-14	mg/kg-day	7.3E-01	(mg/kg-day)-1	3.0E-14
				Benzo(a)pyrene	4.44E-02	mg/kg	4.6E-14	mg/kg-day	7.3E+00	(mg/kg-day)-1	3.4E-13
				Benzo(b)fluoranthene	4.58E-02	mg/kg	4.8E-14	mg/kg-day	7.3E-01	(mg/kg-day)-1	3.5E-14
				Benzo(k)fluoranthene	3.90E-02	mg/kg	4.1E-14	mg/kg-day	7.3E-02	(mg/kg-day)-1	3.0E-15
				Dibenz(a,h)anthracene	2.17E-02	mg/kg	2.3E-14	mg/kg-day	7.3E+00	(mg/kg-day)-1	1.7E-13
				Indeno(1,2,3-cd)pyrene	3.83E-02	mg/kg	4.0E-14	mg/kg-day	7.3E-01	(mg/kg-day)-1	2.9E-14
			Exp. Route Total								5.0E-11
		Exposure Point Total									5.0E-11
	Exposure Medium Total										5.0E-11
Medium Total											1.5E-07
										Total of Receptor Risks Across All Media	1.5E-07

Notes:

CSF	Cancer slope factor
EPC	Exposure point concentration
mg/kg	Milligram per kilogram
mg/kg-day	Milligram per kilogram per day
(mg/kg-day)-1	1/(Milligram per kilogram per day)
CTE	Central tendency exposure

TABLE H2-8.5.2.CTE
EPA RAGS PART D TABLE 7a
CALCULATION OF CTE CHEMICAL CANCER RISKS
CURRENT CONSTRUCTION WORKER
SITE 23, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk
							Value	Units	Value	Units	
Soil (0-2)	Soil	Site Soil	Ingestion	Arsenic	3.17E+00	mg/kg	1.1E-08	mg/kg-day	1.5E+00	(mg/kg-day)-1	1.6E-08
				Benz(a)anthracene	3.99E-02	mg/kg	1.3E-10	mg/kg-day	7.3E-01	(mg/kg-day)-1	9.8E-11
				Benzo(a)pyrene	4.44E-02	mg/kg	1.5E-10	mg/kg-day	7.3E+00	(mg/kg-day)-1	1.1E-09
				Benzo(b)fluoranthene	4.58E-02	mg/kg	1.5E-10	mg/kg-day	7.3E-01	(mg/kg-day)-1	1.1E-10
				Benzo(k)fluoranthene	3.90E-02	mg/kg	1.3E-10	mg/kg-day	7.3E-02	(mg/kg-day)-1	9.6E-12
				Dibenz(a,h)anthracene	2.17E-02	mg/kg	7.3E-11	mg/kg-day	7.3E+00	(mg/kg-day)-1	5.3E-10
				Indeno(1,2,3-cd)pyrene	3.83E-02	mg/kg	1.3E-10	mg/kg-day	7.3E-01	(mg/kg-day)-1	9.4E-11
			Exp. Route Total								1.8E-08
			Dermal	Arsenic	3.17E+00	mg/kg	1.1E-09	mg/kg-day	1.5E+00	(mg/kg-day)-1	1.6E-09
				Benz(a)anthracene	3.99E-02	mg/kg	5.7E-11	mg/kg-day	7.3E-01	(mg/kg-day)-1	4.2E-11
				Benzo(a)pyrene	4.44E-02	mg/kg	6.4E-11	mg/kg-day	7.3E+00	(mg/kg-day)-1	4.7E-10
				Benzo(b)fluoranthene	4.58E-02	mg/kg	6.6E-11	mg/kg-day	7.3E-01	(mg/kg-day)-1	4.8E-11
				Benzo(k)fluoranthene	3.90E-02	mg/kg	5.6E-11	mg/kg-day	7.3E-02	(mg/kg-day)-1	4.1E-12
				Dibenz(a,h)anthracene	2.17E-02	mg/kg	3.1E-11	mg/kg-day	7.3E+00	(mg/kg-day)-1	2.3E-10
				Indeno(1,2,3-cd)pyrene	3.83E-02	mg/kg	5.5E-11	mg/kg-day	7.3E-01	(mg/kg-day)-1	4.0E-11
			Exp. Route Total								2.4E-09
		Exposure Point Total									2.0E-08
	Exposure Medium Total										2.0E-08
	Air	Outdoor Air	Inhalation (particulates)	Arsenic	3.17E+00	mg/kg	1.6E-12	mg/kg-day	1.5E+01	(mg/kg-day)-1	2.4E-11
				Benz(a)anthracene	3.99E-02	mg/kg	2.0E-14	mg/kg-day	7.3E-01	(mg/kg-day)-1	1.5E-14
				Benzo(a)pyrene	4.44E-02	mg/kg	2.3E-14	mg/kg-day	7.3E+00	(mg/kg-day)-1	1.6E-13
				Benzo(b)fluoranthene	4.58E-02	mg/kg	2.3E-14	mg/kg-day	7.3E-01	(mg/kg-day)-1	1.7E-14
				Benzo(k)fluoranthene	3.90E-02	mg/kg	2.0E-14	mg/kg-day	7.3E-02	(mg/kg-day)-1	1.4E-15
				Dibenz(a,h)anthracene	2.17E-02	mg/kg	1.1E-14	mg/kg-day	7.3E+00	(mg/kg-day)-1	8.1E-14
				Indeno(1,2,3-cd)pyrene	3.83E-02	mg/kg	1.9E-14	mg/kg-day	7.3E-01	(mg/kg-day)-1	1.4E-14
			Exp. Route Total								2.4E-11
		Exposure Point Total									2.4E-11
	Exposure Medium Total										2.4E-11
Medium Total											2.0E-08
										Total of Receptor Risks Across All Media	2.0E-08

Notes:

CSF	Cancer slope factor
EPC	Exposure point concentration
mg/kg	Milligram per kilogram
mg/kg-day	Milligram per kilogram per day
(mg/kg-day)-1	1/(Milligram per kilogram per day)
CTE	Central tendency exposure

TABLE H2-8.5.3.CTE
EPA RAGS PART D TABLE 7a
CALCULATION OF CTE CHEMICAL CANCER RISKS
CURRENT ADULT RESIDENT
SITE 23, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future
Receptor Population:	Resident
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk
							Value	Units	Value	Units	
Soil (0-2)	Soil	Site Soil	Ingestion	Arsenic	3.17E+00	mg/kg	2.8E-07	mg/kg-day	1.5E+00	(mg/kg-day)-1	4.2E-07
				Benz(a)anthracene	3.99E-02	mg/kg	3.5E-09	mg/kg-day	7.3E-01	(mg/kg-day)-1	2.6E-09
				Benzo(a)pyrene	4.44E-02	mg/kg	3.9E-09	mg/kg-day	7.3E+00	(mg/kg-day)-1	2.9E-08
				Benzo(b)fluoranthene	4.58E-02	mg/kg	4.0E-09	mg/kg-day	7.3E-01	(mg/kg-day)-1	2.9E-09
				Benzo(k)fluoranthene	3.90E-02	mg/kg	3.4E-09	mg/kg-day	7.3E-02	(mg/kg-day)-1	2.5E-10
				Dibenz(a,h)anthracene	2.17E-02	mg/kg	1.9E-09	mg/kg-day	7.3E+00	(mg/kg-day)-1	1.4E-08
				Indeno(1,2,3-cd)pyrene	3.83E-02	mg/kg	3.4E-09	mg/kg-day	7.3E-01	(mg/kg-day)-1	2.5E-09
			Exp. Route Total								4.7E-07
			Dermal	Arsenic	3.17E+00	mg/kg	9.5E-09	mg/kg-day	1.5E+00	(mg/kg-day)-1	1.4E-08
				Benz(a)anthracene	3.99E-02	mg/kg	5.2E-10	mg/kg-day	7.3E-01	(mg/kg-day)-1	3.8E-10
				Benzo(a)pyrene	4.44E-02	mg/kg	5.8E-10	mg/kg-day	7.3E+00	(mg/kg-day)-1	4.2E-09
				Benzo(b)fluoranthene	4.58E-02	mg/kg	6.0E-10	mg/kg-day	7.3E-01	(mg/kg-day)-1	4.4E-10
				Benzo(k)fluoranthene	3.90E-02	mg/kg	5.1E-10	mg/kg-day	7.3E-02	(mg/kg-day)-1	3.7E-11
				Dibenz(a,h)anthracene	2.17E-02	mg/kg	2.8E-10	mg/kg-day	7.3E+00	(mg/kg-day)-1	2.1E-09
				Indeno(1,2,3-cd)pyrene	3.83E-02	mg/kg	5.0E-10	mg/kg-day	7.3E-01	(mg/kg-day)-1	3.6E-10
			Exp. Route Total								2.2E-08
		Exposure Point Total									4.9E-07
	Exposure Medium Total										4.9E-07
	Homegrown Produce	Homegrown Produce	Ingestion	Arsenic	3.17E+00	mg/kg	3.8E-07	mg/kg-day	1.5E+00	(mg/kg-day)-1	5.7E-07
				Benz(a)anthracene	3.99E-02	mg/kg	4.3E-09	mg/kg-day	7.3E-01	(mg/kg-day)-1	3.2E-09
				Benzo(a)pyrene	4.44E-02	mg/kg	3.7E-09	mg/kg-day	7.3E+00	(mg/kg-day)-1	2.7E-08
				Benzo(b)fluoranthene	4.58E-02	mg/kg	3.5E-09	mg/kg-day	7.3E-01	(mg/kg-day)-1	2.6E-09
				Benzo(k)fluoranthene	3.90E-02	mg/kg	3.0E-09	mg/kg-day	7.3E-02	(mg/kg-day)-1	2.2E-10
				Dibenz(a,h)anthracene	2.17E-02	mg/kg	2.7E-09	mg/kg-day	7.3E+00	(mg/kg-day)-1	2.0E-08
				Indeno(1,2,3-cd)pyrene	3.83E-02	mg/kg	2.3E-09	mg/kg-day	7.3E-01	(mg/kg-day)-1	1.7E-09
			Exp. Route Total								6.3E-07
		Exposure Point Total									6.3E-07
	Exposure Medium Total										6.3E-07
	Air	Outdoor Air	Inhalation (particulates)	Arsenic	3.17E+00	mg/kg	3.5E-12	mg/kg-day	1.5E+01	(mg/kg-day)-1	5.3E-11
				Benz(a)anthracene	3.99E-02	mg/kg	4.4E-14	mg/kg-day	7.3E-01	(mg/kg-day)-1	3.2E-14
				Benzo(a)pyrene	4.44E-02	mg/kg	4.9E-14	mg/kg-day	7.3E+00	(mg/kg-day)-1	3.6E-13
				Benzo(b)fluoranthene	4.58E-02	mg/kg	5.1E-14	mg/kg-day	7.3E-01	(mg/kg-day)-1	3.7E-14
				Benzo(k)fluoranthene	3.90E-02	mg/kg	4.3E-14	mg/kg-day	7.3E-02	(mg/kg-day)-1	3.2E-15
				Dibenz(a,h)anthracene	2.17E-02	mg/kg	2.4E-14	mg/kg-day	7.3E+00	(mg/kg-day)-1	1.8E-13

TABLE H2-8.5.3.CTE
EPA RAGS PART D TABLE 7a
CALCULATION OF CTE CHEMICAL CANCER RISKS
CURRENT ADULT RESIDENT
SITE 23, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future
Receptor Population:	Resident
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk
							Value	Units	Value	Units	
				Indeno(1,2,3-cd)pyrene	3.83E-02	mg/kg	4.2E-14	mg/kg-day	7.3E-01	(mg/kg-day)-1	3.1E-14
			Exp. Route Total								5.3E-11
		Exposure Point Total									5.3E-11
	Exposure Medium Total										5.3E-11
Medium Total											1.1E-06
Groundwater	Groundwater	Tap	Ingestion	1,2,4-Trimethylbenzene	6.54E-02	mg/L	1.6E-04	mg/kg-day	--	--	--
				2-Butanone	2.13E-01	mg/L	5.3E-04	mg/kg-day	--	--	--
				2-Methylnaphthalene	7.85E-03	mg/L	1.9E-05	mg/kg-day	--	--	--
				Arsenic	6.24E-03	mg/L	1.5E-05	mg/kg-day	1.5E+00	(mg/kg-day)-1	2.3E-05
				Benzene	1.00E-03	mg/L	2.5E-06	mg/kg-day	5.5E-02	(mg/kg-day)-1	1.4E-07
				Benzo(a)pyrene	6.00E-04	mg/L	1.5E-06	mg/kg-day	7.3E+00	(mg/kg-day)-1	1.1E-05
				Benzo(b)fluoranthene	8.00E-04	mg/L	2.0E-06	mg/kg-day	7.3E-01	(mg/kg-day)-1	1.4E-06
				Chrysene	9.00E-04	mg/L	2.2E-06	mg/kg-day	7.3E-03	(mg/kg-day)-1	1.6E-08
				Ethylbenzene	1.50E-02	mg/L	3.7E-05	mg/kg-day	3.9E-03	(mg/kg-day)-1	1.4E-07
				Isopropylbenzene	7.52E-02	mg/L	1.9E-04	mg/kg-day	--	--	--
				Naphthalene	3.89E-02	mg/L	9.6E-05	mg/kg-day	--	--	--
				sec-Butylbenzene	7.51E-02	mg/L	1.9E-04	mg/kg-day	--	--	--
				Thallium	1.27E-03	mg/L	3.1E-06	mg/kg-day	--	--	--
				Xylene (Total)	3.52E-02	mg/L	8.7E-05	mg/kg-day	--	--	--
			Exp. Route Total								3.6E-05
			Dermal (bathing/ showering)	1,2,4-Trimethylbenzene	6.54E-02	mg/L	4.3E-05	mg/kg-day	--	--	--
				2-Butanone	2.13E-01	mg/L	1.6E-06	mg/kg-day	--	--	--
				2-Methylnaphthalene	7.85E-03	mg/L	2.9E-06	mg/kg-day	--	--	--
				Arsenic	6.24E-03	mg/L	4.9E-08	mg/kg-day	1.5E+00	(mg/kg-day)-1	7.4E-08
				Benzene	1.00E-03	mg/L	1.7E-07	mg/kg-day	5.5E-02	(mg/kg-day)-1	9.2E-09
				Benzo(a)pyrene	6.00E-04	mg/L	3.3E-06	mg/kg-day	7.3E+00	(mg/kg-day)-1	2.4E-05
				Benzo(b)fluoranthene	8.00E-04	mg/L	4.4E-06	mg/kg-day	7.3E-01	(mg/kg-day)-1	3.2E-06
				Chrysene	9.00E-04	mg/L	3.4E-06	mg/kg-day	7.3E-03	(mg/kg-day)-1	2.4E-08
				Ethylbenzene	1.50E-02	mg/L	5.8E-06	mg/kg-day	3.9E-03	(mg/kg-day)-1	2.2E-08
				Isopropylbenzene	7.52E-02	mg/L	5.2E-05	mg/kg-day	--	--	--
				Naphthalene	3.89E-02	mg/L	1.4E-05	mg/kg-day	--	--	--
				sec-Butylbenzene	7.51E-02	mg/L	1.1E-04	mg/kg-day	--	--	--
				Thallium	1.27E-03	mg/L	1.0E-08	mg/kg-day	--	--	--
				Xylene (Total)	3.52E-02	mg/L	1.5E-05	mg/kg-day	--	--	--

TABLE H2-8.5.3.CTE
EPA RAGS PART D TABLE 7a
CALCULATION OF CTE CHEMICAL CANCER RISKS
CURRENT ADULT RESIDENT
SITE 23, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future
Receptor Population:	Resident
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk
							Value	Units	Value	Units	
			Exp. Route Total								2.8E-05
			Inhalation (bathing/ showering)	1,2,4-Trimethylbenzene	6.54E-02	mg/L	5.0E-07	mg/kg-day	--	--	--
				2-Butanone	2.13E-01	mg/L	1.6E-06	mg/kg-day	--	--	--
				2-Methylnaphthalene	7.85E-03	mg/L	6.0E-08	mg/kg-day	--	--	--
				Benzene	1.00E-03	mg/L	7.6E-09	mg/kg-day	2.7E-02	(mg/kg-day)-1	2.1E-10
				Ethylbenzene	1.50E-02	mg/L	1.1E-07	mg/kg-day	3.9E-03	(mg/kg-day)-1	4.4E-10
				Isopropylbenzene	7.52E-02	mg/L	5.7E-07	mg/kg-day	--	--	--
				Naphthalene	3.89E-02	mg/L	3.0E-07	mg/kg-day	--	--	--
				sec-Butylbenzene	7.51E-02	mg/L	5.7E-07	mg/kg-day	--	--	--
				Xylene (Total)	3.52E-02	mg/L	2.7E-07	mg/kg-day	--	--	--
			Exp. Route Total								6.5E-10
		Exposure Point Total									6.3E-05
	Exposure Medium Total										6.3E-05
Medium Total											6.3E-05
										Total of Receptor Risks Across All Media	6.4E-05

Notes:

CSF	Cancer slope factor
EPC	Exposure point concentration
mg/kg	Milligram per kilogram
mg/kg-day	Milligram per kilogram per day
(mg/kg-day)-1	1/(Milligram per kilogram per day)
CTE	Central tendency exposure

TABLE H2-8.5.4.CTE
EPA RAGS PART D TABLE 7a
CALCULATION OF CTE CHEMICAL CANCER RISKS
CURRENT CHILD RESIDENT
SITE 23, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future
Receptor Population:	Resident
Receptor Age:	Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk
							Value	Units	Value	Units	
Soil (0-2)	Soil	Site Soil	Ingestion	Arsenic	3.17E+00	mg/kg	1.7E-06	mg/kg-day	1.5E+00	(mg/kg-day)-1	2.6E-06
				Benz(a)anthracene	3.99E-02	mg/kg	2.2E-08	mg/kg-day	7.3E-01	(mg/kg-day)-1	1.6E-08
				Benzo(a)pyrene	4.44E-02	mg/kg	2.4E-08	mg/kg-day	7.3E+00	(mg/kg-day)-1	1.8E-07
				Benzo(b)fluoranthene	4.58E-02	mg/kg	2.5E-08	mg/kg-day	7.3E-01	(mg/kg-day)-1	1.8E-08
				Benzo(k)fluoranthene	3.90E-02	mg/kg	2.1E-08	mg/kg-day	7.3E-02	(mg/kg-day)-1	1.6E-09
				Dibenz(a,h)anthracene	2.17E-02	mg/kg	1.2E-08	mg/kg-day	7.3E+00	(mg/kg-day)-1	8.7E-08
				Indeno(1,2,3-cd)pyrene	3.83E-02	mg/kg	2.1E-08	mg/kg-day	7.3E-01	(mg/kg-day)-1	1.5E-08
			Exp. Route Total								2.9E-06
			Dermal	Arsenic	3.17E+00	mg/kg	5.8E-08	mg/kg-day	1.5E+00	(mg/kg-day)-1	8.7E-08
				Benz(a)anthracene	3.99E-02	mg/kg	3.2E-09	mg/kg-day	7.3E-01	(mg/kg-day)-1	2.3E-09
				Benzo(a)pyrene	4.44E-02	mg/kg	3.5E-09	mg/kg-day	7.3E+00	(mg/kg-day)-1	2.6E-08
				Benzo(b)fluoranthene	4.58E-02	mg/kg	3.7E-09	mg/kg-day	7.3E-01	(mg/kg-day)-1	2.7E-09
				Benzo(k)fluoranthene	3.90E-02	mg/kg	3.1E-09	mg/kg-day	7.3E-02	(mg/kg-day)-1	2.3E-10
				Dibenz(a,h)anthracene	2.17E-02	mg/kg	1.7E-09	mg/kg-day	7.3E+00	(mg/kg-day)-1	1.3E-08
				Indeno(1,2,3-cd)pyrene	3.83E-02	mg/kg	3.1E-09	mg/kg-day	7.3E-01	(mg/kg-day)-1	2.2E-09
			Exp. Route Total								1.3E-07
		Exposure Point Total									3.1E-06
	Exposure Medium Total										3.1E-06
	Homegrown Produce	Homegrown Produce	Ingestion	Arsenic	3.17E+00	mg/kg	2.5E-07	mg/kg-day	1.5E+00	(mg/kg-day)-1	3.8E-07
				Benz(a)anthracene	3.99E-02	mg/kg	2.9E-09	mg/kg-day	7.3E-01	(mg/kg-day)-1	2.1E-09
				Benzo(a)pyrene	4.44E-02	mg/kg	2.4E-09	mg/kg-day	7.3E+00	(mg/kg-day)-1	1.8E-08
				Benzo(b)fluoranthene	4.58E-02	mg/kg	2.3E-09	mg/kg-day	7.3E-01	(mg/kg-day)-1	1.7E-09
				Benzo(k)fluoranthene	3.90E-02	mg/kg	2.0E-09	mg/kg-day	7.3E-02	(mg/kg-day)-1	1.4E-10
				Dibenz(a,h)anthracene	2.17E-02	mg/kg	1.8E-09	mg/kg-day	7.3E+00	(mg/kg-day)-1	1.3E-08
				Indeno(1,2,3-cd)pyrene	3.83E-02	mg/kg	1.5E-09	mg/kg-day	7.3E-01	(mg/kg-day)-1	1.1E-09
			Exp. Route Total								4.2E-07
		Exposure Point Total									4.2E-07
	Exposure Medium Total										4.2E-07
	Air	Outdoor Air	Inhalation (particulates)	Arsenic	3.17E+00	mg/kg	5.5E-12	mg/kg-day	1.5E+01	(mg/kg-day)-1	8.3E-11
				Benz(a)anthracene	3.99E-02	mg/kg	7.0E-14	mg/kg-day	7.3E-01	(mg/kg-day)-1	5.1E-14
				Benzo(a)pyrene	4.44E-02	mg/kg	7.7E-14	mg/kg-day	7.3E+00	(mg/kg-day)-1	5.7E-13
				Benzo(b)fluoranthene	4.58E-02	mg/kg	8.0E-14	mg/kg-day	7.3E-01	(mg/kg-day)-1	5.8E-14
				Benzo(k)fluoranthene	3.90E-02	mg/kg	6.8E-14	mg/kg-day	7.3E-02	(mg/kg-day)-1	5.0E-15
				Dibenz(a,h)anthracene	2.17E-02	mg/kg	3.8E-14	mg/kg-day	7.3E+00	(mg/kg-day)-1	2.8E-13

TABLE H2-8.5.4.CTE
EPA RAGS PART D TABLE 7a
CALCULATION OF CTE CHEMICAL CANCER RISKS
CURRENT CHILD RESIDENT
SITE 23, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future
Receptor Population:	Resident
Receptor Age:	Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk
							Value	Units	Value	Units	
				Indeno(1,2,3-cd)pyrene	3.83E-02	mg/kg	6.7E-14	mg/kg-day	7.3E-01	(mg/kg-day)-1	4.9E-14
			Exp. Route Total								8.4E-11
		Exposure Point Total									8.4E-11
	Exposure Medium Total										8.4E-11
Medium Total											3.5E-06
Groundwater	Groundwater	Tap	Ingestion	1,2,4-Trimethylbenzene	6.54E-02	mg/L	3.6E-04	mg/kg-day	--	--	--
				2-Butanone	2.13E-01	mg/L	1.2E-03	mg/kg-day	--	--	--
				2-Methylnaphthalene	7.85E-03	mg/L	4.3E-05	mg/kg-day	--	--	--
				Arsenic	6.24E-03	mg/L	3.4E-05	mg/kg-day	1.5E+00	(mg/kg-day)-1	5.1E-05
				Benzene	1.00E-03	mg/L	5.5E-06	mg/kg-day	5.5E-02	(mg/kg-day)-1	3.0E-07
				Benzo(a)pyrene	6.00E-04	mg/L	3.3E-06	mg/kg-day	7.3E+00	(mg/kg-day)-1	2.4E-05
				Benzo(b)fluoranthene	8.00E-04	mg/L	4.4E-06	mg/kg-day	7.3E-01	(mg/kg-day)-1	3.2E-06
				Chrysene	9.00E-04	mg/L	4.9E-06	mg/kg-day	7.3E-03	(mg/kg-day)-1	3.6E-08
				Ethylbenzene	1.50E-02	mg/L	8.2E-05	mg/kg-day	3.9E-03	(mg/kg-day)-1	3.2E-07
				Isopropylbenzene	7.52E-02	mg/L	4.1E-04	mg/kg-day	--	--	--
				Naphthalene	3.89E-02	mg/L	2.1E-04	mg/kg-day	--	--	--
				sec-Butylbenzene	7.51E-02	mg/L	4.1E-04	mg/kg-day	--	--	--
				Thallium	1.27E-03	mg/L	7.0E-06	mg/kg-day	--	--	--
				Xylene (Total)	3.52E-02	mg/L	1.9E-04	mg/kg-day	--	--	--
			Exp. Route Total								7.9E-05
			Dermal (bathing/ showering)	1,2,4-Trimethylbenzene	6.54E-02	mg/L	6.5E-05	mg/kg-day	--	--	--
				2-Butanone	2.13E-01	mg/L	2.4E-06	mg/kg-day	--	--	--
				2-Methylnaphthalene	7.85E-03	mg/L	4.4E-06	mg/kg-day	--	--	--
				Arsenic	6.24E-03	mg/L	7.4E-08	mg/kg-day	1.5E+00	(mg/kg-day)-1	1.1E-07
				Benzene	1.00E-03	mg/L	2.5E-07	mg/kg-day	5.5E-02	(mg/kg-day)-1	1.4E-08
				Benzo(a)pyrene	6.00E-04	mg/L	5.0E-06	mg/kg-day	7.3E+00	(mg/kg-day)-1	3.7E-05
				Benzo(b)fluoranthene	8.00E-04	mg/L	6.7E-06	mg/kg-day	7.3E-01	(mg/kg-day)-1	4.9E-06
				Chrysene	9.00E-04	mg/L	5.0E-06	mg/kg-day	7.3E-03	(mg/kg-day)-1	3.7E-08
				Ethylbenzene	1.50E-02	mg/L	8.8E-06	mg/kg-day	3.9E-03	(mg/kg-day)-1	3.4E-08
				Isopropylbenzene	7.52E-02	mg/L	7.9E-05	mg/kg-day	--	--	--
				Naphthalene	3.89E-02	mg/L	2.2E-05	mg/kg-day	--	--	--
				sec-Butylbenzene	7.51E-02	mg/L	1.6E-04	mg/kg-day	--	--	--
				Thallium	1.27E-03	mg/L	1.5E-08	mg/kg-day	--	--	--
				Xylene (Total)	3.52E-02	mg/L	2.2E-05	mg/kg-day	--	--	--

TABLE H2-8.5.4.CTE
EPA RAGS PART D TABLE 7a
CALCULATION OF CTE CHEMICAL CANCER RISKS
CURRENT CHILD RESIDENT
SITE 23, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future
Receptor Population:	Resident
Receptor Age:	*Child*

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk
							Value	Units	Value	Units	
			Exp. Route Total								4.2E-05
			Inhalation (bathing/ showering)	1,2,4-Trimethylbenzene	6.54E-02	mg/L	1.0E-06	mg/kg-day	--	--	--
				2-Butanone	2.13E-01	mg/L	3.4E-06	mg/kg-day	--	--	--
				2-Methylnaphthalene	7.85E-03	mg/L	1.2E-07	mg/kg-day	--	--	--
				Benzene	1.00E-03	mg/L	1.6E-08	mg/kg-day	2.7E-02	(mg/kg-day)-1	4.3E-10
				Ethylbenzene	1.50E-02	mg/L	2.4E-07	mg/kg-day	3.9E-03	(mg/kg-day)-1	9.1E-10
				Isopropylbenzene	7.52E-02	mg/L	1.2E-06	mg/kg-day	--	--	--
				Naphthalene	3.89E-02	mg/L	6.2E-07	mg/kg-day	--	--	--
				sec-Butylbenzene	7.51E-02	mg/L	1.2E-06	mg/kg-day	--	--	--
				Xylene (Total)	3.52E-02	mg/L	5.6E-07	mg/kg-day	--	--	--
			Exp. Route Total								1.3E-09
		Exposure Point Total									1.2E-04
	Exposure Medium Total										1.2E-04
Medium Total											1.2E-04
										Total of Receptor Risks Across All Media	1.2E-04

Notes:

CSF	Cancer slope factor
EPC	Exposure point concentration
mg/kg	Milligram per kilogram
mg/kg-day	Milligram per kilogram per day
(mg/kg-day)-1	1/(Milligram per kilogram per day)
CTE	Central tendency exposure

TABLE H2-8.5.5.CTE
EPA RAGS PART D TABLE 7a
CALCULATION OF CTE CHEMICAL CANCER RISKS
FUTURE DEVELOPED CONSTRUCTION WORKER
SITE 23, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future-Developed
Receptor Population:	Construction Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk
							Value	Units	Value	Units	
Soil (0-8)	Soil	Site Soil	Ingestion	2-Methylnaphthalene	6.37E-02	mg/kg	2.1E-10	mg/kg-day	–	–	–
				Arsenic	3.82E+00	mg/kg	1.3E-08	mg/kg-day	1.5E+00	(mg/kg-day)-1	1.9E-08
				Benz(a)anthracene	2.55E-02	mg/kg	8.6E-11	mg/kg-day	7.3E-01	(mg/kg-day)-1	6.2E-11
				Benzo(a)pyrene	3.00E-02	mg/kg	1.0E-10	mg/kg-day	7.3E+00	(mg/kg-day)-1	7.3E-10
				Benzo(b)fluoranthene	4.92E-03	mg/kg	1.7E-11	mg/kg-day	7.3E-01	(mg/kg-day)-1	1.2E-11
				Benzo(k)fluoranthene	3.16E-02	mg/kg	1.1E-10	mg/kg-day	7.3E-02	(mg/kg-day)-1	7.7E-12
				Dibenz(a,h)anthracene	1.59E-02	mg/kg	5.3E-11	mg/kg-day	7.3E+00	(mg/kg-day)-1	3.9E-10
				Indeno(1,2,3-cd)pyrene	2.44E-02	mg/kg	8.2E-11	mg/kg-day	7.3E-01	(mg/kg-day)-1	6.0E-11
			Exp. Route Total								2.1E-08
			Dermal	2-Methylnaphthalene	6.37E-02	mg/kg	–	mg/kg-day	–	–	–
				Arsenic	3.82E+00	mg/kg	1.3E-09	mg/kg-day	1.5E+00	(mg/kg-day)-1	1.9E-09
				Benz(a)anthracene	2.55E-02	mg/kg	3.7E-11	mg/kg-day	7.3E-01	(mg/kg-day)-1	2.7E-11
				Benzo(a)pyrene	3.00E-02	mg/kg	4.3E-11	mg/kg-day	7.3E+00	(mg/kg-day)-1	3.2E-10
				Benzo(b)fluoranthene	4.92E-03	mg/kg	7.1E-12	mg/kg-day	7.3E-01	(mg/kg-day)-1	5.2E-12
				Benzo(k)fluoranthene	3.16E-02	mg/kg	4.5E-11	mg/kg-day	7.3E-02	(mg/kg-day)-1	3.3E-12
				Dibenz(a,h)anthracene	1.59E-02	mg/kg	2.3E-11	mg/kg-day	7.3E+00	(mg/kg-day)-1	1.7E-10
				Indeno(1,2,3-cd)pyrene	2.44E-02	mg/kg	3.5E-11	mg/kg-day	7.3E-01	(mg/kg-day)-1	2.6E-11
			Exp. Route Total								2.4E-09
		Exposure Point Total									2.3E-08
	Exposure Medium Total										2.3E-08
	Air	Outdoor Air	Inhalation (particulates)	2-Methylnaphthalene	6.37E-02	mg/kg	3.2E-14	mg/kg-day	–	–	–
				Arsenic	3.82E+00	mg/kg	1.9E-12	mg/kg-day	1.5E+01	(mg/kg-day)-1	2.9E-11
				Benz(a)anthracene	2.55E-02	mg/kg	1.3E-14	mg/kg-day	7.3E-01	(mg/kg-day)-1	9.5E-15
				Benzo(a)pyrene	3.00E-02	mg/kg	1.5E-14	mg/kg-day	7.3E+00	(mg/kg-day)-1	1.1E-13
				Benzo(b)fluoranthene	4.92E-03	mg/kg	2.5E-15	mg/kg-day	7.3E-01	(mg/kg-day)-1	1.8E-15
				Benzo(k)fluoranthene	3.16E-02	mg/kg	1.6E-14	mg/kg-day	7.3E-02	(mg/kg-day)-1	1.2E-15
				Dibenz(a,h)anthracene	1.59E-02	mg/kg	8.1E-15	mg/kg-day	7.3E+00	(mg/kg-day)-1	5.9E-14
				Indeno(1,2,3-cd)pyrene	2.44E-02	mg/kg	1.2E-14	mg/kg-day	7.3E-01	(mg/kg-day)-1	9.1E-15
			Exp. Route Total								2.9E-11
			Inhalation (VOCs)	2-Methylnaphthalene	6.37E-02	mg/kg	9.9E-10	mg/kg-day	–	–	–
			Exp. Route Total								0.0E+00
		Exposure Point Total									2.9E-11
	Exposure Medium Total										2.9E-11
Medium Total											2.3E-08
										Total of Receptor Risks Across All Media	2.3E-08

Notes:

CSF	Cancer slope factor
EPC	Exposure point concentration
mg/kg	Milligram per kilogram
mg/kg-day	Milligram per kilogram per day
(mg/kg-day)-1	1/(Milligram per kilogram per day)
CTE	Central tendency exposure

TABLE H2-8.5.6.CTE
EPA RAGS PART D TABLE 7a
CALCULATION OF CTE CHEMICAL CANCER RISKS
FUTURE REDEVELOPED ADULT RESIDENT
SITE 23, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future-Redeveloped
Receptor Population:	Resident
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk
							Value	Units	Value	Units	
Soil (0-8)	Soil	Site Soil	Ingestion	2-Methylnaphthalene	6.37E-02	mg/kg	5.6E-09	mg/kg-day	--	--	--
				Arsenic	3.82E+00	mg/kg	3.4E-07	mg/kg-day	1.5E+00	(mg/kg-day)-1	5.0E-07
				Benz(a)anthracene	2.55E-02	mg/kg	2.2E-09	mg/kg-day	7.3E-01	(mg/kg-day)-1	1.6E-09
				Benzo(a)pyrene	3.00E-02	mg/kg	2.6E-09	mg/kg-day	7.3E+00	(mg/kg-day)-1	1.9E-08
				Benzo(b)fluoranthene	4.92E-03	mg/kg	4.3E-10	mg/kg-day	7.3E-01	(mg/kg-day)-1	3.2E-10
				Benzo(k)fluoranthene	3.16E-02	mg/kg	2.8E-09	mg/kg-day	7.3E-02	(mg/kg-day)-1	2.0E-10
				Dibenz(a,h)anthracene	1.59E-02	mg/kg	1.4E-09	mg/kg-day	7.3E+00	(mg/kg-day)-1	1.0E-08
				Indeno(1,2,3-cd)pyrene	2.44E-02	mg/kg	2.1E-09	mg/kg-day	7.3E-01	(mg/kg-day)-1	1.6E-09
			Exp. Route Total								5.4E-07
			Dermal	2-Methylnaphthalene	6.37E-02	mg/kg	--	mg/kg-day	--	--	--
				Arsenic	3.82E+00	mg/kg	1.2E-08	mg/kg-day	1.5E+00	(mg/kg-day)-1	1.7E-08
				Benz(a)anthracene	2.55E-02	mg/kg	3.3E-10	mg/kg-day	7.3E-01	(mg/kg-day)-1	2.4E-10
				Benzo(a)pyrene	3.00E-02	mg/kg	3.9E-10	mg/kg-day	7.3E+00	(mg/kg-day)-1	2.9E-09
				Benzo(b)fluoranthene	4.92E-03	mg/kg	6.4E-11	mg/kg-day	7.3E-01	(mg/kg-day)-1	4.7E-11
				Benzo(k)fluoranthene	3.16E-02	mg/kg	4.1E-10	mg/kg-day	7.3E-02	(mg/kg-day)-1	3.0E-11
				Dibenz(a,h)anthracene	1.59E-02	mg/kg	2.1E-10	mg/kg-day	7.3E+00	(mg/kg-day)-1	1.5E-09
				Indeno(1,2,3-cd)pyrene	2.44E-02	mg/kg	3.2E-10	mg/kg-day	7.3E-01	(mg/kg-day)-1	2.3E-10
			Exp. Route Total								2.2E-08
		Exposure Point Total									5.6E-07
	Exposure Medium Total										5.6E-07
	Homegrown Produce	Homegrown Produce	Ingestion	2-Methylnaphthalene	6.37E-02	mg/kg	--	mg/kg-day	--	--	--
				Arsenic	3.82E+00	mg/kg	4.6E-07	mg/kg-day	1.5E+00	(mg/kg-day)-1	6.9E-07
				Benz(a)anthracene	2.55E-02	mg/kg	2.8E-09	mg/kg-day	7.3E-01	(mg/kg-day)-1	2.0E-09
				Benzo(a)pyrene	3.00E-02	mg/kg	2.5E-09	mg/kg-day	7.3E+00	(mg/kg-day)-1	1.8E-08
				Benzo(b)fluoranthene	4.92E-03	mg/kg	3.8E-10	mg/kg-day	7.3E-01	(mg/kg-day)-1	2.8E-10
				Benzo(k)fluoranthene	3.16E-02	mg/kg	2.4E-09	mg/kg-day	7.3E-02	(mg/kg-day)-1	1.8E-10
				Dibenz(a,h)anthracene	1.59E-02	mg/kg	2.0E-09	mg/kg-day	7.3E+00	(mg/kg-day)-1	1.5E-08
				Indeno(1,2,3-cd)pyrene	2.44E-02	mg/kg	1.5E-09	mg/kg-day	7.3E-01	(mg/kg-day)-1	1.1E-09
			Exp. Route Total								7.3E-07
		Exposure Point Total									7.3E-07
	Exposure Medium Total										7.3E-07
	Air	Outdoor Air	Inhalation (particulates)	2-Methylnaphthalene	6.37E-02	mg/kg	7.1E-14	mg/kg-day	--	--	--
				Arsenic	3.82E+00	mg/kg	4.2E-12	mg/kg-day	1.5E+01	(mg/kg-day)-1	6.3E-11
				Benz(a)anthracene	2.55E-02	mg/kg	2.8E-14	mg/kg-day	7.3E-01	(mg/kg-day)-1	2.1E-14

TABLE H2-8.5.6.CTE
EPA RAGS PART D TABLE 7a
CALCULATION OF CTE CHEMICAL CANCER RISKS
FUTURE REDEVELOPED ADULT RESIDENT
SITE 23, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future-Redeveloped
Receptor Population:	Resident
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk
							Value	Units	Value	Units	
				Benzo(a)pyrene	3.00E-02	mg/kg	3.3E-14	mg/kg-day	7.3E+00	(mg/kg-day)-1	2.4E-13
				Benzo(b)fluoranthene	4.92E-03	mg/kg	5.4E-15	mg/kg-day	7.3E-01	(mg/kg-day)-1	4.0E-15
				Benzo(k)fluoranthene	3.16E-02	mg/kg	3.5E-14	mg/kg-day	7.3E-02	(mg/kg-day)-1	2.6E-15
				Dibenz(a,h)anthracene	1.59E-02	mg/kg	1.8E-14	mg/kg-day	7.3E+00	(mg/kg-day)-1	1.3E-13
				Indeno(1,2,3-cd)pyrene	2.44E-02	mg/kg	2.7E-14	mg/kg-day	7.3E-01	(mg/kg-day)-1	2.0E-14
			Exp. Route Total								6.4E-11
			Inhalation (VOCs)	2-Methylnaphthalene	6.37E-02	mg/kg	2.2E-09	mg/kg-day	--	--	--
			Exp. Route Total								0.0E+00
		Exposure Point Total									6.4E-11
	Exposure Medium Total										6.4E-11
Medium Total											1.3E-06
Groundwater	Groundwater	Tap	Ingestion	1,2,4-Trimethylbenzene	6.54E-02	mg/L	1.6E-04	mg/kg-day	--	--	--
				2-Butanone	2.13E-01	mg/L	5.3E-04	mg/kg-day	--	--	--
				2-Methylnaphthalene	7.85E-03	mg/L	1.9E-05	mg/kg-day	--	--	--
				Arsenic	6.24E-03	mg/L	1.5E-05	mg/kg-day	1.5E+00	(mg/kg-day)-1	2.3E-05
				Benzene	1.00E-03	mg/L	2.5E-06	mg/kg-day	5.5E-02	(mg/kg-day)-1	1.4E-07
				Benzo(a)pyrene	6.00E-04	mg/L	1.5E-06	mg/kg-day	7.3E+00	(mg/kg-day)-1	1.1E-05
				Benzo(b)fluoranthene	8.00E-04	mg/L	2.0E-06	mg/kg-day	7.3E-01	(mg/kg-day)-1	1.4E-06
				Chrysene	9.00E-04	mg/L	2.2E-06	mg/kg-day	7.3E-03	(mg/kg-day)-1	1.6E-08
				Ethylbenzene	1.50E-02	mg/L	3.7E-05	mg/kg-day	3.9E-03	(mg/kg-day)-1	1.4E-07
				Isopropylbenzene	7.52E-02	mg/L	1.9E-04	mg/kg-day	--	--	--
				Naphthalene	3.89E-02	mg/L	9.6E-05	mg/kg-day	--	--	--
				sec-Butylbenzene	7.51E-02	mg/L	1.9E-04	mg/kg-day	--	--	--
				Thallium	1.27E-03	mg/L	3.1E-06	mg/kg-day	--	--	--
				Xylene (Total)	3.52E-02	mg/L	8.7E-05	mg/kg-day	--	--	--
			Exp. Route Total								3.6E-05
			Dermal (bathing/ showering)	1,2,4-Trimethylbenzene	6.54E-02	mg/L	4.3E-05	mg/kg-day	--	--	--
				2-Butanone	2.13E-01	mg/L	1.6E-06	mg/kg-day	--	--	--
				2-Methylnaphthalene	7.85E-03	mg/L	2.9E-06	mg/kg-day	--	--	--
				Arsenic	6.24E-03	mg/L	4.9E-08	mg/kg-day	1.5E+00	(mg/kg-day)-1	7.4E-08
				Benzene	1.00E-03	mg/L	1.7E-07	mg/kg-day	5.5E-02	(mg/kg-day)-1	9.2E-09
				Benzo(a)pyrene	6.00E-04	mg/L	3.3E-06	mg/kg-day	7.3E+00	(mg/kg-day)-1	2.4E-05
				Benzo(b)fluoranthene	8.00E-04	mg/L	4.4E-06	mg/kg-day	7.3E-01	(mg/kg-day)-1	3.2E-06

TABLE H2-8.5.6.CTE
EPA RAGS PART D TABLE 7a
CALCULATION OF CTE CHEMICAL CANCER RISKS
FUTURE REDEVELOPED ADULT RESIDENT
SITE 23, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future-Redeveloped
Receptor Population:	Resident
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk
							Value	Units	Value	Units	
				Chrysene	9.00E-04	mg/L	3.4E-06	mg/kg-day	7.3E-03	(mg/kg-day)-1	2.4E-08
				Ethylbenzene	1.50E-02	mg/L	5.8E-06	mg/kg-day	3.9E-03	(mg/kg-day)-1	2.2E-08
				Isopropylbenzene	7.52E-02	mg/L	5.2E-05	mg/kg-day	--	--	--
				Naphthalene	3.89E-02	mg/L	1.4E-05	mg/kg-day	--	--	--
				sec-Butylbenzene	7.51E-02	mg/L	1.1E-04	mg/kg-day	--	--	--
				Thallium	1.27E-03	mg/L	1.0E-08	mg/kg-day	--	--	--
				Xylene (Total)	3.52E-02	mg/L	1.5E-05	mg/kg-day	--	--	--
			Exp. Route Total								2.8E-05
			Inhalation (bathing/ showering)	1,2,4-Trimethylbenzene	6.54E-02	mg/L	5.0E-07	mg/kg-day	--	--	--
				2-Butanone	2.13E-01	mg/L	1.6E-06	mg/kg-day	--	--	--
				2-Methylnaphthalene	7.85E-03	mg/L	6.0E-08	mg/kg-day	--	--	--
				Benzene	1.00E-03	mg/L	7.6E-09	mg/kg-day	2.7E-02	(mg/kg-day)-1	2.1E-10
				Ethylbenzene	1.50E-02	mg/L	1.1E-07	mg/kg-day	3.9E-03	(mg/kg-day)-1	4.4E-10
				Isopropylbenzene	7.52E-02	mg/L	5.7E-07	mg/kg-day	--	--	--
				Naphthalene	3.89E-02	mg/L	3.0E-07	mg/kg-day	--	--	--
				sec-Butylbenzene	7.51E-02	mg/L	5.7E-07	mg/kg-day	--	--	--
				Xylene (Total)	3.52E-02	mg/L	2.7E-07	mg/kg-day	--	--	--
			Exp. Route Total								6.5E-10
		Exposure Point Total									6.3E-05
	Exposure Medium Total										6.3E-05
Medium Total											6.3E-05
										Total of Receptor Risks Across All Media	6.5E-05

Notes:

CSF	Cancer slope factor
EPC	Exposure point concentration
mg/kg	Milligram per kilogram
mg/kg-day	Milligram per kilogram per day
(mg/kg-day)-1	1/(Milligram per kilogram per day)
CTE	Central tendency exposure

TABLE H2-8.5.7.CTE
EPA RAGS PART D TABLE 7b
CALCULATION OF CTE CHEMICAL CANCER RISKS
FUTURE REDEVELOPED CHILD RESIDENT
SITE 23, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future-Redeveloped
Receptor Population:	Resident
Receptor Age:	Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk
							Value	Units	Value	Units	
Soil (0-8)	Soil	Site Soil	Ingestion	2-Methylnaphthalene	6.37E-02	mg/kg	3.5E-08	mg/kg-day	--	--	--
				Arsenic	3.82E+00	mg/kg	2.1E-06	mg/kg-day	1.5E+00	(mg/kg-day)-1	3.1E-06
				Benz(a)anthracene	2.55E-02	mg/kg	1.4E-08	mg/kg-day	7.3E-01	(mg/kg-day)-1	1.0E-08
				Benzo(a)pyrene	3.00E-02	mg/kg	1.6E-08	mg/kg-day	7.3E+00	(mg/kg-day)-1	1.2E-07
				Benzo(b)fluoranthene	4.92E-03	mg/kg	2.7E-09	mg/kg-day	7.3E-01	(mg/kg-day)-1	2.0E-09
				Benzo(k)fluoranthene	3.16E-02	mg/kg	1.7E-08	mg/kg-day	7.3E-02	(mg/kg-day)-1	1.3E-09
				Dibenz(a,h)anthracene	1.59E-02	mg/kg	8.7E-09	mg/kg-day	7.3E+00	(mg/kg-day)-1	6.4E-08
				Indeno(1,2,3-cd)pyrene	2.44E-02	mg/kg	1.3E-08	mg/kg-day	7.3E-01	(mg/kg-day)-1	9.8E-09
			Exp. Route Total								3.3E-06
			Dermal	2-Methylnaphthalene	6.37E-02	mg/kg	--	mg/kg-day	--	--	--
				Arsenic	3.82E+00	mg/kg	7.0E-08	mg/kg-day	1.5E+00	(mg/kg-day)-1	1.1E-07
				Benz(a)anthracene	2.55E-02	mg/kg	2.0E-09	mg/kg-day	7.3E-01	(mg/kg-day)-1	1.5E-09
				Benzo(a)pyrene	3.00E-02	mg/kg	2.4E-09	mg/kg-day	7.3E+00	(mg/kg-day)-1	1.7E-08
				Benzo(b)fluoranthene	4.92E-03	mg/kg	3.9E-10	mg/kg-day	7.3E-01	(mg/kg-day)-1	2.9E-10
				Benzo(k)fluoranthene	3.16E-02	mg/kg	2.5E-09	mg/kg-day	7.3E-02	(mg/kg-day)-1	1.8E-10
				Dibenz(a,h)anthracene	1.59E-02	mg/kg	1.3E-09	mg/kg-day	7.3E+00	(mg/kg-day)-1	9.3E-09
				Indeno(1,2,3-cd)pyrene	2.44E-02	mg/kg	1.9E-09	mg/kg-day	7.3E-01	(mg/kg-day)-1	1.4E-09
			Exp. Route Total								1.4E-07
		Exposure Point Total									3.5E-06
	Exposure Medium Total										3.5E-06
	Homegrown Produce	Homegrown Produce	Ingestion	2-Methylnaphthalene	6.37E-02	mg/kg	--	mg/kg-day	--	--	--
				Arsenic	3.82E+00	mg/kg	3.1E-07	mg/kg-day	1.5E+00	(mg/kg-day)-1	4.6E-07
				Benz(a)anthracene	2.55E-02	mg/kg	1.8E-09	mg/kg-day	7.3E-01	(mg/kg-day)-1	1.3E-09
				Benzo(a)pyrene	3.00E-02	mg/kg	1.7E-09	mg/kg-day	7.3E+00	(mg/kg-day)-1	1.2E-08
				Benzo(b)fluoranthene	4.92E-03	mg/kg	2.5E-10	mg/kg-day	7.3E-01	(mg/kg-day)-1	1.8E-10
				Benzo(k)fluoranthene	3.16E-02	mg/kg	1.6E-09	mg/kg-day	7.3E-02	(mg/kg-day)-1	1.2E-10
				Dibenz(a,h)anthracene	1.59E-02	mg/kg	1.3E-09	mg/kg-day	7.3E+00	(mg/kg-day)-1	9.7E-09
				Indeno(1,2,3-cd)pyrene	2.44E-02	mg/kg	9.8E-10	mg/kg-day	7.3E-01	(mg/kg-day)-1	7.1E-10
			Exp. Route Total								4.8E-07
		Exposure Point Total									4.8E-07
	Exposure Medium Total										4.8E-07
	Air	Outdoor Air	Inhalation (particulates)	2-Methylnaphthalene	6.37E-02	mg/kg	1.1E-13	mg/kg-day	--	--	--
				Arsenic	3.82E+00	mg/kg	6.7E-12	mg/kg-day	1.5E+01	(mg/kg-day)-1	1.0E-10
				Benz(a)anthracene	2.55E-02	mg/kg	4.4E-14	mg/kg-day	7.3E-01	(mg/kg-day)-1	3.2E-14

TABLE H2-8.5.7.CTE
EPA RAGS PART D TABLE 7b
CALCULATION OF CTE CHEMICAL CANCER RISKS
FUTURE REDEVELOPED CHILD RESIDENT
SITE 23, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future-Redeveloped
Receptor Population:	Resident
Receptor Age:	Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk
							Value	Units	Value	Units	
				Benzo(a)pyrene	3.00E-02	mg/kg	5.2E-14	mg/kg-day	7.3E+00	(mg/kg-day)-1	3.8E-13
				Benzo(b)fluoranthene	4.92E-03	mg/kg	8.6E-15	mg/kg-day	7.3E-01	(mg/kg-day)-1	6.3E-15
				Benzo(k)fluoranthene	3.16E-02	mg/kg	5.5E-14	mg/kg-day	7.3E-02	(mg/kg-day)-1	4.0E-15
				Dibenz(a,h)anthracene	1.59E-02	mg/kg	2.8E-14	mg/kg-day	7.3E+00	(mg/kg-day)-1	2.0E-13
				Indeno(1,2,3-cd)pyrene	2.44E-02	mg/kg	4.3E-14	mg/kg-day	7.3E-01	(mg/kg-day)-1	3.1E-14
			Exp. Route Total								1.0E-10
			Inhalation (VOCs)	2-Methylnaphthalene	6.37E-02	mg/kg	3.4E-09	mg/kg-day	--	--	--
			Exp. Route Total								0.0E+00
		Exposure Point Total									1.0E-10
	Exposure Medium Total										1.0E-10
Medium Total											4.0E-06
Groundwater	Groundwater	Tap	Ingestion	1,2,4-Trimethylbenzene	6.54E-02	mg/L	3.6E-04	mg/kg-day	--	--	--
				2-Butanone	2.13E-01	mg/L	1.2E-03	mg/kg-day	--	--	--
				2-Methylnaphthalene	7.85E-03	mg/L	4.3E-05	mg/kg-day	--	--	--
				Arsenic	6.24E-03	mg/L	3.4E-05	mg/kg-day	1.5E+00	(mg/kg-day)-1	5.1E-05
				Benzene	1.00E-03	mg/L	5.5E-06	mg/kg-day	5.5E-02	(mg/kg-day)-1	3.0E-07
				Benzo(a)pyrene	6.00E-04	mg/L	3.3E-06	mg/kg-day	7.3E+00	(mg/kg-day)-1	2.4E-05
				Benzo(b)fluoranthene	8.00E-04	mg/L	4.4E-06	mg/kg-day	7.3E-01	(mg/kg-day)-1	3.2E-06
				Chrysene	9.00E-04	mg/L	4.9E-06	mg/kg-day	7.3E-03	(mg/kg-day)-1	3.6E-08
				Ethylbenzene	1.50E-02	mg/L	8.2E-05	mg/kg-day	3.9E-03	(mg/kg-day)-1	3.2E-07
				Isopropylbenzene	7.52E-02	mg/L	4.1E-04	mg/kg-day	--	--	--
				Naphthalene	3.89E-02	mg/L	2.1E-04	mg/kg-day	--	--	--
				sec-Butylbenzene	7.51E-02	mg/L	4.1E-04	mg/kg-day	--	--	--
				Thallium	1.27E-03	mg/L	7.0E-06	mg/kg-day	--	--	--
				Xylene (Total)	3.52E-02	mg/L	1.9E-04	mg/kg-day	--	--	--
			Exp. Route Total								7.9E-05
			Dermal (bathing/ showering)	1,2,4-Trimethylbenzene	6.54E-02	mg/L	6.5E-05	mg/kg-day	--	--	--
				2-Butanone	2.13E-01	mg/L	2.4E-06	mg/kg-day	--	--	--
				2-Methylnaphthalene	7.85E-03	mg/L	4.4E-06	mg/kg-day	--	--	--
				Arsenic	6.24E-03	mg/L	7.4E-08	mg/kg-day	1.5E+00	(mg/kg-day)-1	1.1E-07
				Benzene	1.00E-03	mg/L	2.5E-07	mg/kg-day	5.5E-02	(mg/kg-day)-1	1.4E-08
				Benzo(a)pyrene	6.00E-04	mg/L	5.0E-06	mg/kg-day	7.3E+00	(mg/kg-day)-1	3.7E-05
				Benzo(b)fluoranthene	8.00E-04	mg/L	6.7E-06	mg/kg-day	7.3E-01	(mg/kg-day)-1	4.9E-06
				Chrysene	9.00E-04	mg/L	5.0E-06	mg/kg-day	7.3E-03	(mg/kg-day)-1	3.7E-08

TABLE H2-8.5.7.CTE
EPA RAGS PART D TABLE 7b
CALCULATION OF CTE CHEMICAL CANCER RISKS
FUTURE REDEVELOPED CHILD RESIDENT
SITE 23, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future-Redeveloped
Receptor Population:	Resident
Receptor Age:	Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk
							Value	Units	Value	Units	
				Ethylbenzene	1.50E-02	mg/L	8.8E-06	mg/kg-day	3.9E-03	(mg/kg-day)-1	3.4E-08
				Isopropylbenzene	7.52E-02	mg/L	7.9E-05	mg/kg-day	--	--	--
				Naphthalene	3.89E-02	mg/L	2.2E-05	mg/kg-day	--	--	--
				sec-Butylbenzene	7.51E-02	mg/L	1.6E-04	mg/kg-day	--	--	--
				Thallium	1.27E-03	mg/L	1.5E-08	mg/kg-day	--	--	--
				Xylene (Total)	3.52E-02	mg/L	2.2E-05	mg/kg-day	--	--	--
			Exp. Route Total								4.2E-05
			Inhalation (bathing/ showering)	1,2,4-Trimethylbenzene	6.54E-02	mg/L	1.0E-06	mg/kg-day	--	--	--
				2-Butanone	2.13E-01	mg/L	3.4E-06	mg/kg-day	--	--	--
				2-Methylnaphthalene	7.85E-03	mg/L	1.2E-07	mg/kg-day	--	--	--
				Benzene	1.00E-03	mg/L	1.6E-08	mg/kg-day	2.7E-02	(mg/kg-day)-1	4.3E-10
				Ethylbenzene	1.50E-02	mg/L	2.4E-07	mg/kg-day	3.9E-03	(mg/kg-day)-1	9.1E-10
				Isopropylbenzene	7.52E-02	mg/L	1.2E-06	mg/kg-day	--	--	--
				Naphthalene	3.89E-02	mg/L	6.2E-07	mg/kg-day	--	--	--
				sec-Butylbenzene	7.51E-02	mg/L	1.2E-06	mg/kg-day	--	--	--
				Xylene (Total)	3.52E-02	mg/L	5.6E-07	mg/kg-day	--	--	--
			Exp. Route Total								1.3E-09
		Exposure Point Total									1.2E-04
	Exposure Medium Total										1.2E-04
Medium Total											1.2E-04
										Total of Receptor Risks Across All Media	1.2E-04

Notes:

CSF	Cancer slope factor
EPC	Exposure point concentration
mg/kg	Milligram per kilogram
mg/kg-day	Milligram per kilogram per day
(mg/kg-day)-1	1/(Milligram per kilogram per day)
CTE	Central tendency exposure

HHRA RISK TABLES

Central Tendency Exposure
Site 09
Alameda Point, Alameda, California

TABLE H2-9.1.1.CTE
EPA RAGS PART D TABLE 9
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS
CURRENT INDUSTRIAL WORKER
SITE 09, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future
Receptor Population:	Industrial Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil (0-2)	Soil	Site Soil	Arsenic	1.0E-07	–	4.0E-09	–	1.1E-07	Skin	3.5E-03	–	1.4E-04	3.6E-03
			Chemical Total	1.0E-07	–	4.0E-09	–	1.1E-07		3.5E-03	–	1.4E-04	3.6E-03
		Exposure Point Total						1.1E-07					3.6E-03
	Exposure Medium Total							1.1E-07					3.6E-03
	Air	Outdoor Air (Particulates and VOCs)	Arsenic	–	3.8E-11	–	–	3.8E-11	–	–	–	–	–
			Chemical Total	–	3.8E-11	–	–	3.8E-11		–	–	–	0.0E+00
		Exposure Point Total						3.8E-11					0.0E+00
	Exposure Medium Total							3.8E-11					0.0E+00
Medium Total								1.1E-07					3.6E-03
Groundwater	Groundwater	Indoor Air (Vapor Intrusion)	Benzene	–	2.9E-09	–	–	2.9E-09	Blood	–	2.0E-04	–	2.0E-04
			Vinyl chloride	–	2.0E-08	–	–	2.0E-08	Liver	–	6.7E-04	–	6.7E-04
			Chemical Total	–	2.3E-08	–	–	2.3E-08		–	8.6E-04	–	8.6E-04
		Exposure Point Total						2.3E-08					8.6E-04
	Exposure Medium Total							2.3E-08					8.6E-04
Medium Total								2.3E-08					8.6E-04
Receptor Total							Receptor Risk Total	1.3E-07				Receptor HI Total	4.5E-03

Notes:

–	Not Applicable or Not Available
HI	Hazard Index
CTE	Central tendency exposure
VOC	Volatile organic compound

TABLE H2-9.1.2.CTE
EPA RAGS PART D TABLE 9
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS
CURRENT CONSTRUCTION WORKER
SITE 09, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil (0-2)	Soil	Site Soil	Arsenic	1.2E-08	–	1.2E-09	–	1.4E-08	Skin	1.9E-03	–	1.9E-04	2.1E-03
			Chemical Total	1.2E-08	–	1.2E-09	–	1.4E-08		1.9E-03	–	1.9E-04	2.1E-03
		Exposure Point Total						1.4E-08					2.1E-03
	Exposure Medium Total							1.4E-08					2.1E-03
	Air	Outdoor Air (Particulates and VOCs)	Arsenic	–	1.9E-11	–	–	1.9E-11	–	–	–	–	–
			Chemical Total	–	1.9E-11	–	–	1.9E-11		–	–	–	0.0E+00
		Exposure Point Total						1.9E-11					0.0E+00
	Exposure Medium Total							1.9E-11					0.0E+00
Medium Total								1.4E-08					2.1E-03
Receptor Total							Receptor Risk Total	1.4E-08				Receptor HI Total	2.1E-03

Notes:

–	Not Applicable or Not Available
HI	Hazard Index
CTE	Central tendency exposure
VOC	Volatile organic compound

TABLE H2-9.1.3.CTE
EPA RAGS PART D TABLE 9
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS
CURRENT ADULT RESIDENT
SITE 09, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future
Receptor Population:	Resident
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil (0-2)	Soil	Site Soil	Arsenic	3.2E-07	–	1.1E-08	–	3.3E-07	Skin	5.6E-03	–	1.9E-04	5.8E-03
			Chemical Total	3.2E-07	–	1.1E-08	–	3.3E-07		5.6E-03	–	1.9E-04	5.8E-03
		Exposure Point Total						3.3E-07					5.8E-03
	Exposure Medium Total							3.3E-07					5.8E-03
	Homegrown Produce	Homegrown Produce	Arsenic	4.4E-07	–	–	–	4.4E-07	Skin	7.6E-03	–	–	7.6E-03
			Chemical Total	4.4E-07	–	–	–	4.4E-07		7.6E-03	–	–	7.6E-03
		Exposure Point Total						4.4E-07					7.6E-03
	Exposure Medium Total							4.4E-07					7.6E-03
	Air	Outdoor Air (Particulates and VOCs)	Arsenic	–	4.1E-11	–	–	4.1E-11	–	–	–	–	–
			Chemical Total	–	4.1E-11	–	–	4.1E-11		–	–	–	0.0E+00
		Exposure Point Total						4.1E-11					0.0E+00
	Exposure Medium Total							4.1E-11					0.0E+00
Medium Total								7.8E-07					1.3E-02
Groundwater	Groundwater	Indoor Air (Vapor Intrusion)	Benzene	–	3.1E-08	–	–	3.1E-08	Blood	–	1.0E-03	–	1.0E-03
			Vinyl chloride	–	4.0E-07	–	–	4.0E-07	Liver	–	3.5E-03	–	3.5E-03
			Chemical Total	–	4.3E-07	–	–	4.3E-07		–	4.6E-03	–	4.6E-03
		Exposure Point Total						4.3E-07					4.6E-03
	Exposure Medium Total							4.3E-07					4.6E-03
	Groundwater	Tap Water (oral/dermal)	1,1-Dichloroethane	–	–	–	–	–	No observed effect	9.7E-04	–	2.1E-05	9.9E-04
			1,2-Dichloroethane	1.3E-07	–	1.8E-09	–	1.4E-07	Kidney, Death	3.8E-04	–	5.2E-06	3.9E-04
			1,2-Dichloroethene (Total)	–	–	–	–	–	Blood	1.8E-01	–	4.5E-03	1.9E-01
			1,2-Dichloropropane	3.4E-07	–	8.4E-09	–	3.4E-07	Nasal	3.5E-02	–	8.7E-04	3.6E-02
			1,2,3-Trichloropropane	1.5E-06	–	3.5E-08	–	1.5E-06	Blood	9.6E-04	–	2.3E-05	9.8E-04
			1,3-Dichloropropane	1.1E-07	–	2.8E-09	–	1.2E-07	Nasal	1.2E-02	–	2.9E-04	1.2E-02
			2,2'-Oxybis(1-chloropropane)	–	–	–	–	–	Blood	3.4E-04	–	8.2E-06	3.4E-04
			2-Methylnaphthalene	–	–	–	–	–	Lung	3.8E-01	–	5.8E-02	4.4E-01
			4-Methylphenol	–	–	–	–	–	CNS, Respiratory, Whole Body	9.1E-01	–	2.2E-02	9.3E-01
			Antimony	–	–	–	–	–	Longevity, Blood, Cholesterol	2.0E-01	–	6.4E-04	2.0E-01
			Arsenic	4.9E-05	–	1.6E-07	–	4.9E-05	Skin	8.4E-01	–	2.7E-03	8.5E-01
			Benzene	2.6E-07	–	1.7E-08	–	2.7E-07	Blood	9.1E-03	–	6.1E-04	9.7E-03
			Benz(a)anthracene	1.8E-06	–	2.7E-06	–	4.5E-06	–	–	–	–	–
			Benzo(a)pyrene	3.6E-05	–	8.1E-05	–	1.2E-04	–	–	–	–	–

TABLE H2-9.1.3.CTE
EPA RAGS PART D TABLE 9
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS
CURRENT ADULT RESIDENT
SITE 09, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future
Receptor Population:	Resident
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			Benzo(b)fluoranthene	3.6E-06	–	8.1E-06	–	1.2E-05	–	–	–	–	–
			Benzo(k)fluoranthene	1.4E-07	–	1.0E-07	–	2.5E-07	–	–	–	–	–
			Chloroethane	2.6E-08	–	5.2E-10	–	2.7E-08	No observed effect	1.8E-04	–	3.5E-06	1.8E-04
			Chrysene	1.8E-08	–	2.7E-08	–	4.5E-08	–	–	–	–	–
			Ethylbenzene	6.2E-08	–	9.8E-09	–	7.2E-08	Kidney, Liver	1.3E-03	–	2.0E-04	1.5E-03
			Indeno(1,2,3-cd)pyrene	1.8E-06	–	5.8E-06	–	7.6E-06	–	–	–	–	–
			Lead	–	–	–	–	–	–	–	–	–	–
			Manganese	–	–	–	–	–	CNS	9.8E-01	–	3.2E-03	9.9E-01
			Methyl-t-butyl ether	3.9E-08	–	2.6E-10	–	3.9E-08	Liver, Kidney, Eyes	1.1E-04	–	7.2E-07	1.1E-04
			Naphthalene	–	–	–	–	–	Body Weight	6.1E-01	–	9.2E-02	7.0E-01
			Pentachlorophenol	5.9E-07	–	7.4E-07	–	1.3E-06	–	1.3E-03	–	1.6E-03	2.9E-03
			Tetrachloroethene	2.5E-07	–	2.7E-08	–	2.8E-07	Liver	3.8E-03	–	4.0E-04	4.2E-03
			Trichloroethene	2.3E-06	–	9.0E-08	–	2.4E-06	Liver, Kidney, Fetus	1.5E-01	–	5.8E-03	1.6E-01
			Vinyl chloride	2.9E-05	–	5.2E-07	–	2.9E-05	Liver	4.9E-02	–	8.9E-04	5.0E-02
			Xylene (Total)	–	–	–	–	–	Death, Body Weight	5.0E-03	–	8.5E-04	5.8E-03
		Exposure Point Total		1.3E-04	–	9.9E-05	–	2.3E-04		4.4E+00	–	1.9E-01	4.6E+00
		Tap Water (inhalation)	1,1-Dichloroethane	–	–	–	–	–	Kidney	–	2.1E-06	–	2.1E-06
			1,2-Dichloroethane	–	4.2E-10	–	–	4.2E-10	GI, Liver	–	2.5E-05	–	2.5E-05
			1,2-Dichloroethene (Total)	–	–	–	–	–	Blood	–	5.6E-04	–	5.6E-04
			1,2-Dichloropropane	–	1.0E-09	–	–	1.0E-09	Nasal	–	1.1E-04	–	1.1E-04
			1,2,3-Trichloropropane	–	4.6E-09	–	–	4.6E-09	Blood	–	1.3E-05	–	1.3E-05
			1,3-Dichloropropane	–	3.5E-10	–	–	3.5E-10	Nasal	–	3.6E-05	–	3.6E-05
			2,2'-Oxybis(1-chloropropane)	–	–	–	–	–	Blood	–	1.0E-06	–	1.0E-06
			2-Methylnaphthalene	–	–	–	–	–	Nasal	–	1.2E-02	–	1.2E-02
			Benzene	–	3.9E-10	–	–	3.9E-10	Blood	–	1.3E-05	–	1.3E-05
			Chloroethane	–	8.2E-11	–	–	8.2E-11	Fetus	–	7.6E-08	–	7.6E-08
			Ethylbenzene	–	1.9E-10	–	–	1.9E-10	Developmental	–	1.3E-06	–	1.3E-06
			Methyl-t-butyl ether	–	1.3E-11	–	–	1.3E-11	Liver, Kidney, Eyes	–	3.3E-07	–	3.3E-07
			Naphthalene	–	–	–	–	–	Nasal	–	4.4E-02	–	4.4E-02
			Tetrachloroethene	–	1.5E-10	–	–	1.5E-10	Liver, Kidney	–	6.9E-07	–	6.9E-07
			Trichloroethene	–	7.2E-09	–	–	7.2E-09	CNS, Liver, Endocrine	–	1.4E-05	–	1.4E-05
			Vinyl chloride	–	1.8E-09	–	–	1.8E-09	Liver	–	1.6E-05	–	1.6E-05
			Xylene (Total)	–	–	–	–	–	CNS	–	1.1E-04	–	1.1E-04

TABLE H2-9.1.3.CTE
EPA RAGS PART D TABLE 9
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS
CURRENT ADULT RESIDENT
SITE 09, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future
Receptor Population:	Resident
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
		Exposure Point Total		–	1.6E-08	–	–	1.6E-08		–	5.7E-02	–	5.7E-02
	Exposure Medium Total							2.3E-04					4.6E+00
Medium Total								2.3E-04					4.6E+00
Receptor Total							Receptor Risk Total	2.3E-04				Receptor HI Total	4.7E+00

Notes:

–	Not Applicable or Not Available
CNS	Central nervous system
HI	Hazard index
CTE	Central tendency exposure
VOC	Volatile organic compound

Total Organ 1 (Nervous System) HI Across All Media =	1.9E+00
Total Organ 2 (Blood) HI Across All Media =	4.0E-01
Total Organ 3 (Respiratory) HI Across All Media =	9.3E-01
Total Organ 4 (Whole Body) HI Across All Media =	9.3E-01
Total Organ 5 (Skin) HI Across All Media =	8.6E-01
Total Organ 6 (Gastrointestinal System) HI Across All Media =	2.5E-05
Total Organ 7 (Lung) HI Across All Media =	4.4E-01
Total Organ 8 (Liver) HI Across All Media =	2.2E-01
Total Organ 9 (Cholesterol) HI Across All Media =	2.0E-01
Total Organ 10 (Longevity) HI Across All Media =	2.0E-01
Total Organ 11 (Kidney) HI Across All Media =	1.6E-01
Total Organ 12 (Fetus) HI Across All Media =	1.6E-01
Total Organ 13 (Nasal) HI Across All Media =	1.0E-01
Total Organ 14 (Death) HI Across All Media =	6.2E-03
Total Organ 15 (Body Weight) HI Across All Media =	5.8E-03
Total Organ 16 (Unknown Systems) HI Across All Media =	2.9E-03
Total Organ 17 (No Observed Effect) HI Across All Media =	1.2E-03
Total Organ 18 (Eyes) HI Across All Media =	1.1E-04
Total Organ 19 (Endocrine system) HI Across All Media =	1.4E-05
Total Organ 20 (Developmental) HI Across All Media =	1.3E-06

TABLE H2-9.1.4.CTE
EPA RAGS PART D TABLE 9
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS
CURRENT CHILD RESIDENT
SITE 09, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future
Receptor Population:	Resident
Receptor Age:	Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil (0-2)	Soil	Site Soil	Arsenic	2.0E-06	–	6.8E-08	–	2.1E-06	Skin	5.2E-02	–	1.8E-03	5.4E-02
			Chemical Total	2.0E-06	–	6.8E-08	–	2.1E-06		5.2E-02	–	1.8E-03	5.4E-02
		Exposure Point Total						2.1E-06					5.4E-02
	Exposure Medium Total							2.1E-06					5.4E-02
	Homegrown Produce	Homegrown Produce	Arsenic	2.9E-07	–	–	–	2.9E-07	Skin	7.6E-03	–	–	7.6E-03
			Chemical Total	2.9E-07	–	–	–	2.9E-07		7.6E-03	–	–	7.6E-03
		Exposure Point Total						2.9E-07					7.6E-03
	Exposure Medium Total							2.9E-07					7.6E-03
	Air	Outdoor Air (Particulates and VOCs)	Arsenic	–	6.4E-11	–	–	6.4E-11	–	–	–	–	–
			Chemical Total	–	6.4E-11	–	–	6.4E-11		–	–	–	0.0E+00
		Exposure Point Total						6.4E-11					0.0E+00
	Exposure Medium Total							6.4E-11					0.0E+00
Medium Total								2.4E-06					6.2E-02
Groundwater	Groundwater	Indoor Air (Vapor Intrusion)	Benzene	–	4.9E-08	–	–	4.9E-08	Blood	–	2.5E-03	–	2.5E-03
			Vinyl chloride	–	6.3E-07	–	–	6.3E-07	Liver	–	8.4E-03	–	8.4E-03
			Chemical Total	–	6.8E-07	–	–	6.8E-07		–	1.1E-02	–	1.1E-02
		Exposure Point Total						6.8E-07					1.1E-02
	Exposure Medium Total							6.8E-07					1.1E-02
	Groundwater	Tap Water (oral/dermal)	1,1-Dichloroethane	–	–	–	–	–	No observed effect	3.2E-03	–	4.7E-05	3.3E-03
			1,2-Dichloroethane	3.0E-07	–	2.7E-09	–	3.0E-07	Kidney, Death	1.3E-03	–	1.2E-05	1.3E-03
			1,2-Dichloroethene (Total)	–	–	–	–	–	Blood	6.1E-01	–	1.0E-02	6.2E-01
			1,2-Dichloropropane	7.5E-07	–	1.3E-08	–	7.6E-07	Nasal	1.2E-01	–	2.0E-03	1.2E-01
			1,2,3-Trichloropropane	3.3E-06	–	5.3E-08	–	3.3E-06	Blood	3.2E-03	–	5.2E-05	3.2E-03
			1,3-Dichloropropane	2.5E-07	–	4.3E-09	–	2.5E-07	Nasal	3.9E-02	–	6.6E-04	4.0E-02
			2,2'-Oxybis(1-chloropropane)	–	–	–	–	–	Blood	1.1E-03	–	1.8E-05	1.1E-03
			2-Methylnaphthalene	–	–	–	–	–	Lung	1.3E+00	–	1.3E-01	1.4E+00
			4-Methylphenol	–	–	–	–	–	CNS, Respiratory, Whole Body	3.0E+00	–	5.0E-02	3.1E+00
			Antimony	–	–	–	–	–	Longevity, Blood, Cholesterol	6.7E-01	–	1.5E-03	6.7E-01
			Arsenic	1.1E-04	–	2.4E-07	–	1.1E-04	Skin	2.8E+00	–	6.1E-03	2.8E+00
			Benzene	5.7E-07	–	2.6E-08	–	6.0E-07	Blood	3.0E-02	–	1.4E-03	3.2E-02
			Benz(a)anthracene	4.0E-06	–	4.1E-06	–	8.1E-06	–	–	–	–	–
			Benzo(a)pyrene	8.0E-05	–	1.2E-04	–	2.0E-04	–	–	–	–	–

TABLE H2-9.1.4.CTE
EPA RAGS PART D TABLE 9
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS
CURRENT CHILD RESIDENT
SITE 09, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future
Receptor Population:	Resident
Receptor Age:	Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			Benzo(b)fluoranthene	8.0E-06	–	1.2E-05	–	2.0E-05	–	–	–	–	–
			Benzo(k)fluoranthene	3.2E-07	–	1.5E-07	–	4.7E-07	–	–	–	–	–
			Chloroethane	5.9E-08	–	7.8E-10	–	6.0E-08	No observed effect	5.9E-04	–	7.9E-06	6.0E-04
			Chrysene	4.0E-08	–	4.1E-08	–	8.1E-08	–	–	–	–	–
			Ethylbenzene	1.4E-07	–	1.5E-08	–	1.5E-07	Kidney, Liver	4.2E-03	–	4.5E-04	4.6E-03
			Indeno(1,2,3-cd)pyrene	4.0E-06	–	8.7E-06	–	1.3E-05	–	–	–	–	–
			Lead	–	–	–	–	–	–	–	–	–	–
			Manganese	–	–	–	–	–	CNS	3.3E+00	–	7.1E-03	3.3E+00
			Methyl-t-butyl ether	8.6E-08	–	4.0E-10	–	8.6E-08	Liver, Kidney, Eyes	3.5E-04	–	1.6E-06	3.6E-04
			Naphthalene	–	–	–	–	–	Body Weight	2.0E+00	–	2.1E-01	2.2E+00
			Pentachlorophenol	1.3E-06	–	1.1E-06	–	2.4E-06	–	4.3E-03	–	3.6E-03	7.9E-03
			Tetrachloroethene	5.6E-07	–	4.1E-08	–	6.0E-07	Liver	1.3E-02	–	9.1E-04	1.4E-02
			Trichloroethene	5.2E-06	–	1.4E-07	–	5.3E-06	Liver, Kidney, Fetus	5.1E-01	–	1.3E-02	5.2E-01
			Vinyl chloride	6.4E-05	–	7.8E-07	–	6.4E-05	Liver	1.6E-01	–	2.0E-03	1.7E-01
			Xylene (Total)	–	–	–	–	–	Death, Body Weight	1.7E-02	–	1.9E-03	1.8E-02
		Exposure Point Total		2.8E-04	–	1.5E-04	–	4.3E-04		1.5E+01	–	4.4E-01	1.5E+01
		Tap Water (inhalation)	1,1-Dichloroethane	–	–	–	–	–	Kidney	–	6.7E-06	–	6.7E-06
			1,2-Dichloroethane	–	8.6E-10	–	–	8.6E-10	GI, Liver	–	7.9E-05	–	7.9E-05
			1,2-Dichloroethene (Total)	–	–	–	–	–	Blood	–	1.7E-03	–	1.7E-03
			1,2-Dichloropropane	–	2.2E-09	–	–	2.2E-09	Nasal	–	3.4E-04	–	3.4E-04
			1,2,3-Trichloropropane	–	9.5E-09	–	–	9.5E-09	Blood	–	4.0E-05	–	4.0E-05
			1,3-Dichloropropane	–	7.2E-10	–	–	7.2E-10	Nasal	–	1.1E-04	–	1.1E-04
			2,2'-Oxybis(1-chloropropane)	–	–	–	–	–	Blood	–	3.2E-06	–	3.2E-06
			2-Methylnaphthalene	–	–	–	–	–	Nasal	–	3.9E-02	–	3.9E-02
			Benzene	–	8.1E-10	–	–	8.1E-10	Blood	–	4.1E-05	–	4.1E-05
			Chloroethane	–	1.7E-10	–	–	1.7E-10	Fetus	–	2.4E-07	–	2.4E-07
			Ethylbenzene	–	4.0E-10	–	–	4.0E-10	Developmental	–	4.2E-06	–	4.2E-06
			Methyl-t-butyl ether	–	2.6E-11	–	–	2.6E-11	Liver, Kidney, Eyes	–	1.0E-06	–	1.0E-06
			Naphthalene	–	–	–	–	–	Nasal	–	1.4E-01	–	1.4E-01
			Tetrachloroethene	–	3.1E-10	–	–	3.1E-10	Liver, Kidney	–	2.1E-06	–	2.1E-06
			Trichloroethene	–	1.5E-08	–	–	1.5E-08	CNS, Liver, Endocrine	–	4.4E-05	–	4.4E-05
			Vinyl chloride	–	3.8E-09	–	–	3.8E-09	Liver	–	5.0E-05	–	5.0E-05
			Xylene (Total)	–	–	–	–	–	CNS	–	3.3E-04	–	3.3E-04

TABLE H2-9.1.4.CTE
EPA RAGS PART D TABLE 9
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS
CURRENT CHILD RESIDENT
SITE 09, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future
Receptor Population:	Resident
Receptor Age:	Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
		Exposure Point Total		–	3.4E-08	–	–	3.4E-08		–	1.8E-01	–	1.8E-01
	Exposure Medium Total							4.3E-04					1.5E+01
Medium Total								4.3E-04					1.5E+01
Receptor Total							Receptor Risk Total	4.3E-04				Receptor HI Total	1.5E+01

Notes:

–	Not Applicable or Not Available
CNS	Central nervous system
HI	Hazard index
CTE	Central tendency exposure
VOC	Volatile organic compound

Total Organ 1 (Nervous System) HI Across All Media =	6.4E+00
Total Organ 2 (Blood) HI Across All Media =	1.3E+00
Total Organ 3 (Respiratory) HI Across All Media =	3.1E+00
Total Organ 4 (Whole Body) HI Across All Media =	3.1E+00
Total Organ 5 (Skin) HI Across All Media =	2.9E+00
Total Organ 6 (Gastrointestinal System) HI Across All Media =	7.9E-05
Total Organ 7 (Body Weight) HI Across All Media =	2.2E+00
Total Organ 8 (Lung) HI Across All Media =	1.4E+00
Total Organ 9 (Liver) HI Across All Media =	7.1E-01
Total Organ 10 (Cholesterol) HI Across All Media =	6.7E-01
Total Organ 11 (Longevity) HI Across All Media =	6.7E-01
Total Organ 12 (Kidney) HI Across All Media =	5.2E-01
Total Organ 13 (Fetus) HI Across All Media =	5.2E-01
Total Organ 14 (Nasal) HI Across All Media =	3.3E-01
Total Organ 15 (Death) HI Across All Media =	2.0E-02
Total Organ 16 (Unknown Systems) HI Across All Media =	7.9E-03
Total Organ 17 (No Observed Effect) HI Across All Media =	3.9E-03
Total Organ 18 (Eyes) HI Across All Media =	3.6E-04
Total Organ 19 (Endocrine system) HI Across All Media =	4.4E-05
Total Organ 20 (Developmental) HI Across All Media =	4.2E-06

TABLE H2-9.1.5.CTE
EPA RAGS PART D TABLE 9
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS
FUTURE DEVELOPED CONSTRUCTION WORKER
SITE 09, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future-Developed
Receptor Population:	Construction Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil (0-8)	Soil	Site Soil	Arsenic	1.4E-08	–	1.4E-09	–	1.5E-08	Skin	2.2E-03	–	2.2E-04	2.4E-03
			Chemical Total	1.4E-08	–	1.4E-09	–	1.5E-08		2.2E-03	–	2.2E-04	2.4E-03
		Exposure Point Total						1.5E-08					2.4E-03
	Exposure Medium Total							1.5E-08					2.4E-03
	Air	Outdoor Air (Particulates and VOCs)	Arsenic	–	2.1E-11	–	–	2.1E-11	–	–	–	–	–
			Chemical Total	–	2.1E-11	–	–	2.1E-11		–	–	–	0.0E+00
		Exposure Point Total						2.1E-11					0.0E+00
	Exposure Medium Total							2.1E-11					0.0E+00
Medium Total								1.5E-08					2.4E-03
Receptor Total							Receptor Risk Total	1.5E-08				Receptor HI Total	2.4E-03

Notes:

–	Not Applicable or Not Available
HI	Hazard Index
CTE	Central tendency exposure
VOC	Volatile organic compound

TABLE H2-9.1.6.CTE
EPA RAGS PART D TABLE 9
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS
FUTURE REDEVELOPED ADULT RESIDENT
SITE 09, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	*Future-Redeveloped*
Receptor Population:	Resident
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil (0-8)	Soil	Site Soil	Arsenic	3.7E-07	–	1.3E-08	–	3.8E-07	Skin	6.3E-03	–	2.2E-04	6.6E-03
			Chemical Total	3.7E-07	–	1.3E-08	–	3.8E-07		6.3E-03	–	2.2E-04	6.6E-03
		Exposure Point Total						3.8E-07					6.6E-03
	Exposure Medium Total							3.8E-07					6.6E-03
	Homegrown Produce	Homegrown Produce	Arsenic	5.0E-07	–	–	–	5.0E-07	Skin	8.7E-03	–	–	8.7E-03
			Chemical Total	5.0E-07	–	–	–	5.0E-07		8.7E-03	–	–	8.7E-03
		Exposure Point Total						5.0E-07					8.7E-03
	Exposure Medium Total							5.0E-07					8.7E-03
	Air	Outdoor Air (Particulates and VOCs)	Arsenic	–	4.6E-11	–	–	4.6E-11	–	–	–	–	–
			Chemical Total	–	4.6E-11	–	–	4.6E-11		–	–	–	0.0E+00
		Exposure Point Total						4.6E-11					0.0E+00
	Exposure Medium Total							4.6E-11					0.0E+00
Medium Total								8.8E-07					6.6E-03
Groundwater	Groundwater	Indoor Air (Vapor Intrusion)	Benzene	–	3.1E-08	–	–	3.1E-08	Blood	–	1.0E-03	–	1.0E-03
			Vinyl chloride	–	4.0E-07	–	–	4.0E-07	Liver	–	3.5E-03	–	3.5E-03
			Chemical Total	–	4.3E-07	–	–	4.3E-07		–	4.6E-03	–	4.6E-03
		Exposure Point Total						4.3E-07					4.6E-03
	Exposure Medium Total							4.3E-07					4.6E-03
	Groundwater	Tap Water (oral/dermal)	1,1-Dichloroethane	–	–	–	–	–	No observed effect	9.7E-04	–	2.1E-05	9.9E-04
			1,2-Dichloroethane	1.3E-07	–	1.8E-09	–	1.4E-07	Kidney, Death	3.6E-04	–	5.2E-06	3.9E-04
			1,2-Dichloroethene (Total)	–	–	–	–	–	Blood	1.8E-01	–	4.5E-03	1.9E-01
			1,2-Dichloropropane	3.4E-07	–	8.4E-09	–	3.4E-07	Nasal	3.5E-02	–	8.7E-04	3.6E-02
			1,2,3-Trichloropropane	1.5E-06	–	3.5E-08	–	1.5E-06	Blood	9.6E-04	–	2.3E-05	9.8E-04
			1,3-Dichloropropane	1.1E-07	–	2.8E-09	–	1.2E-07	Nasal	1.2E-02	–	2.9E-04	1.2E-02
			2,2'-Oxybis(1-chloropropane)	–	–	–	–	–	Blood	3.4E-04	–	8.2E-06	3.4E-04
			2-Methylnaphthalene	–	–	–	–	–	Lung	3.8E-01	–	5.8E-02	4.4E-01
			4-Methylphenol	–	–	–	–	–	CNS, Respiratory, Whole Body	9.1E-01	–	2.2E-02	9.3E-01
			Antimony	–	–	–	–	–	Longevity, Blood, Cholesterol	2.0E-01	–	6.4E-04	2.0E-01
			Arsenic	4.9E-05	–	1.6E-07	–	4.9E-05	Skin	8.4E-01	–	2.7E-03	8.5E-01
			Benzene	2.6E-07	–	1.7E-08	–	2.7E-07	Blood	9.1E-03	–	6.1E-04	9.7E-03
			Benz(a)anthracene	1.8E-06	–	2.7E-06	–	4.5E-06	–	–	–	–	–
			Benzo(a)pyrene	3.6E-05	–	8.1E-05	–	1.2E-04	–	–	–	–	–

TABLE H2-9.1.6.CTE
EPA RAGS PART D TABLE 9
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS
FUTURE REDEVELOPED ADULT RESIDENT
SITE 09, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future-Redeveloped
Receptor Population:	Resident
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			Benzo(b)fluoranthene	3.6E-06	–	8.1E-06	–	1.2E-05	–	–	–	–	–
			Benzo(k)fluoranthene	1.4E-07	–	1.0E-07	–	2.5E-07	–	–	–	–	–
			Chloroethane	2.6E-08	–	5.2E-10	–	2.7E-08	No observed effect	1.8E-04	–	3.5E-06	1.8E-04
			Chrysene	1.8E-08	–	2.7E-08	–	4.5E-08	–	–	–	–	–
			Ethylbenzene	6.2E-08	–	9.8E-09	–	7.2E-08	Kidney, Liver	1.3E-03	–	2.0E-04	1.5E-03
			Indeno(1,2,3-cd)pyrene	1.8E-06	–	5.8E-06	–	7.6E-06	–	–	–	–	–
			Lead	–	–	–	–	–	–	–	–	–	–
			Manganese	–	–	–	–	–	CNS	9.8E-01	–	3.2E-03	9.9E-01
			Methyl-t-butyl ether	3.9E-08	–	2.6E-10	–	3.9E-08	Liver, Kidney, Eyes	1.1E-04	–	7.2E-07	1.1E-04
			Naphthalene	–	–	–	–	–	Body Weight	6.1E-01	–	9.2E-02	7.0E-01
			Pentachlorophenol	5.9E-07	–	7.4E-07	–	1.3E-06	–	1.3E-03	–	1.6E-03	2.9E-03
			Tetrachloroethene	2.5E-07	–	2.7E-08	–	2.8E-07	Liver	3.8E-03	–	4.0E-04	4.2E-03
			Trichloroethene	2.3E-06	–	9.0E-08	–	2.4E-06	Liver, Kidney, Fetus	1.5E-01	–	5.8E-03	1.6E-01
			Vinyl chloride	2.9E-05	–	5.2E-07	–	2.9E-05	Liver	4.9E-02	–	8.9E-04	5.0E-02
			Xylene (Total)	–	–	–	–	–	Death, Body Weight	5.0E-03	–	8.5E-04	5.8E-03
		Exposure Point Total		1.3E-04	–	9.9E-05	–	2.3E-04		4.4E+00	–	1.9E-01	4.6E+00
		Tap Water	1,1-Dichloroethane	–	–	–	–	–	Kidney	–	2.1E-06	–	2.1E-06
		(Inhalation)	1,2-Dichloroethane	–	4.2E-10	–	–	4.2E-10	GI, Liver	–	2.5E-05	–	2.5E-05
			1,2-Dichloroethene (Total)	–	–	–	–	–	Blood	–	5.6E-04	–	5.6E-04
			1,2-Dichloropropane	–	1.0E-09	–	–	1.0E-09	Nasal	–	1.1E-04	–	1.1E-04
			1,2,3-Trichloropropane	–	4.6E-09	–	–	4.6E-09	Blood	–	1.3E-05	–	1.3E-05
			1,3-Dichloropropane	–	3.5E-10	–	–	3.5E-10	Nasal	–	3.6E-05	–	3.6E-05
			2,2'-Oxybis(1-chloropropane)	–	–	–	–	–	Blood	–	1.0E-06	–	1.0E-06
			2-Methylnaphthalene	–	–	–	–	–	Nasal	–	1.2E-02	–	1.2E-02
			Benzene	–	3.9E-10	–	–	3.9E-10	Blood	–	1.3E-05	–	1.3E-05
			Chloroethane	–	8.2E-11	–	–	8.2E-11	Fetus	–	7.6E-08	–	7.6E-08
			Ethylbenzene	–	1.9E-10	–	–	1.9E-10	Developmental	–	1.3E-06	–	1.3E-06
			Methyl-t-butyl ether	–	1.3E-11	–	–	1.3E-11	Liver, Kidney, Eyes	–	3.3E-07	–	3.3E-07
			Naphthalene	–	–	–	–	–	Nasal	–	4.4E-02	–	4.4E-02
			Tetrachloroethene	–	1.5E-10	–	–	1.5E-10	Liver, Kidney	–	6.9E-07	–	6.9E-07
			Trichloroethene	–	7.2E-09	–	–	7.2E-09	CNS, Liver, Endocrine	–	1.4E-05	–	1.4E-05
			Vinyl chloride	–	1.8E-09	–	–	1.8E-09	Liver	–	1.6E-05	–	1.6E-05
			Xylene (Total)	–	–	–	–	–	CNS	–	1.1E-04	–	1.1E-04

TABLE H2-9.1.6.CTE
EPA RAGS PART D TABLE 9
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS
FUTURE REDEVELOPED ADULT RESIDENT
SITE 09, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future-Redeveloped
Receptor Population:	Resident
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
		Exposure Point Total		–	1.6E-08	–	–	1.6E-08		–	5.7E-02	–	5.7E-02
	Exposure Medium Total							2.3E-04					4.6E+00
Medium Total								2.3E-04					4.6E+00
Receptor Total							Receptor Risk Total	2.3E-04				Receptor HI Total	4.6E+00

Notes:

–	Not Applicable or Not Available
CNS	Central nervous system
HI	Hazard index
CTE	Central tendency exposure
VOC	Volatile organic compound

Total Organ 1 (Nervous System) HI Across All Media =	1.9E+00
Total Organ 2 (Blood) HI Across All Media =	4.0E-01
Total Organ 3 (Respiratory) HI Across All Media =	9.3E-01
Total Organ 4 (Whole Body) HI Across All Media =	9.3E-01
Total Organ 5 (Skin) HI Across All Media =	8.6E-01
Total Organ 6 (Gastrointestinal System) HI Across All Media =	2.5E-05
Total Organ 7 (Body Weight) HI Across All Media =	7.0E-01
Total Organ 8 (Lung) HI Across All Media =	4.4E-01
Total Organ 9 (Liver) HI Across All Media =	2.2E-01
Total Organ 10 (Cholesterol) HI Across All Media =	2.0E-01
Total Organ 11 (Longevity) HI Across All Media =	2.0E-01
Total Organ 12 (Kidney) HI Across All Media =	1.6E-01
Total Organ 13 (Fetus) HI Across All Media =	1.6E-01
Total Organ 14 (Nasal) HI Across All Media =	6.0E-02
Total Organ 15 (Death) HI Across All Media =	6.2E-03
Total Organ 16 (Unknown Systems) HI Across All Media =	2.9E-03
Total Organ 17 (No Observed Effect) HI Across All Media =	1.2E-03
Total Organ 18 (Eyes) HI Across All Media =	1.1E-04
Total Organ 19 (Endocrine system) HI Across All Media =	1.4E-05
Total Organ 20 (Developmental) HI Across All Media =	1.3E-06

TABLE H2-9.1.7.CTE
EPA RAGS PART D TABLE 9
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS
FUTURE REDEVELOPED CHILD RESIDENT
SITE 09, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future-Redeveloped
Receptor Population:	Resident
Receptor Age:	Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil (0-8)	Soil	Site Soil	Arsenic	2.3E-06	–	7.7E-08	–	2.4E-06	Skin	5.9E-02	–	2.0E-03	6.1E-02
			Chemical Total	2.3E-06	–	7.7E-08	–	2.4E-06		5.9E-02	–	2.0E-03	6.1E-02
		Exposure Point Total						2.4E-06					6.1E-02
	Exposure Medium Total							2.4E-06					6.1E-02
	Homegrown Produce	Homegrown Produce	Arsenic	3.3E-07	–	–	–	3.3E-07	Skin	8.6E-03	–	–	8.6E-03
			Chemical Total	3.3E-07	–	–	–	3.3E-07		8.6E-03	–	–	8.6E-03
		Exposure Point Total						3.3E-07					8.6E-03
	Exposure Medium Total							3.3E-07					8.6E-03
	Air	Outdoor Air (Particulates and VOCs)	Arsenic	–	7.3E-11	–	–	7.3E-11	–	–	–	–	–
			Chemical Total	–	7.3E-11	–	–	7.3E-11		–	–	–	0.0E+00
		Exposure Point Total						7.3E-11					0.0E+00
	Exposure Medium Total							7.3E-11					0.0E+00
Medium Total								2.7E-06					7.0E-02
Groundwater	Groundwater	Indoor Air (Vapor Intrusion)	Benzene	–	4.9E-08	–	–	4.9E-08	Blood	–	2.5E-03	–	2.5E-03
			Vinyl chloride	–	6.3E-07	–	–	6.3E-07	Liver	–	8.4E-03	–	8.4E-03
			Chemical Total	–	6.8E-07	–	–	6.8E-07		–	1.1E-02	–	1.1E-02
		Exposure Point Total						6.8E-07					1.1E-02
	Exposure Medium Total							6.8E-07					1.1E-02
	Groundwater	Tap Water (oral/dermal)	1,1-Dichloroethane	–	–	–	–	–	No observed effect	3.2E-03	–	4.7E-05	3.3E-03
			1,2-Dichloroethane	3.0E-07	–	2.7E-09	–	3.0E-07	Kidney, Death	1.3E-03	–	1.2E-05	1.3E-03
			1,2-Dichloroethene (Total)	–	–	–	–	–	Blood	6.1E-01	–	1.0E-02	6.2E-01
			1,2-Dichloropropane	7.5E-07	–	1.3E-08	–	7.6E-07	Nasal	1.2E-01	–	2.0E-03	1.2E-01
			1,2,3-Trichloropropane	3.3E-06	–	5.3E-08	–	3.3E-06	Blood	3.2E-03	–	5.2E-05	3.2E-03
			1,3-Dichloropropane	2.5E-07	–	4.3E-09	–	2.5E-07	Nasal	3.9E-02	–	6.6E-04	4.0E-02
			2,2'-Oxybis(1-chloropropane)	–	–	–	–	–	Blood	1.1E-03	–	1.8E-05	1.1E-03
			2-Methylnaphthalene	–	–	–	–	–	Lung	1.3E+00	–	1.3E-01	1.4E+00
			4-Methylphenol	–	–	–	–	–	CNS, Respiratory, Whole Body	3.0E+00	–	5.0E-02	3.1E+00
			Antimony	–	–	–	–	–	Longevity, Blood, Cholesterol	6.7E-01	–	1.5E-03	6.7E-01
			Arsenic	1.1E-04	–	2.4E-07	–	1.1E-04	Skin	2.8E+00	–	6.1E-03	2.8E+00
			Benzene	5.7E-07	–	2.6E-08	–	6.0E-07	Blood	3.0E-02	–	1.4E-03	3.2E-02
			Benz(a)anthracene	4.0E-06	–	4.1E-06	–	8.1E-06	–	–	–	–	–
			Benzo(a)pyrene	8.0E-05	–	1.2E-04	–	2.0E-04	–	–	–	–	–

TABLE H2-9.1.7.CTE
EPA RAGS PART D TABLE 9
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS
FUTURE REDEVELOPED CHILD RESIDENT
SITE 09, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future-Redeveloped
Receptor Population:	Resident
Receptor Age:	Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			Benzo(b)fluoranthene	8.0E-06	–	1.2E-05	–	2.0E-05	–	–	–	–	–
			Benzo(k)fluoranthene	3.2E-07	–	1.5E-07	–	4.7E-07	–	–	–	–	–
			Chloroethane	5.9E-08	–	7.8E-10	–	6.0E-08	No observed effect	5.9E-04	–	7.9E-06	6.0E-04
			Chrysene	4.0E-08	–	4.1E-08	–	8.1E-08	–	–	–	–	–
			Ethylbenzene	1.4E-07	–	1.5E-08	–	1.5E-07	Kidney, Liver	4.2E-03	–	4.5E-04	4.6E-03
			Indeno(1,2,3-cd)pyrene	4.0E-06	–	8.7E-06	–	1.3E-05	–	–	–	–	–
			Lead	–	–	–	–	–	–	–	–	–	–
			Manganese	–	–	–	–	–	CNS	3.3E+00	–	7.1E-03	3.3E+00
			Methyl-t-butyl ether	8.6E-08	–	4.0E-10	–	8.6E-08	Liver, Kidney, Eyes	3.5E-04	–	1.6E-06	3.6E-04
			Naphthalene	–	–	–	–	–	Body Weight	2.0E+00	–	2.1E-01	2.2E+00
			Pentachlorophenol	1.3E-06	–	1.1E-06	–	2.4E-06	–	4.3E-03	–	3.6E-03	7.9E-03
			Tetrachloroethene	5.6E-07	–	4.1E-08	–	6.0E-07	Liver	1.3E-02	–	9.1E-04	1.4E-02
			Trichloroethene	5.2E-06	–	1.4E-07	–	5.3E-06	Liver, Kidney, Fetus	5.1E-01	–	1.3E-02	5.2E-01
			Vinyl chloride	6.4E-05	–	7.8E-07	–	6.4E-05	Liver	1.6E-01	–	2.0E-03	1.7E-01
			Xylene (Total)	–	–	–	–	–	Death, Body Weight	1.7E-02	–	1.9E-03	1.8E-02
		Exposure Point Total		2.8E-04	–	1.5E-04	–	4.3E-04		1.5E+01	–	4.4E-01	1.5E+01
		Tap Water (inhalation)	1,1-Dichloroethane	–	–	–	–	–	Kidney	–	6.7E-06	–	6.7E-06
			1,2-Dichloroethane	–	8.6E-10	–	–	8.6E-10	GI, Liver	–	7.9E-05	–	7.9E-05
			1,2-Dichloroethene (Total)	–	–	–	–	–	Blood	–	1.7E-03	–	1.7E-03
			1,2-Dichloropropane	–	2.2E-09	–	–	2.2E-09	Nasal	–	3.4E-04	–	3.4E-04
			1,2,3-Trichloropropane	–	9.5E-09	–	–	9.5E-09	Blood	–	4.0E-05	–	4.0E-05
			1,3-Dichloropropane	–	7.2E-10	–	–	7.2E-10	Nasal	–	1.1E-04	–	1.1E-04
			2,2'-Oxybis(1-chloropropane)	–	–	–	–	–	Blood	–	3.2E-06	–	3.2E-06
			2-Methylnaphthalene	–	–	–	–	–	Nasal	–	3.9E-02	–	3.9E-02
			Benzene	–	8.1E-10	–	–	8.1E-10	Blood	–	4.1E-05	–	4.1E-05
			Chloroethane	–	1.7E-10	–	–	1.7E-10	Fetus	–	2.4E-07	–	2.4E-07
			Ethylbenzene	–	4.0E-10	–	–	4.0E-10	Developmental	–	4.2E-06	–	4.2E-06
			Methyl-t-butyl ether	–	2.6E-11	–	–	2.6E-11	Liver, Kidney, Eyes	–	1.0E-06	–	1.0E-06
			Naphthalene	–	–	–	–	–	Nasal	–	1.4E-01	–	1.4E-01
			Tetrachloroethene	–	3.1E-10	–	–	3.1E-10	Liver, Kidney	–	2.1E-06	–	2.1E-06
			Trichloroethene	–	1.5E-08	–	–	1.5E-08	CNS, Liver, Endocrine	–	4.4E-05	–	4.4E-05
			Vinyl chloride	–	3.8E-09	–	–	3.8E-09	Liver	–	5.0E-05	–	5.0E-05
			Xylene (Total)	–	–	–	–	–	CNS	–	3.3E-04	–	3.3E-04

TABLE H2-9.1.7.CTE
EPA RAGS PART D TABLE 9
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS
FUTURE REDEVELOPED CHILD RESIDENT
SITE 09, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future-Redeveloped
Receptor Population:	Resident
Receptor Age:	Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
		Exposure Point Total		–	3.4E-08	–	–	3.4E-08		–	1.8E-01	–	1.8E-01
	Exposure Medium Total							4.3E-04					1.5E+01
Medium Total								4.3E-04					1.5E+01
Receptor Total							Receptor Risk Total	4.3E-04				Receptor HI Total	1.5E+01

Notes:

–	Not Applicable or Not Available
CNS	Central nervous system
HI	Hazard Index
CTE	Central tendency exposure
VOC	Volatile organic compound

Total Organ 1 (Nervous System) HI Across All Media =	6.4E+00
Total Organ 2 (Blood) HI Across All Media =	1.3E+00
Total Organ 3 (Respiratory) HI Across All Media =	3.1E+00
Total Organ 4 (Whole Body) HI Across All Media =	3.1E+00
Total Organ 5 (Skin) HI Across All Media =	2.9E+00
Total Organ 6 (Gastrointestinal System) HI Across All Media =	7.9E-05
Total Organ 7 (Body Weight) HI Across All Media =	2.2E+00
Total Organ 8 (Lung) HI Across All Media =	1.4E+00
Total Organ 9 (Liver) HI Across All Media =	7.1E-01
Total Organ 10 (Cholesterol) HI Across All Media =	6.7E-01
Total Organ 11 (Longevity) HI Across All Media =	6.7E-01
Total Organ 12 (Kidney) HI Across All Media =	5.2E-01
Total Organ 13 (Fetus) HI Across All Media =	5.2E-01
Total Organ 14 (Nasal) HI Across All Media =	3.3E-01
Total Organ 15 (Death) HI Across All Media =	2.0E-02
Total Organ 16 (Unknown Systems) HI Across All Media =	7.9E-03
Total Organ 17 (No Observed Effect) HI Across All Media =	3.9E-03
Total Organ 18 (Eyes) HI Across All Media =	3.6E-04
Total Organ 19 (Endocrine system) HI Across All Media =	4.4E-05
Total Organ 20 (Developmental) HI Across All Media =	4.2E-06

HHRA RISK TABLES

Central Tendency Exposure
Site 13
Alameda Point, Alameda, California

TABLE H2-9.2.1.CTE
EPA RAGS PART D TABLE 9
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS
CURRENT INDUSTRIAL WORKER
SITE 13, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future
Receptor Population:	Industrial Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil (0-2)	Soil	Site Soil	Arsenic	2.2E-07	–	8.8E-09	–	2.3E-07	Skin	7.7E-03	–	3.1E-04	8.0E-03
			Benz(a)anthracene	9.2E-10	–	1.6E-10	–	1.1E-09	–	–	–	–	–
			Benzo(a)pyrene	8.5E-09	–	1.5E-09	–	1.0E-08	–	–	–	–	–
			Benzo(b)fluoranthene	8.5E-10	–	1.5E-10	–	1.0E-09	–	–	–	–	–
			Benzo(k)fluoranthene	6.6E-11	–	1.1E-11	–	7.8E-11	–	–	–	–	–
			Chromium	–	–	–	–	–	No observed effect	9.9E-06	–	1.3E-07	1.0E-05
			Dibenz(a,h)anthracene	4.1E-09	–	7.0E-10	–	4.8E-09	–	–	–	–	–
			Indeno(1,2,3-cd)pyrene	6.9E-10	–	1.2E-10	–	8.1E-10	–	–	–	–	–
			Lead	–	–	–	–	–	–	–	–	–	–
			Chemical Total	2.4E-07	–	1.1E-08	–	2.5E-07		7.7E-03	–	3.1E-04	8.0E-03
		Exposure Point Total						2.5E-07					8.0E-03
	Exposure Medium Total							2.5E-07					8.0E-03
	Air	Outdoor Air (Particulates and VOCs)	Arsenic	–	8.5E-11	–	–	8.5E-11	–	–	–	–	–
			Benz(a)anthracene	–	3.5E-14	–	–	3.5E-14	–	–	–	–	–
			Benzo(a)pyrene	–	3.2E-13	–	–	3.2E-13	–	–	–	–	–
			Benzo(b)fluoranthene	–	3.2E-14	–	–	3.2E-14	–	–	–	–	–
			Benzo(k)fluoranthene	–	2.5E-15	–	–	2.5E-15	–	–	–	–	–
			Chromium	–	–	–	–	–	–	–	–	–	–
			Dibenz(a,h)anthracene	–	1.6E-13	–	–	1.6E-13	–	–	–	–	–
			Indeno(1,2,3-cd)pyrene	–	2.6E-14	–	–	2.6E-14	–	–	–	–	–
			Lead	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	8.5E-11	–	–	8.5E-11		–	–	–	0.0E+00
		Exposure Point Total						8.5E-11					0.0E+00
	Exposure Medium Total							8.5E-11					0.0E+00
Medium Total								2.5E-07					8.0E-03
Receptor Total							Receptor Risk Total	2.5E-07				Receptor HI Total	8.0E-03

Notes:

–	Not Applicable or Not Available
GI	Gastrointestinal
HI	Hazard Index
CTE	Central tendency exposure
VOC	Volatile organic compound

TABLE H2-9.2.2.CTE
EPA RAGS PART D TABLE 9
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS
CURRENT CONSTRUCTION WORKER
SITE 13, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	*Future*
Receptor Population:	Construction Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil (0-2)	Soil	Site Soil	Arsenic	2.7E-08	–	2.7E-09	–	3.0E-08	Skin	4.2E-03	–	4.2E-04	4.6E-03
			Benz(a)anthracene	1.1E-10	–	4.8E-11	–	1.6E-10	–	–	–	–	–
			Benzo(a)pyrene	1.0E-09	–	4.4E-10	–	1.5E-09	–	–	–	–	–
			Benzo(b)fluoranthene	1.0E-10	–	4.5E-11	–	1.5E-10	–	–	–	–	–
			Benzo(k)fluoranthene	8.1E-12	–	3.5E-12	–	1.2E-11	–	–	–	–	–
			Chromium	–	–	–	–	–	No observed effect	5.4E-06	–	1.8E-07	5.6E-06
			Dibenz(a,h)anthracene	5.0E-10	–	2.1E-10	–	7.1E-10	–	–	–	–	–
			Indeno(1,2,3-cd)pyrene	8.4E-11	–	3.6E-11	–	1.2E-10	–	–	–	–	–
			Lead	–	–	–	–	–	–	–	–	–	–
			Chemical Total	2.9E-08	–	3.5E-09	–	3.3E-08		4.2E-03	–	4.2E-04	4.7E-03
		Exposure Point Total						3.3E-08					4.7E-03
	Exposure Medium Total							3.3E-08					4.7E-03
	Air	Outdoor Air (Particulates and VOCs)	Arsenic	–	4.1E-11	–	–	4.1E-11	–	–	–	–	–
			Benz(a)anthracene	–	1.7E-14	–	–	1.7E-14	–	–	–	–	–
			Benzo(a)pyrene	–	1.6E-13	–	–	1.6E-13	–	–	–	–	–
			Benzo(b)fluoranthene	–	1.6E-14	–	–	1.6E-14	–	–	–	–	–
			Benzo(k)fluoranthene	–	1.2E-15	–	–	1.2E-15	–	–	–	–	–
			Chromium	–	–	–	–	–	–	–	–	–	–
			Dibenz(a,h)anthracene	–	7.6E-14	–	–	7.6E-14	–	–	–	–	–
			Indeno(1,2,3-cd)pyrene	–	1.3E-14	–	–	1.3E-14	–	–	–	–	–
			Lead	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	4.1E-11	–	–	4.1E-11		–	–	–	0.0E+00
		Exposure Point Total						4.1E-11					0.0E+00
	Exposure Medium Total							4.1E-11					0.0E+00
Medium Total								3.3E-08					4.7E-03
Receptor Total							Receptor Risk Total	3.3E-08				Receptor HI Total	4.7E-03

Notes:

–	Not Applicable or Not Available
GI	Gastrointestinal
HI	Hazard Index
CTE	Central tendency exposure

TABLE H2-9.2.3.CTE
EPA RAGS PART D TABLE 9
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS
CURRENT ADULT RESIDENT
SITE 13, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future
Receptor Population:	Resident
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil (0-2)	Soil	Site Soil	Arsenic	7.1E-07	–	2.4E-08	–	7.4E-07	Skin	1.2E-02	–	4.2E-04	1.3E-02
			Benz(a)anthracene	2.9E-09	–	4.4E-10	–	3.4E-09	–	–	–	–	–
			Benzo(a)pyrene	2.7E-08	–	4.0E-09	–	3.1E-08	–	–	–	–	–
			Benzo(b)fluoranthene	2.7E-09	–	4.0E-10	–	3.1E-09	–	–	–	–	–
			Benzo(k)fluoranthene	2.1E-10	–	3.1E-11	–	2.4E-10	–	–	–	–	–
			Chromium	–	–	–	–	–	No observed effect	1.6E-05	–	1.8E-07	1.6E-05
			Dibenz(a,h)anthracene	1.3E-08	–	1.9E-09	–	1.5E-08	–	–	–	–	–
			Indeno(1,2,3-cd)pyrene	2.2E-09	–	3.3E-10	–	2.5E-09	–	–	–	–	–
			Lead	–	–	–	–	–	–	–	–	–	–
			Chemical Total	7.6E-07	–	3.2E-08	–	7.9E-07		1.2E-02	–	4.2E-04	1.3E-02
		Exposure Point Total						7.9E-07					1.3E-02
	Exposure Medium Total							7.9E-07					1.3E-02
	Homegrown Produce	Homegrown Produce	Arsenic	9.8E-07	–	–	–	9.8E-07	Skin	1.7E-02	–	–	1.7E-02
			Benz(a)anthracene	3.6E-09	–	–	–	3.6E-09	–	–	–	–	–
			Benzo(a)pyrene	2.6E-08	–	–	–	2.6E-08	–	–	–	–	–
			Benzo(b)fluoranthene	2.4E-09	–	–	–	2.4E-09	–	–	–	–	–
			Benzo(k)fluoranthene	1.8E-10	–	–	–	1.8E-10	–	–	–	–	–
			Chromium	–	–	–	–	–	No observed effect	–	–	–	–
			Dibenz(a,h)anthracene	1.9E-08	–	–	–	1.9E-08	–	–	–	–	–
			Indeno(1,2,3-cd)pyrene	1.5E-09	–	–	–	1.5E-09	–	–	–	–	–
			Lead	–	–	–	–	–	–	–	–	–	–
			Chemical Total	1.0E-06	–	–	–	1.0E-06		1.7E-02	–	–	1.7E-02
		Exposure Point Total						1.0E-06					1.7E-02
	Exposure Medium Total							1.0E-06					1.7E-02
	Air	Outdoor Air (Particulates and VOCs)	Arsenic	–	9.0E-11	–	–	9.0E-11	–	–	–	–	–
			Benz(a)anthracene	–	3.7E-14	–	–	3.7E-14	–	–	–	–	–
			Benzo(a)pyrene	–	3.4E-13	–	–	3.4E-13	–	–	–	–	–
			Benzo(b)fluoranthene	–	3.4E-14	–	–	3.4E-14	–	–	–	–	–
			Benzo(k)fluoranthene	–	2.7E-15	–	–	2.7E-15	–	–	–	–	–
			Chromium	–	–	–	–	–	–	–	–	–	–
			Dibenz(a,h)anthracene	–	1.6E-13	–	–	1.6E-13	–	–	–	–	–
			Indeno(1,2,3-cd)pyrene	–	2.8E-14	–	–	2.8E-14	–	–	–	–	–
			Lead	–	–	–	–	–	–	–	–	–	–

TABLE H2-9.2.3.CTE
EPA RAGS PART D TABLE 9
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS
CURRENT ADULT RESIDENT
SITE 13, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future
Receptor Population:	Resident
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			Chemical Total	–	9.0E-11	–	–	9.0E-11		–	–	–	0.0E+00
		Exposure Point Total						9.0E-11					0.0E+00
	Exposure Medium Total							9.0E-11					0.0E+00
Medium Total								1.8E-06					3.0E-02
Groundwater	Groundwater	Tap Water (oral/dermal)	1,2-Dichloroethane	6.1E-08	–	8.3E-10	–	6.2E-08	Kidney, Death	1.8E-04	–	2.4E-06	1.8E-04
			2-Methylnaphthalene	–	–	–	–	–	Lung	1.3E-02	–	1.9E-03	1.5E-02
			Arsenic	2.9E-05	–	9.2E-08	–	2.9E-05	Skin	4.9E-01	–	1.6E-03	5.0E-01
			Benzene	1.8E-07	–	1.2E-08	–	1.9E-07	Blood	6.2E-03	–	4.2E-04	6.7E-03
			Ethylbenzene	5.7E-09	–	9.0E-10	–	6.6E-09	Kidney, Liver	1.2E-04	–	1.8E-05	1.3E-04
			Manganese	–	–	–	–	–	CNS	6.2E+00	–	2.0E-02	6.3E+00
			Naphthalene	–	–	–	–	–	Body Weight	1.2E-02	–	1.8E-03	1.4E-02
			Pentachlorophenol	2.1E-06	–	2.6E-06	–	4.7E-06	–	4.5E-03	–	5.6E-03	1.0E-02
			Thallium	–	–	–	–	–	Liver, Blood	3.6E-01	–	1.2E-03	3.6E-01
			Trichloroethene	5.3E-07	–	2.0E-08	–	5.5E-07	Liver, Kidney, Fetus	3.4E-02	–	1.3E-03	3.6E-02
		Exposure Point Total		3.1E-05	–	2.7E-06	–	3.4E-05		7.2E+00	–	3.4E-02	7.2E+00
		Tap Water (inhalation)	1,2-Dichloroethane	–	1.9E-10	–	–	1.9E-10	GI, Liver	–	1.2E-05	–	1.2E-05
			2-Methylnaphthalene	–	–	–	–	–	Nasal	–	4.1E-04	–	4.1E-04
			Benzene	–	2.7E-10	–	–	2.7E-10	Blood	–	9.0E-06	–	9.0E-06
			Ethylbenzene	–	1.8E-11	–	–	1.8E-11	Developmental	–	1.2E-07	–	1.2E-07
			Naphthalene	–	–	–	–	–	Nasal	–	8.5E-04	–	8.5E-04
			Trichloroethene	–	1.6E-09	–	–	1.6E-09	CNS, Liver, Endocrine	–	3.2E-06	–	3.2E-06
		Exposure Point Total		–	2.1E-09	–	–	2.1E-09		–	1.3E-03	–	1.3E-03
	Exposure Medium Total							3.4E-05					7.2E+00
Medium Total								3.4E-05					7.2E+00
Receptor Total							Receptor Risk Total	3.6E-05				Receptor HI Total	7.2E+00

Notes:

–	Not Applicable or Not Available
CNS	Central nervous system
HI	Hazard index
CTE	Central tendency exposure
VOC	Volatile organic compound

Total Organ 1 (Nervous System) HI Across All Media =	6.3E+00
Total Organ 2 (Blood) HI Across All Media =	3.7E-01
Total Organ 3 (Gastrointestinal System) HI Across All Media =	1.2E-05
Total Organ 4 (Skin) HI Across All Media =	5.2E-01
Total Organ 5 (Liver) HI Across All Media =	4.0E-01
Total Organ 6 (Kidney) HI Across All Media =	3.6E-02
Total Organ 7 (Fetus) HI Across All Media =	3.6E-02
Total Organ 8 (Lung) HI Across All Media =	1.5E-02

TABLE H2-9.2.3.CTE
EPA RAGS PART D TABLE 9
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS
CURRENT ADULT RESIDENT
SITE 13, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future
Receptor Population:	Resident
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total

Total Organ 9 (Body Weight) HI Across All Media =	1.4E-02
Total Organ 10 (Unknown Systems) HI Across All Media =	1.0E-02
Total Organ 11 (Nasal) HI Across All Media =	1.3E-03
Total Organ 12 (Death) HI Across All Media =	1.8E-04
Total Organ 13 (No Observed Effect) HI Across All Media =	1.6E-05
Total Organ 14 (Endocrine System) HI Across All Media =	3.2E-06
Total Organ 15 (Developmental) HI Across All Media =	1.2E-07

TABLE H2-9.2.4.CTE
EPA RAGS PART D TABLE 9
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS
CURRENT CHILD RESIDENT
SITE 13, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future
Receptor Population:	Resident
Receptor Age:	Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil (0-2)	Soil	Site Soil	Arsenic	4.4E-06	–	1.5E-07	–	4.6E-06	Skin	1.2E-01	–	3.9E-03	1.2E-01
			Benz(a)anthracene	1.8E-08	–	2.7E-09	–	2.1E-08	–	–	–	–	–
			Benzo(a)pyrene	1.7E-07	–	2.5E-08	–	1.9E-07	–	–	–	–	–
			Benzo(b)fluoranthene	1.7E-08	–	2.5E-09	–	1.9E-08	–	–	–	–	–
			Benzo(k)fluoranthene	1.3E-09	–	1.9E-10	–	1.5E-09	–	–	–	–	–
			Chromium	–	–	–	–	–	No observed effect	1.5E-04	–	1.7E-06	1.5E-04
			Dibenz(a,h)anthracene	8.2E-08	–	1.2E-08	–	9.3E-08	–	–	–	–	–
			Indeno(1,2,3-cd)pyrene	1.4E-08	–	2.0E-09	–	1.6E-08	–	–	–	–	–
			Lead	–	–	–	–	–	–	–	–	–	–
			Chemical Total	4.7E-06	–	1.9E-07	–	4.9E-06		1.2E-01	–	3.9E-03	1.2E-01
		Exposure Point Total						4.9E-06					1.2E-01
	Exposure Medium Total							4.9E-06					1.2E-01
	Homegrown Produce	Homegrown Produce	Arsenic	6.5E-07	–	–	–	6.5E-07	Skin	1.7E-02	–	–	1.7E-02
			Benz(a)anthracene	2.4E-09	–	–	–	2.4E-09	–	–	–	–	–
			Benzo(a)pyrene	1.7E-08	–	–	–	1.7E-08	–	–	–	–	–
			Benzo(b)fluoranthene	1.6E-09	–	–	–	1.6E-09	–	–	–	–	–
			Benzo(k)fluoranthene	1.2E-10	–	–	–	1.2E-10	–	–	–	–	–
			Chromium	–	–	–	–	–	No observed effect	–	–	–	–
			Dibenz(a,h)anthracene	1.2E-08	–	–	–	1.2E-08	–	–	–	–	–
			Indeno(1,2,3-cd)pyrene	1.0E-09	–	–	–	1.0E-09	–	–	–	–	–
			Lead	–	–	–	–	–	–	–	–	–	–
			Chemical Total	6.8E-07	–	–	–	6.8E-07		1.7E-02	–	–	1.7E-02
		Exposure Point Total						6.8E-07					1.7E-02
	Exposure Medium Total							6.8E-07					1.7E-02
	Air	Outdoor Air (Particulates and VOCs)	Arsenic	–	1.4E-10	–	–	1.4E-10	–	–	–	–	–
			Benz(a)anthracene	–	5.8E-14	–	–	5.8E-14	–	–	–	–	–
			Benzo(a)pyrene	–	5.4E-13	–	–	5.4E-13	–	–	–	–	–
			Benzo(b)fluoranthene	–	5.4E-14	–	–	5.4E-14	–	–	–	–	–
			Benzo(k)fluoranthene	–	4.2E-15	–	–	4.2E-15	–	–	–	–	–
			Chromium	–	–	–	–	–	–	–	–	–	–
			Dibenz(a,h)anthracene	–	2.6E-13	–	–	2.6E-13	–	–	–	–	–
			Indeno(1,2,3-cd)pyrene	–	4.4E-14	–	–	4.4E-14	–	–	–	–	–
			Lead	–	–	–	–	–	–	–	–	–	–

TABLE H2-9.2.4.CTE
EPA RAGS PART D TABLE 9
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS
CURRENT CHILD RESIDENT
SITE 13, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future
Receptor Population:	Resident
Receptor Age:	Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total

Total Organ 9 (Body Weight) HI Across All Media =	4.4E-02
Total Organ 10 (Unknown Systems) HI Across All Media =	2.8E-02
Total Organ 11 (Nasal) HI Across All Media =	3.9E-03
Total Organ 12 (Death) HI Across All Media =	5.9E-04
Total Organ 13 (No Observed Effect) HI Across All Media =	1.5E-04
Total Organ 14 (Endocrine System) HI Across All Media =	9.9E-06
Total Organ 15 (Developmental) HI Across All Media =	3.8E-07

TABLE H2-9.2.5.CTE
EPA RAGS PART D TABLE 9
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS
FUTURE DEVELOPED CONSTRUCTION WORKER
SITE 13, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future-Developed
Receptor Population:	Construction Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil (0-8)	Soil	Site Soil	2-Methylnaphthalene	–	–	–	–	–	Lung	2.2E-05	–	–	2.2E-05
			Arsenic	2.2E-08	–	2.2E-09	–	2.5E-08	Skin	3.5E-03	–	3.5E-04	3.8E-03
			Benzene	3.9E-12	–	–	–	3.9E-12	Blood	1.2E-06	–	–	1.2E-06
			Benz(a)anthracene	1.3E-10	–	5.6E-11	–	1.9E-10	–	–	–	–	–
			Benzo(a)pyrene	1.2E-09	–	5.1E-10	–	1.7E-09	–	–	–	–	–
			Benzo(b)fluoranthene	1.1E-10	–	4.9E-11	–	1.6E-10	–	–	–	–	–
			Benzo(k)fluoranthene	1.0E-11	–	4.3E-12	–	1.4E-11	–	–	–	–	–
			Chromium	–	–	–	–	–	No observed effect	5.3E-06	–	1.7E-07	5.5E-06
			Chrysene	2.1E-12	–	8.9E-13	–	3.0E-12	–	–	–	–	–
			Dibenz(a,h)anthracene	5.9E-10	–	2.5E-10	–	8.4E-10	–	–	–	–	–
			Indeno(1,2,3-cd)pyrene	9.9E-11	–	4.3E-11	–	1.4E-10	–	–	–	–	–
			Lead	–	–	–	–	–	–	–	–	–	–
			Vanadium	–	–	–	–	–	No observed effect	8.9E-04	–	2.9E-05	9.2E-04
			Chemical Total	2.5E-08	–	3.1E-09	–	2.8E-08		4.4E-03	–	3.5E-04	4.8E-03
		Exposure Point Total						2.8E-08					4.8E-03
	Exposure Medium Total							2.8E-08					4.8E-03
	Air	Outdoor Air (Particulates and VOCs)	2-Methylnaphthalene	–	–	–	–	–	Nasal	–	1.1E-03	–	1.1E-03
			Arsenic	–	3.4E-11	–	–	3.4E-11	–	–	–	–	–
			Benzene	–	1.4E-10	–	–	1.4E-10	Blood	–	4.2E-05	–	4.2E-05
			Benz(a)anthracene	–	2.0E-14	–	–	2.0E-14	–	–	–	–	–
			Benzo(a)pyrene	–	1.8E-13	–	–	1.8E-13	–	–	–	–	–
			Benzo(b)fluoranthene	–	1.7E-14	–	–	1.7E-14	–	–	–	–	–
			Benzo(k)fluoranthene	–	1.5E-15	–	–	1.5E-15	–	–	–	–	–
			Chromium	–	–	–	–	–	–	–	–	–	–
			Chrysene	–	3.1E-16	–	–	3.1E-16	–	–	–	–	–
			Dibenz(a,h)anthracene	–	8.9E-14	–	–	8.9E-14	–	–	–	–	–
			Indeno(1,2,3-cd)pyrene	–	1.5E-14	–	–	1.5E-14	–	–	–	–	–
			Lead	–	–	–	–	–	–	–	–	–	–
			Vanadium	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	1.8E-10	–	–	1.8E-10		–	1.1E-03	–	1.1E-03
		Exposure Point Total						1.8E-10					1.1E-03
	Exposure Medium Total							1.8E-10					1.1E-03
Medium Total								2.8E-08					5.9E-03
Receptor Total							Receptor Risk Total	2.8E-08				Receptor HI Total	5.9E-03

TABLE H2-9.2.5.CTE
EPA RAGS PART D TABLE 9
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS
FUTURE DEVELOPED CONSTRUCTION WORKER
SITE 13, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future-Developed
Receptor Population:	Construction Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total

Notes:

–	Not Applicable or Not Available
HI	Hazard index
CTE	Central tendency exposure
VOC	Volatile organic compound

TABLE H2-9.2.6.CTE
EPA RAGS PART D TABLE 9
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS
FUTURE REDEVELOPED ADULT RESIDENT
SITE 13, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future-Redeveloped
Receptor Population:	Resident
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil (0-8)	Soil	Site Soil	2-Methylnaphthalene	–	–	–	–	–	Lung	6.6E-05	–	–	6.6E-05
			Arsenic	5.9E-07	–	2.0E-08	–	6.1E-07	Skin	1.0E-02	–	3.5E-04	1.1E-02
			Benzene	1.0E-10	–	–	–	1.0E-10	Blood	3.6E-06	–	–	3.6E-06
			Benz(a)anthracene	3.4E-09	–	5.1E-10	–	3.9E-09	–	–	–	–	–
			Benzo(a)pyrene	3.1E-08	–	4.6E-09	–	3.6E-08	–	–	–	–	–
			Benzo(b)fluoranthene	3.0E-09	–	4.4E-10	–	3.4E-09	–	–	–	–	–
			Benzo(k)fluoranthene	2.6E-10	–	3.9E-11	–	3.0E-10	–	–	–	–	–
			Chromium	–	–	–	–	–	No observed effect	1.5E-05	–	1.8E-07	1.6E-05
			Chrysene	5.5E-11	–	8.1E-12	–	6.3E-11	–	–	–	–	–
			Dibenz(a,h)anthracene	1.5E-08	–	2.3E-09	–	1.8E-08	–	–	–	–	–
			Indeno(1,2,3-cd)pyrene	2.6E-09	–	3.9E-10	–	3.0E-09	–	–	–	–	–
			Lead	–	–	–	–	–	–	–	–	–	–
			Vanadium	–	–	–	–	–	No observed effect	2.6E-03	–	3.0E-05	2.6E-03
			Chemical Total	6.4E-07	–	2.8E-08	–	6.7E-07		1.3E-02	–	3.8E-04	1.3E-02
		Exposure Point Total						6.7E-07					1.3E-02
	Exposure Medium Total							6.7E-07					1.3E-02
	Homegrown Produce	Homegrown Produce	2-Methylnaphthalene	–	–	–	–	–	–	–	–	–	–
			Arsenic	8.0E-07	–	–	–	8.0E-07	Skin	1.4E-02	–	–	1.4E-02
			Benzene	–	–	–	–	–	–	–	–	–	–
			Benz(a)anthracene	4.2E-09	–	–	–	4.2E-09	–	–	–	–	–
			Benzo(a)pyrene	3.0E-08	–	–	–	3.0E-08	–	–	–	–	–
			Benzo(b)fluoranthene	2.6E-09	–	–	–	2.6E-09	–	–	–	–	–
			Benzo(k)fluoranthene	2.3E-10	–	–	–	2.3E-10	–	–	–	–	–
			Chromium	–	–	–	–	–	–	–	–	–	–
			Chrysene	6.0E-11	–	–	–	6.0E-11	–	–	–	–	–
			Dibenz(a,h)anthracene	2.2E-08	–	–	–	2.2E-08	–	–	–	–	–
			Indeno(1,2,3-cd)pyrene	1.8E-09	–	–	–	1.8E-09	–	–	–	–	–
			Lead	–	–	–	–	–	–	–	–	–	–
			Vanadium	–	–	–	–	–	–	–	–	–	–
			Chemical Total	8.7E-07	–	–	–	8.7E-07		1.4E-02	–	–	1.4E-02
		Exposure Point Total						8.7E-07					1.4E-02
	Exposure Medium Total							8.7E-07					1.4E-02
	Air	Outdoor Air (Particulates and VOCs)	2-Methylnaphthalene	–	–	–	–	–	Nasal	–	2.6E-04	–	2.6E-04
			Arsenic	–	7.4E-11	–	–	7.4E-11	–	–	–	–	–

TABLE H2-9.2.6.CTE
EPA RAGS PART D TABLE 9
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS
FUTURE REDEVELOPED ADULT RESIDENT
SITE 13, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future-Redeveloped
Receptor Population:	Resident
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			Benzene	–	3.1E-10	–	–	3.1E-10	Blood	–	1.0E-05	–	1.0E-05
			Benz(a)anthracene	–	4.3E-14	–	–	4.3E-14	–	–	–	–	–
			Benzo(a)pyrene	–	3.9E-13	–	–	3.9E-13	–	–	–	–	–
			Benzo(b)fluoranthene	–	3.7E-14	–	–	3.7E-14	–	–	–	–	–
			Benzo(k)fluoranthene	–	3.3E-15	–	–	3.3E-15	–	–	–	–	–
			Chromium	–	–	–	–	–	–	–	–	–	–
			Chrysene	–	6.9E-16	–	–	6.9E-16	–	–	–	–	–
			Dibenz(a,h)anthracene	–	1.9E-13	–	–	1.9E-13	–	–	–	–	–
			Indeno(1,2,3-cd)pyrene	–	3.3E-14	–	–	3.3E-14	–	–	–	–	–
			Lead	–	–	–	–	–	–	–	–	–	–
			Vanadium	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	3.8E-10	–	–	3.8E-10		–	2.8E-04	–	2.8E-04
		Exposure Point Total						3.8E-10					2.8E-04
	Exposure Medium Total							3.8E-10					2.8E-04
Medium Total								1.5E-06					2.7E-02
Groundwater	Groundwater	Tap Water (oral/dermal)	1,2-Dichloroethane	6.1E-08	–	8.3E-10	–	6.2E-08	Kidney, Death	1.8E-04	–	2.4E-06	1.8E-04
			2-Methylnaphthalene	–	–	–	–	–	Lung	1.3E-02	–	1.9E-03	1.5E-02
			Arsenic	2.9E-05	–	9.2E-08	–	2.9E-05	Skin	4.9E-01	–	1.6E-03	5.0E-01
			Benzene	1.8E-07	–	1.2E-08	–	1.9E-07	Blood	6.2E-03	–	4.2E-04	6.7E-03
			Ethylbenzene	5.7E-09	–	9.0E-10	–	6.6E-09	Kidney, Liver	1.2E-04	–	1.8E-05	1.3E-04
			Manganese	–	–	–	–	–	CNS	6.2E+00	–	2.0E-02	6.3E+00
			Naphthalene	–	–	–	–	–	Body Weight	1.2E-02	–	1.8E-03	1.4E-02
			Pentachlorophenol	2.1E-06	–	2.6E-06	–	4.7E-06	–	4.5E-03	–	5.6E-03	1.0E-02
			Thallium	–	–	–	–	–	Liver, Blood	3.6E-01	–	1.2E-03	3.6E-01
			Trichloroethene	5.3E-07	–	2.0E-08	–	5.5E-07	Liver, Kidney, Fetus	3.4E-02	–	1.3E-03	3.6E-02
		Exposure Point Total		3.1E-05	–	2.7E-06	–	3.4E-05		7.2E+00	–	3.4E-02	7.2E+00
		Tap Water (inhalation)	1,2-Dichloroethane	–	1.9E-10	–	–	1.9E-10	GI, Liver	–	1.2E-05	–	1.2E-05
			2-Methylnaphthalene	–	–	–	–	–	Nasal	–	4.1E-04	–	4.1E-04
			Benzene	–	2.7E-10	–	–	2.7E-10	Blood	–	9.0E-06	–	9.0E-06
			Ethylbenzene	–	1.8E-11	–	–	1.8E-11	Developmental	–	1.2E-07	–	1.2E-07
			Naphthalene	–	–	–	–	–	Nasal	–	8.5E-04	–	8.5E-04
			Trichloroethene	–	1.6E-09	–	–	1.6E-09	CNS, Liver, Endocrine	–	3.2E-06	–	3.2E-06

TABLE H2-9.2.6.CTE
EPA RAGS PART D TABLE 9
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS
FUTURE REDEVELOPED ADULT RESIDENT
SITE 13, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future-Redeveloped
Receptor Population:	Resident
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
		Exposure Point Total		–	2.1E-09	–	–	2.1E-09		–	1.3E-03	–	1.3E-03
	Exposure Medium Total							3.4E-05					7.2E+00
Medium Total								3.4E-05					7.2E+00
Receptor Total							Receptor Risk Total	3.6E-05				Receptor HI Total	7.2E+00

Notes:

–	Not Applicable or Not Available
CNS	Central nervous system
HI	Hazard index
CTE	Central tendency exposure
VOC	Volatile organic compound

Total Organ 1 (Nervous System) HI Across All Media =	6.3E+00
Total Organ 2 (Blood) HI Across All Media =	3.7E-01
Total Organ 3 (Gastrointestinal System) HI Across All Media =	1.2E-05
Total Organ 4 (Skin) HI Across All Media =	5.2E-01
Total Organ 5 (Liver) HI Across All Media =	4.0E-01
Total Organ 6 (Kidney) HI Across All Media =	3.6E-02
Total Organ 7 (Fetus) HI Across All Media =	3.6E-02
Total Organ 8 (Lung) HI Across All Media =	1.5E-02
Total Organ 9 (Body Weight) HI Across All Media =	1.4E-02
Total Organ 10 (Unknown Systems) HI Across All Media =	1.0E-02
Total Organ 11 (No Observed Effect) HI Across All Media =	2.7E-03
Total Organ 12 (Nasal) HI Across All Media =	1.5E-03
Total Organ 13 (Death) HI Across All Media =	1.8E-04
Total Organ 14 (Endocrine System) HI Across All Media =	3.2E-06
Total Organ 15 (Developmental) HI Across All Media =	1.2E-07

TABLE H2-9.2.7.CTE
EPA RAGS PART D TABLE 9
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS
FUTURE REDEVELOPED CHILD RESIDENT
SITE 13, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future-Redeveloped
Receptor Population:	Resident
Receptor Age:	Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil (0-8)	Soil	Site Soil	2-Methylnaphthalene	–	–	–	–	–	Lung	6.1E-04	–	–	6.1E-04
			Arsenic	3.7E-06	–	1.2E-07	–	3.8E-06	Skin	9.5E-02	–	3.2E-03	9.8E-02
			Benzene	6.3E-10	–	–	–	6.3E-10	Blood	3.4E-05	–	–	3.4E-05
			Benz(a)anthracene	2.1E-08	–	3.1E-09	–	2.4E-08	–	–	–	–	–
			Benzo(a)pyrene	2.0E-07	–	2.8E-08	–	2.2E-07	–	–	–	–	–
			Benzo(b)fluoranthene	1.9E-08	–	2.7E-09	–	2.1E-08	–	–	–	–	–
			Benzo(k)fluoranthene	1.6E-09	–	2.4E-10	–	1.9E-09	–	–	–	–	–
			Chromium	–	–	–	–	–	No observed effect	1.4E-04	–	1.6E-06	1.5E-04
			Chrysene	3.4E-10	–	4.9E-11	–	3.9E-10	–	–	–	–	–
			Dibenz(a,h)anthracene	9.6E-08	–	1.4E-08	–	1.1E-07	–	–	–	–	–
			Indeno(1,2,3-cd)pyrene	1.6E-08	–	2.4E-09	–	1.9E-08	–	–	–	–	–
			Lead	–	–	–	–	–	–	–	–	–	–
			Vanadium	–	–	–	–	–	No observed effect	2.4E-02	–	2.7E-04	2.5E-02
			Chemical Total	4.0E-06	–	1.7E-07	–	4.2E-06		1.2E-01	–	3.5E-03	1.2E-01
		Exposure Point Total						4.2E-06					1.2E-01
	Exposure Medium Total							4.2E-06					1.2E-01
	Homegrown Produce	Homegrown Produce	2-Methylnaphthalene	–	–	–	–	–	–	–	–	–	–
			Arsenic	5.3E-07	–	–	–	5.3E-07	Skin	1.4E-02	–	–	1.4E-02
			Benzene	–	–	–	–	–	–	–	–	–	–
			Benz(a)anthracene	2.8E-09	–	–	–	2.8E-09	–	–	–	–	–
			Benzo(a)pyrene	2.0E-08	–	–	–	2.0E-08	–	–	–	–	–
			Benzo(b)fluoranthene	1.7E-09	–	–	–	1.7E-09	–	–	–	–	–
			Benzo(k)fluoranthene	1.5E-10	–	–	–	1.5E-10	–	–	–	–	–
			Chromium	–	–	–	–	–	–	–	–	–	–
			Chrysene	4.0E-11	–	–	–	4.0E-11	–	–	–	–	–
			Dibenz(a,h)anthracene	1.5E-08	–	–	–	1.5E-08	–	–	–	–	–
			Indeno(1,2,3-cd)pyrene	1.2E-09	–	–	–	1.2E-09	–	–	–	–	–
			Lead	–	–	–	–	–	–	–	–	–	–
			Vanadium	–	–	–	–	–	–	–	–	–	–
			Chemical Total	5.7E-07	–	–	–	5.7E-07		1.4E-02	–	–	1.4E-02
		Exposure Point Total						5.7E-07					1.4E-02
	Exposure Medium Total							5.7E-07					1.4E-02
	Air	Outdoor Air (Particulates and VOCs)	2-Methylnaphthalene	–	–	–	–	–	Nasal	–	6.3E-04	–	6.3E-04
			Arsenic	–	1.2E-10	–	–	1.2E-10	–	–	–	–	–

TABLE H2-9.2.7.CTE
EPA RAGS PART D TABLE 9
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS
FUTURE REDEVELOPED CHILD RESIDENT
SITE 13, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future-Redeveloped
Receptor Population:	Resident
Receptor Age:	Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			Benzene	–	4.8E-10	–	–	4.8E-10	Blood	–	2.4E-05	–	2.4E-05
			Benz(a)anthracene	–	6.8E-14	–	–	6.8E-14	–	–	–	–	–
			Benzo(a)pyrene	–	6.2E-13	–	–	6.2E-13	–	–	–	–	–
			Benzo(b)fluoranthene	–	5.9E-14	–	–	5.9E-14	–	–	–	–	–
			Benzo(k)fluoranthene	–	5.2E-15	–	–	5.2E-15	–	–	–	–	–
			Chromium	–	–	–	–	–	–	–	–	–	–
			Chrysene	–	1.1E-15	–	–	1.1E-15	–	–	–	–	–
			Dibenz(a,h)anthracene	–	3.1E-13	–	–	3.1E-13	–	–	–	–	–
			Indeno(1,2,3-cd)pyrene	–	5.2E-14	–	–	5.2E-14	–	–	–	–	–
			Lead	–	–	–	–	–	–	–	–	–	–
			Vanadium	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	6.0E-10	–	–	6.0E-10		–	6.5E-04	–	6.5E-04
		Exposure Point Total						6.0E-10					6.5E-04
	Exposure Medium Total							6.0E-10					6.5E-04
Medium Total								4.8E-06					1.4E-01
Groundwater	Groundwater	Tap Water (oral/dermal)	1,2-Dichloroethane	1.4E-07	–	1.2E-09	–	1.4E-07	Kidney, Death	5.8E-04	–	5.3E-06	5.9E-04
			2-Methylnaphthalene	–	–	–	–	–	Lung	4.2E-02	–	4.3E-03	4.7E-02
			Arsenic	6.3E-05	–	1.4E-07	–	6.4E-05	Skin	1.6E+00	–	3.6E-03	1.6E+00
			Benzene	3.9E-07	–	1.8E-08	–	4.1E-07	Blood	2.1E-02	–	9.5E-04	2.2E-02
			Ethylbenzene	1.3E-08	–	1.4E-09	–	1.4E-08	Kidney, Liver	3.8E-04	–	4.1E-05	4.2E-04
			Manganese	–	–	–	–	–	CNS	2.1E+01	–	4.5E-02	2.1E+01
			Naphthalene	–	–	–	–	–	Body Weight	4.0E-02	–	4.1E-03	4.4E-02
			Pentachlorophenol	4.6E-06	–	3.9E-06	–	8.5E-06	–	1.5E-02	–	1.3E-02	2.8E-02
			Thallium	–	–	–	–	–	Liver, Blood	1.2E+00	–	2.6E-03	1.2E+00
			Trichloroethene	1.2E-06	–	3.1E-08	–	1.2E-06	Liver, Kidney, Fetus	1.1E-01	–	3.0E-03	1.2E-01
		Exposure Point Total		7.0E-05	–	4.1E-06	–	7.4E-05		2.4E+01	–	7.7E-02	2.4E+01
		Tap Water (inhalation)	1,2-Dichloroethane	–	3.9E-10	–	–	3.9E-10	GI, Liver	–	3.6E-05	–	3.6E-05
			2-Methylnaphthalene	–	–	–	–	–	Nasal	–	1.3E-03	–	1.3E-03
			Benzene	–	5.6E-10	–	–	5.6E-10	Blood	–	2.8E-05	–	2.8E-05
			Ethylbenzene	–	3.7E-11	–	–	3.7E-11	Developmental	–	3.8E-07	–	3.8E-07
			Naphthalene	–	–	–	–	–	Nasal	–	2.7E-03	–	2.7E-03
			Trichloroethene	–	3.4E-09	–	–	3.4E-09	CNS, Liver, Endocrine	–	9.9E-06	–	9.9E-06

TABLE H2-9.2.7.CTE
EPA RAGS PART D TABLE 9
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS
FUTURE REDEVELOPED CHILD RESIDENT
SITE 13, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future-Redeveloped
Receptor Population:	Resident
Receptor Age:	Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
		Exposure Point Total		–	4.4E-09	–	–	4.4E-09		–	4.0E-03	–	4.0E-03
	Exposure Medium Total							7.4E-05					2.4E+01
Medium Total								7.4E-05					2.4E+01
Receptor Total							Receptor Risk Total	7.9E-05				Receptor HI Total	2.4E+01

Notes:

–	Not Applicable or Not Available
CNS	Central nervous system
CTE	Central tendency exposure
GI	Central tendency exposure
HI	Hazard Index
VOC	Volatile organic compound

Total Organ 1 (Nervous System) HI Across All Media =	2.1E+01
Total Organ 2 (Blood) HI Across All Media =	1.2E+00
Total Organ 3 (Gastrointestinal System) HI Across All Media =	3.6E-05
Total Organ 4 (Skin) HI Across All Media =	1.8E+00
Total Organ 5 (Liver) HI Across All Media =	1.3E+00
Total Organ 6 (Kidney) HI Across All Media =	1.2E-01
Total Organ 7 (Fetus) HI Across All Media =	1.2E-01
Total Organ 8 (Lung) HI Across All Media =	4.7E-02
Total Organ 9 (Body Weight) HI Across All Media =	4.4E-02
Total Organ 10 (Unknown Systems) HI Across All Media =	2.8E-02
Total Organ 11 (No Observed Effect) HI Across All Media =	2.5E-02
Total Organ 12 (Nasal) HI Across All Media =	4.6E-03
Total Organ 13 (Death) HI Across All Media =	5.9E-04
Total Organ 14 (Endocrine System) HI Across All Media =	9.9E-06
Total Organ 15 (Developmental) HI Across All Media =	3.8E-07

HHRA RISK TABLES

Central Tendency Exposure
Site 19
Alameda Point, Alameda, California

TABLE H2-9.3.1.CTE
EPA RAGS PART D TABLE 9
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS
CURRENT INDUSTRIAL WORKER
SITE 19, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	*Current/Future*
Receptor Population:	Industrial Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil (0-2)	Soil	Site Soil	Arsenic	1.8E-07	–	7.1E-09	–	1.9E-07	Skin	6.2E-03	–	2.4E-04	6.4E-03
			Benzo(a)pyrene	4.0E-09	–	6.9E-10	–	4.7E-09	–	–	–	–	–
			Chemical Total	1.8E-07	–	7.8E-09	–	1.9E-07		6.2E-03	–	2.4E-04	6.4E-03
		Exposure Point Total						1.9E-07					6.4E-03
	Exposure Medium Total							1.9E-07					6.4E-03
	Air	Outdoor Air (Particulates and VOCs)	Arsenic	–	6.8E-11	–	–	6.8E-11	–	–	–	–	–
			Benzo(a)pyrene	–	1.5E-13	–	–	1.5E-13	–	–	–	–	–
			Chemical Total	–	6.8E-11	–	–	6.8E-11		–	–	–	0.0E+00
		Exposure Point Total						6.8E-11					0.0E+00
	Exposure Medium Total							6.8E-11					0.0E+00
Medium Total								1.9E-07					6.4E-03
Receptor Total							Receptor Risk Total	1.9E-07				Receptor HI Total	6.4E-03

Notes:

GI	*Gastrointestinal*
HI	Hazard index
CTE	Central tendency exposure
VOC	Volatile organic compound
–	Not Applicable or Not Available

TABLE H2-9.3.2.CTE
EPA RAGS PART D TABLE 9
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS
CURRENT CONSTRUCTION WORKER
SITE 19, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Current/Future
Receptor Population:	Construction Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil (0-2)	Soil	Site Soil	Arsenic	2.2E-08	–	2.2E-09	–	2.4E-08	Skin	3.4E-03	–	3.4E-04	3.7E-03
			Benzo(a)pyrene	4.9E-10	–	2.1E-10	–	7.0E-10	–	–	–	–	–
			Chemical Total	2.2E-08	–	2.4E-09	–	2.5E-08		3.4E-03	–	3.4E-04	3.7E-03
		Exposure Point Total						2.5E-08					3.7E-03
	Exposure Medium Total							2.5E-08					3.7E-03
	Air	Outdoor Air (Particulates and VOCs)	Arsenic	–	3.3E-11	–	–	3.3E-11	–	–	–	–	–
			Benzo(a)pyrene	–	7.4E-14	–	–	7.4E-14	–	–	–	–	–
			Chemical Total	–	3.3E-11	–	–	3.3E-11		–	–	–	0.0E+00
		Exposure Point Total						3.3E-11					0.0E+00
	Exposure Medium Total							3.3E-11					0.0E+00
Medium Total								2.5E-08					3.7E-03
Receptor Total							Receptor Risk Total	2.5E-08				Receptor HI Total	3.7E-03

Notes:

GI Gastrointestinal

HI Hazard index

CTE Central tendency exposure

TABLE H2-9.3.3.CTE
EPA RAGS PART D TABLE 9
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS
CURRENT ADULT RESIDENT
SITE 19, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Current/Future
Receptor Population:	Resident
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil (0-2)	Soil	Site Soil	Arsenic	5.7E-07	–	2.0E-08	–	5.9E-07	Skin	9.9E-03	–	3.4E-04	1.0E-02
			Benzo(a)pyrene	1.3E-08	–	1.9E-09	–	1.5E-08	–	–	–	–	–
			Chemical Total	5.8E-07	–	2.1E-08	–	6.1E-07		9.9E-03	–	3.4E-04	1.0E-02
		Exposure Point Total						6.1E-07					1.0E-02
	Exposure Medium Total							6.1E-07					1.0E-02
	Homegrown Produce	Homegrown Produce	Arsenic	7.8E-07	–	–	–	7.8E-07	Skin	1.4E-02	–	–	1.4E-02
			Benzo(a)pyrene	1.2E-08	–	–	–	1.2E-08	–	–	–	–	–
			Chemical Total	7.9E-07	–	–	–	7.9E-07		1.4E-02	–	–	1.4E-02
		Exposure Point Total						7.9E-07					1.4E-02
	Exposure Medium Total							7.9E-07					1.4E-02
	Air	Outdoor Air (Particulates and VOCs)	Arsenic	–	7.2E-11	–	–	7.2E-11	–	–	–	–	–
			Benzo(a)pyrene	–	1.6E-13	–	–	1.6E-13	–	–	–	–	–
			Chemical Total	–	7.2E-11	–	–	7.2E-11		–	–	–	0.0E+00
		Exposure Point Total						7.2E-11					0.0E+00
	Exposure Medium Total							7.2E-11					0.0E+00
Medium Total								1.4E-06					2.4E-02
Groundwater	Groundwater	Tap Water (oral/dermal)	1,1-Dichloroethane	–	–	–	–	–	No observed effect	1.1E-03	–	2.4E-05	1.2E-03
			1,2-Dichloroethane	6.0E-08	–	8.1E-10	–	6.0E-08	Kidney, Death	1.7E-04	–	2.3E-06	1.7E-04
			1,2-Dichloropropane	9.6E-08	–	2.4E-09	–	9.8E-08	Nasal	9.9E-03	–	2.5E-04	1.0E-02
			Arsenic	1.2E-05	–	3.9E-08	–	1.2E-05	Skin	2.1E-01	–	6.8E-04	2.1E-01
			Benzene	4.5E-08	–	3.0E-09	–	4.8E-08	Blood	1.6E-03	–	1.1E-04	1.7E-03
			Manganese	–	–	–	–	–	CNS	4.1E+00	–	1.3E-02	4.1E+00
			Tetrachloroethene	5.2E-07	–	5.5E-08	–	5.8E-07	Liver	7.8E-03	–	8.3E-04	8.6E-03
			Trichloroethene	1.2E-06	–	4.8E-08	–	1.3E-06	Liver, Kidney, Fetus	8.1E-02	–	3.1E-03	8.4E-02
		Exposure Point Total		1.4E-05	–	1.5E-07	–	1.4E-05		4.4E+00	–	1.8E-02	4.5E+00
		Tap Water (inhalation)	1,1-Dichloroethane	–	–	–	–	–	Kidney	–	2.5E-06	–	2.5E-06
			1,2-Dichloroethane	–	1.8E-10	–	–	1.8E-10	GI, Liver	–	1.1E-05	–	1.1E-05
			1,2-Dichloropropane	–	3.0E-10	–	–	3.0E-10	Nasal	–	3.1E-05	–	3.1E-05
			Benzene	–	6.8E-11	–	–	6.8E-11	Blood	–	2.3E-06	–	2.3E-06
			Tetrachloroethene	–	3.1E-10	–	–	3.1E-10	Liver, Kidney	–	1.4E-06	–	1.4E-06
			Trichloroethene	–	3.8E-09	–	–	3.8E-09	CNS, Liver, Endocrine	–	7.5E-06	–	7.5E-06

TABLE H2-9.3.3.CTE
EPA RAGS PART D TABLE 9
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS
CURRENT ADULT RESIDENT
SITE 19, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Current/Future
Receptor Population:	Resident
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
		Exposure Point Total		–	4.7E-09	–	–	4.7E-09		–	5.6E-05	–	5.6E-05
	Exposure Medium Total							1.4E-05					4.5E+00
Medium Total								1.4E-05					4.5E+00
Receptor Total							Receptor Risk Total	1.6E-05				Receptor HI Total	4.5E+00

Notes:

CNS	Central nervous system
GI	Gastrointestinal
HI	Hazard index
CTE	Central tendency exposure
VOC	Volatile organic compound
–	Not Applicable or Not Available

Total Organ 1 (Nervous System) HI Across All Media =	4.1E+00
Total Organ 2 (Skin) HI Across All Media =	2.4E-01
Total Organ 3 (Liver) HI Across All Media =	9.2E-02
Total Organ 4 (Kidney) HI Across All Media =	8.4E-02
Total Organ 5 (Fetus) HI Across All Media =	8.4E-02
Total Organ 6 (Nasal) HI Across All Media =	1.0E-02
Total Organ 7 (Blood) HI Across All Media =	1.7E-03
Total Organ 8 (No Observed Effect) HI Across All Media =	1.2E-03
Total Organ 9 (Death) HI Across All Media =	1.7E-04
Total Organ 10 (Gastrointestinal System) HI Across All Media =	1.1E-05
Total Organ 11 (Endocrine system) HI Across All Media =	7.5E-06

TABLE H2-9.3.4.CTE
EPA RAGS PART D TABLE 9
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS
CURRENT CHILD RESIDENT
SITE 19, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Current/Future
Receptor Population:	Resident
Receptor Age:	Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil (0-2)	Soil	Site Soil	Arsenic	3.6E-06	–	1.2E-07	–	3.7E-06	Skin	9.2E-02	–	3.1E-03	9.5E-02
			Benzo(a)pyrene	8.0E-08	–	1.2E-08	–	9.2E-08	–	–	–	–	–
			Chemical Total	3.6E-06	–	1.3E-07	–	3.8E-06		9.2E-02	–	3.1E-03	9.5E-02
		Exposure Point Total						3.8E-06					9.5E-02
	Exposure Medium Total							3.8E-06					9.5E-02
	Homegrown Produce	Homegrown Produce	Arsenic	5.2E-07	–	–	–	5.2E-07	Skin	1.3E-02	–	–	1.3E-02
			Benzo(a)pyrene	8.0E-09	–	–	–	8.0E-09	–	–	–	–	–
			Chemical Total	5.3E-07	–	–	–	5.3E-07		1.3E-02	–	–	1.3E-02
		Exposure Point Total						5.3E-07					1.3E-02
	Exposure Medium Total							5.3E-07					1.3E-02
	Air	Outdoor Air (Particulates and VOCs)	Arsenic	–	1.1E-10	–	–	1.1E-10	–	–	–	–	–
			Benzo(a)pyrene	–	2.5E-13	–	–	2.5E-13	–	–	–	–	–
			Chemical Total	–	1.1E-10	–	–	1.1E-10		–	–	–	0.0E+00
		Exposure Point Total						1.1E-10					0.0E+00
	Exposure Medium Total							1.1E-10					0.0E+00
Medium Total								4.3E-06					1.1E-01
Groundwater	Groundwater	Tap Water (oral/dermal)	1,1-Dichloroethane	–	–	–	–	–	No observed effect	3.8E-03	–	5.5E-05	3.8E-03
			1,2-Dichloroethane	1.3E-07	–	1.2E-09	–	1.3E-07	Kidney, Death	5.7E-04	–	5.2E-06	5.7E-04
			1,2-Dichloropropane	2.1E-07	–	3.6E-09	–	2.2E-07	Nasal	3.3E-02	–	5.6E-04	3.4E-02
			Arsenic	2.7E-05	–	5.9E-08	–	2.7E-05	Skin	7.1E-01	–	1.5E-03	7.1E-01
			Benzene	1.0E-07	–	4.6E-09	–	1.0E-07	Blood	5.3E-03	–	2.4E-04	5.6E-03
			Manganese	–	–	–	–	–	CNS	1.4E+01	–	3.0E-02	1.4E+01
			Tetrachloroethene	1.2E-06	–	8.3E-08	–	1.2E-06	Liver	2.6E-02	–	1.9E-03	2.8E-02
			Trichloroethene	2.8E-06	–	7.2E-08	–	2.8E-06	Liver, Kidney, Fetus	2.7E-01	–	7.0E-03	2.8E-01
		Exposure Point Total		3.2E-05	–	2.2E-07	–	3.2E-05		1.5E+01	–	4.1E-02	1.5E+01
		Tap Water (inhalation)	1,1-Dichloroethane	–	–	–	–	–	Kidney	–	7.8E-06	–	7.8E-06
			1,2-Dichloroethane	–	3.8E-10	–	–	3.8E-10	GI, Liver	–	3.5E-05	–	3.5E-05
			1,2-Dichloropropane	–	6.1E-10	–	–	6.1E-10	Nasal	–	9.6E-05	–	9.6E-05
			Benzene	–	1.4E-10	–	–	1.4E-10	Blood	–	7.1E-06	–	7.1E-06
			Tetrachloroethene	–	6.4E-10	–	–	6.4E-10	Liver, Kidney	–	4.4E-06	–	4.4E-06
			Trichloroethene	–	8.0E-09	–	–	8.0E-09	CNS, Liver, Endocrine	–	2.3E-05	–	2.3E-05

TABLE H2-9.3.4.CTE
EPA RAGS PART D TABLE 9
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS
CURRENT CHILD RESIDENT
SITE 19, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Current/Future
Receptor Population:	Resident
Receptor Age:	Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
		Exposure Point Total		–	9.8E-09	–	–	9.8E-09		–	1.7E-04	–	1.7E-04
	Exposure Medium Total							3.2E-05					1.5E+01
Medium Total								3.2E-05					1.5E+01
Receptor Total							Receptor Risk Total	3.6E-05				Receptor HI Total	1.5E+01

Notes:

CNS	Central nervous system
HI	Hazard index
CTE	Central tendency exposure
VOC	Volatile organic compound
–	Not Applicable or Not Available

Total Organ 1 (Nervous System) HI Across All Media =	1.4E+01
Total Organ 2 (Skin) HI Across All Media =	8.2E-01
Total Organ 3 (Liver) HI Across All Media =	3.0E-01
Total Organ 4 (Kidney) HI Across All Media =	2.8E-01
Total Organ 5 (Fetus) HI Across All Media =	2.8E-01
Total Organ 6 (Nasal) HI Across All Media =	3.4E-02
Total Organ 7 (Blood) HI Across All Media =	5.6E-03
Total Organ 8 (No Observed Effect) HI Across All Media =	3.8E-03
Total Organ 9 (Death) HI Across All Media =	5.7E-04
Total Organ 10 (Gastrointestinal System) HI Across All Media =	3.5E-05
Total Organ 11 (Endocrine system) HI Across All Media =	2.3E-05

TABLE H2-9.3.5.CTE
EPA RAGS PART D TABLE 9
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS
FUTURE DEVELOPED CONSTRUCTION WORKER
SITE 19, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future-Developed
Receptor Population:	Construction Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil (0-8)	Soil	Site Soil	Arsenic	2.6E-08	–	2.6E-09	–	2.9E-08	Skin	4.1E-03	–	4.1E-04	4.5E-03
			Benzo(a)pyrene	4.6E-10	–	2.0E-10	–	6.5E-10	–	–	–	–	–
			Lead	–	–	–	–	–	–	–	–	–	–
			Chemical Total	2.7E-08	–	2.8E-09	–	3.0E-08		4.1E-03	–	4.1E-04	4.5E-03
		Exposure Point Total						3.0E-08					4.5E-03
	Exposure Medium Total							3.0E-08					4.5E-03
	Air	Outdoor Air (Particulates and VOCs)	Arsenic	–	4.0E-11	–	–	4.0E-11	–	–	–	–	–
			Benzo(a)pyrene	–	6.9E-14	–	–	6.9E-14	–	–	–	–	–
			Lead	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	4.0E-11	–	–	4.0E-11		–	–	–	0.0E+00
		Exposure Point Total						4.0E-11					0.0E+00
	Exposure Medium Total							4.0E-11					0.0E+00
Medium Total								3.0E-08					4.5E-03
Receptor Total							Receptor Risk Total	3.0E-08				Receptor HI Total	4.5E-03

Notes:

HI	Hazard index
CTE	Central tendency exposure
VOC	Volatile organic compound
–	Not Applicable or Not Available

TABLE H2-9.3.6.CTE
EPA RAGS PART D TABLE 9
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS
FUTURE REDEVELOPED ADULT RESIDENT
SITE 19, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future-Redeveloped
Receptor Population:	Resident
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil (0-8)	Soil	Site Soil	Arsenic	6.9E-07	–	2.4E-08	–	7.2E-07	Skin	1.2E-02	–	4.1E-04	1.2E-02
			Benzo(a)pyrene	1.2E-08	–	1.8E-09	–	1.4E-08	–	–	–	–	–
			Lead	–	–	–	–	–	–	–	–	–	–
			Chemical Total	7.1E-07	–	2.5E-08	–	7.3E-07		1.2E-02	–	4.1E-04	1.2E-02
		Exposure Point Total						7.3E-07					1.2E-02
	Exposure Medium Total							7.3E-07					1.2E-02
	Homegrown Produce	Homegrown Produce	Arsenic	9.5E-07	–	–	–	9.5E-07	Skin	1.6E-02	–	–	1.6E-02
			Benzo(a)pyrene	1.1E-08	–	–	–	1.1E-08	–	–	–	–	–
			Lead	–	–	–	–	–	–	–	–	–	–
			Chemical Total	9.6E-07	–	–	–	9.6E-07		1.6E-02	–	–	1.6E-02
		Exposure Point Total						9.6E-07					1.6E-02
	Exposure Medium Total							9.6E-07					1.6E-02
	Air	Outdoor Air (Particulates and VOCs)	Arsenic	–	8.7E-11	–	–	8.7E-11	–	–	–	–	–
			Benzo(a)pyrene	–	1.5E-13	–	–	1.5E-13	–	–	–	–	–
			Lead	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	8.7E-11	–	–	8.7E-11		–	–	–	0.0E+00
		Exposure Point Total						8.7E-11					0.0E+00
	Exposure Medium Total							8.7E-11					0.0E+00
Medium Total								1.7E-06					2.9E-02
Groundwater	Groundwater	Tap Water (oral/dermal)	1,1-Dichloroethane	–	–	–	–	–	No observed effect	1.1E-03	–	2.4E-05	1.2E-03
			1,2-Dichloroethane	6.0E-08	–	8.1E-10	–	6.0E-08	Kidney, Death	1.7E-04	–	2.3E-06	1.7E-04
			1,2-Dichloropropane	9.6E-08	–	2.4E-09	–	9.8E-08	Nasal	9.9E-03	–	2.5E-04	1.0E-02
			Arsenic	1.2E-05	–	3.9E-08	–	1.2E-05	Skin	2.1E-01	–	6.8E-04	2.1E-01
			Benzene	4.5E-08	–	3.0E-09	–	4.8E-08	Blood	1.6E-03	–	1.1E-04	1.7E-03
			Manganese	–	–	–	–	–	CNS	4.1E+00	–	1.3E-02	4.1E+00
			Tetrachloroethene	5.2E-07	–	5.5E-08	–	5.8E-07	Liver	7.8E-03	–	8.3E-04	8.6E-03
			Trichloroethene	1.2E-06	–	4.8E-08	–	1.3E-06	Liver, Kidney, Fetus	8.1E-02	–	3.1E-03	8.4E-02
		Exposure Point Total		1.4E-05	–	1.5E-07	–	1.4E-05		4.4E+00	–	1.8E-02	4.5E+00
		Tap Water (inhalation)	1,1-Dichloroethane	–	–	–	–	–	Kidney	–	2.5E-06	–	2.5E-06
			1,2-Dichloroethane	–	1.8E-10	–	–	1.8E-10	GI, Liver	–	1.1E-05	–	1.1E-05
			1,2-Dichloropropane	–	3.0E-10	–	–	3.0E-10	Nasal	–	3.1E-05	–	3.1E-05
			Benzene	–	6.8E-11	–	–	6.8E-11	Blood	–	2.3E-06	–	2.3E-06

TABLE H2-9.3.6.CTE
EPA RAGS PART D TABLE 9
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS
FUTURE REDEVELOPED ADULT RESIDENT
SITE 19, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future-Redeveloped
Receptor Population:	Resident
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			Tetrachloroethene	–	3.1E-10	–	–	3.1E-10	Liver, Kidney	–	1.4E-06	–	1.4E-06
			Trichloroethene	–	3.8E-09	–	–	3.8E-09	CNS, Liver, Endocrine	–	7.5E-06	–	7.5E-06
		Exposure Point Total		–	4.7E-09	–	–	4.7E-09		–	5.6E-05	–	5.6E-05
	Exposure Medium Total							1.4E-05					4.5E+00
Medium Total								1.4E-05					4.5E+00
Receptor Total							Receptor Risk Total	1.6E-05				Receptor HI Total	4.5E+00

Notes:

CNS	Central nervous system
HI	Hazard index
CTE	Central tendency exposure
VOC	Volatile organic compound
–	Not Applicable or Not Available

Total Organ 1 (Nervous System) HI Across All Media =	4.1E+00
Total Organ 2 (Liver) HI Across All Media =	9.2E-02
Total Organ 3 (Kidney) HI Across All Media =	8.4E-02
Total Organ 4 (Fetus) HI Across All Media =	8.4E-02
Total Organ 5 (Skin) HI Across All Media =	2.9E-02
Total Organ 6 (Nasal) HI Across All Media =	1.0E-02
Total Organ 7 (Blood) HI Across All Media =	1.7E-03
Total Organ 8 (No Observed Effect) HI Across All Media =	1.2E-03
Total Organ 9 (Death) HI Across All Media =	1.7E-04
Total Organ 10 (Gastrointestinal System) HI Across All Media =	1.1E-05
Total Organ 11 (Endocrine system) HI Across All Media =	7.5E-06

TABLE H2-9.3.7.CTE
EPA RAGS PART D TABLE 9
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS
FUTURE REDEVELOPED CHILD RESIDENT
SITE 19, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future-Redeveloped
Receptor Population:	Resident
Receptor Age:	Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil (0-8)	Soil	Site Soil	Arsenic	4.3E-06	–	1.4E-07	–	4.5E-06	Skin	1.1E-01	–	3.8E-03	1.2E-01
			Benzo(a)pyrene	7.5E-08	–	1.1E-08	–	8.6E-08	–	–	–	–	–
			Lead	–	–	–	–	–	–	–	–	–	–
			Chemical Total	4.4E-06	–	1.6E-07	–	4.5E-06		1.1E-01	–	3.8E-03	1.2E-01
		Exposure Point Total						4.5E-06					1.2E-01
	Exposure Medium Total							4.5E-06					1.2E-01
	Homegrown Produce	Homegrown Produce	Arsenic	6.3E-07	–	–	–	6.3E-07	Skin	1.6E-02	–	–	1.6E-02
			Benzo(a)pyrene	7.5E-09	–	–	–	7.5E-09	–	–	–	–	–
			Lead	–	–	–	–	–	–	–	–	–	–
			Chemical Total	6.4E-07	–	–	–	6.4E-07		1.6E-02	–	–	1.6E-02
		Exposure Point Total						6.4E-07					1.6E-02
	Exposure Medium Total							6.4E-07					1.6E-02
	Air	Outdoor Air (Particulates and VOCs)	Arsenic	–	1.4E-10	–	–	1.4E-10	–	–	–	–	–
			Benzo(a)pyrene	–	2.4E-13	–	–	2.4E-13	–	–	–	–	–
			Lead	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	1.4E-10	–	–	1.4E-10		–	–	–	0.0E+00
		Exposure Point Total						1.4E-10					0.0E+00
	Exposure Medium Total							1.4E-10					0.0E+00
Medium Total								5.2E-06					1.3E-01
Groundwater	Groundwater	Tap Water (oral/dermal)	1,1-Dichloroethane	–	–	–	–	–	No observed effect	3.8E-03	–	5.5E-05	3.8E-03
			1,2-Dichloroethane	1.3E-07	–	1.2E-09	–	1.3E-07	Kidney, Death	5.7E-04	–	5.2E-06	5.7E-04
			1,2-Dichloropropane	2.1E-07	–	3.6E-09	–	2.2E-07	Nasal	3.3E-02	–	5.6E-04	3.4E-02
			Arsenic	2.7E-05	–	5.9E-08	–	2.7E-05	Skin	7.1E-01	–	1.5E-03	7.1E-01
			Benzene	1.0E-07	–	4.6E-09	–	1.0E-07	Blood	5.3E-03	–	2.4E-04	5.6E-03
			Manganese	–	–	–	–	–	CNS	1.4E+01	–	3.0E-02	1.4E+01
			Tetrachloroethene	1.2E-06	–	8.3E-08	–	1.2E-06	Liver	2.6E-02	–	1.9E-03	2.8E-02
			Trichloroethene	2.8E-06	–	7.2E-08	–	2.8E-06	Liver, Kidney, Fetus	2.7E-01	–	7.0E-03	2.8E-01
		Exposure Point Total		3.2E-05	–	2.2E-07	–	3.2E-05		1.5E+01	–	4.1E-02	1.5E+01
		Tap Water (inhalation)	1,1-Dichloroethane	–	–	–	–	–	Kidney	–	7.8E-06	–	7.8E-06
			1,2-Dichloroethane	–	3.8E-10	–	–	3.8E-10	GI, Liver	–	3.5E-05	–	3.5E-05
			1,2-Dichloropropane	–	6.1E-10	–	–	6.1E-10	Nasal	–	9.6E-05	–	9.6E-05
			Benzene	–	1.4E-10	–	–	1.4E-10	Blood	–	7.1E-06	–	7.1E-06

HHRA RISK TABLES

Central Tendency Exposure
Site 22
Alameda Point, Alameda, California

TABLE H2-9.4.1.CTE
EPA RAGS PART D TABLE 9
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS
CURRENT INDUSTRIAL WORKER
SITE 22, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Current
Receptor Population:	Industrial Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil (0-2)	Soil	Site Soil	2-Methylnaphthalene	–	–	–	–	–	Lung	4.6E-06	–	–	4.6E-06
			Arsenic	1.9E-07	–	7.5E-09	–	2.0E-07	Skin	6.5E-03	–	2.6E-04	6.8E-03
			Benzo(a)pyrene	5.5E-09	–	9.4E-10	–	6.4E-09	–	–	–	–	–
			Lead	–	–	–	–	–	–	–	–	–	–
			Chemical Total	1.9E-07	–	8.4E-09	–	2.0E-07		6.6E-03	–	2.6E-04	6.8E-03
		Exposure Point Total						2.0E-07					6.8E-03
	Exposure Medium Total							2.0E-07					6.8E-03
	Air	Outdoor Air (Particulates and VOCs)	2-Methylnaphthalene	–	–	–	–	–	Nasal	–	1.8E-09	–	1.8E-09
			Arsenic	–	7.2E-11	–	–	7.2E-11	–	–	–	–	–
			Benzo(a)pyrene	–	2.1E-13	–	–	2.1E-13	–	–	–	–	–
			Lead	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	7.2E-11	–	–	7.2E-11		–	1.8E-09	–	1.8E-09
		Exposure Point Total						7.2E-11					1.8E-09
	Exposure Medium Total							7.2E-11					1.8E-09
Medium Total								2.0E-07					6.8E-03
Groundwater	Groundwater	Indoor Air (Vapor Intrusion)	Benzene	–	5.2E-08	–	–	5.2E-08	Blood	–	3.5E-03	–	3.5E-03
			Ethylbenzene	–	5.8E-09	–	–	5.8E-09	Developmental	–	8.1E-05	–	8.1E-05
			o-Xylene	–	–	–	–	–	CNS	–	1.9E-03	–	1.9E-03
			m-Xylene	–	–	–	–	–	CNS	–	3.5E-04	–	3.5E-04
			Toluene	–	–	–	–	–	CNS	–	5.6E-04	–	5.6E-04
			Chemical Total	–	5.8E-08	–	–	5.8E-08		–	6.4E-03	–	6.4E-03
		Exposure Point Total						5.8E-08					6.4E-03
	Exposure Medium Total							5.8E-08					6.4E-03
Medium Total								5.8E-08					6.4E-03
Receptor Total							Receptor Risk Total	2.6E-07				Receptor HI Total	1.3E-02

Notes:

HI	Hazard Index
CTE	Central tendency exposure
VOC	Volatile organic compound
–	Not Applicable or Not Available

TABLE H2-9.4.2.CTE
EPA RAGS PART D TABLE 9
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS
CURRENT CONSTRUCTION WORKER
SITE 22, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Current
Receptor Population:	Construction Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil (0-2)	Soil	Site Soil	2-Methylnaphthalene	–	–	–	–	–	Lung	2.5E-06	–	–	2.5E-06
			Arsenic	2.3E-08	–	2.3E-09	–	2.5E-08	Skin	3.6E-03	–	3.6E-04	3.9E-03
			Benzo(a)pyrene	6.7E-10	–	2.9E-10	–	9.6E-10	–	–	–	–	–
			Lead	–	–	–	–	–	–	–	–	–	–
			Chemical Total	2.4E-08	–	2.6E-09	–	2.6E-08		3.6E-03	–	3.6E-04	3.9E-03
		Exposure Point Total						2.6E-08					3.9E-03
	Exposure Medium Total							2.6E-08					3.9E-03
	Air	Outdoor Air (Particulates and VOCs)	2-Methylnaphthalene	–	–	–	–	–	Nasal	–	4.0E-09	–	4.0E-09
			Arsenic	–	3.5E-11	–	–	3.5E-11	–	–	–	–	–
			Benzo(a)pyrene	–	1.0E-13	–	–	1.0E-13	–	–	–	–	–
			Lead	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	3.5E-11	–	–	3.5E-11		–	4.0E-09	–	4.0E-09
		Exposure Point Total						3.5E-11					4.0E-09
	Exposure Medium Total							3.5E-11					4.0E-09
Medium Total								2.6E-08					3.9E-03
Receptor Total							Receptor Risk Total	2.6E-08				Receptor HI Total	3.9E-03

Notes:

HI	*Hazard Index*
CTE	Central tendency exposure
VOC	Volatile organic compound
–	Not Applicable or Not Available

TABLE H2-9.4.3.CTE
EPA RAGS PART D TABLE 9
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS
CURRENT ADULT RESIDENT
SITE 22, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	*Future*
Receptor Population:	Resident
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil (0-2)	Soil	Site Soil	2-Methylnaphthalene	–	–	–	–	–	Lung	7.4E-06	–	–	7.4E-06
			Arsenic	6.1E-07	–	2.1E-08	–	6.3E-07	Skin	1.0E-02	–	3.6E-04	1.1E-02
			Benzo(a)pyrene	1.8E-08	–	2.6E-09	–	2.0E-08	–	–	–	–	–
			Lead	–	–	–	–	–	–	–	–	–	–
			Chemical Total	6.2E-07	–	2.3E-08	–	6.5E-07		1.0E-02	–	3.6E-04	1.1E-02
		Exposure Point Total						6.5E-07					1.1E-02
	Exposure Medium Total							6.5E-07					1.1E-02
	Homegrown Produce	Homegrown Produce	2-Methylnaphthalene	–	–	–	–	–	–	–	–	–	–
			Arsenic	8.3E-07	–	–	–	8.3E-07	Skin	1.4E-02	–	–	1.4E-02
			Benzo(a)pyrene	1.7E-08	–	–	–	1.7E-08	–	–	–	–	–
			Lead	–	–	–	–	–	–	–	–	–	–
			Chemical Total	8.4E-07	–	–	–	8.4E-07		1.4E-02	–	–	1.4E-02
		Exposure Point Total						8.4E-07					1.4E-02
	Exposure Medium Total							8.4E-07					1.4E-02
	Air	Outdoor Air (Particulates and VOCs)	2-Methylnaphthalene	–	–	–	–	–	Nasal	–	9.8E-10	–	9.8E-10
			Arsenic	–	7.6E-11	–	–	7.6E-11	–	–	–	–	–
			Benzo(a)pyrene	–	2.2E-13	–	–	2.2E-13	–	–	–	–	–
			Lead	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	7.6E-11	–	–	7.6E-11		–	9.8E-10	–	9.8E-10
		Exposure Point Total						7.6E-11					9.8E-10
	Exposure Medium Total							7.6E-11					9.8E-10
Medium Total								1.5E-06					2.5E-02
Groundwater	Groundwater	Indoor Air (Vapor Intrusion)	Benzene	–	5.5E-07	–	–	5.5E-07	Blood	–	1.9E-02	–	1.9E-02
			Ethylbenzene	–	6.2E-08	–	–	6.2E-08	Developmental	–	4.3E-04	–	4.3E-04
			o-Xylene	–	–	–	–	–	CNS	–	1.0E-02	–	1.0E-02
			m-Xylene	–	–	–	–	–	CNS	–	1.8E-03	–	1.8E-03
			Toluene	–	–	–	–	–	CNS	–	3.0E-03	–	3.0E-03
			Chemical Total	–	6.1E-07	–	–	6.1E-07		–	3.4E-02	–	3.4E-02
		Exposure Point Total						6.1E-07					3.4E-02
	Exposure Medium Total							6.1E-07					3.4E-02

TABLE H2-9.4.3.CTE
EPA RAGS PART D TABLE 9
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS
CURRENT ADULT RESIDENT
SITE 22, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future
Receptor Population:	Resident
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
	Groundwater	Tap Water (oral/dermal)	1,2-Dichloroethane	4.6E-07	–	6.2E-09	–	4.7E-07	Kidney, Death	1.3E-03	–	1.8E-05	1.3E-03
			2-Methylnaphthalene	–	–	–	–	–	Lung	2.2E-02	–	3.3E-03	2.5E-02
			Arsenic	4.6E-05	–	1.5E-07	–	4.6E-05	Skin	7.9E-01	–	2.5E-03	8.0E-01
			Benzene	7.3E-05	–	4.9E-06	–	7.8E-05	Blood	2.6E+00	–	1.7E-01	2.8E+00
			Chloroform	–	–	–	–	–	Liver	4.3E-03	–	9.4E-05	4.4E-03
			Ethylbenzene	1.1E-06	–	1.8E-07	–	1.3E-06	Kidney, Liver	2.3E-02	–	3.7E-03	2.7E-02
			Manganese	–	–	–	–	–	CNS	4.1E+00	–	1.3E-02	4.1E+00
			Naphthalene	–	–	–	–	–	Body Weight	8.1E-02	–	1.2E-02	9.3E-02
			n-Propylbenzene	–	–	–	–	–	–	8.4E-02	–	1.9E-02	8.3E-02
			Tetrachloroethene	2.5E-07	–	2.6E-08	–	2.7E-07	Liver	3.7E-03	–	3.9E-04	4.1E-03
			Thallium	–	–	–	–	–	Liver, Blood	5.3E-01	–	1.7E-03	5.3E-01
			Toluene	–	–	–	–	–	Kidney, Liver	2.8E-02	–	2.8E-03	3.1E-02
			Trichloroethene	2.3E-06	–	9.0E-08	–	2.4E-06	Liver, Kidney, Fetus	1.5E-01	–	5.8E-03	1.6E-01
			Xylene (Total)	–	–	–	–	–	Death, Body Weight	3.7E-02	–	6.3E-03	4.3E-02
		Exposure Point Total		1.2E-04	–	5.4E-06	–	1.3E-04		8.4E+00	–	2.5E-01	8.6E+00
		Tap Water (inhalation)	1,2-Dichloroethane	–	1.4E-09	–	–	1.4E-09	GI, Liver	–	8.7E-05	–	8.7E-05
			2-Methylnaphthalene	–	–	–	–	–	Nasal	–	7.0E-04	–	7.0E-04
			Benzene	–	1.1E-07	–	–	1.1E-07	Blood	–	3.7E-03	–	3.7E-03
			Chloroform	–	1.4E-09	–	–	1.4E-09	–	–	1.5E-04	–	1.5E-04
			Ethylbenzene	–	3.5E-09	–	–	3.5E-09	Developmental	–	2.5E-05	–	2.5E-05
			Naphthalene	–	–	–	–	–	Nasal	–	5.8E-03	–	5.8E-03
			n-Propylbenzene	–	–	–	–	–	–	–	2.0E-04	–	2.0E-04
			Tetrachloroethene	–	1.5E-10	–	–	1.5E-10	Liver, Kidney	–	6.7E-07	–	6.7E-07
			Toluene	–	–	–	–	–	CNS	–	1.6E-04	–	1.6E-04
			Trichloroethene	–	7.2E-09	–	–	7.2E-09	CNS, Liver, Endocrine	–	1.4E-05	–	1.4E-05
			Xylene (Total)	–	–	–	–	–	CNS	–	7.9E-04	–	7.9E-04
		Exposure Point Total		–	1.2E-07	–	–	1.2E-07		–	1.2E-02	–	1.2E-02

TABLE H2-9.4.3.CTE
EPA RAGS PART D TABLE 9
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS
CURRENT ADULT RESIDENT
SITE 22, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future
Receptor Population:	Resident
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
	Exposure Medium Total							1.3E-04					8.6E+00
Medium Total								1.3E-04					8.7E+00
Receptor Total							Receptor Risk Total	1.3E-04				Receptor HI Total	8.7E+00

Notes:

CNS	Central nervous system
GI	Gastrointestinal
HI	Hazard index
CTE	Central tendency exposure
VOC	Volatile organic compound
–	Not Applicable or Not Available

Total Organ 1 (Nervous System) HI Across All Media =	4.1E+00
Total Organ 2 (Blood) HI Across All Media =	3.3E+00
Total Organ 3 (Skin) HI Across All Media =	8.2E-01
Total Organ 4 (Liver) HI Across All Media =	7.6E-01
Total Organ 5 (Kidney) HI Across All Media =	2.2E-01
Total Organ 6 (Gastrointestinal System) HI Across All Media =	8.7E-05
Total Organ 7 (Fetus) HI Across All Media =	1.6E-01
Total Organ 8 (Body Weight) HI Across All Media =	1.4E-01
Total Organ 9 (Unknown Systems) HI Across All Media =	8.4E-02
Total Organ 10 (Death) HI Across All Media =	4.5E-02
Total Organ 11 (Lung) HI Across All Media =	2.5E-02
Total Organ 12 (Nasal) HI Across All Media =	6.5E-03
Total Organ 13 (Developmental) HI Across All Media =	4.6E-04
Total Organ 14 (Endocrine system) HI Across All Media =	1.4E-05

TABLE H2-9.4.4.CTE
EPA RAGS PART D TABLE 9
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS
CURRENT CHILD RESIDENT
SITE 22, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future
Receptor Population:	Resident
Receptor Age:	Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil (0-2)	Soil	Site Soil	2-Methylnaphthalene	–	–	–	–	–	Lung	6.9E-05	–	–	6.9E-05
			Arsenic	3.8E-06	–	1.3E-07	–	3.9E-06	Skin	9.8E-02	–	3.3E-03	1.0E-01
			Benzo(a)pyrene	1.1E-07	–	1.6E-08	–	1.3E-07	–	–	–	–	–
			Lead	–	–	–	–	–	–	–	–	–	–
			Chemical Total	3.9E-06	–	1.4E-07	–	4.0E-06		9.8E-02	–	3.3E-03	1.0E-01
		Exposure Point Total						4.0E-06					1.0E-01
	Exposure Medium Total							4.0E-06					1.0E-01
	Homegrown Produce	Homegrown Produce	2-Methylnaphthalene	–	–	–	–	–	–	–	–	–	–
			Arsenic	5.5E-07	–	–	–	5.5E-07	Skin	1.4E-02	–	–	1.4E-02
			Benzo(a)pyrene	1.1E-08	–	–	–	1.1E-08	–	–	–	–	–
			Lead	–	–	–	–	–	–	–	–	–	–
			Chemical Total	5.6E-07	–	–	–	5.6E-07		1.4E-02	–	–	1.4E-02
		Exposure Point Total						5.6E-07					1.4E-02
	Exposure Medium Total							5.6E-07					1.4E-02
	Air	Outdoor Air (Particulates and VOCs)	2-Methylnaphthalene	–	–	–	–	–	Nasal	–	2.3E-09	–	2.3E-09
			Arsenic	–	1.2E-10	–	–	1.2E-10	–	–	–	–	–
			Benzo(a)pyrene	–	3.5E-13	–	–	3.5E-13	–	–	–	–	–
			Lead	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	1.2E-10	–	–	1.2E-10		–	2.3E-09	–	2.3E-09
		Exposure Point Total						1.2E-10					2.3E-09
	Exposure Medium Total							1.2E-10					2.3E-09
Medium Total								4.6E-06					1.2E-01
Groundwater	Groundwater	Indoor Air (Vapor Intrusion)	Benzene	–	8.7E-07	–	–	8.7E-07	Blood	–	4.4E-02	–	4.4E-02
			Ethylbenzene	–	9.7E-08	–	–	9.7E-08	Developmental	–	1.0E-03	–	1.0E-03
			o-Xylene	–	–	–	–	–	CNS	–	2.4E-02	–	2.4E-02
			m-Xylene	–	–	–	–	–	CNS	–	4.4E-03	–	4.4E-03
			Toluene	–	–	–	–	–	CNS	–	7.1E-03	–	7.1E-03
			Chemical Total	–	9.7E-07	–	–	9.7E-07		–	8.0E-02	–	8.0E-02
		Exposure Point Total						9.7E-07					8.0E-02
	Exposure Medium Total							9.7E-07					8.0E-02

TABLE H2-9.4.4.CTE
EPA RAGS PART D TABLE 9
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS
CURRENT CHILD RESIDENT
SITE 22, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future
Receptor Population:	Resident
Receptor Age:	Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
	Groundwater	Tap Water (oral/dermal)	1,2-Dichloroethane	1.0E-06	–	9.4E-09	–	1.0E-06	Kidney, Death	4.4E-03	–	4.0E-05	4.4E-03
			2-Methylnaphthalene	–	–	–	–	–	Lung	7.2E-02	–	7.4E-03	8.0E-02
			Arsenic	1.0E-04	–	2.2E-07	–	1.0E-04	Skin	2.6E+00	–	5.8E-03	2.6E+00
			Benzene	1.6E-04	–	7.4E-06	–	1.7E-04	Blood	8.6E+00	–	3.9E-01	9.0E+00
			Chloroform	–	–	–	–	–	Liver	1.4E-02	–	2.1E-04	1.5E-02
			Ethylbenzene	2.6E-06	–	2.7E-07	–	2.8E-06	Kidney, Liver	7.7E-02	–	8.3E-03	8.6E-02
			Manganese	–	–	–	–	–	CNS	1.4E+01	–	3.0E-02	1.4E+01
			Naphthalene	–	–	–	–	–	Body Weight	2.7E-01	–	2.8E-02	3.0E-01
			n-Propylbenzene	–	–	–	–	–	–	2.1E-01	–	4.3E-02	2.6E-01
			Tetrachloroethene	5.5E-07	–	3.9E-08	–	5.9E-07	Liver	1.2E-02	–	8.8E-04	1.3E-02
			Thallium	–	–	–	–	–	Liver, Blood	1.8E+00	–	3.9E-03	1.8E+00
			Toluene	–	–	–	–	–	Kidney, Liver	9.4E-02	–	6.4E-03	1.0E-01
			Trichloroethene	5.2E-06	–	1.4E-07	–	5.3E-06	Liver, Kidney, Fetus	5.1E-01	–	1.3E-02	5.2E-01
			Xylene (Total)	–	–	–	–	–	Death, Body Weight	1.2E-01	–	1.4E-02	1.4E-01
		Exposure Point Total		2.7E-04	–	8.1E-06	–	2.8E-04		2.8E+01	–	5.5E-01	2.9E+01
		Tap Water (inhalation)	1,2-Dichloroethane	–	3.0E-09	–	–	3.0E-09	GI, Liver	–	2.7E-04	–	2.7E-04
			2-Methylnaphthalene	–	–	–	–	–	Nasal	–	2.2E-03	–	2.2E-03
			Benzene	–	2.3E-07	–	–	2.3E-07	Blood	–	1.2E-02	–	1.2E-02
			Chloroform	–	2.9E-09	–	–	2.9E-09	–	–	4.8E-04	–	4.8E-04
			Ethylbenzene	–	7.4E-09	–	–	7.4E-09	Developmental	–	7.7E-05	–	7.7E-05
			Naphthalene	–	–	–	–	–	Nasal	–	1.8E-02	–	1.8E-02
			n-Propylbenzene	–	–	–	–	–	–	–	6.2E-04	–	6.2E-04
			Tetrachloroethene	–	3.0E-10	–	–	3.0E-10	Liver, Kidney	–	2.1E-06	–	2.1E-06
			Toluene	–	–	–	–	–	CNS	–	5.0E-04	–	5.0E-04
			Trichloroethene	–	1.5E-08	–	–	1.5E-08	CNS, Liver, Endocrine	–	4.4E-05	–	4.4E-05
			Xylene (Total)	–	–	–	–	–	CNS	–	2.5E-03	–	2.5E-03
		Exposure Point Total		–	2.6E-07	–	–	2.6E-07		–	3.6E-02	–	3.6E-02
	Exposure Medium Total							2.8E-04					2.9E+01

TABLE H2-9.4.4.CTE
EPA RAGS PART D TABLE 9
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS
CURRENT CHILD RESIDENT
SITE 22, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future
Receptor Population:	Resident
Receptor Age:	Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Medium Total								2.8E-04					2.9E+01
Receptor Total							Receptor Risk Total	2.9E-04				Receptor HI Total	2.9E+01

Notes:

CNS	Central nervous system
GI	Gastrointestinal
HI	Hazard Index
CTE	Central tendency exposure
VOC	Volatile organic compound
--	Not Applicable or Not Available

Total Organ 1 (Nervous System) HI Across All Media =	1.4E+01
Total Organ 2 (Blood) HI Across All Media =	1.1E+01
Total Organ 3 (Skin) HI Across All Media =	2.8E+00
Total Organ 4 (Liver) HI Across All Media =	2.5E+00
Total Organ 5 (Kidney) HI Across All Media =	7.1E-01
Total Organ 6 (Gastrointestinal System) HI Across All Media =	2.7E-04
Total Organ 7 (Fetus) HI Across All Media =	5.2E-01
Total Organ 8 (Body Weight) HI Across All Media =	4.3E-01
Total Organ 9 (Unknown Systems) HI Across All Media =	2.6E-01
Total Organ 10 (Death) HI Across All Media =	1.4E-01
Total Organ 11 (Lung) HI Across All Media =	8.0E-02
Total Organ 12 (Nasal) HI Across All Media =	2.0E-02
Total Organ 13 (Developmental) HI Across All Media =	1.1E-03
Total Organ 14 (Endocrine system) HI Across All Media =	4.4E-05

TABLE H2-9.4.5.CTE
EPA RAGS PART D TABLE 9
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS
FUTURE DEVELOPED CONSTRUCTION WORKER
SITE 22, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future-Developed
Receptor Population:	Construction Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil (0-8)	Soil	Site Soil	2-Methylnaphthalene	–	–	–	–	–	Lung	4.8E-05	–	–	4.8E-05
			Arsenic	2.2E-08	–	2.1E-09	–	2.4E-08	Skin	3.4E-03	–	3.3E-04	3.7E-03
			Benzene	1.1E-10	–	–	–	1.1E-10	Blood	3.4E-05	–	–	3.4E-05
			Benzo(a)pyrene	8.7E-10	–	3.7E-10	–	1.2E-09	–	–	–	–	–
			Ethylbenzene	7.0E-11	–	–	–	7.0E-11	Kidney, Liver	1.3E-05	–	–	1.3E-05
			Lead	–	–	–	–	–	–	–	–	–	–
			Toluene	–	–	–	–	–	Kidney, Liver	7.5E-06	–	–	7.5E-06
			Xylene (Total)	–	–	–	–	–	Death, Body Weight	4.1E-05	–	–	4.1E-05
			Chemical Total	2.3E-08	–	2.5E-09	–	2.5E-08		3.5E-03	–	3.3E-04	3.8E-03
		Exposure Point Total						2.5E-08					3.8E-03
	Exposure Medium Total							2.5E-08					3.8E-03
	Air	Outdoor Air (Particulates and VOCs)	2-Methylnaphthalene	–	–	–	–	–	Nasal	–	2.3E-03	–	2.3E-03
			Arsenic	–	3.3E-11	–	–	3.3E-11	–	–	–	–	–
			Benzene	–	3.9E-09	–	–	3.9E-09	Blood	–	1.2E-03	–	1.2E-03
			Benzo(a)pyrene	–	2.0E-11	–	–	2.0E-11	–	–	–	–	–
			Ethylbenzene	–	2.6E-09	–	–	2.6E-09	Developmental	–	1.6E-04	–	1.6E-04
			Lead	–	–	–	–	–	–	–	–	–	–
			Toluene	–	–	–	–	–	CNS	–	6.8E-04	–	6.8E-04
			Xylene (Total)	–	–	–	–	–	CNS	–	9.3E-03	–	9.3E-03
			Chemical Total	–	6.5E-09	–	–	6.5E-09		–	1.4E-02	–	1.4E-02
		Exposure Point Total						6.5E-09					1.4E-02
	Exposure Medium Total							6.5E-09					1.4E-02
Medium Total								3.2E-08					1.7E-02
Receptor Total							Receptor Risk Total	3.2E-08				Receptor HI Total	1.7E-02

Notes:

CNS	Central nervous system
HI	Hazard index
CTE	Central tendency exposure
VOC	Volatile organic compound
–	Not Applicable or Not Available

TABLE H2-9.4.6.CTE
EPA RAGS PART D TABLE 9
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS
FUTURE REDEVELOPED ADULT RESIDENT
SITE 22, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future-Redeveloped
Receptor Population:	Resident
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil (0-8)	Soil	Site Soil	2-Methylnaphthalene	–	–	–	–	–	Lung	1.4E-04	–	–	1.4E-04
			Arsenic	5.7E-07	–	1.9E-08	–	5.9E-07	Skin	9.8E-03	–	3.4E-04	1.0E-02
			Benzene	2.8E-09	–	–	–	2.8E-09	Blood	9.9E-05	–	–	9.9E-05
			Benzo(a)pyrene	2.3E-08	–	3.4E-09	–	2.6E-08	–	–	–	–	–
			Ethylbenzene	1.8E-09	–	–	–	1.8E-09	Kidney, Liver	3.7E-05	–	–	3.7E-05
			Lead	–	–	–	–	–	–	–	–	–	–
			Toluene	–	–	–	–	–	Kidney, Liver	2.2E-05	–	–	2.2E-05
			Xylene (Total)	–	–	–	–	–	Death, Body Weight	1.2E-04	–	–	1.2E-04
			Chemical Total	6.0E-07	–	2.3E-08	–	6.2E-07		1.0E-02	–	3.4E-04	1.1E-02
		Exposure Point Total						6.2E-07					1.1E-02
	Exposure Medium Total							6.2E-07					1.1E-02
	Homegrown Produce	Homegrown Produce	2-Methylnaphthalene	–	–	–	–	–	–	–	–	–	–
			Arsenic	7.8E-07	–	–	–	7.8E-07	Skin	1.3E-02	–	–	1.3E-02
			Benzene	–	–	–	–	–	–	–	–	–	–
			Benzo(a)pyrene	2.2E-08	–	–	–	2.2E-08	–	–	–	–	–
			Ethylbenzene	–	–	–	–	–	–	–	–	–	–
			Lead	–	–	–	–	–	–	–	–	–	–
			Toluene	–	–	–	–	–	–	–	–	–	–
			Xylene (Total)	–	–	–	–	–	–	–	–	–	–
			Chemical Total	8.0E-07	–	–	–	8.0E-07		1.3E-02	–	–	1.3E-02
		Exposure Point Total						8.0E-07					1.3E-02
	Exposure Medium Total							8.0E-07					1.3E-02
	Air	Outdoor Air (Particulates and VOCs)	2-Methylnaphthalene	–	–	–	–	–	Nasal	–	5.7E-04	–	5.7E-04
			Arsenic	–	7.2E-11	–	–	7.2E-11	–	–	–	–	–
			Benzene	–	8.5E-09	–	–	8.5E-09	Blood	–	2.8E-04	–	2.8E-04
			Benzo(a)pyrene	–	4.4E-11	–	–	4.4E-11	–	–	–	–	–
			Ethylbenzene	–	5.6E-09	–	–	5.6E-09	Developmental	–	3.9E-05	–	3.9E-05
			Lead	–	–	–	–	–	–	–	–	–	–
			Toluene	–	–	–	–	–	CNS	–	1.7E-04	–	1.7E-04
			Xylene (Total)	–	–	–	–	–	CNS	–	2.2E-03	–	2.2E-03
			Chemical Total	–	1.4E-08	–	–	1.4E-08		–	3.3E-03	–	3.3E-03
		Exposure Point Total						1.4E-08					3.3E-03
	Exposure Medium Total							1.4E-08					3.3E-03

TABLE H2-9.4.6.CTE
EPA RAGS PART D TABLE 9
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS
FUTURE REDEVELOPED ADULT RESIDENT
SITE 22, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future-Redeveloped
Receptor Population:	Resident
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Medium Total								1.4E-06					2.7E-02
Groundwater	Groundwater	Indoor Air (Vapor Intrusion)	Benzene	–	5.5E-07	–	–	5.5E-07	Blood	–	1.9E-02	–	1.9E-02
			Ethylbenzene	–	6.2E-08	–	–	6.2E-08	Developmental	–	4.3E-04	–	4.3E-04
			o-Xylene	–	–	–	–	–	CNS	–	1.0E-02	–	1.0E-02
			m-Xylene	–	–	–	–	–	CNS	–	1.8E-03	–	1.8E-03
			Toluene	–	–	–	–	–	CNS	–	3.0E-03	–	3.0E-03
			Chemical Total	–	6.1E-07	–	–	6.1E-07		–	3.4E-02	–	3.4E-02
		Exposure Point Total						6.1E-07					3.4E-02
	Exposure Medium Total							6.1E-07					3.4E-02
	Groundwater	Tap Water (oral/dermal)	1,2-Dichloroethane	4.6E-07	–	6.2E-09	–	4.7E-07	Kidney, Death	1.3E-03	–	1.8E-05	1.3E-03
			2-Methylnaphthalene	–	–	–	–	–	Lung	2.2E-02	–	3.3E-03	2.5E-02
			Arsenic	4.6E-05	–	1.5E-07	–	4.6E-05	Skin	7.9E-01	–	2.5E-03	8.0E-01
			Benzene	7.3E-05	–	4.9E-06	–	7.8E-05	Blood	2.6E+00	–	1.7E-01	2.8E+00
			Chloroform	–	–	–	–	–	Liver	4.3E-03	–	9.4E-05	4.4E-03
			Ethylbenzene	1.1E-06	–	1.8E-07	–	1.3E-06	Kidney, Liver	2.3E-02	–	3.7E-03	2.7E-02
			Manganese	–	–	–	–	–	CNS	4.1E+00	–	1.3E-02	4.1E+00
			Naphthalene	–	–	–	–	–	Body Weight	8.1E-02	–	1.2E-02	9.3E-02
			n-Propylbenzene	–	–	–	–	–	–	6.4E-02	–	1.9E-02	8.3E-02
			Tetrachloroethene	2.5E-07	–	2.6E-08	–	2.7E-07	Liver	3.7E-03	–	3.9E-04	4.1E-03
			Thallium	–	–	–	–	–	Liver, Blood	5.3E-01	–	1.7E-03	5.3E-01
			Toluene	–	–	–	–	–	Kidney, Liver	2.8E-02	–	2.8E-03	3.1E-02
			Trichloroethene	2.3E-06	–	9.0E-08	–	2.4E-06	Liver, Kidney, Fetus	1.5E-01	–	5.8E-03	1.6E-01
			Xylene (Total)	–	–	–	–	–	Death, Body Weight	3.7E-02	–	6.3E-03	4.3E-02
		Exposure Point Total		1.2E-04	–	5.4E-06	–	1.3E-04		8.4E+00	–	2.5E-01	8.6E+00
		Tap Water (inhalation)	1,2-Dichloroethane	–	1.4E-09	–	–	1.4E-09	GI, Liver	–	8.7E-05	–	8.7E-05
			2-Methylnaphthalene	–	–	–	–	–	Nasal	–	7.0E-04	–	7.0E-04
			Benzene	–	1.1E-07	–	–	1.1E-07	Blood	–	3.7E-03	–	3.7E-03
			Chloroform	–	1.4E-09	–	–	1.4E-09	–	–	1.5E-04	–	1.5E-04
			Ethylbenzene	–	3.5E-09	–	–	3.5E-09	Developmental	–	2.5E-05	–	2.5E-05
			Naphthalene	–	–	–	–	–	Nasal	–	5.8E-03	–	5.8E-03
			n-Propylbenzene	–	–	–	–	–	–	–	2.0E-04	–	2.0E-04
			Tetrachloroethene	–	1.5E-10	–	–	1.5E-10	Liver, Kidney	–	6.7E-07	–	6.7E-07
			Toluene	–	–	–	–	–	CNS	–	1.6E-04	–	1.6E-04

TABLE H2-9.4.6.CTE
EPA RAGS PART D TABLE 9
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS
FUTURE REDEVELOPED ADULT RESIDENT
SITE 22, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future-Redeveloped
Receptor Population:	Resident
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			Trichloroethene	–	7.2E-09	–	–	7.2E-09	CNS, Liver, Endocrine	–	1.4E-05	–	1.4E-05
			Xylene (Total)	–	–	–	–	–	CNS	–	7.9E-04	–	7.9E-04
		Exposure Point Total		–	1.2E-07	–	–	1.2E-07		–	1.2E-02	–	1.2E-02
	Exposure Medium Total							1.3E-04					8.6E+00
Medium Total								1.3E-04					8.7E+00
Receptor Total							Receptor Risk Total	1.3E-04				Receptor HI Total	8.7E+00

Notes:

CNS	Central nervous system
GI	Gastrointestinal
HI	Hazard index
CTE	Central tendency exposure
VOC	Volatile organic compound
–	Not Applicable or Not Available

Total Organ 1 (Nervous System) HI Across All Media =	4.1E+00
Total Organ 2 (Blood) HI Across All Media =	3.3E+00
Total Organ 3 (Skin) HI Across All Media =	8.2E-01
Total Organ 4 (Liver) HI Across All Media =	7.6E-01
Total Organ 5 (Kidney) HI Across All Media =	2.2E-01
Total Organ 6 (Gastrointestinal System) HI Across All Media =	8.7E-05
Total Organ 7 (Fetus) HI Across All Media =	1.6E-01
Total Organ 8 (Body Weight) HI Across All Media =	1.4E-01
Total Organ 9 (Unknown Systems) HI Across All Media =	8.4E-02
Total Organ 10 (Death) HI Across All Media =	4.5E-02
Total Organ 11 (Lung) HI Across All Media =	2.5E-02
Total Organ 12 (Nasal) HI Across All Media =	7.1E-03
Total Organ 13 (Developmental) HI Across All Media =	5.0E-04
Total Organ 14 (Endocrine system) HI Across All Media =	1.4E-05

TABLE H2-9.4.7.CTE
EPA RAGS PART D TABLE 9
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS
FUTURE REDEVELOPED CHILD RESIDENT
SITE 22, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future-Redeveloped
Receptor Population:	Resident
Receptor Age:	Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil (0-8)	Soil	Site Soil	2-Methylnaphthalene	–	–	–	–	–	Lung	1.3E-03	–	–	1.3E-03
			Arsenic	3.5E-06	–	1.2E-07	–	3.7E-06	Skin	9.2E-02	–	3.1E-03	9.5E-02
			Benzene	1.8E-08	–	–	–	1.8E-08	Blood	9.3E-04	–	–	9.3E-04
			Benzo(a)pyrene	1.4E-07	–	2.1E-08	–	1.6E-07	–	–	–	–	–
			Ethylbenzene	1.1E-08	–	–	–	1.1E-08	Kidney, Liver	3.5E-04	–	–	3.5E-04
			Lead	–	–	–	–	–	–	–	–	–	–
			Toluene	–	–	–	–	–	Kidney, Liver	2.0E-04	–	–	2.0E-04
			Xylene (Total)	–	–	–	–	–	Death, Body Weight	1.1E-03	–	–	1.1E-03
			Chemical Total	3.7E-06	–	1.4E-07	–	3.9E-06		9.6E-02	–	3.1E-03	9.9E-02
		Exposure Point Total						3.9E-06					9.9E-02
	Exposure Medium Total							3.9E-06					9.9E-02
	Homegrown Produce	Homegrown Produce	2-Methylnaphthalene	–	–	–	–	–	–	–	–	–	–
			Arsenic	5.2E-07	–	–	–	5.2E-07	Skin	1.3E-02	–	–	1.3E-02
			Benzene	–	–	–	–	–	–	–	–	–	–
			Benzo(a)pyrene	1.4E-08	–	–	–	1.4E-08	–	–	–	–	–
			Ethylbenzene	–	–	–	–	–	–	–	–	–	–
			Lead	–	–	–	–	–	–	–	–	–	–
			Toluene	–	–	–	–	–	–	–	–	–	–
			Xylene (Total)	–	–	–	–	–	–	–	–	–	–
			Chemical Total	5.3E-07	–	–	–	5.3E-07		1.3E-02	–	–	1.3E-02
		Exposure Point Total						5.3E-07					1.3E-02
	Exposure Medium Total							5.3E-07					1.3E-02
	Air	Outdoor Air (Particulates and VOCs)	2-Methylnaphthalene	–	–	–	–	–	Nasal	–	1.3E-03	–	1.3E-03
			Arsenic	–	1.1E-10	–	–	1.1E-10	–	–	–	–	–
			Benzene	–	1.3E-08	–	–	1.3E-08	Blood	–	6.7E-04	–	6.7E-04
			Benzo(a)pyrene	–	4.5E-13	–	–	4.5E-13	–	–	–	–	–
			Ethylbenzene	–	8.9E-09	–	–	8.9E-09	Developmental	–	9.3E-05	–	9.3E-05
			Lead	–	–	–	–	–	–	–	–	–	–
			Toluene	–	–	–	–	–	CNS	–	3.9E-04	–	3.9E-04
			Xylene (Total)	–	–	–	–	–	CNS	–	5.3E-03	–	5.3E-03
			Chemical Total	–	2.2E-08	–	–	2.2E-08		–	2.5E-03	–	7.8E-03
		Exposure Point Total						2.2E-08					7.8E-03
	Exposure Medium Total							2.2E-08					7.8E-03

TABLE H2-9.4.7.CTE
EPA RAGS PART D TABLE 9
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS
FUTURE REDEVELOPED CHILD RESIDENT
SITE 22, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future-Redeveloped
Receptor Population:	Resident
Receptor Age:	Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Medium Total								4.4E-06					1.2E-01
Groundwater	Groundwater	Indoor Air (Vapor Intrusion)	Benzene	–	8.7E-07	–	–	8.7E-07	Blood	–	4.4E-02	–	4.4E-02
			Ethylbenzene	–	9.7E-08	–	–	9.7E-08	Developmental	–	1.0E-03	–	1.0E-03
			o-Xylene	–	–	–	–	–	CNS	–	2.4E-02	–	2.4E-02
			m-Xylene	–	–	–	–	–	CNS	–	4.4E-03	–	4.4E-03
			Toluene	–	–	–	–	–	CNS	–	7.1E-03	–	7.1E-03
			Chemical Total	–	9.7E-07	–	–	9.7E-07		–	8.0E-02	–	8.0E-02
		Exposure Point Total						9.7E-07					8.0E-02
	Exposure Medium Total							9.7E-07					8.0E-02
	Groundwater	Tap Water (oral/dermal)	1,2-Dichloroethane	1.0E-06	–	9.4E-09	–	1.0E-06	Kidney, Death	4.4E-03	–	4.0E-05	4.4E-03
			2-Methylnaphthalene	–	–	–	–	–	Lung	7.2E-02	–	7.4E-03	8.0E-02
			Arsenic	1.0E-04	–	2.2E-07	–	1.0E-04	Skin	2.6E+00	–	5.8E-03	2.6E+00
			Benzene	1.6E-04	–	7.4E-06	–	1.7E-04	Blood	8.6E+00	–	3.9E-01	9.0E+00
			Chloroform	–	–	–	–	–	Liver	1.4E-02	–	2.1E-04	1.5E-02
			Ethylbenzene	2.6E-06	–	2.7E-07	–	2.8E-06	Kidney, Liver	7.7E-02	–	8.3E-03	8.6E-02
			Manganese	–	–	–	–	–	CNS	1.4E+01	–	3.0E-02	1.4E+01
			Naphthalene	–	–	–	–	–	Body Weight	2.7E-01	–	2.8E-02	3.0E-01
			n-Propylbenzene	–	–	–	–	–	–	2.1E-01	–	4.3E-02	2.6E-01
			Tetrachloroethene	5.5E-07	–	3.9E-08	–	5.9E-07	Liver	1.2E-02	–	8.8E-04	1.3E-02
			Thallium	–	–	–	–	–	Liver, Blood	1.8E+00	–	3.9E-03	1.8E+00
			Toluene	–	–	–	–	–	Kidney, Liver	9.4E-02	–	6.4E-03	1.0E-01
			Trichloroethene	5.2E-06	–	1.4E-07	–	5.3E-06	Liver, Kidney, Fetus	5.1E-01	–	1.3E-02	5.2E-01
			Xylene (Total)	–	–	–	–	–	Death, Body Weight	1.2E-01	–	1.4E-02	1.4E-01
		Exposure Point Total		2.7E-04	–	8.1E-06	–	2.8E-04		2.8E+01	–	5.5E-01	2.9E+01
		Tap Water (inhalation)	1,2-Dichloroethane	–	3.0E-09	–	–	3.0E-09	GI, Liver	–	2.7E-04	–	2.7E-04
			2-Methylnaphthalene	–	–	–	–	–	Nasal	–	2.2E-03	–	2.2E-03
			Benzene	–	2.3E-07	–	–	2.3E-07	Blood	–	1.2E-02	–	1.2E-02
			Chloroform	–	2.9E-09	–	–	2.9E-09	–	–	4.8E-04	–	4.8E-04
			Ethylbenzene	–	7.4E-09	–	–	7.4E-09	Developmental	–	7.7E-05	–	7.7E-05
			Naphthalene	–	–	–	–	–	Nasal	–	1.8E-02	–	1.8E-02
			n-Propylbenzene	–	–	–	–	–	–	–	6.2E-04	–	6.2E-04
			Tetrachloroethene	–	3.0E-10	–	–	3.0E-10	Liver, Kidney	–	2.1E-06	–	2.1E-06
			Toluene	–	–	–	–	–	CNS	–	5.0E-04	–	5.0E-04

TABLE H2-9.4.7.CTE
EPA RAGS PART D TABLE 9
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS
FUTURE REDEVELOPED CHILD RESIDENT
SITE 22, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future-Redeveloped
Receptor Population:	Resident
Receptor Age:	Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			Trichloroethene	–	1.5E-08	–	–	1.5E-08	CNS, Liver, Endocrine	–	4.4E-05	–	4.4E-05
			Xylene (Total)	–	–	–	–	–	CNS	–	2.5E-03	–	2.5E-03
		Exposure Point Total		–	2.6E-07	–	–	2.6E-07		–	3.6E-02	–	3.6E-02
	Exposure Medium Total							2.8E-04					2.9E+01
Medium Total								2.8E-04					2.9E+01
Receptor Total							Receptor Risk Total	2.9E-04				Receptor HI Total	2.9E+01

Notes:

CNS	Central nervous system
GI	Gastrointestinal
HI	Hazard index
CTE	Central tendency exposure
VOC	Volatile organic compound
–	Not Applicable or Not Available

Total Organ 1 (Skin) HI Across All Media =	2.8E+00
Total Organ 2 (Nervous System) HI Across All Media =	1.4E+01
Total Organ 3 (Blood) HI Across All Media =	1.1E+01
Total Organ 4 (Liver) HI Across All Media =	2.5E+00
Total Organ 5 (Kidney) HI Across All Media =	7.1E-01
Total Organ 6 (Gastrointestinal System) HI Across All Media =	2.7E-04
Total Organ 7 (Fetus) HI Across All Media =	5.2E-01
Total Organ 8 (Body Weight) HI Across All Media =	4.4E-01
Total Organ 9 (Death) HI Across All Media =	1.4E-01
Total Organ 10 (Unknown Systems) HI Across All Media =	2.6E-01
Total Organ 11 (Lung) HI Across All Media =	8.1E-02
Total Organ 12 (Nasal) HI Across All Media =	2.2E-02
Total Organ 13 (Developmental) HI Across All Media =	1.2E-03
Total Organ 14 (Endocrine system) HI Across All Media =	4.4E-05

HHRA RISK TABLES

Central Tendency Exposure
Site 23
Alameda Point, Alameda, California

TABLE H2-9.5.1.CTE
EPA RAGS PART D TABLE 9
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS
CURRENT INDUSTRIAL WORKER
SITE 23, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future
Receptor Population:	Industrial Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil (0-2)	Soil	Site Soil	Arsenic	1.3E-07	–	5.2E-09	–	1.4E-07	Skin	4.5E-03	–	1.8E-04	4.7E-03
			Benz(a)anthracene	8.0E-10	–	1.4E-10	–	9.4E-10	–	–	–	–	–
			Benzo(a)pyrene	8.9E-09	–	1.5E-09	–	1.0E-08	–	–	–	–	–
			Benzo(b)fluoranthene	9.2E-10	–	1.6E-10	–	1.1E-09	–	–	–	–	–
			Benzo(k)fluoranthene	7.8E-11	–	1.3E-11	–	9.2E-11	–	–	–	–	–
			Dibenz(a,h)anthracene	4.4E-09	–	7.5E-10	–	5.1E-09	–	–	–	–	–
			Indeno(1,2,3-cd)pyrene	7.7E-10	–	1.3E-10	–	9.0E-10	–	–	–	–	–
			Chemical Total	1.5E-07	–	7.9E-09	–	1.5E-07		4.5E-03	–	1.8E-04	4.7E-03
		Exposure Point Total						1.5E-07					4.7E-03
	Exposure Medium Total							1.5E-07					4.7E-03
	Air	Outdoor Air (Particulates and VOCs)	Arsenic	–	5.0E-11	–	–	5.0E-11	–	–	–	–	–
			Benz(a)anthracene	–	3.0E-14	–	–	3.0E-14	–	–	–	–	–
			Benzo(a)pyrene	–	3.4E-13	–	–	3.4E-13	–	–	–	–	–
			Benzo(b)fluoranthene	–	3.5E-14	–	–	3.5E-14	–	–	–	–	–
			Benzo(k)fluoranthene	–	3.0E-15	–	–	3.0E-15	–	–	–	–	–
			Dibenz(a,h)anthracene	–	1.7E-13	–	–	1.7E-13	–	–	–	–	–
			Indeno(1,2,3-cd)pyrene	–	2.9E-14	–	–	2.9E-14	–	–	–	–	–
			Chemical Total	–	5.0E-11	–	–	5.0E-11		–	–	–	0.0E+00
		Exposure Point Total						5.0E-11					0.0E+00
	Exposure Medium Total							5.0E-11					0.0E+00
Medium Total								1.5E-07					4.7E-03
Receptor Total							Receptor Risk Total	1.5E-07				Receptor HI Total	4.7E-03

Notes:

HI	Hazard index
CTE	Central tendency exposure
VOC	Volatile organic compound
–	Not Applicable or Not Available

TABLE H2-9.5.2.CTE
EPA RAGS PART D TABLE 9
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS
CURRENT CONSTRUCTION WORKER
SITE 23, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil (0-2)	Soil	Site Soil	Arsenic	1.6E-08	–	1.6E-09	–	1.8E-08	Skin	2.5E-03	–	2.5E-04	2.7E-03
			Benz(a)anthracene	9.8E-11	–	4.2E-11	–	1.4E-10	–	–	–	–	–
			Benzo(a)pyrene	1.1E-09	–	4.7E-10	–	1.6E-09	–	–	–	–	–
			Benzo(b)fluoranthene	1.1E-10	–	4.8E-11	–	1.6E-10	–	–	–	–	–
			Benzo(k)fluoranthene	9.6E-12	–	4.1E-12	–	1.4E-11	–	–	–	–	–
			Dibenz(a,h)anthracene	5.3E-10	–	2.3E-10	–	7.6E-10	–	–	–	–	–
			Indeno(1,2,3-cd)pyrene	9.4E-11	–	4.0E-11	–	1.3E-10	–	–	–	–	–
			Chemical Total	1.8E-08	–	2.4E-09	–	2.0E-08		2.5E-03	–	2.5E-04	2.7E-03
		Exposure Point Total						2.0E-08					2.7E-03
	Exposure Medium Total							2.0E-08					2.7E-03
	Air	Outdoor Air (Particulates and VOCs)	Arsenic	–	2.4E-11	–	–	2.4E-11	–	–	–	–	–
			Benz(a)anthracene	–	1.5E-14	–	–	1.5E-14	–	–	–	–	–
			Benzo(a)pyrene	–	1.6E-13	–	–	1.6E-13	–	–	–	–	–
			Benzo(b)fluoranthene	–	1.7E-14	–	–	1.7E-14	–	–	–	–	–
			Benzo(k)fluoranthene	–	1.4E-15	–	–	1.4E-15	–	–	–	–	–
			Dibenz(a,h)anthracene	–	8.1E-14	–	–	8.1E-14	–	–	–	–	–
			Indeno(1,2,3-cd)pyrene	–	1.4E-14	–	–	1.4E-14	–	–	–	–	–
			Chemical Total	–	2.4E-11	–	–	2.4E-11		–	–	–	0.0E+00
		Exposure Point Total						2.4E-11					0.0E+00
	Exposure Medium Total							2.4E-11					0.0E+00
Medium Total								2.0E-08					2.7E-03
Receptor Total							Receptor Risk Total	2.0E-08				Receptor HI Total	2.7E-03

Notes:

HI	Hazard index
CTE	Central tendency exposure
VOC	Volatile organic compound
–	Not Applicable or Not Available

TABLE H2-9.5.3.CTE
EPA RAGS PART D TABLE 9
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS
CURRENT ADULT RESIDENT
SITE 23, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future
Receptor Population:	Resident
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil (0-2)	Soil	Site Soil	Arsenic	4.2E-07	–	1.4E-08	–	4.3E-07	Skin	7.2E-03	–	2.5E-04	7.5E-03
			Benz(a)anthracene	2.6E-09	–	3.8E-10	–	2.9E-09	–	–	–	–	–
			Benzo(a)pyrene	2.9E-08	–	4.2E-09	–	3.3E-08	–	–	–	–	–
			Benzo(b)fluoranthene	2.9E-09	–	4.4E-10	–	3.4E-09	–	–	–	–	–
			Benzo(k)fluoranthene	2.5E-10	–	3.7E-11	–	2.9E-10	–	–	–	–	–
			Dibenz(a,h)anthracene	1.4E-08	–	2.1E-09	–	1.6E-08	–	–	–	–	–
			Indeno(1,2,3-cd)pyrene	2.5E-09	–	3.6E-10	–	2.8E-09	–	–	–	–	–
			Chemical Total	4.7E-07	–	2.2E-08	–	4.9E-07		7.2E-03	–	2.5E-04	7.5E-03
		Exposure Point Total						4.9E-07					7.5E-03
	Exposure Medium Total							4.9E-07					7.5E-03
	Homegrown Produce	Homegrown Produce	Arsenic	5.7E-07	–	–	–	5.7E-07	Skin	9.9E-03	–	–	9.9E-03
			Benz(a)anthracene	3.2E-09	–	–	–	3.2E-09	–	–	–	–	–
			Benzo(a)pyrene	2.7E-08	–	–	–	2.7E-08	–	–	–	–	–
			Benzo(b)fluoranthene	2.6E-09	–	–	–	2.6E-09	–	–	–	–	–
			Benzo(k)fluoranthene	2.2E-10	–	–	–	2.2E-10	–	–	–	–	–
			Dibenz(a,h)anthracene	2.0E-08	–	–	–	2.0E-08	–	–	–	–	–
			Indeno(1,2,3-cd)pyrene	1.7E-09	–	–	–	1.7E-09	–	–	–	–	–
			Chemical Total	6.3E-07	–	–	–	6.3E-07		9.9E-03	–	–	9.9E-03
		Exposure Point Total						6.3E-07					9.9E-03
	Exposure Medium Total							6.3E-07					9.9E-03
	Air	Outdoor Air (Particulates and VOCs)	Arsenic	–	5.3E-11	–	–	5.3E-11	–	–	–	–	–
			Benz(a)anthracene	–	3.2E-14	–	–	3.2E-14	–	–	–	–	–
			Benzo(a)pyrene	–	3.6E-13	–	–	3.6E-13	–	–	–	–	–
			Benzo(b)fluoranthene	–	3.7E-14	–	–	3.7E-14	–	–	–	–	–
			Benzo(k)fluoranthene	–	3.2E-15	–	–	3.2E-15	–	–	–	–	–
			Dibenz(a,h)anthracene	–	1.8E-13	–	–	1.8E-13	–	–	–	–	–
			Indeno(1,2,3-cd)pyrene	–	3.1E-14	–	–	3.1E-14	–	–	–	–	–
			Chemical Total	–	5.3E-11	–	–	5.3E-11		–	–	–	0.0E+00
		Exposure Point Total						5.3E-11					0.0E+00
	Exposure Medium Total							5.3E-11					0.0E+00
Medium Total								1.1E-06					1.7E-02

TABLE H2-9.5.3.CTE
EPA RAGS PART D TABLE 9
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS
CURRENT ADULT RESIDENT
SITE 23, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future
Receptor Population:	Resident
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Tap Water (oral/dermal)	1,2,4-Trimethylbenzene	–	–	–	–	–	No observed effect	2.5E-02	–	6.7E-03	3.2E-02
			2-Butanone	–	–	–	–	–	Fetus	6.8E-03	–	2.1E-05	6.8E-03
			2-Methylnaphthalene	–	–	–	–	–	Lung	1.7E-02	–	2.5E-03	1.9E-02
			Arsenic	2.3E-05	–	7.4E-08	–	2.3E-05	Skin	4.0E-01	–	1.3E-03	4.0E-01
			Benzene	1.4E-07	–	9.2E-09	–	1.4E-07	Blood	4.8E-03	–	3.2E-04	5.1E-03
			Benzo(a)pyrene	1.1E-05	–	2.4E-05	–	3.5E-05	–	–	–	–	–
			Benzo(b)fluoranthene	1.4E-06	–	3.2E-06	–	4.7E-06	–	–	–	–	–
			Chrysene	1.6E-08	–	2.4E-08	–	4.1E-08	–	–	–	–	–
			Ethylbenzene	1.4E-07	–	2.2E-08	–	1.6E-07	Kidney, Liver	2.9E-03	–	4.5E-04	3.3E-03
			Isopropylbenzene	–	–	–	–	–	Kidney	1.4E-02	–	4.1E-03	1.8E-02
			Naphthalene	–	–	–	–	–	Body Weight	3.7E-02	–	5.6E-03	4.3E-02
			sec-Butylbenzene	–	–	–	–	–	–	3.6E-02	–	2.0E-02	5.6E-02
			Thallium	–	–	–	–	–	Liver, Blood	3.7E-01	–	1.2E-03	3.7E-01
			Xylene (Total)	–	–	–	–	–	Death, Body Weight	3.4E-03	–	5.8E-04	4.0E-03
		Exposure Point Total		3.6E-05	–	2.8E-05	–	6.3E-05		9.2E-01	–	4.3E-02	9.6E-01
		Tap Water (inhalation)	1,2,4-Trimethylbenzene	–	–	–	–	–	CNS	–	2.3E-03	–	2.3E-03
			2-Butanone	–	–	–	–	–	Fetus	–	4.3E-05	–	4.3E-05
			2-Methylnaphthalene	–	–	–	–	–	Nasal	–	5.4E-04	–	5.4E-04
			Benzene	–	2.1E-10	–	–	2.1E-10	Blood	–	6.9E-06	–	6.9E-06
			Ethylbenzene	–	4.4E-10	–	–	4.4E-10	Developmental	–	3.1E-06	–	3.1E-06
			Isopropylbenzene	–	–	–	–	–	Kidney	–	4.0E-05	–	4.0E-05
			Naphthalene	–	–	–	–	–	Nasal	–	2.7E-03	–	2.7E-03
			sec-Butylbenzene	–	–	–	–	–	–	–	1.1E-04	–	1.1E-04
			Xylene (Total)	–	–	–	–	–	CNS	–	7.2E-05	–	7.2E-05
		Exposure Point Total		–	6.5E-10	–	–	6.5E-10		–	5.8E-03	–	5.8E-03
	Exposure Medium Total							6.3E-05					9.6E-01
Medium Total								6.3E-05					9.6E-01
Receptor Total							Receptor Risk Total	6.4E-05				Receptor HI Total	9.8E-01

Notes:

HI	Hazard index
CTE	Central tendency exposure
VOC	Volatile organic compound
–	Not Applicable or Not Available

TABLE H2-9.5.4.CTE
EPA RAGS PART D TABLE 9
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS
CURRENT CHILD RESIDENT
SITE 23, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future
Receptor Population:	Resident
Receptor Age:	Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil (0-2)	Soil	Site Soil	Arsenic	2.6E-06	--	8.7E-08	--	2.7E-06	Skin	6.7E-02	--	2.3E-03	7.0E-02
			Benz(a)anthracene	1.6E-08	--	2.3E-09	--	1.8E-08	--	--	--	--	--
			Benzo(a)pyrene	1.8E-07	--	2.6E-08	--	2.0E-07	--	--	--	--	--
			Benzo(b)fluoranthene	1.8E-08	--	2.7E-09	--	2.1E-08	--	--	--	--	--
			Benzo(k)fluoranthene	1.6E-09	--	2.3E-10	--	1.8E-09	--	--	--	--	--
			Dibenz(a,h)anthracene	8.7E-08	--	1.3E-08	--	9.9E-08	--	--	--	--	--
			Indeno(1,2,3-cd)pyrene	1.5E-08	--	2.2E-09	--	1.8E-08	--	--	--	--	--
			Chemical Total	2.9E-06	--	1.3E-07	--	3.1E-06		6.7E-02	--	2.3E-03	7.0E-02
		Exposure Point Total						3.1E-06					7.0E-02
	Exposure Medium Total							3.1E-06					7.0E-02
	Homegrown Produce	Homegrown Produce	Arsenic	3.8E-07	--	--	--	3.8E-07	Skin	9.8E-03	--	--	9.8E-03
			Benz(a)anthracene	2.1E-09	--	--	--	2.1E-09	--	--	--	--	--
			Benzo(a)pyrene	1.8E-08	--	--	--	1.8E-08	--	--	--	--	--
			Benzo(b)fluoranthene	1.7E-09	--	--	--	1.7E-09	--	--	--	--	--
			Benzo(k)fluoranthene	1.4E-10	--	--	--	1.4E-10	--	--	--	--	--
			Dibenz(a,h)anthracene	1.3E-08	--	--	--	1.3E-08	--	--	--	--	--
			Indeno(1,2,3-cd)pyrene	1.1E-09	--	--	--	1.1E-09	--	--	--	--	--
			Chemical Total	4.2E-07	--	--	--	4.2E-07		9.8E-03	--	--	9.8E-03
		Exposure Point Total						4.2E-07					9.8E-03
	Exposure Medium Total							4.2E-07					9.8E-03
	Air	Outdoor Air (Particulates and VOCs)	Arsenic	--	8.3E-11	--	--	8.3E-11	--	--	--	--	--
			Benz(a)anthracene	--	5.1E-14	--	--	5.1E-14	--	--	--	--	--
			Benzo(a)pyrene	--	5.7E-13	--	--	5.7E-13	--	--	--	--	--
			Benzo(b)fluoranthene	--	5.8E-14	--	--	5.8E-14	--	--	--	--	--
			Benzo(k)fluoranthene	--	5.0E-15	--	--	5.0E-15	--	--	--	--	--
			Dibenz(a,h)anthracene	--	2.8E-13	--	--	2.8E-13	--	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	4.9E-14	--	--	4.9E-14	--	--	--	--	--
			Chemical Total	--	8.4E-11	--	--	8.4E-11		--	--	--	0.0E+00
		Exposure Point Total						8.4E-11					0.0E+00
	Exposure Medium Total							8.4E-11					0.0E+00
Medium Total								3.5E-06					8.0E-02
Groundwater	Groundwater	Tap Water (oral/dermal)	1,2,4-Trimethylbenzene	--	--	--	--	--	No observed effect	8.4E-02	--	1.5E-02	9.9E-02
			2-Butanone	--	--	--	--	--	Fetus	2.3E-02	--	4.7E-05	2.3E-02
			2-Methylnaphthalene	--	--	--	--	--	Lung	5.6E-02	--	5.7E-03	6.1E-02
			Arsenic	5.1E-05	--	1.1E-07	--	5.1E-05	Skin	1.3E+00	--	2.9E-03	1.3E+00
			Benzene	3.0E-07	--	1.4E-08	--	3.2E-07	Blood	1.6E-02	--	7.3E-04	1.7E-02

TABLE H2-9.5.4.CTE
EPA RAGS PART D TABLE 9
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS
CURRENT CHILD RESIDENT
SITE 23, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future
Receptor Population:	Resident
Receptor Age:	Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			Benzo(a)pyrene	2.4E-05	--	3.7E-05	--	6.1E-05	--	--	--	--	--
			Benzo(b)fluoranthene	3.2E-06	--	4.9E-06	--	8.1E-06	--	--	--	--	--
			Chrysene	3.6E-08	--	3.7E-08	--	7.3E-08	--	--	--	--	--
			Ethylbenzene	3.2E-07	--	3.4E-08	--	3.5E-07	Kidney, Liver	9.6E-03	--	1.0E-03	1.1E-02
			Isopropylbenzene	--	--	--	--	--	Kidney	4.8E-02	--	9.2E-03	5.7E-02
			Naphthalene	--	--	--	--	--	Body Weight	1.2E-01	--	1.3E-02	1.4E-01
			sec-Butylbenzene	--	--	--	--	--	--	1.2E-01	--	4.6E-02	1.7E-01
			Thallium	--	--	--	--	--	Liver, Blood	1.2E+00	--	2.7E-03	1.2E+00
			Xylene (Total)	--	--	--	--	--	Death, Body Weight	1.1E-02	--	1.3E-03	1.3E-02
		Exposure Point Total		7.9E-05	--	4.2E-05	--	1.2E-04		3.1E+00	--	9.8E-02	3.1E+00
		Tap Water (inhalation)	1,2,4-Trimethylbenzene	--	--	--	--	--	CNS	--	7.1E-03	--	7.1E-03
			2-Butanone	--	--	--	--	--	Fetus	--	1.4E-04	--	1.4E-04
			2-Methylnaphthalene	--	--	--	--	--	Nasal	--	1.7E-03	--	1.7E-03
			Benzene	--	4.3E-10	--	--	4.3E-10	Blood	--	2.1E-05	--	2.1E-05
			Ethylbenzene	--	9.1E-10	--	--	9.1E-10	Developmental	--	9.5E-06	--	9.5E-06
			Isopropylbenzene	--	--	--	--	--	Kidney	--	1.3E-04	--	1.3E-04
			Naphthalene	--	--	--	--	--	Nasal	--	8.3E-03	--	8.3E-03
			sec-Butylbenzene	--	--	--	--	--	--	--	3.5E-04	--	3.5E-04
			Xylene (Total)	--	--	--	--	--	CNS	--	2.2E-04	--	2.2E-04
		Exposure Point Total		--	1.3E-09	--	--	1.3E-09		--	1.8E-02	--	1.8E-02
	Exposure Medium Total							1.2E-04					3.2E+00
Medium Total								1.2E-04					3.2E+00
Receptor Total							Receptor Risk Total	1.2E-04				Receptor HI Total	3.2E+00

Notes:

HI	Hazard index
CTE	Central tendency exposure
VOC	Volatile organic compound
--	Not Applicable or Not Available

Total Organ 1 (Skin) HI Across All Media =	1.4E+00
Total Organ 2 (Blood) HI Across All Media =	1.2E+00
Total Organ 3 (Liver) HI Across All Media =	1.2E+00
Total Organ 4 (Unknown Systems) HI Across All Media =	1.7E-01
Total Organ 5 (Body Weight) HI Across All Media =	1.5E-01
Total Organ 6 (No Observed Effect) HI Across All Media =	9.9E-02
Total Organ 7 (Kidney) HI Across All Media =	6.8E-02
Total Organ 8 (Nasal) HI Across All Media =	1.0E-02
Total Organ 9 (Lung) HI Across All Media =	6.1E-02
Total Organ 10 (Nervous System) HI Across All Media =	7.3E-03
Total Organ 11 (Fetus) HI Across All Media =	2.3E-02
Total Organ 12 (Death) HI Across All Media =	1.3E-02
Total Organ 13 (Developmental) HI Across All Media =	9.5E-06

TABLE H2-9.5.5.CTE
EPA RAGS PART D TABLE 9
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS
FUTURE DEVELOPED CONSTRUCTION WORKER
SITE 23, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future-Developed
Receptor Population:	Construction Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil (0-8)	Soil	Site Soil	2-Methylnaphthalene	–	–	–	–	–	Lung	1.7E-06	–	–	1.7E-06
			Arsenic	1.9E-08	–	1.9E-09	–	2.1E-08	Skin	3.0E-03	–	3.0E-04	3.3E-03
			Benz(a)anthracene	6.2E-11	–	2.7E-11	–	8.9E-11	–	–	–	–	–
			Benzo(a)pyrene	7.3E-10	–	3.2E-10	–	1.0E-09	–	–	–	–	–
			Benzo(b)fluoranthene	1.2E-11	–	5.2E-12	–	1.7E-11	–	–	–	–	–
			Benzo(k)fluoranthene	7.7E-12	–	3.3E-12	–	1.1E-11	–	–	–	–	–
			Dibenz(a,h)anthracene	3.9E-10	–	1.7E-10	–	5.6E-10	–	–	–	–	–
			Indeno(1,2,3-cd)pyrene	6.0E-11	–	2.6E-11	–	8.5E-11	–	–	–	–	–
			Chemical Total	2.1E-08	–	2.4E-09	–	2.3E-08		3.0E-03	–	3.0E-04	3.3E-03
		Exposure Point Total						2.3E-08					3.3E-03
	Exposure Medium Total							2.3E-08					3.3E-03
	Air	Outdoor Air	2-Methylnaphthalene	–	–	–	–	–	Nasal	–	8.1E-05	–	8.1E-05
			Arsenic	–	2.9E-11	–	–	2.9E-11	–	–	–	–	–
			Benz(a)anthracene	–	9.5E-15	–	–	9.5E-15	–	–	–	–	–
			Benzo(a)pyrene	–	1.1E-13	–	–	1.1E-13	–	–	–	–	–
			Benzo(b)fluoranthene	–	1.8E-15	–	–	1.8E-15	–	–	–	–	–
			Benzo(k)fluoranthene	–	1.2E-15	–	–	1.2E-15	–	–	–	–	–
			Dibenz(a,h)anthracene	–	5.9E-14	–	–	5.9E-14	–	–	–	–	–
			Indeno(1,2,3-cd)pyrene	–	9.1E-15	–	–	9.1E-15	–	–	–	–	–
		(Particulates and VOCs)											
			Chemical Total	–	2.9E-11	–	–	2.9E-11		–	8.1E-05	–	8.1E-05
		Exposure Point Total						2.9E-11					8.1E-05
	Exposure Medium Total							2.9E-11					8.1E-05
Medium Total								2.3E-08					3.4E-03
Receptor Total							Receptor Risk Total	2.3E-08				Receptor HI Total	3.4E-03

Notes:

HI	Hazard Index
CTE	Central tendency exposure
VOC	Volatile organic compound
–	Not Applicable or Not Available

TABLE H2-9.5.6.CTE
EPA RAGS PART D TABLE 9
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS
FUTURE REDEVELOPED ADULT RESIDENT
SITE 23, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future-Redeveloped
Receptor Population:	Resident
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil (0-8)	Soil	Site Soil	2-Methylnaphthalene	--	--	--	--	--	Lung	4.8E-06	--	--	4.8E-06
			Arsenic	5.0E-07	--	1.7E-08	--	5.2E-07	Skin	8.7E-03	--	3.0E-04	9.0E-03
			Benz(a)anthracene	1.6E-09	--	2.4E-10	--	1.9E-09	--	--	--	--	--
			Benzo(a)pyrene	1.9E-08	--	2.9E-09	--	2.2E-08	--	--	--	--	--
			Benzo(b)fluoranthene	3.2E-10	--	4.7E-11	--	3.6E-10	--	--	--	--	--
			Benzo(k)fluoranthene	2.0E-10	--	3.0E-11	--	2.3E-10	--	--	--	--	--
			Dibenz(a,h)anthracene	1.0E-08	--	1.5E-09	--	1.2E-08	--	--	--	--	--
			Indeno(1,2,3-cd)pyrene	1.6E-09	--	2.3E-10	--	1.8E-09	--	--	--	--	--
			Chemical Total	5.4E-07	--	2.2E-08	--	5.6E-07		8.7E-03	--	3.0E-04	9.0E-03
		Exposure Point Total						5.6E-07					9.0E-03
	Exposure Medium Total							5.6E-07					9.0E-03
	Homegrown Produce	Homegrown Produce	2-Methylnaphthalene	--	--	--	--	--	--	--	--	--	--
			Arsenic	6.9E-07	--	--	--	6.9E-07	Skin	1.2E-02	--	--	1.2E-02
			Benz(a)anthracene	2.0E-09	--	--	--	2.0E-09	--	--	--	--	--
			Benzo(a)pyrene	1.8E-08	--	--	--	1.8E-08	--	--	--	--	--
			Benzo(b)fluoranthene	2.8E-10	--	--	--	2.8E-10	--	--	--	--	--
			Benzo(k)fluoranthene	1.8E-10	--	--	--	1.8E-10	--	--	--	--	--
			Dibenz(a,h)anthracene	1.5E-08	--	--	--	1.5E-08	--	--	--	--	--
			Indeno(1,2,3-cd)pyrene	1.1E-09	--	--	--	1.1E-09	--	--	--	--	--
			Chemical Total	7.3E-07	--	--	--	7.3E-07		1.2E-02	--	--	1.2E-02
		Exposure Point Total						7.3E-07					1.2E-02
	Exposure Medium Total							7.3E-07					1.2E-02
	Air	Outdoor Air (Particulates and VOCs)	2-Methylnaphthalene	--	--	--	--	--	Nasal	--	2.0E-05	--	2.0E-05
			Arsenic	--	6.3E-11	--	--	6.3E-11	--	--	--	--	--
			Benz(a)anthracene	--	2.1E-14	--	--	2.1E-14	--	--	--	--	--
			Benzo(a)pyrene	--	2.4E-13	--	--	2.4E-13	--	--	--	--	--
			Benzo(b)fluoranthene	--	4.0E-15	--	--	4.0E-15	--	--	--	--	--
			Benzo(k)fluoranthene	--	2.6E-15	--	--	2.6E-15	--	--	--	--	--
			Dibenz(a,h)anthracene	--	1.3E-13	--	--	1.3E-13	--	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	2.0E-14	--	--	2.0E-14	--	--	--	--	--
			Chemical Total	--	6.4E-11	--	--	6.4E-11		--	2.0E-05	--	2.0E-05
		Exposure Point Total						6.4E-11					2.0E-05
	Exposure Medium Total							6.4E-11					2.0E-05
Medium Total								1.3E-06					2.1E-02

TABLE H2-9.5.6.CTE
EPA RAGS PART D TABLE 9
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS
FUTURE REDEVELOPED ADULT RESIDENT
SITE 23, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future-Redeveloped
Receptor Population:	Resident
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Tap Water (oral/dermal)	1,2,4-Trimethylbenzene	--	--	--	--	--	No observed effect	2.5E-02	--	6.7E-03	3.2E-02
			2-Butanone	--	--	--	--	--	Fetus	6.8E-03	--	2.1E-05	6.8E-03
			2-Methylnaphthalene	--	--	--	--	--	Lung	1.7E-02	--	2.5E-03	1.9E-02
			Arsenic	2.3E-05	--	7.4E-08	--	2.3E-05	Skin	4.0E-01	--	1.3E-03	4.0E-01
			Benzene	1.4E-07	--	9.2E-09	--	1.4E-07	Blood	4.8E-03	--	3.2E-04	5.1E-03
			Benzo(a)pyrene	1.1E-05	--	2.4E-05	--	3.5E-05	--	--	--	--	--
			Benzo(b)fluoranthene	1.4E-06	--	3.2E-06	--	4.7E-06	--	--	--	--	--
			Chrysene	1.6E-08	--	2.4E-08	--	4.1E-08	--	--	--	--	--
			Ethylbenzene	1.4E-07	--	2.2E-08	--	1.6E-07	Kidney, Liver	2.9E-03	--	4.5E-04	3.3E-03
			Isopropylbenzene	--	--	--	--	--	Kidney	1.4E-02	--	4.1E-03	1.8E-02
			Naphthalene	--	--	--	--	--	Body Weight	3.7E-02	--	5.6E-03	4.3E-02
			sec-Butylbenzene	--	--	--	--	--	--	3.6E-02	--	2.0E-02	5.6E-02
			Thallium	--	--	--	--	--	Liver, Blood	3.7E-01	--	1.2E-03	3.7E-01
			Xylene (Total)	--	--	--	--	--	Death, Body Weight	3.4E-03	--	5.8E-04	4.0E-03
		Exposure Point Total		3.6E-05	--	2.8E-05	--	6.3E-05		9.2E-01	--	4.3E-02	9.6E-01
		Tap Water (Inhalation)	1,2,4-Trimethylbenzene	--	--	--	--	--	CNS	--	2.3E-03	--	2.3E-03
			2-Butanone	--	--	--	--	--	Fetus	--	4.3E-05	--	4.3E-05
			2-Methylnaphthalene	--	--	--	--	--	Nasal	--	5.4E-04	--	5.4E-04
			Benzene	--	2.1E-10	--	--	2.1E-10	Blood	--	6.9E-06	--	6.9E-06
			Ethylbenzene	--	4.4E-10	--	--	4.4E-10	Developmental	--	3.1E-06	--	3.1E-06
			Isopropylbenzene	--	--	--	--	--	Kidney	--	4.0E-05	--	4.0E-05
			Naphthalene	--	--	--	--	--	Nasal	--	2.7E-03	--	2.7E-03
			sec-Butylbenzene	--	--	--	--	--	--	--	1.1E-04	--	1.1E-04
			Xylene (Total)	--	--	--	--	--	CNS	--	7.2E-05	--	7.2E-05
		Exposure Point Total		--	6.5E-10	--	--	6.5E-10		--	5.8E-03	--	5.8E-03
	Exposure Medium Total							6.3E-05					9.6E-01
Medium Total								6.3E-05					9.6E-01
Receptor Total							Receptor Risk Total	6.5E-05				Receptor HI Total	9.9E-01

Notes:

HI	Hazard index
CTE	Central tendency exposure
VOC	Volatile organic compound
--	Not Applicable or Not Available

TABLE H2-9.5.7.CTE
EPA RAGS PART D TABLE 9
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS
FUTURE REDEVELOPED CHILD RESIDENT
SITE 23, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future-Redeveloped
Receptor Population:	Resident
Receptor Age:	Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil (0-8)	Soil	Site Soil	2-Methylnaphthalene	--	--	--	--	--	Lung	4.5E-05	--	--	4.5E-05
			Arsenic	3.1E-06	--	1.1E-07	--	3.2E-06	Skin	8.1E-02	--	2.7E-03	8.4E-02
			Benz(a)anthracene	1.0E-08	--	1.5E-09	--	1.2E-08	--	--	--	--	--
			Benzo(a)pyrene	1.2E-07	--	1.7E-08	--	1.4E-07	--	--	--	--	--
			Benzo(b)fluoranthene	2.0E-09	--	2.9E-10	--	2.3E-09	--	--	--	--	--
			Benzo(k)fluoranthene	1.3E-09	--	1.8E-10	--	1.4E-09	--	--	--	--	--
			Dibenz(a,h)anthracene	6.4E-08	--	9.3E-09	--	7.3E-08	--	--	--	--	--
			Indeno(1,2,3-cd)pyrene	9.8E-09	--	1.4E-09	--	1.1E-08	--	--	--	--	--
			Chemical Total	3.3E-06	--	1.4E-07	--	3.5E-06		8.1E-02	--	2.7E-03	8.4E-02
		Exposure Point Total						3.5E-06					8.4E-02
	Exposure Medium Total							3.5E-06					8.4E-02
	Homegrown Produce	Homegrown Produce	2-Methylnaphthalene	--	--	--	--	--	--	--	--	--	--
			Arsenic	4.6E-07	--	--	--	4.6E-07	Skin	1.2E-02	--	--	1.2E-02
			Benz(a)anthracene	1.3E-09	--	--	--	1.3E-09	--	--	--	--	--
			Benzo(a)pyrene	1.2E-08	--	--	--	1.2E-08	--	--	--	--	--
			Benzo(b)fluoranthene	1.8E-10	--	--	--	1.8E-10	--	--	--	--	--
			Benzo(k)fluoranthene	1.2E-10	--	--	--	1.2E-10	--	--	--	--	--
			Dibenz(a,h)anthracene	9.7E-09	--	--	--	9.7E-09	--	--	--	--	--
			Indeno(1,2,3-cd)pyrene	7.1E-10	--	--	--	7.1E-10	--	--	--	--	--
			Chemical Total	4.8E-07	--	--	--	4.8E-07		1.2E-02	--	--	1.2E-02
		Exposure Point Total						4.8E-07					1.2E-02
	Exposure Medium Total							4.8E-07					1.2E-02
	Air	Outdoor Air (Particulates and VOCs)	2-Methylnaphthalene	--	--	--	--	--	Nasal	--	1.5E-09	--	1.5E-09
			Arsenic	--	1.0E-10	--	--	1.0E-10	--	--	--	--	--
			Benz(a)anthracene	--	3.2E-14	--	--	3.2E-14	--	--	--	--	--
			Benzo(a)pyrene	--	3.8E-13	--	--	3.8E-13	--	--	--	--	--
			Benzo(b)fluoranthene	--	6.3E-15	--	--	6.3E-15	--	--	--	--	--
			Benzo(k)fluoranthene	--	4.0E-15	--	--	4.0E-15	--	--	--	--	--
			Dibenz(a,h)anthracene	--	2.0E-13	--	--	2.0E-13	--	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	3.1E-14	--	--	3.1E-14	--	--	--	--	--
			Chemical Total	--	1.0E-10	--	--	1.0E-10		--	1.5E-09	--	1.5E-09
		Exposure Point Total						1.0E-10					1.5E-09
	Exposure Medium Total							1.0E-10					1.5E-09
Medium Total								4.0E-06					9.6E-02

TABLE H2-9.5.7.CTE
EPA RAGS PART D TABLE 9
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS
FUTURE REDEVELOPED CHILD RESIDENT
SITE 23, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future-Redeveloped
Receptor Population:	Resident
Receptor Age:	Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Tap Water (oral/dermal)	1,2,4-Trimethylbenzene	--	--	--	--	--	No observed effect	8.4E-02	--	1.5E-02	9.9E-02
			2-Butanone	--	--	--	--	--	Fetus	2.3E-02	--	4.7E-05	2.3E-02
			2-Methylnaphthalene	--	--	--	--	--	Lung	5.6E-02	--	5.7E-03	6.1E-02
			Arsenic	5.1E-05	--	1.1E-07	--	5.1E-05	Skin	1.3E+00	--	2.9E-03	1.3E+00
			Benzene	3.0E-07	--	1.4E-08	--	3.2E-07	Blood	1.6E-02	--	7.3E-04	1.7E-02
			Benzo(a)pyrene	2.4E-05	--	3.7E-05	--	6.1E-05	--	--	--	--	--
			Benzo(b)fluoranthene	3.2E-06	--	4.9E-06	--	8.1E-06	--	--	--	--	--
			Chrysene	3.6E-08	--	3.7E-08	--	7.3E-08	--	--	--	--	--
			Ethylbenzene	3.2E-07	--	3.4E-08	--	3.5E-07	Kidney, Liver	9.6E-03	--	1.0E-03	1.1E-02
			Isopropylbenzene	--	--	--	--	--	Kidney	4.8E-02	--	9.2E-03	5.7E-02
			Naphthalene	--	--	--	--	--	Body Weight	1.2E-01	--	1.3E-02	1.4E-01
			sec-Butylbenzene	--	--	--	--	--	--	1.2E-01	--	4.6E-02	1.7E-01
			Thallium	--	--	--	--	--	Liver, Blood	1.2E+00	--	2.7E-03	1.2E+00
			Xylene (Total)	--	--	--	--	--	Death, Body Weight	1.1E-02	--	1.3E-03	1.3E-02
		Exposure Point Total		7.9E-05	--	4.2E-05	--	1.2E-04		3.1E+00	--	9.8E-02	3.1E+00
		Tap Water (inhalation)	1,2,4-Trimethylbenzene	--	--	--	--	--	CNS	--	7.1E-03	--	7.1E-03
			2-Butanone	--	--	--	--	--	Fetus	--	1.4E-04	--	1.4E-04
			2-Methylnaphthalene	--	--	--	--	--	Nasal	--	1.7E-03	--	1.7E-03
			Benzene	--	4.3E-10	--	--	4.3E-10	Blood	--	2.1E-05	--	2.1E-05
			Ethylbenzene	--	9.1E-10	--	--	9.1E-10	Developmental	--	9.5E-06	--	9.5E-06
			Isopropylbenzene	--	--	--	--	--	Kidney	--	1.3E-04	--	1.3E-04
			Naphthalene	--	--	--	--	--	Nasal	--	8.3E-03	--	8.3E-03
			sec-Butylbenzene	--	--	--	--	--	--	--	3.5E-04	--	3.5E-04
			Xylene (Total)	--	--	--	--	--	CNS	--	2.2E-04	--	2.2E-04
		Exposure Point Total		--	1.3E-09	--	--	1.3E-09		--	1.8E-02	--	1.8E-02
	Exposure Medium Total							1.2E-04					3.2E+00
Medium Total								1.2E-04					3.2E+00
Receptor Total							Receptor Risk Total	1.2E-04				Receptor HI Total	3.3E+00

Notes:

HI	Hazard index
CTE	Central tendency exposure
VOC	Volatile organic compound
--	Not Applicable or Not Available

Total Organ 1 (Skin) HI Across All Media =	1.4E+00
Total Organ 2 (Blood) HI Across All Media =	1.2E+00
Total Organ 3 (Liver) HI Across All Media =	1.2E+00
Total Organ 4 (Unknown Systems) HI Across All Media =	1.7E-01
Total Organ 5 (Body Weight) HI Across All Media =	1.5E-01
Total Organ 6 (Nasal) HI Across All Media =	1.0E-02

TABLE H2-9.5.7.CTE
EPA RAGS PART D TABLE 9
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS
FUTURE REDEVELOPED CHILD RESIDENT
SITE 23, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future-Redeveloped
Receptor Population:	Resident
Receptor Age:	Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total

Total Organ 7 (No Observed Effect) HI Across All Media =	9.9E-02
Total Organ 8 (Nervous System) HI Across All Media =	7.3E-03
Total Organ 9 (Kidney) HI Across All Media =	6.8E-02
Total Organ 10 (Lung) HI Across All Media =	6.2E-02
Total Organ 11 (Fetus) HI Across All Media =	2.3E-02
Total Organ 12 (Death) HI Across All Media =	1.3E-02
Total Organ 13 (Developmental) HI Across All Media =	9.5E-06

HHRA RISK TABLES

Central Tendency Exposure
Site 09
Alameda Point, Alameda, California

TABLE H2-10.1.1.CTE
EPA RAGS PART D TABLE 10
RISK SUMMARY
CURRENT INDUSTRIAL WORKER
SITE 09, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future
Receptor Population:	Industrial Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil (0-2)	Soil	Site Soil	–	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	–	–	–	0.0E+00		–	–	–	0.0E+00
		Exposure Point Total						0.0E+00					0.0E+00
	Exposure Medium Total							0.0E+00					0.0E+00
	Air	Outdoor Air (Particulates and VOCs)	–	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	–	–	–	0.0E+00		–	–	–	0.0E+00
		Exposure Point Total						0.0E+00					0.0E+00
	Exposure Medium Total							0.0E+00					0.0E+00
Medium Total								0.0E+00					0.0E+00
Groundwater	Groundwater	Indoor Air (Vapor Intrusion)	–	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	–	–	–	0.0E+00		–	–	–	0.0E+00
		Exposure Point Total						0.0E+00					0.0E+00
	Exposure Medium Total							0.0E+00					0.0E+00
Medium Total								0.0E+00					0.0E+00
Receptor Total							Receptor Risk Total	0.0E+00				Receptor HI Total	0.0E+00

Notes:

–	Not Applicable or Not Available
HI	Hazard index
CTE	Central tendency exposure
VOC	Volatile organic compound

TABLE H2-10.1.2.CTE
EPA RAGS PART D TABLE 10
RISK SUMMARY
CURRENT CONSTRUCTION WORKER
SITE 09, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil (0-2)	Soil	Site Soil	–	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	–	–	–	0.0E+00		–	–	–	0.0E+00
		Exposure Point Total						0.0E+00					0.0E+00
	Exposure Medium Total							0.0E+00					0.0E+00
	Air	Outdoor Air (Particulates and VOCs)	–	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	–	–	–	0.0E+00		–	–	–	0.0E+00
		Exposure Point Total						0.0E+00					0.0E+00
	Exposure Medium Total							0.0E+00					0.0E+00
Medium Total								0.0E+00					0.0E+00
Receptor Total							Receptor Risk Total	0.0E+00				Receptor HI Total	0.0E+00

Notes:

–	Not Applicable or Not Available
HI	Hazard index
CTE	Central tendency exposure
VOC	Volatile organic compound

TABLE H2-10.1.3.CTE
EPA RAGS PART D TABLE 10
RISK SUMMARY
CURRENT ADULT RESIDENT
SITE 09, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future
Receptor Population:	Resident
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil (0-2)	Soil	Site Soil	--	--	--	--	--	--	--	--	--	--	--
			Chemical Total	--	--	--	--	0.0E+00		--	--	--	0.0E+00
		Exposure Point Total						0.0E+00					0.0E+00
	Exposure Medium Total							0.0E+00					0.0E+00
	Homegrown Produce	Homegrown Produce	--	--	--	--	--	--	--	--	--	--	--
			Chemical Total	--	--	--	--	0.0E+00		--	--	--	0.0E+00
		Exposure Point Total						0.0E+00					0.0E+00
	Exposure Medium Total							0.0E+00					0.0E+00
	Air	Outdoor Air (Particulates and VOCs)	--	--	--	--	--	--	--	--	--	--	--
			Chemical Total	--	--	--	--	0.0E+00		--	--	--	0.0E+00
		Exposure Point Total						0.0E+00					0.0E+00
	Exposure Medium Total							0.0E+00					0.0E+00
Medium Total								0.0E+00					0.0E+00
Groundwater	Groundwater	Indoor Air (Vapor Intrusion)	--	--	--	--	--	--	--	--	--	--	--
			Chemical Total	--	--	--	--	0.0E+00		--	--	--	0.0E+00
		Exposure Point Total						0.0E+00					0.0E+00
	Exposure Medium Total							0.0E+00					0.0E+00
	Groundwater	Tap Water (oral/dermal)	1,2,3-Trichloropropane	1.5E-06	--	3.5E-08	--	1.5E-06	--	--	--	--	--
			Arsenic	4.9E-05	--	1.6E-07	--	4.9E-05	--	--	--	--	--
			Benz(a)anthracene	1.8E-06	--	2.7E-06	--	4.5E-06	--	--	--	--	--
			Benzo(a)pyrene	3.6E-05	--	8.1E-05	--	1.2E-04	--	--	--	--	--
			Benzo(b)fluoranthene	3.6E-06	--	8.1E-06	--	1.2E-05	--	--	--	--	--
			Indeno(1,2,3-cd)pyrene	1.8E-06	--	5.8E-06	--	7.6E-06	--	--	--	--	--
			Pentachlorophenol	5.9E-07	--	7.4E-07	--	1.3E-06	--	--	--	--	--
			Trichloroethene	2.3E-06	--	9.0E-08	--	2.4E-06	--	--	--	--	--
			Vinyl chloride	2.9E-05	--	5.2E-07	--	2.9E-05	--	--	--	--	--
		Exposure Point Total		1.3E-04	--	9.9E-05	--	2.2E-04		--	--	--	0.0E+00
		Tap Water (inhalation)	--	--	--	--	--	--	--	--	--	--	--
		Exposure Point Total		--	--	--	--	0.0E+00		--	--	--	0.0E+00
	Exposure Medium Total							2.2E-04					0.0E+00
Medium Total								2.2E-04					0.0E+00
Receptor Total							Receptor Risk Total	2.2E-04				Receptor HI Total	0.0E+00

TABLE H2-10.1.3.CTE
EPA RAGS PART D TABLE 10
RISK SUMMARY
CURRENT ADULT RESIDENT
SITE 09, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future
Receptor Population:	Resident
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total

Notes:

--	Not Applicable or Not Available
CNS	Central nervous system
HI	Hazard index
CTE	Central tendency exposure
VOC	Volatile organic compound

TABLE H2-10.1.4.CTE
EPA RAGS PART D TABLE 10
RISK SUMMARY
CURRENT CHILD RESIDENT
SITE 09, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future
Receptor Population:	Resident
Receptor Age:	Child

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil (0-2)	Soil	Site Soil	Arsenic	2.0E-06	–	6.8E-08	–	2.1E-06	–	–	–	–	–
			Chemical Total	2.0E-06	–	6.8E-08	–	2.1E-06		–	–	–	0.0E+00
		Exposure Point Total						2.1E-06					0.0E+00
	Exposure Medium Total							2.1E-06					0.0E+00
	Homegrown Produce	Homegrown Produce	–	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	–	–	–	0.0E+00		–	–	–	0.0E+00
		Exposure Point Total						0.0E+00					0.0E+00
	Exposure Medium Total							0.0E+00					0.0E+00
	Air	Outdoor Air (Particulates and VOCs)	–	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	–	–	–	0.0E+00		–	–	–	0.0E+00
		Exposure Point Total						0.0E+00					0.0E+00
	Exposure Medium Total							0.0E+00					0.0E+00
Medium Total								2.1E-06					0.0E+00
Groundwater	Groundwater	Indoor Air (Vapor Intrusion)	–	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	–	–	–	0.0E+00		–	–	–	0.0E+00
		Exposure Point Total						0.0E+00					0.0E+00
	Exposure Medium Total							0.0E+00					0.0E+00
	Groundwater	Tap Water (oral/dermal)	1,2,3-Trichloropropane	3.3E-06	–	5.3E-08	–	3.3E-06	–	–	–	–	–
			2-Methylnaphthalene	–	–	–	–	–	Lung	1.3E+00	–	1.3E-01	1.4E+00
			4-Methylphenol	–	–	–	–	–	CNS, Respiratory, Whole Body	3.0E+00	–	5.0E-02	3.1E+00
			Arsenic	1.1E-04	–	2.4E-07	–	1.1E-04	Skin	2.8E+00	–	6.1E-03	2.8E+00
			Benz(a)anthracene	4.0E-06	–	4.1E-06	–	8.1E-06	–	–	–	–	–
			Benzo(a)pyrene	8.0E-05	–	1.2E-04	–	2.0E-04	–	–	–	–	–
			Benzo(b)fluoranthene	8.0E-06	–	1.2E-05	–	2.0E-05	–	–	–	–	–
			Indeno(1,2,3-cd)pyrene	4.0E-06	–	8.7E-06	–	1.3E-05	–	–	–	–	–
			Manganese	–	–	–	–	–	CNS	3.3E+00	–	7.1E-03	3.3E+00
			Naphthalene	–	–	–	–	–	Body Weight	2.0E+00	–	2.1E-01	2.2E+00
			Pentachlorophenol	1.3E-06	–	1.1E-06	–	2.4E-06	–	–	–	–	–
			Trichloroethene	5.2E-06	–	1.4E-07	–	5.3E-06	–	–	–	–	–
			Vinyl chloride	6.4E-05	–	7.8E-07	–	6.4E-05	–	–	–	–	–

TABLE H2-10.1.4.CTE
EPA RAGS PART D TABLE 10
RISK SUMMARY
CURRENT CHILD RESIDENT
SITE 09, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future
Receptor Population:	Resident
Receptor Age:	Child

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
		Exposure Point Total		2.8E-04	–	1.5E-04	–	4.3E-04		1.2E+01	–	4.0E-01	1.3E+01
		Tap Water (inhalation)	–	–	–	–	–	–	–	–	–	–	–
		Exposure Point Total		–	–	–	–	0.0E+00		–	–	–	0.0E+00
	Exposure Medium Total							4.3E-04					1.3E+01
Medium Total								4.3E-04					1.3E+01
Receptor Total							Receptor Risk Total	4.3E-04				Receptor HI Total	1.3E+01

Notes:

–	Not Applicable or Not Available
CNS	Central nervous system
HI	Hazard index
CTE	Central tendency exposure

TABLE H2-10.1.5.CTE
EPA RAGS PART D TABLE 10
RISK SUMMARY
FUTURE DEVELOPED CONSTRUCTION WORKER
SITE 09, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future-Developed
Receptor Population:	Construction Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil (0-8)	Soil	Site Soil	–	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	–	–	–	0.0E+00		–	–	–	0.0E+00
		Exposure Point Total						0.0E+00					0.0E+00
	Exposure Medium Total							0.0E+00					0.0E+00
	Air	Outdoor Air (Particulates and VOCs)	–	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	–	–	–	0.0E+00		–	–	–	0.0E+00
		Exposure Point Total						0.0E+00					0.0E+00
	Exposure Medium Total							0.0E+00					0.0E+00
Medium Total								0.0E+00					0.0E+00
Receptor Total							Receptor Risk Total	0.0E+00				Receptor HI Total	0.0E+00

Notes:

–	Not Applicable or Not Available
HI	Hazard index
CTE	Central tendency exposure
VOC	Volatile organic compound

TABLE H2-10.1.6.CTE
EPA RAGS PART D TABLE 10
RISK SUMMARY
FUTURE REDEVELOPED ADULT RESIDENT
SITE 09, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future-Redeveloped
Receptor Population:	Resident
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil (0-8)	Soil	Site Soil	–	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	–	–	–	0.0E+00		–	–	–	0.0E+00
		Exposure Point Total						0.0E+00					0.0E+00
	Exposure Medium Total							0.0E+00					0.0E+00
	Homegrown Produce	Homegrown Produce	–	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	–	–	–	0.0E+00		–	–	–	0.0E+00
		Exposure Point Total						0.0E+00					0.0E+00
	Exposure Medium Total							0.0E+00					0.0E+00
	Air	Outdoor Air (Particulates and VOCs)	–	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	–	–	–	0.0E+00		–	–	–	0.0E+00
		Exposure Point Total						0.0E+00					0.0E+00
	Exposure Medium Total							0.0E+00					0.0E+00
Medium Total								0.0E+00					0.0E+00
Groundwater	Groundwater	Indoor Air (Vapor Intrusion)	–	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	–	–	–	0.0E+00		–	–	–	0.0E+00
		Exposure Point Total						0.0E+00					0.0E+00
	Exposure Medium Total							0.0E+00					0.0E+00
	Groundwater	Tap Water (oral/dermal)	1,2,3-Trichloropropane	1.5E-06	–	3.5E-08	–	1.5E-06	–	–	–	–	–
			Arsenic	4.9E-05	–	1.6E-07	–	4.9E-05	–	–	–	–	–
			Benz(a)anthracene	1.8E-06	–	2.7E-06	–	4.5E-06	–	–	–	–	–
			Benzo(a)pyrene	3.6E-05	–	8.1E-05	–	1.2E-04	–	–	–	–	–
			Benzo(b)fluoranthene	3.6E-06	–	8.1E-06	–	1.2E-05	–	–	–	–	–
			Indeno(1,2,3-cd)pyrene	1.8E-06	–	5.8E-06	–	7.6E-06	–	–	–	–	–
			Pentachlorophenol	5.9E-07	–	7.4E-07	–	1.3E-06	–	–	–	–	–
			Trichloroethene	2.3E-06	–	9.0E-08	–	2.4E-06	–	–	–	–	–
			Vinyl chloride	2.9E-05	–	5.2E-07	–	2.9E-05	–	–	–	–	–
		Exposure Point Total		1.3E-04	–	9.9E-05	–	2.2E-04		–	–	–	0.0E+00
		Tap Water (inhalation)	–	–	–	–	–	–	–	–	–	–	–
		Exposure Point Total		–	–	–	–	0.0E+00		–	–	–	0.0E+00
	Exposure Medium Total							2.2E-04					0.0E+00

TABLE H2-10.1.6.CTE
EPA RAGS PART D TABLE 10
RISK SUMMARY
FUTURE REDEVELOPED ADULT RESIDENT
SITE 09, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future-Redeveloped
Receptor Population:	Resident
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Medium Total								2.2E-04					0.0E+00
Receptor Total							Receptor Risk Total	2.2E-04				Receptor HI Total	0.0E+00

Notes:

--	Not Applicable or Not Available
CNS	Central nervous system
HI	Hazard index
CTE	Central tendency exposure
VOC	Volatile organic compound

TABLE H2-10.1.7.CTE
EPA RAGS PART D TABLE 10
RISK SUMMARY
FUTURE REDEVELOPED CHILD RESIDENT
SITE 09, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future-Redeveloped
Receptor Population:	Resident
Receptor Age:	Child

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil (0-8)	Soil	Site Soil	Arsenic	2.3E-06	–	7.7E-08	–	2.4E-06	–	–	–	–	–
			Chemical Total	2.3E-06	–	7.7E-08	–	2.4E-06		–	–	–	0.0E+00
		Exposure Point Total						2.4E-06					0.0E+00
	Exposure Medium Total							2.4E-06					0.0E+00
	Homegrown Produce	Homegrown Produce	–	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	–	–	–	0.0E+00		–	–	–	0.0E+00
		Exposure Point Total						0.0E+00					0.0E+00
	Exposure Medium Total							0.0E+00					0.0E+00
	Air	Outdoor Air (Particulates and VOCs)	–	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	–	–	–	0.0E+00		–	–	–	0.0E+00
		Exposure Point Total						0.0E+00					0.0E+00
	Exposure Medium Total							0.0E+00					0.0E+00
Medium Total								2.4E-06					0.0E+00
Groundwater	Groundwater	Indoor Air (Vapor Intrusion)	–	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	–	–	–	0.0E+00		–	–	–	0.0E+00
		Exposure Point Total						0.0E+00					0.0E+00
	Exposure Medium Total							0.0E+00					0.0E+00
	Groundwater	Tap Water (oral/dermal)	1,2,3-Trichloropropane	3.3E-06	–	5.3E-08	–	3.3E-06	–	–	–	–	–
			2-Methylnaphthalene	–	–	–	–	–	Lung	1.3E+00	–	1.3E-01	1.4E+00
			4-Methylphenol	–	–	–	–	–	CNS, Respiratory, Whole Body	3.0E+00	–	5.0E-02	3.1E+00
			Arsenic	1.1E-04	–	2.4E-07	–	1.1E-04	Skin	2.8E+00	–	6.1E-03	2.8E+00
			Benz(a)anthracene	4.0E-06	–	4.1E-06	–	8.1E-06	–	–	–	–	–
			Benzo(a)pyrene	8.0E-05	–	1.2E-04	–	2.0E-04	–	–	–	–	–
			Benzo(b)fluoranthene	8.0E-06	–	1.2E-05	–	2.0E-05	–	–	–	–	–
			Indeno(1,2,3-cd)pyrene	4.0E-06	–	8.7E-06	–	1.3E-05	–	–	–	–	–
			Manganese	–	–	–	–	–	CNS	3.3E+00	–	7.1E-03	3.3E+00
			Naphthalene	–	–	–	–	–	Body Weight	2.0E+00	–	2.1E-01	2.2E+00
			Pentachlorophenol	1.3E-06	–	1.1E-06	–	2.4E-06	–	–	–	–	–
			Trichloroethene	5.2E-06	–	1.4E-07	–	5.3E-06	–	–	–	–	–
			Vinyl chloride	6.4E-05	–	7.8E-07	–	6.4E-05	–	–	–	–	–

TABLE H2-10.1.7.CTE
EPA RAGS PART D TABLE 10
RISK SUMMARY
FUTURE REDEVELOPED CHILD RESIDENT
SITE 09, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future-Redeveloped
Receptor Population:	Resident
Receptor Age:	Child

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
		Exposure Point Total		2.8E-04	–	1.5E-04	–	4.3E-04		1.2E+01	–	4.0E-01	1.3E+01
		Tap Water (inhalation)	–	–	–	–	–	–	–	–	–	–	–
		Exposure Point Total		–	–	–	–	0.0E+00		–	–	–	0.0E+00
	Exposure Medium Total							4.3E-04					1.3E+01
Medium Total								4.3E-04					1.3E+01
Receptor Total							Receptor Risk Total	4.3E-04				Receptor HI Total	1.3E+01

Notes:

–	Not Applicable or Not Available
CNS	Central nervous system
HI	Hazard index
CTE	Central tendency exposure
VOC	Volatile organic compound

HHRA RISK TABLES

Central Tendency Exposure
Site 13
Alameda Point, Alameda, California

TABLE H2-10.2.1.CTE
EPA RAGS PART D TABLE 10
RISK SUMMARY
CURRENT INDUSTRIAL WORKER
SITE 13, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future
Receptor Population:	Industrial Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil (0-2)	Soil	Site Soil	–	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	–	–	–	0.0E+00		–	–	–	0.0E+00
		Exposure Point Total						0.0E+00					0.0E+00
	Exposure Medium Total							0.0E+00					0.0E+00
	Air	Outdoor Air (Particulates and VOCs)	–	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	–	–	–	0.0E+00		–	–	–	0.0E+00
		Exposure Point Total						0.0E+00					0.0E+00
	Exposure Medium Total							0.0E+00					0.0E+00
Medium Total								0.0E+00					0.0E+00
Receptor Total							Receptor Risk Total	0.0E+00				Receptor HI Total	0.0E+00

Notes:

–	Not Applicable or Not Available
HI	Hazard index
CTE	Central tendency exposure
VOC	Volatile organic compound

TABLE H2-10.2.2.CTE
EPA RAGS PART D TABLE 10
RISK SUMMARY
CURRENT CONSTRUCTION WORKER
SITE 13, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil (0-2)	Soil	Site Soil	–	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	–	–	–	0.0E+00		–	–	–	0.0E+00
		Exposure Point Total						0.0E+00					0.0E+00
	Exposure Medium Total							0.0E+00					0.0E+00
	Air	Outdoor Air (Particulates and VOCs)	–	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	–	–	–	0.0E+00		–	–	–	0.0E+00
		Exposure Point Total						0.0E+00					0.0E+00
	Exposure Medium Total							0.0E+00					0.0E+00
Medium Total								0.0E+00					0.0E+00
Receptor Total							Receptor Risk Total	0.0E+00				Receptor HI Total	0.0E+00

Notes:

–	Not Applicable or Not Available
HI	Hazard index
CTE	Central tendency exposure
VOC	Volatile organic compound

TABLE H2-10.2.3.CTE
EPA RAGS PART D TABLE 10
RISK SUMMARY
CURRENT ADULT RESIDENT
SITE 13, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future
Receptor Population:	Resident
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil (0-2)	Soil	Site Soil	–	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	–	–	–	0.0E+00		–	–	–	0.0E+00
		Exposure Point Total						0.0E+00					0.0E+00
	Exposure Medium Total							0.0E+00					0.0E+00
	Homegrown Produce	Homegrown Produce	–	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	–	–	–	0.0E+00		–	–	–	0.0E+00
		Exposure Point Total						0.0E+00					0.0E+00
	Exposure Medium Total							0.0E+00					0.0E+00
	Air	Outdoor Air (Particulates and VOCs)	–	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	–	–	–	0.0E+00		–	–	–	0.0E+00
		Exposure Point Total						0.0E+00					0.0E+00
	Exposure Medium Total							0.0E+00					0.0E+00
Medium Total								0.0E+00					0.0E+00
Groundwater	Groundwater	Tap Water (oral/dermal)	Arsenic	2.9E-05	–	9.2E-08	–	2.9E-05	–	–	–	–	–
			Manganese	–	–	–	–	–	CNS	6.2E+00	–	2.0E-02	6.3E+00
			Pentachlorophenol	2.1E-06	–	2.6E-06	–	4.7E-06	–	–	–	–	–
		Exposure Point Total		3.1E-05	–	2.7E-06	–	3.3E-05		6.2E+00	–	2.0E-02	6.3E+00
		Tap Water (inhalation)	–	–	–	–	–	–	–	–	–	–	–
		Exposure Point Total		–	–	–	–	0.0E+00		–	–	–	0.0E+00
	Exposure Medium Total							3.3E-05					6.3E+00
Medium Total								3.3E-05					6.3E+00
Receptor Total							Receptor Risk Total	3.3E-05				Receptor HI Total	6.3E+00

Notes:

–	Not Applicable or Not Available
CNS	Central nervous system
HI	Hazard index
CTE	Central tendency exposure

TABLE H2-10.2.4.CTE
EPA RAGS PART D TABLE 10
RISK SUMMARY
CURRENT CHILD RESIDENT
SITE 13, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future
Receptor Population:	Resident
Receptor Age:	Child

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	*Primary* Target Organ(s)	*Ingestion*	*Inhalation*	Dermal	Exposure Routes Total
Soil (0-2)	Soil	Site Soil	Arsenic	4.4E-06	–	1.5E-07	–	4.6E-06	–	–	–	–	–
			Chemical Total	4.4E-06	–	1.5E-07	–	4.6E-06		–	–	–	0.0E+00
		Exposure Point Total						4.6E-06					0.0E+00
	Exposure Medium Total							4.6E-06					0.0E+00
	Homegrown Produce	Homegrown Produce	–	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	–	–	–	0.0E+00		–	–	–	0.0E+00
		Exposure Point Total						0.0E+00					0.0E+00
	Exposure Medium Total							0.0E+00					0.0E+00
	Air	Outdoor Air (Particulates and VOCs)	–	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	–	–	–	0.0E+00		–	–	–	0.0E+00
		Exposure Point Total						0.0E+00					0.0E+00
	Exposure Medium Total							0.0E+00					0.0E+00
Medium Total								4.6E-06					0.0E+00
Groundwater	Groundwater	Tap Water (oral/dermal)	Arsenic	6.3E-05	–	1.4E-07	–	6.4E-05	Skin	1.6E+00	–	3.6E-03	1.6E+00
			Manganese	–	–	–	–	–	CNS	2.1E+01	–	4.5E-02	2.1E+01
			Pentachlorophenol	4.6E-06	–	3.9E-06	–	8.5E-06	–	–	–	–	–
			Thallium	–	–	–	–	–	Liver, Blood	1.2E+00	–	2.6E-03	1.2E+00
			Trichloroethene	1.2E-06	–	3.1E-08	–	1.2E-06	–	–	–	–	–
		Exposure Point Total		6.9E-05	–	4.1E-06	–	7.3E-05		2.4E+01	–	5.1E-02	2.4E+01
		Tap Water (inhalation)	–	–	–	–	–	–	–	–	–	–	–
		Exposure Point Total		–	–	–	–	0.0E+00		–	–	–	0.0E+00
	Exposure Medium Total							7.3E-05					2.4E+01
Medium Total								7.3E-05					2.4E+01
Receptor Total							Receptor Risk Total	7.8E-05				Receptor HI Total	2.4E+01

TABLE H2-10.2.5.CTE
EPA RAGS PART D TABLE 10
RISK SUMMARY
FUTURE DEVELOPED CONSTRUCTION WORKER
SITE 13, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future-Developed
Receptor Population:	Construction Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil (0-8)	Soil	Site Soil	–	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	–	–	–	0.0E+00		–	–	–	0.0E+00
		Exposure Point Total						0.0E+00					0.0E+00
	Exposure Medium Total							0.0E+00					0.0E+00
	Air	Outdoor Air (Particulates and VOCs)	–	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	–	–	–	0.0E+00		–	–	–	0.0E+00
		Exposure Point Total						0.0E+00					0.0E+00
	Exposure Medium Total							0.0E+00					0.0E+00
Medium Total								0.0E+00					0.0E+00
Receptor Total							Receptor Risk Total	0.0E+00				Receptor HI Total	0.0E+00

Notes:

–	Not Applicable or Not Available
HI	Hazard index
CTE	Central tendency exposure
VOC	Volatile organic compound

TABLE H2-10.2.6.CTE
EPA RAGS PART D TABLE 10
RISK SUMMARY
FUTURE REDEVELOPED ADULT RESIDENT
SITE 13, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future-Redeveloped
Receptor Population:	Resident
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil (0-8)	Soil	Site Soil	–	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	–	–	–	0.0E+00		–	–	–	0.0E+00
		Exposure Point Total						0.0E+00					0.0E+00
	Exposure Medium Total							0.0E+00					0.0E+00
	Homegrown Produce	Homegrown Produce	–	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	–	–	–	0.0E+00		–	–	–	0.0E+00
		Exposure Point Total						0.0E+00					0.0E+00
	Exposure Medium Total							0.0E+00					0.0E+00
	Air	Outdoor Air (Particulates and VOCs)	–	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	–	–	–	0.0E+00		–	–	–	0.0E+00
		Exposure Point Total						0.0E+00					0.0E+00
	Exposure Medium Total							0.0E+00					0.0E+00
Medium Total								0.0E+00					0.0E+00
Groundwater	Groundwater	Tap Water (oral/dermal)	Arsenic	2.9E-05	–	9.2E-08	–	2.9E-05	–	–	–	–	–
			Manganese	–	–	–	–	–	CNS	6.2E+00	–	2.0E-02	6.3E+00
			Pentachlorophenol	2.1E-06	–	2.6E-06	–	4.7E-06	–	–	–	–	–
		Exposure Point Total		3.1E-05	–	2.7E-06	–	3.3E-05		6.2E+00	–	2.0E-02	6.3E+00
		Tap Water (inhalation)	–	–	–	–	–	–	–	–	–	–	–
		Exposure Point Total		–	–	–	–	0.0E+00		–	–	–	0.0E+00
	Exposure Medium Total							3.3E-05					6.3E+00
Medium Total								3.3E-05					6.3E+00
Receptor Total							Receptor Risk Total	3.3E-05				Receptor HI Total	6.3E+00

Notes:

–	Not Applicable or Not Available
CNS	Central nervous system
HI	Hazard index
CTE	Central tendency exposure
VOC	Volatile organic compound

TABLE H2-10.2.7.CTE
EPA RAGS PART D TABLE 10
RISK SUMMARY
FUTURE REDEVELOPED CHILD RESIDENT
SITE 13, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future-Redeveloped
Receptor Population:	Resident
Receptor Age:	Child

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil (0-8)	Soil	Site Soil	Arsenic	3.7E-06	–	1.2E-07	–	3.8E-06	–	–	–	–	–
			Chemical Total	3.7E-06	–	1.2E-07	–	3.8E-06		–	–	–	0.0E+00
		Exposure Point Total						3.8E-06					0.0E+00
	Exposure Medium Total							3.8E-06					0.0E+00
	Homegrown Produce	Homegrown Produce	–	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	–	–	–	0.0E+00		–	–	–	0.0E+00
		Exposure Point Total						0.0E+00					0.0E+00
	Exposure Medium Total							0.0E+00					0.0E+00
	Air	Outdoor Air (Particulates and VOCs)	–	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	–	–	–	0.0E+00		–	–	–	0.0E+00
		Exposure Point Total						0.0E+00					0.0E+00
	Exposure Medium Total							0.0E+00					0.0E+00
Medium Total								3.8E-06					0.0E+00
Groundwater	Groundwater	Tap Water (oral/dermal)	Arsenic	6.3E-05	–	1.4E-07	–	6.4E-05	Skin	1.6E+00	–	3.6E-03	1.6E+00
			Manganese	–	–	–	–	–	CNS	2.1E+01	–	4.5E-02	2.1E+01
			Pentachlorophenol	4.6E-06	–	3.9E-06	–	8.5E-06	–	–	–	–	–
			Thallium	–	–	–	–	–	Liver, Blood	1.2E+00	–	2.6E-03	1.2E+00
			Trichloroethene	1.2E-06	–	3.1E-08	–	1.2E-06	–	–	–	–	–
		Exposure Point Total		6.9E-05	–	4.1E-06	–	7.3E-05		2.4E+01	–	5.1E-02	2.4E+01
		Tap Water (inhalation)	–	–	–	–	–	–	–	–	–	–	–
		Exposure Point Total		–	–	–	–	0.0E+00		–	–	–	0.0E+00
	Exposure Medium Total							7.3E-05					2.4E+01
Medium Total								7.3E-05					2.4E+01
Receptor Total							Receptor Risk Total	7.7E-05				Receptor HI Total	2.4E+01

Notes:

–	Not Applicable or Not Available
CNS	Central nervous system
HI	Hazard index
CTE	Central tendency exposure
VOC	Volatile organic compound

HHRA RISK TABLES

Central Tendency Exposure
Site 19
Alameda Point, Alameda, California

TABLE H2-10.3.1.CTE
EPA RAGS PART D TABLE 10
RISK SUMMARY
CURRENT INDUSTRIAL WORKER
SITE 19, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Current/Future
Receptor Population:	Industrial Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil (0-2)	Soil	Site Soil	--	--	--	--	--	--	--	--	--	--	--
			Chemical Total	--	--	--	--	0.0E+00		--	--	--	0.0E+00
		Exposure Point Total						0.0E+00					0.0E+00
	Exposure Medium Total							0.0E+00					0.0E+00
	Air	Outdoor Air (Particulates and VOCs)	--	--	--	--	--	--	--	--	--	--	--
			Chemical Total	--	--	--	--	0.0E+00		--	--	--	0.0E+00
		Exposure Point Total						0.0E+00					0.0E+00
	Exposure Medium Total							0.0E+00					0.0E+00
Medium Total								0.0E+00					0.0E+00
Receptor Total							Receptor Risk Total	0.0E+00				Receptor HI Total	0.0E+00

Notes:

HI	Hazard index
CTE	Central tendency exposure
VOC	Volatile organic compound
--	Not Applicable or Not Available

TABLE H2-10.3.2.CTE
EPA RAGS PART D TABLE 10
RISK SUMMARY
CURRENT CONSTRUCTION WORKER
SITE 19, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Current/Future
Receptor Population:	Construction Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil (0-2)	Soil	Site Soil	–	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	–	–	–	0.0E+00		–	–	–	0.0E+00
		Exposure Point Total						0.0E+00					0.0E+00
	Exposure Medium Total							0.0E+00					0.0E+00
	Air	Outdoor Air (Particulates and VOCs)	–	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	–	–	–	0.0E+00		–	–	–	0.0E+00
		Exposure Point Total						0.0E+00					0.0E+00
	Exposure Medium Total							0.0E+00					0.0E+00
Medium Total								0.0E+00					0.0E+00
Receptor Total							Receptor Risk Total	0.0E+00				Receptor HI Total	0.0E+00

Notes:

HI	Hazard index
CTE	Central tendency exposure
VOC	Volatile organic compound
--	Not Applicable or Not Available

TABLE H2-10.3.3.CTE
EPA RAGS PART D TABLE 10
RISK SUMMARY
CURRENT ADULT RESIDENT
SITE 19, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Current/Future
Receptor Population:	Resident
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil (0-2)	Soil	Site Soil	–	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	–	–	–	0.0E+00		–	–	–	0.0E+00
		Exposure Point Total						0.0E+00					0.0E+00
	Exposure Medium Total							0.0E+00					0.0E+00
	Homegrown Produce	Homegrown Produce	–	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	–	–	–	0.0E+00		–	–	–	0.0E+00
		Exposure Point Total						0.0E+00					0.0E+00
	Exposure Medium Total							0.0E+00					0.0E+00
	Air	Outdoor Air (Particulates and VOCs)	–	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	–	–	–	0.0E+00		–	–	–	0.0E+00
		Exposure Point Total						0.0E+00					0.0E+00
	Exposure Medium Total							0.0E+00					0.0E+00
Medium Total								0.0E+00					0.0E+00
Groundwater	Groundwater	Tap Water (oral/dermal)	Arsenic	1.2E-05	–	3.9E-08	–	1.2E-05	–	–	–	–	–
			Manganese	–	–	–	–	–	CNS	4.1E+00	–	1.3E-02	4.1E+00
			Trichloroethene	1.2E-06	–	4.8E-08	–	1.3E-06	–	–	–	–	–
		Exposure Point Total		1.3E-05	–	8.7E-08	–	1.4E-05		4.1E+00	–	1.3E-02	4.1E+00
		Tap Water (inhalation)	–	–	–	–	–	–	–	–	–	–	–
		Exposure Point Total		–	–	–	–	0.0E+00		–	–	–	0.0E+00
	Exposure Medium Total							1.4E-05					4.1E+00
Medium Total								1.4E-05					4.1E+00
Receptor Total							Receptor Risk Total	1.4E-05				Receptor HI Total	4.1E+00

Notes:

CNS	Central nervous system
GI	Gastrointestinal
HI	Hazard index
CTE	Central tendency exposure
VOC	Volatile organic compound
–	Not Applicable or Not Available

TABLE H2-10.3.4.CTE
EPA RAGS PART D TABLE 10
RISK SUMMARY
CURRENT CHILD RESIDENT
SITE 19, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Current/Future
Receptor Population:	Resident
Receptor Age:	Child

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil (0-2)	Soil	Site Soil	Arsenic	3.6E-06	–	1.2E-07	–	3.7E-06	–	–	–	–	–
			Chemical Total	3.6E-06	–	1.2E-07	–	3.7E-06		–	–	–	0.0E+00
		Exposure Point Total						3.7E-06					0.0E+00
	Exposure Medium Total							3.7E-06					0.0E+00
	Homegrown Produce	Homegrown Produce	–	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	–	–	–	0.0E+00		–	–	–	0.0E+00
		Exposure Point Total						0.0E+00					0.0E+00
	Exposure Medium Total							0.0E+00					0.0E+00
	Air	Outdoor Air (Particulates and VOCs)	–	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	–	–	–	0.0E+00		–	–	–	0.0E+00
		Exposure Point Total						0.0E+00					0.0E+00
	Exposure Medium Total							0.0E+00					0.0E+00
Medium Total								3.7E-06					0.0E+00
Groundwater	Groundwater	Tap Water (oral/dermal)	Arsenic	2.7E-05	–	5.9E-08	–	2.7E-05	–	–	–	–	–
			Manganese	–	–	–	–	–	CNS	1.4E+01	–	3.0E-02	1.4E+01
			Tetrachloroethene	1.2E-06	–	8.3E-08	–	1.2E-06	–	–	–	–	–
			Trichloroethene	2.8E-06	–	7.2E-08	–	2.8E-06	–	–	–	–	–
		Exposure Point Total		3.1E-05	–	2.1E-07	–	3.1E-05		1.4E+01	–	3.0E-02	1.4E+01
		Tap Water (Inhalation)	–	–	–	–	–	–	–	–	–	–	–
		Exposure Point Total		–	–	–	–	0.0E+00		–	–	–	0.0E+00
	Exposure Medium Total							3.1E-05					1.4E+01
Medium Total								3.1E-05					1.4E+01
Receptor Total							Receptor Risk Total	3.5E-05				Receptor HI Total	1.4E+01

Notes:

CNS	Central nervous system
HI	Hazard index
CTE	Central tendency exposure
VOC	Volatile organic compound
–	Not Applicable or Not Available

TABLE H2-10.3.5.CTE
EPA RAGS PART D TABLE 10
RISK SUMMARY
FUTURE DEVELOPED CONSTRUCTION WORKER
SITE 19, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future-Developed
Receptor Population:	Construction Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil (0-8)	Soil	Site Soil	–	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	–	–	–	0.0E+00		–	–	–	0.0E+00
		Exposure Point Total						0.0E+00					0.0E+00
	Exposure Medium Total							0.0E+00					0.0E+00
	Air	Outdoor Air (Particulates and VOCs)	–	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	–	–	–	0.0E+00		–	–	–	0.0E+00
		Exposure Point Total						0.0E+00					0.0E+00
	Exposure Medium Total							0.0E+00					0.0E+00
Medium Total								0.0E+00					0.0E+00
Receptor Total							Receptor Risk Total	0.0E+00				Receptor HI Total	0.0E+00

Notes:

HI	Hazard index
CTE	Central tendency exposure
VOC	Volatile organic compound
–	Not Applicable or Not Available

TABLE H2-10.3.6.CTE
EPA RAGS PART D TABLE 10
RISK SUMMARY
FUTURE REDEVELOPED ADULT RESIDENT
SITE 19, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future-Redeveloped
Receptor Population:	Resident
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil (0-8)	Soil	Site Soil	–	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	–	–	–	0.0E+00		–	–	–	0.0E+00
		Exposure Point Total						0.0E+00					0.0E+00
	Exposure Medium Total							0.0E+00					0.0E+00
	Homegrown Produce	Homegrown Produce	–	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	–	–	–	0.0E+00		–	–	–	0.0E+00
		Exposure Point Total						0.0E+00					0.0E+00
	Exposure Medium Total							0.0E+00					0.0E+00
	Air	Outdoor Air (Particulates and VOCs)	–	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	–	–	–	0.0E+00		–	–	–	0.0E+00
		Exposure Point Total						0.0E+00					0.0E+00
	Exposure Medium Total							0.0E+00					0.0E+00
Medium Total								0.0E+00					0.0E+00
Groundwater	Groundwater	Tap Water (oral/dermal)	Arsenic	1.2E-05	–	3.9E-08	–	1.2E-05	–	–	–	–	–
			Manganese	–	–	–	–	–	CNS	4.1E+00	–	1.3E-02	4.1E+00
			Trichloroethene	1.2E-06	–	4.8E-08	–	1.3E-06	–	–	–	–	–
		Exposure Point Total		1.3E-05	–	8.7E-08	–	1.4E-05		4.1E+00	–	1.3E-02	4.1E+00
		Tap Water (inhalation)	–	–	–	–	–	–	–	–	–	–	–
		Exposure Point Total		–	–	–	–	0.0E+00		–	–	–	0.0E+00
	Exposure Medium Total							1.4E-05					4.1E+00
Medium Total								1.4E-05					4.1E+00
Receptor Total							Receptor Risk Total	1.4E-05				Receptor HI Total	4.1E+00

Notes:

CNS	Central nervous system
HI	Hazard index
CTE	Central tendency exposure
VOC	Volatile organic compound
–	Not Applicable or Not Available

TABLE H2-10.3.7.CTE
EPA RAGS PART D TABLE 10
RISK SUMMARY
FUTURE REDEVELOPED CHILD RESIDENT
SITE 19, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future-Redeveloped
Receptor Population:	Resident
Receptor Age:	Child

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil (0-8)	Soil	Site Soil	Arsenic	4.3E-06	–	1.4E-07	–	4.5E-06	–	–	–	–	–
			Chemical Total	4.3E-06	–	1.4E-07	–	4.5E-06		–	–	–	0.0E+00
		Exposure Point Total						4.5E-06					0.0E+00
	Exposure Medium Total							4.5E-06					0.0E+00
	Homegrown Produce	Homegrown Produce	–	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	–	–	–	0.0E+00		–	–	–	0.0E+00
		Exposure Point Total						0.0E+00					0.0E+00
	Exposure Medium Total							0.0E+00					0.0E+00
	Air	Outdoor Air	–	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	–	–	–	0.0E+00		–	–	–	0.0E+00
		Exposure Point Total						0.0E+00					0.0E+00
	Exposure Medium Total							0.0E+00					0.0E+00
Medium Total								4.5E-06					0.0E+00
Groundwater	Groundwater	Tap Water (oral/dermal)	Arsenic	2.7E-05	–	5.9E-08	–	2.7E-05	–	–	–	–	–
			Manganese	–	–	–	–	–	CNS	1.4E+01	–	3.0E-02	1.4E+01
			Tetrachloroethene	1.2E-06	–	8.3E-08	–	1.2E-06	–	–	–	–	–
			Trichloroethene	2.8E-06	–	7.2E-08	–	2.8E-06	–	–	–	–	–
		Exposure Point Total		3.1E-05	–	2.1E-07	–	3.1E-05		1.4E+01	–	3.0E-02	1.4E+01
		Tap Water (inhalation)	–	–	–	–	–	–	–	–	–	–	–
		Exposure Point Total		–	–	–	–	0.0E+00		–	–	–	0.0E+00
	Exposure Medium Total							3.1E-05					1.4E+01
Medium Total								3.1E-05					1.4E+01
Receptor Total							Receptor Risk Total	3.6E-05				Receptor HI Total	1.4E+01

Notes:

CNS	Central nervous system
HI	Hazard index
CTE	Central tendency exposure
VOC	Volatile organic compound
–	Not Applicable or Not Available

HHRA RISK TABLES

Central Tendency Exposure
Site 22
Alameda Point, Alameda, California

TABLE H2-10.4.1.CTE
EPA RAGS PART D TABLE 10
RISK SUMMARY
CURRENT INDUSTRIAL WORKER
SITE 22, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	*Current*
Receptor Population:	Industrial Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil (0-2)	Soil	Site Soil	–	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	–	–	–	0.0E+00		–	–	–	0.0E+00
		Exposure Point Total						0.0E+00					0.0E+00
	Exposure Medium Total							0.0E+00					0.0E+00
	Air	Outdoor Air (Particulates and VOCs)	–	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	–	–	–	0.0E+00		–	–	–	0.0E+00
		Exposure Point Total						0.0E+00					0.0E+00
	Exposure Medium Total							0.0E+00					0.0E+00
Medium Total								0.0E+00					0.0E+00
Groundwater	Groundwater	Indoor Air (Vapor Intrusion)	–	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	–	–	–	0.0E+00		–	–	–	0.0E+00
		Exposure Point Total						0.0E+00					0.0E+00
	Exposure Medium Total							0.0E+00					0.0E+00
Medium Total								0.0E+00					0.0E+00
Receptor Total							Receptor Risk Total	0.0E+00				Receptor HI Total	0.0E+00

Notes:

HI	Hazard index
CTE	Central tendency exposure
VOC	Volatile organic compound
–	Not Applicable or Not Available

TABLE H2-10.4.2.CTE
EPA RAGS PART D TABLE 10
RISK SUMMARY
CURRENT CONSTRUCTION WORKER
SITE 22, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Current
Receptor Population:	Construction Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil (0-2)	Soil	Site Soil	–	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	–	–	–	0.0E+00		–	–	–	0.0E+00
		Exposure Point Total						0.0E+00					0.0E+00
	Exposure Medium Total							0.0E+00					0.0E+00
	Air	Outdoor Air (Particulates and VOCs)	–	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	–	–	–	0.0E+00		–	–	–	0.0E+00
		Exposure Point Total						0.0E+00					0.0E+00
	Exposure Medium Total							0.0E+00					0.0E+00
Medium Total								0.0E+00					0.0E+00
Receptor Total							Receptor Risk Total	0.0E+00				Receptor HI Total	0.0E+00

Notes:

HI	Hazard index
CTE	Central tendency exposure
VOC	Volatile organic compound
–	Not Applicable or Not Available

TABLE H2-10.4.3.CTE
EPA RAGS PART D TABLE 10
RISK SUMMARY
CURRENT ADULT RESIDENT
SITE 22, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future
Receptor Population:	Resident
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil (0-2)	Soil	Site Soil	–	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	–	–	–	0.0E+00		–	–	–	0.0E+00
		Exposure Point Total						0.0E+00					0.0E+00
	Exposure Medium Total							0.0E+00					0.0E+00
	Homegrown Produce	Homegrown Produce	–	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	–	–	–	0.0E+00		–	–	–	0.0E+00
		Exposure Point Total						0.0E+00					0.0E+00
	Exposure Medium Total							0.0E+00					0.0E+00
	Air	Outdoor Air (Particulates and VOCs)	–	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	–	–	–	0.0E+00		–	–	–	0.0E+00
		Exposure Point Total						0.0E+00					0.0E+00
	Exposure Medium Total							0.0E+00					0.0E+00
Medium Total								0.0E+00					0.0E+00
Groundwater	Groundwater	Indoor Air (Vapor Intrusion)	–	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	–	–	–	0.0E+00		–	–	–	0.0E+00
		Exposure Point Total						0.0E+00					0.0E+00
	Exposure Medium Total							0.0E+00					0.0E+00
	Groundwater	Tap Water (oral/dermal)	Arsenic	4.6E-05	–	1.5E-07	–	4.6E-05	–	–	–	–	–
			Benzene	7.3E-05	–	4.9E-06	–	7.8E-05	Blood	2.6E+00	–	1.7E-01	2.8E+00
			Ethylbenzene	1.1E-06	–	1.8E-07	–	1.3E-06	–	–	–	–	–
			Manganese	–	–	–	–	–	CNS	4.1E+00	–	1.3E-02	4.1E+00
			Trichloroethene	2.3E-06	–	9.0E-08	–	2.4E-06	–	–	–	–	–
		Exposure Point Total		1.2E-04	–	5.4E-06	–	1.3E-04		6.7E+00	–	1.9E-01	6.8E+00
		Tap Water (inhalation)	–	–	–	–	–	–	–	–	–	–	–
		Exposure Point Total		–	–	–	–	0.0E+00		–	–	–	0.0E+00
	Exposure Medium Total							1.3E-04					6.8E+00
Medium Total								1.3E-04					6.8E+00
Receptor Total							Receptor Risk Total	1.3E-04				Receptor HI Total	6.8E+00

TABLE H2-10.4.3.CTE
EPA RAGS PART D TABLE 10
RISK SUMMARY
CURRENT ADULT RESIDENT
SITE 22, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future
Receptor Population:	Resident
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total

Notes:

HI	Hazard index
CTE	Central tendency exposure
VOC	Volatile organic compound
–	Not Applicable or Not Available

TABLE H2-10.4.4.CTE
EPA RAGS PART D TABLE 10
RISK SUMMARY
CURRENT CHILD RESIDENT
SITE 22, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future
Receptor Population:	Resident
Receptor Age:	Child

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil (0-2)	Soil	Site Soil	Arsenic	3.8E-06	–	1.3E-07	–	3.9E-06	–	–	–	–	–
			Chemical Total	3.8E-06	–	1.3E-07	–	3.9E-06		–	–	–	0.0E+00
		Exposure Point Total						3.9E-06					0.0E+00
	Exposure Medium Total							3.9E-06					0.0E+00
	Homegrown Produce	Homegrown Produce	–	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	–	–	–	0.0E+00		–	–	–	0.0E+00
		Exposure Point Total						0.0E+00					0.0E+00
	Exposure Medium Total							0.0E+00					0.0E+00
	Air	Outdoor Air (Particulates and VOCs)	–	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	–	–	–	0.0E+00		–	–	–	0.0E+00
		Exposure Point Total						0.0E+00					0.0E+00
	Exposure Medium Total							0.0E+00					0.0E+00
Medium Total								3.9E-06					0.0E+00
Groundwater	Groundwater	Indoor Air (Vapor Intrusion)	–	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	–	–	–	0.0E+00		–	–	–	0.0E+00
		Exposure Point Total						0.0E+00					0.0E+00
	Exposure Medium Total							0.0E+00					0.0E+00
	Groundwater	Tap Water (oral/dermal)	1,2-Dichloroethane	1.0E-06	–	9.4E-09	–	1.0E-06	–	–	–	–	–
			Arsenic	1.0E-04	–	2.2E-07	–	1.0E-04	Skin	2.6E+00	–	5.8E-03	2.6E+00
			Benzene	1.6E-04	–	7.4E-06	–	1.7E-04	Blood	8.6E+00	–	3.9E-01	9.0E+00
			Ethylbenzene	2.6E-06	–	2.7E-07	–	2.8E-06	–	–	–	–	–
			Manganese	–	–	–	–	–	CNS	1.4E+01	–	3.0E-02	1.4E+01
			Thallium	–	–	–	–	–	Liver, Blood	1.8E+00	–	3.9E-03	1.8E+00
			Trichloroethene	5.2E-06	–	1.4E-07	–	5.3E-06	–	–	–	–	–
		Exposure Point Total		2.7E-04	–	8.1E-06	–	2.8E-04		2.7E+01	–	4.3E-01	2.7E+01
		Tap Water (inhalation)	–	–	–	–	–	–	–	–	–	–	–
		Exposure Point Total		–	–	–	–	0.0E+00		–	–	–	0.0E+00
	Exposure Medium Total							2.8E-04					2.7E+01
Medium Total								2.8E-04					2.7E+01
Receptor Total							Receptor Risk Total	2.9E-04				Receptor Hi Total	2.7E+01

TABLE H2-10.4.4.CTE
EPA RAGS PART D TABLE 10
RISK SUMMARY
CURRENT CHILD RESIDENT
SITE 22, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future
Receptor Population:	Resident
Receptor Age:	Child

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total

Notes:

CNS	Central nervous system
HI	Hazard index
CTE	Central tendency exposure
VOC	Volatile organic compound
–	Not Applicable or Not Available

TABLE H2-10.4.5.CTE
EPA RAGS PART D TABLE 10
RISK SUMMARY
FUTURE DEVELOPED CONSTRUCTION WORKER
SITE 22, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future-Developed
Receptor Population:	Construction Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil (0-8)	Soil	Site Soil	–	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	–	–	–	0.0E+00		–	–	–	0.0E+00
		Exposure Point Total						0.0E+00					0.0E+00
	Exposure Medium Total							0.0E+00					0.0E+00
	Air	Outdoor Air (Particulates and VOCs)	–	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	–	–	–	0.0E+00		–	–	–	0.0E+00
		Exposure Point Total						0.0E+00					0.0E+00
	Exposure Medium Total							0.0E+00					0.0E+00
Medium Total								0.0E+00					0.0E+00
Receptor Total							Receptor Risk Total	0.0E+00				Receptor HI Total	0.0E+00

Notes:

HI	Hazard index
CTE	Central tendency exposure
VOC	Volatile organic compound
–	Not Applicable or Not Available

TABLE H2-10.4.6.CTE
EPA RAGS PART D TABLE 10
RISK SUMMARY
FUTURE REDEVELOPED ADULT RESIDENT
SITE 22, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future-Redeveloped
Receptor Population:	Resident
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil (0-8)	Soil	Site Soil	–	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	–	–	–	0.0E+00		–	–	–	0.0E+00
		Exposure Point Total						0.0E+00					0.0E+00
	Exposure Medium Total							0.0E+00					0.0E+00
	Homegrown Produce	Homegrown Produce	–	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	–	–	–	0.0E+00		–	–	–	0.0E+00
		Exposure Point Total						0.0E+00					0.0E+00
	Exposure Medium Total							0.0E+00					0.0E+00
	Air	Outdoor Air (Particulates and VOCs)	–	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	–	–	–	0.0E+00		–	–	–	0.0E+00
		Exposure Point Total						0.0E+00					0.0E+00
	Exposure Medium Total							0.0E+00					0.0E+00
Medium Total								0.0E+00					0.0E+00
Groundwater	Groundwater	Indoor Air (Vapor Intrusion)	–	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	–	–	–	0.0E+00		–	–	–	0.0E+00
		Exposure Point Total						0.0E+00					0.0E+00
	Exposure Medium Total							0.0E+00					0.0E+00
	Groundwater	Tap Water (oral/dermal)	Arsenic	4.6E-05	–	1.5E-07	–	4.6E-05	–	–	–	–	–
			Benzene	7.3E-05	–	4.9E-06	–	7.8E-05	Blood	2.6E+00	–	1.7E-01	2.8E+00
			Ethylbenzene	1.1E-06	–	1.8E-07	–	1.3E-06	–	–	–	–	–
			Manganese	–	–	–	–	–	CNS	4.1E+00	–	1.3E-02	4.1E+00
			Trichloroethene	2.3E-06	–	9.0E-08	–	2.4E-06	–	–	–	–	–
		Exposure Point Total		1.2E-04	–	5.4E-06	–	1.3E-04		6.7E+00	–	1.9E-01	6.8E+00
		Tap Water (inhalation)	–	–	–	–	–	–	–	–	–	–	–
		Exposure Point Total		–	–	–	–	0.0E+00		–	–	–	0.0E+00
	Exposure Medium Total							1.3E-04					6.8E+00
Medium Total								1.3E-04					6.8E+00
Receptor Total							Receptor Risk Total	1.3E-04				Receptor HI Total	6.8E+00

TABLE H2-10.4.6.CTE
EPA RAGS PART D TABLE 10
RISK SUMMARY
FUTURE REDEVELOPED ADULT RESIDENT
SITE 22, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future-Redeveloped
Receptor Population:	Resident
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total

Notes:

CNS	Central nervous system
HI	Hazard index
CTE	Central tendency exposure
VOC	Volatile organic compound
–	Not Applicable or Not Available

TABLE H2-10.4.7.RME
EPA RAGS PART D TABLE 10
RISK SUMMARY
FUTURE REDEVELOPED CHILD RESIDENT
SITE 22, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future-Redeveloped
Receptor Population:	Resident
Receptor Age:	Child

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil (0-8)	Soil	Site Soil	Arsenic	3.5E-06	–	1.2E-07	–	3.7E-06	–	–	–	–	–
			Chemical Total	3.5E-06	–	1.2E-07	–	3.7E-06		–	–	–	0.0E+00
		Exposure Point Total						3.7E-06					0.0E+00
	Exposure Medium Total							3.7E-06					0.0E+00
	Homegrown Produce	Homegrown Produce	–	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	–	–	–	0.0E+00		–	–	–	0.0E+00
		Exposure Point Total						0.0E+00					0.0E+00
	Exposure Medium Total							0.0E+00					0.0E+00
	Air	Outdoor Air (Particulates and VOCs)	–	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	–	–	–	0.0E+00		–	–	–	0.0E+00
		Exposure Point Total						0.0E+00					0.0E+00
	Exposure Medium Total							0.0E+00					0.0E+00
Medium Total								3.7E-06					0.0E+00
Groundwater	Groundwater	Indoor Air (Vapor Intrusion)	–	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	–	–	–	0.0E+00		–	–	–	0.0E+00
		Exposure Point Total						0.0E+00					0.0E+00
	Exposure Medium Total							0.0E+00					0.0E+00
	Groundwater	Tap Water (oral/dermal)	1,2-Dichloroethane	1.0E-06	–	9.4E-09	–	1.0E-06	–	–	–	–	–
			Arsenic	1.0E-04	–	2.2E-07	–	1.0E-04	Skin	2.6E+00	–	5.8E-03	2.6E+00
			Benzene	1.6E-04	–	7.4E-06	–	1.7E-04	Blood	8.6E+00	–	3.9E-01	9.0E+00
			Ethylbenzene	2.6E-06	–	2.7E-07	–	2.8E-06	–	–	–	–	–
			Manganese	–	–	–	–	–	CNS	1.4E+01	–	3.0E-02	1.4E+01
			Thallium	–	–	–	–	–	Liver, Blood	1.8E+00	–	3.9E-03	1.8E+00
			Trichloroethene	5.2E-06	–	1.4E-07	–	5.3E-06	–	–	–	–	–
		Exposure Point Total		2.7E-04	–	8.1E-06	–	2.8E-04		2.7E+01	–	4.3E-01	2.7E+01
		Tap Water (inhalation)	–	–	–	–	–	–	–	–	–	–	–
		Exposure Point Total		–	–	–	–	0.0E+00		–	–	–	0.0E+00
	Exposure Medium Total							2.8E-04					2.7E+01
Medium Total								2.8E-04					2.7E+01
Receptor Total							Receptor Risk Total	2.8E-04				Receptor HI Total	2.7E+01

HHRA RISK TABLES

Central Tendency Exposure
Site 23
Alameda Point, Alameda, California

TABLE H2-10.5.1.CTE
EPA RAGS PART D TABLE 10
RISK SUMMARY
CURRENT INDUSTRIAL WORKER
SITE 23, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future
Receptor Population:	Industrial Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil (0-2)	Soil	Site Soil	–	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	–	–	–	0.0E+00		–	–	–	0.0E+00
		Exposure Point Total						0.0E+00					0.0E+00
	Exposure Medium Total							0.0E+00					0.0E+00
	Air	Outdoor Air (Particulates and VOCs)	–	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	–	–	–	0.0E+00		–	–	–	0.0E+00
		Exposure Point Total						0.0E+00					0.0E+00
	Exposure Medium Total							0.0E+00					0.0E+00
Medium Total								0.0E+00					0.0E+00
Receptor Total							Receptor Risk Total	0.0E+00				Receptor HI Total	0.0E+00

Notes:

HI	Hazard index
CTE	Central tendency exposure
VOC	Volatile organic compound
–	Not Applicable or Not Available

TABLE H2-10.5.2.CTE
EPA RAGS PART D TABLE 10
RISK SUMMARY
CURRENT CONSTRUCTION WORKER
SITE 23, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil (0-2)	Soil	Site Soil	–	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	–	–	–	0.0E+00		–	–	–	0.0E+00
		Exposure Point Total						0.0E+00					0.0E+00
	Exposure Medium Total							0.0E+00					0.0E+00
	Air	Outdoor Air (Particulates and VOCs)	–	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	–	–	–	0.0E+00		–	–	–	0.0E+00
		Exposure Point Total						0.0E+00					0.0E+00
	Exposure Medium Total							0.0E+00					0.0E+00
Medium Total								0.0E+00					0.0E+00
Receptor Total							Receptor Risk Total	0.0E+00				Receptor HI Total	0.0E+00

Notes:

HI	Hazard index
CTE	Central tendency exposure
VOC	Volatile organic compound
–	Not Applicable or Not Available

TABLE H2-10.5.3.CTE
EPA RAGS PART D TABLE 10
RISK SUMMARY
CURRENT ADULT RESIDENT
SITE 23, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future
Receptor Population:	Resident
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil (0-2)	Soil	Site Soil	–	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	–	–	–	0.0E+00		–	–	–	0.0E+00
		Exposure Point Total						0.0E+00					0.0E+00
	Exposure Medium Total							0.0E+00					0.0E+00
	Homegrown Produce	Site Soil	–	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	–	–	–	0.0E+00		–	–	–	0.0E+00
		Exposure Point Total						0.0E+00					0.0E+00
	Exposure Medium Total							0.0E+00					0.0E+00
	Air	Outdoor Air (Particulates and VOCs)	–	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	–	–	–	0.0E+00		–	–	–	0.0E+00
		Exposure Point Total						0.0E+00					0.0E+00
	Exposure Medium Total							0.0E+00					0.0E+00
Medium Total								0.0E+00					0.0E+00
Groundwater	Groundwater	Tap Water (oral/dermal)	Arsenic	2.3E-05	–	7.4E-08	–	2.3E-05	–	–	–	–	–
			Benzo(a)pyrene	1.1E-05	–	2.4E-05	–	3.5E-05	–	–	–	–	–
			Benzo(b)fluoranthene	1.4E-06	–	3.2E-06	–	4.7E-06	–	–	–	–	–
		Exposure Point Total		3.5E-05	–	2.8E-05	–	6.3E-05		–	–	–	0.0E+00
		Tap Water (inhalation)	–	–	–	–	–	–	–	–	–	–	–
		Exposure Point Total		–	–	–	–	0.0E+00		–	–	–	0.0E+00
	Exposure Medium Total							6.3E-05					0.0E+00
Medium Total								6.3E-05					0.0E+00
Receptor Total							Receptor Risk Total	6.3E-05				Receptor HI Total	0.0E+00

Notes:

HI	Hazard Index
CTE	Central tendency exposure
VOC	Volatile organic compound
–	Not Applicable or Not Available

TABLE H2-10.5.4.CTE
EPA RAGS PART D TABLE 10
RISK SUMMARY
CURRENT CHILD RESIDENT
SITE 23, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	*Future*
Receptor Population:	**Resident**
Receptor Age:	Child

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil (0-2)	Soil	Site Soil	Arsenic	2.6E-06	–	8.7E-08	–	2.7E-06	–	–	–	–	–
			Chemical Total	2.6E-06	–	8.7E-08	–	2.7E-06		–	–	–	0.0E+00
		Exposure Point Total						2.7E-06					0.0E+00
	Exposure Medium Total							2.7E-06					0.0E+00
	Homegrown Produce	Homegrown Produce	–	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	–	–	–	0.0E+00		–	–	–	0.0E+00
		Exposure Point Total						0.0E+00					0.0E+00
	Exposure Medium Total							0.0E+00					0.0E+00
	Air	Outdoor Air (Particulates and VOCs)	–	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	–	–	–	0.0E+00		–	–	–	0.0E+00
		Exposure Point Total						0.0E+00					0.0E+00
	Exposure Medium Total							0.0E+00					0.0E+00
Medium Total								2.7E-06					0.0E+00
Groundwater	Groundwater	Tap Water (oral/dermal)	Arsenic	5.1E-05	–	1.1E-07	–	5.1E-05	Skin	1.3E+00	–	2.9E-03	1.3E+00
			Benzo(a)pyrene	2.4E-05	–	3.7E-05	–	6.1E-05	–	–	–	–	–
			Benzo(b)fluoranthene	3.2E-06	–	4.9E-06	–	8.1E-06	–	–	–	–	–
			Thallium	–	–	–	–	–	Liver, Blood	1.2E+00	–	2.7E-03	1.2E+00
		Exposure Point Total		7.8E-05	–	4.2E-05	–	1.2E-04		2.6E+00	–	5.6E-03	2.6E+00
		Tap Water (inhalation)	–	–	–	–	–	–	–	–	–	–	–
		Exposure Point Total		–	–	–	–	0.0E+00		–	–	–	0.0E+00
	Exposure Medium Total							1.2E-04					2.6E+00
Medium Total								1.2E-04					2.6E+00
Receptor Total							Receptor Risk Total	1.2E-04				Receptor HI Total	2.6E+00

Notes:

HI	Hazard index
CTE	Central tendency exposure
VOC	Volatile organic compound
–	Not Applicable or Not Available

TABLE H2-10.5.5.CTE
EPA RAGS PART D TABLE 10
RISK SUMMARY
FUTURE DEVELOPED CONSTRUCTION WORKER
SITE 23, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future-Developed
Receptor Population:	Construction Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil (0-8)	Soil	Site Soil	–	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	–	–	–	0.0E+00		–	–	–	0.0E+00
		Exposure Point Total						0.0E+00					0.0E+00
	Exposure Medium Total							0.0E+00					0.0E+00
	Air	Outdoor Air (Particulates and VOCs)	–	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	–	–	–	0.0E+00		–	–	–	0.0E+00
		Exposure Point Total						0.0E+00					0.0E+00
	Exposure Medium Total							0.0E+00					0.0E+00
Medium Total								0.0E+00					0.0E+00
Receptor Total							Receptor Risk Total	0.0E+00				Receptor HI Total	0.0E+00

Notes:

HI	Hazard index
CTE	Central tendency exposure
VOC	Volatile organic compound
–	Not Applicable or Not Available

TABLE H2-10.5.6.CTE
EPA RAGS PART D TABLE 10
RISK SUMMARY
FUTURE REDEVELOPED ADULT RESIDENT
SITE 23, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future-Redeveloped
Receptor Population:	Resident
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil (0-8)	Soil	Site Soil	–	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	–	–	–	0.0E+00		–	–	–	0.0E+00
		Exposure Point Total						0.0E+00					0.0E+00
	Exposure Medium Total							0.0E+00					0.0E+00
	Homegrown Produce	Homegrown Produce	–	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	–	–	–	0.0E+00		–	–	–	0.0E+00
		Exposure Point Total						0.0E+00					0.0E+00
	Exposure Medium Total							0.0E+00					0.0E+00
	Air	Outdoor Air (Particulates and VOCs)	–	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	–	–	–	0.0E+00		–	–	–	0.0E+00
		Exposure Point Total						0.0E+00					0.0E+00
	Exposure Medium Total							0.0E+00					0.0E+00
Medium Total								0.0E+00					0.0E+00
Groundwater	Groundwater	Tap Water (oral/dermal)	Arsenic	2.3E-05	–	7.4E-08	–	2.3E-05	–	–	–	–	–
			Benzo(a)pyrene	1.1E-05	–	2.4E-05	–	3.5E-05	–	–	–	–	–
			Benzo(b)fluoranthene	1.4E-06	–	3.2E-06	–	4.7E-06	–	–	–	–	–
		Exposure Point Total		3.5E-05	–	2.8E-05	–	6.3E-05		–	–	–	0.0E+00
		Tap Water (inhalation)	–	–	–	–	–	–	–	–	–	–	–
		Exposure Point Total		–	–	–	–	0.0E+00		–	–	–	0.0E+00
	Exposure Medium Total							6.3E-05					0.0E+00
Medium Total								6.3E-05					0.0E+00
Receptor Total							Receptor Risk Total	6.3E-05				Receptor HI Total	0.0E+00

Notes:

HI	Hazard index
CTE	Central tendency exposure
VOC	*Volatile organic compound*
–	Not Applicable or Not Available

TABLE H2-10.5.7.CTE
EPA RAGS PART D TABLE 10
RISK SUMMARY
FUTURE REDEVELOPED CHILD RESIDENT
SITE 23, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Scenario Timeframe:	Future-Redeveloped
Receptor Population:	Resident
Receptor Age:	Child

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil (0-8)	Soil	Site Soil	Arsenic	3.1E-06	–	1.1E-07	–	3.2E-06	–	–	–	–	–
			Chemical Total	3.1E-06	–	1.1E-07	–	3.2E-06		–	–	–	0.0E+00
		Exposure Point Total						3.2E-06					0.0E+00
	Exposure Medium Total							3.2E-06					0.0E+00
	Homegrown Produce	Homegrown Produce	–	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	–	–	–	0.0E+00		–	–	–	0.0E+00
		Exposure Point Total						0.0E+00					0.0E+00
	Exposure Medium Total							0.0E+00					0.0E+00
	Air	Outdoor Air (Particulates and VOCs)	–	–	–	–	–	–	–	–	–	–	–
			Chemical Total	–	–	–	–	0.0E+00		–	–	–	0.0E+00
		Exposure Point Total						0.0E+00					0.0E+00
	Exposure Medium Total							0.0E+00					0.0E+00
Medium Total								3.2E-06					0.0E+00
Groundwater	Groundwater	Tap Water (oral/dermal)	Arsenic	5.1E-05	–	1.1E-07	–	5.1E-05	Skin	1.3E+00	–	2.9E-03	1.3E+00
			Benzo(a)pyrene	2.4E-05	–	3.7E-05	–	6.1E-05	–	–	–	–	–
			Benzo(b)fluoranthene	3.2E-06	–	4.9E-06	–	8.1E-06	–	–	–	–	–
			Thallium	–	–	–	–	–	Liver, Blood	1.2E+00	–	2.7E-03	1.2E+00
		Exposure Point Total		7.8E-05	–	4.2E-05	–	1.2E-04		2.6E+00	–	5.6E-03	2.6E+00
		Tap Water (inhalation)	–	–	–	–	–	–	–	–	–	–	–
		Exposure Point Total		–	–	–	–	0.0E+00		–	–	–	0.0E+00
	Exposure Medium Total							1.2E-04					2.6E+00
Medium Total								1.2E-04					2.6E+00
Receptor Total							Receptor Risk Total	1.2E-04				Receptor HI Total	2.6E+00

Notes:

HI	Hazard Index
CTE	Central tendency exposure
VOC	Volatile organic compound
–	Not Applicable or Not Available

ATTACHMENT H3
TOXICITY PROFILES

ATTACHMENT H3
TOXICITY PROFILES FOR OU-2A RISK DRIVERS

H3.1 ARSENIC

Arsenic is a naturally occurring element with widespread distribution. Arsenic is used in metallurgy to harden copper, lead, and alloys, in the manufacture of certain types of glass, and in medical applications. Because arsenic is present in many mineral ores, it is frequently concentrated near mining sites as a by-product of smelting. Historically, inorganic and organic forms of arsenic were widely used as pesticides. Consequently, arsenic concentrations are frequently elevated in agricultural areas.

Human arsenic exposure occurs primarily through oral ingestion of both organic and inorganic forms of arsenic. The ingestion of arsenic in food items constitutes the largest source of arsenic exposure on a daily basis (approximately 25 to 50 micrograms per day). The particular form of arsenic ingested is a critical factor, since it is well established that trivalent arsenic compounds are more toxic than pentavalent forms. However, exposure to individuals at hazardous waste sites is usually to the pentavalent form because natural oxidation processes in the environment favor this formation (Agency for Toxic Substances and Disease Registry [ATSDR] 1989).

Water-soluble arsenic is efficiently absorbed from the gastrointestinal tract. Reaching the systemic circulation, trivalent arsenic is detoxified in the liver by conversion to methylarsenic acid and dimethylarsenic acid, which are the principal forms excreted in the urine. The body burden of arsenic can reach considerable levels since it can be sequestered in nails, hair, bones, teeth, skin, liver, kidneys, and lungs (ATSDR 1989).

The adverse health effects produced by arsenic are highly dose-dependent. For example, at low concentrations arsenic may be an essential nutrient and substitute for phosphorus in key biochemical reactions (ATSDR 1989). However, at high levels, arsenic has been recognized, and used since ancient times, as an effective human poison. At toxic levels, it produces a severe form of peripheral arteriosclerosis known as blackfoot disease.

Chronic exposure to low levels of arsenic can produce malaise and fatigue, gastrointestinal distress, anemia, basophilic stippling, and neuropathy. The prominent pathological effect, however, is plantar and palmar hyperpigmentation and hyperkeratotic lesions (ATSDR 1989). Although these lesions in themselves do not pose a significant health concern, they may ultimately develop into malignant skin cancers and metastasize to other parts of the body.

The oral RfD for arsenic is 0.0003 mg/kg-day based on pathological changes in skin as well as lesions in blood vessels and includes an uncertainty factor of 3 (EPA 2003). EPA has not established an inhalation RfC for arsenic.

Arsenic is classified as a class A carcinogen. The basis for the classification is an increased lung cancer mortality observed in multiple human populations exposed through the inhalation route. An increased mortality observed in multiple internal organs (liver, kidney, lung, and bladder) and an increased incidence of skin cancer were observed in populations consuming drinking water containing high concentration of inorganic arsenic. An oral CSF of 1.5 $(mg/kg\text{-}day)^{-1}$ and an inhalation URF of 0.0043 $(ug/m^3)^{-1}$ have been established by EPA (EPA 2003).

H3.2 BENZENE

Benzene is a highly volatile organic compound, as such, the primary route of exposure is inhalation. An estimated 40 to 50 percent of the inhaled dose is estimated to be absorbed into the bloodstream. Benzene is readily absorbed from the gastrointestinal tract following oral ingestion because of its lipophilic nature. In contrast, dermal absorption of benzene is limited. Benzene is distributed to fatty tissues in the body and has an affinity for adipose and nervous tissue, bone marrow, liver, spleen, and blood. Benzene is metabolized in the liver to phenol that is subsequently excreted in the urine.

Long-term exposure to benzene can result in central nervous system (CNS) and gastrointestinal effects; however, the primary pathological target is the bone marrow, the principal blood-forming organ in adults. Symptoms include anemia, leukemia, and thrombocytopenia as well as other hematologic abnormalities. Triggered by chronic benzene exposure, these hematologic abnormalities may progress to leukemia. Benzene does not appear to be teratogenic.

Benzene is classified as a class A weight-of-evidence carcinogen (EPA 2003), based on nonlymphocytic leukemia associated with occupational exposures and neoplasia in experimental animals. An oral CSF of 5.5E-02 $(mg/kg\text{-}day)^{-1}$ and an inhalation URF of 7.8E-06 $(ug/m^3)^{-1}$ have been established by EPA.

Both the oral RfD (4E-03 mg/kg-day) and inhalation RfC (3E-02 mg/m^3) are based on a decreased lymphocyte count in an occupational study and include uncertainty factors of 300 (EPA 2003).

H3.3 CHLOROFORM

Chloroform is a colorless, volatile liquid that is widely used as a general solvent and as an intermediate in the production of refrigerants, plastics, and pharmaceuticals (RAIS 2003). Chloroform is rapidly absorbed from the lungs and the gastrointestinal tract, and to some extent through the skin. It is extensively metabolized in the body, with carbon

dioxide as the major end product. The primary sites of metabolism are the liver and kidneys. Excretion of chloroform occurs primarily via the lungs, either as unchanged chloroform or as carbon dioxide (ATSDR 1989).

Epidemiological studies indicate a possible relationship between exposure to chloroform present in chlorinated drinking water and cancer of the bladder, large intestine, and rectum. Chloroform is one of several contaminants present in drinking water, but it has not been identified as the sole or primary cause of any excess cancer rates (ATSDR 1989).

The oral RfD for chloroform is 1E-02 mg/kg-day based on the LOAEL dose for an increased incidence of fatty cyst formation in dogs exposed to chloroform (via ingestions) for 7.5 years. The oral RfD includes an uncertainty factor of 1,000. EPA has not established an inhalation RfC for chloroform; however a provisional RfC is available from NCEA.

Chloroform is a classified as a class B2 weight-of-evidence carcinogen based on an increased incidence of several tumor types in rats and in three strains of mice (RAIS 2003). EPA has not established an oral CSF; however, the oral RfD for noncancer effects is derived from a sensitive endpoint in the most sensitive species. The oral RfD is considered protective against an increased incidence of cancer (EPA 2003). While an inhalation URF of 2.3E-5 $(ug/m^3)^{-1}$ has been established by EPA, it should be noted that as indicated in the IRIS toxicological profile, the cancer evaluation for the inhalation pathway does not incorporate newer data or the 1996 or 1999 draft cancer assessment guideline and EPA is currently revising the inhalation exposure assessment.

H3.4 1,2-DICHLOROETHANE

1,2-Dichloroethane can be absorbed via the ingestion, inhalation, and dermal exposure routes. The oral RfD (3E-02 mg/kg-day) is based on a subchronic NOAEL dose; an uncertainty factor of 1,000 was applied. At the NOAEL dose, liver weight was increased; however no other lesions were observed (RAIS 2003). No chronic studies were available for the derivation of a chronic NOAEL (RAIS 2003).

The inhalation RfC (5E-03 mg/m^3) is based on a LOAEL dose for an increased incidence of gastrointestinal effects as well as liver and gall bladder disease in workers occupationally exposed to 1,2-dichloroethane. The inhalation reference concentration includes an uncertainty factor of 3,000.

1,2-Dichloroethane is classified as a class B2 weight-of-evidence carcinogen (EPA 2003) based on the induction of several types of tumors in rats and mice via gavage and lung papillomas in mice after topical administration (RAIS 2003). An oral CSF of 9.1E-02 $(mg/kg\text{-}day)^{-1}$ was derived from a long-term study in which rats and mice were administered technical grade 1,2-dichloroethane via gavage. The unit risk should not be

used if the air concentration exceeds 4E+02 ug/m^3, since above this concentration the unit risk may not be appropriate.

The inhalation URF of 2.6E-05 (ug/m^3)$^{-1}$ is based on the same study used to determine the oral CSF. Reitz and others (1982 as cited in EPA 2003) found the major urinary metabolites to be the same (and generated in the same relative amounts) in rats that ingested or inhaled 1,2-dichloroethane. The IRIS toxicity profile notes that the inhalation URF should not be used if the air concentration exceeds 4E-02 ug/m^3.

H3.5 1,2-DICHLOROETHENE

1,2-DCE enters the environment through human industrial activity, and is a known degradation product of TCE and PCE in certain media and under certain dechlorinating conditions in the environment. 1,2-DCE is released to the environment from chemical factories that make or use this chemical, from landfills and hazardous waste sites containing this chemical, from chemical spills, from burning of vinyl-containing objects, and from the breakdown of other chlorinated chemicals. Inhalation, oral, and dermal routes of exposure to 1,2-dichloroethene are of concern to humans because 1,2-DCE has been found in air, groundwater that may be used for drinking in the future, and soil.

Toxicokinetic data are very limited for both human and animal exposures. Partition coefficients suggest that 1,2-DCE has a much stronger affinity for blood and fats than for air. Although the compound is relatively lipophilic, there is no good evidence of accumulation in important organs such as liver, brain, kidney, and adipose tissue. 1,2-DCE is likely to be metabolized to more hydrophilic by-products, and, therefore, eliminated quickly as metabolites.

The most significant effects of 1,2-DCE exposure are hematological and hepatic. At high levels of exposure, clinical symptoms that have been reported in humans exposed to 1,2-DCE in air include nausea, drowsiness, fatigue, intracranial pressure and ocular irritation. No information is available on oral toxicity for 1,2-DCE in humans. No information is available on the relative toxicities of the cis- and trans-isomers of 1,2-DCE in humans. Pathological lesions of the heart, liver, and lung have been reported in rats exposed to trans-1,2-DCE in air. Ataxia and respiratory depression occur in the terminal stages prior to death in animals. Since these conditions have not been observed in humans, their relevance to public health is not known.

A variety of genotoxicity tests have been performed for 1,2-DCE. The predominant results are negative, and no carcinogenicity studies were found in the literature. EPA has found that both the cis- and trans-1,2-DCE isomers are "not classifiable" as to their carcinogenicity. Toxicity factors for cis-1,2-DCE were used to estimate the toxicity of 1,2-DCE (total). The oral RfD for cis-1,2-DCE (1E-02 mg/kg-day) is based on hematopoetic system effects (EPA 1997) in a 90 day gavage study in rats, and includes an uncertainty factor of 3,000. An inhalation RfD was route-extrapolated from the oral RfD following the EPA Region IX approach.

H3.6 1,2-DICHLOROPROPANE AND 1,2,3-TRICHLOROPROPANE

1,2-Dichloropropane is a volatile chemical. It is man-made; currently, its primary uses are in research and industry. Prior to the 1980's, 1,2-dichloropropane was used in farming as a soil fumigant and was found in some paint strippers, varnishes, and furniture finish removers. Occupational exposure may occur during production or during its use in chemical reactions or as an industrial solvent; use of this chemical has declined.

While ingestion or inhalation 1,2-dichloropropane (i.e., by drinking cleaning solutions or intentional inhalation of vapors) has produced effects such as dizziness, headache, nausea, injury to the liver and kidneys, anemia, coma and, death; no reports have been made of any health effects in humans following low-level exposure to 1,2-dichloropropane for either short or long time periods. In animals, low doses of 1,2-dichloropropane over long periods of time resulted in damage to the liver, kidney, and respiratory systems. EPA has not established an oral RfD for 1,2-dichloropropane; an inhalation RfC of 4E-03 mg/m3 based on hyperplasia of the nasal mucosa in rats, which includes an uncertainty factor of 300 has been established. The inhalation RfC was used to route-extrapolate an oral RfD in keeping with approach used to determine the EPA Region 9 PRGs.

While a determination as to the carcinogenicity of 1,2-dichloropropane is not available in the EPA IRIS toxicological profile, EPA (1997) does group 1,2-dichloropropane in carcinogenic weight-of-evidence group B2 and lists an oral CSF of 6.8E-02 $(mg/kg\text{-}day)^{-1}$ based on the formation of liver tumors in mice. The oral CSF was route-extrapolated to derive an inhalation CSF in keeping with the approach used to determine the EPA Region 9 PRGs.

Short-term exposure to high levels of 1,2,3-trichloropropane has resulted in eye and throat irritation. Long-term effects associated with the ingestion or inhalation of, or dermal contact with 1,2,3-trichlorophenol is not known. Animals that exposed to concentrations in air (at levels higher than what is usually found in the environment were adversely affected. Rats that breathed 1,2-trichloropropane for several months at concentrations below those that affected humans developed eye, nose, and lung irritation, as well as liver and kidney disease. When small amounts were administered orally over several months, most rats and mice died from liver and kidney damage.

The oral RfD of 6E-03 mg/kg-day is based on the NOAEL dose for alterations of blood chemistry and decreased red cell mass in rats and includes an uncertainty factor of 1,000. No inhalation RfC has been established by EPA; however, the oral RfD was used to route-extrapolate an inhalation RfD in keeping with the approach used to determine the EPA Region IX PRGs. While a determination as to the carcinogenicity of 1,2-dichloropropane is not available in the EPA IRIS toxicological profile, EPA (1997) does group 1,2,3-trichloropropane in carcinogenic weight-of-evidence group B2. NCEA provides a provisional oral CSF of 2E00 $(mg/kg\text{-}day)^{-1}$. The inhalation RfC is based on the same study.

H3.7 ETHYLBENZENE

Ethylbenzene is widely used in the manufacturing industry as a solvent, an anti-knock agent in gasoline, and as an intermediate in the production of rubber and styrene. Ethylbenzene is a skin and mucous membrane irritant. Effects of chronic exposure to ethylbenzene include: dryness, scaling and fissuring of the skin; fatigue; sleepiness; headache; irritation of eyes and respiratory tract; and blood disorders, such as leukemia and lymphocytosis.

Studies in laboratory animals indicated that the predominant effects resulting from subchronic inhalation exposure to ethylbenzene are increases in absolute organ weights, primarily involving the liver and kidneys. Increases in serum alkaline phosphatase activity, liver and kidney drug metabolizing enzymes, kidney lesions and enlargement of the bronchial and/or mediastinal lymph nodes were also observed. In gestational studies, ethyl benzene did not elicit embryotoxicity, fetotoxicity or teratogenicity. The only adverse health effects observed were a decrease in the number of offspring and an increase in the number of supernumerary and rudimentary fetal ribs. No maternal toxicity or reproductive effects were observed.

The oral RfD for ethylbenzene is 1E-01 mg/kg-day based on the NOAEL dose for histopatholgic changes in the liver and kidney of rats administered ethylbenzene via gavage and includes an uncertainty factor of 1,000 (EPA 2003). The inhalation RfC is 1 mg/m^3 based on the NOAEL dose for developmental effects in rabbits administered ethylbenzene via the inhalation route. The inhalation RfC includes an uncertainty factor of 300.

Ethylbenzene is classified as a class D carcinogen. EPA has not developed an oral CSF or inhalation URF for ethylbenzene; however, a provisional inhalation RfC of 1.1E-06 $(ug/m^3)^{-1}$ was provided by NCEA. See Section 8.3.10 of Appendix H for additional information on ethylbenzene's toxicity.

H3.8 MANGANESE

Manganese is an essential element in humans; however, it can cause toxic effects with prolonged exposure at high concentrations via the oral or inhalation routes. The National Research Council (NRC) recommends a dietary allowance of 2 to 5 mg/day as a "safe and adequate" intake of manganese for an adult human (NRC 1989 as cited in RAIS 2003). The primary target organ for manganese toxicity is the central nervous system. Symptoms include headache, insomnia, and disorientation. These symptoms progress with continued exposure and the motor skill effects are often irreversible. Based on human epidemiological studies, 0.8 mg/kg-day for drinking water exposure and 0.34 mg/m^3 in air for inhalation exposure are estimated as LOAELs for central nervous system effects (RAIS 2003).

Intestinal absorption has been estimated to be between 3 and 10 percent of the amount of manganese ingested (RAIS 2003). Due to the greater bioavailability of manganese from water, separate RfDs for water and diet have been determined (RAIS 2003).

Kawamura and others (1941) reported incidences of manganese toxicity resulting from the consumption of contaminated water. Symptoms included lethargy, tremors, increased muscle tonus, and, mental disturbances. The drinking water was estimated to contain at least 28 mg/L manganese, which is equivalent to an intake of 0.8 mg/kg-day for a 70-kg adult drinking 2 L/day of water.

No single study was used to determine the oral dietary RfD for manganese (1.4E-01 mg/kg-day), which accounts for intake from all sources (e.g., diet, soil, and water). Information from many large populations consuming normal diets over an extended period of time with no adverse effects were used to determine the RfD. The IRIS assessment for manganese recommends that the dietary contribution from the normal U.S. diet (an upper limit of 5 mg/day) be subtracted when evaluating non-food (e.g. drinking water or soil) exposures to manganese, leading to an RfD of 0.071 mg/kg-day for non-food items. The explanatory text in IRIS further recommends using a modifying factor of 3 when calculating risks associated with non-food sources due to a number of uncertainties that are discussed in the IRIS file for manganese, leading to a RfD of 0.024 mg/kg-day.

A study conducted by Roels and others (1987; as cited in RAIS 2003) compared occupationally exposed workers (through the inhalation pathway) to a non-exposed group. A higher frequency of coughs, dyspnea during exercise, episodes of acute bronchitis, and altered lung parameters were found in the exposed group; however, these effects were only significant in workers who smoked. Respiratory effects were determined to be secondary to neurological effects. Workplace exposure to manganese dioxide resulted in decreased performance on tests measuring neurobehavioral function. Based on these and other occupational studies, low-level occupational exposure to manganese is associated with neurotoxic effects (EPA 2003). After an UF of 1,000 is applied, an inhalation RfC of 5E-05 mg/m^3 was calculated (EPA 2003).

Manganese is assigned to weight of evidence Group D based on a lack of existing studies to assess its carcinogenicity. See Section 8.3.8 of Appendix H for additional information on manganese.

H3.9 4-METHYLPHENOL

4-Methylphenol is also known as p-cresol. Cresols are natural products and are found in wood and tobacco smoke, crude oil, and coal tar. In addition, they can also be found in disinfectants and deodorizers, can be used as solvents and in the manufacturing of other chemicals.

Exposure to high concentrations of cresols could result in anemia, kidney problems, and loss of consciousness. Low dose exposure over a longer period of time might also result in some of these same effects, namely anemia and kidney problems. Central nervous system effects, such as loss of coordination, and twitching of muscles have been reported in animals, but it is uncertain whether these same effects would occur in humans. While cresols may have some tumor-promoting activity, cresols have not been shown to produce cancer in humans or animals. The EPA has determined that cresols are possible human carcinogens.

EPA has not established toxicity values for 4-methylphenol (p-cresol); however, an oral RfD (5E-03 mg/kg-day) is available in the HEAST tables (EPA 1997), which is based on central nervous system, respiratory system, and whole body effects in rabbits. The oral RfD includes an uncertainty factor of 1,000. The oral RfD was route-extrapolated to derive an inhalation RfD.

H3.10 PENTACHLOROPHENOL

Pentachlorophenol, also known as PCP, is an insecticide used in termite control. It also is a general herbicide and is used as a pre-harvest defoliant for food crops. It also is used as a preservative for wood and wood products and is used in starches, dextrins, and glues. At Alameda Point OU-2A, pentachlorophenol has only been detected in two groundwater samples, and is not thought to be related to any historical release or site-related process.

Ingestion of pentachlorophenol causes an increase then a decrease in respiration, blood pressure, and urinary output. It may also cause a fever and motor weakness, followed by collapse with convulsions and death. Pentachlorophenol causes liver, lung, and kidney damage and contact dermatitis. It may be absorbed through the skin.

Pentachlorophenol is a B2 carcinogen based on the induction of several types of tumors in laboratory animals. The oral CSF is 0.12 $(mg/kg\text{-}day)^{-1}$; EPA has not developed an inhalation CSF for this chemical (EPA 2003). The oral reference dose for pentachlorophenol is 0.03 mg/kg-day, with an uncertainty factor of 100. This value is based on the critical effect of pathological changes in the liver and kidneys (EPA 2003). The oral value was route-to-route extrapolated to the inhalation exposure route.

H3.11 POLYCYCLIC AROMATIC HYDROCARBONS

PAHs include more than 100 different compounds (ATSDR 1995). They have no known use in manufacturing or industry and are associated primarily with incomplete combustion of organic substances. Common sources of exposure to PAHs include tobacco, smoke, wood, coal, oil, and gasoline.

Although PAHs can enter the body through ingestion and dermal exposure, the most significant route of exposure is inhalation. Dermal and gastrointestinal absorption of

individual PAHs varies considerably. For example, gastrointestinal absorption of benzo(a)anthracene is rapid and efficient, while only limited amounts of benzo(a)pyrene are absorbed into the systemic circulation. Due to their lipophilic properties, PAHs can be stored in tissues and organs with high fat content such as adipose tissue, the liver, and the kidneys.

EPA considers seven PAHs to be probable human carcinogens (EPA 2003). These include benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene. When admistered by gavage, several PAHs have been shown to induce papillomas and malignant (and benign) tumors of the forestomach and/or lung adenomas and hepatomas. Administered topically, the carcinogenic PAHs induce skin papillomas and carcinomas in test animals. While there is adequate evidence for the carcinogenicity of PAHs in humans, a number of epidemiologic and mortality studies show increased incidences of cancer in humans exposed to mixtures of PAHs. Benzo(a)pyrene is the most studied of the carcinogenic PAHs and has become the archetypal carcinogenic PAH used in animal experiments.

RfDs for noncarcinogenic PAHs have been established for acenaphthene, anthracene, fluoranthene, fluorene, naphthalene, and pyrene. Of these, only naphthalene was retained as a COPC for the HHRA. Naphthalene has an oral RfD of 2E-02 mg/kg-day based on decreased body weights in male rats and includes an uncertainty factor of 3,000. The inhalation RfC for naphthalene is 3E-03 mg/m^3 (EPA 2003) based on the LOAEL dose for the formation of hyperplasia and metaplasia in respiratory and olfactory epithelium. The RfC includes an uncertainty factor of 3,000.

EPA has established an oral CSF of 7.3 $(mg/kg\text{-}day)^{-1}$ for benzo(a)pyrene. An inhalation URF has not been established (EPA 2003). The EPA Region 9 PRGs list a provisional inhalation CSF of 3.1 $(mg/kg\text{-}day)^{-1}$ for benzo(a)pyrene. Toxicity equivalency factors for other PAHs, as developed by EPA (1993) for determining SFs relative to benzo(a)pyrene for the remaining carcinogenic PAHs, are:

- Benzo(a)anthracene = 0.1
- Benzo(b)fluoranthene = 0.1
- Benzo(k)fluoranthene = 0.1
- Chrysene = 0.001
- Dibenzo(a,h)anthracene = 1.0
- Indeno(1,2,3-c,d)pyrene = 0.1

These values were used to determine the oral CSFs and inhalation CSFs for this HHRA. In addition to these classic PAHs, a methyl-substituted PAH (2-methylnaphthalene) was found to co-occur at most of the OU-2A sites. NCEA is currently reviewing the derivation of toxicity values for 2-methylnaphthalene and has prepared a draft IRIS summary. The toxicity information presented in the draft IRIS summary was used in this HHRA. An oral RfD of 9E-03 mg/kg-day was used. However, in the absence of a 2-methylnaphthalene RfC, the inhalation RfC for unsubstituted naphthalene was used. The draft IRIS summary prepared by NCEA may not recommend this value in the future, as some differences in the toxicities of naphthalene and 2-methylnaphthalene have been observed (EPA-NCEA 2003).

H3.12 SEC-BUTYLBENZENE

EPA has not established toxicity factors for sec-butylbenzene; however NCEA provides a provisional oral RfD of 4E-02 mg/kg-day. The oral RfD was used to route-extrapolate an inhalation RfD in keeping with the approach used to determine the EPA Region 9 PRGs. No information regarding the carcinogenicity of sec-butylbenzene was identified.

H3.13 TETRACHLOROETHENE

PCE is used primarily as a solvent in industry, and less frequently in commercial dry cleaning operations (ATSDR 1997a). Exposure to the general population can occur via exposure to contaminated air, food, and water.

PCE is rapidly absorbed by the lungs and the digestive tract but not through the skin (RAIS 2003); therefore, the inhalation and oral routes are the major routes of human exposure to PCE. The main target organs of PCE are the liver and kidney by both the oral and inhalation exposure routes. Chronic exposure can cause various effects such as respiratory tract irritation, headache, nausea, sleeplessness, abdominal pain, cirrhosis of the liver, hepatitis, and nephritis.

Oral exposure to PCE is primarily through drinking contaminated groundwater. PCE readily volatilizes from water, therefore contaminated water is also a potential source of inhalation exposure to PCE. Compared to inhalation exposure, little PCE vapor is absorbed across the skin. However, when PCE is trapped against the skin beneath an impermeable barrier, small amounts of the solvent are absorbed.

The RfD for chronic oral exposure to PCE (1E-02 mg/kg-day) is based on hepatotoxicity observed in mice given 100 mg PCE per kg body weight for 6 weeks and a NOAEL of 20 mg/kg (Buben and O'Flaherty 1985 as cited in EPA 2003). The PCE RfD includes an uncertainty factor of 1,000. As a RfC for PCE is not available on IRIS (EPA 2003), a provisional RfC provided by NCEA was used. The provisional RfC (6E-01 mg/m^3) is based on a benchmark dose for renal tubular effects in chronically exposed male and female mice (National Toxicology Program [NTP] 1986 as cited in RAIS 2003).

Although several human studies of PCE exposures in the dry cleaning industry exist, STSC concluded that the small number of subjects used in some studies, the uncertainty associated with the adversity of some of the observed effects, and the lack of adequate exposure information preclude deriving a provisional reference concentration from the available occupational exposure studies. Thus, the NTP (1986 as cited in RAIS 2003) animal study was selected as the basis of the provisional RfC. In this study, a LOAEL of 678 mg/m^3 was identified for the chronic mouse study based on kidney effects (renal tubule cell karyomegaly, nephrosis, hepatic degeneration and necrosis, and acute passive congestion in the lungs). To calculate the provisional PCE RfC, the STSC selected the benchmark dose of 17 mg/m^3 for renal tubular cell karyomegaly in chronically exposed male and female mice (NTP 1986 as cited in RAIS 2003) because it was the lowest critical concentration for a relevant. A provisional chronic RfC of 6E-1 mg/m^3 PCE was determined and includes an uncertainty factor of 30.

The PCE toxicity values used in this HHRA are the most current, and reflect recent (December 2001) recommendations by the STSC. However, these toxicity values have not met with consensus in the formal EPA peer review process. Although the EPA's Science Advisory Board recommended a cancer weight-of-evidence classification of C-B2 continuum, the agency has not adopted a current position on the PCE carcinogenic classification and the oral CSF and URF have been withdrawn from IRIS and HEAST. A provisional oral CSF of 5.2E-02 $(mg/kg\text{-}day)^{-1}$ and inhalation URF of 3E-06 $(ug/m^3)^{-1}$ are available from the National Center for Environmental Assessment (EPA-NCEA 2003).

H3.14 THALLIUM

Thallium is a relatively rare metal that exists in a variety of combinations with iron, copper, sulfide, and selenium. It has been used as a rodenticide, but was banned in the United States in 1972 because of unintended poisoning of birds and other animals, as well as small children. Currently, thallium has several minor uses as alloys for electrical and electronic devices.

Thallium is readily absorbed from the gastrointestinal tract and through the skin and is distributed in a pattern much like that of potassium. Because its chemical properties are similar to potassium, it can substitute for this essential element in biochemical reactions and lead to disruptions of normal cellular metabolic function. Following high doses, thallium is concentrated in the kidney and urine. The body burden of thallium can increase for a protracted period because it is excreted slowly.

The toxic effects of thallium have been well characterized after many years of medicinal and pesticide use. After acute doses, even lethal ones, effects do not appear until many hours or even days postdose. Symptoms range from gastrointestinal disturbances, limb pain and paralysis, polyneuritis, high blood pressure, optic nerve atrophy and blindness, psychic excitement, liver and kidney lesions, and lymphocytosis. With chronic exposure, a latent period is also observed with no clinical signs. When symptoms are present, they are manifested as polyneuritis, optic nerve atrophy, and alopecia with eyebrow loss.

Thallium has not been shown to exert any reproductive toxicity, although it has been shown to be fetotoxic in experimental animals.

The EPA has not determined the carcinogenic potential or derived an oral CSF or inhalation URF for thallium (EPA 2003). The oral RfD for thallium is dependent on the species of thallium present. For this HHRA, the oral RfD for thallium sulfate (8E-05 mg/kg-day) was used after adjustment based on the molecular weight of the thallium salt resulting in an adjust oral RfD of 6.6E-05 mg/kg-day (EPA 2002). The oral RfD for thallium sulfate is based on the NOAEL dose identified in a subchronic study conducted on rats and includes an uncertainty factor of 3,000. No inhalation RfCs have been established for any of the thallium species listed in the IRIS database.

H3.15 TRICHLOROETHENE

TCE is an industrial solvent used primarily in metal degreasing and cleaning operations. TCE can be absorbed through the lungs, mucous membranes, gastrointestinal tract, and the skin; therefore, exposure to TCE may occur via the inhalation, oral, or dermal routes. TCE is extensively metabolized in humans with most of the absorbed dose excreted in urine (ATSDR 1997b). Human and animal data indicate TCE exposure can result in toxic effects on a number of organs including the liver, kidney, blood, skin, immune system, reproductive system, nervous system, and cardiovascular system.

In the past, TCE was used as a human anesthetic. TCE has also been used by individuals who intentionally inhale it for its narcotic properties. Therefore, most of the information regarding the effects of TCE in humans comes from case studies and experiments describing effects of TCE after inhalation exposure. These studies indicate that the primary effect of exposure to TCE is on the central nervous system. Effects include headache, vertigo, fatigue, short-term memory loss, decreased word associations, central nervous system depression, and anesthesia.

Much of the most recently available information on TCE was summarized by EPA in an external review draft *Trichloroethylene Health Risk Assessment: Synthesis and Characterization* (EPA 2001). However, that review draft was the subject of some controversy, and does not yet represent agency policy. In particular, the external review draft discussed several CSFs, with most between 2E-02 and 4E-01 per mg/kg-day. Several sources of uncertainty have been identified and quantified (EPA 2001). EPA's external draft review slope factor range, 2E-02 to 4E-01 per mg/kg-day, lies just above EPA's previous slope factor for TCE, 1.1E-02 per mg/kg-day. The upper bound of the slope factor range (4E-01 per mg/kg-day) was used as the oral CSF for this HHRA.

Despite the existence of numerous studies, EPA noted that the database for developing a noncancer RfD or RfC is problematic. ATSDR (1997b) did not derive chronic-duration levels for TCE, viewing the chronic studies as limited by inadequate characterization of exposure, inadequate quantification of results, or lack of endpoints suitable for deriving chronic levels (ATSDR 1997b). Adverse effects have been observed in several studies at

a human-equivalent dose range of 1–10 mg/kg-day (EPA 2001). Among these liver values, EPA recommended 1 mg/kg-day is chosen as the point of departure, supported by studies indicating this is a dose where liver toxicity can begin to be observed in two species after subchronic dosing.

The oral RfD of 3E-04 mg/kg-day based on critical effects in the liver, kidney, and developing fetus proposed in the external review draft was used in this HHRA; however as stated above, this value has not met with peer review consensus and does not yet reflect the final agency position on the most appropriate TCE RfD. The inhalation RfC of 4E-02 mg/m^3 proposed in the external review draft was used in this HHRA based on critical effects in the central nervous system, liver, and endocrine system. Similarly, this value has not met with peer review consensus and does not yet reflect the final agency position on the most appropriate TCE RfC.

H3.16 1,2,4-TRIMETHYLBENZENE

1,2,4-Trimethylbenzene is an intermediate in the manufacture of anhydride, dyes, pharmaceuticals, and is the chief industrial use is as a solvent and paint thinner. EPA has not established toxicity factors for 1,2,4-trimethylbenzene; however, provisional toxicity factors are provided by NCEA. An oral RfD for 1,2,4-trimethylbenzene was derived by analogy from toxicological information for an isomer, 1,3,5-trimethylbenzene, assuming similar metabolism and toxicological endpoints.

NCEA lists an oral RfD of 5E-02 mg/kg-day based on the NOAEL dose for a slight decrease in body weight gain, increased liver and kidney weights, and increased serum phosphorus levels and application of an uncertainty factor of 3,000. NCEA also lists a provisional RfC of 6E-03 mg/m^3 based on the LOAEL dose for central nervous system effects in an occupational study and application of an uncertainty factor of 3,000.

The human carcinogenicity potential of 1,2,4-trimethylbenzene cannot be determined on the basis of the available information.

H3.17 VINYL CHLORIDE

VC is among the few chemicals that has been conclusively linked to human cancer, and VC is classified as a class A weight-of-evidence carcinogen. EPA recently studied VC in detail and established two sets of CSFs for VC, considering lifetime (since birth) exposure as well as exposure only in adulthood. EPA established the oral SF of 7.2E-1 per mg/kg-day to account for continuous lifetime exposure during adulthood, based on use of the linearized multistage model, with a twofold increase (doubling) to 1.4 per mg/kg-day to account for continuous lifetime exposure from birth (EPA 2003). Among the specific types of cancer induced in the animal studies were statistically significant increases in liver angiosarcomas, neoplastic nodules, and hepatocellular carcinomas, and risk was calculated based on animals exhibiting any of these endpoints. EPA (2003)

notes that the oral URF (and SF) should not be used if the water concentration exceeds 10^5 μg/L, because above this concentration the slope factor may differ from that stated.

VC is also carcinogenic via inhalation. VC metabolism becomes nonlinear at high exposure concentrations, therefore, cumulative exposure is not sufficient for quantitating risk. Instead, animal studies were pharmacokinetically converted to human equivalents. The pharmacokinetic model employed by EPA was linear up to nearly 100 mg/m^3; the calculated equivalence factor was used to convert the risk from the inhalation experiments conducted in animals (in the units of the dose metric) to human risk values (EPA 2003). The slope factor is thus based on the 95 percent upper confidence on risk in female rats. Calculation of a SF is appropriate in this case, in spite of the use of a pharmacokinetic model, because VC metabolism is linear in humans in this exposure range (EPA 2003). EPA (2003) notes that the inhalation URF (4.4 $[mg/m^3]^{-1}$ for continuous exposure during adulthood) should not be used if the air concentration exceeds 10^4 $\mu g/m^3$, because above this concentration the slope factor may differ from that stated.

Noncancer effects of VC have also been studied. Preneoplastic liver cell polymorphism was found to be the critical noncancer effect upon which EPA based the oral RfD (3E-03 mg/kg-day) for oral VC exposure. After two lifetime studies in rats, a NOAEL for cellular changes in the liver (0.13 mg/kg-day) was established, and converted with a total uncertainty factor of 30.

The same underlying chronic dietary study in rats is the principal study for both the inhalation RfC and oral RfD (EPA 2003). EPA found the inhalation database for VC deficient in chronic inhalation studies from which a RfC could be derived, but determined that the mode of action is common to exposures from either route (liver toxicity) and found that pharmacokinetic models were adequate for route-to-route extrapolations. The critical effect, increases in the incidence of liver cell polymorphism and cysts, was reported in both oral studies (lifetime feeding studies) and inhalation studies (EPA 2003). In addition, the existing inhalation studies report no direct effects at the portal of entry (i.e., the respiratory tract). Therefore, the same study NOAEL was used in the EPA RfC derivation for VC, and included the same uncertainty factor of 30.

H3.18 XYLENES

Xylene is a solvent that is composed of a mixture of dimethyl phenyl compounds (or isomers, such as m-, p-, and o-), often referred to as xylenes. Approximately 60 percent of the inhaled dose of xylenes is retained and absorbed; they are also readily absorbed through the skin and probably also from the gastrointestinal tract based on their lipophilic nature. The highest levels are found in fatty tissues such as adipose tissue, subcutaneous fat, adrenal glands, brain, and liver. Excretion is primarily in the urine but some is exhaled.

The acute toxic potential is relatively low as is the chronic toxicity. The vapor may be irritating to eyes, skin, and mucous membranes. Xylenes cause CNS effects. Mice given high doses exhibited hyperactivity. Effects on eyes, kidneys, liver and lungs are also reported. Xylenes are fetotoxic and teratogenic in mice at high oral doses. Similar results have been reported in women exposed to solvents including xylene. Xylenes have not been found to be mutagenic (EPA 2003).

Available EPA toxicity values for total xylenes were used to evaluate the toxicity of the m- and p-xylene isomers. The oral RfD for xylenes is 2E-01 mg/kg-day and includes an uncertainty factor of 1,000. The oral RfD is based on the NOAEL dose for decreased body weight and increased mortality in experimental animals. The inhalation RfC (0.1 mg/m^3) is based on the NOAEL dose for decreased motor coordination (central nervous system effect) in male rats and includes an uncertainty factor of 300.

Xylenes are classified in the class D weight-of-evidence group and no cancer toxicity values have been established.

H3.19 REFERENCES

Agency for Toxic Substances and Disease Registry (ATSDR). 1989. Toxicological Profile for Arsenic.

ATSDR. 1989. Toxicological Profile for Chloroform.

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ATSDR 1997a. Toxicological Profile for Tetrachloroethene.

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ATTACHMENT H4
"TOTAL RISK" EVALUATION TABLES

ATTACHMENT H4-1: SUMMARY OF "TOTAL RISK" BASED ON MAXIMA DETECTED IN SOIL AT SITE 9

Appendix H, HHRA for CERCLA Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

Exposure Point	CAS Number	Chemical		Maximum Concentration (Qualifier)		Units	Cancer Screening Toxicity Value (Residential PRG) (1)	Noncancer Screening Toxicity Value (Residential PRG) (1)	Proportion of Residential PRG (2) Cancer Risk	Proportion of Residential PRG (2) Hazard Index	Cumulative Effect on Cancer Risk	Cumulative Effect on Hazard Index (3)
Soil at	107-06-2	1,2-DICHLOROETHENE (TOTAL)	a	1.30E-01		mg/kg	–	4.30E+01	–	0.0030	–	0.0030
Site 9	78-93-3	2-BUTANONE		9.00E-03	BDJ	mg/kg	–	7.30E+03	–	0.0000	–	0.0000
(Subsurface Soil)	91-57-6	2-METHYLNAPHTHALENE	b	2.80E+00		mg/kg	–	5.60E+01	–	0.0500	–	0.0500
	59-50-7	4-CHLORO-3-METHYLPHENOL	c	4.30E-02	J	mg/kg	–	3.10E+03	–	0.0000	–	0.0000
	7429-90-5	ALUMINUM		1.39E+04	J	mg/kg	–	7.60E+04	–	0.1829	–	0.1829
	7440-36-0	ANTIMONY		1.20E+00	J	mg/kg	–	3.10E+01	–	0.0387	–	0.0387
	83-32-9	ACENAPHTHENE		1.40E-01		mg/kg	–	3.70E+03	–	0.0000	–	0.0000
	208-96-8	ACENAPHTHYLENE	d	2.90E-03	J	mg/kg	–	3.68E+03	–	0.0000	–	0.0000
	120-12-7	ANTHRACENE		4.30E-02		mg/kg	–	2.20E+04	–	0.0000	–	0.0000
	7440-39-3	BARIUM		2.66E+02		mg/kg	–	5.40E+03	–	0.0493	–	0.0493
	56-55-3	BENZ(A)ANTHRACENE		1.90E-02		mg/kg	6.20E-01	–	3.06E-02	–	3.06E-08	–
	50-32-8	BENZO(A)PYRENE		3.90E-02		mg/kg	6.20E-02	–	6.29E-01	–	6.29E-07	–
	205-99-2	BENZO(B)FLUORANTHENE		5.40E-02		mg/kg	6.20E-01	–	8.71E-02	–	8.71E-08	–
	191-24-2	BENZO(G,H,I)PERYLENE	e	1.10E-01		mg/kg	–	2.32E+03	–	0.0000	–	0.0000
	207-08-9	BENZO(K)FLUORANTHENE		2.10E-02		mg/kg	3.78E-01	–	5.55E-02	–	5.55E-08	–
	7440-41-7	BERYLLIUM		1.50E+00		mg/kg	–	1.50E+02	–	0.0100	–	0.0100
	7440-43-9	CADMIUM		4.90E-01	J	mg/kg	1.40E+03	3.70E+01	3.50E-04	0.0132	3.50E-10	0.0132
	7440-47-3	CHROMIUM		1.78E+02		mg/kg	2.10E+02	–	8.48E-01	–	8.48E-07	–
	218-01-9	CHRYSENE		1.50E-01		mg/kg	3.78E+00	–	3.97E-02	–	3.97E-08	–
	7440-48-4	COBALT		2.30E+01		mg/kg	9.00E+02	1.40E+03	2.56E-02	0.0164	2.56E-08	0.0164
	7440-50-8	COPPER		8.94E+01		mg/kg	–	3.10E+03	–	0.0288	–	0.0288
	53-70-3	DIBENZ(A,H)ANTHRACENE		3.40E-02	J	mg/kg	6.21E-02	–	5.47E-01	–	5.47E-07	–
	100-41-4	ETHYLBENZENE		2.00E-01		mg/kg	8.90E+00	1.90E+03	2.25E-02	0.0001	2.25E-08	0.0001
	206-44-0	FLUORANTHENE		6.00E-02		mg/kg	–	2.29E+03	–	0.0000	–	0.0000
	86-73-7	FLUORENE		3.80E-01		mg/kg	–	2.75E+03	–	0.0001	–	0.0001
	193-39-5	INDENO(1,2,3-CD)PYRENE		3.90E-02		mg/kg	6.21E-01	–	6.28E-02	–	6.28E-08	–
	7439-92-1	LEAD	f	1.04E+01		mg/kg	–	–	–	–	–	–
	7439-96-5	MANGANESE		1.05E+03		mg/kg	–	1.80E+03	–	0.5833	–	0.5833
	91-20-3	NAPHTHALENE		4.30E+00		mg/kg	–	5.59E+01	–	0.0769	–	0.0769
	62-75-9	N-NITROSODIPHENYLAMINE		1.20E-01	JB	mg/kg	9.90E+01	–	1.21E-03	–	1.21E-09	–
	7440-02-0	NICKEL		5.08E+01		mg/kg	–	1.60E+03	–	0.0318	–	0.0318
	87-86-5	PENTACHLOROPHENOL		4.30E-01	JB	mg/kg	3.00E+00	1.40E+03	1.43E-01	0.0003	1.43E-07	0.0003
	85-01-8	PHENANTHRENE	g	6.40E-01		mg/kg	–	2.19E+04	–	0.0000	–	0.0000
	129-00-0	PYRENE		1.10E-01		mg/kg	–	2.32E+03	–	0.0000	–	0.0000
	7440-22-4	SILVER		4.40E-01	B	mg/kg	–	3.90E+02	–	0.0011	–	0.0011
	7440-32-6	TITANIUM	h	1.02E+03		mg/kg	–	3.10E+05	–	0.0033	–	0.0033
	108-88-3	TOLUENE		7.30E-01	D	mg/kg	–	6.60E+02	–	0.0011	–	0.0011
	7440-62-2	VANADIUM		4.23E+01		mg/kg	–	5.50E+02	–	0.0769	–	0.0769
	1330-20-7	XYLENE (TOTAL)		3.10E+00		mg/kg	–	2.70E+02	–	0.0115	–	0.0115
	7440-66-6	ZINC		8.06E+01		mg/kg	–	2.30E+04	–	0.0035	–	0.0035

Total Residential Risk for All Maxima For Analytes Not Selected as COPCs	2.5E-06
Total Residential HI for All Maxima for Analytes Not Selected as COPCs	1.2

Notes:

(1) Screening values are residential Region 9 PRGs (EPA 2002a).

(2) Contribution to total risk was estimated for the most sensitive endpoint (i.e., the critical PRG). While some carcinogens would also have a calculateable noncancer hazard, contribution was noted to be negligible.

(3) For noncarcinogens, the contribution of the chemical hazard to the cumulative HI is the same as the maximum's proportion to the residential PRG.

a = The PRG for 1,2-dichloroethylene (cis) was used as a surrogate
b = The PRG for naphthalene was used as a surrogate
c = The PRG for 3-methylphenol was used as a surrogate
d = The PRG for acenaphthene was used as a surrogate
e = The PRG for pyrene was used as a surrogate
f = No EPA Region 9 cancer or noncancer soil PRG (EPA 2002a) is available for lead. Because the EPA value is not appropriate to determine risk or hazard index due to lead, it was not included in the carcinogenic and noncarcinogenic total risk evaluation.
g = The PRG for anthracene was used as a surrogate
h = Screening toxicity value was taken from EPA Region 3 Risk-based Concentration Table (2002b) and represents risk-based screening level for residential surface soil.

B = Blank contamination
CAS = Chemical Abstracts Service number
D = Compound reported from a diluted sample
EPA = U.S. Environmental Protection Agency
EPC = Exposure point concentration
HHRA = Human Health Risk Assessment
HI = Hazard index
J = Estimated value
mg/kg = Milligram per kilogram
PRG = Preliminary remediation goal

References:

EPA 2002a. "Region 9 Preliminary Remediation Goals." October. Available on-line at: http://www.epa.gov/region09/waste/sfund/prg/
EPA 2002b. "EPA Region 3 Risk-Based Concentration Table." April 2. Available on-line at: http://www.epa.gov/reg3hwmd/risk/rbc.pdf

ATTACHMENT H4-2: SUMMARY OF "TOTAL RISK" BASED ON MAXIMA DETECTED IN GROUNDWATER AT SITE 9

Appendix H, HHRA for CERCLA Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

Exposure Point	CAS Number	Chemical		Maximum Concentration (Qualifier)		Units	Cancer Screening Toxicity Value (Residential PRG) (1)	Noncancer Screening Toxicity Value (Residential PRG) (1)	Proportion of Residential PRG (2) Cancer Risk	Proportion of Residential PRG (2) Hazard Index	Cumulative Effect on Cancer Risk	Cumulative Effect on Hazard Index (3)
Groundwater at Site 9	75-35-4	1,1-DICHLOROETHENE		1.00E+00	J	ug/L	--	3.40E+02	--	0.0029	--	0.0029
	95-63-6	1,2,4-TRIMETHYLBENZENE		3.00E-01	J	ug/L	--	1.20E+01	--	0.0250	--	0.0250
	95-50-1	1,2-DICHLOROBENZENE		5.00E-01	J	ug/L	--	3.70E+02	--	0.0014	--	0.0014
	95-63-6	1,3,5-TRIMETHYLBENZENE		4.00E-01	J	ug/L	--	1.20E+01	--	0.0333	--	0.0333
	106-46-7	1,4-DICHLOROBENZENE		2.00E-01	J	ug/L	5.0E-01	1.80E+02	4.00E-01	0.0011	4.00E-07	0.0011
	105-67-9	2,4-DIMETHYLPHENOL		1.40E+02	J	ug/L	--	7.30E+02	--	0.1918	--	0.1918
	78-93-3	2-BUTANONE		6.30E+01	J	ug/L	--	1.90E+03	--	0.0332	--	0.0332
	95-49-8	2-CHLOROTOLUENE		1.00E-01	J	ug/L	--	1.20E+02	--	0.0008	--	0.0008
	95-48-7	2-METHYLPHENOL		4.10E+01	J	ug/L	--	1.80E+03	--	0.0228	--	0.0228
	534-52-1	4,6-DINITRO-2-METHYLPHENOL	a	2.50E+01	J	ug/L	--	1.80E+03	--	0.0139	--	0.0139
	108-10-1	4-METHYL-2-PENTANONE		5.00E+00	J	ug/L	--	1.60E+02	--	0.0313	--	0.0313
	100-02-7	4-NITROPHENOL	b	6.00E+00	J	ug/L	--	2.20E+04	--	0.0003	--	0.0003
	83-32-9	ACENAPHTHENE		9.00E-01	J	ug/L	--	3.70E+02	--	0.0024	--	0.0024
	67-64-1	ACETONE		1.50E+02	J	ug/L	--	6.10E+02	--	0.2459	--	0.2459
	7429-90-5	ALUMINUM		1.74E+04		ug/L	--	3.60E+04	--	0.4833	--	0.4833
	7440-39-3	BARIUM		7.85E+02	J	ug/L	--	2.60E+03	--	0.3019	--	0.3019
	191-24-2	BENZO(G,H,I)PERYLENE	c	2.00E+00	J	ug/L	--	1.8E+02	--	0.0111	--	0.0111
	7440-41-7	BERYLLIUM		4.30E+00	J	ug/L	--	7.3E+01	--	0.0589	--	0.0589
	7440-43-9	CADMIUM		1.35E+01		ug/L	--	1.8E+01	--	0.7500	--	0.7500
	75-15-0	CARBON DISULFIDE		2.00E+01	J	ug/L	--	1.0E+03	--	0.0200	--	0.0200
	108-90-7	CHLOROBENZENE		1.10E+01		ug/L	--	1.1E+02	--	0.1000	--	0.1000
	7440-47-3	CHROMIUM		2.06E+02	J	ug/L	--	5.5E+04	--	0.0037	--	0.0037
	156-59-2	CIS-1,2-DICHLOROETHENE		9.90E+00		ug/L	--	6.1E+01	--	0.1623	--	0.1623
	7440-48-4	COBALT		4.16E+01	J	ug/L	--	7.3E+02	--	0.0570	--	0.0570
	7440-50-8	COPPER		2.81E+01		ug/L	--	1.5E+03	--	0.0187	--	0.0187
	108-20-3	DIISOPROPYL ETHER	d	1.80E+00		ug/L	--	--	--	--	--	--
	206-44-0	FLUORANTHENE		3.00E+00	J	ug/L	--	1.5E+03	--	0.0020	--	0.0020
	86-73-7	FLUORENE		8.00E-01	J	ug/L	--	2.4E+02	--	0.0033	--	0.0033
	78-59-1	ISOPHORONE		1.00E+00	J	ug/L	7.1E+01	7.3E+03	1.41E-02	0.0001	1.41E-08	0.0001
	98-82-8	ISOPROPYLBENZENE		2.80E+00		ug/L	--	6.6E+02	--	0.0042	--	0.0042
	NA	M,P-XYLENE	e	3.00E+01		ug/L	--	2.1E+02	--	0.1429	--	0.1429
	7439-98-7	MOLYBDENUM		4.82E+01	J	ug/L	--	1.8E+02	--	0.2678	--	0.2678
	103-65-1	N-PROPYLBENZENE		1.40E+00		ug/L	--	2.4E+02	--	0.0058	--	0.0058
	7440-02-0	NICKEL		1.57E+02		ug/L	--	7.3E+02	--	0.2151	--	0.2151
	95-47-6	O-XYLENE	e	1.20E+01		ug/L	--	2.1E+02	--	0.0571	--	0.0571
	85-01-8	PHENANTHRENE	f	1.20E+03	J	ug/L	--	1.8E+03	--	0.6667	--	0.6667
	108-95-2	PHENOL		5.90E+01		ug/L	--	2.2E+04	--	0.0027	--	0.0027
	129-00-0	PYRENE		4.00E+00	J	ug/L	--	1.8E+02	--	0.0222	--	0.0222
	135-98-8	SEC-BUTYLBENZENE		1.90E+00		ug/L	--	2.4E+02	--	0.0079	--	0.0079
	7782-49-2	SELENIUM		8.50E-01	J	ug/L	--	1.8E+02	--	0.0047	--	0.0047
	75-65-0	TERT-BUTANOL	g	2.50E+01		ug/L	--	1.8E+03	--	0.0139	--	0.0139
	98-06-6	TERT-BUTYLBENZENE		9.00E-01		ug/L	--	2.4E+02	--	0.0038	--	0.0038
	108-88-3	TOLUENE		2.30E+02		ug/L	--	7.2E+02	--	0.3194	--	0.3194
	156-60-5	TRANS-1,2-DICHLOROETHENE		9.00E-01		ug/L	--	1.2E+02	--	0.0075	--	0.0075
	7440-62-2	VANADIUM		1.02E+02	J	ug/L	--	2.6E+02	--	0.3923	--	0.3923
	7440-66-6	ZINC		1.44E+02		ug/L	--	1.1E+04	--	0.0131	--	0.0131

Total Residential Risk for All Maxima For Analytes Not Selected as COPCs	4.1E-07
Total Residential HI for All Maxima for Analytes Not Selected as COPCs	4.7

Notes:

(1) Screening values are residential Region 9 PRGs (EPA 2002a).

(2) Contribution to total risk was estimated for the most sensitive endpoint (i.e., the critical PRG). While some carcinogens would also have a calculateable noncancer hazard, contribution was noted to be negligible.

(3) For noncarcinogens, the contribution of the chemical hazard to the cumulative HI is the same as the maximum's proportion to the residential PRG.

a = The PRG for 2-methylphenol was used as a surrogate
b = The PRG for phenol was used as a surrogate
c = The PRG for pyrene was used as a surrogate
d = Diisopropyl ether does not have a toxicity value and this chemical is not consistent with previous site operations; therefore, it was not included in the carcinogenic and noncarcinogenic total risk evaluation.
e = The PRG for total xylene was used as a surrogate
f = The PRG for anthracene was used as a surrogate
g = The PRG for isobutanol was used as a surrogate

CAS = Chemical Abstracts Service number
EPA = U.S. Environmental Protection Agency
EPC = Exposure point concentration
HHRA = Human Health Risk Assessment
HI = Hazard index
J = Estimated value
PRG = Preliminary remediation goal
ug/L = Microgram per liter

References:

EPA 2002a. "Region 9 Preliminary Remediation Goals." October. Available on-line at: http://www.epa.gov/region09/waste/sfund/prg/

ATTACHMENT H4-3: SUMMARY OF "TOTAL RISK" BASED ON MAXIMA DETECTED IN SOIL AT SITE 13

Appendix H, HHRA for CERCLA Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

Exposure Point	CAS Number	Chemical	Maximum Concentration (Qualifier)		Units	Cancer Screening Toxicity Value (Residential PRG)	Noncancer Screening Toxicity Value (Residential PRG)	Proportion of Residential PRG (2) Cancer Risk	Proportion of Residential PRG (2) Hazard Index	Cumulative Effect on Cancer Risk	Cumulative Effect on Hazard Index (3)
Soil at Site 13 (Subsurface Soil)	95-63-6	1,2,4-TRIMETHYLBENZENE	7.70E+00		mg/kg	--	5.20E+01	--	0.1481	--	0.1481
	108-67-8	1,3,5-TRIMETHYLBENZENE	6.60E-01		mg/kg	--	2.10E+01	--	0.0314	--	0.0314
	105-67-9	2,4-DIMETHYLPHENOL	1.20E+01	J	mg/kg	--	1.20E+03	--	0.0100	--	0.0100
	72-55-9	4,4'-DDE	3.10E-02		mg/kg	1.70E+00	--	1.82E-02	--	1.82E-08	--
	50-29-3	4,4'-DDT	1.60E-01		mg/kg	1.70E+00	3.60E+01	9.41E-02	0.0044	9.41E-08	0.0044
	108-10-1	4-METHYL-2-PENTANONE	4.10E-02	J	mg/kg	--	7.90E+02	--	0.0001	--	0.0001
	67-64-1	ACETONE	4.70E-01	J	mg/kg	--	1.60E+03	--	0.0003	--	0.0003
	83-32-9	ACENAPHTHENE a	7.70E-01		mg/kg	--	3.68E+03	--	0.0002	--	0.0002
	208-96-8	ACENAPHTHYLENE	8.70E-01		mg/kg	--	3.68E+03	--	0.0002	--	0.0002
	7429-90-5	ALUMINUM	1.82E+04		mg/kg	--	7.60E+04	--	0.2395	--	0.2395
	7440-36-0	ANTIMONY	8.20E+00		mg/kg	--	3.10E+01	--	0.2645	--	0.2645
	120-12-7	ANTHRACENE	1.20E+01		mg/kg	--	2.19E+04	--	0.0005	--	0.0005
	7440-39-3	BARIUM	3.76E+02		mg/kg	--	5.40E+03	--	0.0696	--	0.0696
	191-24-2	BENZO(G,H,I)PERYLENE b	2.90E+00		mg/kg	--	2.32E+03	--	0.0013	--	0.0013
	7440-41-7	BERYLLIUM	2.00E+00		mg/kg	--	1.50E+02	--	0.0133	--	0.0133
	7440-43-9	CADMIUM	1.80E+01		mg/kg	1.40E+03	3.70E+01	1.29E-02	0.4865	1.29E-08	0.4865
	86-74-8	CARBAZOLE	5.90E+00	J	mg/kg	2.40E+01	--	2.46E-01	--	2.46E-07	--
	75-15-0	CARBON DISULFIDE	2.00E-03	J	mg/kg	--	3.60E+02	--	0.0000	--	0.0000
	108-90-7	CHLOROBENZENE	2.00E-03	J	mg/kg	--	1.50E+02	--	0.0000	--	0.0000
	7440-48-4	COBALT	1.52E+01		mg/kg	9.00E+02	1.40E+03	1.69E-02	0.0109	1.69E-08	0.0109
	7440-50-8	COPPER	1.60E+02		mg/kg	--	3.10E+03	--	0.0516	--	0.0516
	132-64-9	DIBENZOFURAN	6.90E+00	J	mg/kg	--	2.90E+02	--	0.0238	--	0.0238
	84-74-2	DI-N-BUTYLPHTHALATE	3.10E-02	J	mg/kg	--	6.10E+03	--	0.0000	--	0.0000
	100-41-4	ETHYLBENZENE	5.10E+00		mg/kg	8.90E+00	1.90E+03	5.73E-01	0.0027	5.73E-07	0.0027
	206-44-0	FLUORANTHENE	7.40E+00		mg/kg	--	2.29E+03	--	0.0032	--	0.0032
	86-73-7	FLUORENE	9.10E+00		mg/kg	--	2.75E+03	--	0.0033	--	0.0033
	1024-57-3	HEPTACHLOR EPOXIDE	5.40E-03		mg/kg	5.30E-02	7.90E-01	1.02E-01	0.0068	1.02E-07	0.0068
	7439-96-5	MANGANESE	7.02E+02		mg/kg	--	1.80E+03	--	0.3900	--	0.3900
	7439-97-6	MERCURY	4.00E-01		mg/kg	--	2.30E+01	--	0.0174	--	0.0174
	7439-98-7	MOLYBDENUM	5.90E+00	J	mg/kg	--	3.90E+02	--	0.0151	--	0.0151
	91-20-3	NAPHTHALENE	1.00E+01		mg/kg	--	5.59E+01	--	0.1788	--	0.1788
	7440-02-0	NICKEL	2.78E+02		mg/kg	--	1.60E+03	--	0.1738	--	0.1738
	86-30-6	N-NITROSODIPHENYLAMINE	1.20E+00	JB	mg/kg	9.90E+01	--	1.21E-02	--	1.21E-08	--
	87-86-5	PENTACHLOROPHENOL	1.00E+00	J	mg/kg	3.00E+00	1.40E+03	3.33E-01	0.0007	3.33E-07	0.0007
	85-01-8	PHENANTHRENE c	9.60E+00		mg/kg	--	2.19E+04	--	0.0004	--	0.0004
	129-00-0	PYRENE	7.10E+00		mg/kg	--	2.32E+03	--	0.0031	--	0.0031
	7782-49-2	SELENIUM	1.20E+01		mg/kg	--	3.90E+02	--	0.0308	--	0.0308
	7440-22-4	SILVER	1.60E+00	J	mg/kg	--	3.90E+02	--	0.0041	--	0.0041
	7440-28-0	THALLIUM	2.70E+00		mg/kg	--	5.20E+00	--	0.5192	--	0.5192
	7440-32-6	TITANIUM d	6.32E+02		mg/kg	--	3.10E+05	--	0.0020	--	0.0020
	108-88-3	TOLUENE	9.10E+00	J	mg/kg	--	6.60E+02	--	0.0138	--	0.0138
	1330-20-7	XYLENE (TOTAL)	3.80E+01		mg/kg	--	2.70E+02	--	0.1407	--	0.1407
	7440-66-6	ZINC	7.12E+03		mg/kg	--	2.30E+04	--	0.3096	--	0.3096

Total Residential Risk for All Maxima For Analytes Not Selected as COPCs	1.4E-06
Total Residential HI for All Maxima for Analytes Not Selected as COPCs	3.2

Notes:

(1) Screening values are residential Region 9 PRGs (EPA 2002a).

(2) Contribution to total risk was estimated for the most sensitive endpoint (i.e., the critical PRG). While some carcinogens would also have a calculateable noncancer hazard, contribution was noted to be negligible.

(3) For noncarcinogens, the contribution of the chemical hazard to the cumulative HI is the same as the maximum's proportion to the residential PRG.

a = The PRG for acenaphthene was used as a surrogate

b = The PRG for pyrene was used as a surrogate

c = The PRG for anthracene was used as a surrogate

d = Screening toxicity value was taken from EPA Region 3 Risk-based Concentration Table (2002b) and represents risk-based screening level for residential surface soil.

B = Blank contamination

CAS = Chemical Abstracts Service number

EPA = U.S. Environmental Protection Agency

EPC = Exposure point concentration

HHRA = Human Health Risk Assessment

HI = Hazard index

J = Estimated value

mg/kg = Milligram per kilogram

PRG = Preliminary remediation goal

References:

EPA 2002a. "Region 9 Preliminary Remediation Goals." October. Available on-line at: http://www.epa.gov/region09/waste/sfund/prg/

ATTACHMENT H4-4: SUMMARY OF "TOTAL RISK" BASED ON MAXIMA DETECTED IN GROUNDWATER AT SITE 13

Appendix H, HHRA for CERCLA Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, Californie

Exposure Point	CAS Number	Chemical	Maximum Concentration (Qualifier)		Units	Cancer Screening Toxicity Value (Residential PRG) (1)	Noncancer Screening Toxicity Value (Residential PRG) (1)	Proportion of Residential PRG (2) Cancer Risk	Proportion of Residential PRG (2) Hazard Index	Cumulative Effect on Cancer Risk	Cumulative Effect on Hazard Index (3)
Groundwater at Site 13	71-55-6	1,1,1-TRICHLOROETHANE	1.00E+00		ug/L	–	3.20E+03	–	0.0003	–	0.0003
	95-63-6	1,2,4-TRIMETHYLBENZENE	2.10E+00		ug/L	–	1.20E+01	–	0.1750	–	0.1750
	120-83-2	2,4-DICHLOROPHENOL	7.00E+00	J	ug/L	–	1.09E+02	–	0.0639	–	0.0639
	67-64-1	ACETONE	9.90E+01	J	ug/L	–	6.10E+02	–	0.1623	–	0.1623
	7429-90-5	ALUMINUM	2.97E+02		ug/L	–	3.60E+04	–	0.0083	–	0.0083
	7440-36-0	ANTIMONY	5.40E-01	J	ug/L	–	1.50E+01	–	0.0360	–	0.0360
	7440-39-3	BARIUM	5.30E+02		ug/L	–	2.60E+03	–	0.2038	–	0.2038
	7440-41-7	BERYLLIUM	1.40E-01	J	ug/L	–	7.30E+01	–	0.0019	–	0.0019
	74-83-9	BROMOMETHANE	6.00E-01	J	ug/L	–	8.70E+00	–	0.0690	–	0.0690
	7440-43-9	CADMIUM	6.40E-01	J	ug/L	–	1.8E+01	–	0.0356	–	0.0356
	75-15-0	CARBON DISULFIDE	1.20E+00		ug/L	–	1.00E+03	–	0.0012	–	0.0012
	108-90-7	CHLOROBENZENE	2.00E-01	J	ug/L	–	1.10E+02	–	0.0018	–	0.0018
	74-87-3	CHLOROMETHANE	3.00E-01	J	ug/L	1.50E+00	–	2.00E-01	–	2.00E-07	–
	7440-47-3	CHROMIUM	7.20E+00	J	ug/L	–	5.50E+04	–	0.0001	–	0.0001
	7440-48-4	COBALT	2.70E+01		ug/L	–	7.30E+02	–	0.0370	–	0.0370
	7440-50-8	COPPER	2.10E+01		ug/L	–	1.50E+03	–	0.0140	–	0.0140
	108--20-3	DIISOPROPYL ETHER a	8.00E-01	J	ug/L	–	–	–	–	–	–
	86-73-7	FLUORENE	1.00E+00	J	ug/L	–	2.43E+02	–	0.0041	–	0.0041
	98-82-8	ISOPROPYLBENZENE	3.00E+00		ug/L	–	6.60E+02	–	0.0045	–	0.0045
	7439-92-1	LEAD b	6.70E+00		ug/L	–	–	–	–	–	–
	NA	M,P-XYLENE c	1.60E+00		ug/L	–	2.10E+02	–	0.0076	–	0.0076
	7439-97-6	MERCURY	5.20E-02	J	ug/L	–	1.10E+01	–	0.0047	–	0.0047
	7439-98-7	MOLYBDENUM	1.11E+01	J	ug/L	–	1.80E+02	–	0.0617	–	0.0617
	103-65-1	N-PROPYLBENZENE	8.00E-01		ug/L	–	2.40E+02	–	0.0033	–	0.0033
	7440-02-0	NICKEL	8.20E+00	J	ug/L	–	7.30E+02	–	0.0112	–	0.0112
	95-47-6	O-XYLENE c	2.00E-01	J	ug/L	–	2.10E+02	–	0.0010	–	0.0010
	99-87-6	P-ISOPROPYLTOLUENE d	3.00E-01	J	ug/L	–	7.20E+02	–	0.0004	–	0.0004
	108-95-2	PHENOL	9.00E-01	J	ug/L	–	2.20E+04	–	0.0000	–	0.0000
	135-98-8	SEC-BUTYLBENZENE	1.40E+00		ug/L	–	2.40E+02	–	0.0058	–	0.0058
	7782-49-2	SELENIUM	2.40E+00	J	ug/L	–	1.80E+02	–	0.0133	–	0.0133
	7440-22-4	SILVER	6.80E-01	J	ug/L	–	1.80E+02	–	0.0038	–	0.0038
	75-65-0	TERT-BUTANOL e	3.70E+00	J	ug/L	–	1.80E+03	–	0.0021	–	0.0021
	98-06-6	TERT-BUTYLBENZENE	8.00E-01		ug/L	–	2.40E+02	–	0.0033	–	0.0033
	108-88-3	TOLUENE	9.00E-01	J	ug/L	–	7.20E+02	–	0.0013	–	0.0013
	7440-62-2	VANADIUM	1.21E+01	J	ug/L	–	2.60E+02	–	0.0465	–	0.0465
	1330-20-7	XYLENE (TOTAL)	1.00E+00		ug/L	–	2.10E+02	–	0.0048	–	0.0048
	7440-66-6	ZINC	1.18E+02		ug/L	–	1.10E+04	–	0.0107	–	0.0107

Total Residential Risk for All Maxima For Analytes Not Selected as COPCs	2.0E-07	
Total Residential HI for All Maxima for Analytes Not Selected as COPCs		1.0

Notes:

(1) Screening values are residential Region 9 PRGs (EPA 2002a).

(2) Contribution to total risk was estimated for the most sensitive endpoint (i.e., the critical PRG).

(3) For noncarcinogens, the contribution of the chemical hazard to the cumulative HI is the same as the maximum's proportion to the residential PRG.

a = Diisopropyl ether does not have a toxicity value and this chemical is not consistent with previous site operations; therefore, it was not included in the carcinogenic and noncarcinogenic total risk evaluation.

b = No EPA Region 9 Tap Water PRG (EPA 2002a) is available for lead. Because the U.S. EPA Treatment Technique value (from EPA's National Primary Drinking Water Regulations (EPA 2002c) value is not appropriate to determine risk or hazard index due to lead, it was not included in the carcinogenic and noncarcinogenic total risk evaluation.

c = The PRG for total xylene was used as a surrogate

d = The PRG for toluene was used as a surrogate

e = The PRG for isobutanol was used as a surrogate

CAS = Chemical Abstracts Service number
EPA = U.S. Environmental Protection Agency
EPC = Exposure point concentration
HHRA = Human Health Risk Assessment
HI = Hazard index
J = Estimated value
PRG = Preliminary remediation goal
ug/L = Microgram per liter

References:

EPA 2002a. "Region 9 Preliminary Remediation Goals." October. Available on-line at: http://www.epa.gov/region09/waste/sfund/prg/

ATTACHMENT H4-5: SUMMARY OF "TOTAL RISK" BASED ON MAXIMA DETECTED IN SOIL AT SITE 19

Appendix H, HHRA for CERCLA Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

Exposure Point	CAS Number	Chemical	Maximum Concentration (Qualifier)		Units	Cancer Screening Toxicity Value (Residential PRG) (1)	Noncancer Screening Toxicity Value (Residential PRG) (1)	Proportion of Residential PRG (2) Cancer Risk	Proportion of Residential PRG (2) Hazard Index	Cumulative Effect on Cancer Risk	Cumulative Effect on Hazard Index (3)
Soil at	71-55-6	1,1,1-TRICHLOROETHANE	3.00E-03	J	mg/kg	--	2.00E+03	--	0.0000	--	0.0000
Site 19	541-73-1	1,3-DICHLOROBENZENE	5.90E-01	DJ	mg/kg	--	1.60E+01	--	0.0369	--	0.0369
(Subsurface Soil)	95-57-8	2-CHLOROPHENOL	1.50E+00	J	mg/kg	--	6.30E+01	--	0.0238	--	0.0238
	91-57-6	2-METHYLNAPHTHALENE a	7.70E-03		mg/kg	--	5.60E+01	--	0.0001	--	0.0001
	59-50-7	4-CHLORO-3-METHYLPHENOL b	1.50E+00	J	mg/kg	--	3.10E+03	--	0.0005	--	0.0005
	83-32-9	ACENAPHTHENE	2.00E-03	J	mg/kg	--	3.68E+03	--	0.0000	--	0.0000
	208-96-8	ACENAPHTHYLENE c	1.90E-02		mg/kg	--	3.68E+03	--	0.0000	--	0.0000
	67-64-1	ACETONE	3.10E-02		mg/kg	--	1.60E+03	--	0.0000	--	0.0000
	7429-90-5	ALUMINUM	1.09E+04		mg/kg	--	7.60E+04	--	0.1434	--	0.1434
	120-12-7	ANTHRACENE	4.70E-02		mg/kg	--	2.19E+04	--	0.0000	--	0.0000
	7440-39-3	BARIUM	5.70E+02		mg/kg	--	5.40E+03	--	0.1056	--	0.1056
	56-55-3	BENZ(A)ANTHRACENE	3.20E-01		mg/kg	6.21E-01	--	5.15E-01	--	5.15E-07	--
	205-99-2	BENZO(B)FLUORANTHENE	2.80E-01		mg/kg	6.21E-01	--	4.51E-01	--	4.51E-07	--
	191-24-2	BENZO(G,H,I)PERYLENE d	4.00E-01		mg/kg	--	2.32E+03	--	0.0002	--	0.0002
	207-08-9	BENZO(K)FLUORANTHENE	3.30E-01		mg/kg	3.78E-01	--	8.73E-01	--	8.73E-07	--
	7440-41-7	BERYLLIUM	4.00E-01		mg/kg	--	1.50E+02	--	0.0027	--	0.0027
	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	8.90E-01		mg/kg	3.50E+01	1.20E+03	2.54E-02	0.0007	2.54E-08	0.0007
	7440-43-9	CADMIUM	7.40E+00		mg/kg	1.40E+03	3.70E+01	5.29E-03	0.2000	5.29E-09	0.2000
	7440-47-3	CHROMIUM	6.70E+01		mg/kg	2.10E+02	--	3.19E-01	--	3.19E-07	--
	218-01-9	CHRYSENE	4.20E-01		mg/kg	3.78E+00	--	1.11E-01	--	1.11E-07	--
	7440-48-4	COBALT	9.70E+00		mg/kg	9.00E+02	1.40E+03	1.08E-02	0.0069	1.08E-08	0.0069
	7440-50-8	COPPER	1.38E+02		mg/kg	--	3.10E+03	--	0.0445	--	0.0445
	57-12-5	CYANIDE e	6.40E-01		mg/kg	--	1.20E+03	--	0.0005	--	0.0005
	53-70-3	DIBENZ(A,H)ANTHRACENE	4.00E-02		mg/kg	6.21E-02	--	6.44E-01	--	6.44E-07	--
	84-66-2	DIETHYLPHTHALATE	7.70E+00		mg/kg	--	4.90E+04	--	0.0002	--	0.0002
	84-74-2	DI-N-BUTYLPHTHALATE	7.30E+00		mg/kg	--	6.10E+03	--	0.0012	--	0.0012
	206-44-0	FLUORANTHENE	6.40E-01		mg/kg	--	2.29E+03	--	0.0003	--	0.0003
	86-73-7	FLUORENE	6.40E-03		mg/kg	--	2.75E+03	--	0.0000	--	0.0000
	193-39-5	INDENO(1,2,3-CD)PYRENE	4.70E-01		mg/kg	6.21E-01	--	7.56E-01	--	7.56E-07	--
	7439-96-5	MANGANESE	8.97E+02		mg/kg	--	1.80E+03	--	0.4983	--	0.4983
	75-09-2	METHYLENE CHLORIDE	3.00E-02	B	mg/kg	9.10E+00	2.00E+03	3.30E-03	0.0000	3.30E-09	0.0000
	7439-98-7	MOLYBDENUM	1.60E+00		mg/kg	--	3.90E+02	--	0.0041	--	0.0041
	91-20-3	NAPHTHALENE	2.50E-02		mg/kg	--	5.59E+01	--	0.0004	--	0.0004
	7440-02-0	NICKEL	6.40E+01		mg/kg	--	1.60E+03	--	0.0400	--	0.0400
	86-30-6	N-NITROSODIPHENYLAMINE	9.00E-01	JB	mg/kg	9.90E+01	--	9.09E-03	--	9.09E-09	--
	87-86-5	PENTACHLOROPHENOL	1.60E+00	J	mg/kg	3.00E+00	1.40E+03	5.33E-01	0.0011	5.33E-07	0.0011
	85-01-8	PHENANTHRENE f	1.70E-01		mg/kg	--	2.19E+04	--	0.0000	--	0.0000
	129-00-0	PYRENE	7.10E-01		mg/kg	--	2.32E+03	--	0.0003	--	0.0003
	7440-22-4	SILVER	7.00E-01		mg/kg	--	3.90E+02	--	0.0018	--	0.0018
	127-18-4	TETRACHLOROETHENE	4.00E-03	J	mg/kg	1.50E+00	3.60E+02	2.67E-03	0.0000	2.67E-09	0.0000
	7440-28-0	THALLIUM	3.30E+00	B	mg/kg	--	5.20E+00	--	0.6346	--	0.6346
	7440-32-6	TITANIUM g	8.19E+02		mg/kg	--	3.10E+05	--	0.0026	--	0.0026
	108-88-3	TOLUENE	1.00E+00	D	mg/kg	--	6.60E+02	--	0.0015	--	0.0015
	79-01-6	TRICHLOROETHENE	4.00E-03	J	mg/kg	5.30E-02	1.60E+01	7.55E-02	0.0003	7.55E-08	0.0003
	7440-62-2	VANADIUM	4.15E+01		mg/kg	--	5.50E+02	--	0.0755	--	0.0755
	1330-20-7	XYLENE (TOTAL)	1.90E-01	DJ	mg/kg	--	2.70E+02	--	0.0007	--	0.0007
	7440-66-6	ZINC	2.92E+02		mg/kg	--	2.30E+04	--	0.0127	--	0.0127

Total Residential Risk for All Maxima For Analytes Not Selected as COPCs	4.3E-06
Total Residential HI for All Maxima for Analytes Not Selected as COPCs	1.8

Notes:

(1) Screening values are residential Region 9 PRGs (EPA 2002a).

(2) Contribution to total risk was estimated for the most sensitive endpoint (i.e., the critical PRG). While some carcinogens would also have a calculateable noncancer hazard, contribution was noted to be negligible.

(3) For noncarcinogens, the contribution of the chemical hazard to the cumulative HI is the same as the maximum's proportion to the residential PRG.

a = The PRG for naphthalene was used as a surrogate
b = The PRG for 3-methylphenol was used as a surrogate
c = The PRG for acenaphthene was used as a surrogate
d = The PRG for pyrene was used as a surrogate
e = The PRG for cyanide (free) was used as a surrogate
f = The PRG for anthracene was used as a surrogate
g = Screening toxicity value was taken from EPA Region 3 Risk-based Concentration Table (2002b) and represents risk-based screening level for residential surface soil.

B = Blank contamination
CAS = Chemical Abstracts Service number
D = Compound reported from a diluted sample
EPA = U.S. Environmental Protection Agency
EPC = Exposure point concentration
HHRA = Human Health Risk Assessment
HI = Hazard index
J = Estimated value
mg/kg = Milligram per kilogram
PRG = Preliminary remediation goal

References:

EPA 2002a. "Region 9 Preliminary Remediation Goals." October. Available on-line at: http://www.epa.gov/region09/waste/sfund/prg/

ATTACHMENT H4-6: SUMMARY OF "TOTAL RISK" BASED ON MAXIMA DETECTED IN GROUNDWATER AT SITE 19

Appendix H, HHRA for CERCLA Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

Exposure Point	CAS Number	Chemical	Maximum Concentration (Qualifier)		Units	Cancer Screening Toxicity Value (Residential PRG) (1)	Noncancer Screening Toxicity Value (Residential PRG) (1)	Proportion of Residential PRG (2) Cancer Risk	Proportion of Residential PRG (2) Hazard Index	Cumulative Effect on Cancer Risk	Cumulative Effect on Hazard Index (3)
Groundwater at Site 19	71-55-6	1,1,1-TRICHLOROETHANE	3.20E+00		ug/L	--	3.20E+03	--	0.0010	--	0.0010
	75-35-4	1,1-DICHLOROETHENE	2.00E+00		ug/L	--	3.40E+02	--	0.0059	--	0.0059
	95-63-6	1,2,4-TRICHLOROBENZENE	1.00E-01	J	ug/L	--	1.90E+02	--	0.0005	--	0.0005
	540-59-0	1,2-DICHLOROETHENE (TOTAL) a	8.00E+00		ug/L	--	6.10E+01	--	0.1311	--	0.1311
	78-93-3	2-BUTANONE	7.00E-01	J	ug/L	--	1.90E+03	--	0.0004	--	0.0004
	67-64-1	ACETONE	3.80E+01	J	ug/L	--	6.10E+02	--	0.0623	--	0.0623
	7429-90-5	ALUMINUM	4.29E+02		ug/L	--	3.60E+04	--	0.0119	--	0.0119
	7440-36-0	ANTIMONY	1.26E+01	J	ug/L	--	1.50E+01	--	0.8400	--	0.8400
	7440-39-3	BARIUM	2.65E+02		ug/L	--	2.60E+03	--	0.1019	--	0.1019
	7440-41-7	BERYLLIUM	1.30E+00	J	ug/L	--	7.30E+01	--	0.0178	--	0.0178
	7440-43-9	CADMIUM	2.40E+00	J	ug/L	--	1.8E+01	--	0.1333	--	0.1333
	75-15-0	CARBON DISULFIDE	4.40E+00		ug/L	--	1.00E+03	--	0.0044	--	0.0044
	67-66-3	CHLOROFORM	2.00E-01	J	ug/L	5.3E-01	6.20E+00	3.77E-01	0.0323	3.77E-07	0.0323
	7440-47-3	CHROMIUM	1.50E+00	J	ug/L	--	5.50E+04	--	0.0000	--	0.0000
	156-59-2	CIS-1,2-DICHLOROETHENE	3.40E+00		ug/L	--	6.10E+01	--	0.0557	--	0.0557
	7440-48-4	COBALT	1.39E+01	J	ug/L	--	7.30E+02	--	0.0190	--	0.0190
	7440-50-8	COPPER	7.20E+00	J	ug/L	--	1.50E+03	--	0.0048	--	0.0048
	100-41-4	ETHYLBENZENE	1.00E-01	J	ug/L	2.9E+00	1.30E+03	3.45E-02	0.0001	3.45E-08	0.0001
	7439-92-1	LEAD b	5.30E+00		ug/L	--	--	--	--	--	--
	NA	M,P-XYLENE c	4.00E-01	J	ug/L	--	2.10E+02	--	0.0019	--	0.0019
	1634-04-4	METHYL-T-BUTYL ETHER	3.00E-01	J	ug/L	6.2E+00	5.20E+03	4.84E-02	0.0001	4.84E-08	0.0001
	7439-98-7	MOLYBDENUM	8.20E+00	J	ug/L	--	1.80E+02	--	0.0456	--	0.0456
	91-20-3	NAPHTHALENE	2.20E+00		ug/L	--	6.20E+00	--	0.3547	--	0.3547
	7440-02-0	NICKEL	2.65E+01	J	ug/L	--	7.30E+02	--	0.0363	--	0.0363
	95-47-6	O-XYLENE c	1.00E-01	J	ug/L	--	2.10E+02	--	0.0005	--	0.0005
	85-01-8	PHENANTHRENE d	5.00E-01	J	ug/L	--	1.83E+03	--	0.0003	--	0.0003
	7782-49-2	SELENIUM	2.70E+00	J	ug/L	--	1.80E+02	--	0.0150	--	0.0150
	7440-22-4	SILVER	4.30E-01	J	ug/L	--	1.80E+02	--	0.0024	--	0.0024
	108-88-3	TOLUENE	4.00E-01	J	ug/L	--	7.20E+02	--	0.0006	--	0.0006
	156-60-5	TRANS-1,2-DICHLOROETHENE	1.00E-01	J	ug/L	--	1.20E+02	--	0.0008	--	0.0008
	7440-62-2	VANADIUM	1.90E+01		ug/L	--	2.60E+02	--	0.0731	--	0.0731
	7440-66-6	ZINC	5.87E+02		ug/L	--	1.10E+04	--	0.0534	--	0.0534

Total Residential Risk for All Maxima For Analytes Not Selected as COPCs	4.6E-07
Total Residential HI for All Maxima for Analytes Not Selected as COPCs	2.0

Notes:

(1) Screening values are residential Region 9 PRGs (EPA 2002a).

(2) Contribution to total risk was estimated for the most sensitive endpoint (i.e., the critical PRG). While some carcinogens would also have a calculateable noncancer hazard, contribution was noted to be negligible.

(3) For noncarcinogens, the contribution of the chemical hazard to the cumulative HI is the same as the maximum's proportion to the residential PRG.

a = The PRG for cis-1,2-dichloroethene was used as a surrogate

b = No EPA Region 9 Tap Water PRG (EPA 2002a) is available for lead. Because the U.S. EPA Treatment Technique value (from EPA's National Primary Drinking Water Regulations (EPA 2002c) value is not appropriate to determine risk or hazard index due to lead, it was not included in the carcinogenic and noncarcinogenic total risk evaluation.

c = The PRG for total xylene was used as a surrogate

d = The PRG for anthracene was used as a surrogate

CAS = Chemical Abstracts Service number
EPA = U.S. Environmental Protection Agency
EPC = Exposure point concentration
HHRA = Human Health Risk Assessment
HI = Hazard index
J = Estimated Value
PRG = Preliminary remediation goal
ug/L = Microgram per liter

References:

EPA 2002a. "Region 9 Preliminary Remediation Goals." October. Available on-line at: http://www.epa.gov/region09/waste/sfund/prg/

ATTACHMENT H4-7: SUMMARY OF "TOTAL RISK" BASED ON MAXIMA DETECTED IN SOIL AT SITE 22

Appendix H, HHRA for CERCLA Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

Exposure Point	CAS Number	Chemical		Maximum Concentration (Qualifier)		Units	Cancer Screening Toxicity Value (Residential PRG) (1)	Noncancer Screening Toxicity Value (Residential PRG) (1)	Proportion of Residential PRG (2) Cancer Risk	Proportion of Residential PRG (2) Hazard Index	Cumulative Effect on Cancer Risk	Cumulative Effect on Hazard Index (3)
Soil at Site 22 (Subsurface Soil)	120-82-1	1,2,4-TRICHLOROBENZENE		2.00E+00	J	mg/kg	--	6.50E+02	--	0.0031	--	0.0031
	95-57-8	2-CHLOROPHENOL		3.10E+00	J	mg/kg	--	6.30E+01	--	0.0492	--	0.0492
	59-50-7	4-CHLORO-3-METHYLPHENOL	a	5.70E+00	J	mg/kg	--	3.10E+03	--	0.0018	--	0.0018
	108-10-1	4-METHYL-2-PENTANONE		7.20E+01		mg/kg	--	7.90E+02	--	0.0911	--	0.0911
	72-54-8	4,4'-DDD		9.00E-03	JX	mg/kg	2.40E+00	--	3.75E-03	--	3.75E-09	--
	72-55-9	4,4'-DDE		2.30E-02	JX	mg/kg	1.70E+00	--	1.35E-02	--	1.35E-08	--
	50-29-3	4,4'-DDT		5.30E-02	JX	mg/kg	1.70E+00	3.60E+01	3.12E-02	0.0015	3.12E-08	0.0015
	83-32-9	ACENAPHTHENE		1.30E-01	J	mg/kg	--	3.68E+03	--	0.0000	--	0.0000
	208-96-8	ACENAPHTHYLENE	b	5.60E-02	J	mg/kg	--	3.68E+03	--	0.0000	--	0.0000
	5103-71-9	ALPHA-CHLORDANE	c	2.70E-02	JX	mg/kg	1.60E+00	3.50E+01	1.69E-02	0.0008	1.69E-08	0.0008
	7429-90-5	ALUMINUM		2.68E+04		mg/kg	--	7.60E+04	--	0.3526	--	0.3526
	120-12-7	ANTHRACENE		9.40E-02		mg/kg	--	2.19E+04	--	0.0000	--	0.0000
	7440-39-3	BARIUM		1.40E+02		mg/kg	--	5.40E+03	--	0.0259	--	0.0259
	56-55-3	BENZ(A)ANTHRACENE		3.20E-01	J	mg/kg	6.21E-01	--	5.15E-01	--	5.15E-07	--
	205-99-2	BENZO(B)FLUORANTHENE		5.50E-01	J	mg/kg	6.21E-01	--	8.85E-01	--	8.85E-07	--
	191-24-2	BENZO(G,H,I)PERYLENE	d	4.80E-01	J	mg/kg	--	2.32E+03	--	0.0002	--	0.0002
	207-08-9	BENZO(K)FLUORANTHENE		2.40E-01		mg/kg	3.78E-01	--	6.35E-01	--	6.35E-07	--
	7440-41-7	BERYLLIUM		1.80E+00		mg/kg	--	1.50E+02	--	0.0120	--	0.0120
	7440-43-9	CADMIUM		4.30E+00		mg/kg	1.40E+03	3.70E+01	3.07E-03	0.1162	3.07E-09	0.1162
	86-74-8	CARBAZOLE		2.40E-02	J	mg/kg	2.40E+01	--	1.00E-03	--	1.00E-09	--
	7440-47-3	CHROMIUM		6.70E+01		mg/kg	2.10E+02	--	3.19E-01	--	3.19E-07	--
	218-01-9	CHRYSENE		3.60E-01	J	mg/kg	3.78E+00	--	9.52E-02	--	9.52E-08	--
	7440-48-4	COBALT		1.70E+01		mg/kg	9.00E+02	1.40E+03	1.89E-02	0.0121	1.89E-08	0.0121
	7440-50-8	COPPER		8.62E+01		mg/kg	--	3.10E+03	--	0.0278	--	0.0278
	53-70-3	DIBENZ(A,H)ANTHRACENE		5.60E-02	J	mg/kg	6.21E-02	--	9.01E-01	--	9.01E-07	--
	206-44-0	FLUORANTHENE		1.30E+00	J	mg/kg	--	2.29E+03	--	0.0006	--	0.0006
	86-73-7	FLUORENE		9.10E-02	J	mg/kg	--	2.75E+03	--	0.0000	--	0.0000
	5103-74-2	GAMMA-CHLORDANE	c	2.20E-02	JX	mg/kg	1.60E+00	3.50E+01	1.38E-02	0.0006	1.38E-08	0.0006
	193-39-5	INDENO(1,2,3-CD)PYRENE		3.50E-01	J	mg/kg	6.21E-01	--	5.63E-01	--	5.63E-07	--
	7439-96-5	MANGANESE		4.40E+02		mg/kg	--	1.80E+03	--	0.2444	--	0.2444
	7439-97-6	MERCURY		4.60E-01		mg/kg	--	2.30E+01	--	0.0200	--	0.0200
	72-43-5	METHOXYCHLOR		2.00E-02		mg/kg	--	3.10E+02	--	0.0001	--	0.0001
	91-20-3	NAPHTHALENE		3.40E+01		mg/kg	--	5.59E+01	--	0.6081	--	0.6081
	7440-02-0	NICKEL		8.90E+01		mg/kg	--	1.60E+03	--	0.0556	--	0.0556
	85-01-8	PHENANTHRENE	e	5.40E-01	J	mg/kg	--	2.19E+04	--	0.0000	--	0.0000
	108-95-2	PHENOL		3.00E-01	J	mg/kg	--	3.70E+04	--	0.0000	--	0.0000
	129-00-0	PYRENE		1.50E+00	J	mg/kg	--	2.32E+03	--	0.0006	--	0.0006
	7782-49-2	SELENIUM		1.00E+00	J	mg/kg	--	3.90E+02	--	0.0026	--	0.0026
	7440-22-4	SILVER		1.20E+00		mg/kg	--	3.90E+02	--	0.0031	--	0.0031
	7440-32-6	TITANIUM	f	7.04E+02		mg/kg	--	3.10E+05	--	0.0023	--	0.0023
	7440-62-2	VANADIUM		6.23E+01		mg/kg	--	5.50E+02	--	0.1133	--	0.1133
	7440-66-6	ZINC		1.51E+02		mg/kg	--	2.30E+04	--	0.0066	--	0.0066

Total Residential Risk for All Maxima For Analytes Not Selected as COPCs	4.0E-06
Total Residential HI for All Maxima for Analytes Not Selected as COPCs	1.8

Notes:

(1) Screening values are residential Region 9 PRGs (EPA 2002a).

(2) Contribution to total risk was estimated for the most sensitive endpoint (i.e., the critical PRG). While some carcinogens would also have a calculateable noncancer hazard, contribution was noted to be negligible.

(3) For noncarcinogens, the contribution of the chemical hazard to the cumulative HI is the same as the maximum's proportion to the residential PRG.

a = The PRG for 3-methylphenol was used as a surrogate
b = The PRG for acenaphthene was used as a surrogate
c = The PRG for chlordane was used as a surrogate
d = The PRG for pyrene was used as a surrogate
e = The PRG for anthracene was used as a surrogate
f = Screening toxicity value was taken from EPA Region 3 Risk-based Concentration Table (2002b) and represents risk-based screening level for residential surface soil.

CAS = Chemical Abstracts Service number
EPA = U.S. Environmental Protection Agency
EPC = Exposure point concentration
HHRA = Human Health Risk Assessment
HI = Hazard index
J = Estimated value
mg/kg = Milligram per kilogram
PRG = Preliminary remediation goal
QC = Quality control
X = Other laboratory identified QC problem summarized in the data summary package

References:

EPA 2002a. "Region 9 Preliminary Remediation Goals." October. Available on-line at: http://www.epa.gov/region09/waste/sfund/prg/

ATTACHMENT H4-8: SUMMARY OF "TOTAL RISK" BASED ON MAXIMA DETECTED IN GROUNDWATER AT SITE 22

Appendix H, HHRA for CERCLA Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

Exposure Point	CAS Number	Chemical	Maximum Concentration (Qualifier)		Units	Cancer Screening Toxicity Value (Residential PRG) (1)	Noncancer Screening Toxicity Value (Residential PRG) (1)	Proportion of Residential PRG (2) Cancer Risk	Proportion of Residential PRG (2) Hazard Index	Cumulative Effect on Cancer Risk	Cumulative Effect on Hazard Index (3)
Groundwater at Site 22	71-55-6	1,1,1-TRICHLOROETHANE	3.00E+00		ug/L	–	3.20E+03	–	0.0009	–	0.0009
	95-50-1	1,2-DICHLOROBENZENE	3.00E+00	J	ug/L	–	3.70E+02	–	0.0081	–	0.0081
	67-64-1	ACETONE	8.40E+00	J	ug/L	–	6.10E+02	–	0.0138	–	0.0138
	7429-90-5	ALUMINUM	2.60E+03		ug/L	–	3.60E+04	–	0.0722	–	0.0722
	7440-36-0	ANTIMONY	3.20E+00	J	ug/L	–	1.50E+01	–	0.2133	–	0.2133
	7440-39-3	BARIUM	4.90E+02	J	ug/L	–	2.60E+03	–	0.1885	–	0.1885
	7440-41-7	BERYLLIUM	1.40E+00	J	ug/L	–	7.30E+01	–	0.0192	–	0.0192
	74-83-9	BROMOMETHANE	6.00E-01	J	ug/L	–	8.70E+00	–	0.0690	–	0.0690
	7440-43-9	CADMIUM	3.10E+00	J	ug/L	–	1.8E+01	–	0.1722	–	0.1722
	74-87-3	CHLOROMETHANE	2.00E-01	J	ug/L	1.5E+00	–	1.33E-01	–	1.33E-07	–
	7440-47-3	CHROMIUM	9.50E+00		ug/L	–	5.50E+04	–	0.0002	–	0.0002
	7440-48-4	COBALT	6.30E+00	J	ug/L	–	7.30E+02	–	0.0086	–	0.0086
	7440-50-8	COPPER	3.80E+01		ug/L	–	1.50E+03	–	0.0253	–	0.0253
	108-20-3	DIISOPROPYL ETHER a	3.00E-01	J	ug/L	–	–	–	–	–	–
	98-82-8	ISOPROPYLBENZENE	1.20E+02		ug/L	–	6.60E+02	–	0.1818	–	0.1818
	7439-92-1	LEAD b	3.30E-01	J	ug/L	–	–	–	–	–	–
	NA	M,P-XYLENE c	7.90E+00	J	ug/L	–	2.10E+02	–	0.0376	–	0.0376
	7439-97-6	MERCURY	1.50E-01	J	ug/L	–	1.10E+01	–	0.0136	–	0.0136
	1634-04-4	METHYL-T-BUTYL ETHER	5.00E+00	J	ug/L	6.2E+00	5.20E+03	8.06E-01	0.0010	8.06E-07	0.0010
	7439-98-7	MOLYBDENUM	1.40E+01	J	ug/L	–	1.80E+02	–	0.0778	–	0.0778
	104-51-8	N-BUTYLBENZENE	2.10E+01		ug/L	–	2.40E+02	–	0.0875	–	0.0875
	7440-02-0	NICKEL	2.94E+01		ug/L	–	7.30E+02	–	0.0403	–	0.0403
	95-47-6	O-XYLENE c	7.00E-01		ug/L	–	2.10E+02	–	0.0033	–	0.0033
	108-95-2	PHENOL	5.40E+01		ug/L	–	2.20E+04	–	0.0025	–	0.0025
	135-98-8	SEC-BUTYLBENZENE	1.80E+01		ug/L	–	2.40E+02	–	0.0750	–	0.0750
	7782-49-2	SELENIUM	2.20E+00	J	ug/L	–	1.80E+02	–	0.0122	–	0.0122
	7440-22-4	SILVER	2.10E-01	J	ug/L	–	1.80E+02	–	0.0012	–	0.0012
	75-65-0	TERT-BUTANOL d	2.10E+02		ug/L	–	1.80E+03	–	0.1167	–	0.1167
	7440-62-2	VANADIUM	1.24E+01	J	ug/L	–	2.60E+02	–	0.0477	–	0.0477
	7440-66-6	ZINC	1.05E+02		ug/L	–	1.10E+04	–	0.0095	–	0.0095

Total Residential Risk for All Maxima For Analytes Not Selected as COPCs	9.4E-07	
Total Residential HI for All Maxima for Analytes Not Selected as COPCs		1.5

Notes:

(1) Screening values are residential Region 9 PRGs (EPA 2002a).

(2) Contribution to total risk was estimated for the most sensitive endpoint (i.e., the critical PRG). While some carcinogens would also have a calculateable noncancer hazard, contribution was noted to be negligible.

(3) For noncarcinogens, the contribution of the chemical hazard to the cumulative HI is the same as the maximum's proportion to the residential PRG.

a = Diisopropyl ether does not have a toxicity value and this chemical is not consistent with previous site operations; therefore, it was not included in the carcinogenic and noncarcinogenic total risk evaluation.

b = No EPA Region 9 Tap Water PRG (EPA 2002a) is available for lead. Because the U.S. EPA Treatment Technique value (from EPA's National Primary Drinking Water Regulations (EPA 2002c) value is not appropriate to determine risk or hazard index due to lead, it was not included in the carcinogenic and noncarcinogenic total risk evaluation.

c = The PRG for total xylene was used as a surrogate

d = The PRG for isobutanol was used as a surrogate

CAS = Chemical Abstracts Service number
EPA = U.S. Environmental Protection Agency
EPC = Exposure point concentration
HHRA = Human Health Risk Assessment
HI = Hazard index
J = Estimated value
PRG = Preliminary remediation goal
ug/L = Microgram per liter

References:

EPA 2002a. "Region 9 Preliminary Remediation Goals." October. Available on-line at: http://www.epa.gov/region09/waste/sfund/prg/

ATTACHMENT H4-9: SUMMARY OF "TOTAL RISK" BASED ON MAXIMA DETECTED IN SOIL AT SITE 23

Appendix H, HHRA for CERCLA Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

Exposure Point	CAS Number	Chemical		Maximum Concentration (Qualifier)		Units	Cancer Screening Toxicity Value (Residential PRG) (1)	Noncancer Screening Toxicity Value (Residential PRG) (1)	Proportion of Residential PRG (2) Cancer Risk	Proportion of Residential PRG (2) Hazard Index	Cumulative Effect on Cancer Risk	Cumulative Effect on Hazard Index (3)
Soil at Site 23 (Subsurface Soil)	105-67-9	2,4-DIMETHYLPHENOL		5.20E-02	J	mg/kg	–	1.20E+03	–	0.0000	–	0.0000
	95-48-7	2-METHYLPHENOL		2.10E-02	J	mg/kg	–	3.10E+03	–	0.0000	–	0.0000
	106-44-5	4-METHYLPHENOL		4.80E-02	J	mg/kg	–	3.10E+02	–	0.0002	–	0.0002
	72-54-8	4,4'-DDT		5.40E-03	J	mg/kg	1.70E+00	3.60E+01	3.18E-03	0.0002	3.18E-09	0.0002
	83-32-9	ACENAPHTHENE		9.30E-02	J	mg/kg	–	3.68E+03	–	0.0000	–	0.0000
	208-96-8	ACENAPHTHYLENE	a	6.60E-02	J	mg/kg	–	3.68E+03	–	0.0000	–	0.0000
	7429-90-5	ALUMINUM		2.19E+04		mg/kg	–	7.60E+04	–	0.2882	–	0.2882
	120-12-7	ANTHRACENE		4.30E-01		mg/kg	–	2.19E+04	–	0.0000	–	0.0000
	7440-36-0	ANTIMONY		4.80E+00		mg/kg	–	3.10E+01	–	0.1548	–	0.1548
	11096-82-5	AROCLOR-1260		3.80E-02	J	mg/kg	2.20E-01	–	1.73E-01	–	1.73E-07	–
	7440-39-3	BARIUM		3.00E+02		mg/kg	–	5.40E+03	–	0.0556	–	0.0556
	191-24-2	BENZO(G,H,I)PERYLENE	b	1.30E+00		mg/kg	–	2.32E+03	–	0.0006	–	0.0006
	7440-41-7	BERYLLIUM		2.20E-01	J	mg/kg	1.50E+02	1.50E+02	1.47E-03	0.0015	1.47E-09	0.0015
	7440-43-9	CADMIUM		1.00E+01		mg/kg	1.40E+03	3.70E+01	7.14E-03	0.2703	7.14E-09	0.2703
	7440-47-3	CHROMIUM		7.69E+01		mg/kg	2.10E+02	–	3.66E-01	–	3.66E-07	–
	218-01-9	CHRYSENE		2.30E+00		mg/kg	3.78E+00	–	6.08E-01	–	6.08E-07	–
	7440-48-4	COBALT		1.33E+01		mg/kg	9.00E+02	1.40E+03	1.48E-02	0.0095	1.48E-08	0.0095
	7440-50-8	COPPER		1.13E+02		mg/kg	–	3.10E+03	–	0.0365	–	0.0365
	206-44-0	FLUORANTHENE		3.40E+00		mg/kg	–	2.29E+03	–	0.0015	–	0.0015
	86-73-7	FLUORENE		2.90E-01		mg/kg	–	2.75E+03	–	0.0001	–	0.0001
	7439-92-1	LEAD	c	1.20E+02		mg/kg	–	–	–	–	–	–
	7439-96-5	MANGANESE		4.14E+02		mg/kg	–	1.80E+03	–	0.2300	–	0.2300
	91-20-3	NAPHTHALENE		1.20E+01		mg/kg	–	5.59E+01	–	0.2146	–	0.2146
	7440-02-0	NICKEL		3.80E+01		mg/kg	–	1.60E+03	–	0.0238	–	0.0238
	86-30-6	N-NITROSODIPHENYLAMINE		2.20E-01	JB	mg/kg	9.90E+01	–	2.22E-03	–	2.22E-09	–
	85-01-8	PHENANTHRENE	d	1.50E+00		mg/kg	–	2.19E+04	–	0.0001	–	0.0001
	129-00-0	PYRENE		2.70E+00		mg/kg	–	2.32E+03	–	0.0012	–	0.0012
	7440-22-4	SILVER		3.80E-01	B	mg/kg	–	3.90E+02	–	0.0010	–	0.0010
	7440-28-0	THALLIUM		3.30E+00		mg/kg	–	5.20E+00	–	0.6346	–	0.6346
	7440-32-6	TITANIUM	e	8.79E+02		mg/kg	–	3.10E+05	–	0.0028	–	0.0028
	108-88-3	TOLUENE		1.10E+00		mg/kg	–	6.60E+02	–	0.0017	–	0.0017
	8001-35-2	TOXAPHENE		1.40E+00		mg/kg	4.40E-01	–	3.18E+00	–	3.18E-06	–
	7440-62-2	VANADIUM		8.20E+01		mg/kg	–	5.50E+02	–	0.1491	–	0.1491
	7440-66-6	ZINC		7.90E+01		mg/kg	–	2.30E+04	–	0.0034	–	0.0034

Total Residential Risk for All Maxima For Analytes Not Selected as COPCs	4.4E-06	
Total Residential HI for All Maxima for Analytes Not Selected as COPCs		2.1

Notes:

(1) Screening values are residential Region 9 PRGs (EPA 2002a).

(2) Contribution to total risk was estimated for the most sensitive endpoint (i.e., the critical PRG). While some carcinogens would also have a calculateable noncancer hazard, contribution was noted to be negligible.

(3) For noncarcinogens, the contribution of the chemical hazard to the cumulative HI is the same as the maximum's proportion to the residential PRG.

(4) Chemical risk exceeds 1E-06. See Risk Characterization in Section 7 for further discussion.

a = The PRG for acenaphthene was used as a surrogate

b = The PRG for pyrene was used as a surrogate

c = No EPA Region 9 cancer or noncancer soil PRG is available for lead. Because the EPA value is not appropriate to determine risk or hazard index due to lead, it was not included in the carcinogenic and noncarcinogenic total risk evaluation.

d = The PRG for anthracene was used as a surrogate

e = Screening toxicity value was taken from EPA Region 3 Risk-based Concentration Table (2002b) and represents risk-based screening level for residential surface soil.

B = Blank contamination
CAS = Chemical Abstracts Service number
EPA = U.S. Environmental Protection Agency
EPC = Exposure point concentration
HHRA = Human Health Risk Assessment
HI = Hazard index
J = Estimated value
mg/kg = Milligram per kilogram
PRG = Preliminary remediation goal

References:

EPA 2002a. "Region 9 Preliminary Remediation Goals." October. Available on-line at: http://www.epa.gov/region09/waste/sfund/prg/

ATTACHMENT H4-10: SUMMARY OF "TOTAL RISK" BASED ON MAXIMA DETECTED IN GROUNDWATER AT SITE 23

Appendix H, HHRA for CERCLA Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

Exposure Point	CAS Number	Chemical		Maximum Concentration (Qualifier)		Units	Cancer Screening Toxicity Value (Residential PRG) (1)	Noncancer Screening Toxicity Value (Residential PRG) (1)	Proportion of Residential PRG (2) Cancer Risk	Proportion of Residential PRG (2) Hazard Index	Cumulative Effect on Cancer Risk	Cumulative Effect on Hazard Index (3)
Groundwater at Site 23	96-18-4	1,2,3-TRICHLOROBENZENE	a	1.10E+00		ug/L	--	1.9E+02	--	0.0058	--	0.0058
	95-50-1	1,2-DICHLOROBENZENE		1.00E-01	J	ug/L	--	3.7E+02	--	0.0003	--	0.0003
	540-59-0	1,2-DICHLOROETHENE (TOTAL)	b	1.00E+00	J	ug/L	--	6.1E+01	--	0.0164	--	0.0164
	120-83-2	2,4-DICHLOROPHENOL		5.00E-01	J	ug/L	--	1.1E+02	--	0.0045	--	0.0045
	591-78-6	2-HEXANONE	c	2.00E+00	J	ug/L	--	3.5E+02	--	0.0057	--	0.0057
	108-10-1	4-METHYL-2-PENTANONE		2.00E+00	J	ug/L	--	1.6E+02	--	0.0125	--	0.0125
	83-32-9	ACENAPHTHENE		1.00E+00	J	ug/L	--	3.7E+02	--	0.0027	--	0.0027
	67-64-1	ACETONE		1.60E+00	J	ug/L	--	6.1E+02	--	0.0026	--	0.0026
	7429-90-5	ALUMINUM		3.83E+03		ug/L	--	3.6E+04	--	0.1064	--	0.1064
	7440-36-0	ANTIMONY		2.20E-01	J	ug/L	--	1.5E+01	--	0.0147	--	0.0147
	7440-39-3	BARIUM		3.88E+02		ug/L	--	2.6E+03	--	0.1492	--	0.1492
	7440-41-7	BERYLLIUM		1.40E+00	J	ug/L	--	7.3E+01	--	0.0192	--	0.0192
	75-25-2	BROMOFORM		2.00E-01	J	ug/L	8.5E+00	7.3E+02	2.35E-02	0.0003	2.35E-08	0.0003
	7440-43-9	CADMIUM		4.90E-01	J	ug/L	--	1.8E+01	--	0.0272	--	0.0272
	75-15-0	CARBON DISULFIDE		1.70E+02	J	ug/L	--	1.0E+03	--	0.1700	--	0.1700
	7440-47-3	CHROMIUM		1.14E+01		ug/L	--	5.5E+04	--	0.0002	--	0.0002
	7440-48-4	COBALT		4.50E+00	J	ug/L	--	7.3E+02	--	0.0062	--	0.0062
	7440-50-8	COPPER		1.63E+01	J	ug/L	--	1.5E+03	--	0.0109	--	0.0109
	206-44-0	FLUORANTHENE		1.00E+00	J	ug/L	--	1.5E+03	--	0.0007	--	0.0007
	86-73-7	FLUORENE		5.00E+00	J	ug/L	--	2.4E+02	--	0.0205	--	0.0205
	7439-92-1	LEAD	d	3.10E-01	J	ug/L	--	--	--	--	--	--
	7439-96-5	MANGANESE		5.32E+02		ug/L	--	8.8E+02	--	0.6045	--	0.6045
	7439-97-6	MERCURY		1.70E+00		ug/L	--	1.1E+01	--	0.1545	--	0.1545
	7439-98-7	MOLYBDENUM		4.40E+00	J	ug/L	--	1.8E+02	--	0.0244	--	0.0244
	7440-02-0	NICKEL		2.23E+01		ug/L	--	7.3E+02	--	0.0305	--	0.0305
	85-01-8	PHENANTHRENE	e	5.00E+00	J	ug/L	--	1.8E+03	--	0.0027	--	0.0027
	129-00-0	PYRENE		1.00E+00	J	ug/L	--	1.8E+02	--	0.0055	--	0.0055
	7782-49-2	SELENIUM		3.20E+00	J	ug/L	--	1.8E+02	--	0.0178	--	0.0178
	7440-22-4	SILVER		1.90E-02	J	ug/L	--	1.8E+02	--	0.0001	--	0.0001
	108-88-3	TOLUENE		5.00E+00		ug/L	--	7.2E+02	--	0.0069	--	0.0069
	7440-62-2	VANADIUM		3.00E+01		ug/L	--	2.6E+02	--	0.1154	--	0.1154
	7440-66-6	ZINC		1.41E+02		ug/L	--	1.1E+04	--	0.0128	--	0.0128

Total Residential Risk for All Maxima For Analytes Not Selected as COPCs	2.4E-08
Total Residential HI for All Maxima for Analytes Not Selected as COPCs	1.6

Notes:

(1) Screening values are residential Region 9 PRGs (EPA 2002a).

(2) Contribution to total risk was estimated for the most sensitive endpoint (i.e., the critical PRG). While some carcinogens would also have a calculateable noncancer hazard, contribution was noted to be negligible.

(3) For noncarcinogens, the contribution of the chemical hazard to the cumulative HI is the same as the maximum's proportion to the residential PRG.

a = The PRG for 1,2,4-trichlorobenzene was used as a surrogate

b = The PRG for cis-1,2-dichloroethene was used as a surrogate

c = The PRG for 2-hexane was used as a surrogate

d = No EPA Region 9 Tap Water PRG (EPA 2002a) is available for lead. Because the U.S. EPA Treatment Technique value (from EPA's National Primary Drinking Water Regulations (EPA 2002c) value is not appropriate to determine risk or hazard index due to lead, it was not included in the carcinogenic and noncarcinogenic total risk evaluation.

e = The PRG for anthracene was used as a surrogate

CAS = Chemical Abstracts Service number
EPA = U.S. Environmental Protection Agency
EPC = Exposure point concentration
HHRA = Human Health Risk Assessment
HI = Hazard index
J = Estimated value
PRG = Preliminary remediation goal
ug/L = Microgram per liter

References:

EPA 2002a. "Region 9 Preliminary Remediation Goals." October. Available on-line at: http://www.epa.gov/region09/waste/sfund/prg/

ATTACHMENT H5
SAMPLES WITH VALIDATED DATA INCLUDED IN THE RISK ASSESSMENT

ATTACHMENT H5-1: SAMPLES WITH VALIDATED DATA INCLUDED IN THE RISK ASSESSMENT

Appendix H, HHRA for CERCLA Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

Site Location	Point Name	Client ID	Point Type	Installation Type	Aquifer Code	Sample Date	Dissolved Metals	Pesticides	Semi-Volatile Organic Compounds	Volatile Organic Compunds
Site 9	MW410-1	A1996	MW	Permanent	FMSU	4/9/2003				X
	MW410-2	A1997	MW	Permanent	FMSU	4/9/2003				X
	MW410-1	A1650	MW	Permanent	FMSU	12/16/2002	X			X
	MW410-2	A1651	MW	Permanent	FMSU	12/16/2002	X			X
	MW410-2	A1344	MW	Permanent	FMSU	9/5/2002				X
	MW410-1	A1343	MW	Permanent	FMSU	9/4/2002				X
	MW410-1	A1149	MW	Permanent	FMSU	6/18/2002	X			X
	MW410-2	A1150	MW	Permanent	FMSU	6/18/2002	X			X
	S09-DGS-DP12	385-S09-059	DP	Temporary	FMSL	9/12/2001				X
	S09-DGS-DP10	385-S09-055A	DP	Temporary	FMSL	8/22/2001				X
	S09-DGS-DP09	385-S09-050A	DP	Temporary	FMSU	8/17/2001				X
	S09-DGS-DP05	385-S09-016A	DP	Temporary	FMSU	8/3/2001			X	
	S09-DGS-DP05	385-S09-017A	DP	Temporary	FMSU	8/3/2001			X	X
	S09-DGS-DP05	385-S09-018A	DP	Temporary	FMSU	8/3/2001			X	
	S09-DGS-DP02	385-S09-004A	DP	Temporary	FMSU	7/28/2001			X	
	S09-DGS-DP02	385-S09-005A	DP	Temporary	FMSU	7/28/2001			X	
	S09-DGS-DP01	385-S09-001A	DP	Temporary	FMSU	7/18/2001			X	
	S09-DGS-DP01	385-S09-002A	DP	Temporary	FMSU	7/18/2001			X	
	S09-DGS-DP04	385-S09-022A	DP	Temporary	FMSU	7/18/2001			X	
	S09-DGS-DP04	385-S09-023A	DP	Temporary	FMSU	7/18/2001			X	
	S09-DGS-DP04	385-S09-024A	DP	Temporary	FMSU	7/18/2001			X	
	MW410-3	385-S09-027	MW	Permanent	FMSU	6/26/2001			X	X
	M09-06	385-S09-030	MW	Permanent	FMSU	6/25/2001			X	X
	MW410-1	385-S09-025	MW	Permanent	FMSU	6/25/2001			X	X
	MW410-2	385-S09-026	MW	Permanent	FMSU	6/25/2001			X	X
	M09-06	108-S09-012	MW	Permanent	FMSU	8/7/1998				X
	M09-06	108-S09-009	MW	Permanent	FMSU	5/12/1998	X			X
	M09-06	108-S09-005	MW	Permanent	FMSU	2/5/1998	X			X
	M09-06	108-S09-001	MW	Permanent	FMSU	11/5/1997	X			X
	M09-06	280-S09-052	MW	Permanent	FMSU	8/8/1995	X		X	X
	MW410-1	280-S09-030	MW	Permanent	FMSU	8/8/1995	X		X	X
	MW410-3	280-S09-039	MW	Permanent	FMSU	8/7/1995	X		X	X
	MW410-2	280-S09-034	MW	Permanent	FMSU	8/4/1995	X		X	X
	MW410-1	280-S09-028	MW	Permanent	FMSU	6/23/1995	X		X	X
	MW410-2	280-S09-033	MW	Permanent	FMSU	6/22/1995	X		X	X
	MW410-3	280-S09-038	MW	Permanent	FMSU	6/22/1995	X		X	X

ATTACHMENT H5-1: SAMPLES WITH VALIDATED DATA INCLUDED IN THE RISK ASSESSMENT

Appendix H, HHRA for CERCLA Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

Site Location	Point Name	Client ID	Point Type	Installation Type	Aquifer Code	Sample Date	Dissolved Metals	Pesticides	Semi-Volatile Organic Compounds	Volatile Organic Compunds
Site 9	MW410-2	280-S09-032	MW	Permanent	FMSU	2/21/1995	X		X	X
	MW410-3	280-S09-037	MW	Permanent	FMSU	2/21/1995	X		X	X
	DHP-S09-09	280-S09-066	HP	Temporary	FWBZU	9/12/1994	X		X	X
	DHP-S09-10	280-S09-068	HP	Temporary	FWBZU	9/9/1994	X		X	X
	SHP-S09-08	280-S09-063	HP	Temporary	FMSU	9/9/1994	X		X	X
	DHP-S09-06	280-S09-059	HP	Temporary	FWBZU	9/8/1994	X		X	X
	SHP-S09-09	280-S09-065	HP	Temporary	FWBZU	9/8/1994	X		X	X
	DHP-S09-07	280-S09-062	HP	Temporary	FWBZU	9/7/1994	X		X	X
	DHP-S09-08	280-S09-064	HP	Temporary	FWBZU	9/7/1994			X	
	SHP-S09-07	280-S09-061	HP	Temporary	FWBZU	9/7/1994	X		X	X
	DHP-S09-08	280-S09-064	HP	Temporary	FWBZU	9/6/1994	X			X
	SHP-S09-10	280-S09-067	HP	Temporary	FWBZU	9/6/1994	X		X	X
	DHP-S09-11	280-S09-094	HP	Temporary	FWBZU	8/25/1994	X		X	X
	DHP-S09-12	280-S09-096	HP	Temporary	FWBZU	8/25/1994	X		X	X
	SHP-S09-11	280-S09-093	HP	Temporary	FMSU	8/25/1994	X		X	X
	SHP-S09-05	280-S09-057	HP	Temporary	FWBZU	8/24/1994	X		X	X
	DHP-S09-05	280-S09-058	HP	Temporary	FWBZU	8/23/1994	X		X	X
	DHP-S09-03	280-S09-055	HP	Temporary	FWBZU	7/29/1994	X		X	X

Notes:

DP	Direct Push
HP	Hydropunch
MW	Monitoring Well
FMSL	First Merritt Sand, Lower (First Water Bearing Zone, Lower)
FMSU	First Merritt Sand, Upper (First Water Bearing Zone, Upper)
FWBZU	First Water Bearing Zone, Upper

ATTACHMENT H5-2: SAMPLES WITH VALIDATED DATA INCLUDED IN THE RISK ASSESSMENT

Appendix H, HHRA for CERCLA Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

Site Location	Point Name	Client ID	Point Type	Installation Type	Aquifer Code	Sample Date	Dissolved Metals	Pesticides	Semi-Volatile Organic Compounds	Volatile Organic Compunds
	M07C-06	M07C-06-A1993	MW	Permanent	FMSU	4/14/2003				X
	M07C-09	M07C-09-A1994	MW	Permanent	FMSU	4/10/2003				X
	D13-01	D13-01-A1639	MW	Permanent	FMSL	12/17/2002	X			X
	M07C-06	M07C-06-A1640	MW	Permanent	FMSU	12/17/2002	X			X
	M07C-09	M07C-09-A1642	MW	Permanent	FMSU	12/17/2002	X			X
	M13-06	M13-06-A1645	MW	Permanent	FMSU	12/17/2002	X			X
	M13-07	M13-07-A1646	MW	Permanent	FMSU	12/17/2002	X			X
	M13-08	M13-08-A1647	MW	Permanent	FMSU	12/17/2002	X			X
	M13-09	M13-09-A1648	MW	Permanent	FMSU	12/17/2002	X			X
	MW-1	MW-1-A1649	MW	Permanent	FMSU	12/17/2002	X			X
	MWOR-4	MWOR-4-A1660	MW	Permanent	FMSU	12/17/2002	X			X
	M07C-06	M07C-06-A1339	MW	Permanent	FMSU	9/5/2002				X
	M07C-09	M07C-09-A1340	MW	Permanent	FMSU	9/4/2002				X
	D13-01	D13-01-A1138	MW	Permanent	FMSL	7/8/2002	X			X
	M07C-06	M07C-06-A1139	MW	Permanent	FMSU	6/21/2002	X			X
	M13-08	M13-08-A1146	MW	Permanent	FMSU	6/20/2002	X			X
	M07C-09	MW7C-09-A1141	MW	Permanent	FMSU	6/19/2002	X			X
	M13-09	M13-09-A1147	MW	Permanent	FMSU	6/19/2002	X			X
Site 13	MWOR-4	MWOR-4-A1159	MW	Permanent	FMSU	6/19/2002	X			X
	M13-06	M13-06-A1144	MW	Permanent	FMSU	6/18/2002	X			X
	M13-07	M13-07-A1145	MW	Permanent	FMSU	6/18/2002	X			X
	MW-1	MW-1-A1148	MW	Permanent	FMSU	6/18/2002	X			X
	MWOR-2	385-S13-002A	MW	Permanent	FMSU	7/19/2001			X	
	M07C-06	385-S22-006	MW	Permanent	FMSU	7/5/2001			X	X
	M07C-09	385-S22-009	MW	Permanent	FMSU	7/5/2001			X	X
	D13-01	385-S13-011	MW	Permanent	FMSL	6/29/2001			X	X
	MWOR-4	385-S13-004	MW	Permanent	FMSU	6/29/2001			X	X
	M13-07	385-S13-007A	MW	Permanent	FMSU	6/28/2001			X	
	M13-08	385-S13-008	MW	Permanent	FMSU	6/28/2001			X	X
	M13-09	385-S13-009	MW	Permanent	FMSU	6/28/2001			X	X
	MW-1	385-S13-010A	MW	Permanent	FMSU	6/28/2001			X	
	MWOR-2	385-S13-002	MW	Permanent	FMSU	6/28/2001				X
	MWOR-3	385-S13-003	MW	Permanent	FMSU	6/28/2001			X	X
	M13-06	385-S13-006	MW	Permanent	FMSU	6/27/2001			X	X
	M13-07	385-S13-007	MW	Permanent	FMSU	6/27/2001				X
	MW-1	385-S13-010	MW	Permanent	FMSU	6/27/2001				X
	MWOR-1	385-S13-001	MW	Permanent	FMSU	6/27/2001			X	X

ATTACHMENT H5-2: SAMPLES WITH VALIDATED DATA INCLUDED IN THE RISK ASSESSMENT

Appendix H, HHRA for CERCLA Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

Site Location	Point Name	Client ID	Point Type	Installation Type	Aquifer Code	Sample Date	Dissolved Metals	Pesticides	Semi-Volatile Organic Compounds	Volatile Organic Compunds
Site 13	M13-06	108-S13-013	MW	Permanent	FMSU	8/7/1998			X	X
	M13-09	108-S13-014	MW	Permanent	FMSU	8/7/1998				X
	M13-09	108-S13-010	MW	Permanent	FMSU	5/12/1998	X			X
	M13-06	108-S13-009	MW	Permanent	FMSU	5/6/1998	X		X	X
	M13-06	108-S13-005	MW	Permanent	FMSU	2/10/1998	X		X	X
	M13-09	108-S13-006	MW	Permanent	FMSU	2/10/1998	X			X
	M13-09	108-S13-002	MW	Permanent	FMSU	11/6/1997	X			X
	D13-01	280-S13-113	MW	Permanent	FMSL	9/19/1995	X	X	X	X
	M07C-06	280-S7C-053	MW	Permanent	FMSU	8/31/1995	X			X
	M07C-09	280-S7C-065	MW	Permanent	FMSU	8/30/1995	X			X
	M13-09	280-S13-071	MW	Permanent	FMSU	8/18/1995	X	X	X	X
	MW-1	280-S13-151	MW	Permanent	FMSU	8/17/1995	X	X	X	X
	MWOR-4	280-S13-049	MW	Permanent	FMSU	8/17/1995	X	X	X	X
	M13-07	280-S13-062	MW	Permanent	FMSU	8/16/1995	X	X	X	X
	M13-08	280-S13-067	MW	Permanent	FMSU	8/16/1995	X	X	X	X
	MWOR-3	280-S13-045	MW	Permanent	FMSU	8/10/1995	X	X	X	X
	MWOR-1	280-S13-035	MW	Permanent	FMSU	8/9/1995	X	X	X	X
	MWOR-2	280-S13-040	MW	Permanent	FMSU	8/9/1995	X	X	X	X
	M13-07	280-S13-061	MW	Permanent	FMSU	6/28/1995	X	X	X	X
	M13-08	280-S13-066	MW	Permanent	FMSU	6/28/1995	X	X	X	X
	MW-1	280-S13-150	MW	Permanent	FMSU	6/27/1995	X	X	X	X
	MWOR-1	280-S13-034	MW	Permanent	FMSU	6/27/1995	X	X	X	X
	MWOR-2	280-S13-039	MW	Permanent	FMSU	6/27/1995	X	X	X	X
	MWOR-3	280-S13-043	MW	Permanent	FMSU	6/27/1995	X	X	X	X
	MWOR-4	280-S13-048	MW	Permanent	FMSU	6/26/1995	X	X	X	X
	M07C-09	280-S7C-064	MW	Permanent	FMSU	6/21/1995	X		X	X
	M07C-06	280-S7C-051	MW	Permanent	FMSU	6/20/1995	X		X	X
	MWOR-3	280-S13-042	MW	Permanent	FMSU	2/28/1995	X	X	X	X
	MWOR-1	280-S13-033	MW	Permanent	FMSU	2/24/1995	X	X	X	X
	13GB005	GPW13-500	GP	Temporary	FWBZ	8/17/1994				X
	13GB100	GPW13-100	GP	Temporary	FWBZ	8/17/1994				X
	B13-44	ALA13B44-W	SB	Temporary	NA	4/6/1994	X			
	B13-41	ALA13B41-W	SB	Temporary	NA	4/5/1994	X			
	B13-42	ALA13B42-W	SB	Temporary	NA	4/5/1994	X			
	B13-43	ALA13B43-W	SB	Temporary	NA	4/5/1994	X			
	B13-38	ALA13B38-W	SB	Temporary	NA	4/4/1994	X			
	B13-39	ALA13B39-W	SB	Temporary	NA	4/4/1994	X			
	B13-40	ALA13B40-W	SB	Temporary	NA	4/4/1994	X			

ATTACHMENT H5-2: SAMPLES WITH VALIDATED DATA INCLUDED IN THE RISK ASSESSMENT

Appendix H, HHRA for CERCLA Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

Site Location	Point Name	Client ID	Point Type	Installation Type	Aquifer Code	Sample Date	Dissolved Metals	Pesticides	Semi-Volatile Organic Compounds	Volatile Organic Compunds

Notes:

GP	Geoprobe
MW	Monitoring Well
NA	Not Applicable
SB	Soil Boring
FMSL	First Merritt Sand, Lower (First Water Bearing Zone, Lower)
FMSU	First Merritt Sand, Upper (First Water Bearing Zone, Upper)
FWBZ	First Water Bearing Zone

ATTACHMENT H5-3: SAMPLES WITH VALIDATED DATA INCLUDED IN THE RISK ASSESSMENT

Appendix H, HHRA for CERCLA Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

Site Location	Point Name	Client ID	Point Type	Installation Type	Aquifer Code	Sample Date	Dissolved Metals	Pesticides	Semi-Volatile Organic Compounds	Volatile Organic Compunds
Site 19	MWD13-4	MWD13-4-A2001	MW	Permanent	FMSU	4/10/2003				X
	MWD13-3	MWD13-3-A1658	MW	Permanent	FMSU	12/18/2002	X			X
	MWD13-4	MWD13-4-A1659	MW	Permanent	FMSU	12/16/2002	X			X
	MWD13-4	MWD13-4-A1349	MW	Permanent	FMSU	9/5/2002				X
	MWD13-3	MWD13-3-A1157	MW	Permanent	FMSU	6/19/2002	X			X
	MWD13-4	MWD13-4-A1158	MW	Permanent	FMSU	6/19/2002	X			X
	M19-05	385-S19-005	MW	Permanent	FMSL	7/2/2001			X	X
	MWD13-1	385-S19-001	MW	Permanent	FMSU	7/2/2001			X	X
	MWD13-2	385-S19-002	MW	Permanent	FMSU	7/2/2001			X	X
	MWD13-3	385-S19-003	MW	Permanent	FMSU	7/2/2001			X	X
	MWD13-4	385-S19-004	MW	Permanent	FMSU	7/2/2001			X	X
	MWD13-3	108-S19-006	MW	Permanent	FMSU	8/11/1998				X
	MWD13-2	108-S19-005	MW	Permanent	FMSU	8/10/1998				X
	MWD13-3	108-S19-003	MW	Permanent	FMSU	5/13/1998	X			X
	MWD13-2	108-S04-046	MW	Permanent	FMSU	5/6/1998	X			X
	MWD13-3	108-S19-002	MW	Permanent	FMSU	2/12/1998	X			X
	MWD13-3	108-S19-001	MW	Permanent	FMSU	11/10/1997	X			X
	M19-05	280-S19-037	MW	Permanent	FMSL	8/21/1995	X		X	X
	MWD13-4	280-S19-032	MW	Permanent	FMSU	8/21/1995	X		X	X
	MWD13-1	280-S19-019	MW	Permanent	FMSU	8/18/1995	X		X	X
	MWD13-2	280-S19-024	MW	Permanent	FMSU	8/18/1995	X		X	X
	M19-05	280-S19-036	MW	Permanent	FMSL	6/29/1995	X		X	X
	MWD13-1	280-S19-018	MW	Permanent	FMSU	6/29/1995	X		X	X
	MWD13-4	280-S19-031	MW	Permanent	FMSU	6/29/1995	X		X	X
	M19-05	280-S19-035	MW	Permanent	FMSL	3/2/1995	X		X	X
	MWD13-1	280-S19-017	MW	Permanent	FMSU	3/1/1995	X		X	X
	DHP-S19-04	280-S19-042	HP	Temporary	FMSU	8/18/1994	X		X	X
	DHP-S19-02	280-S19-039	HP	Temporary	FMSU	8/1/1994	X		X	X

Notes:

HP	Hydropunch
MW	Monitoring Well
FMSL	First Merritt Sand, Lower (First Water Bearing Zone, Lower)
FMSU	First Merritt Sand, Upper (First Water Bearing Zone, Upper)

ATTACHMENT H5-4: SAMPLES WITH VALIDATED DATA INCLUDED IN THE RISK ASSESSMENT

Appendix H, HHRA for CERCLA Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

Site Location	Point Name	Client ID	Point Type	Installation Type	Aquifer Code	Sample Date	Dissolved Metals	Pesticides	Semi-Volatile Organic Compounds	Volatile Organic Compunds
	MW547-3	MW547-3-A2000	MW	Permanent	FMSU	4/10/2003				X
	D07C-01	D07C-01-A1636	MW	Permanent	FMSL	12/17/2002	X			X
	M07C-08	M07C-08-A1641	MW	Permanent	FMSU	12/17/2002	X			X
	MW547-3	MW547-3-A1657	MW	Permanent	FMSU	12/17/2002	X			X
	MW547-3	MW547-3-A1348	MW	Permanent	FMSU	9/5/2002				X
	M07C-08	M07C-08-A1140	MW	Permanent	FMSU	7/24/2002	X			X
	D07C-01	D07C-01-A1135	MW	Permanent	FMSL	7/11/2002	X			X
	MW547-3	MW547-3-A1156	MW	Permanent	FMSU	6/20/2002	X			X
	DP06	385-CAA4C-011A	DP	Temporary	FMSU	5/8/2002				X
	DP07	385-CAA4C-012	DP	Temporary	FMSU	5/8/2002				X
	DP08	385-CAA4C-013	DP	Temporary	FMSU	5/8/2002				X
	DP09	385-CAA4C-014	DP	Temporary	FMSU	5/8/2002				X
	DP10	385-CAA4C-015	DP	Temporary	FMSU	5/8/2002				X
	DP02	385-CAA4C-003	DP	Temporary	FMSU	4/18/2002				X
	DP02	385-CAA4C-004	DP	Temporary	FMSU	4/18/2002				X
	DP04	385-CAA4C-008	DP	Temporary	FMSU	4/18/2002				X
	DP05	385-CAA4C-010	DP	Temporary	FMSU	4/18/2002				X
	DP03	385-CAA4C-005	DP	Temporary	FMSU	4/17/2002				X
Site 22	DP03	385-CAA4C-006	DP	Temporary	FMSU	4/17/2002				X
	D07C-01	385-S22-010	MW	Permanent	FMSL	7/9/2001			X	X
	M07C-08	385-S22-008	MW	Permanent	FMSU	7/5/2001			X	X
	MW547-1	385-S22-001	MW	Permanent	FMSU	7/5/2001			X	X
	MW547-2	385-S22-002	MW	Permanent	FMSU	7/5/2001			X	X
	MW547-3	385-S22-003	MW	Permanent	FMSU	7/5/2001			X	X
	MW547-4	385-S22-004	MW	Permanent	FMSU	7/5/2001			X	X
	MW547-5	385-S22-005	MW	Permanent	FMSU	7/5/2001			X	X
	M07C-08	108-S22-014	MW	Permanent	FMSU	8/11/1998				X
	MW547-4	108-S22-015	MW	Permanent	FMSU	8/11/1998				X
	D07C-01	108-S22-009	MW	Permanent	FMSL	5/14/1998	X			X
	M07C-08	108-S22-011	MW	Permanent	FMSU	5/13/1998	X			X
	MW547-4	108-S22-012	MW	Permanent	FMSU	5/13/1998	X			X
	M07C-08	108-S22-007	MW	Permanent	FMSU	2/11/1998	X			X
	MW547-4	108-S22-008	MW	Permanent	FMSU	2/11/1998	X			X
	D07C-01	108-S22-005	MW	Permanent	FMSL	2/4/1998	X			X
	D07C-01	108-S22-003	MW	Permanent	FMSL	11/11/1997	X			X
	MW547-4	108-S22-004	MW	Permanent	FMSU	11/10/1997	X			X
	M07C-08	108-S22-002	MW	Permanent	FMSU	11/7/1997	X			X

ATTACHMENT H5-4: SAMPLES WITH VALIDATED DATA INCLUDED IN THE RISK ASSESSMENT

Appendix H, HHRA for CERCLA Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

Site Location	Point Name	Client ID	Point Type	Installation Type	Aquifer Code	Sample Date	Dissolved Metals	Pesticides	Semi-Volatile Organic Compounds	Volatile Organic Compunds
Site 22	D07C-01	280-S7C-091	MW	Permanent	FMSL	9/20/1995	X			X
	M07C-08	280-S7C-061	MW	Permanent	FMSU	8/31/1995	X			X
	MW547-1	280-S7C-031	MW	Permanent	FMSU	8/31/1995	X			X
	MW547-3	280-S7C-039	MW	Permanent	FMSU	8/31/1995	X			X
	MW547-2	280-S7C-035	MW	Permanent	FMSU	8/29/1995	X			X
	MW547-4	280-S7C-044	MW	Permanent	FMSU	8/29/1995	X			X
	MW547-5	280-S7C-048	MW	Permanent	FMSU	8/29/1995	X			X
	D07C-01	280-S7C-090	MW	Permanent	FMSL	6/22/1995	X			X
	M07C-08	280-S7C-060	MW	Permanent	FMSU	6/21/1995	X		X	X
	MW547-3	280-S7C-038	MW	Permanent	FMSU	6/21/1995	X		X	X
	MW547-4	280-S7C-043	MW	Permanent	FMSU	6/21/1995	X		X	X
	MW547-5	280-S7C-047	MW	Permanent	FMSU	6/21/1995	X		X	X
	MW547-1	280-S7C-030	MW	Permanent	FMSU	6/20/1995	X		X	X
	MW547-2	280-S7C-034	MW	Permanent	FMSU	6/20/1995	X		X	X
	D07C-01	280-S7C-089	MW	Permanent	FMSL	2/20/1995	X			X
	MW547-5	280-S7C-046	MW	Permanent	FMSU	2/20/1995	X			X
	D07C-01	280-S7C-088	MW	Permanent	FMSL	12/16/1994	X		X	X
	MW547-2	280-S7C-032	MW	Permanent	FMSU	11/8/1994	X		X	X

Notes:

DP	Direct Push
MW	Monitoring Well
FMSL	First Merritt Sand, Lower (First Water Bearing Zone, Lower)
FMSU	First Merritt Sand, Upper (First Water Bearing Zone, Upper)

APPENDIX I
ECOLOGICAL RISK ASSESSMENT

AECRU CONTRACT NUMBER N68711-00-D-0005
Delivery Order 028

APPENDIX I

ECOLOGICAL RISK ASSESSMENT
SITES 9, 13, 19, 22, AND 23
ALAMEDA POINT

February 1, 2005

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ACRONYMS AND ABBREVIATIONS

amu	Atomic mass units
AOC	Area of Concern
ATSDR	Agency for Toxic Substances and Disease Registry
Ba_{mammal}	Biotransfer factor of compound into mammal tissue
BCF	Bioconcentration factor
$BCF_{food\ item\text{-}to\text{-}mammal}$	Bioconcentration factor for uptake of constituent from ingestion of food item and into mammal tissue
$BCF_{plant\text{-}to\text{-}mammal}$	Bioconcentration factor for uptake of constituent from ingestion of plant tissue and into mammal tissue
$BCF_{soil\text{-}to\text{-}plant}$	Bioconcentration factor for uptake of constituent from ingestion of soil and into plant tissue
$BCF_{soil\text{-}to\text{-}invert}$	Bioconcentration factor for uptake of constituent from ingestion of soil and into invertebrate tissue
$BCF_{soil\text{-}to\text{-}mammal}$	Bioconcentration factor for uptake of constituent from ingestion of soil and into mammal tissue
BTAG	Biological Technical Advisory Group
BW	Body weight
$C_{ground\ squirrel}$	Concentration of constituent in the California ground squirrel
$C_{invertebrate}$	Concentration of constituent in the invertebrate
C_{plant}	Concentration of constituent in the plant
C_{soil}	Concentration of constituent in the soil
CDFG	California Department of Fish and Game
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
COPC	Chemical of potential concern
CSM	Conceptual site model
DCE	1,2-Dichloroethene
DDD	4,4'-Dichlorodiphenyldichloroethane
DDE	4,4'-Dichlorodiphenyldichloroethene
DDT	4,4'-Dichlorodiphenyltrichloroethane
DDTt	Total DDT
DTSC	California Department of Toxic Substances Control
EPA	U.S. Environmental Protection Agency
EPC	Exposure point concentration
ERA	Ecological risk assessment
ERV	Ecological reference value

FCM	Food chain multiplier
FWS	U.S. Fish and Wildlife Service
GI	Gastrointestinal
HERD	DTSC Human and Ecological Risk Division
HMW	High-molecular weight
HQ	Hazard quotient
IR	Ingestion rate
$IR_{food\ item}$	Ingestion rate of food item (that is, invertebrate or plant)
IR_{soil}	Ingestion rate of soil
IT	International Technology Corporation
LMW	Low-molecular weight
Log	Logarithm
K_{ow}	Octanol-water partition coefficient
mg/kg	Milligrams per kilogram
mg/kg-day	Milligrams per kilogram per day
mg/kg-DW	Milligrams per kilogram Dry Weight
mg/kg-FW	Milligrams per kilogram Fresh Weight
mg/L	Milligrams per liter
Navy	Department of the Navy
OU	Light Industrial Operable Unit
OWS	Oil-water separator
PAH	Polynuclear aromatic hydrocarbon
PCB	Polychlorinated biphenyl
PCE	Tetrachloroethene
QE	Qualitative evaluation
RCRA	Resource Conservation and Recovery Act
RI	Remedial investigation
SUF	Site use factor
SVOC	Semivolatile organic compound

TCE	Trichloroethene
Tetra Tech	Tetra Tech EM Inc.
TRV	Toxicity reference value
UCL95	95th percentile upper confidence limit on the arithmetic mean
UST	Underground storage tank
VOC	Volatile organic compound

I.1 INTRODUCTION

This ecological risk assessment (ERA) is part of a remedial investigation (RI) being conducted by the U.S. Department of the Navy (Navy) in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) at CERCLA Sites 9, 13, 19, 22, and 23 at Alameda Point (formerly Naval Air Station Alameda) in Alameda County, California. These sites make up the Light Industrial Operable Unit (OU), referred to as "OU-2A." All of the sites are industrial areas with limited habitat for ecological receptors, and planned reuse is to remain industrial and commercial. The purpose of this ERA was to evaluate residual chemicals at the OU-2A sites to determine their potential risks to ecological receptors.

A screening-level ERA was prepared for the OU-2 sites in 1999 (Tetra Tech EM Inc. [Tetra Tech] 1999). The screening-level ERA for the OU-2 sites indicated that risk to ecological receptors was possible at the sites based on the conservative assumptions used; however, significant data gaps identified required additional investigation. These additional data gap investigations resulted in the collection of soil and groundwater samples for analysis from the sites.

To reduce the level of uncertainty in the screening-level ERA, a baseline ERA, including the new data from the data gap sampling, was deemed to be necessary. The urban nature of the sites, however, precluded the collection of site-specific tissue samples that could be used to reduce the uncertainty in the baseline ERA. Because limited habitat at the sites does not support site-specific ecological sampling needed for baseline ERAs, a typical baseline ERA is not feasible. A modified ERA was conducted for OU-2A. This modified ERA is intended to be a conservative estimate that uses more realistic exposure parameters for the ecological endpoints defined than would be used typically for a screening-level ERA. In addition, because habitat is limited at the sites and future land use would not result in additional habitat, it is unlikely that ecological receptors would use the sites in any significant manner. The methodology used to conduct the assessments and the results of the ERA are presented in this appendix. This ERA methodology follows U.S. Environmental Protection Agency (EPA) guidance for screening-level and baseline ERAs, as well as Navy ERA guidance (EPA 1997a; Navy 1999).

This ERA is organized into the following sections:

- Section I.1 presents the scope and process used to conduct the modified screening-level ERA at Sites 9, 13, 19, 22, and 23.
- Section I.2 presents the site-specific screening-level ERA results and conclusions for Sites 9, 13, 19, 22, and 23.
- Section 1.3 presents the references used to prepare this appendix.
- Attachment I1 presents the ecotoxicological profiles for ecological chemicals of potential concern (COPC) at Alameda Point.

Figures and tables used to prepare this appendix are provided after Section I.3, References.

I.1.1 SCOPE

A modified ERA was conducted for Sites 9, 13, 19, 22, and 23. Figure I-1 identifies these sites in relation to the entire Alameda Point facility.

The following section identifies the ERA process used to evaluate potential risks to ecological receptors associated with ecological COPCs at Sites 9, 13, 19, 22, and 23. This ERA is composed of two major steps: (1) problem formulation and (2) exposure estimates and risk calculations. The problem formulation step results in development of an ecological conceptual site model (CSM) for exposure at the site and selection of assessment and measurement endpoints. The exposure estimate and risk calculation parameters used in the assessment were generally based on average values instead of the most conservative values. These modifications resulted in a more realistic estimate of potential risk to selected assessment endpoints; however, these estimates are still relatively conservative.

This ERA incorporates conservative assumptions to represent site-specific information in a manner that minimizes the probability of underestimating ecological risks. Because of the conservative nature of the assessment, potential risks identified in the ERA should not be interpreted to imply that a risk actually exists.

I.1.2 DESCRIPTION OF THE ECOLOGICAL RISK ASSESSMENT PROCESS

The following sections present a description of the process used in conducting the modified screening-level ERA for Sites 9, 13, 19, 22, and 23.

I.1.2.1 Screening for Ecological Chemicals of Potential Concern

Existing soil data collected during the RI, environmental baseline survey, and data gap sampling were deemed to be of adequate quality to support an ERA. Soil data from 0 to 6 feet below ground surface, which represent the maximum burrowing depth of the California ground squirrel, were used. Groundwater at the five OU-2A sites was not assessed in this ERA for two reasons: (1) Groundwater was determined not to express to the surface, and (2) groundwater occurs at depths such that exposure to burrowing animals is expected to be minimal.

The soil data were used as follows to develop ecological COPCs for the OU-2A sites. Ecological COPCs are site-related chemicals that have the potential for causing adverse effects to ecological receptors. The 95th percentile upper confidence limit on the arithmetic mean (UCL95) and standard deviation values were calculated for each detected constituent. For chemicals with less than 15 percent of samples detected, one-half the reporting limit is substituted for each nondetect measurement in all calculations. The exposure point concentration (EPC) for each site was the lower of the UCL95 or maximum detected value and was used to identify ecological COPCs. The distribution of each chemical (that is, normal,

lognormal, or unknown) was taken into account when calculating the UCL95. When the constituent was detected in less than three of the total samples collected, a UCL95 was not calculated, and the maximum detected value was used as the EPC.

EPCs were calculated as discussed in Section I.1.2.1. Constituents detected in the soils were subjected to a screening process to focus the ERA on chemicals that are site-specific and that pose the greatest potential risk to ecological receptors. The screening was a sequential process that considered factors such as frequency of detection, spatial distribution of detected chemicals, statistical comparison to background concentrations for inorganic chemicals, and chemical properties such as bioaccumulation and toxicity. The following are the steps involved in the chemical screening process; a detailed flow chart is presented in Figure I-2.

Step 1: Certain inorganic chemicals are essential nutrients that may be eliminated as ecological COPCs, according to guidance documents issued by EPA and the California Department of Toxic Substances Control (DTSC). These chemicals are calcium, iron, magnesium, potassium, and sodium. The first step in the ecological COPC screening process was to exclude these essential nutrients as ecological COPCs. If the chemical was not an essential nutrient, then it was further screened by the criteria in Step 2.

Step 2: The second step in the ecological COPC screening process was to calculate the frequency of detection for all detected chemicals. Chemicals with a frequency of detection of greater than 5 percent were further screened in Step 4. Chemicals with a frequency of detection of 5 percent or less were further screened in Step 3.

Step 3: Chemicals that did not have a 5 percent frequency of detection were then screened based on their bioaccumulation potential and toxicity. Octanol-water partition coefficient (K_{ow}) values for a chemical are correlated with the bioaccumulation potential because K_{ow} values provide a measure of the tendency of a chemical to partition into lipids (fat tissues). Constituents detected in the soils, with K_{ow} values greater than 3.0, were considered to have significant bioaccumulation potential. Chemical toxicity was evaluated by literature review. If the chemical was associated with significant bioaccumulation or high toxicity (to a specific receptor), it was retained as an ecological COPC.

Step 4: If the frequency of detection was greater than 5 percent and the chemical was inorganic, but not an essential nutrient, the concentration was statistically compared to background levels established for Alameda Point, consistent with the methodology identified in the document "Procedural Guidance for Statistically Analyzing Environmental Background Data" (Navy 1998a). Any inorganic chemical that was detected at levels that were determined to be statistically similar to or less than background was removed from consideration as an ecological COPC. This comparison was not conducted for organic chemicals, because organic chemicals are not naturally occurring and do not have a natural background level by which to compare.

I.1.2.2 Problem Formulation

Problem formulation represents the stage of the ERA process where the goals, breadth, and focus of the assessment are determined. The major goal of the problem formulation step was to develop an ecological CSM that addressed the following five issues:

1. Environmental setting and chemicals known or suspected to exist at the site
2. Chemical fate and transport mechanisms that might exist at the site
3. Mechanisms of ecotoxicity associated with chemicals and likely categories of receptors that could be affected
4. Complete exposure pathways that might exist at the site (a complete exposure pathway is one in which the chemical can be traced or expected to travel from the source to a receptor)
5. Selection of assessment and measurement endpoints to screen for ecological risk

The following sections summarize specific issues associated with problem formulation for OU-2A sites.

I.1.2.2.1 Evaluation of Environmental Setting and Chemicals

To begin the screening-level problem formulation stage, information on the environmental setting and a list of chemicals known to exist at the site was obtained. For these chemicals, physical and chemical characteristics were obtained. The first step to compiling environmental setting information was to obtain information about site (1) history, (2) habitats, and (3) animal and plant species, including special status species. In addition, a literature search of site reports, review of maps and aerial photographs, communication with regulatory agencies, and site visits were used to gather information on valuable ecological resources at the facility. Valuable ecological resources include those that are critical to ecosystem function, provide critical resources, or are perceived by humans as being valuable.

Habitat and animal and plant species were identified by: (1) reviewing site-specific literature and data, (2) conducting site reconnaissance in June 1995 and June 1997, and (3) conducting a site visit in October 1998. The U.S. Fish and Wildlife Service (FWS) identified special status species that occur or are expected to occur at Alameda Point (1993). Special status species are defined as (1) plants and animals officially listed or proposed for listing under state or federal Endangered Species Acts, (2) state or federal candidate species for possible listing, (3) California Department of Fish and Game (CDFG) "Species of Special Concern," and (4) species designated as "sensitive" by federal land managers. In addition, "special species" listed by CDFG were identified. They are not state or federally designated threatened or endangered but those species that fall into one or more of the following categories: (1) species that are biologically rare, very restricted in distribution, declining throughout their range, or reside in California during a critical

stage in their life cycle; (2) populations in California that may be peripheral to the major population of a species range, but are threatened with extirpation in California; and (3) species closely associated with habitats that are declining in California such as wetland, riparian, and primary forest habitats. Based on literature reviews, four rare plants, four rare fishes, one special status species reptile, 29 special status species birds and associated sensitive habitat, and seven special status species mammals could potentially occur at Alameda Point (Tables I-1 and I-2).

Site reconnaissances of Alameda Point were conducted in 1995 and 1997 to assess habitats and species at Alameda Point and to augment literature sources. These reconnaissances were conducted following protocol developed by the EPA Region 9 reconnaissance work plan (PRC Environmental Management, Inc. 1995). Terrestrial habitats were delineated, and the dominant vegetation was identified. Additionally, these reconnaissances were important in providing information on the physical layout of the site; identifying existing habitat types and distributions, potential migration pathways, and exposure pathways; and identifying the potential for nonchemical stressors at the site. Table I-3 identifies the dominant vegetation and fauna present at OU-2A sites, and Figure I-3 depicts the habitat at Sites 9, 13, 19, 22, and 23.

I.1.2.2.2 Evaluation of Chemical Fate and Transport

The physical and chemical properties of ecological COPCs at each site were evaluated because these properties govern chemical and biological transformation processes, bioaccumulation potential, and transport properties. Based on this evaluation, the fate and transport potential of each ecological COPC was assessed. The fate and transport potential assessment was used to evaluate potential exposure pathways.

The movement of chemicals in the environment depends on several factors such as vapor pressure, solubility, and adsorption. These factors govern the distribution of chemicals among various phases (gas, liquid, or solid) and a chemical's mobility and persistence in the environment. Chemical and structural properties of organic chemicals determine resistance to biological and chemical degradation, and therefore govern persistence of the chemical in the environment. Physical properties are more important when developing the ecological CSM because current chemical concentrations and their potential transport mechanisms are being assumed. Literature data on the following physical properties were evaluated to assist in development of the ecological CSM.

Water Solubility

Water solubility is a critical property affecting the fate of chemicals in the environment. Highly soluble chemicals can be leached rapidly from wastes and soils into groundwater, where they are transported by groundwater. The mobility of chemicals in soil is proportional to their water solubility. Solubilities can range from less than 1 milligram per liter (mg/L) to totally miscible, with most common organic chemicals exhibiting solubilities greater than 1 mg/L (Lyman and others 1982). Water solubility is influenced by several factors such as pH, temperature, salinity, dissolved organic carbon, and the presence of cosolvents. Chemicals with solubilities greater than 1,000 mg/L are expected to be mobile in soil. The pesticides and polychlorinated biphenyls

(PCB) detected in the soils at OU-2A sites have a water solubility of less than 1 mg/L, while most of the semivolatile organic compounds (SVOC) and volatile organic compounds (VOC) have water solubilities of greater than 1,000 mg/L.

Vapor Pressure

Volatilization is the transformation of a compound from a liquid or solid to a gas. As a gas, a compound's mobility is generally higher because of advection (flow) of air and diffusion. Volatilization of a compound depends on its vapor pressure, water solubility, and air diffusion coefficient. Highly water-soluble chemicals generally have lower volatilization rates from water unless they also have high vapor pressures. Vapor pressure (a relative measure of the volatility of a chemical in its pure state) ranges from roughly 0.001 to 760 millimeters of mercury for liquids. Henry's Law constant, which is a function of vapor pressure and solubility, is more appropriate than vapor pressure alone for estimating releases from water to air. Chemicals with Henry's Law constants greater than 1×10^{-3} atmosphere per cubic meters per mole can be expected to volatilize readily from water; those with values ranging from 1×10^{-3} to 1×10^{-5} are associated with moderate volatilization; chemicals with values less than 1×10^{-5} will volatilize from water only to a limited extent (Lyman and others 1982). Chemicals with high vapor pressure will preferentially partition from soils and surface water to the air.

Octanol-water Partition Coefficient

The K_{ow} indicates the tendency of dissolved organic chemicals to partition from water into the lipids of an organism or into organic matter found in soil or sediment. High K_{ow} values are strongly correlated with a chemical's propensity to bioaccumulate. K_{ow} is the ratio of the solute concentration in octanol to the solute concentration in water at equilibrium and is calculated by dissolving a given mass of the chemical of interest in a container holding octanol and water. K_{ow} can be measured accurately up to values in the range of 106 (Mackay and others 1992). In the event that measured K_{ow} values are not available, Lyman and others (1982) have summarized estimation methods for predicting K_{ow} values for a chemical based on substituent groups or fragment constants.

Bioconcentration, Bioaccumulation, and Biomagnification

Bioconcentration is the process resulting in a net accumulation of a chemical in an organism (such as fish) from direct exposure to a medium such as water (EPA 1997b).

Bioaccumulation is the process by which chemicals are taken up by an organism, either directly from a contaminated medium or by consumption of contaminated foods (EPA 1997b). In the dose assessment of an ERA, it is sometimes necessary to assess chemical exposure from multiple routes if each route contributes significantly to the total dose. It is often possible in most ERAs, however, to assume that one route of exposure is dominant and others are negligible (Suter 1993).

The processes of bioaccumulation and biotransfer, by which tissue concentrations of chemicals in organisms at one trophic level exceed tissue concentrations in organisms at the next lower trophic level in a food chain, cause biomagnification (EPA 1997b). The term implies an efficient transfer of chemical from food to consumer so that residue concentrations increase systematically from one trophic level to the next.

Fate and Transport Assumptions

To develop the ecological CSM, site conditions and the physical and chemical properties of the ecological COPCs were evaluated. Physical fate processes of concern include transport to groundwater, volatilization to air, transfer to surface water, and movement of contaminated soil particles through windblown dust or as suspended soil particles in surface water. The following assumptions were used to evaluate various transport mechanisms.

All ecological COPCs in soils were assumed to be leaching to groundwater. Groundwater was assumed to be inaccessible to ecological receptors unless evidence of groundwater discharge was present in the immediate area of the site. If evidence of groundwater discharge occurred in the immediate area of the site, groundwater was assumed to be surface water that could be consumed by ecological receptors. Groundwater was not a complete exposure pathway for Sites 9, 13, 19, 22, and 23.

The air exposure pathway was considered to be complete for inhalation of contaminated dust or vapors if the site had significant areas of exposed soils or volatile ecological COPCs. Limited areas of exposed soils exist at the OU-2A sites. VOCs only occur in relatively low concentrations; therefore, exposure to airborne vapors and dust was not considered a significant exposure pathway for evaluation purposes.

The site was evaluated to determine whether rainfall runoff went into the storm sewer system or collected in low spots on the site. Exposure to surface water did not occur in association with the OU-2A sites.

Direct contact and ingestion pathways for contaminated soils were assumed to be complete at OU-2A sites.

Food chain exposure to chemicals was assumed to occur at the sites with complete exposure pathways. The food chain exposure evaluation was based on the food web presented in Figure I-4.

I.1.2.2.3 Ecotoxicity Evaluation

Ecological COPCs associated with OU-2A sites of Alameda Point include metals, pesticides, PCBs, SVOCs, and VOCs. A literature review was conducted to identify potential toxic effects of ecological COPCs on ecological receptors. These ecological COPCs induce a variety of effects that depend on species and trophic level. A summary of literature information collected

on potential ecotoxicological effects is presented in Attachment I1 of this appendix. This information was used to assist in selection of assessment and measurement endpoints.

I.1.2.2.4 Development of Toxicity Reference Values for Soil

Toxicity reference values (TRV) or ecological reference values (ERV) were used to assess the toxicity of ecological COPCs in the soil. A TRV or ERV is a concentration or daily dose at which a particular biological effect may occur in an organism, based on laboratory toxicological investigations. The Navy, the EPA Region 9 Biological Technical Advisory Group (BTAG), and Tetra Tech (Navy 1998b) developed TRVs as a result of an ecological effect evaluation for mammalian and avian receptors. This evaluation resulted in development of high and low TRVs for a number of ecological COPCs commonly detected at Navy facilities in California (Navy 1998b). The low TRV is a conservative screening value consistent with a chronic no effects level; the high TRV is a less conservative value consistent with an effect level, at which a specific biological effect was observed in a laboratory test organism. The high TRV, therefore, is a value at which the potential for adverse effects exists. If a Navy TRV was not available for an ecological COPC or endpoint, ERVs previously developed for other Navy facilities in California were used, if available. If no ERVs for Navy facilities were available, other sources of conservative ERVs and TRVs, such as Toxicological Benchmarks for Wildlife (Sample and others 1996) or the EcoSSLs, were used. For most of the chemicals in the Sample (1996) document, benchmarks are provided as NOAELs, which were used as the low TRV, and LOAELs, which were used as the high TRV. For the EcoSSLs a geometric mean NOAEL and LOAEL were calculated from several studies that were deemed adequate for TRV development.

The Navy established a low, mammalian TRV for lead of 0.0015 milligram per kilogram per day (mg/kg-day) in 1997, which was based on a study by Krasovskii and others (1979). This study evaluated reproductive, hematological, and neurological effects of lead in rats; however, this TRV was revised by BTAG in November 2002 based on a request by the U.S. Department of the Army (2001), which stated that the Krasovskii and others (1979) study was inadequate for the purpose of TRV development. The new low mammalian TRV of 1 mg/kg-day was developed based primarily on a study by Fowler and others (1980). This study evaluated renal effects in rats. The justification and rationale for the establishment of the new low mammalian TRV is presented in the DTSC Human and Ecological Risk Division (HERD), HERD Ecological Risk Assessment Note, No. 5 (2002).

Following protocol established in Navy (1998), if the species representing the measurement endpoint was different from the species used to develop the ERV, dietary concentrations were converted to dose (that is, milligram of ecological COPC per kilogram of body weight per day) for comparison with estimated ecological COPC ingestion rates in receptor species. All TRVs and ERVs were adjusted to account for the difference in body weights between the study organism and the measurement endpoint receptor, based on the allometric equations recommended by Sample and others (1998a). The allometric conversion equations developed by Sample and others (1998a) were used to extrapolate doses according to methods described by Opresko and others (1993) and Sample and Arenal (1999). The following allometric conversion equations were used for this food chain analysis:

$$\text{Birds: } TRV_{receptor} = TRV_{test\ organism} (BW_{test\ organism} / BW_{receptor})^{1 - 1.2}$$
$$\text{Mammals: } TRV_{receptor} = TRV_{test\ organism} (BW_{test\ organism} / BW_{receptor})^{1 - 0.94}$$

Toxicity was evaluated by one of the following methods for ecological COPCs and endpoints not covered by the Navy TRV list:

1. Available literature was evaluated to determine whether published studies could be used to develop a conservative ERV. If appropriate studies were found, the relevant, most sensitive ecological effect was used to develop the ERV. ERVs were developed in accordance with EPA guidance (EPA 1997a). This was relevant when a high TRV was not published for a chemical that had a low TRV. In these instances, the low TRV was multiplied by 10 to develop a high TRV.

2. The existing literature was evaluated to determine whether the ERV for a similar chemical could be used as a surrogate when insufficient information existed to develop a specific ERV for the ecological COPC and endpoint. If the literature indicated similar effects and mechanisms of actions for the chemicals, surrogate ERVs were used for the preliminary ecological effects evaluation conducted in the screening-level ERA.

3. The ecological COPC and endpoint were evaluated on a qualitative basis if an ERV or surrogate ERV could not be developed. Available literature information, ecological COPC concentrations and distribution, and other information were used to arrive at a conclusion on potential ecological effects.

High and low ERVs and TRVs used in risk calculations for each receptor endpoint are presented in Tables I-4 through I-11.

I.1.2.2.5 Exposure Pathway Evaluation

Complete exposure pathways were evaluated for OU-2A sites, based on fate and transport properties of each ecological COPC, including food chain transfer in the food web postulated to exist at the site. Complete exposure pathways were identified before a quantitative evaluation of toxicity to allow the assessment to focus on only the contaminants that can reach ecological receptors. For an exposure pathway to be considered complete, an ecological COPC must be able to travel from the source to ecological receptors and to be taken up by the receptors through one or more exposure routes. As requested by EPA and DTSC, the ERA assumes that all existing buildings and pavement are removed and that the underlying soil immediately provides suitable habitat for higher-trophic-level receptors.

The ecological CSM for the OU-2A sites is based on site media, potential food chain transport pathways, assessment endpoints, and measurement endpoints associated with each assessment endpoint. The ecological CSM supports selection of completed exposure pathways that present the greatest potential risk of adverse effects. A generic ecological CSM for OU-2A sites is presented in Figure I-5. The CSM depicts the guilds chosen as assessment endpoints as well as

those species representing those endpoints. Additionally, other guilds, not chosen as assessment endpoints are also presented in the CSM because they represent a food source for the assessment endpoints.

I.1.2.2.6 Selection of Assessment and Measurement Endpoints

EPA defines an assessment endpoint as an "explicit expression of an environmental value to be protected" (EPA 1997a). Ecological resources may be considered valuable when (1) their absence would significantly impair ecosystem function; (2) they provide critical resources, such as habitat or fisheries; and (3) they are perceived by humans as being valuable such as endangered species. An assessment endpoint should define both the valuable ecological entity at the site and a characteristic of the entity to protect, such as reproductive success or production per unit area.

Unlike human health risk assessment, which evaluates only one species, the ERA involves multiple species with different degrees of exposure and toxicological responses. For the purpose of a CERCLA ERA, investigations should focus on endpoints most likely to be affected given the fate and transport mechanisms of the chemicals involved, ecotoxicological properties of the chemicals, habitats at the site (and future use), and potential ecological receptors (EPA 1997a).

OU-2A sites consist of developed and paved areas within Alameda Point, and suitable wildlife habitats are limited; however, this screening-level ERA assumes that all pavement and buildings are removed and that soil is fully exposed. Based on EPA guidance, three generic assessment endpoints were selected for OU-2A to evaluate potential ecological risk at the sites. The following paragraphs summarize the assessment endpoints selected and the rationale for selection. Plants and invertebrate populations were not selected as assessment endpoints because of the urban habitat at the sites. The habitat available for such species is expected to remain minimal.

Sufficient Rates of Survival, Growth, and Reproduction to Sustain Small Mammal Populations Typical to the Area. Literature data indicate that ecological COPCs associated with Alameda Point can cause reproductive impairment, reduced growth, altered behavior, various physiological effects, mortality, mutagenic, teratogenic, and other effects on mammals (Peterle 1991; EPA 1975). Small mammals, such as the California ground squirrel and various voles, are secondary consumers that provide a major food source for upper-trophic-level consumers such as raptors. Adverse effects on the small mammal community of Alameda Point could result in a reduction in the amount of food available to and corresponding reductions in populations of predators. The small mammal community was, therefore, considered to be an ecological value to be protected.

Sufficient Rates of Survival, Growth, and Reproduction to Sustain Passerine Populations Typical to the Area. Literature data indicate that ecological COPCs associated with Alameda Point can cause reproductive impairment, reduced growth, altered behavior, various physiological effects, mortality, teratogenic, and other effects on passerine species (Beyer and others 1996; Peterle 1991; EPA 1995; Hoffman and others 1996). Passerines, such as the

Alameda song sparrow and the American robin, are secondary consumers that provide a food source for upper trophic level predators. In addition, some small birds, such as songbirds, are considered to be important and worthy of protection for aesthetic or other functional reasons. Adverse effects on the passerine community at Alameda Point could result in a reduction of food available to and corresponding reductions in populations of predators; therefore, the passerine community was considered to be an ecological value to be protected.

Sufficient Rates of Survival, Growth, and Reproduction to Sustain Raptor Populations Typical to the Area. Literature data indicate that ecological COPCs associated with Alameda Point can cause reproductive impairment, reduced growth, altered behavior, various physiological effects, mortality, teratogenic, and other effects on birds (Beyer and others 1996; Peterle 1991; EPA 1995; Hoffman and others 1996). The facility has a strong presence of raptors such as red-tailed hawks, Swainson's hawk, and other species. At least one of these, the northern harrier, is a species of special concern. Raptors are the major tertiary consumers at the site and are strongly susceptible to effects of bioaccumulating chemicals. A decrease in the raptor population at Alameda Point would be undesirable because of the effects of the loss of predation on prey; therefore, the raptor population was considered to be an ecological value to be protected.

Assessment endpoints are usually not amenable to direct measurement. Instead, measurement endpoints that are measurable and related to assessment endpoints must be developed. EPA defines a measurement endpoint as "a measurable ecological characteristic that is related to the valued characteristic chosen as the assessment endpoint and is a measure of biological effects (e.g., mortality, reproduction, growth)" (EPA 1997a). Measurement endpoints can include measures of exposure or measures of effect. They are frequently numerical expressions of observations that can be compared statistically to a control or reference site or scientific study to detect adverse responses to an ecological COPC. Each measurement endpoint correlates directly with one of the defined assessment endpoints and was based on available literature mechanisms of toxicity.

The following generic measurement endpoints for Alameda Point were selected based on ecotoxicity data for ecological COPCs found at the site and each measurement endpoint corresponds to an assessment endpoint. Each generic measurement endpoint (1) is based on populations or communities present or potentially present at the site, (2) is amenable to evaluation based on literature research, and (3) can be used to infer information about the related assessment endpoint. The following measurement endpoints were used to evaluate potential ecological impacts to assessment endpoints. Even though Special Status Species may be present at OU-2A sites, as indicated in Table I-1, these species were not selected as measurement endpoints because the sites are located in an urban/industrial area and are not expected to revert to a natural ecological state. The organisms identified as measurement endpoints were, therefore, selected based on their ability to represent more ecologically relevant endpoints that would be exposed at the sites.

Reproductive or Physiological Impacts to the California Ground Squirrel. The California ground squirrel (*Citellus beecheyi*) was used as a surrogate to represent the small mammal

population associated with the site. Potential reproductive or physiological impacts were evaluated against existing, consensus TRVs. For ecological COPCs that have not been assigned an existing, consensus TRV, ERVs were identified or developed, as described in Section I.1.2.2.4 of this appendix, or evaluated on a qualitative basis if information in the literature was insufficient to support ERV development. A conservative daily dose was calculated based on site-specific ecological COPC concentrations and natural history information on the California ground squirrel (Linsdale 1946). A hazard quotient (HQ) was developed by dividing the daily dose by the appropriate TRV or ERV for each ecological COPC.

Reproductive or Physiological Impacts to the Alameda Song Sparrow and the American Robin. The Alameda song sparrow (*Melospiza melodia pusillula*) and the American robin (*Turdus migratorius*) were used as surrogates to represent the passerine population associated with the site. Both species were assessed because the Alameda song sparrow resides in a more estuarine habitat, while the American robin resides in a more terrestrial or upland habitat. Potential reproductive or physiological impacts were evaluated against existing, consensus TRVs. For ecological COPCs that have not been assigned an existing, consensus TRV, ERVs were identified or developed, as described in Section I.1.2.2.4 of this appendix, or evaluated on a qualitative basis if information in the literature was insufficient to support ERV development. A conservative daily dose was calculated based on site-specific ecological COPC concentrations and natural history information on the Alameda song sparrow or the American robin (EPA 1993). An HQ was developed by dividing the daily dose by the appropriate TRV or ERV for each ecological COPC.

Reproductive or Physiological Impacts to the Red-tailed Hawk. The red-tailed hawk (*Buteo jamaicensis*) was used as a surrogate to represent the raptor population associated with the site. Potential reproductive or physiological impacts were evaluated against existing, consensus TRVs. For ecological COPCs that have not been assigned an existing, consensus TRV, ERVs were identified or developed, as described in Section I.1.2.2.4 of this appendix, or evaluated on a qualitative basis if information in the literature was insufficient to support ERV development. A conservative daily dose was calculated based on site-specific ecological COPC concentrations and natural history information on the red-tailed hawk (EPA 1993). An HQ was developed by dividing the daily dose by the appropriate TRV or ERV for each ecological COPC.

Table I-12 presents generic assessment and associated measurement endpoints.

I.1.2.3 Exposure Estimates and Risk Evaluation

The exposure estimate and risk calculation step results in a conservative estimate of potential risk to the selected measurement endpoints. For each measurement endpoint and ecological COPC, a conservative estimate of the dose to an organism was developed using soil EPCs and either site-specific or literature-derived exposure parameters. Using risk calculations, doses were then compared to TRVs or ERVs to evaluate potential risks to each ecological receptor. The following sections describe the development of exposure estimates and risk calculations.

I.1.2.3.1 Development of Exposure Estimates

It is important to be conservative when estimating risk with a screening-level ERA to ensure that the assessment does not indicate insignificant risk when a significant risk exists. The screening-level ERA for the OU-2A sites indicated that risk to ecological receptors was possible at the sites based on the conservative assumptions that were used. The urban nature of the sites, however, precluded the collection of site-specific tissue samples that could be used to reduce the uncertainty in the baseline ERA. In the absence of site- or species-specific tissue data, a modified ERA based on the use of more average exposure parameters was deemed appropriate for the OU-2A sites. These average exposure parameters were used to provide a more realistic estimate of potential risk to ecological receptors. The following assumptions were used for the exposure assessment to calculate a conservative dose to each receptor.

Site Use Factors (SUF). All species considered in the ERA were assumed to live and feed within the site at all times.

Bioavailability. All ecological COPCs were assumed to be 100 percent bioavailable for all trophic levels and species.

Body Weight and Food Ingestion. The average body weight indicated in the literature was used in conjunction with the average ingestion rate.

Bioconcentration and Bioaccumulation Factors. Soil-to-plant and soil-to-soil invertebrate bioconcentration factors (BCF) were obtained from EPA protocol (1999) (Appendix C) or calculated using the following formulas, also presented by EPA (1999):

$$\log BCF_{soil\text{-}to\text{-}invert} = (0.819)(\log K_{ow}) - 1.146 \quad \text{(I-1)}$$

$$\log BCF_{soil\text{-}to\text{-}plant} = 1.588 - (0.578)(\log K_{ow}) \quad \text{(I-2)}$$

where

$BCF_{soil\text{-}to\text{-}invert}$	=	Bioconcentration factor for uptake of constituent from ingestion of soil and into invertebrate tissue
$BCF_{soil\text{-}to\text{-}plant}$	=	Bioconcentration factor for uptake of constituent from ingestion of soil and into plant tissue
log	=	Logarithm

Table I-13 presents the plant and soil invertebrate BCFs.

BCFs for intake of food items to mammal tissues also were based upon EPA protocol (EPA 1999) (Appendix D). The ecological COPC-specific biotransfer factor for mammals

(Ba_{mammal}) was based upon studies of beef cattle ingesting food items. The Ba_{mammal} for inorganic compounds are presented by EPA (1998), while the Ba_{mammal} for organic compounds were calculated using the Travis and Arms (1988) correlation equation, as presented by EPA (1999):

$$\log Ba_{mammal} = -7.6 + \log K_{ow} \quad \text{(I-3)}$$

The $BCF_{soil\text{-}to\text{-}mammal}$ and the $BCF_{food\ item\text{-}to\text{-}mammal}$ was then calculated from the following equations (EPA 1999):

$$BCF_{soil\text{-}to\text{-}mammal} = (Ba_{mammal})\ (IR_{soil}) \quad \text{(I-4)}$$

$$BCF_{food\ item\text{-}to\text{-}mammal} = (Ba_{mammal})\ (IR_{food\ item}) \quad \text{(I-5)}$$

where

$BCF_{soil\text{-}to\text{-}mammal}$ = Bioconcentration factor for uptake of constituent from ingestion of soil and into mammal tissue

$BCF_{food\ item\text{-}to\text{-}mammal}$ = Bioconcentration factor for uptake of constituent from ingestion of food item and into mammal tissue

Table I-14 presents the Ba_{mammal} values and the calculated mammal BCFs used in exposure estimate calculations, as discussed in the following text.

Dietary Composition. The diet of each of the receptors was based on the percentages of dietary items, as reported in the literature.

Ecological COPC Concentration. The EPC used in the evaluation was the lower of the maximum detected concentration or the UCL95 concentration.

Exposure was assessed in the context of the following linear food chains:

Soil→Invertebrates and Plants→California ground squirrel→Red-tailed hawk

Soil→Invertebrates and Plants→Alameda song sparrow or American robin

These food chains were used in this modified ERA to evaluate potential ecological effects on small mammals, passerines, and raptors. The postulated food web for Alameda Point is presented in Figure I-4.

The model presented in the following equations is adequate to estimate daily doses to various receptors in a modified ERA.

Ground squirrel dose (milligrams per kilogram per day [mg/kg-day]) =

$$(SUF)\ \frac{[(C_{soil})(IR_{soil}) + (C_{invert})(IR_{invert}) + (C_{plant})(IR_{plant})]}{BW} \quad \text{(I-6)}$$

Alameda song sparrow dose (mg/kg-day) =

$$(SUF)\ \frac{[(C_{soil})(IR_{soil}) + (C_{invert})(IR_{invert}) + (C_{plant})(IR_{plant})]}{BW} \quad \text{(I-7)}$$

American robin dose (mg/kg-day) =

$$(SUF)\ \frac{[(C_{soil})(IR_{soil}) + (C_{invert})(IR_{invert}) + (C_{plant})(IR_{plant})]}{BW} \quad \text{(I-7)}$$

Red-tailed hawk dose (mg/kg-day) =

$$(SUF)\ \frac{[(C_{ground\ squirrel})(IR_{ground\ squirrel}) + (C_{soil})(IR_{soil})]}{BW} \quad \text{(I-8)}$$

where

BW	=	Body weight
C_{soil}	=	EPC of chemical in soil (milligrams per kilogram [mg/kg])
C_{invert}	=	$(C_{soil})(BCF_{soil\text{-}to\text{-}invert})$ (mg/kg-Fresh Weight [FW]) (EPA 1999)
C_{plant}	=	$(C_{soil})(BCF_{soil\text{-}to\text{-}plant})$ (0.12) (mg/kg-FW) (EPA 1999)

(0.12 is a default value to convert the plant concentration from dry weight to fresh weight and is presented in Appendix B of EPA 1999. This value is an average based on 80 to 95 percent water content in herbaceous plants and non-woody plant parts.)

$BCF_{soil\text{-}to\text{-}invert}$	=	Bioconcentration factor for uptake of constituent from soil to invertebrate tissue
$BCF_{soil\text{-}to\text{-}plant}$	=	Bioconcentration factor for uptake of constituent from soil to plant tissue
$C_{ground\ squirrel}$	=	$[(C_{invert})(FCM^3/FCM^2)(F_i) + (C_{plant})(BCF_{plant\text{-}to\text{-}mammals})(F_p)(0.12) + (C_{soil})(BCF_{soil\text{-}to\text{-}mammal})](mg/kg)]$ (EPA 1999)
$BCF_{soil\text{-}to\ mammal}$	=	Bioconcentration factor for uptake of constituent from soil to mammal tissue (based on mg/kg Dry Weight [DW] soil to mg/kg FW mammal tissue (unitless) (EPA 1999)

$BCF_{plant\text{-}to\text{-}mammals}$	=	Bioconcentration factor for uptake of constituent from plant tissues to mammal tissues (based on mg/kg DW soil to mg/kg DW plant tissue (unitless)
FCM^3/FCM^2	=	Food chain multiplier (FCM), which models a COPC concentration in a predator item (FCM^3), such as the California ground squirrel, from the ingestion of a prey item (FCM^2), such as a soil invertebrate (unitless).
Fi	=	The fraction of the ground squirrel diet that consists of invertebrates
F_p	=	The fraction of the ground squirrel diet that consists of plants
IR	=	Ingestion rate (the amount of prey items, IR_{soil}, IR_{invert}, IR_{plant}, and soil ingested per day) (mg/kg-day)
SUF	=	Site use factor

Table I-15 presents the FCMs as presented in EPA 1999.

Values for the exposure factors for each vertebrate receptor are presented in Table I-16. The following overall procedures and assumptions are associated with the exposure estimates for each receptor.

Small Mammal and Passerine Endpoints

- Small mammal and passerine receptors were assumed to have a diet consisting of a mixture of plants and invertebrates. For small mammals, diet consisted of 80 percent vegetation and 20 percent invertebrates; while for passerines, diet consisted of 50 percent vegetation and 50 percent invertebrates. The primary source of the dietary information was collected from the California Environmental Protection Agency (2000).

- The EPC is the ecological COPC soil concentration used in risk calculations. Multiplying the EPC by the appropriate plant and invertebrate BCF and natural history information on ingestion rates and body weights for the receptors derived the dose for each ecological COPC. The dose was calculated in mg/kg-day for each ecological COPC.

- For 4,4'-dichlorodiphenyltrichloroethane (DDT); 4,4'-dichlorodiphenyldichloroethane (DDD); and 4,4-dichlorodiphenyldichloroethene (DDE), the EPCs were summed and evaluated as total DDT (DDTt). The DDTt value was used in calculations as the soil concentration.

- All polynuclear aromatic hydrocarbon (PAH) compounds were segregated into low-molecular weight (LMW) and high-molecular weight (HMW) PAH categories. LMW PAHs are defined as measured PAHs with a molecular weight below 200 atomic mass units (amu) and include acenaphthene, anthracene, fluorene, naphthalene, 2-methylnaphthalene, and phenanthrene. HMW PAHs are defined as measured PAHs with a molecular weight greater than 200 amu and include benzo(a)fluorene, benzo(b)fluorene, fluoranthene, benzo(k)fluoranthene, benzo(b)fluoranthene, benzo(g,h,i)perylene, chrysene, benzo(a)anthracene, dibenzo(a,h)anthracene, indeno(1,2,3-cd)pyrene, pyrene, and benzo(a)pyrene. The EPC for each category was calculated by summing the individual compound concentrations detected in each medium and area. Total LMW and HMW PAH concentrations were used in the calculations as the soil concentration.

- For PCB compounds, the EPCs of detected Aroclors were summed to develop a total PCB concentration, which was used in the calculations as the soil concentration.

Raptor Endpoints

- Raptors at the site were assumed to have a diet consisting exclusively of the California ground squirrel, which is considered to be the most conservative diet for the raptor. This diet was selected based on the screening-level ERA, which estimated that the concentrations of chemicals in small mammals were higher than passerines.

- The EPC is the ecological COPC soil concentration used in risk calculations. The red-tailed hawk dose for each ecological COPC was derived by (1) calculating the California ground squirrel concentration, as discussed previously in Section I.1.2.3.1 and (2) multiplying the EPC and the California ground squirrel concentration by the appropriate natural history information on ingestion rates and body weight for the receptor.. The dose was calculated in mg/kg-day for each ecological COPC.

- The EPCs for DDT, DDD, and DDE were summed and evaluated as DDTt. The DDTt value was used in calculations as the soil concentration.

- PAH compounds were segregated into LMW and HMW PAH categories defined previously. The soil concentration for each category was calculated by summing the individual EPCs in each medium and area. Total LMW and HMW PAH concentrations were used in the calculations as the soil EPC.

- For PCB compounds, the EPCs of each detected Aroclor were summed to develop a total PCB concentration, which was used in the calculations as the soil concentration.

Depending on ecological COPCs identified at each site, additional site-specific considerations were used, where appropriate.

I.1.2.3.2 Risk Calculations

Risk calculations were prepared for each receptor based on exposure assumptions for the individual receptor. Risk calculations consist of dividing the calculated dose by the appropriate ERV or TRV for each receptor and ecological COPC, deriving an HQ. HQs greater than 1.0 indicate potential risk to the assessment endpoint that was being evaluated. Depending on the ecological COPCs present at a site, risk calculations were based on the following assumptions.

Small Mammal Endpoint

- The calculations for total PCBs were based on the TRV for Aroclor 1254. No TRV was identified or developed for Aroclor 1260.
- No specific TRVs or ERVs were identified for the individual PAHs. The TRV for naphthalene was used as a surrogate for the LMW PAHs, and the benzo(a)pyrene TRV was used as a surrogate for the HMW PAHs. These surrogates were based on Navy guidance (Navy 1998b).
- No specific TRVs or ERVs were identified for the SVOCs n-nitroso-diphenylamine, and carbazole; therefore, a qualitative evaluation (QE) was performed for these chemicals.
- No specific TRVs or ERVs were identified for the VOCs 1,3-dichlorobenzene, ethylbenzene, and carbon disulfide. A QE was performed for these chemicals.

Passerine and Raptor Endpoints

- No avian TRV or ERV was identified for alpha-chlordane, gamma-chlordane, and heptachlor epoxide. Literature data were inadequate to develop a TRV for avian species. To support the modified ERA, the TRV for DDT was used to evaluate the potential effects of these pesticides. The basis for using the TRV for DDT as a surrogate is based on the fact that these constituents are chlorinated pesticides and as a group, have many of the same effects (Agency for Toxic Substance Disease Registry [ATSDR] 1992a).
- The calculations for total PCBs were based on the TRV for Aroclor 1254. No TRV was identified or developed for Aroclor 1260.
- No specific TRVs or ERVs were identified for the LMW and HMW PAH ecological COPCs. A QE was performed for the chemicals.
- No specific TRVs or ERVs were identified for the SVOCs pentachlorophenol, n-nitroso-diphenylamine, and carbazole. A QE was performed for these chemicals.
- No specific TRVs or ERVs were identified for the VOCs 1,2-dichloroethene (DCE), 1,3-dichlorobenzene, 4-methyl-2-pentanone, acetone, benzene, carbon disulfide, ethylbenzene, methylene chloride, tetrachloroethene (PCE), toluene, trichloroethene (TCE), and xylene. A QE was performed for these chemicals.

I.1.2.4 Evaluation of Assessment Results

Using the high and low TRVs to evaluate ecological endpoints bounds the estimate of risk to each endpoint. The high TRV is the lowest reported dose in the literature at which adverse effects are known to occur and represents an upper bounding limit. The low TRV is the highest reported dose in the literature at which adverse effects are known not to occur and represents the lower bounding limit. Based on this, HQ results using the high and low TRV were evaluated. Generally, concentrations of ecological COPCs with calculated HQs less than 1.0 based on the low TRV would not be considered to pose an appreciable risk to ecological receptors, while HQs greater than 1.0 based on the high TRVs may pose an unacceptable level of risk and require evaluation of the need for remedial actions at a site.

Following calculation of the low and high HQs, further assessment of the potential risk was conducted using a weight-of-evidence approach. This evaluation was conducted as follows:

1. If both HQ values for a constituent were below 1.0, then no potential risk to the ecological endpoint was anticipated.

2. If one or both bounding-limit HQs exceeded 1.0, then the constituent was further compared to calculated background or ambient HQs.

3. Additional factors such as frequency of detection, distribution, concentration, and absorption potential of the chemical were used to evaluate risk.

I.1.2.5 Uncertainties

The ERA process involves a large number of uncertainties and extrapolations to evaluate potential risk to ecological receptors. Uncertainties and extrapolations associated with the evaluation of each site were identified and explained so that risk managers can make risk management decisions with an understanding of how the HQs were developed. Many of the assumptions in the screening-level ERA process are conservative and result in overestimates of site-specific parameters. The following uncertainties apply to all sites for the modified ERA.

SUFs. The risk calculations assumed that all receptors lived and fed in the area of the site at all times. This will not be true for the upper-trophic-level receptors that have large foraging ranges. Sites 9, 13, 19, 22, and 23 are 3, 17.5, 2.3, 2.1, and 14 acres in size, respectively. Based on the assumption of 100 percent site use, the exposure is overestimated for receptors, such as the red-tailed hawk, that feed over a range of about 200 acres (EPA 1993). The actual ingestion of ecological COPCs from the site will, therefore, be much less than the value used in the risk calculations.

Dietary Composition. The percent composition and type of prey ingested by the endpoint receptors were based on literature studies that were not site-specific. Additionally, the models were simplified to assume a limited diet, such as the raptor diet, consisting of 100 percent

California ground squirrels. Receptors at the facility may use different food sources or have different percentages of available food sources.

Bioavailability. All ecological COPCs were assumed to be 100 percent bioavailable to all receptors. Depending on the ecological COPCs and receptor, bioavailability may be significantly less than 100 percent.

Development of TRVs. TRVs and ERVs used in risk calculations were derived from literature studies. These studies were not conducted on the receptors used in this assessment. TRVs and ERVs were extrapolated using uncertainty factors to account for differences between species. The effect of this uncertainty cannot be estimated.

QEs of Ecological COPCs. Studies were not available to develop TRVs for a number of the measurement endpoints. The potential effects of these ecological COPCs were evaluated on a qualitative basis, relying heavily on professional judgment. The potential exists that these QEs may not have adequately judged the potential effects of these ecological COPCs.

Surrogate TRVs. The use of surrogate TRVs for some compounds, such as the DDT TRV for other chlorinated pesticides, increases the uncertainty associated with the evaluation. While every effort was made to select conservative TRVs, the effect of this uncertainty cannot be estimated.

Bioconcentration Factors. The use of the logKow to calculate the $Ba_{mammals}$ and the BCFs for receptors and food items can overestimate the uptake of organic compounds into the tissues of organisms and plants.

Background Concentrations. Another consideration is risk associated with background levels of metals and ambient concentrations of pesticides that are not specific to the various sites but are ubiquitous across Alameda Point. Documentation of background soil is presented in Appendix A of the RI. To place site-specific risks in the proper context, the risks associated with background and ambient concentrations of chemicals were considered. Background samples collected for Alameda underwent statistical analysis, the results of which are presented in Table I-17. These background concentration risks, based on the screening-level ERA exposure assumptions, are presented in Table I-17 for each receptor.

I.2 SITE-SPECIFIC SCREENING-LEVEL ECOLOGICAL RISK ASSESSMENTS

This section describes the results of the modified ERA for sites 9, 13, 19, 22, and 23, including site-specific considerations, factors, and uncertainties in the assessment. These sites are very similar in environmental setting and the ERA conducted for each used the same parameters. The following sections describe the ERA process for the sites.

I.2.1 PROBLEM FORMULATION

The environmental setting for each of the OU-2A sites is described in the following text.

I.2.1.1 Environmental Setting and Contaminants

Site 9

Site 9 is located in the southeast portion of Alameda Point, approximately 1,100 feet east of the Seaplane Lagoon (Figure I-1). Site 9 is approximately 3 acres in size, relatively flat, mostly paved, and primarily comprises open space surrounding Building 410. Before the construction of Building 410 in 1958, the site was used for aircraft storage. Building 410, located in the western portion of Site 9, is the primary structure on the property. The building housed the aircraft cleaning and paint stripping facility for the installation. Paint stripping and aircraft cleaning activities included the use of phenol, methylene chloride, TCE, chromium, detergents, wipe down solvents, and parts cleaners (Ecology and Environment, Inc. 1983). Other site features include Buildings 351, an office and break room for staff. Former Building 588, which housed parts of former industrial waste treatment plant, and 11 former aboveground storage tanks have been removed (Navy 1998a). Storm and industrial wastewater sewer lines run from Building 410 to the area previously occupied by Building 588 and extend to the Seaplane Lagoon. No underground storage tanks (UST) or underground fuel lines were identified at Site 9.

Anecdotal evidence suggests that numerous undocumented releases of aircraft fuel have occurred inside of Building 410 (International Technology Corporation [IT] 2001). Floor drains within Building 410 drained to storm sewer laterals extending from Building 410 toward the east and north to a sewer main line located parallel to the northern edge of Site 9. This sewer main line flows from east to west and empties at Outfall "J" in the Seaplane lagoon. Industrial wastes were discharged into these lines from 1958 until 1973. A catch basin (6-9A) for a second storm sewer line is located south of the southwest corner of Building 410. This second storm sewer line is oriented north-south and runs south to Outfall "O" and the San Francisco Bay.

Approximately 70 percent of Site 9 consists of open space, which is extensively covered with asphalt and concrete. These areas were primarily used for aircraft storage, roadways, vehicle and equipment parking, materials storage, and as maintenance, gear, and equipment wash-down areas. There are minor landscaped areas at the site.

Site 13

Site 13 is situated approximately 1,000 feet east of the Seaplane Lagoon and lies at the center of OU-2A (Figure I-1). The site is approximately 17.5 acres in size, relatively flat, partially paved and is composed of primarily open space with several structures. Past uses included aircraft, fuel, and material storage, and vehicle parking. Site 13 includes Building 397, which is located in the northwest portion of Site 13, and serves as an aircraft overhaul plant services facility. This

building contains Generator Accumulation Point 62 (a Resource Conservation Recovery Act [RCRA]-regulated, but not permitted, temporary storage area for hazardous waste) and oil water separators (OWS)-397 A, B, and C. Materials stored at Building 397 included petroleum products, halogenated and nonhalogenated solvents, and aircraft fuel (IT 2001). Other structures at Site 13 include Buildings MS-01 through MS-10 (the Navy Exchange Mini-Storage area); a recreational vehicle park; Corrective Action Area-13; RCRA Area of Concern (AOC) 397 and AOC 009; and several storm sewer lines.

All buildings, with the exception of Building 397, were demolished before 1981, and approximately 90 percent of Site 13 now consists of open space. The open space area is half exposed soil and half paved with asphalt or concrete. No significant vegetation growth has been allowed because the current uses of the site include vehicle parking, storage, and a bicycle path (IT 2001).

Site 19

Site 19 is located in the northwest corner of OU-2A, approximately 1,000 feet east of the Seaplane Lagoon (Figure I-1). Site 19 is approximately 2.3 acres in size. The main structure at the site is Yard D-13, a hazardous waste storage yard. Empty 55-gallon drums and drums containing wastes such as corrosives, halogenated and nonhalogenated organics, paints, metals, asbestos, PCBs, petroleum products, and various types of fuel were stored at Yard D-13. Drums containing wastes were organized by chemical type and stored in separate bermed areas in the open-sided building. The wastes were removed from the storage area in 1996. Several releases have been documented in Yard D-13, including nitric acid, PD-680, poly paint, zyglow penetrant, and mixed oil and fuel (IT 2001). Other structures at Site 19 include Building 616, former Building 609, an underground fuel line, and Navy-installed underground storage tanks.

Approximately 50 percent of Site 19 consists of open space. Eighty percent of the open space is paved. The unpaved areas are covered with grass. Reported activities conducted within the paved open space include vehicle parking and equipment storage.

Site 22

Site 22 is located in the northeast corner of OU-2A and is approximately 2.1 acres in size. Site 22 consists of the area around Buildings 547, 547A (a former gasoline service station), and 547-1. The gas station was built in 1974. In 1982, leaking fuel lines were dug up and replaced. Other structures at Site 22 include an OWS-547, four USTs, and fuel lines. All site features have been partially or completely removed.

All storm sewer lines at Site 22 are in sound condition (Tetra Tech 2000). One storm sewer line runs southward from the center of Site 22. This storm sewer line flows into the San Francisco Bay at Outfall Q. Another storm sewer line runs west and out of Site 22 from the northern portion. This storm sewer line empties into the Bay at Outfall P. Six catch basins (1-QA, 2-QA, 2-QB, 2-QC, 2-QD, and 2-QE) are located within Site 16.

Open space covers roughly 95 percent of Site 22. Approximately 70 percent of the open space is paved with asphalt, while the remaining area is exposed soil. PCB oil was used for weed control in the storage yard until 1963.

Site 23

Site 23 is located along the southern side of OU-2A and is approximately 14 acres in size. Site 23 consists primarily of Building 530, a missile rework facility, built in 1973. Hazardous materials known to have been used in the building include lead-based paint, hydraulic fluid, silver solder, ethylene glycol, lead, zinc, silver, tin, chromium, nickel, mercury, TCE, and petroleum. Other structures at Site 23 include Structures 529, 561, and 586; Buildings 600 and MS-11 through MS-19; and former Buildings 352, 460A, and 606.

Storm sewer lines at Site 23 are generally in sound condition with some limited segments having observed or potential infiltration (Tetra Tech 2000). Two main storm sewer line branches run along the northern and southern boundaries of Site 23 with the northern branch flowing to Outfall J and the southern branch flowing to Outfall P. Shorter segments from within Site 23 (some from buildings) connect to these main branches.

Open space covers roughly 80 percent of Site 23. Nearly all the open space is paved with asphalt. Areas not paved generally consist of exposed soil. PCB oil was used for weed control in the storage yard until 1963.

I.2.1.2 Selection of Chemicals of Potential Ecological Concern

The screening of chemicals for soils were conducted as described in Section I.1 and presented in Figure I-2 of this appendix. The data concerning the statistical comparison to background concentrations for inorganic constituents are presented in Appendix A of the RI.

Data concerning all detected chemicals for sites 9, 13, 19, 22, and 23 and the results of the screening process are presented in Tables I-19 through I-23 for soils. Based on the screening of ecological COPCs in surface soils at each of the sites, the following chemicals were retained for further evaluation:

Site 9: The metals barium, beryllium, chromium, and lead; the SVOCs 2-methylnaphthalene, pentachlorophenol, and n-nitroso-diphenylamine; and the VOCs 1,2-DCE, ethylbenzene, PCE, toluene, and xylene (Table I-19).

Site 13: The metals antimony, arsenic, lead, mercury, selenium, and zinc; the pesticides DDE, DDT, and heptachlor epoxide; the SVOCs 2-methylnaphthalene, carbazole, di-n-butylphthalate, pentachlorophenol, and n-nitroso-diphenylamine; and the VOCs acetone, benzene, carbon disulfide, ethylbenzene, toluene, and xylene (Table I-20).

Site 19: The metals barium, copper, lead, and zinc; the SVOCs 4-chloro-3-methylphenol, bis(2-ethylhexyl)phthalate, diethylphthalate, di-n-butylphthalate, pentachlorophenol, and n-nitroso-diphenylamine; and the VOCs 1,3-dichlorobenzene, acetone, methylene chloride, PCE, toluene, TCE, and xylene (Table I-21).

Site 22: The metals barium, copper, lead, selenium, and zinc; the pesticides DDD, DDE, DDT, alpha-chlordane, and gamma-chlordane; the SVOCs 2-methylnaphthalene and carbazole; and the VOCs 4-methyl-2-pentanone, benzene, ethylbenzene, toluene, and xylene (Table I-22).

Site 23: The metals antimony, barium, cadmium, and lead; the pesticides DDT and Aroclor 1260; the SVOC n-nitroso-diphenylamine; and the VOC toluene (Table I-23).

I.2.1.3 Fate and Transport of Ecological Chemicals of Potential Concern

Physical properties of all of the ecological COPCs, with the exception of VOCs, indicate that they will bind preferentially to the soil and are relatively insoluble in water. Major ecological COPC movement will be through erosion processes, such as wind and surface water runoff, and infiltration to subsurface soils and groundwater.

I.2.1.4 Ecotoxicity Assessment

Ecological COPCs associated with the OU-2A sites include metals, pesticides, PCBs, SVOCs, and VOCs. A literature review was conducted to identify the potential toxic effects of the ecological COPCs on ecological receptors. These ecological COPCs have a variety of effects dependent on species and trophic level. Known effects of these chemicals are described in Attachment I1 of this appendix.

The ecological effects evaluation was conducted as described in Section I.1 of this appendix. Tables I-4 through I-11 provide detailed information on the derivation of the TRVs and ERVs used to evaluate each measurement endpoint and ecological COPC for the OU-2A sites.

I.2.1.5 Potential Receptors

Table I-3 provides a summary of species observed or potentially present at the OU-2A sites.

I.2.1.6 Exposure Pathways

Both existing and potential exposure pathways were identified for terrestrial receptors. Potential terrestrial exposure pathways to contaminated soil include direct contact, incidental ingestion, volatilization, windblown dust, and food chain effects. As requested by EPA and DTSC, the ERA assumes that all existing buildings and pavement at the OU-2A sites are removed and that the underlying soil immediately provides suitable habitat for higher-trophic-level receptors.

The depth of groundwater at the OU-2A sites is greater than 6 feet, and groundwater is not expected to reach the Seaplane Lagoon or the San Francisco Bay because of the distance from these shorelines (Tetra Tech 2000). Storm sewers within OU-2A are in good condition wherever groundwater plumes exist. Some VOCs have been measured near storm sewers within OU-2A. However, it has been determined VOCs from up gradient in OU-2B have migrated along the sewer bedding material. This source is addressed in the OU-2B RI Report. Exposure to groundwater is, therefore, not a complete exposure pathway at OU-2A.

Complete exposure pathways were assessed for Site 9, 13, 19, 22, and 23, as discussed in Section I.1.2.2.5. The following discussion summarizes each potential exposure pathway under this scenario.

Direct Exposure to Soil. Animals in contact with the soil at the OU-2A sites can be directly exposed to metals, SVOCs, and VOCs through ingestion and dermal exposure. Direct exposure is expected to involve all trophic levels; therefore, direct exposure to soil at the OU-2A sites is a complete exposure pathway under the fully exposed soil scenario. In addition to the potential direct effects to receptors, contaminated soil at the sites is a probable source of ecological COPCs migrating to the underlying groundwater.

Direct Exposure to Surface Water. Precipitation and runoff infiltrates soil and moves to groundwater; therefore, the surface water pathway is considered to be a complete pathway for the sites. The only surface water available at the sites is ponded water that exists for a short period of time after rainfall events. Even thought this exposure pathway is complete, it is not significant and was not evaluated.

Direct Exposure to Air. Many of the ecological COPCs associated with the OU-2A sites have extremely low volatilization rates. Ecological COPCs with low volatilization rates include metals (except mercury) and SVOCs. The exceptions are VOCs, which generally were detected at low concentrations in soil. Minimal volatilization from ecological COPCs from soil to the air is expected. Windblown dust could represent a complete exposure pathway because exposed soil exists at least on a portion of each of the OU-2A sites; therefore, the air exposure pathway is considered to be a complete exposure pathway, primarily resulting from airborne dust ingestion at Site 9 under the fully exposed soil scenario. Although this exposure pathway is complete, it is postulated to be insignificant compared to direct soil exposure.

Food Chain Exposure. A number of higher-trophic-level receptors could be exposed to ecological COPCs through diet. Of the ecological COPCs associated with OU-2A sites, alpha-chlordane, Aroclor 1260, DDD, DDE, DDT, gamma-chlordane, heptachlor epoxide, 2-methylnaphthalene, 4-chloro-3-methylphenol, bis(2-ethylhexyl)phthalate, di-n-butylphthalate, n-nitroso-diphenylamine, pentachlorophenol, ethylbenzene, PCE, and xylene have a K_{ow} greater than 3.0, which could indicate significant tendencies for these chemicals to bioaccumulate and biomagnify in food chains. Food chain exposure is, therefore, a complete exposure pathway under the fully exposed soil scenario.

I.2.1.7 Assessment and Measurement Endpoints

Habitat associated with the OU-2A sites is of low ecological value because of current limited habitat existing at the sites. The sites are expected to have long-term reuse potential including research and development, light industrial, supporting retail, office, commercial, and residential uses. Community oriented institutions, such as places of worship and nonprofit organizations, are also considered allowable and desirable uses. Based on the anticipated future uses of the sites, the value of the habitat is not expected to increase.

Ecological COPCs present at the OU-2A sites have different effects on different trophic levels; therefore, the assessment endpoints and associated measurement endpoints presented in Section I.1.2.2.6 of this appendix are necessary to adequately evaluate the risk to environmental receptors associated with the ecological COPCs.

I.2.2 EXPOSURE ESTIMATES AND RISK EVALUATION

For each measurement endpoint and ecological COPC, an estimate of the exposure of the organism to the ecological COPC was developed using life history information, site chemical concentrations, and other data. This exposure information was then compared with TRVs or ERVs to develop a quantitative evaluation of risk to ecological receptors.

Exposure estimates for each receptor were developed using the assumptions described in Section I.1.2.3.1 of this appendix. General exposure factors used for the California ground squirrel, Alameda song sparrow, American robin, and red-tailed hawk are presented in Table I-16. Risk calculations were conducted using the procedures described in Section I.1.2.3.2.

I.2.3 RESULTS OF THE ECOLOGICAL RISK ASSESSMENT FOR TERRESTRIAL RECEPTORS

HQs calculated for each site using high and low TRVs for each measurement endpoint are presented in Tables I-24 through I-28. HQs were evaluated based on the discussion presented in Section I.1.2.4. The following sections relate calculated HQs to assessment endpoints for each site and discuss these results. Uncertainties that exist in this ERA for the OU-2A sites are presented in Section I.1.2.5.

I.2.3.1 Ecological Risk Assessment Results for Site 9

The following sections relay the results of the ERA for Site 9 for each of the assessment endpoints evaluated. HQ values for Site 9 are presented on Table I-24.

I.2.3.1.1 Sufficient Rates of Survival, Growth, and Reproduction to Sustain Small Mammal Populations Typical to the Area

Pentachlorophenol was the only ecological COPC with an HQ above 1.0 using either the high or low TRV (Table I-24). Literature data were not adequate to develop ERVs for n-nitroso-diphenylamine and ethylbenzene for small mammals. All other ecological COPCs presented in Table I-19 pose no significant risk to small mammals. The following sections discuss each chemical or chemical grouping with an HQ above 1.0 or that require a QE.

Pentachlorophenol: The HQ value using the high TRV was 6.69, and the low TRV HQ value was 66.9. Pentachlorophenol was detected in only 1 of 13 samples at a concentration of 0.43 mg/kg, which was below the maximum laboratory-reporting limit of 3.5 mg/kg. The relatively high HQ values are directly attributable to the conservative $BCF_{soil\text{-}to\text{-}invert}$ value of 1,034 (EPA 1999). This value was calculated based on the K_{ow} value of 5.12 and the fact that pentachlorophenol is rapidly absorbed by ecological receptors. In mammals, however, the degree of accumulation into the tissues is small because pentachlorophenol is efficiently and rapidly excreted (EPA 1999). Based on these factors, the ecological risk of pentachlorophenol to small mammals cannot be discounted; however, it is expected to be low.

SVOCs: The literature data were not adequate to develop an ERV for small mammals for the SVOC n-nitroso-diphenylamine. N-nitroso-diphenylamine was detected in 4 of 13 samples. The maximum detected value was 0.054 mg/kg, which is below the maximum laboratory-reporting limit of 0.73 mg/kg. Impacts on wildlife from n-nitroso-diphenylamine are not well documented; however, based on the low frequency of detection and low concentration, the potential impacts to small mammals are postulated to be low.

VOCs: The literature data were not adequate to develop an ERV for small mammals for the VOC ethylbenzene. Ethylbenzene was detected in only 1 of 21 samples at a concentration of 0.2 mg/kg, which is slightly above the maximum laboratory-reporting limit of 0.12 mg/kg. In general, VOCs only have toxic effects at higher doses, in the 500- to 1,000-mg/kg range (ATSDR 1992b, 1996a, 1996b). Based on the general low toxicity of VOCs to ecological receptors, the low frequency of detection, and relatively low concentrations, the impact to small mammals from the residual levels of ethylbenzene at Site 9 is postulated to be low.

I.2.3.1.2 Sufficient Rates of Survival, Growth, and Reproduction to Sustain Passerine Populations Typical to the Area

Chromium and lead were the only ecological COPCs with HQs above 1.0 using the low TRV for the passerine endpoints, the Alameda song sparrow and the American robin (Table I-24). Literature data were not adequate to develop ERVs for HMW PAHs, LMW PAHs, pentachlorophenol, n-nitroso-diphenylamine, 1,2-DCE, ethylbenzene, PCE, toluene, and xylene. All other ecological COPCs presented in Table I-19 had HQ values less than 1.0 and pose no significant risk to passerines. The following sections discuss each chemical or chemical grouping with an HQ above 1.0 or that require a QE.

Chromium: HQs for the Alameda song sparrow and the American robin using the high TRV for chromium were below 1.0. The low TRV HQs for chromium were 2.84 and 1.36, respectively. The low HQs for the Alameda song sparrow and the American robin exceeded the background low HQs of 0.851 and 0.385, respectively, which was three times above background (Table I-18). Chromium was detected in all 26 samples collected within the Site 9 at concentrations ranging from 22 mg/kg to 178 mg/kg. Background concentrations of chromium range from 11.4 mg/kg to 81.7 mg/kg. Very limited information is available in the literature pertaining to toxic effects of chromium to birds. Based on the range of HQs calculated for the song sparrow and robin (not greatly above 1.0), the potential risk to passerines from chromium is expected to be low.

Lead: HQs for the Alameda song sparrow and the American robin using the high TRV for lead were below 1.0. The low TRV HQs for lead were 18.7 and 8.79, respectively. The HQ for the Alameda song sparrow and the American robin did not exceed the background low HQs of 27.1 and 12.7, respectively. Additionally, these HQ values may be driven by an overly conservative low TRV of 0.014 mg/kg-day. This TRV was originally developed by the Navy and the EPA Region 9 BTAG and is based on a study by Edens and others (1976) that found physiological effects on birds that were measurable at a dose of 0.014 mg/kg-day, but the effects are not believed to be ecologically significant. When the HQ was calculated using an alternative TRV of 3.85 mg/kg-day, developed by Oak Ridge National Laboratory for the U.S. Department of Energy, the lead HQ value was reduced significantly. This TRV was established based on a study by Pattee (1984) during which inorganic lead was administered to an avian receptor. Using an allometrically converted TRV of 2.65 mg/kg-day for song sparrows and 3.50 mg/kg-day for robins, reevaluation of the lead HQ at Site 9 was calculated as 0.0712 for the song sparrow with a background HQ of 0.103 and as 0.0334 for the robin with a background HQ of 0.0484. Based on this information, lead at Site 9 does not appear to pose a significant potential for risk to passerines.

PAHs: The literature data were not adequate to develop avian ERVs for PAHs. The HMW and LMW PAHs were detected at Site 9 at frequencies ranging from 13 to 82 percent out of a total of 39 samples collected. Calculated EPCs ranged from 0.003 to 0.22 mg/kg. PAHs can cause genotoxic, reproductive, and mutagenic effects; however, studies indicate that PAH compounds do not appear to bioaccumulate in mammals and birds (Eisler 1987a). The risk posed to the passerine community from residual levels of HMW and LMW PAHs associated with Site 9 cannot be discounted.

SVOC: The literature data were not adequate to develop a passerine ERV for pentachlorophenol and n-nitroso-diphenylamine. Pentachlorophenol was detected in only 1 of 13 samples, at a concentration below the maximum laboratory-reporting of 3.5 mg/kg. N-nitroso-diphenylamine was detected in 4 of 13 samples with a maximum concentration of 0.054 mg/kg, which was not above the maximum reporting limit 0f 0.73 mg/kg. Impacts on wildlife from these SVOCs are not well documented; however, based on the low frequency of detection and low concentration, the potential impacts from these SVOCs are postulated to be low.

VOCs: The literature data were not adequate to develop avian ERVs for 1,2-DCE, ethylbenzene, PCE, toluene, TCE, and xylene. VOCs were detected in up to 9 of 21 samples collected at Site 9, with maximum concentrations ranging from 0.001 to 0.43 mg/kg. Although the risk posed to passerines from residual VOC compounds in soils at Site 19 is not fully known, it is expected to be low.

I.2.3.1.3 Sufficient Rates of Survival, Growth, and Reproduction to Sustain Raptor Populations Typical to the Area

There were no ecological COPCs with an HQ above 1.0 using the high and low TRV for the raptor endpoint (Table I-24). Literature data were not adequate to develop avian ERVs for LMW PAHs, pentachlorophenol, n-nitroso-diphenylamine, 1,2-DCE, ethylbenzene, PCE, toluene, TCE, and xylene. All other ecological COPCs presented in Table I-19 had low and high HQ values of less than 1.0 and pose no significant risk to raptors. The following sections discuss each chemical or chemical grouping with an HQ above 1.0 or that require a QE.

PAHs: The literature data were not adequate to develop avian ERVs for PAHs. The HMW and LMW PAHs were detected at Site 9 at frequencies ranging from 13 to 82 percent out of a total of 39 samples collected. Calculated EPCs ranged from 0.003 to 0.22 mg/kg. PAHs can cause genotoxic, reproductive, and mutagenic effects; however, studies indicate that PAH compounds do not appear to bioaccumulate in mammals and birds (Eisler 1987a). The risk posed to the raptor community from residual levels of HMW and LMW PAHs associated with Site 9 cannot be discounted.

SVOCs: The literature data were not adequate to develop a raptor ERV for pentachlorophenol and n-nitroso-diphenylamine. Pentachlorophenol was detected in only 1 of 13 samples, at a concentration below the maximum laboratory-reporting of 3.5 mg/kg. N-nitroso-diphenylamine was detected in 4 of 13 samples with a maximum concentration of 0.054 mg/kg, which was not above the maximum reporting limit 0f 0.73 mg/kg. Impacts on wildlife from these SVOCs are not well documented; however, based on the low frequency of detection and low concentration, these impacts are postulated to be low.

VOCs: The literature data were not adequate to develop raptor ERVs for 1,2-DCE, ethylbenzene, PCE, toluene, TCE, and xylene. VOCs were detected in up to 9 of 21 samples collected at Site 9, with maximum concentrations ranging from 0.001 to 0.43 mg/kg. Although the risk posed to raptors from residual VOC compounds in soils at Site 19 is not fully known, it is expected to be low.

I.2.3.1.4 Discussion of Conclusions of the Ecological Risk Assessment for Site 9

The results of the HQ calculations and QEs indicate that the residual chemicals at Site 9 have very limited potential to impact terrestrial ecological receptors. Based on the HQ calculations and QEs and the planned future use of the site, no risks to ecological receptors have been identified that require further evaluation or mitigation.

I.2.3.2 Ecological Risk Assessment Results for Site 13

The following sections relay the results of the ERA for Site 13 for each of the assessment endpoints evaluated. HQ values for Site 13 are presented on Table I-25.

I.2.3.2.1 Sufficient Rates of Survival, Growth, and Reproduction to Sustain Small Mammal Populations Typical to the Area

Pentachlorophenol was the only ecological COPCs with an HQ above 1.0 using either the high or low TRV for mammals (Table I-25). Literature data were not adequate to develop ERVs for carbazole, n-nitroso-diphenylamine, carbon disulfide, and ethylbenzene for small mammals. All other ecological COPCs presented in Table I-20 had HQ values of less than 1.0 and pose no significant risk to small mammals. The following sections discuss each chemical or chemical grouping with an HQ above 1.0 or that require a QE.

Pentachlorophenol: The HQ value using the high TRV was 15.6, and the low TRV HQ value was 156. Pentachlorophenol was detected in only 3 of 54 samples at concentrations ranging from 0.27 to 1 mg/kg, which was below the maximum laboratory-reporting limit of 170 mg/kg. The high HQ values are directly attributable to the conservative $BCF_{soil\text{-}to\text{-}invert}$ value of 1,034 (EPA 1999). This value was calculated based upon the K_{ow} value of 5.12 and the fact that pentachlorophenol is rapidly absorbed by ecological receptors. In mammals, however, the degree of accumulation into the tissues is small because pentachlorophenol is efficiently and rapidly excreted (EPA 1999). Based on these factors, the ecological risk of pentachlorophenol to small mammals cannot be discounted; however, it is expected to be low.

SVOCs: The literature data were not adequate to develop an ERV for small mammals for the SVOCs carbazole and n-nitroso-diphenylamine. Carbazole was detected in only 2 of 14 samples at concentrations ranging from 0.13 to 0.27 mg/kg, which was below the maximum reporting limit of 3.6 mg/kg. N-nitroso-diphenylamine was detected in 12 of 53 samples, which is only 23 percent of the total samples collected. The maximum detected value was 1.2 mg/kg, which is below the maximum reporting limit of 34 mg/kg. Impacts on wildlife from these SVOCs are not well documented; however, based on the low frequency of detection and low concentration, impacts from SVOCs to small mammals at Site 13 are postulated to be low.

VOCs: The literature data were not adequate to develop an ERV for small mammals for the VOCs carbon disulfide and ethylbenzene. Carbon disulfide was detected in 3 of 43 samples at concentrations ranging from 0.001 to 0.002 mg/kg, which are below the maximum reporting limit of 0.63 mg/kg. Ethylbenzene was detected in only 12 of 48 samples at concentrations ranging from 0.00069 to 0.56 mg/kg. In general, VOCs only have toxic effects at higher doses, in the 500- to 1,000-mg/kg range (ATSDR 1992b, 1996a, 1996b). Based on the relatively low toxicity of VOCs to mammals, the low frequency of detection, and relatively low concentrations, the impact to small mammals from the residual levels of VOCs at Site 13 is postulated to be low.

I.2.3.2.2 Sufficient Rates of Survival, Growth, and Reproduction to Sustain Passerine Populations Typical to the Area

Ecological COPCs with HQs above 1.0 calculated using either the high or low TRV for the passerine endpoints included lead, mercury, selenium, zinc, DDTt, and di-n-butylphthalate (Table I-25). Literature data were not adequate to develop ERVs for HMW PAHs, LMW PAHs, carbazole, n-nitroso-diphenylamine, pentachlorophenol, acetone, benzene, carbon disulfide, ethylbenzene, toluene, and xylene. All other ecological COPCs presented in Table I-20 had HQ values less than 1.0 and pose no significant risk to passerines. The following sections discuss each chemical or chemical grouping with an HQ above 1.0 or that require a QE.

Lead: HQs for the Alameda song sparrow and the American robin using the high TRV for lead were below 1.0. The low HQs for these receptors were 300 and 141, which exceeded the background HQs of 27.1 and 12.7, respectively. This HQ value may, however, be driven by the overly conservative low TRV, as described in Section I.2.3.1.2. Using the allometrically converted TRVs for the passerines, reevaluation of the low TRV lead HQ at Site 13 was calculated as 1.14 for the song sparrow with a background HQ of 0.103 and as 0.537 for the robin with a background HQ of 0.0484. Based on this information, lead at Site 13 poses no significant potential for risk to the passerine endpoints.

Mercury: HQs for the Alameda song sparrow and the American robin using the high TRV for mercury were below 1.0. The low HQs for these receptors were 3.06 and 1.34, respectively. Mercury was not detected in background samples collected. Mercury was detected in 8 of 37 samples collected within the Site 13 at concentrations ranging from 0.01 mg/kg to 0.4 mg/kg. There can be reproductive and other physiological effects of mercury to birds; however, based on the low HQ values (not significantly above 1.0) and low frequency of detection, the risk to passerines from mercury at Site 13 is expected to be low.

Selenium: HQs for the Alameda song sparrow and the American robin using the high TRV for selenium were below 1.0. The low HQs for these receptors were 3.38 and 1.51, which were not above the background low HQs of 4.83 and 2.16, respectively. Selenium was detected in 14 of 75 samples collected within the Site 13 at concentrations ranging from 0.14 mg/kg to 12 mg/kg, while selenium was detected in only one background sample at a concentration of 5.7 mg/kg. Based on the low HQ values (not significantly above 1.0) and low frequency of detection, the risk to passerines from selenium at Site 13 is expected to be low.

Zinc: HQs for the Alameda song sparrow and the American robin using the high TRV for zinc were below 1.0. The low HQs for these receptors were 8.86 and 3.90, which exceeded the background low HQs of 0.912 and 0.401, respectively, by a factor of 10. Zinc was detected in all 75 samples collected within the Site 13 at concentrations ranging from 7 mg/kg to 7,120 mg/kg, while the EPC used in risk calculations was 300.45 mg/kg. Zinc was detected in all 88 background samples at concentrations ranging from 14 mg/kg to 84 mg/kg. Zinc can have varying toxicities to different species of birds. Based on the HQ values, the risk to birds from zinc at Site 13 cannot be discounted; however, based on the future reuse of the site, this risk is expected to be low.

DDTt: HQs for the Alameda song sparrow and the American robin using the high TRV for DDTt were below 1.0. The low HQs for these receptors were 7.46 and 3.26. 4,4-DDE was detected in two of 38 samples collected within the Site 13 at concentrations of 0.0037 mg/kg and 0.0.031, while 4,4-DDT was detected in three of 38 samples at concentrations ranging from 0.0021 mg/kg to 0.16 mg/kg Based on the low frequency of detection of these compounds in soils at Site 13, the risk to passerines is expected to be low.

Di-n-butylphthalate: The HQ value using the high TRV for the Alameda song sparrow was 11.8, and 5.12 for the American robin. The low TRV HQs were 118 and 51.2, respectively. Di-n-butylphthalate was detected in only 1 of 54 samples at a concentration of 0.031 mg/kg, which was below the maximum laboratory-reporting limit of 34 mg/kg. The relatively high HQ values were directly attributable to the conservative $BCF_{soil\text{-}to\text{-}invert}$ value of 736.4, which is based upon the K_{ow} value of 4.9. Based on this and the low frequency of detection, the risk of di-n-butylphthalate to passerines is expected to be low.

PAHs: The literature data were not adequate to develop avian ERVs for PAHs. The HMW and LMW PAHs were detected at Site 13 at frequencies ranging from 17 to 60 percent out of a total of 243 samples collected. Calculated EPCs ranged from 0.036 to 1.03 mg/kg. PAHs can cause genotoxic, reproductive, and mutagenic effects; however, studies indicate that PAH compounds do not appear to bioaccumulate in mammals and birds (Eisler 1987a). The risk posed to the passerine community from residual levels of HMW and LMW PAHs associated with Site 13 cannot be discounted.

SVOCs: The literature data were not adequate to develop avian ERVs for carbazole, n-nitroso-diphenylamine, and pentachlorophenol. Carbazole was detected in 2 of 14 samples at a maximum concentration of 0.27 mg/kg, which was not above the maximum reporting limit of 3.6 mg/kg. N-nitroso-diphenylamine was detected in 12 of 53 samples with concentrations ranging from 0.042 to 1.2 mg/kg, which was not above the maximum reporting limit of 34 mg/kg. Pentachlorophenol was detected in only 1 of 54 samples, at a concentration below the maximum reporting limit of 34 mg/kg. Impacts of these SVOCs on wildlife are not well documented; however, based on the low frequency of detection and low concentration, these impacts are postulated to be low.

VOCs: The literature data were not adequate to develop avian ERVs for acetone, benzene, carbon disulfide, ethylbenzene, toluene, and xylene. VOCs were detected in up to 26 of 48 samples collected at Site 13, with maximum concentrations ranging from 0.001 to 0.15 mg/kg. Although the risk posed to passerines from residual VOC compounds in soils at Site 19 is not fully known, it is expected to be low.

I.2.3.2.3 Sufficient Rates of Survival, Growth, and Reproduction to Sustain Raptor Populations Typical to the Area

Ecological COPCs with HQs above 1.0 calculated using either the high or low TRV for the raptor endpoints included lead, DDTt, and di-n-butylphthalate (Table I-25). Literature data were not adequate to develop ERVs for HMW PAHs, LMW PAHs, carbazole, n-nitroso-

diphenylamine, pentachlorophenol, acetone, benzene, carbon disulfide, ethylbenzene, toluene, and xylene. All other ecological COPCs presented in Table I-20 had HQ values of less than 1.0 and pose no significant risk to raptors. The following sections discuss each chemical or chemical grouping with an HQ above 1.0 or that require a QE.

Lead: The high HQ value for lead was less than 1.0. The low HQ value was 8.48, which was more than 10 times above the background HQ value of 0.765. As discussed in Section I.2.3.1.2, however, the Navy believes that this HQ value may be driven by an inappropriately conservative low TRV. When HQs were calculated using the alternate allometrically converted TRV of 5.93, the HQ for lead at Site 13 was 0.0323, with a background HQ of 0.00292. Based on this information, lead at Site 13 poses no significant risk to the raptor community.

DDTt: The high HQ value for DDTt for the raptor was less than 1.0. The low HQ value was 6.83. Based on the low frequency of detection of DDT and its metabolite, DDE, in soils at Site 13 (as discussed in Section I.2.3.2.2), the risk to raptors is expected to be low. Additionally, this HQ was conservatively calculated assuming that 100 percent of the organism's diet came from Site 13, which is only 17.5 acres. Raptors, such as the red-tailed hawk, can have extensive foraging ranges, up to 200 acres.

Di-n-butylphthalate: The HQ value using the high TRV for the raptor was 2.26, while the low TRV HQ was 22.6. Di-n-butylphthalate was detected in only 1 of 54 samples at a concentration of 0.031 mg/kg, which was below the maximum laboratory-reporting limit of 34 mg/kg. The relatively high HQ values were directly attributable to the conservative $BCF_{soil\text{-}to\text{-}invert}$ value of 736.4, which is based upon the K_{ow} value of 4.9. Based on this and the low frequency of detection, the ecological risk of di-n-butylphthalate to raptors is expected to be low.

PAHs: The literature data were not adequate to develop avian ERVs for PAHs. The HMW and LMW PAHs were detected at Site 13 at frequencies ranging from 17 to 60 percent out of a total of 243 samples collected. Calculated EPCs ranged from 0.036 to 1.03 mg/kg. PAHs can cause genotoxic, reproductive, and mutagenic effects; however, studies indicate that PAH compounds do not appear to bioaccumulate in mammals and birds (Eisler 1987a). The risk posed to the raptor community from residual levels of HMW and LMW PAHs associated with Site 13 cannot be discounted.

SVOCs: The literature data were not adequate to develop a raptor ERV for carbazole, n-nitroso-diphenylamine, and pentachlorophenol. Carbazole was detected in 2 of 14 samples at a maximum concentration of 0.27 mg/kg, which was not above the maximum reporting limit of 3.6 mg/kg. N-nitroso-diphenylamine was detected in 12 of 53 samples with concentrations ranging from 0.042 to 1.2 mg/kg, which were not above the maximum reporting limit of 34 mg/kg. Pentachlorophenol was detected in only 1 of 54 samples, at a concentration below the maximum reporting limit of 34 mg/kg. Impacts of these SVOCs on wildlife are not well documented; however, based on the low frequency of detection and low concentration, these impacts are postulated to be low.

VOCs: The literature data were not adequate to develop raptor ERVs for acetone, benzene, carbon disulfide, ethylbenzene, toluene, and xylene. VOCs were detected in up to 26 of 48 samples collected at Site 13, with maximum concentrations ranging from 0.001 to 0.15 mg/kg. Although the risk posed to raptors from residual VOC compounds in soils at Site 19 is not fully known, it is expected to be low.

I.2.3.2.4 Discussion of Conclusions of the Ecological Risk Assessment for Site 13

The results of the HQ calculations and QEs indicate potential risk to passerines from zinc. No significant risk to small mammals and raptors occurs from exposure to Site 13 soils. Based on the lack of habitat at Site 13 and the planned future use of the site, however, any risk associated with exposure to these contaminants will be low.

I.2.3.3 Ecological Risk Assessment Results for Site 19

The following sections relay the results of the ERA for Site 19 for each of the assessment endpoints evaluated. HQ values for Site 19 are presented on Table I-26.

I.2.3.3.1 Sufficient Rates of Survival, Growth, and Reproduction to Sustain Small Mammal Populations Typical to the Area

Ecological COPCs with HQs above 1.0 using either the high or low TRV for mammals included bis(2-ethylhexyl)phthalate and pentachlorophenol (Table I-26). Literature data were not adequate to develop ERVs for 4-chloro-3-methylphenol, n-nitroso-diphenylamine, and 1,3-dichlorobenzene for small mammals. All other ecological COPCs presented in Table I-21 had HQ values of less than 1.0 and pose no significant risk to small mammals. The following sections discuss each chemical or chemical grouping with an HQ above 1.0 or that require a QE.

Bis(2-ethylhexyl)phthalate: The HQ value for bis(2-ethylhexyl)phthalate using the high TRV was less than 1.0, and the low TRV HQ value was 2.67. Bis(2-ethylhexyl)phthalate was detected in only 2 of 28 samples at concentrations of 0.11 and 0.89 mg/kg, which are below the maximum reporting limit of 11 mg/kg. The high HQ values are directly attributable to the conservative $BCF_{soil\text{-}to\text{-}invert}$ value of 1,309. This value is based upon the high K_{ow} value of 7.6. Based on this and the low frequency of detection, the risk of bis(2-ethylhexyl)phthalate to small mammals is expected to be low.

Pentachlorophenol: The HQ value using the high TRV was 24.9, and the low TRV HQ value was 249. Pentachlorophenol was detected in only 3 of 28 samples at concentrations ranging from 0.41 to 1.6 mg/kg, which was below the maximum laboratory-reporting limit of 33 mg/kg. The high HQ values are directly attributable to the conservative $BCF_{soil\text{-}to\text{-}invert}$ value of 1,034 (EPA 1999). This value was calculated based upon the high K_{ow} value of 5.12 and the fact that pentachlorophenol is rapidly absorbed by ecological receptors. In mammals, however, the degree of accumulation into the tissues is small because pentachlorophenol is efficiently and

rapidly excreted (EPA 1999). Based on these factors and the low frequency of detection, the risk of pentachlorophenol to small mammals is expected to be low.

SVOCs: The literature data were not adequate to develop an ERV for small mammals for the SVOCs 4-chloro-3-methylphenol and n-nitroso-diphenylamine. 4-Chloro-3-methylphenol was detected in only 1 of 28 samples at a concentration below the maximum reporting limit of 11 mg/kg. N-nitroso-diphenylamine was detected in 7 of 28 samples, which is only 25 percent of the total samples collected. The maximum detected value was 0.9 mg/kg, which is below the maximum reporting limit of 11 mg/kg. Impacts on wildlife from 4-chloro-3-methylphenol and n-nitroso-diphenylamine are not well documented; however, based on the low frequency of detection and low concentration, the impacts of SVOCs at Site 19 to the small mammal population are postulated to be low.

VOCs: The literature data were not adequate to develop an ERV for small mammals for the VOC 1,3-dichlorobenzene. 1,3-Dichlorobenzene was detected in one of nine samples at a concentration slightly above the maximum reporting limit of 0.52 mg/kg. In general, VOCs only will have toxic effects at higher doses, in the 500- to 1,000-mg/kg range (ATSDR 1992b, 1996a, 1996b). Based on the relatively low toxicity, the low frequency of detection, and relatively low concentrations, the impact to small mammals from the residual levels of VOCs at Site 19 is postulated to be low.

I.2.3.3.2 Sufficient Rates of Survival, Growth, and Reproduction to Sustain Passerine Populations Typical to the Area

Ecological COPCs with HQs above 1.0 using the high or low TRV for the passerine receptors included copper, lead, zinc, bis(2-ethylhexyl)phthalate, and di-n-butylphthalate (Table I-26). Literature data were not adequate to develop ERVs for 4-chloro-3-methylphenol, HMW PAHs, LMW PAHs, n-nitroso-diphenylamine, pentachlorophenol, 1,3-dichlorobenzene, acetone, methylene chloride, PCE, toluene, TCE, and xylene. All other ecological COPCs presented in Table I-21 had HQ values less than 1.0 and pose no significant risk to passerines. The following sections discuss each chemical or chemical grouping with an HQ above 1.0 or that require a QE.

Copper: HQs for the Alameda song sparrow and the American robin using the high TRV for copper were below 1.0. The low HQs for these receptors were 2.52 and 1.15, which exceeded the background HQs of 0.743 and 0.341, respectively, by a factor of three times. Copper was detected in 21 of 24 samples collected within the Site 19 at concentrations ranging from 5.9 mg/kg to 138 mg/kg, while in background samples copper was detected in 83 of 88 samples at concentrations ranging from 4.2 mg/kg to 89.4 mg/kg. Based on the low HQ values (not significantly above 1.0), the risk from copper at Site 19 to passerines is expected to be low.

Lead: HQs for the Alameda song sparrow and the American robin using the high TRV for lead were below 1.0. The low HQs for these receptors were 148 and 69.6, which exceeded the background HQs of 27.2 and 12.7, respectively. These HQs may, however, be driven by the overly conservative low TRV, as described in Section I.2.3.1.2. Using the alternative allometrically converted TRVs, reevaluation of the lead HQ at Site 19 was calculated as 0.564

for the song sparrow with a background HQ of 0.103 and as 0.265 for the robin with a background HQ of 0.0484. Based on this information, lead at Site 19 poses no significant potential for risk to passerines.

Zinc: High and low HQs for the American robin were below 1.0. The high HQ for the song sparrow was less than 1.0, also. The low HQ for this receptor was 1.91, which exceeded the background HQ of 0.912, by a factor of two. Zinc was detected in all 24 samples collected within the Site 19 at concentrations ranging from 14 mg/kg to 292 mg/kg, while in background samples zinc was detected in all 88 samples at concentrations ranging from 14 mg/kg to 84 mg/kg. Based on the low HQ value (not significantly above 1.0), the risk from zinc at Site 19 to passerines is expected to be low

Bis(2-ethylhexyl)phthalate: The high TRV HQ value for bis(2-ethylhexylphthalate was 60.1 and 26.1, respectively for the Alameda song sparrow and the American robin. The low TRV HQ values were 601 and 261, respectively. Bis(2-ethylhexyl)phthalate was detected in only 2 of 28 samples at concentrations of 0.11 and 0.89 mg/kg, which are below the maximum reporting limit of 11 mg/kg. The high HQ values are directly attributable to the conservative $BCF_{soil\text{-}to\text{-}invert}$ value of 1,309. This value is calculated based upon the high K_{ow} value of 7.6. Based on this and the low frequency of detection, the risk of bis(2-ethylhexyl)phthalate to small mammals is expected to be low.

Di-n-butylphthalate: The high TRV HQ value for di-n-butylphthalate was 729 and 317, respectively, for the Alameda song sparrow and the American robin. The low TRV HQ values were 7,290 and 3,170, respectively. Di-n-butylphthalate was detected in only 1 of 28 samples at a concentration of 7.3 mg/kg, which was below the maximum laboratory-reporting limit of 11 mg/kg. The high HQ values are directly attributable to the conservative $BCF_{soil\text{-}to\text{-}invert}$ value of 736.4, which is calculated based upon the K_{ow} value of 4.9. Based on this and the low frequency of detection, the risk of di-n-butylphthalate to passerines is expected to be low.

PAHs: The literature data were not adequate to develop avian ERVs for PAHs. The HMW and LMW PAHs were detected at Site 19 at frequencies ranging from 18 to 95 percent out of a total of 39 samples collected. Calculated EPCs ranged from 0.0018 to 0.072 mg/kg. PAHs can cause genotoxic, reproductive, and mutagenic effects; however, studies indicate that PAH compounds do not appear to bioaccumulate in mammals and birds (Eisler 1987a). The risk posed to the passerine community from residual levels of HMW and LMW PAHs associated with Site 19 cannot be discounted.

SVOC: The literature data were not adequate to develop a passerine ERV for 4-chloro-3-methylphenol, n-nitroso-diphenylamine, and pentachlorophenol. 4-Chloro-3-methylphenol was detected in only 1 of 28 samples at a concentration below the maximum reporting limit of 11 mg/kg. N-nitroso-diphenylamine was detected in 7 of 28 samples, which is only 25 percent of the total samples collected. The maximum detected value was 0.9 mg/kg, which is below the maximum reporting limit of 11 mg/kg. Pentachlorophenol was detected in only 3 of 28 samples, at concentrations below the maximum reporting limit of 33 mg/kg. Impacts of these SVOCs on

wildlife are not well documented; however, based on the low frequency of detection and low concentration, these impacts are postulated to be low.

VOCs: The literature data were not adequate to develop passerine ERVs for 1,3-dichlorobenzene, acetone, methylene chloride, PCE, toluene, TCE, and xylene. VOCs were detected in up to 15 of 20 samples collected at Site 19, with maximum concentrations ranging from 0.004 to 0.59 mg/kg. Although the risk posed to passerines from residual VOC compounds in soils at Site 19 is not fully known, it is expected to be low.

I.2.3.3.3 Sufficient Rates of Survival, Growth, and Reproduction to Sustain Raptor Populations Typical to the Area

Ecological COPCs with HQs above 1.0 using either the high or low TRV for raptors included lead, bis(2-ethylhexyl)phthalate, and di-n-butylphthalate (Table I-26). Literature data were not adequate to develop ERVs for 4-chloro-3-methylphenol, HMW PAHs, LMW PAHs, n-nitroso-diphenylamine, pentachlorophenol, 1,3-dichlorobenzene, acetone, methylene chloride, PCE, toluene, TCE, and xylene. All other ecological COPCs presented in Table I-21 had HQ values of less than 1.0 and pose no significant risk to raptors. The following sections discuss each chemical or chemical grouping with an HQ above 1.0 or that require a QE.

Lead: The high HQ value for lead was less than 1.0. The low HQ value was 16.8, which was more than 20 times the background HQ value of 0.765. As discussed in Section I.2.3.1.2, however, the Navy believes that this HQ value may be driven by an inappropriately conservative low TRV. When HQs were calculated using the alternate allometrically converted TRV of 5.93, the HQ for lead at Site 19 was 0.0642, with a background HQ of 0.00292. Based on this information, lead at Site 19 poses no significant potential for risk to raptors.

Bis(2-ethylhexyl)phthalate: The high TRV HQ value for bis(2-ethylhexylphthalate was 20.6, while the low TRV HQ was 206 for the raptor receptor. Bis(2-ethylhexyl)phthalate was detected in only 2 of 28 samples at concentrations of 0.11 and 0.89 mg/kg, which are below the maximum reporting limit of 11 mg/kg. The high HQ values are directly attributable to the conservative $BCF_{soil\text{-}to\text{-}invert}$ value of 1,309 and the high FCM of 12. These values are based upon the high K_{ow} value of 7.6. Based on this and the low frequency of detection, the risk of bis(2-ethylhexyl)phthalate to raptors is expected to be low.

Di-n-butylphthalate: The high TRV HQ value for di-n-butylphthalate was 249, while the low TRV HQ was 2,490 for the raptor receptor. Di-n-butylphthalate was detected in only 1 of 28 samples at a concentration of 0.73 mg/kg, which was below the maximum laboratory reporting limit of 11 mg/kg. The relatively high HQ values are directly attributable to the conservative $BCF_{soil\text{-}to\text{-}invert}$ value of 736.4, which is calculated based upon the K_{ow} value of 4.9. Based on this and the low frequency of detection, the risk of di-n-butylphthalate to passerines is expected to be low.

PAHs: The literature data were not adequate to develop avian ERVs for PAHs. The HMW and LMW PAHs were detected at Site 19 at frequencies ranging from 18 to 95 percent out of a total of 39 samples collected. Calculated EPCs ranged from 0.0018 to 0.072 mg/kg. PAHs can cause genotoxic, reproductive, and mutagenic effects; however, studies indicate that PAH compounds do not appear to bioaccumulate in mammals and birds (Eisler 1987a). The risk posed to the raptor community from residual levels of HMW and LMW PAHs associated with Site 19 cannot be discounted.

SVOC: The literature data were not adequate to develop avian ERVs for 4-chloro-3-methylphenol, n-nitroso-diphenylamine, and pentachlorophenol. 4-Chloro-3-methylphenol was detected in only 1 of 28 samples at a concentration below the maximum reporting limit of 11 mg/kg. N-nitroso-diphenylamine was detected in 7 of 28 samples, which is only 25 percent of the total samples collected. The maximum detected value was 0.9 mg/kg, which is below the maximum reporting limit of 11 mg/kg. Pentachlorophenol was detected in only 3 of 28 samples, at concentrations below the maximum reporting limit of 33 mg/kg. Impacts of these SVOCs on wildlife are not well documented; however, based on the low frequency of detection and low concentration, these impacts are postulated to be low.

VOCs: The literature data were not adequate to develop avian ERVs for 1,3-dichlorobenzene, acetone, methylene chloride, PCE, toluene, TCE, and xylene. VOCs were detected in up to 15 of 20 samples collected at Site 19, with maximum concentrations ranging from 0.004 to 0.59 mg/kg. Although the risk posed to raptors from residual VOC compounds in soils at Site 19 is not fully known, it is expected to be low.

I.2.3.3.4 Discussion of Conclusions of the Ecological Risk Assessment for Site 19

The results of the HQ calculations and QEs indicated no significant risk to small mammals, passerines, or raptors occur from exposure to Site 19 soils. Based on the magnitude of the calculated low HQs, lack of habitat at Site 19, and the planned future use of the site, no risks to ecological receptors have been identified that require further evaluation or mitigation.

I.2.3.4 Ecological Risk Assessment Results for Site 22

The following sections relay the results of the ERA for Site 22 for each of the assessment endpoints evaluated. HQ values for Site 22 are presented on Table I-27.

I.2.3.4.1 Sufficient Rates of Survival, Growth, and Reproduction to Sustain Small Mammal Populations Typical to the Area

Ecological COPCs with HQs above 1.0 using either the high or low TRV for mammals included lead and xylene (Table I-27). Literature data were not adequate to develop ERVs for carbazole and ethylbenzene for small mammals. All other ecological COPCs presented in Table I-22 had HQ values of less than 1.0 and pose no significant risk to small mammals. The following sections discuss each chemical or chemical grouping with an HQ above 1.0 or that require a QE.

Lead: The high TRV HQ value for lead was less than 1.0. The low TRV HQ value was 10.1, which was more than 200 times above the background low TRV HQ of 0.0428. Lead was detected at Site 22 in 22 of 30 samples with an EPC of 1,780.33 mg/kg, which exceeded the UCL95 calculated for the background samples of 7.54 mg/kg. The extent and rate of GI absorption of lead are influenced by the age of the organism; presence of essential nutrients, such as calcium and iron, in the diet; physiological state of the organism, such as pregnancy; and form of lead ingested (ATSDR 1999a). The absorption of lead in contaminated soil is lower than that of easily dissolvable forms, such as lead acetate. Absorption studies in rats determined that the bioavailability of ingested lead acetate was about 15 percent. Using this estimate, the "absolute" bioavailability of lead in soils from this study was 2.7 percent (ATSDR 1999a). Also, bioavailability of lead in soil decreased with increasing soil-lead concentration. Based on this information, lead at Site 22 poses a potential risk to small mammals.

Xylene: The high HQ value for xylene was 2.27, while the low HQ value was 2.81. Xylene was detected in 6 of 15 samples collected from Site 22 with concentrations ranging from 0.07 to 22 mg/kg. Large amounts of xylene can cause changes in the liver and harmful effects in the kidneys, heart, lungs, and nervous system (ATSDR 1993). Long-term exposures of animals to low doses of xylene have not been well studied (ATSDR 1993). The HQ values are directly attributable to the relatively conservative $BCF_{soil\text{-}to\text{-}invert}$ of 29.84, which was calculated using the K_{ow} of 3.2. Plants and animals take up only a small portion of xylene. Based on these factors, the ecological risk of xylene to small mammals cannot be discounted; however, it is expected to be low.

SVOCs: The literature data were not adequate to develop an ERV for small mammals for the SVOC carbazole. Carbazole was detected in only 1 of 11 samples at a concentration below the maximum reporting limit of 0.39 mg/kg. Impacts on wildlife from carbazole are not well documented; however, based on the low frequency of detection and low concentration, these impacts are postulated to be low.

VOCs: The literature data were not adequate to develop an ERV for small mammals for the VOC ethylbenzene. Ethylbenzene was detected in 7 of 15 samples at concentrations ranging from 0.012 to 52 mg/kg. The maximum reporting limit for ethylbenzene was 7.2 mg/kg. In general, VOCs only will have toxic effects at higher doses, in the 500- to 1,000-mg/kg range (ATSDR 1992b, 1996a, 1996b). Based on this and the relatively low concentrations, the impact to small mammals from the residual levels of VOCs at Site 22 is postulated to be low.

I.2.3.4.2 Sufficient Rates of Survival, Growth, and Reproduction to Sustain Passerine Populations Typical to the Area

Ecological COPCs with HQs above 1.0 using the low or high TRV for the song sparrow and the robin include copper, lead, selenium, zinc, alpha-chlordane, gamma-chlordane, and DDTt (Table I-27). Literature data were not adequate to develop ERVs for HMW PAHs, LMW PAHs, carbazole, 4-methyl-2-pentanone, benzene, ethylbenzene, toluene, and xylene. All other ecological COPCs presented in Table I-22 had HQ values less than 1.0 and pose no significant

risk to passerines. The following sections discuss each chemical or chemical grouping with an HQ above 1.0 or that require a QE.

Copper: The high and low lead HQ values for the robin were below 1.0. The high HQ value for the song sparrow also was less than 1.0. The low HQ value for the sparrow was 1.13, which exceeded the background HQs of 0.743 by less than two times. Copper was detected in all 30 samples collected within Site 22 at concentrations ranging from 5.6 mg/kg to 86.2 mg/kg; while in background soils, copper was detected in 83 of 88 samples at concentrations ranging from 4.2 mg/kg to 89.4 mg/kg. Copper at Site 22 poses no significant potential for risk to passerines, based on background concentrations and the low HQ values (less than 1.0 or not significantly above 1.0).

Lead: The high lead HQ values for the sparrow and the robin were 15.5 and 7.24, respectively. The low HQ values for these receptors were 6,400 and 3,010, which exceeded the background HQs of 27.1 and 12.7, respectively. These HQs may, however, be driven by the overly conservative low TRV, as described in Section I.2.3.1.2. Using the allometrically converted TRVs, reevaluation of the lead HQ at Site 22 was calculated as 24.4 for the song sparrow with a background HQ of 0.103 and as 11.4 for the robin with a background HQ of 0.0484. Based on this information, lead at Site 22 poses a potential for risk to passerines.

Zinc: The high and low lead HQ values for the robin were below 1.0. The high HQ value for the song sparrow also was less than 1.0. The low HQ value for the sparrow was 1.63, which exceeded the background HQs of 0.912 by less than two times. Zinc was detected in all 30 samples collected within Site 22 at concentrations ranging from 16.6 mg/kg to 151 mg/kg; while in background soils, zinc was detected in all 88 samples at concentrations ranging from 14 mg/kg to 84 mg/kg. Zinc at Site 22 poses no significant potential for risk to passerines, based on background concentrations and the low HQ values (less than 1.0 or not significantly above 1.0).

Chlordane: The high and low HQ values for alpha-chlordane for the sparrow were 17.8 and 3,820, respectively; while for the robin the HQ values were 7.76 and 1,660. The high and low HQs for gamma-chlordane for the sparrow were 14.5 and 3,080, respectively, while for the robin the HQ values were 6.32 and 1,350. These compounds were once widely used as a broad-spectrum insecticide and known to bioconcentration and biomagnify in food chains. Physiologic and reproductive effects can be seen in wild birds. Both alpha- and gamma-chlordane were detected in only 2 of 10 samples at maximum concentrations of 0.027 mg/kg and 0.022 mg/kg, respectively, which were below the compounds' maximum laboratory-reporting limit of 0.87. Additionally, the high HQ values are directly attributable to the conservative $BCF_{soil\text{-}to\text{-}invert}$ value of 1,202.4. This value was calculated based upon the K_{ow} value of 5.16. Based on this and the low frequency of detection, the potential risk to passerines from residual chlordane concentrations at Site 22 is postulated to be low.

DDTt: The high HQ values for DDTt for the passerine receptors were below 1.0. The low HQ value for the sparrow and the robin were 12 and 5.3, respectively. 4,4-DDD was detected in 2 of 19 samples at a maximum concentration of 0.009 mg/kg, 4,4-DDE was detected in 4 of 19 samples at a maximum concentration of 0.023 mg/kg, and 4,4-DDT was detected in 3 of 19

samples at a maximum concentration of 0.053 mg/kg. Based on the low frequency of detection and low concentrations, the potential risk to passerines from residual DDT compounds at Site 22 is postulated to be low.

PAHs: The literature data were not adequate to develop avian ERVs for PAHs. The HMW and LMW PAHs were detected at Site 22 at frequencies ranging from 41 to 92 percent out of a total of 66 samples collected. Calculated EPCs ranged from 0.016 to 0.612 mg/kg. PAHs can cause genotoxic, reproductive, and mutagenic effects; however, studies indicate that PAH compounds do not appear to bioaccumulate in mammals and birds (Eisler 1987a). The risk posed to the passerine community from residual levels of HMW and LMW PAHs associated with Site 22 cannot be discounted.

SVOC: The literature data were not adequate to develop an avian ERV for the SVOC carbazole. Carbazole was detected in only 1 of 11 samples at a concentration below the maximum reporting limit of 0.39 mg/kg. Impacts of carbazole on wildlife are not well documented; however, based on the low frequency of detection and low concentration, these impacts are postulated to be low.

VOCs: The literature data were not adequate to develop avian ERVs for 4-methyl-2-pentanone, benzene, ethylbenzene, toluene, and xylene. VOCs were detected in up to 10 of 18 samples collected at Site 22, with maximum concentrations ranging from 0.003 to 72 mg/kg. In general, VOCs only will have toxic effects at higher doses, in the 500- to 1,000-mg/kg range (ATSDR 1992b, 1996a, 1996b). Although the risk posed to passerines from residual VOC compounds in soils at Site 22 is not fully known, it is postulated to be low because mammals and birds quickly metabolize VOCs (ATSDR 1992b, 1996a, 1996b).

I.2.3.4.3 Sufficient Rates of Survival, Growth, and Reproduction to Sustain Raptor Populations Typical to the Area

Lead was the only ecological COPC with an HQ above 1.0 using the low TRV for raptors (Table I-27). Literature data were not adequate to develop ERVs for HMW PAHs, LMW PAHs, carbazole, 4-methyl-2-pentanone, benzene, ethylbenzene, toluene, and xylene. All other ecological COPCs presented in Table I-22 had HQ values less than 1.0 and pose no significant risk to raptors. The following sections discuss each chemical or chemical grouping with an HQ above 1.0 or that require a QE

Lead: The high HQ value for lead was less than 1.0. The low HQ value was 43.9, which was more than 50 times the background HQ value of 0.765. As discussed in Section I.2.3.1.2, however, the Navy believes that this HQ value may be driven by an inappropriately conservative low TRV. When HQs were calculated using the alternate allometrically converted TRV of 5.93, the HQ for lead at Site 22 was 0.167, with a background HQ of 0.00292. Based on this information, lead at Site 22 poses no significant potential for risk to the raptor community.

PAHs: The literature data were not adequate to develop avian ERVs for PAHs. The HMW and LMW PAHs were detected at Site 22 at frequencies ranging from 41 to 92 percent out of a total

of 66 samples collected. Calculated EPCs ranged from 0.016 to 0.612 mg/kg. PAHs can cause genotoxic, reproductive, and mutagenic effects; however, studies indicate that PAH compounds do not appear to bioaccumulate in mammals and birds (Eisler 1987a). The risk posed to the raptor community from residual levels of HMW and LMW PAHs associated with Site 22 cannot be discounted.

SVOC: The literature data were not adequate to develop an avian ERV for the SVOC carbazole. Carbazole was detected in only 1 of 11 samples at a concentration below the maximum reporting limit of 0.39 mg/kg. Impacts of carbazole on wildlife are not well documented; however, based on the low frequency of detection and low concentration, these impacts are postulated to be low.

VOCs: The literature data were not adequate to develop avian ERVs for the VOCs 4-methyl-2-pentanone, benzene, ethylbenzene, toluene, and xylene. VOCs were detected in up to 10 of 18 samples collected at Site 22, with maximum concentrations ranging from 0.003 to 72 mg/kg. In general, VOCs only will have toxic effects at higher doses, in the 500- to 1,000-mg/kg range (ATSDR 1992b, 1996a, 1996b). Although the risk posed to raptors from residual VOC compounds in soils at Site 22 is not fully known, it is postulated to be low because mammals and birds quickly metabolize VOCs (ATSDR 1992b, 1996a, 1996b).

I.2.3.4.4 Discussion of Conclusions of the Ecological Risk Assessment for Site 22

The results of the HQ calculations and QEs indicate potential risk to small mammals and passerines from lead. Because of the high magnitude of the HQs for these receptors, lead may pose a risk to ecological receptors at Site 22.

I.2.3.5 Ecological Risk Assessment Results for Site 23

The following sections relay the results of the ERA for Site 23 for each of the assessment endpoints evaluated. HQ values for Site 23 are presented on Table I-28.

I.2.3.5.1 Sufficient Rates of Survival, Growth, and Reproduction to Sustain Small Mammal Populations Typical to the Area

Cadmium was the only ecological COPC with an HQ above 1.0 using the low TRV for mammals (Table I-28). Literature data were not adequate to develop ERVs for n-nitroso-diphenylamine for small mammals. All other ecological COPCs presented in Table I-23 had HQ values of less than 1.0 and pose no significant risk to small mammals. The following sections discuss each chemical or chemical grouping with an HQ above 1.0 or that require a QE.

Cadmium: The high TRV HQ value for cadmium was below 1.0. The low TRV HQ value was 1.23, which was less than 7 times above the background HQ of 0.191. Cadmium was detected in 14 of 30 soil samples collected at Site 23. The calculated EPC was 1.43 mg/kg, while the calculated background EPC was 0.49 mg/kg. Cadmium is a known teratogen in mammals; however, the GI absorption of cadmium in mammals is very limited. Based on the ATSDR

(1999b) "Toxicological Profile for Cadmium," GI absorption of cadmium in mammals ranges from 0.5 to 3 percent for monkeys, 1 to 2 percent for mice and rats, 2 percent for goats, and 5 percent for pigs and lambs to 16 percent for cattle. Assuming a conservative absorption rate of 16 percent, a revised low TRV HQ value for cadmium would be 0.196. Based on this, cadmium poses no significant potential for risk to small mammals.

SVOCs: The literature data were not adequate to develop an ERV for small mammals for the SVOC n-nitroso-diphenylamine. N-nitroso-diphenylamine was detected in 4 of 36 samples at a concentration below the maximum reporting limit of 7 mg/kg. Impacts on wildlife from n-nitroso-diphenylamine are not well documented; however, based on the low frequency of detection and low concentration, these impacts are postulated to be low.

I.2.3.5.2 Sufficient Rates of Survival, Growth, and Reproduction to Sustain Passerine Populations Typical to the Area

Cadmium and lead were the only ecological COPCs with an HQ above 1.0 using the low TRV for the song sparrow and the robin (Table I-28). Literature data were not adequate to develop ERVs for HMW PAHs, LMW PAHs, n-nitroso-diphenylamine and toluene. All other ecological COPCs presented in Table I-23 had HQ values less than 1.0 and pose no significant risk to passerines. The following sections discuss each chemical or chemical grouping with an HQ above 1.0 or that require a QE.

Cadmium: The high HQ values for the Alameda song sparrow and the American robin were below 1.0. The low HQ values for the sparrow and robin were 15 and 6.57, which exceeded the background HQs of 0.851 and 0.385, respectively. Cadmium was detected in 14 of 30 samples collected within the Site 23 at concentrations ranging from 0.18 mg/kg to 10 mg/kg; while in background soils, cadmium was detected in 29 of 88 samples at concentrations ranging from 0.1 mg/kg to 0.82 mg/kg. Based on this information, cadmium at Site 23 poses a potential risk to passerines.

Lead: The high HQ values for the Alameda song sparrow and the American robin were below 1.0. The low HQ values for the sparrow and robin were 77 and 36.3, which exceeded the background HQs of 2.71 and 9.07, respectively. These HQs may, however, be driven by the overly conservative low TRV, as described in Section I.2.3.1.2. Using the allometrically converted TRVs, reevaluation of the lead HQ at Site 23 was calculated as 0.294 for the song sparrow with a background HQ of 0.103 and as 0.138 for the robin with a background HQ of 0.0484. Based on this information, lead at Site 23 poses no significant potential for risk to passerines.

PAHs: The literature data were not adequate to develop avian ERVs for PAHs. The HMW and LMW PAHs were detected at Site 23 at frequencies ranging from 8.3 to 59 percent out of a total of 180 samples collected. Calculated EPCs ranged from 0.028 to 0.13 mg/kg. PAHs can cause genotoxic, reproductive, and mutagenic effects; however, studies indicate that PAH compounds do not appear to bioaccumulate in mammals and birds (Eisler 1987a). The risk posed to the

passerine community from residual levels of HMW and LMW PAHs associated with Site 22 cannot be discounted.

SVOC: The literature data were not adequate to develop an avian ERV for the SVOC n-nitroso-diphenylamine. N-nitroso-diphenylamine was detected in 4 of 36 samples at a concentration below the maximum reporting limit of 7 mg/kg. Impacts of n-nitroso-diphenylamine on wildlife are not well documented; however, based on the low frequency of detection and low concentration, these impacts are postulated to be low.

I.2.3.5.3 Sufficient Rates of Survival, Growth, and Reproduction to Sustain Raptor Populations Typical to the Area

Lead was the only ecological COPCs with an HQ above 1.0 using the low TRV for raptors (Table I-28). Literature data were not adequate to develop ERVs for HMW PAHs, LMW PAHs, n-nitroso-diphenylamine, and toluene. All other ecological COPCs presented in Table I-23 had HQ values less than 1.0 and pose no significant risk to raptors. The following sections discuss each chemical or chemical grouping with an HQ above 1.0 or that require a QE.

Lead: The high HQ value for lead was less than 1.0. The low HQ value was 2.18, which was less than 3 times the background HQ value of 0.765. As discussed in Section I.2.3.1.2, however, the Navy believes that this HQ value may be driven by an inappropriately conservative low TRV. When HQs were calculated using the alternate allometrically converted TRV of 5.93, the HQ for lead at Site 23 was 0.00829, with a background HQ of 0.00292. Based on this information, lead at Site 23 poses no significant potential risk to the raptor community.

PAHs: The literature data were not adequate to develop avian ERVs for PAHs. The HMW and LMW PAHs were detected at Site 23 at frequencies ranging from 8.3 to 59 percent out of a total of 180 samples collected. Calculated EPCs ranged from 0.028 to 0.13 mg/kg. PAHs can cause genotoxic, reproductive, and mutagenic effects; however, studies indicate that PAH compounds do not appear to bioaccumulate in mammals and birds (Eisler 1987a). The risk posed to the raptor community from residual levels of HMW and LMW PAHs associated with Site 23 cannot be discounted.

SVOCs: The literature data were not adequate to develop an avian ERV for the SVOC n-nitroso-diphenylamine. N-nitroso-diphenylamine was detected in 4 of 36 samples at a concentration below the maximum reporting limit of 7 mg/kg. Impacts of n-nitroso-diphenylamine on wildlife are not well documented; however, based on the low frequency of detection and low concentration, these impacts are postulated to be low.

I.2.3.5.4 ~~I.2.1.5~~ Discussion of Conclusions of the Ecological Risk Assessment for Site 23

The results of the HQ calculations and QEs indicate potential risk to passerines from cadmium. Based on the low magnitude of the low HQ, the limited habitat at Site 23, and the planned future

use of the site, no risks to ecological receptors have been identified that require further evaluation or mitigation.

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