ATTACHMENT H1
ESTIMATING THE CONCENTRATION TERM

1/713

FUTURE ONSITE ECOLOGICAL RESEARCHER
AREA OF CONCERN NO. 1

RME - Ingestion of surface water Woman Creek

Noncarcinogens

$$IF = (IR \times ET \times EF \times ED)/(BW \times AT)$$
$$HQ = (C \times IF)/RfD$$

Chemical	C Surface Water Concentration (mg/l)	IR Ingestion Rate (l/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
1,1-Dichloroethene	2.00E-06	0.05	1	12	2.5	70	915	2.34E-05	9.00E-03	5.20E-09
Carbon Tetrachloride	2.62E-04	0.05	1	12	2.5	70	915	2.34E-05	7.00E-04	8.77E-06
Chloroform	2.15E-04	0.05	1	12	2.5	70	915	2.34E-05	1.00E-02	5.04E-07
Methylene Chloride	1.06E-04	0.05	1	12	2.5	70	915	2.34E-05	6.00E-02	4.14E-08
Tetrachloroethene	1.16E-04	0.05	1	12	2.5	70	915	2.34E-05	1.00E-02	2.72E-07
									Total Hazard Index	9.59E-06

FUTURE ONSITE ECOLOGICAL RESEARCHER
AREA OF CONCERN NO. 1

RME - Ingestion of surface water Woman Creek

Nonradionuclide carcinogens

IF = (IR x ET x EF x ED)/(BW x AT)
CR = C x IF x SF

Chemical	C Surface Water Concentration (mg/l)	IR Ingestion Rate (l/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
1,1-Dichloroethene	2.00E-06	0.05	1	12	2.5	70	25550	8.39E-07	6.00E-01	1.01E-12
Carbon Tetrachloride	2.62E-04	0.05	1	12	2.5	70	25550	8.39E-07	1.30E-01	2.86E-11
Chloroform	2.15E-04	0.05	1	12	2.5	70	25550	8.39E-07	6.10E-03	1.10E-12
Methylene Chloride	1.06E-04	0.05	1	12	2.5	70	25550	8.39E-07	7.50E-03	6.67E-13
Tetrachloroethene	1.16E-04	0.05	1	12	2.5	70	25550	8.39E-07	5.20E-02	5.06E-12
Trichloroethene	9.25E-04	0.05	1	12	2.5	70	25550	8.39E-07	1.10E-02	8.53E-12
								Total Chemical Cancer Risk		4.49E-11

Radionuclides

IF = IR x ET x EF x ED
CR = C x IF x SF

Radionuclide	C Surface Water Concentration (pCi/l)	IR Ingestion Rate (l/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	IF Intake Factor (l)	SF Slope Factor (Risk/pCi)	CR Cancer Risk
Americium-241	6.30E-02	0.05	1	12	2.5	1.50E+00	2.40E-10	2.27E-11
Plutonium-239/240	2.37E+00	0.05	1	12	2.5	1.50E+00	2.30E-10	8.18E-10
						Total Radionuclide Cancer Risk		8.40E-10

Total Cancer Risk 8.85E-10

FUTURE ONSITE ECOLOGICAL RESEARCHER
AREA OF CONCERN NO. 1

CT - Dermal contact with surface water - Walnut Creek

Noncarcinogens

$$IF = (SA \times DP \times ET \times EF \times ED \times CF)/(BW \times AT)$$
$$HQ = (C \times IF)/RfD$$

	C	SA	DP	ET	EF	ED	CF	BW	AT	IF	RfD	HQ
Chemical	Surface Water Concentration (mg/l)	Skin Surface Area (cm^2)	Dermal Permeability (cm/hr)	Exposure Time (hr/day)	Exposure Frequency (day/yr)	Exposure Duration (years)	Conversion Factor (l/cm^3)	Body Weight (kg)	Averaging Time (days)	Intake Factor (l/kg-day)	Reference Dose (mg/kg-day)	Hazard Quotient
1,1-Dichloroethene	5.00E-06	9275	0.016	1	7	2.5	0.001	70	915	4.05E-05	9.00E-03	2.25E-08
Carbon Tetrachloride	4.81E-04	9275	0.022	1	7	2.5	0.001	70	915	5.58E-05	7.00E-04	3.83E-05
Chloroform	9.30E-05	9275	0.13	1	7	2.5	0.001	70	915	3.29E-04	1.00E-02	3.06E-06
Methylene Chloride	3.80E-05	9275	0.0045	1	7	2.5	0.001	70	915	1.14E-05	6.00E-02	7.22E-09
Tetrachloroethene	8.03E-04	9275	0.37	1	7	2.5	0.001	70	915	9.38E-04	1.00E-02	7.53E-05
											Total Hazard Index	1.17E-04

Nonradionuclide carcinogens

$$IF = (SA \times DP \times ET \times EF \times ED \times CF)/(BW \times AT)$$
$$CR = C \times IF \times SF$$

	C	SA	DP	ET	EF	ED	CF	BW	AT	IF	SF	CR
Chemical	Surface Water Concentration (mg/l)	Skin Surface Area (cm^2)	Dermal Permeability (cm/hr)	Exposure Time (hr/day)	Exposure Frequency (day/yr)	Exposure Duration (years)	Conversion Factor (l/cm^3)	Body Weight (kg)	Averaging Time (days)	Intake Factor (l/kg-day)	Slope Factor 1/(mg/kg-day)	Cancer Risk
1,1-Dichloroethene	5.00E-06	9275	0.016	1	7	2.5	0.001	70	25550	1.45E-06	6.00E-01	4.36E-12
Carbon Tetrachloride	4.81E-04	9275	0.022	1	7	2.5	0.001	70	25550	2.00E-06	1.30E-01	1.25E-10
Chloroform	9.30E-05	9275	0.13	1	7	2.5	0.001	70	25550	1.18E-05	6.10E-03	6.69E-12
Methylene Chloride	3.80E-05	9275	0.0045	1	7	2.5	0.001	70	25550	4.08E-07	7.50E-03	1.16E-13
Tetrachloroethene	8.03E-04	9275	0.37	1	7	2.5	0.001	70	25550	3.36E-05	5.20E-02	1.40E-09
Trichloroethene	6.24E-03	9275	0.23	1	7	2.5	0.001	70	25550	2.09E-05	1.10E-02	1.43E-09
											Total Cancer Risk	2.97E-09

FUTURE ONSITE ECOLOGICAL RESEARCHER
AREA OF CONCERN NO. 1

RME - Dermal contact with surface water - Walnut Creek

Noncarcinogens

$$IF = (SA \times DP \times ET \times EF \times ED \times CF)/(BW \times AT)$$
$$HQ = (C \times IF)/RfD$$

	C	SA	DP	ET	EF	ED	CF	BW	AT	IF	RfD	HQ
Chemical	Surface Water Concentration (mg/l)	Skin Surface Area (cm^2)	Dermal Permeability (cm/hr)	Exposure Time (hr/day)	Exposure Frequency (day/yr)	Exposure Duration (years)	Conversion Factor (l/cm^3)	Body Weight (kg)	Averaging Time (days)	Intake Factor (l/kg-day)	Reference Dose (mg/kg-day)	Hazard Quotient
1,1-Dichloroethene	5.00E-06	9275	0.016	1	12	2.5	0.001	70	915	6.95E-05	9.00E-03	3.86E-08
Carbon Tetrachloride	4.81E-04	9275	0.022	1	12	2.5	0.001	70	915	9.56E-05	7.00E-04	6.57E-05
Chloroform	9.30E-05	9275	0.13	1	12	2.5	0.001	70	915	5.65E-04	1.00E-02	5.25E-06
Methylene Chloride	3.80E-05	9275	0.0045	1	12	2.5	0.001	70	915	1.95E-05	6.00E-02	1.24E-08
Tetrachloroethene	8.03E-04	9275	0.37	1	12	2.5	0.001	70	915	1.61E-03	1.00E-02	1.29E-04
											Total Hazard Index	2.00E-04

Nonradionuclide carcinogens

$$IF = (SA \times DP \times ET \times EF \times ED \times CF)/(BW \times AT)$$
$$CR = C \times IF \times SF$$

	C	SA	DP	ET	EF	ED	CF	BW	AT	IF	SF	CR
Chemical	Surface Water Concentration (mg/l)	Skin Surface Area (cm^2)	Dermal Permeability (cm/hr)	Exposure Time (hr/day)	Exposure Frequency (day/yr)	Exposure Duration (years)	Conversion Factor (l/cm^3)	Body Weight (kg)	Averaging Time (days)	Intake Factor (l/kg-day)	Slope Factor 1/(mg/kg-day)	Cancer Risk
1,1-Dichloroethene	5.00E-06	9275	0.016	1	12	2.5	0.001	70	25550	2.49E-06	6.00E-01	7.47E-12
Carbon Tetrachloride	4.81E-04	9275	0.022	1	12	2.5	0.001	70	25550	3.42E-06	1.30E-01	2.14E-10
Chloroform	9.30E-05	9275	0.13	1	12	2.5	0.001	70	25550	2.02E-05	6.10E-03	1.15E-11
Methylene Chloride	3.80E-05	9275	0.0045	1	12	2.5	0.001	70	25550	7.00E-07	7.50E-03	2.00E-13
Tetrachloroethene	8.03E-04	9275	0.37	1	12	2.5	0.001	70	25550	5.76E-05	5.20E-02	2.40E-09
Trichloroethene	6.24E-03	9275	0.23	1	12	2.5	0.001	70	25550	3.58E-05	1.10E-02	2.46E-09
											Total Cancer Risk	5.09E-09

FUTURE ONSITE ECOLOGICAL RESEARCHER
AREA OF CONCERN NO. 1

CT - Dermal contact with surface water - Woman Creek

Noncarcinogens

IF = (SA x DP x ET x EF x ED x CF)/(BW x AT)
HQ = (C x IF)/RfD

Chemical	C Surface Water Concentration (mg/l)	SA Skin Surface Area (cm^2)	DP Dermal Permeability (cm/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (day/yr)	ED Exposure Duration (years)	CF Conversion Factor (l/cm^3)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
1,1-Dichloroethene	2.00E-06	9275	0.016	1	7	2.5	0.001	70	915	4.05E-05	9.00E-03	9.01E-09
Carbon Tetrachloride	2.62E-04	9275	0.022	1	7	2.5	0.001	70	915	5.58E-05	7.00E-04	2.09E-05
Chloroform	2.15E-04	9275	0.13	1	7	2.5	0.001	70	915	3.29E-04	1.00E-02	7.08E-06
Methylene Chloride	1.06E-04	9275	0.0045	1	7	2.5	0.001	70	915	1.14E-05	6.00E-02	2.01E-08
Tetrachloroethene	1.16E-04	9275	0.37	1	7	2.5	0.001	70	915	9.38E-04	1.00E-02	1.09E-05
											Total Hazard Index	3.89E-05

Nonradionuclide carcinogens

IF = (SA x DP x ET x EF x ED x CF)/(BW x AT)
CR = C x IF x SF

Chemical	C Surface Water Concentration (mg/l)	SA Skin Surface Area (cm^2)	DP Dermal Permeability (cm/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (day/yr)	ED Exposure Duration (years)	CF Conversion Factor (l/cm^3)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
1,1-Dichloroethene	2.00E-06	9275	0.016	1	7	2.5	0.001	70	25550	1.45E-06	6.00E-01	1.74E-12
Carbon Tetrachloride	2.62E-04	9275	0.022	1	7	2.5	0.001	70	25550	2.00E-06	1.30E-01	6.80E-11
Chloroform	2.15E-04	9275	0.13	1	7	2.5	0.001	70	25550	1.18E-05	6.10E-03	1.55E-11
Methylene Chloride	1.06E-04	9275	0.0045	1	7	2.5	0.001	70	25550	4.08E-07	7.50E-03	3.25E-13
Tetrachloroethene	1.16E-04	9275	0.37	1	7	2.5	0.001	70	25550	3.36E-05	5.20E-02	2.03E-10
Trichloroethene	9.25E-04	9275	0.23	1	7	2.5	0.001	70	25550	2.09E-05	1.10E-02	2.12E-10
											Total Cancer Risk	5.00E-10

FUTURE ONSITE ECOLOGICAL RESEARCHER
AREA OF CONCERN NO. 1

RME - Dermal contact with surface water - Woman Creek

Noncarcinogens

$$IF = (SA \times DP \times ET \times EF \times ED \times CF)/(BW \times AT)$$
$$HQ = (C \times IF)/RfD$$

	C	SA	DP	ET	EF	ED	CF	BW	AT	IF	RfD	HQ
Chemical	Surface Water Concentration (mg/l)	Skin Surface Area (cm^2)	Dermal Permeability (cm/hr)	Exposure Time (hr/day)	Exposure Frequency (day/yr)	Exposure Duration (years)	Conversion Factor (l/cm^3)	Body Weight (kg)	Averaging Time (days)	Intake Factor (l/kg-day)	Reference Dose (mg/kg-day)	Hazard Quotient
1,1-Dichloroethene	2.00E-06	9275	0.016	1	12	2.5	0.001	70	915	6.95E-05	9.00E-03	1.54E-08
Carbon Tetrachloride	2.62E-04	9275	0.022	1	12	2.5	0.001	70	915	9.56E-05	7.00E-04	3.58E-05
Chloroform	2.15E-04	9275	0.13	1	12	2.5	0.001	70	915	5.65E-04	1.00E-02	1.21E-05
Methylene Chloride	1.06E-04	9275	0.0045	1	12	2.5	0.001	70	915	1.95E-05	6.00E-02	3.45E-08
Tetrachloroethene	1.16E-04	9275	0.37	1	12	2.5	0.001	70	915	1.61E-03	1.00E-02	1.86E-05
											Total Hazard Index	6.66E-05

Nonradionuclide carcinogens

$$IF = (SA \times DP \times ET \times EF \times ED \times CF)/(BW \times AT)$$
$$CR = C \times IF \times SF$$

	C	SA	DP	ET	EF	ED	CF	BW	AT	IF	SF	CR
Chemical	Surface Water Concentration (mg/l)	Skin Surface Area (cm^2)	Dermal Permeability (cm/hr)	Exposure Time (hr/day)	Exposure Frequency (day/yr)	Exposure Duration (years)	Conversion Factor (l/cm^3)	Body Weight (kg)	Averaging Time (days)	Intake Factor (l/kg-day)	Slope Factor 1/(mg/kg-day)	Cancer Risk
1,1-Dichloroethene	2.00E-06	9275	0.016	1	12	2.5	0.001	70	25550	2.49E-06	6.00E-01	2.99E-12
Carbon Tetrachloride	2.62E-04	9275	0.022	1	12	2.5	0.001	70	25550	3.42E-06	1.30E-01	1.17E-10
Chloroform	2.15E-04	9275	0.13	1	12	2.5	0.001	70	25550	2.02E-05	6.10E-03	2.65E-11
Methylene Chloride	1.06E-04	9275	0.0045	1	12	2.5	0.001	70	25550	7.00E-07	7.50E-03	5.57E-13
Tetrachloroethene	1.16E-04	9275	0.37	1	12	2.5	0.001	70	25550	5.76E-05	5.20E-02	3.47E-10
Trichloroethene	9.25E-04	9275	0.23	1	12	2.5	0.001	70	25550	3.58E-05	1.10E-02	3.64E-10
											Total Cancer Risk	8.58E-10

FUTURE ONSITE ECO GICAL RESEARCHER
AREA OF CONCERN NO. 1

CT - External Radiation

IF = TF x GSF x EF x ED
CR = C x IF x SF

Radionuclide	C Soil Concentration (pCi/g)	TF Gamma Time Factor (T_e)	GSF Gamma Shielding Factor ($1-S_e$)	EF Percent of year Exposed	ED Exposure Duration (years)	IF Intake Factor (years)	SF Slope Factor (1/pCi-yr/g)	CR Cancer Risk
Americium-241	29.5	0.3	0.8	0.18	2.5	1.08E-01	4.90E-09	1.56E-08
Plutonium-239/240	813	0.3	0.8	0.18	2.5	1.08E-01	1.88E-11	1.65E-09
							Total Cancer Risk	1.73E-08

RME - External Radiation

IF = TF x GSF x EF x ED
CR = C x IF x SF

Radionuclide	C Soil Concentration (pCi/g)	TF Gamma Time Factor (T_e)	GSF Gamma Shielding Factor ($1-S_e$)	EF Percent of year Exposed	ED Exposure Duration (years)	IF Intake Factor (years)	SF Slope Factor (1/pCi-yr/g)	CR Cancer Risk
Americium-241	29.5	0.3	1	0.18	2.5	1.35E-01	4.90E-09	1.95E-08
Plutonium-239/240	813	0.3	1	0.18	2.5	1.35E-01	1.88E-11	2.06E-09
							Total Cancer Risk	2.16E-08

SUMMARY OF RISK
FUTURE ONSITE CONSTRUCTION WORKER
AREA OF CONCERN NO. 1

	Central Tendency		Reasonable Maximum	
Pathway	Hazard Index	Cancer Risk	Hazard Index	Cancer Risk
Ingestion of subsurface soil	3.11E-03	2.46E-08	1.74E-02	1.38E-07
Inhalation of particulates from subsurface soil	1.20E-10	1.19E-07	1.49E-10	1.49E-07
Dermal contact with subsurface soil*	7.47E-04	5.55E-09	4.15E-03	3.08E-08
External Radiation	-	1.24E-09	-	1.55E-09
Total	3.85E-03	1.51E-07	2.16E-02	3.19E-07

*Dermal absorption of metals and radionuclides is considered insignificant.

FUTURE ONSITE CO UCTION WORKER
AREA OF CONCERN NO. 1

CT - Subsurface soil ingestion

Noncarcinogens

IF =(IR x ED x FC x EF x ME x CF)/(BW x AT)
HQ = (C x IF)/RfD

	C	IR	ED	FC	EF	ME	CF	BW	AT	IF	RfD	HQ
Chemical	Soil Concentration (mg/kg)	Ingestion Rate (mg/day)	Exposure Duration (years)	Fraction Contaminated	Exposure Frequency (days/yr)	Matrix Effect	Conversion Factor (kg/mg)	Body Weight (kg)	Averaging Time (days)	Intake Factor (kg/kg-day)	Reference Dose (mg/kg-day)	Hazard Quotient
Arsenic	6.40E+00	95	1	0.9	30	0.8	0.000001	70	365	8.03E-08	3.00E-04	1.71E-03
Cadmium (Food)	1.20E+00	95	1	0.9	30	1	0.000001	70	365	1.00E-07	1.00E-03	1.20E-04
Mercury	9.00E-02	95	1	0.9	30	0.5	0.000001	70	365	5.02E-08	3.00E-04	1.51E-05
Tetrchloroethene	2.51E+02	95	1	0.9	30	0.5	0.000001	70	365	5.02E-08	1.00E-02	1.26E-03
											Total Hazard Index	3.11E-03

CT - Subsurface soil ingestion

Nonradionuclide Carcinogens

IF =(IR x ED x FC x EF x ME x CF)/(BW x AT)
CR = C x IF x SF

	C	IR	ED	FC	EF	ME	CF	BW	AT	IF	SF	CR
Chemical	Soil Concentration (mg/kg)	Ingestion Rate (mg/day)	Exposure Duration (years)	Fraction Contaminated	Exposure Frequency (days/yr)	Matrix Effect	Conversion Factor (kg/mg)	Body Weight (kg)	Averaging Time (days)	Intake Factor (kg/kg-day)	Slope Factor 1/(mg/kg-day)	Cancer Risk
Arsenic	6.40E+00	95	1	0.9	30	0.8	0.000001	70	25550	1.15E-09	1.70E+00	1.25E-08
Tetrachloroethene	2.51E+02	95	1	0.9	30	0.5	0.000001	70	25550	7.17E-10	5.20E-02	9.35E-09
											Total Chemical Cancer Risk	2.18E-08

Radionuclides

IF =IR x ED x FC x EF x ME x CF
CR = C x IF x SF

	C	IR	ED	FC	EF	ME	CF	IF	SF	CR
Radionuclide	Soil Concentration (pCi/g))	Ingestion Rate (mg/day)	Exposure Duration (years)	Fraction Contaminated	Exposure Frequency (days/yr)	Matrix Effect	Conversion Factor (g/mg)	Intake Factor (kg/kg-day)	Slope Factor 1/(mg/kg-day)	Cancer Risk
Americium-241	3.20E-01	95	1	0.9	30	1	0.001	2.57E+00	2.40E-10	1.97E-10
Plutonium-239/240	4.15E+00	95	1	0.9	30	1	0.001	2.57E+00	2.30E-10	2.45E-09
Uranium-233/234	8.20E-01	95	1	0.9	30	1	0.001	2.57E+00	1.60E-11	3.37E-11
Uranium-235	7.00E-02	95	1	0.9	30	1	0.001	2.57E+00	1.60E-11	2.87E-12
Uranium-238	8.70E-01	95	1	0.9	30	1	0.001	2.57E+00	2.00E-11	4.46E-11
									Total Radionuclide Cancer Risk	2.73E-09

Total Cancer Risk 2.46E-08

FUTURE ONSITE CONSTRUCTION WORKER
AREA OF CONCERN NO. 1

RME - Subsurface soil ingestion

Noncarcinogens

IF =(IR x ED x FC x EF x ME x CF)/(BW x AT)
HQ = (C x IF)/RfD

Chemical	C Soil Concentration (mg/kg)	IR Ingestion Rate (mg/day)	ED Exposure Duration (years)	FC Fraction Contaminated	EF Exposure Frequency (days/yr)	ME Matrix Effect	CF Conversion Factor (kg/mg)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (kg/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
Arsenic	6.40E+00	480	1	1	30	0.8	0.000001	70	365	4.51E-07	3.00E-04	9.62E-03
Cadmium (Food)	1.20E+00	480	1	1	30	1	0.000001	70	365	5.64E-07	1.00E-03	6.76E-04
Mercury	9.00E-02	480	1	1	30	0.5	0.000001	70	365	2.82E-07	3.00E-04	8.45E-05
Tetrchloroethene	2.51E+02	480	1	1	30	0.5	0.000001	70	365	2.82E-07	1.00E-02	7.07E-03
											Total Hazard Index	1.74E-02

RME - Subsurface soil ingestion

Nonradionuclide Carcinogens

IF =(IR x ED x FC x EF x ME x CF)/(BW x AT)
CR = C x IF x SF

Chemical	C Soil Concentration (mg/kg)	IR Ingestion Rate (mg/day)	ED Exposure Duration (years)	FC Fraction Contaminated	EF Exposure Frequency (days/yr)	ME Matrix Effect	CF Conversion Factor (kg/mg)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (kg/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
Arsenic	6.40E+00	480	1	1	30	0.8	0.000001	70	25550	6.44E-09	1.70E+00	7.01E-08
Tetrachloroethene	2.51E+02	480	1	1	30	0.5	0.000001	70	25550	4.03E-09	5.20E-02	5.25E-08
											Total Chemical Cancer Risk	1.23E-07

Radionuclides

IF =IR x ED x FC x EF x ME x CF
CR = C x IF x SF

Radionuclide	C Soil Concentration (mg/kg)	IR Ingestion Rate (mg/day)	ED Exposure Duration (years)	FC Fraction Contaminated	EF Exposure Frequency (days/yr)	ME Matrix Effect	CF Conversion Factor (g/mg)	IF Intake Factor (kg/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
Americium-241	3.20E-01	480	1	1	30	1	0.001	1.44E+01	2.40E-10	1.11E-09
Plutonium-239/240	4.15E+00	480	1	1	30	1	0.001	1.44E+01	2.30E-10	1.37E-08
Uranium-233/234	8.20E-01	480	1	1	30	1	0.001	1.44E+01	1.60E-11	1.89E-10
Uranium-235	7.00E-02	480	1	1	30	1	0.001	1.44E+01	1.60E-11	1.61E-11
Uranium-238	8.70E-01	480	1	1	30	1	0.001	1.44E+01	2.00E-11	2.51E-10
									Total Radionuclide Cancer Risk	1.53E-08

Total Cancer Risk 1.38E-07

FUTURE ONSITE CONSTRUCTION WORKER
AREA OF CONCERN NO. 1

CT - Inhalation of particulates from subsurface soil

Noncarcinogens

$$IF = (IR \times ET \times EF \times ED \times DF)/(BW \times AT)$$
$$HQ = (IF \times C)/RfD$$

Chemical	C Air Concentration (mg/m³)	IR Inhalation Rate (m³/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	DF Deposition Factor	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (m³/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
Mercury	1.02E-12	1.25	7.2	30	1	1	70	365	1.06E-02	9.00E-05	1.20E-10
										Total Hazard Index	1.1977E-10

Nonradionuclide Carcinogens

$$IF = (IR \times ET \times EF \times ED \times DF)/(BW \times AT)$$
$$CR = IF \times C \times SF$$

Chemical	C Air Concentration (mg/m³)	IR Inhalation Rate (m³/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	DF Deposition Factor	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (m³/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
Arsenic	7.24E-11	1.25	7.2	30	1	1	70	25550	1.51E-04	1.50E+01	1.64E-13
Cadmium (food)	1.35E-11	1.25	7.2	30	1	1	70	25550	1.51E-04	6.30E+00	1.28E-14
										Total Chemical Cancer Risk	1.77E-13

Radionuclides

$$IF = IR \times ET \times EF \times ED \times DF$$
$$CR = IF \times C \times SF$$

Radionuclides	C Air Concentration (pCi/m³)	IR Inhalation Rate (m³/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	DF Deposition Factor	IF Intake Factor (m³)	SF Slope Factor (Risk/pCi)	CR Cancer Risk
Americium-241	4.09E-04	1.25	7.2	30	1	1	2.70E+02	3.20E-08	3.53E-09
Plutonium-239/240	1.13E-02	1.25	7.2	30	1	1	2.70E+02	3.80E-08	1.16E-07
Uranium-233/234	9.29E-09	1.25	7.2	30	1	1	2.70E+02	2.60E-08	6.52E-14
Uranium-235	7.92E-10	1.25	7.2	30	1	1	2.70E+02	2.50E-08	5.35E-15
Uranium-238	9.82E-09	1.25	7.2	30	1	1	2.70E+02	2.40E-08	6.36E-14
								Total Radionuclide Cancer Risk	1.19E-07

Total Cancer Risk 1.19E-07

FUTURE ONSITE CONSTRUCTION WORKER
AREA OF CONCERN NO. 1

RME - Inhalation of particulates from subsurface soil

Noncarcinogens

IF = (IR x ET x EF x ED x DF)/(BW x AT)
HQ = (IF x C)/RfD

	C	IR	ET	EF	ED	DF	BW	AT	IF	RfD	HQ
Chemical	Air Concentration (mg/m^3)	Inhalation Rate (m^3/hr)	Exposure Time (hr/day)	Exposure Frequency (days/yr)	Exposure Duration (years)	Deposition Factor	Body Weight (kg)	Averaging Time (days)	Intake Factor ($m^3/kg\text{-}day$)	Reference Dose (mg/kg-day)	Hazard Quotient
Mercury	1.02E-12	1.4	8	30	1	1	70	365	1.32E-02	9.00E-05	1.49E-10
										Total Hazard Index	1.49E-10

Nonradionuclide Carcinogens

IF = (IR x ET x EF x ED x DF)/(BW x AT)
CR = IF x C x SF

	C	IR	ET	EF	ED	DF	BW	AT	IF	SF	CR
Chemical	Air Concentration (mg/m^3)	Inhalation Rate (m^3/hr)	Exposure Time (hr/day)	Exposure Frequency (days/yr)	Exposure Duration (years)	Deposition Factor	Body Weight (kg)	Averaging Time (days)	Intake Factor ($m^3/kg\text{-}day$)	Slope Factor 1/(mg/kg-day)	Cancer Risk
Arsenic	7.24E-11	1.4	8	30	1	1	70	25550	1.88E-04	1.50E+01	2.04E-13
Cadmium (food)	1.35E-11	1.4	8	30	1	1	70	25550	1.88E-04	6.30E+00	1.60E-14
										Total Chemical Cancer Risk	2.20E-13

Radionuclides

IF = IR x ET x EF x ED x DF
CR = IF x C x SF

	C	IR	ET	EF	ED	DF	IF	SF	CR
Radionuclides	Air Concentration (pCi/m^3)	Inhalation Rate (m^3/hr)	Exposure Time (hr/day)	Exposure Frequency (days/yr)	Exposure Duration (years)	Deposition Factor	Intake Factor (m^3)	Slope Factor (Risk/pCi)	Cancer Risk
Americium-241	4.09E-04	1.4	8	30	1	1	3.36E+02	3.20E-08	4.40E-09
Plutonium-239/240	1.13E-02	1.4	8	30	1	1	3.36E+02	3.80E-08	1.44E-07
Uranium-233/234	9.29E-09	1.4	8	30	1	1	3.36E+02	2.60E-08	8.12E-14
Uranium-235	7.92E-10	1.4	8	30	1	1	3.36E+02	2.50E-08	6.65E-15
Uranium-238	9.82E-09	1.4	8	30	1	1	3.36E+02	2.40E-08	7.92E-14
								Total Radionuclide Cancer Risk	1.49E-07

Total Cancer Risk 1.49E-07

FUTURE ONSITE CONSTRUCTION WORKER
AREA OF CONCERN NO. 1

CT- Dermal contact with surface soil

Noncarcinogens

$$IF = (SA \times FC \times EF \times ED \times AF \times AB \times CF)/(BW \times AT)$$
$$HQ = (C \times IF)/RfD$$

Chemical	C Soil Concentration (mg/kg)	SA Skin Surface Area (cm^2)	FC Fraction Contaminated	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	AF Soil Adherence (mg/cm^2)	AB Skin Absorption	CF Conversion Factor (kg/mg)	BW Body Weight (kg)	AT Averaging Time (days)
Mercury	9.00E-02	4700	0.9	30	1	0.2	0.001	0.000001	70	365
Tetrachloroethene	2.51E+02	4700	0.9	30	1	0.2	0.03	0.000001	70	365

Chemical	IF Intake Factor (kg/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
Mercury	9.93E-10	3.00E-04	2.98E-07
Tetrachloroethene	2.98E-08	1.00E-02	7.47E-04
		Total Hazard Index	7.47E-04

FUTURE ONSITE CONSTRUCTION WORKER
AREA OF CONCERN NO. 1

CT- Dermal contact with surface soil

Nonradionuclide carcinogens

$$IF = (SA \times FC \times EF \times ED \times AF \times AB \times CF)/(BW \times AT)$$
$$CR = C \times IF \times SF$$

Chemical	C Soil Concentration (mg/kg)	SA Skin Surface Area (cm^2)	FC Fraction Contaminated	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	AF Soil Adherence (mg/cm^2)	AB Skin Absorption	CF Conversion Factor (kg/mg)	BW Body Weight (kg)	AT Averaging Time (days)
Tetrachloroethene	2.51E+02	4700	0.9	30	1	0.2	0.03	0.000001	70	25550

Chemical	IF Intake Factor (kg/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
Tetrachloroethene	4.26E-10	5.20E-02	5.55E-09
		Total Cancer Risk	5.55E-09

FUTURE ONSITE CO. RUCTION WORKER
AREA OF CONCERN NO. 1

RME- Dermal contact with surface soil

Noncarcinogens

$$IF = (SA \times FC \times EF \times ED \times AF \times AB \times CF)/(BW \times AT)$$
$$HQ = (C \times IF)/RfD$$

	C	SA	FC	EF	ED	AF	AB	CF	BW	AT
Chemical	Soil Concentration (mg/kg)	Skin Surface Area (cm^2)	Fraction Contaminated	Exposure Frequency (days/yr)	Exposure Duration (years)	Soil Adherence (mg/cm^2)	Skin Absorption	Conversion Factor (kg/mg)	Body Weight (kg)	Averaging Time (days)
Mercury	9.00E-02	4700	1	30	1	1	0.001	0.000001	70	365
Tetrachloroethene	2.51E+02	4700	1	30	1	1	0.03	0.000001	70	365

	IF	RfD	HQ
Chemical	Intake Factor (kg/kg-day)	Reference Dose (mg/kg-day)	Hazard Quotient
Mercury	5.52E-09	3.00E-04	1.66E-06
Tetrachloroethene	1.66E-07	1.00E-02	4.15E-03
		Total Hazard Index	4.15E-03

FUTURE ONSITE CONSTRUCTION WORKER
AREA OF CONCERN NO. 1

RME- Dermal contact with surface soil

Nonradionuclide carcinogens

$$IF = (SA \times FC \times EF \times ED \times AF \times AB \times CF)/(BW \times AT)$$
$$CR = C \times IF \times SF$$

	C	SA	FC	EF	ED	AF	AB	CF	BW	AT
Chemical	Soil Concentration (mg/kg)	Skin Surface Area (cm^2)	Fraction Contaminated	Exposure Frequency (days/yr)	Exposure Duration (years)	Soil Adherence (mg/cm^2)	Skin Absorption	Conversion Factor (kg/mg)	Body Weight (kg)	Averaging Time (days)
Tetrachloroethene	2.51E+02	4700	1	30	1	1	0.03	0.000001	70	25550

	IF	SF	CR
Chemical	Intake Factor (kg/kg-day)	Slope Factor 1/(mg/kg-day)	Cancer Risk
Tetrachloroethene	2.37E-09	5.20E-02	3.08E-08
		Total Cancer Risk	3.08E-08

FUTURE ONSITE CONSTRUCTION WORKER
AREA OF CONCERN NO. 1

CT - External Radiation

IF = TF x GSF x EF x ED
CR = C x IF x SF

Radionuclide	C Soil Concentration (pCi/g)	TF Gamma Time Factor (Te)	GSF Gamma Shielding Factor (1-Se)	EF Percent of year Exposed	ED Exposure Duration (years)	IF Intake Factor (years)	SF Slope Factor (1/pCi-yr/g)	CR Cancer Risk
Americium-241	3.20E-01	0.3	0.8	0.082	1	1.97E-02	4.90E-09	3.09E-11
Plutonium-239/240	4.15E+00	0.3	0.8	0.082	1	1.97E-02	1.88E-11	1.54E-12
Uranium-233/234	8.20E-01	0.3	0.8	0.082	1	1.97E-02	3.00E-11	4.84E-13
Uranium-235	7.00E-02	0.3	0.8	0.082	1	1.97E-02	2.40E-07	3.31E-10
Uranium-238	8.70E-01	0.3	0.8	0.082	1	1.97E-02	5.10E-08	8.73E-10
							Total Cancer Risk	1.24E-09

RME - External Radiation

IF = TF x GSF x EF x ED
CR = C x IF x SF

Radionuclide	C Soil Concentration (pCi/g)	TF Gamma Time Factor (Te)	GSF Gamma Shielding Factor (1-Se)	EF Percent of year Exposed	ED Exposure Duration (years)	IF Intake Factor (years)	SF Slope Factor (1/pCi-yr/g)	CR Cancer Risk
Americium-241	3.20E-01	0.3	1	0.082	1	2.46E-02	4.90E-09	3.86E-11
Plutonium-239/240	4.15E+00	0.3	1	0.082	1	2.46E-02	1.88E-11	1.92E-12
Uranium-233/234	8.20E-01	0.3	1	0.082	1	2.46E-02	3.00E-11	6.05E-13
Uranium-235	7.00E-02	0.3	1	0.082	1	2.46E-02	2.40E-07	4.13E-10
Uranium-238	8.70E-01	0.3	1	0.082	1	2.46E-02	5.10E-08	1.09E-09
							Total Cancer Risk	1.55E-09

SUMMARY OF RISK
OPEN SPACE USER
AREA OF CONCERN NO. 1

	Central Tendency		Reasonable Maximum	
Pathway	Hazard Index	Cancer Risk	Hazard Index	Cancer Risk
Ingestion of surface soil by an adult	4.18E-05	-	6.53E-04	-
Ingestion of surface soil by a child	3.66E-04	-	6.10E-03	-
Carcinogenic effects of soil ingestion	-	1.69E-07	-	8.85E-06
Inhalation of particulates from surface soil	-	4.96E-08	-	2.32E-06
Dermal contact with surface soil*	3.76E-05	7.44E-10	4.15E-03	2.74E-07
Ingestion of surface water - Walnut Creek	1.90E-06	5.96E-11	2.28E-05	2.39E-09
Ingestion of surface water - Woman Creek	1.00E-06	3.32E-10	1.20E-05	1.33E-08
Dermal contact with surface water - Walnut Creek	2.05E-05	1.87E-09	2.51E-04	7.64E-08
Dermal contact with surface water - Woman Creek	6.83E-06	3.16E-10	8.35E-05	1.29E-08
External Radiation	-	3.22E-09	-	6.52E-08
Total	4.75E-04	2.25E-07	1.13E-02	1.16E-05

* Dermal contact with metals (except mercury) and radionuclides is considered insignificant.

OPEN SPACE USER
AREA OF CONCERN NO. 1

CT - Adult soil ingestion

Noncarcinogens

IF =(IR-A x ED-A x EF x ME x CF)/(BW-A*AT)
HQ = (C x IF)/RfD

Chemical	C Soil Concentration (mg/kg)	IR-A Ingestion Rate (mg/visit)	ED-A Exposure Duration (years)	CF Conversion Factor (kg/mg)	ME Matrix Effect	EF Exposure Frequency (visits/yr)	BW-A Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (kg/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
Aroclor-1254	2.99E-01	8	7	0.000001	0.5	10	70	2555	1.57E-09	2.00E-05	2.34E-05
Aroclor-1260	2.34E-01	8	7	0.000001	0.5	10	70	2555	1.57E-09	2.00E-05	1.83E-05
Bis(2-ethylhexyl)phthalate	2.44E-01	8	7	0.000001	1	10	70	2555	3.13E-09	2.00E-02	3.82E-08
Chromium	1.36E+01	8	7	0.000001	1	10	70	2555	3.13E-09	1.00E+00	4.26E-08
										Total Hazard Index	4.18E-05

RME - Adult soil ingestion

Noncarcinogens

IF = (IR-A x ED-A x EF x ME x CF)/(BW-A x AT-A)
HQ = (C x IF)/RfD

Chemical	C Soil Concentration (mg/kg)	IR-A Ingestion Rate (mg/visit)	ED-A Exposure Duration (years)	ME Matrix Effect	EF Exposure Frequency (visits/yr)	CF Conversion Factor (kg/mg)	BW-A Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (kg/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
Aroclor-1254	2.99E-01	50	24	0.5	25	0.000001	70	8760	2.45E-08	2.00E-05	3.66E-04
Aroclor-1260	2.34E-01	50	24	0.5	25	0.000001	70	8760	2.45E-08	2.00E-05	2.86E-04
Bis(2-ethylhexyl)phthalate	2.44E-01	50	24	1	25	0.000001	70	8760	4.89E-08	2.00E-02	5.97E-07
Chromium	1.36E+01	50	24	1	25	0.000001	70	8760	4.89E-08	1.00E+00	6.65E-07
										Total Hazard Index	6.53E-04

OPEN SPACE USER
AREA OF CONCERN NO. 1

CT - Child soil ingestion

Noncarcinogens

IF = (IR-C x ED-C x EF x ME x CF)/(BW-C x AT-C)
HQ = (C x IF)/RfD

Chemical	C Soil Concentration (mg/kg)	IR-C Ingestion Rate (mg/visit)	ED-C Exposure Duration (years)	CF Conversion Factor (kg/mg)	ME Matrix Effect	EF Exposure Frequency (visits/yr)	BW-C Body Weight (kg)	AT-C Averaging Time (days)	IF Intake Factor (kg/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
Aroclor-1254	2.99E-01	15	2	0.000001	0.5	10	15	730	1.37E-08	2.00E-05	2.05E-04
Aroclor-1260	2.34E-01	15	2	0.000001	0.5	10	15	730	1.37E-08	2.00E-05	1.60E-04
Bis(2-ethylhexyl)phthalate	2.44E-01	15	2	0.000001	1	10	15	730	2.74E-08	2.00E-02	3.34E-07
Chromium	1.36E+01	15	2	0.000001	1	10	15	730	2.74E-08	1.00E+00	3.73E-07
										Total Hazard Index	3.66E-04

RME - Child soil ingestion

Noncarcinogens

IF =(IR-C x ED-C x EF x ME x CF)/BW-C x AT-C
HQ = (C x IF)/RfD

Chemical	C Soil Concentration (mg/kg)	IR-C Ingestion Rate (mg/visit)	ED-C Exposure Duration (years)	CF Conversion Factor (kg/mg)	ME Matrix Effect	EF Exposure Frequency (visits/yr)	BW-C Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (kg/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
Aroclor-1254	2.99E-01	100	6	0.000001	0.5	25	15	2190	2.28E-07	2.00E-05	3.41E-03
Aroclor-1260	2.34E-01	100	6	0.000001	0.5	25	15	2190	2.28E-07	2.00E-05	2.67E-03
Bis(2-ethylhexyl)phthalate	2.44E-01	100	6	0.000001	1	25	15	2190	4.57E-07	2.00E-02	5.57E-06
Chromium	1.36E+01	100	6	0.000001	1	25	15	2190	4.57E-07	1.00E+00	6.21E-06
										Total Hazard Index	6.10E-03

OPEN S. E USER
AREA OF CONCERN NO. 1

CT - Time-weighted average soil ingestion

Nonradionuclide Carcinogens

$$IF = ([(IR\text{-}C \times ED\text{-}C / (BW\text{-}C) + (IR\text{-}A \times ED\text{-}A)/(BW\text{-}A)]) \times EF \times ME \times CF)/AT$$

$$CR = C \times IF \times SF$$

	C	IR-C	ED-C	BW-C	IR-A	ED-A	BW-A
		Child			Adult		
Chemical	Soil Concentration (mg/kg)	Ingestion Rate (mg/visit)	Exposure Duration (years)	Body Weight (kg)	Ingestion Rate (mg/visit)	Exposure Duration (years)	Body Weight (kg)
Aroclor-1254	2.99E-01	15	2	15	8	7	70
Aroclor-1260	2.34E-01	15	2	15	8	7	70
Bis(2-ethylhexyl)phthalate	2.44E-01	15	2	15	8	7	70

	CF	ME	EF	AT	IF	SF	CR
Chemical	Conversion Factor (kg/mg)	Matrix Effect	Exposure Frequency (visits/yr)	Averaging Time (days)	Intake Factor (kg/kg-day)	Slope Factor (mg/kg-day)	Cancer Risk
Aroclor-1254	0.000001	0.5	10	25550	5.48E-10	7.70E+00	1.26E-09
Aroclor-1260	0.000001	0.5	10	25550	5.48E-10	7.70E+00	9.87E-10
Bis(2-ethylhexyl)phthalate	0.000001	1	10	25550	1.10E-09	1.40E-02	3.74E-12
					Total Chemical Cancer Risk		2.25E-09

OPEN SPACE USER
AREA OF CONCERN NO. 1

CT - Time-weighted average soil ingestion

Radionuclides

$$IF = [(IR\text{-}C \times ED\text{-}C) + (IR\text{-}A \times ED\text{-}A)] \times EF \times ME \times CF$$
$$CR = C \times IF \times SF$$

	C	IR-C	ED-C	IR-A	ED-A	ME	CF	EF	IF	SF	CR
		Child		Adult							
Chemical	Soil Concentration (pCi/g)	Ingestion Rate (mg/visit)	Exposure Duration (years)	Ingestion Rate (mg/visit)	Exposure Duration (years)	Matrix Effect	Conversion Factor (g/mg)	Exposure Frequency (visits/yr)	Intake Factor (g)	Slope Factor (Risk/pCi)	Cancer Risk
Americium-241	2.95E+01	15	2	8	7	1	0.001	10	0.86	2.40E-10	6.09E-09
Plutonium-239/240	8.13E+02	15	2	8	7	1	0.001	10	0.86	2.30E-10	1.61E-07
										Total Radionuclide Cancer Risk	1.67E-07
										Total Cancer Risk	1.69E-07

OPEN SF USER
AREA OF CONCERN NO. 1

RME - Time-weighted average soil ingestion

Nonradionuclide Carcinogens

$$IF = ([(IR\text{-}C \times ED\text{-}C / (BW\text{-}C) + (IR\text{-}A \times ED\text{-}A)/(BW\text{-}A)]) \times EF \times ME \times CF)/AT$$

$$CR = C \times IF \times SF$$

	C	IR-C	ED-C	BW-C	IR-A	ED-A	BW-A
		Child			Adult		
Chemical	Soil Concentration (mg/kg)	Ingestion Rate (mg/visit)	Exposure Duration (years)	Body Weight (kg)	Ingestion Rate (mg/visit)	Exposure Duration (years)	Body Weight (kg)
Aroclor-1254	2.99E-01	100	6	15	50	24	70
Aroclor-1260	2.34E-01	100	6	15	50	24	70
Bis(2-ethylhexyl)phthalate	2.44E-01	100	6	15	50	24	70

	CF	ME	EF	AT	IF	SF	CR
Chemical	Conversion Factor (kg/mg)	Matrix Effect	Exposure Frequency (visits/yr)	Averaging Time (days)	Intake Factor (kg/kg-day)	Slope Factor (mg/kg-day)	Cancer Risk
Aroclor-1254	0.000001	0.5	25	25550	2.80E-08	7.70E+00	6.44E-08
Aroclor-1260	0.000001	0.5	25	25550	2.80E-08	7.70E+00	5.04E-08
Bis(2-ethylhexyl)phthalate	0.000001	1	25	25550	5.59E-08	1.40E-02	1.91E-10
					Total Chemical Cancer Risk		1.15E-07

OPEN SPACE USER
AREA OF CONCERN NO. 1

RME - Time-weighted average soil ingestion

Radionuclides

$$IF = [(IR\text{-}C \times ED\text{-}C) + (IR\text{-}A \times ED\text{-}A)] \times EF \times ME \times CF$$
$$CR = C \times IF \times SF$$

	C	IR-C	ED-C	IR-A	ED-A	ME	CF	EF	IF	SF	CR
		Child		Adult							
Radionuclide	Soil Concentration (pCi/g)	Ingestion Rate (mg/visit)	Exposure Duration (years)	Ingestion Rate (mg/visit)	Exposure Duration (years)	Matrix Effect	Conversion Factor (g/mg)	Exposure Frequency (visits/yr)	Intake Factor (g)	Slope Factor (Risk/pCi)	Cancer Risk
Americium-241	2.95E+01	100	6	50	24	1	0.001	25	4.50E+01	2.40E-10	3.19E-07
Plutonium-239/240	8.13E+02	100	6	50	24	1	0.001	25	4.50E+01	2.30E-10	8.41E-06
									Total Radionuclide Cancer Risk		8.73E-06
									Total Cancer Risk		8.85E-06

OPEN SPACE USER
AREA OF CONCERN NO. 1

CT Inhalation of Particulates - Radionuclides

IF = IR x ET x EF x ED x DF
CR = IF x C x SF

Radionuclides	C Air Concentration (pCi/m^3)	IR Inhalation Rate (m^3/hr)	ET Exposure Time (hr/visit)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	DF Deposition Factor	IF Intake Factor (m^3)	SF Slope Factor (Risk/pCi)	CR Cancer Risk
Americium-241	4.09E-04	0.83	1.5	10	9	1	1.12E+02	3.20E-08	1.47E-09
Plutonium-239/240	1.13E-02	0.83	1.5	10	9	1	1.12E+02	3.80E-08	4.81E-08
								Total Radionuclide Cancer Risk	4.96E-08
								Total Cancer Risk	4.96E-08

RME - Inhalation of particulates - Radionuclides

IF = IR x ET x EF x ED x DF
CR = IF x C x SF

Radionuclides	C Air Concentration (pCi/m^3)	IR Inhalation Rate (m^3/hr)	ET Exposure Time (hr/visit)	EF Exposure Frequency (visits/yr)	ED Exposure Duration (years)	DF Deposition Factor	IF Intake Factor (m^3)	SF Slope Factor (Risk/pCi)	CR Cancer Risk
Americium-241	4.09E-04	1.4	5	25	30	1	5.25E+03	3.20E-08	6.87E-08
Plutonium-239/240	1.13E-02	1.4	5	25	30	1	5.25E+03	3.80E-08	2.25E-06
								Total Radionuclide Cancer Risk	2.32E-06
								Total Cancer Risk	2.32E-06

OPEN SPACE USER
AREA OF CONCERN NO. 1

CT- Dermal contact with soil

Noncarcinogens

IF = (SA x FC x EF x ED x AF x AB x CF)/(BW x AT)
HQ = (C x IF)/RfD

Chemical	C Soil Concentration (mg/kg)	SA Skin Surface Area (cm^2)	FC Fraction Contaminated	EF Exposure Frequency (visits/yr)	ED Exposure Duration (years)	AF Soil Adherence (mg/cm^2)	AB Skin Absorption	CF Conversion Factor (kg/mg)	BW Body Weight (kg)	AT Averaging Time (days)
Aroclor-1254	2.99E-01	2000	0.15	10	9	0.2	0.06	0.000001	70	3285
Aroclor-1260	2.34E-01	2000	0.15	10	9	0.2	0.06	0.000001	70	3285
Bis(2-ethylhexyl)phthalate	2.44E-01	2000	0.15	10	9	0.2	0.01	0.000001	70	3285

Chemical	IF Intake Factor (kg/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
Aroclor-1254	1.41E-09	2.00E-05	2.11E-05
Aroclor-1260	1.41E-09	2.00E-05	1.65E-05
Bis(2-ethylhexyl)phthalate	2.35E-10	2.00E-02	2.86E-09
	Total Hazard Index		3.76E-05

OPEN SI E USER
AREA OF CONCERN NO. 1

CT- Dermal contact with soil

Nonradionuclide Carcinogens

$$IF = (SA \times FC \times EF \times ED \times AF \times AB \times CF)/(BW \times AT)$$
$$CR = C \times IF \times SF$$

Chemical	C Soil Concentration (mg/kg)	SA Skin Surface Area (cm^2)	FC Fraction Contaminated	EF Exposure Frequency (visits/yr)	ED Exposure Duration (years)	AF Soil Adherence (mg/cm^2)	AB Skin Absorption	CF Conversion Factor (kg/mg)	BW Body Weight (kg)	AT Averaging Time (days)
Aroclor-1254	2.99E-01	2000	0.15	10	9	0.2	0.06	0.000001	70	25550
Aroclor-1260	2.34E-01	2000	0.15	10	9	0.2	0.06	0.000001	70	25550
Bis(2-ethylhexyl)phthalate	2.44E-01	2000	0.15	10	9	0.2	0.01	0.000001	70	25550

Chemical	IF Intake Factor (kg/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
Aroclor-1254	1.81E-10	7.70E+00	4.17E-10
Aroclor-1260	1.81E-10	7.70E+00	3.26E-10
Bis(2-ethylhexyl)phthalate	3.02E-11	1.40E-02	1.03E-13
	Total Cancer Risk		7.44E-10

OPEN SPACE USER
AREA OF CONCERN NO. 1

RME- Dermal contact with soil

Noncarcinogens

$$IF = (SA \times FC \times EF \times ED \times AF \times AB \times CF)/(BW \times AT)$$

$$HQ = (C \times IF)/RfD$$

Chemical	C Soil Concentration (mg/kg)	SA Skin Surface Area (cm^2)	FC Fraction Contaminated	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	AF Soil Adherence (mg/cm^2)	AB Skin Absorption	CF Conversion Factor (kg/mg)	BW Body Weight (kg)	AT Averaging Time (days)
Aroclor-1254	2.99E-01	5300	0.5	25	30	1	0.06	0.000001	70	10950
Aroclor-1260	2.34E-01	5300	0.5	25	30	1	0.06	0.000001	70	10950
Bis(2-ethylhexyl)phthalate	2.44E-01	5300	0.5	25	30	1	0.01	0.000001	70	10950

Chemical	IF Intake Factor (kg/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
Aroclor-1254	1.56E-07	2.00E-05	2.33E-03
Aroclor-1260	1.56E-07	2.00E-05	1.82E-03
Bis(2-ethylhexyl)phthalate	2.59E-08	2.00E-02	3.16E-07
	Total Hazard Index		4.15E-03

OPEN SP. USER
AREA OF CONCERN NO. 1

RME- Dermal contact with soil

Nonradionuclide Carcinogens

$$IF = (SA \times FC \times EF \times ED \times AF \times AB \times CF)/(BW \times AT)$$

$$CR = C \times IF \times SF$$

Chemical	C Soil Concentration (mg/kg)	SA Skin Surface Area (cm^2)	FC Fraction Contaminated	EF Exposure Frequency (visits/yr)	ED Exposure Duration (years)	AF Soil Adherence (mg/cm^2)	AB Skin Absorption	CF Conversion Factor (kg/mg)	BW Body Weight (kg)	AT Averaging Time (days)
Aroclor-1254	2.99E-01	5300	0.5	25	30	1	0.06	0.000001	70	25550
Aroclor-1260	2.34E-01	5300	0.5	25	30	1	0.06	0.000001	70	25550
Bis(2-ethylhexyl)phthalate	2.44E-01	5300	0.5	25	30	1	0.01	0.000001	70	25550

Chemical	IF Intake Factor (kg/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
Aroclor-1254	6.67E-08	7.70E+00	1.54E-07
Aroclor-1260	6.67E-08	7.70E+00	1.20E-07
Bis(2-ethylhexyl)phthalate	1.11E-08	1.40E-02	3.80E-11
	Total Cancer Risk		2.74E-07

OPEN SPACE USER
AREA OF CONCERN NO. 1

CT - Ingestion of surface water - Walnut Creek

Noncarcinogens

$$IF = (IR \times ET \times EF \times ED)/(BW \times AT)$$
$$HQ = (C \times IF)/RfD$$

Chemical	C Surface Water Concentration (mg/l)	IR Ingestion Rate (l/hr)	ET Exposure Time (hr/visit)	EF Exposure Frequency (visits/yr)	ED Exposure Duration (years)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
1,1-Dichloroethene	5.00E-06	0.025	0.5	5	9	70	3285	2.45E-06	9.00E-03	1.36E-09
Carbon Tetrachloride	4.81E-04	0.025	0.5	5	9	70	3285	2.45E-06	7.00E-04	1.68E-06
Chloroform	9.30E-05	0.025	0.5	5	9	70	3285	2.45E-06	1.00E-02	2.27E-08
Methylene Chloride	3.80E-05	0.025	0.5	5	9	70	3285	2.45E-06	6.00E-02	1.55E-09
Tetrachloroethene	8.03E-04	0.025	0.5	5	9	70	3285	2.45E-06	1.00E-02	1.96E-07
									Total Hazard Index	1.90E-06

OPEN SI E USER
AREA OF CONCERN NO. 1

CT - Ingestion of surface water - Walnut Creek

Nonradionuclide carcinogens

IF = (IR x ET x EF x ED)/(BW x AT)
CR = C x IF x SF

	C	IR	ET	EF	ED	BW	AT	IF	SF	CR
Chemical	Surface Water Concentration (mg/l)	Ingestion Rate (l/hr)	Exposure Time (hr/visit)	Exposure Frequency (visits/yr)	Exposure Duration (years)	Body Weight (kg)	Averaging Time (days)	Intake Factor (l/kg-day)	Slope Factor 1/(mg/kg-day)	Cancer Risk
1,1-Dichloroethene	5.00E-06	0.025	0.5	5	9	70	25550	3.15E-07	6.00E-01	9.44E-13
Carbon Tetrachloride	4.81E-04	0.025	0.5	5	9	70	25550	3.15E-07	1.30E-01	1.97E-11
Chloroform	9.30E-05	0.025	0.5	5	9	70	25550	3.15E-07	6.10E-03	1.78E-13
Methylene Chloride	3.80E-05	0.025	0.5	5	9	70	25550	3.15E-07	7.50E-03	8.96E-14
Tetrachloroethene	8.03E-04	0.025	0.5	5	9	70	25550	3.15E-07	5.20E-02	1.31E-11
Trichloroethene	6.24E-03	0.025	0.5	5	9	70	25550	3.15E-07	1.10E-02	2.16E-11
								Total Chemical Cancer Risk		5.56E-11

Radionuclides

IF = IR x ET x EF x ED
CR = C x IF x SF

	C	IR	ET	EF	ED	IF	SF	CR
Radionuclide	Surface Water Concentration (pCi/l)	Ingestion Rate (l/hr)	Exposure Time (hr/visit)	Exposure Frequency (visits/yr)	Exposure Duration (years)	Intake Factor (l)	Slope Factor (Risk/pCi)	Cancer Risk
Americium-241	5.00E-03	0.025	0.5	5	9	5.63E-01	2.40E-10	6.75E-13
Plutonium-239/240	2.60E-02	0.025	0.5	5	9	5.63E-01	2.30E-10	3.36E-12
						Total Radionuclide Cancer Risk		4.04E-12

Total Cancer Risk 5.96E-11

OPEN SPACE USER
AREA OF CONCERN NO. 1

RME - Ingestion of surface water - Walnut Creek

Noncarcinogens

IF = (IR x ET x EF x ED)/(BW x AT)
HQ = (C x IF)/RfD

Chemical	C Surface Water Concentration (mg/l)	IR Ingestion Rate (l/hr)	ET Exposure Time (hr/visit)	EF Exposure Frequency (visits/yr)	ED Exposure Duration (years)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
1,1-Dichloroethene	5.00E-06	0.05	1	15	30	70	10950	2.94E-05	9.00E-03	1.63E-08
Carbon Tetrachloride	4.81E-04	0.05	1	15	30	70	10950	2.94E-05	7.00E-04	2.02E-05
Chloroform	9.30E-05	0.05	1	15	30	70	10950	2.94E-05	1.00E-02	2.73E-07
Methylene Chloride	3.80E-05	0.05	1	15	30	70	10950	2.94E-05	6.00E-02	1.86E-08
Tetrachloroethene	8.03E-04	0.05	1	15	30	70	10950	2.94E-05	1.00E-02	2.36E-06
									Total Hazard Index	2.28E-05

OPEN SF USER
AREA OF CONCERN NO. 1

RME - Ingestion of surface water - Walnut Creek

Nonradionuclide carcinogens

IF = (IR x ET x EF x ED)/(BW x AT)
CR = C x IF x SF

	C	IR	ET	EF	ED	BW	AT	IF	SF	CR
Chemical	Surface Water Concentration (mg/l)	Ingestion Rate (l/hr)	Exposure Time (hr/visit)	Exposure Frequency (visits/yr)	Exposure Duration (years)	Body Weight (kg)	Averaging Time (days)	Intake Factor (l/kg-day)	Slope Factor 1/(mg/kg-day)	Cancer Risk
1,1-Dichloroethene	5.00E-06	0.05	1	15	30	70	25550	1.26E-05	6.00E-01	3.77E-11
Carbon Tetrachloride	4.81E-04	0.05	1	15	30	70	25550	1.26E-05	1.30E-01	7.87E-10
Chloroform	9.30E-05	0.05	1	15	30	70	25550	1.26E-05	6.10E-03	7.14E-12
Methylene Chloride	3.80E-05	0.05	1	15	30	70	25550	1.26E-05	7.50E-03	3.59E-12
Tetrachloroethene	8.03E-04	0.05	1	15	30	70	25550	1.26E-05	5.20E-02	5.25E-10
Trichloroethene	6.24E-03	0.05	1	15	30	70	25550	1.26E-05	1.10E-02	8.64E-10
									Total Chemical Cancer Risk	2.22E-09

Radionuclides

IF = IR x ET x EF x ED
CR = C x IF x SF

	C	IR	ET	EF	ED	IF	SF	CR
Radionuclide	Surface Water Concentration (pCi/l)	Ingestion Rate (l/hr)	Exposure Time (hr/visit)	Exposure Frequency (visits/yr)	Exposure Duration (years)	Intake Factor (l)	Slope Factor (Risk/pCi)	Cancer Risk
Americium-241	5.00E-03	0.05	1	15	30	2.25E+01	2.40E-10	2.70E-11
Plutonium-239/240	2.60E-02	0.05	1	15	30	2.25E+01	2.30E-10	1.35E-10
							Total Radionuclide Cancer Risk	1.62E-10
							Total Cancer Risk	2.39E-09

OPEN SPACE USER
AREA OF CONCERN NO. 1

CT - Ingestion of surface water - Woman Creek

Noncarcinogens

IF = (IR x ET x EF x ED)/(BW x AT)
HQ = (C x IF)/RfD

Chemical	C Surface Water Concentration (mg/l)	IR Ingestion Rate (l/hr)	ET Exposure Time (hr/visit)	EF Exposure Frequency (visit/yr)	ED Exposure Duration (years)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
1,1-Dichloroethene	2.00E-06	0.025	0.5	5	9	70	3285	2.45E-06	9.00E-03	5.44E-10
Carbon Tetrachloride	2.62E-04	0.025	0.5	5	9	70	3285	2.45E-06	7.00E-04	9.16E-07
Chloroform	2.15E-04	0.025	0.5	5	9	70	3285	2.45E-06	1.00E-02	5.26E-08
Methylene Chloride	1.06E-04	0.025	0.5	5	9	70	3285	2.45E-06	6.00E-02	4.32E-09
Tetrachloroethene	1.16E-04	0.025	0.5	5	9	70	3285	2.45E-06	1.00E-02	2.84E-08
									Total Hazard Index	1.00E-06

OPEN SP. [illegible] USER
AREA OF CONCERN NO. 1

CT - Ingestion of surface water - Woman Creek

Nonradionuclide carcinogens

IF = (IR x ET x EF x ED)/(BW x AT)
CR = C x IF x SF

Chemical	C Surface Water Concentration (mg/l)	IR Ingestion Rate (l/hr)	ET Exposure Time (hr/visit)	EF Exposure Frequency (visit/yr)	ED Exposure Duration (years)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
1,1-Dichloroethene	2.00E-06	0.025	0.5	5	9	70	25550	3.15E-07	6.00E-01	3.77E-13
Carbon Tetrachloride	2.62E-04	0.025	0.5	5	9	70	25550	3.15E-07	1.30E-01	1.07E-11
Chloroform	2.15E-04	0.025	0.5	5	9	70	25550	3.15E-07	6.10E-03	4.12E-13
Methylene Chloride	1.06E-04	0.025	0.5	5	9	70	25550	3.15E-07	7.50E-03	2.50E-13
Tetrachloroethene	1.16E-04	0.025	0.5	5	9	70	25550	3.15E-07	5.20E-02	1.90E-12
Trichloroethene	9.25E-04	0.025	0.5	5	9	70	25550	3.15E-07	1.10E-02	3.20E-12
								Total Chemical Cancer Risk		1.68E-11

Radionuclides

IF = IR x ET x EF x ED
CR = C x IF x SF

Radionuclide	C Surface Water Concentration (pCi/l)	IR Ingestion Rate (l/hr)	ET Exposure Time (hr/visit)	EF Exposure Frequency (visit/yr)	ED Exposure Duration (years)	IF Intake Factor (l)	SF Slope Factor (Risk/pCi)	CR Cancer Risk
Americium-241	6.30E-02	0.025	0.5	5	9	5.63E-01	2.40E-10	8.51E-12
Plutonium-239/240	2.37E+00	0.025	0.5	5	9	5.63E-01	2.30E-10	3.07E-10
						Total Radionuclide Cancer Risk		3.15E-10

Total Cancer Risk 3.32E-10

OPEN SPACE USER
AREA OF CONCERN NO. 1

RME - Ingestion of surface water Woman Creek

Noncarcinogens

$$IF = (IR \times ET \times EF \times ED)/(BW \times AT)$$
$$HQ = (C \times IF)/RfD$$

Chemical	C Surface Water Concentration (mg/l)	IR Ingestion Rate (l/hr)	ET Exposure Time (hr/visit)	EF Exposure Frequency (visit/yr)	ED Exposure Duration (years)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
1,1-Dichloroethene	2.00E-06	0.05	1	15	30	70	10950	2.94E-05	9.00E-03	6.52E-09
Carbon Tetrachloride	2.62E-04	0.05	1	15	30	70	10950	2.94E-05	7.00E-04	1.10E-05
Chloroform	2.15E-04	0.05	1	15	30	70	10950	2.94E-05	1.00E-02	6.31E-07
Methylene Chloride	1.06E-04	0.05	1	15	30	70	10950	2.94E-05	6.00E-02	5.19E-08
Tetrachloroethene	1.16E-04	0.05	1	15	30	70	10950	2.94E-05	1.00E-02	3.41E-07
									Total Hazard Index	1.20E-05

OPEN SP. 2 USER
AREA OF CONCERN NO. 1

RME - Ingestion of surface water Woman Creek

Nonradionuclide carcinogens

IF = (IR x ET x EF x ED)/(BW x AT)
CR = C x IF x SF

Chemical	C Surface Water Concentration (mg/l)	IR Ingestion Rate (l/hr)	ET Exposure Time (hr/visit)	EF Exposure Frequency (hr/visit)	ED Exposure Duration (years)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
1,1-Dichloroethene	2.00E-06	0.05	1	15	30	70	25550	1.26E-05	6.00E-01	1.51E-11
Carbon Tetrachloride	2.62E-04	0.05	1	15	30	70	25550	1.26E-05	1.30E-01	4.28E-10
Chloroform	2.15E-04	0.05	1	15	30	70	25550	1.26E-05	6.10E-03	1.65E-11
Methylene Chloride	1.06E-04	0.05	1	15	30	70	25550	1.26E-05	7.50E-03	1.00E-11
Tetrachloroethene	1.16E-04	0.05	1	15	30	70	25550	1.26E-05	5.20E-02	7.59E-11
Trichloroethene	9.25E-04	0.05	1	15	30	70	25550	1.26E-05	1.10E-02	1.28E-10
								Total Chemical Cancer Risk		6.74E-10

Radionuclides

IF = IR x ET x EF x ED
CR = C x IF x SF

Radionuclide	C Surface Water Concentration (pCi/l)	IR Ingestion Rate (l/hr)	ET Exposure Time (hr/visit)	EF Exposure Frequency (hr/visit)	ED Exposure Duration (years)	IF Intake Factor (l)	SF Slope Factor (Risk/pCi)	CR Cancer Risk
Americium-241	6.30E-02	0.05	1	15	30	2.25E+01	2.40E-10	3.40E-10
Plutonium-239/240	2.37E+00	0.05	1	15	30	2.25E+01	2.30E-10	1.23E-08
						Total Radionuclide Cancer Risk		1.26E-08

Total Cancer Risk 1.33E-08

OPEN SPACE USER
AREA OF CONCERN NO. 1

CT - Dermal contact with surface water - Walnut Creek

Noncarcinogens

IF = (SA x DP x ET x EF x ED x CF)/(BW x AT)
HQ = (C x IF)/RfD

Chemical	C Surface Water Concentration (mg/l)	SA Skin Surface Area (cm^2)	DP Dermal Permeability (cm/hr)	ET Exposure Time (hr/visit)	EF Exposure Frequency (visit/yr)	ED Exposure Duration (years)	CF Conversion Factor (l/cm^3)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
1,1-Dichloroethene	5.00E-06	4550	0.016	0.5	5	9	0.001	70	3285	7.12E-06	9.00E-03	3.96E-09
Carbon Tetrachloride	4.81E-04	4550	0.022	0.5	5	9	0.001	70	3285	9.79E-06	7.00E-04	6.73E-06
Chloroform	9.30E-05	4550	0.13	0.5	5	9	0.001	70	3285	5.79E-05	1.00E-02	5.38E-07
Methylene Chloride	3.80E-05	4550	0.0045	0.5	5	9	0.001	70	3285	2.00E-06	6.00E-02	1.27E-09
Tetrachloroethene	8.03E-04	4550	0.37	0.5	5	9	0.001	70	3285	1.65E-04	1.00E-02	1.32E-05
											Total Hazard Index	2.05E-05

Nonradionuclide carcinogens

IF = (SA x DP x ET x EF x ED x CF)/(BW x AT)
CR = C x IF x SF

Chemical	C Surface Water Concentration (mg/l)	SA Skin Surface Area (cm^2)	DP Dermal Permeability (cm/hr)	ET Exposure Time (hr/visit)	EF Exposure Frequency (visit/yr)	ED Exposure Duration (years)	CF Conversion Factor (l/cm^3)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
1,1-Dichloroethene	5.00E-06	4550	0.016	0.5	5	9	0.001	70	25550	9.16E-07	6.00E-01	2.75E-12
Carbon Tetrachloride	4.81E-04	4550	0.022	0.5	5	9	0.001	70	25550	1.26E-06	1.30E-01	7.87E-11
Chloroform	9.30E-05	4550	0.13	0.5	5	9	0.001	70	25550	7.44E-06	6.10E-03	4.22E-12
Methylene Chloride	3.80E-05	4550	0.0045	0.5	5	9	0.001	70	25550	2.58E-07	7.50E-03	7.34E-14
Tetrachloroethene	8.03E-04	4550	0.37	0.5	5	9	0.001	70	25550	2.12E-05	5.20E-02	8.84E-10
Trichloroethene	6.24E-03	4550	0.23	0.5	5	9	0.001	70	25550	1.32E-05	1.10E-02	9.04E-10
											Total Cancer Risk	1.87E-09

OPEN SI[illegible] E USER
AREA OF CONCERN NO. 1

RME - Dermal contact with surface water - Walnut Creek

Noncarcinogens

IF = (SA x DP x ET x EF x ED x CF)/(BW x AT)
HQ = (C x IF)/RfD

Chemical	C Surface Water Concentration (mg/l)	SA Skin Surface Area (cm^2)	DP Dermal Permeability (cm/hr)	ET Exposure Time (hr/visit)	EF Exposure Frequency (visit/yr)	ED Exposure Duration (years)	CF Conversion Factor (l/cm^3)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
1,1-Dichloroethene	5.00E-06	9275	0.016	1	15	30	0.001	70	10950	8.71E-05	9.00E-03	4.84E-08
Carbon Tetrachloride	4.81E-04	9275	0.022	1	15	30	0.001	70	10950	1.20E-04	7.00E-04	8.23E-05
Chloroform	9.30E-05	9275	0.13	1	15	30	0.001	70	10950	7.08E-04	1.00E-02	6.58E-06
Methylene Chloride	3.80E-05	9275	0.0045	1	15	30	0.001	70	10950	2.45E-05	6.00E-02	1.55E-08
Tetrachloroethene	8.03E-04	9275	0.37	1	15	30	0.001	70	10950	2.01E-03	1.00E-02	1.62E-04
											Total Hazard Index	2.51E-04

Nonradionuclide carcinogens

IF = (SA x DP x ET x EF x ED x CF)/(BW x AT)
CR = C x IF x SF

Chemical	C Surface Water Concentration (mg/l)	SA Skin Surface Area (cm^2)	DP Dermal Permeability (cm/hr)	ET Exposure Time (hr/visit)	EF Exposure Frequency (visit/yr)	ED Exposure Duration (years)	CF Conversion Factor (l/cm^3)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
1,1-Dichloroethene	5.00E-06	9275	0.016	1	15	30	0.001	70	25550	3.73E-05	6.00E-01	1.12E-10
Carbon Tetrachloride	4.81E-04	9275	0.022	1	15	30	0.001	70	25550	5.13E-05	1.30E-01	3.21E-09
Chloroform	9.30E-05	9275	0.13	1	15	30	0.001	70	25550	3.03E-04	6.10E-03	1.72E-10
Methylene Chloride	3.80E-05	9275	0.0045	1	15	30	0.001	70	25550	1.05E-05	7.50E-03	2.99E-12
Tetrachloroethene	8.03E-04	9275	0.37	1	15	30	0.001	70	25550	8.63E-04	5.20E-02	3.61E-08
Trichloroethene	6.24E-03	9275	0.23	1	15	30	0.001	70	25550	5.37E-04	1.10E-02	3.68E-08
											Total Cancer Risk	7.64E-08

OPEN SPACE USER
AREA OF CONCERN NO. 1

CT - Dermal contact with surface water - Woman Creek

Noncarcinogens

IF = (SA x DP x ET x EF x ED x CF)/(BW x AT)
HQ = (C x IF)/RfD

Chemical	C Surface Water Concentration (mg/l)	SA Skin Surface Area (cm^2)	DP Dermal Permeability (cm/hr)	ET Exposure Time (hr/visit)	EF Exposure Frequency (hr/visit)	ED Exposure Duration (years)	CF Conversion Factor (l/cm^3)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
1,1-Dichloroethene	2.00E-06	4550	0.016	0.5	5	9	0.001	70	3285	7.12E-06	9.00E-03	1.58E-09
Carbon Tetrachloride	2.62E-04	4550	0.022	0.5	5	9	0.001	70	3285	9.79E-06	7.00E-04	3.67E-06
Chloroform	2.15E-04	4550	0.13	0.5	5	9	0.001	70	3285	5.79E-05	1.00E-02	1.24E-06
Methylene Chloride	1.06E-04	4550	0.0045	0.5	5	9	0.001	70	3285	2.00E-06	6.00E-02	3.54E-09
Tetrachloroethene	1.16E-04	4550	0.37	0.5	5	9	0.001	70	3285	1.65E-04	1.00E-02	1.91E-06
											Total Hazard Index	6.83E-06

Nonradionuclide carcinogens

IF = (SA x DP x ET x EF x ED x CF)/(BW x AT)
CR = C x IF x SF

Chemical	C Surface Water Concentration (mg/l)	SA Skin Surface Area (cm^2)	DP Dermal Permeability (cm/hr)	ET Exposure Time (hr/visit)	EF Exposure Frequency (hr/visit)	ED Exposure Duration (years)	CF Conversion Factor (l/cm^3)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
1,1-Dichloroethene	2.00E-06	4550	0.016	0.5	5	9	0.001	70	25550	9.16E-07	6.00E-01	1.10E-12
Carbon Tetrachloride	2.62E-04	4550	0.022	0.5	5	9	0.001	70	25550	1.26E-06	1.30E-01	4.29E-11
Chloroform	2.15E-04	4550	0.13	0.5	5	9	0.001	70	25550	7.44E-06	6.10E-03	9.76E-12
Methylene Chloride	1.06E-04	4550	0.0045	0.5	5	9	0.001	70	25550	2.58E-07	7.50E-03	2.05E-13
Tetrachloroethene	1.16E-04	4550	0.37	0.5	5	9	0.001	70	25550	2.12E-05	5.20E-02	1.28E-10
Trichloroethene	9.25E-04	4550	0.23	0.5	5	9	0.001	70	25550	1.32E-05	1.10E-02	1.34E-10
											Total Cancer Risk	3.16E-10

OPEN SI E USER
AREA OF CONCERN NO. 1

RME - Dermal contact with surface water - Woman Creek

Noncarcinogens

IF = (SA x DP x ET x EF x ED x CF)/(BW x AT)
HQ = (C x IF)/RfD

Chemical	C Surface Water Concentration (mg/l)	SA Skin Surface Area (cm^2)	DP Dermal Permeability (cm/hr)	ET Exposure Time (hr/visit)	EF Exposure Frequency (hr/visit)	ED Exposure Duration (years)	CF Conversion Factor (l/cm^3)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
1,1-Dichloroethene	2.00E-06	9275	0.016	1	15	30	0.001	70	10950	8.71E-05	9.00E-03	1.94E-08
Carbon Tetrachloride	2.62E-04	9275	0.022	1	15	30	0.001	70	10950	1.20E-04	7.00E-04	4.48E-05
Chloroform	2.15E-04	9275	0.13	1	15	30	0.001	70	10950	7.08E-04	1.00E-02	1.52E-05
Methylene Chloride	1.06E-04	9275	0.0045	1	15	30	0.001	70	10950	2.45E-05	6.00E-02	4.33E-08
Tetrachloroethene	1.16E-04	9275	0.37	1	15	30	0.001	70	10950	2.01E-03	1.00E-02	2.34E-05
											Total Hazard Index	8.35E-05

Nonradionuclide carcinogens

IF = (SA x DP x ET x EF x ED x CF)/(BW x AT)
CR = C x IF x SF

Chemical	C Surface Water Concentration (mg/l)	SA Skin Surface Area (cm^2)	DP Dermal Permeability (cm/hr)	ET Exposure Time (hr/visit)	EF Exposure Frequency (hr/visit)	ED Exposure Duration (years)	CF Conversion Factor (l/cm^3)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
1,1-Dichloroethene	2.00E-06	9275	0.016	1	15	30	0.001	70	25550	3.73E-05	6.00E-01	4.48E-11
Carbon Tetrachloride	2.62E-04	9275	0.022	1	15	30	0.001	70	25550	5.13E-05	1.30E-01	1.75E-09
Chloroform	2.15E-04	9275	0.13	1	15	30	0.001	70	25550	3.03E-04	6.10E-03	3.98E-10
Methylene Chloride	1.06E-04	9275	0.0045	1	15	30	0.001	70	25550	1.05E-05	7.50E-03	8.35E-12
Tetrachloroethene	1.16E-04	9275	0.37	1	15	30	0.001	70	25550	8.63E-04	5.20E-02	5.21E-09
Trichloroethene	9.25E-04	9275	0.23	1	15	30	0.001	70	25550	5.37E-04	1.10E-02	5.46E-09
											Total Cancer Risk	1.29E-08

OPEN SPACE USER
AREA OF CONCERN NO. 1

CT - External Radiation

IF = TF x GSF x EF x ED
CR = C x IF x SF

Radionuclide	C Soil Concentration (pCi/g)	TF Gamma Time Factor (T_e)	GSF Gamma Shielding Factor ($1-S_e$)	EF Percent of year Exposed	ED Exposure Duration (years)	IF Intake Factor (years)	SF Slope Factor (1/pCi-yr/g)	CR Cancer Risk
Americium-241	2.95E+01	0.1	0.8	0.028	9	2.02E-02	4.90E-09	2.91E-09
Plutonium-239/240	8.13E+02	0.1	0.8	0.028	9	2.02E-02	1.88E-11	3.08E-10
							Total Cancer Risk	3.22E-09

RME - External Radiation

IF = TF x GSF x EF x ED
CR = C x IF x SF

Radionuclide	C Soil Concentration (pCi/g)	TF Gamma Time Factor (T_e)	GSF Gamma Shielding Factor ($1-S_e$)	EF Percent of year Exposed	ED Exposure Duration (years)	IF Intake Factor (years)	SF Slope Factor (1/pCi-yr/g)	CR Cancer Risk
Americium-241	2.95E+01	0.2	1	0.068	30	4.08E-01	4.90E-09	5.90E-08
Plutonium-239/240	8.13E+02	0.2	1	0.068	30	4.08E-01	1.88E-11	6.24E-09
							Total Cancer Risk	6.52E-08

SUMMARY OF RISK
HYPOTHETICAL ONSITE RESIDENT
AREA OF CONCERN NO. 1

	Central Tendency		Reasonable Maximum	
Pathway	Hazard Index	Cancer Risk	Hazard Index	Cancer Risk
Ingestion of surface soil by an adult	3.91E-03	-	1.83E-02	-
Ingestion of surface soil by a child	4.68E-02	-	1.71E-01	
Carcinogenic effects of soil ingestion	-	1.79E-05	-	2.48E-04
Inhalation of particulates from surface soil	-	8.81E-06	-	9.26E-05
Dermal contact with surface soil*	3.75E-03	7.42E-08	1.16E-01	7.66E-06
Ingestion of vegetables with soil deposition	1.75E-05	5.90E-08	1.31E-04	1.47E-06
Ingestion of fruit with soil deposition	2.29E-05	7.71E-08	1.60E-04	1.80E-06
Ingestion of leafy vegetables with root uptake	1.16E-03	3.87E-07	4.32E-03	4.81E-06
Ingestion of other produce with root uptake	1.45E-02	6.69E-07	5.08E-02	7.80E-06
Ingestion of groundwater	1.96E+01	2.62E-04	1.40E+02	6.22E-03
Ingestion of surface water - Walnut Creek	1.52E-06	4.77E-11	2.77E-05	2.89E-09
Ingestion of surface water - Woman Creek	8.01E-07	2.66E-10	1.46E-05	1.61E-08
Dermal contact with surface water - Walnut Creek	8.36E-05	7.64E-09	5.95E-04	1.81E-07
Dermal contact with surface water - Woman Creek	2.78E-05	1.29E-09	1.98E-04	3.06E-08
Inhalation of VOCs from infiltration	8.60E-12	8.07E-08	2.06E-11	6.44E-07
Inhalation of VOCs from groundwater use	8.50E-05	1.47E-04	2.03E-04	1.17E-03
External Radiation	-	3.45E-07	-	3.68E-06
Total	1.97E+01	4.37E-04	1.40E+02	7.75E-03

* Dermal contact with metals (except mercury) and radionuclides is considered insignificant.

HYPOTHETICAL ONSITE RESIDENT
AREA OF CONCERN NO. 1

CT - Adult soil ingestion

Noncarcinogens

IF =(IR-A x ED-A x FC-A x EF x ME x CF)/(BW-A x AT)
HQ = (C x IF)/RfD

	C	IR-A	ED-A	FC-A	CF	ME	EF	BW-A	AT	IF	RfD	HQ
Chemical	Soil Concentration (mg/kg)	Ingestion Rate (mg/day)	Exposure Duration (years)	Fraction Contaminated	Conversion Factor (kg/mg)	Matrix Effect	Exposure Frequency (days/yr)	Body Weight (kg)	Averaging Time (days)	Intake Factor (kg/kg-day)	Reference Dose (mg/kg-day)	Hazard Quotient
Aroclor-1254	2.99E-01	50	7	0.64	0.000001	0.5	234	70	2555	1.47E-07	2.00E-05	2.19E-03
Aroclor-1260	2.34E-01	50	7	0.64	0.000001	0.5	234	70	2555	1.47E-07	2.00E-05	1.71E-03
Bis(2-ethylhexyl)phthalate	2.44E-01	50	7	0.64	0.000001	1	234	70	2555	2.93E-07	2.00E-02	3.58E-06
Chromium	1.36E+01	50	7	0.64	0.000001	1	234	70	2555	2.93E-07	1.00E+00	3.99E-06
											Total Hazard Index	3.91E-03

RME - Adult soil ingestion

Noncarcinogens

IF = (IR-A x ED-A x FC-A x EF x ME x CF)/(BW-A x AT-A)
HQ = (C x IF)/RfD

	C	IR-A	ED-A	FC-A	ME	EF	CF	BW-A	AT	IF	RfD	HQ
Chemical	Soil Concentration (mg/kg)	Ingestion Rate (mg/day)	Exposure Duration (years)	Fraction Contaminated	Matrix Effect	Exposure Frequency (days/yr)	Conversion Factor (kg/mg)	Body Weight (kg)	Averaging Time (days)	Intake Factor (kg/kg-day)	Reference Dose (mg/kg-day)	Hazard Quotient
Aroclor-1254	2.99E-01	100	24	1	0.5	350	0.000001	70	8760	6.85E-07	2.00E-05	1.02E-02
Aroclor-1260	2.34E-01	100	24	1	0.5	350	0.000001	70	8760	6.85E-07	2.00E-05	8.01E-03
Bis(2-ethylhexyl)phthalate	2.44E-01	100	24	1	1	350	0.000001	70	8760	1.37E-06	2.00E-02	1.67E-05
Chromium	1.36E+01	100	24	1	1	350	0.000001	70	8760	1.37E-06	1.00E+00	1.86E-05
											Total Hazard Index	1.83E-02

HYPOTHETICAL ...SITE RESIDENT
AREA OF CONCERN NO. 1

CT - Child soil ingestion

Noncarcinogens

IF = (IR-C x ED-C x FC-C x EF x ME x CF)/(BW-C x AT-C)
HQ = (C x IF)/RfD

	C	IR-C	ED-C	FC-C	CF	ME	EF	BW-C	AT-C	IF	RfD	HQ
Chemical	Soil Concentration (mg/kg)	Ingestion Rate (mg/day)	Exposure Duration (years)	Fraction Contaminated	Conversion Factor (kg/mg)	Matrix Effect	Exposure Frequency (days/yr)	Body Weight (kg)	Averaging Time (days)	Intake Factor (kg/kg-day)	Reference Dose (mg/kg-day)	Hazard Quotient
Aroclor-1254	2.99E-01	100	2	0.82	0.000001	0.5	234	15	730	1.75E-06	2.00E-05	2.62E-02
Aroclor-1260	2.34E-01	100	2	0.82	0.000001	0.5	234	15	730	1.75E-06	2.00E-05	2.05E-02
Bis(2-ethylhexyl)phthalate	2.44E-01	100	2	0.82	0.000001	1	234	15	730	3.50E-06	2.00E-02	4.28E-05
Chromium	1.36E+01	100	2	0.82	0.000001	1	234	15	730	3.50E-06	1.00E+00	4.77E-05
											Total Hazard Index	4.68E-02

RME -Child soil ingestion

Noncarcinogens

IF =(IR-C x ED-C x FC-C x EF x ME x CF)/BW-C x AT-C
HQ = (C x IF)/RfD

	C	IR-C	ED-C	FC-C	CF	ME	EF	BW-C	AT	IF	RfD	HQ
Chemical	Soil Concentration (mg/kg)	Ingestion Rate (mg/day)	Exposure Duration (years)	Fraction Contaminated	Conversion Factor (kg/mg)	Matrix Effect	Exposure Frequency (days/yr)	Body Weight (kg)	Averaging Time (days)	Intake Factor (kg/kg-day)	Reference Dose (mg/kg-day)	Hazard Quotient
Aroclor-1254	2.99E-01	200	6	1	0.000001	0.5	350	15	2190	6.39E-06	2.00E-05	9.56E-02
Aroclor-1260	2.34E-01	200	6	1	0.000001	0.5	350	15	2190	6.39E-06	2.00E-05	7.48E-02
Bis(2-ethylhexyl)phthalate	2.44E-01	200	6	1	0.000001	1	350	15	2190	1.28E-05	2.00E-02	1.56E-04
Chromium	1.36E+01	200	6	1	0.000001	1	350	15	2190	1.28E-05	1.00E+00	1.74E-04
											Total Hazard Index	1.71E-01

HYPOTHETICAL ONSITE RESIDENT
AREA OF CONCERN NO. 1

CT - Time-weighted average soil ingestion

Nonradionuclide Carcinogens

$$IF = ([(IR\text{-}C \times ED\text{-}C \times FC\text{-}C)/(BW\text{-}C) + (IR\text{-}A \times ED\text{-}A \times FC\text{-}A)/(BW\text{-}A)] \times EF \times ME \times CF)/AT$$

$$CR = C \times IF \times SF$$

	C	IR-C	ED-C	FC-C	BW-C	IR-A	ED-A	FC-A	BW-A
		Child				Adult			
Chemical	Soil Concentration (mg/kg)	Ingestion Rate (mg/day)	Exposure Duration (years)	Fraction Contaminated	Body Weight (kg)	Ingestion Rate (mg/day)	Exposure Duration (years)	Fraction Contaminated	Body Weight (kg)
Aroclor-1254	2.99E-01	100	2	0.82	15	50	7	0.64	70
Aroclor-1260	2.34E-01	100	2	0.82	15	50	7	0.64	70
Bis(2-ethylhexyl)phthalate	2.44E-01	100	2	0.82	15	50	7	0.64	70

	CF	ME	EF	AT	IF	SF	CR
Chemical	Conversion Factor (kg/mg)	Matrix Effect	Exposure Frequency (days/yr)	Averaging Time (days)	Intake Factor (kg/kg-day)	Slope Factor (mg/kg-day)	Cancer Risk
Aroclor-1254	0.000001	0.5	234	25550	6.47E-08	7.70E+00	1.49E-07
Aroclor-1260	0.000001	0.5	234	25550	6.47E-08	7.70E+00	1.17E-07
Bis(2-ethylhexyl)phthalate	0.000001	1	234	25550	1.29E-07	1.40E-02	4.42E-10
					Total Chemical Cancer Risk		2.66E-07

HYPOTHETICAL SITE RESIDENT
AREA OF CONCERN NO. 1

CT - Time-weighted average soil ingestion

Radionuclides

$$IF = [(IR\text{-}C \times ED\text{-}C \times FC\text{-}C) + (IR\text{-}A \times ED\text{-}A \times FC\text{-}A)] \times EF \times ME \times CF$$
$$CR = C \times IF \times SF$$

	C	IR-C	ED-C	FC-C	IR-A	ED-A	FC-A	ME	CF
		Child			Adult				
Chemical	Soil Concentration (pCi/g)	Ingestion Rate (mg/day)	Exposure Duration (years)	Fraction Contaminated	Ingestion Rate (mg/day)	Exposure Duration (years)	Fraction Contaminated	Matrix Effect	Conversion Factor (g/mg)
Americium-241	2.95E+01	100	2	0.82	50	7	0.64	1	0.001
Plutonium-239/240	8.13E+02	100	2	0.82	50	7	0.64	1	0.001

	EF	IF	SF	CR
Chemical	Exposure Frequency (days/yr)	Intake Factor (g)	Slope Factor (Risk/pCi)	Cancer Risk
Americium-241	234	9.08E+01	2.40E-10	6.43E-07
Plutonium-239/240	234	9.08E+01	2.30E-10	1.70E-05
		Total Radionuclide Cancer Risk		1.76E-05
		Total Cancer Risk		1.79E-05

HYPOTHETICAL ONSITE RESIDENT
AREA OF CONCERN NO. 1

RME - Time-weighted average soil ingestion

Nonradionuclide Carcinogens

$$IF = [(IR\text{-}C \times ED\text{-}C \times FC\text{-}C)/(BW\text{-}C) + (IR\text{-}A \times ED\text{-}A \times FC\text{-}A)/(BW\text{-}A)] \times EF \times ME \times CF/AT$$

$$CR = C \times IF \times SF$$

	C	IR-C	ED-C	FC-C	BW-C	IR-A	ED-A	FC-A	BW-A
		Child				Adult			
Chemical	Soil Concentration (mg/kg)	Ingestion Rate (mg/day)	Exposure Duration (years)	Fraction Contaminated	Body Weight (kg)	Ingestion Rate (mg/day)	Exposure Duration (years)	Fraction Contaminated	Body Weight (kg)
Aroclor-1254	2.99E-01	200	6	1	15	100	24	1	70
Aroclor-1260	2.34E-01	200	6	1	15	100	24	1	70
Bis(2-ethylhexyl)phthalate	2.44E-01	200	6	1	15	100	24	1	70

	CF	ME	EF	AT	IF	SF	CR
Chemical	Conversion Factor (kg/mg)	Matrix Effect	Exposure Frequency (days/yr)	Averaging Time (days)	Intake Factor (kg/kg-day)	Slope Factor (mg/kg-day)	Cancer Risk
Aroclor-1254	0.000001	0.5	350	25550	7.83E-07	7.70E+00	1.80E-06
Aroclor-1260	0.000001	0.5	350	25550	7.83E-07	7.70E+00	1.41E-06
Bis(2-ethylhexyl)phthalate	0.000001	1	350	25550	1.57E-06	1.40E-02	5.35E-09
					Total Chemical Cancer Risk		3.22E-06

HYPOTHETICA[illegible]SITE RESIDENT
AREA OF CONCERN NO. 1

RME - Time-weighted average soil ingestion

Radionuclides

$$IF = [(IR\text{-}C \times ED\text{-}C \times FC\text{-}C) + (IR\text{-}A \times ED\text{-}A \times FC\text{-}A)] \times EF \times ME \times CF$$
$$CR = C \times IF \times SF$$

	C	IR-C	ED-C	FC-C	IR-A	ED-A	FC-A	ME	CF
		Child			Adult				
Radionuclide	Soil Concentration (pCi/g)	Ingestion Rate (mg/day)	Exposure Duration (years)	Fraction Contaminated	Ingestion Rate (mg/day)	Exposure Duration (years)	Fraction Contaminated	Matrix Effect	Conversion Factor (g/mg)
Americium-241	2.95E+01	200	6	1	100	24	1	1	0.001
Plutonium-239/240	8.13E+02	200	6	1	100	24	1	1	0.001

	EF	IF	SF	CR
Radionuclide	Exposure Frequency (days/yr)	Intake Factor (g)	Slope Factor (Risk/pCi)	Cancer Risk
Americium-241	350	1.26E+03	2.40E-10	8.92E-06
Plutonium-239/240	350	1.26E+03	2.30E-10	2.36E-04
		Total Radionuclide Cancer Risk		2.45E-04
		Total Cancer Risk		2.48E-04

HYPOTHETICAL ONSITE RESIDENT
AREA OF CONCERN NO. 1

CT Inhalation of Particulates - Radionuclides

IF = IR x ET x EF x ED x DF
CR = IF x C x SF

Radionuclides	C Air Concentration (pCi/m^3)	IR Inhalation Rate (m^3/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	DF Deposition Factor	IF Intake Factor (m^3)	SF Slope Factor (Risk/pCi)	CR Cancer Risk
Americium-241	4.09E-04	0.63	15	234	9	1	1.99E+04	3.20E-08	2.60E-07
Plutonium-239/240	1.13E-02	0.63	15	234	9	1	1.99E+04	3.80E-08	8.55E-06
								Total Radionuclide Cancer Risk	8.81E-06

Total Cancer Risk 8.81E-06

RME Inhalation of Particulates - Radionuclides

IF = IR x ET x EF x ED x DF
CR = IF x C x SF

Radionuclides	C Air Concentration (pCi/m^3)	IR Inhalation Rate (m^3/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	DF Deposition Factor	IF Intake Factor (m^3)	SF Slope Factor (Risk/pCi)	CR Cancer Risk
Americium-241	4.09E-04	0.83	24	350	30	1	2.09E+05	3.20E-08	2.74E-06
Plutonium-239/240	1.13E-02	0.83	24	350	30	1	2.09E+05	3.80E-08	8.98E-05
								Total Radionuclide Cancer Risk	9.26E-05

Total Cancer Risk 9.26E-05

HYPOTHETIC/ NSITE RESIDENT
AREA OF NCERN NO. 1

CT- Dermal contact with surface soil

Noncarcinogens

IF = (SA x FC x EF x ED x AF x AB x CF)/(BW x AT)
HQ = (C x IF)/RfD

Chemical	C Soil Concentration (mg/kg)	SA Skin Surface Area (cm^2)	FC Fraction Contaminated	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	AF Soil Adherence (mg/cm^2)	AB Skin Absorption	CF Conversion Factor (kg/mg)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (kg/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
Aroclor-1254	2.99E-01	2000	0.64	234	9	0.2	0.06	0.000001	70	3285	1.41E-07	2.00E-05	2.10E-03
Aroclor-1260	2.34E-01	2000	0.64	234	9	0.2	0.06	0.000001	70	3285	1.41E-07	2.00E-05	1.65E-03
Bis(2-ethylhexyl)phthalate	2.44E-01	2000	0.64	234	9	0.2	0.01	0.000001	70	3285	2.34E-08	2.00E-02	2.86E-07
											Total Hazard Index		3.75E-03

Nonradionuclide Carcinogens

IF = (SA x FC x EF x ED x AF x AB x CF)/(BW x AT)
CR = C x IF x SF

Chemical	C Soil Concentration (mg/kg)	SA Skin Surface Area (cm^2)	FC Fraction Contaminated	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	AF Soil Adherence (mg/cm^2)	AB Skin Absorption	CF Conversion Factor (kg/mg)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (kg/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
Aroclor-1254	2.99E-01	2000	0.64	234	9	0.2	0.06	0.000001	70	25550	1.81E-08	7.70E+00	4.16E-08
Aroclor-1260	2.34E-01	2000	0.64	234	9	0.2	0.06	0.000001	70	25550	1.81E-08	7.70E+00	3.26E-08
Bis(2-ethylhexyl)phthalate	2.44E-01	2000	0.64	234	9	0.2	0.01	0.000001	70	25550	3.01E-09	1.40E-02	1.03E-11
											Total Cancer Risk		7.42E-08

HYPOTHETICAL ONSITE RESIDENT
AREA OF CONCERN NO. 1

RME- Dermal contact with surface soil

Noncarcinogens

IF = (SA x FC x EF x ED x AF x AB x CF)/(BW x AT)

HQ = (C x IF)/RfD

Chemical	C Soil Concentration (mg/kg)	SA Skin Surface Area (cm^2)	FC Fraction Contaminated	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	AF Soil Adherence (mg/cm^2)	AB Skin Absorption	CF Conversion Factor (kg/mg)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (kg/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
Aroclor-1254	2.99E-01	5300	1	350	30	1	0.06	0.000001	70	10950	4.36E-06	2.00E-05	6.51E-02
Aroclor-1260	2.34E-01	5300	1	350	30	1	0.06	0.000001	70	10950	4.36E-06	2.00E-05	5.10E-02
Bis(2-ethylhexyl)phthalate	2.44E-01	5300	1	350	30	1	0.01	0.000001	70	10950	7.26E-07	2.00E-02	8.86E-06
											Total Hazard Index		1.16E-01

RME- Dermal contact with surface soil

Nonradionuclide Carcinogens

IF = (SA x FC x EF x ED x AF x AB x CF)/(BW x AT)

CR = C x IF x SF

Chemical	C Soil Concentration (mg/kg)	SA Skin Surface Area (cm^2)	FC Fraction Contaminated	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	AF Soil Adherence (mg/cm^2)	AB Skin Absorption	CF Conversion Factor (kg/mg)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (kg/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
Aroclor-1254	2.99E-01	5300	1	350	30	1	0.06	0.000001	70	25550	1.87E-06	7.70E+00	4.30E-06
Aroclor-1260	2.34E-01	5300	1	350	30	1	0.06	0.000001	70	25550	1.87E-06	7.70E+00	3.36E-06
Bis(2-ethylhexyl)phthalate	2.44E-01	5300	1	350	30	1	0.01	0.000001	70	25550	3.11E-07	1.40E-02	1.06E-09
											Total Cancer Risk		7.66E-06

HYPOTHETICAL SITE RESIDENT
AREA OF CONCERN NO. 1

CT - Ingestion of vegetables with soil deposition

Noncarcinogens

$$IF = (IR \times FH \times FE \times WO \times ME \times EF \times ED \times CF)/(BW \times AT)$$
$$HQ = (C \times IF)/RfD$$

	C	IR	FH	FE	WO	ME	EF	ED	CF	BW	AT	IF	RfD	HQ
Chemical	Concentration on Produce (mg/kg)	Ingestion Rate (mg/day)	Fraction Homegrown	Fraction Exposed	Washoff Factor	Matrix Effect	Exposure Frequency (days/yr)	Exposure Duration (years)	Conversion Factor (kg/mg)	Body Weight (kg)	Averaging Time (days)	Intake Factor (kg/kg-day)	Reference Dose (mg/kg-day)	Hazard Quotient
Aroclor-1254	8.92E-06	200000	0.25	0.3	0.5	0.5	150	9	0.000001	70	3285	2.20E-05	2.00E-05	9.82E-06
Aroclor-1260	6.99E-06	200000	0.25	0.3	0.5	0.5	150	9	0.000001	70	3285	2.20E-05	2.00E-05	7.69E-06
Bis(2-ethylhexyl)phthalate	7.28E-06	200000	0.25	0.3	0.5	1	150	9	0.000001	70	3285	4.40E-05	2.00E-02	1.60E-08
Chromium	4.06E-04	200000	0.25	0.3	0.5	1	150	9	0.000001	70	3285	4.40E-05	1.00E+00	1.79E-08
													Total Hazard Index	1.75E-05

HYPOTHETICAL O[illegible]ITE RESIDENT
AREA OF CONCERN NO. 1

CT - Ingestion of vegetables with soil deposition

Nonradionuclide Carcinogen

IF = (IR x FH x FE x WO x ME x EF x ED x CF)/(BW x AT)
CR = C x IF x SF

	C	IR	FH	FE	WO	ME	EF	ED	CF	BW	AT	IF	SF	CR
Chemical	Concentration on Produce (mg/kg)	Ingestion Rate (mg/day)	Fraction Homegrown	Fraction Exposed	Washoff Factor	Matrix Effect	Exposure Frequency (days/yr)	Exposure Duration (years)	Conversion Factor (kg/mg)	Body Weight (kg)	Averaging Time (days)	Intake Factor (kg/kg-day)	Slope Factor 1/(mg/kg-day)	Cancer Risk
Aroclor-1254	8.92E-06	200000	0.25	0.3	0.5	0.5	150	9	0.000001	70	25550	2.83E-06	7.70E+00	1.94E-10
Aroclor-1260	6.99E-06	200000	0.25	0.3	0.5	0.5	150	9	0.000001	70	25550	2.83E-06	7.70E+00	1.52E-10
Bis(2-ethylhexyl)phthalate	7.28E-06	200000	0.25	0.3	0.5	1	150	9	0.000001	70	25550	5.66E-06	1.40E-02	5.77E-13
													Total Chemical Cancer Risk	3.47E-10

Radionuclides

IF = IR x FC x WO x ME x EF x ED x CF
CR = C x IF x SF

	C	IR	FH	FE	WO	ME	EF	ED	CF	IF	SF	CR
Radionuclide	Concentration on Produce (pCi/g)	Ingestion Rate (mg/day)	Fraction Homegrown	Fraction Exposed	Washoff Factor	Matrix Effect	Exposure Frequency (days/yr)	Exposure Duration (years)	Conversion Factor (g/mg)	Intake Factor (g)	Slope Factor (Risk/pCi)	Cancer Risk
Americium-241	8.52E-04	200000	0.25	0.3	0.5	1	150	9	0.001	1.01E+04	2.40E-10	2.07E-09
Plutonium-239/240	2.43E-02	200000	0.25	0.3	0.5	1	150	9	0.001	1.01E+04	2.30E-10	5.66E-08
											Total Radionuclide Cancer Risk	5.87E-08

Total Cancer Risk 5.90E-08

HYPOTHETICAL SITE RESIDENT
AREA OF CONCERN NO. 1

RME - Ingestion of vegetables with soil deposition

Noncarcinogens

$$IF = (IR \times FC \times WO \times ME \times EF \times ED \times CF)/(BW \times AT)$$
$$HQ = (C \times IF)/RfD$$

	C	IR	FH	FE	WO	ME	EF	ED	CF	BW	AT	IF	RfD	HQ
Chemical	Concentration on Produce (mg/kg)	Ingestion Rate (mg/day)	Fraction Homegrown	Fraction Exposed	Washoff Factor	Matrix Effect	Exposure Frequency (days/yr)	Exposure Duration (years)	Conversion Factor (kg/mg)	Body Weight (kg)	Averaging Time (days)	Intake Factor (kg/kg-day)	Reference Dose (mg/kg-day)	Hazard Quotient
Aroclor-1254	8.92E-06	200000	0.4	0.3	1	0.5	350	30	0.000001	70	10950	1.64E-04	2.00E-05	7.33E-05
Aroclor-1260	6.99E-06	200000	0.4	0.3	1	0.5	350	30	0.000001	70	10950	1.64E-04	2.00E-05	5.75E-05
Bis(2-ethylhexyl)phthalate	7.28E-06	200000	0.4	0.3	1	1	350	30	0.000001	70	10950	3.29E-04	2.00E-02	1.20E-07
Chromium	4.06E-04	200000	0.4	0.3	1	1	350	30	0.000001	70	10950	3.29E-04	1.00E+00	1.33E-07
													Total Hazard Index	1.31E-04

HYPOTHETICAL SITE RESIDENT
AREA OF CONCERN NO. 1

RME - Ingestion of vegetables with soil deposition

Nonradionuclide Carcinogen

IF = (IR x FC x WO x ME x EF x ED x CF)/(BW x AT)
CR = C x IF x SF

	C	IR	FH	FE	WO	ME	EF	ED	CF	BW	AT	IF	SF	CR
Chemical	Concentration on Produce (mg/kg)	Ingestion Rate (mg/day)	Fraction Homegrown	Fraction Exposed	Washoff Factor	Matrix Effect	Exposure Frequency (days/yr)	Exposure Duration (years)	Conversion Factor (kg/mg)	Body Weight (kg)	Averaging Time (days)	Intake Factor (kg/kg-day)	Slope Factor 1/(mg/kg-day)	Cancer Risk
Aroclor-1254	8.92E-06	200000	0.4	0.3	1	0.5	350	30	0.000001	70	25550	7.05E-05	7.70E+00	4.84E-09
Aroclor-1260	6.99E-06	200000	0.4	0.3	1	0.5	350	30	0.000001	70	25550	7.05E-05	7.70E+00	3.79E-09
Bis(2-ethylhexyl)phthalate	7.28E-06	200000	0.4	0.3	1	1	350	30	0.000001	70	25550	1.41E-04	1.40E-02	1.44E-11
													Total Chemical Cancer Risk	8.64E-09

Radionuclides

IF = IR x FC x WO x ME x EF x ED x CF
CR = C x IF x SF

	C	IR	FH	FE	WO	ME	EF	ED	CF	IF	SF	CR
Radionuclide	Concentration on Produce (pCi/g)	Ingestion Rate (mg/day)	Fraction Homegrown	Fraction Exposed	Washoff Factor	Matrix Effect	Exposure Frequency (days/yr)	Exposure Duration (years)	Conversion Factor (g/mg)	Intake Factor (g)	Slope Factor (Risk/pCi)	Cancer Risk
Americium-241	8.52E-04	200000	0.4	0.3	1	1	350	30	0.001	2.52E+05	2.40E-10	5.15E-08
Plutonium-239/240	2.43E-02	200000	0.4	0.3	1	1	350	30	0.001	2.52E+05	2.30E-10	1.41E-06
											Total Radionuclide Cancer Risk	1.46E-06

Total Cancer Risk 1.47E-06

HYPOTHETICAL ONSITE RESIDENT
AREA OF CONCERN NO.1

CT - Ingestion of fruit with soil deposition

Noncarcinogens

$$IF = (IR \times FH \times FE \times WO \times ME \times EF \times ED \times CF)/(BW \times AT)$$

$$HQ = (C \times IF)/RfD$$

	C	IR	FH	FE	WO	ME	EF	ED	CF	BW	AT	IF	RfD	HQ
Chemical	Concentration on Produce (mg/kg)	Ingestion Rate (mg/day)	Fraction Homegrown	Fraction Exposed	Washoff Factor	Matrix Effect	Exposure Frequency (days/yr)	Exposure Duration (years)	Conversion Factor (kg/mg)	Body Weight (kg)	Averaging Time (days)	Intake Factor (kg/kg-day)	Reference Dose (mg/kg-day)	Hazard Quotient
Aroclor-1254	8.92E-06	140000	0.2	0.7	0.5	0.5	150	9	0.000001	70	3285	2.88E-05	2.00E-05	1.28E-05
Aroclor-1260	6.99E-06	140000	0.2	0.7	0.5	0.5	150	9	0.000001	70	3285	2.88E-05	2.00E-05	1.01E-05
Bis(2-ethylhexyl)phthalate	7.28E-06	140000	0.2	0.7	0.5	1	150	9	0.000001	70	3285	5.75E-05	2.00E-02	2.09E-08
Chromium	4.06E-04	140000	0.2	0.7	0.5	1	150	9	0.000001	70	3285	5.75E-05	1.00E+00	2.34E-08
													Total Hazard Index	2.29E-05

HYPOTHETICAL [illegible]TE RESIDENT
AREA OF CONCERN NO.1

CT - Ingestion of fruit with soil deposition

Nonradionuclide Carcinogen

IF = (IR x FH x FE x WO x ME x EF x ED x CF)/(BW x AT)
CR = C x IF x SF

Chemical	C Concentration on Produce (mg/kg)	IR Ingestion Rate (mg/day)	FH Fraction Homegrown	FE Fraction Exposed	WO Washoff Factor	ME Matrix Effect	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	CF Conversion Factor (kg/mg)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (kg/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
Aroclor-1254	8.92E-06	140000	0.2	0.7	0.5	0.5	150	9	0.000001	70	25550	3.70E-06	7.70E+00	2.54E-10
Aroclor-1260	6.99E-06	140000	0.2	0.7	0.5	0.5	150	9	0.000001	70	25550	3.70E-06	7.70E+00	1.99E-10
Bis(2-ethylhexyl)phthalate	7.28E-06	140000	0.2	0.7	0.5	1	150	9	0.000001	70	25550	7.40E-06	1.40E-02	7.54E-13
													Total Chemical Cancer Risk	4.54E-10

Radionuclides

IF = IR x FC x WO x ME x EF x ED x CF
CR = C x IF x SF

Radionuclide	C Concentration on Produce (pCi/g)	IR Ingestion Rate (mg/day)	FH Fraction Homegrown	FE Fraction Exposed	WO Washoff Factor	ME Matrix Effect	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	CF Conversion Factor (g/mg)	IF Intake Factor (g)	SF Slope Factor (Risk/pCi)	CR Cancer Risk
Americium-241	8.52E-04	140000	0.2	0.7	0.5	1	150	9	0.001	1.32E+04	2.40E-10	2.71E-09
Plutonium-239/240	2.43E-02	140000	0.2	0.7	0.5	1	150	9	0.001	1.32E+04	2.30E-10	7.39E-08
											Total Radionuclide Cancer Risk	7.66E-08

Total Cancer Risk 7.71E-08

HYPOTHETICAL SITE RESIDENT
AREA OF CONCERN NO.1

RME - Ingestion of fruit with soil deposition

Noncarcinogens

IF = (IR x FC x WO x ME x EF x ED x CF)/(BW x AT)
HQ = (C x IF)/RfD

	C	IR	FH	FE	WO	ME	EF	ED	CF	BW	AT	IF	RfD	HQ
Chemical	Concentration on Produce (mg/kg)	Ingestion Rate (mg/day)	Fraction Homegrown	Fraction Exposed	Washoff Factor	Matrix Effect	Exposure Frequency (days/yr)	Exposure Duration (years)	Conversion Factor (kg/mg)	Body Weight (kg)	Averaging Time (days)	Intake Factor (kg/kg-day)	Reference Dose (mg/kg-day)	Hazard Quotient
Aroclor-1254	8.92E-06	140000	0.3	0.7	1	0.5	350	30	0.000001	70	10950	2.01E-04	2.00E-05	8.98E-05
Aroclor-1260	6.99E-06	140000	0.3	0.7	1	0.5	350	30	0.000001	70	10950	2.01E-04	2.00E-05	7.04E-05
Bis(2-ethylhexyl)phthalate	7.28E-06	140000	0.3	0.7	1	1	350	30	0.000001	70	10950	4.03E-04	2.00E-02	1.47E-07
Chromium	4.06E-04	140000	0.3	0.7	1	1	350	30	0.000001	70	10950	4.03E-04	1.00E+00	1.64E-07
													Total Hazard Index	1.60E-04

HYPOTHETICAL [illegible]ITE RESIDENT
AREA OF CONCERN NO.1

RME - Ingestion of fruit with soil deposition

Nonradionuclide Carcinogen

IF = (IR x FC x WO x ME x EF x ED x CF)/(BW x AT)
CR = C x IF x SF

Chemical	C Concentration on Produce (mg/kg)	IR Ingestion Rate (mg/day)	FH Fraction Homegrown	FE Fraction Exposed	WO Washoff Factor	ME Matrix Effect	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	CF Conversion Factor (kg/mg)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (kg/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
Aroclor-1254	8.92E-06	140000	0.3	0.7	1	0.5	350	30	0.000001	70	25550	8.63E-05	7.70E+00	5.93E-09
Aroclor-1260	6.99E-06	140000	0.3	0.7	1	0.5	350	30	0.000001	70	25550	8.63E-05	7.70E+00	4.64E-09
Bis(2-ethylhexyl)phthalate	7.28E-06	140000	0.3	0.7	1	1	350	30	0.000001	70	25550	1.73E-04	1.40E-02	1.76E-11
													Total Chemical Cancer Risk	1.06E-08

Radionuclides

IF = IR x FC x WO x ME x EF x ED x CF
CR = C x IF x SF

Radionuclide	C Concentration on Produce (pCi/g)	IR Ingestion Rate (mg/day)	FH Fraction Homegrown	FE Fraction Exposed	WO Washoff Factor	ME Matrix Effect	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	CF Conversion Factor (g/mg)	IF Intake Factor (g)	SF Slope Factor (Risk/pCi)	CR Cancer Risk
Americium-241	8.52E-04	140000	0.3	0.7	1	1	350	30	0.001	3.09E+05	2.40E-10	6.31E-08
Plutonium-239/240	2.43E-02	140000	0.3	0.7	1	1	350	30	0.001	3.09E+05	2.30E-10	1.73E-06
											Total Radionuclide Cancer Risk	1.79E-06

Total Cancer Risk 1.80E-06

HYPOTHETICAL ONSITE RESIDENT
AREA OF CONCERN NO. 1

CT - Ingestion of leafy produces with root uptake

Noncarcinogens

IF = (IR x FP x FH x FC x ME x EF x ED x CF)/(BW x AT)

HQ = (C x IF)/RfD

	C	IR	FP	FH	ME	EF	ED	CF	BW	AT	IF	RfD	HQ
Chemical	Concentration in Produce mg/kg	Ingestion Rate (mg/day)	Fraction of Total Produce (1)	Fraction Homegrown	Matrix Effect	Exposure Frequency (days/yr)	Exposure Duration (years)	Conversion Factor (kg/mg)	Body Weight (kg)	Averaging Time (days)	Intake Factor (kg/kg-day)	Reference Dose (mg/kg-day)	Hazard Quotient
Aroclor-1254	1.13E-03	340000	0.06	0.25	0.5	150	9	0.000001	70	3285	1.50E-05	2.00E-05	8.46E-04
Aroclor-1260	3.84E-04	340000	0.06	0.25	0.5	150	9	0.000001	70	3285	1.50E-05	2.00E-05	2.87E-04
Bis(2-ethylhexyl)phthalate	1.54E-02	340000	0.06	0.25	1	150	9	0.000001	70	3285	2.99E-05	2.00E-02	2.31E-05
Chromium	4.37E-02	340000	0.06	0.25	1	150	9	0.000001	70	3285	2.99E-05	1.00E+00	1.31E-06
												Total Hazard Index	1.16E-03

HYPOTHETICAL ONSITE RESIDENT
AREA OF CONCERN NO. 1

CT - Ingestion of leafy produces with root uptake

Nonradionuclide Carcinogens

IF = (IR x FC x FP x FH x ME x EF x ED x CF)/(BW x AT)
CR = C x IF x SF

Chemical	C Concentration in Produce mg/kg	IR Ingestion Rate (mg/day)	FP Fraction of Total Produce (1)	FH Fraction Homegrown	ME Matrix Effect	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	CF Conversion Factor (kg/mg)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (kg/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
Aroclor-1254	1.13E-03	340000	0.06	0.25	0.5	150	9	0.000001	70	25550	1.92E-06	7.70E+00	1.67E-08
Aroclor-1260	3.84E-04	340000	0.06	0.25	0.5	150	9	0.000001	70	25550	1.92E-06	7.70E+00	5.69E-09
Bis(2-ethylhexyl)phthalate	1.54E-02	340000	0.06	0.25	1	150	9	0.000001	70	25550	3.85E-06	1.40E-02	8.30E-10
										Total Chemical Cancer Risk			2.33E-08

Radionuclides

IF = IR x FP x FH x FC x ME x EF x ED x CF
CR = C x IF x SF

Radionuclide	C Concentration in Produce (pCi/g)	IR Ingestion Rate (mg/day)	FP Fraction of Total Produce (1)	FH Fraction Homegrown	ME Matrix Effect	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	CF Conversion Factor (g/mg)	IF Intake Factor (g)	SF Slope Factor (Risk/pCi)	CR Cancer Risk
Americium-241	6.94E-02	340000	0.06	0.25	1	150	9	0.001	6.89E+03	2.40E-10	1.15E-07
Plutonium-239/240	1.57E-01	340000	0.06	0.25	1	150	9	0.001	6.89E+03	2.30E-10	2.49E-07
								Total Radionuclide Cancer Risk			3.63E-07
									Total Cancer Risk		3.87E-07

HYPOTHETICAL ONSITE RESIDENT
AREA OF CONCERN NO. 1

RME - Ingestion of leafy produces with root uptake

Noncarcinogens

$$IF = (IR \times FC \times FP \times FH \times ME \times EF \times ED \times CF)/(BW \times AT)$$
$$HQ = (C \times IF)/RfD$$

	C	IR	FP	FH	ME	EF	ED	CF	BW	AT	IF	RfD	HQ
Chemical	Concentration in Produce mg/kg	Ingestion Rate (mg/day)	Fraction of Total Produce (1)	Fraction Homegrown	Matrix Effect	Exposure Frequency (days/yr)	Exposure Duration (years)	Conversion Factor (kg/mg)	Body Weight (kg)	Averaging Time (days)	Intake Factor (kg/kg-day)	Reference Dose (mg/kg-day)	Hazard Quotient
Aroclor-1254	1.13E-03	340000	0.06	0.4	0.5	350	30	0.000001	70	10950	5.59E-05	2.00E-05	3.16E-03
Aroclor-1260	3.84E-04	340000	0.06	0.4	0.5	350	30	0.000001	70	10950	5.59E-05	2.00E-05	1.07E-03
Bis(2-ethylhexyl)phthalate	1.54E-02	340000	0.06	0.4	1	350	30	0.000001	70	10950	1.12E-04	2.00E-02	8.61E-05
Chromium	4.37E-02	340000	0.06	0.4	1	350	30	0.000001	70	10950	1.12E-04	1.00E+00	4.88E-06
												Total Hazard Index	4.32E-03

HYPOTHETICAL SITE RESIDENT
AREA OF CONCERN NO. 1

RME - Ingestion of leafy produces with root uptake

Nonradionuclide Carcinogens

IF = (IR x FPx FH x ME x EF x ED x CF)/(BW x AT)
CR = C x IF x SF

Chemical	C Concentration in Produce mg/kg	IR Ingestion Rate (mg/day)	FP Fraction of Total Produce (1)	FH Fraction Homegrown	ME Matrix Effect	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	CF Conversion Factor (kg/mg)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (kg/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
Aroclor-1254	1.13E-03	340000	0.06	0.4	0.5	350	30	0.000001	70	25550	2.40E-05	7.70E+00	2.08E-07
Aroclor-1260	3.84E-04	340000	0.06	0.4	0.5	350	30	0.000001	70	25550	2.40E-05	7.70E+00	7.08E-08
Bis(2-ethylhexyl)phthalate	1.54E-02	340000	0.06	0.4	1	350	30	0.000001	70	25550	4.79E-05	1.40E-02	1.03E-08
											Total Chemical Cancer Risk		2.90E-07

Radionuclides

IF = IR x FC x FP xFH x ME x EF x ED x CF
CR = C x IF x SF

Radionuclide	C Concentration in Produce (pCi/g)	IR Ingestion Rate (mg/day)	FP Fraction of Total Produce (1)	FH Fraction Homegrown	ME Matrix Effect	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	CF Conversion Factor (g/mg)	IF Intake Factor (g)	SF Slope Factor (Risk/pCi)	CR Cancer Risk
Americium-241	6.94E-02	340000	0.06	0.4	1	350	30	0.001	8.57E+04	2.40E-10	1.43E-06
Plutonium-239/240	1.57E-01	340000	0.06	0.4	1	350	30	0.001	8.57E+04	2.30E-10	3.09E-06
							Total Radionuclide Cancer Risk				4.52E-06
								Total Cancer Risk			4.81E-06

(1) Fraction of ingested produce that is leafy; transfer coefficient (Bv) is used to estimate root uptake (Baes et al. 1984)

HYPOTHETICAL ONSITE RESIDENT
AREA OF CONCERN NO. 1

CT - Ingestion of fruit and nonleafy produces with root uptake

Noncarcinogens

IF = (IR x FP x FH xFC x ME x EF x ED x CF)/(BW x AT)

HQ = (C x IF)/RfD

Chemical	C Concentration in Produce mg/kg	IR Ingestion Rate (mg/day)	FP Fraction of Total Produce (1)	FH Fraction Homegrown	ME Matrix Effect	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	CF Conversion Factor (kg/mg)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (kg/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
Aroclor-1254	1.13E-03	340000	0.94	0.2	0.5	150	9	0.000001	70	3285	1.88E-04	2.00E-05	1.06E-02
Aroclor-1260	3.84E-04	340000	0.94	0.2	0.5	150	9	0.000001	70	3285	1.88E-04	2.00E-05	3.60E-03
Bis(2-ethylhexyl)phthalate	1.54E-02	340000	0.94	0.2	1	150	9	0.000001	70	3285	3.75E-04	2.00E-02	2.89E-04
Chromium	2.62E-02	340000	0.94	0.2	1	150	9	0.000001	70	3285	3.75E-04	1.00E+00	9.83E-06
												Total Hazard Index	1.45E-02

HYPOTHETICAL SITE RESIDENT
AREA OF CONCERN NO. 1

CT - Ingestion of fruit and nonleafy produces with root uptake

Nonradionuclide Carcinogens

IF = (IR x FC x FP x FH x ME x EF x ED x CF)/(BW x AT)
CR = C x IF x SF

Chemical	C Concentration in Produce mg/kg	IR Ingestion Rate (mg/day)	FP Fraction of Total Produce (1)	FH Fraction Homegrown	ME Matrix Effect	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	CF Conversion Factor (kg/mg)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (kg/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
Aroclor-1254	1.13E-03	340000	0.94	0.2	0.5	150	9	0.000001	70	25550	2.41E-05	7.70E+00	2.10E-07
Aroclor-1260	3.84E-04	340000	0.94	0.2	0.5	150	9	0.000001	70	25550	2.41E-05	7.70E+00	7.13E-08
Bis(2-ethylhexyl)phthalate	1.54E-02	340000	0.94	0.2	1	150	9	0.000001	70	25550	4.82E-05	1.40E-02	1.04E-08
											Total Chemical Cancer Risk		2.92E-07

Radionuclides

IF = IR x FP x FH x FC x ME x EF x ED x CF
CR = C x IF x SF

Radionuclide	C Concentration in Produce (pCi/g)	IR Ingestion Rate (mg/day)	FP Fraction of Total Produce (1)	FH Fraction Homegrown	ME Matrix Effect	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	CF Conversion Factor (g/mg)	IF Intake Factor (g)	SF Slope Factor (Risk/pCi)	CR Cancer Risk
Americium-241	3.16E-03	340000	0.94	0.2	1	150	9	0.001	8.63E+04	2.40E-10	6.54E-08
Plutonium-239/240	1.57E-02	340000	0.94	0.2	1	150	9	0.001	8.63E+04	2.30E-10	3.12E-07
										Total Radionuclide Cancer Risk	3.77E-07
										Total Cancer Risk	6.69E-07

HYPOTHETICAL ON-SITE RESIDENT
AREA OF CONCERN NO. 1

RME - Ingestion of fruit and nonleafy produces with root uptake

Noncarcinogens

$$IF = (IR \times FC \times FP \times FH \times ME \times EF \times ED \times CF)/(BW \times AT)$$
$$HQ = (C \times IF)/RfD$$

Chemical	C Concentration in Produce mg/kg	IR Ingestion Rate (mg/day)	FP Fraction of Total Produce (1)	FH Fraction Homegrown	ME Matrix Effect	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	CF Conversion Factor (kg/mg)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (kg/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
Aroclor-1254	1.13E-03	340000	0.94	0.3	0.5	350	30	0.000001	70	10950	6.57E-04	2.00E-05	3.71E-02
Aroclor-1260	3.84E-04	340000	0.94	0.3	0.5	350	30	0.000001	70	10950	6.57E-04	2.00E-05	1.26E-02
Bis(2-ethylhexyl)phthalate	1.54E-02	340000	0.94	0.3	1	350	30	0.000001	70	10950	1.31E-03	2.00E-02	1.01E-03
Chromium	2.62E-02	340000	0.94	0.3	1	350	30	0.000001	70	10950	1.31E-03	1.00E+00	3.44E-05
								Total Hazard Index					5.08E-02

HYPOTHETICAL ONSITE RESIDENT
AREA OF CONCERN NO. 1

RME - Ingestion of fruit and nonleafy produces with root uptake

Nonradionuclide Carcinogens

IF = (IR x FPx FH x ME x EF x ED x CF)/(BW x AT)
CR = C x IF x SF

Chemical	C Concentration in Produce mg/kg	IR Ingestion Rate (mg/day)	FP Fraction of Total Produce (1)	FH Fraction Homegrown	ME Matrix Effect	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	CF Conversion Factor (kg/mg)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (kg/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
Aroclor-1254	1.13E-03	340000	0.94	0.3	0.5	350	30	0.000001	70	25550	2.81E-04	7.70E+00	2.45E-06
Aroclor-1260	3.84E-04	340000	0.94	0.3	0.5	350	30	0.000001	70	25550	2.81E-04	7.70E+00	8.32E-07
Bis(2-ethylhexyl)phthalate	1.54E-02	340000	0.94	0.3	1	350	30	0.000001	70	25550	5.63E-04	1.40E-02	1.21E-07
											Total Chemical Cancer Risk		3.40E-06

Radionuclides

IF = IR x FC x FP xFH x ME x EF x ED x CF
CR = C x IF x SF

Radionuclide	C Concentration in Produce (pCi/g)	IR Ingestion Rate (mg/day)	FP Fraction of Total Produce (1)	FH Fraction Homegrown	ME Matrix Effect	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	CF Conversion Factor (g/mg)	IF Intake Factor (g)	SF Slope Factor (Risk/pCi)	CR Cancer Risk
Americium-241	3.16E-03	340000	0.94	0.3	1	350	30	0.001	1.01E+06	2.40E-10	7.64E-07
Plutonium-239/240	1.57E-02	340000	0.94	0.3	1	350	30	0.001	1.01E+06	2.30E-10	3.64E-06
										Total Radionuclide Cancer Risk	7.80E-06

Total Cancer Risk 4.40E-06

(1) Fraction of ingested produce that is fruit or nonleafy; transfer coefficient (Br) is used to estimate root uptake (Baes et al. 1984)

HYPOTHETICAL SITE RESIDENT
AREA OF CONCERN NO. 1

CT - Groundwater Ingestion

Noncarcinogen

$$IF = (IR \times FC \times EF \times ED)/(BW \times AT)$$
$$HQ = (C \times IF)/RfD$$

	C	IR	FC	EF	ED	BW	AT	IF	RfD	HQ
Chemical	Groundwater Concentration (mg/l)	Ingestion Rate (l/day)	Fraction Ingested from Source	Exposure Frequency (days/yr)	Exposure Duration (years)	Body Weight (kg)	Averaging Time (days)	Intake Factor (l/kg-day)	Reference Dose (mg/kg-day)	Hazard Quotient
1,1-Dichloroethene	4.00E-03	1.4	0.3	234	9	70	3285	3.85E-03	9.00E-03	1.71E-03
Carbon Tetrachloride	3.49E+00	1.4	0.3	234	9	70	3285	3.85E-03	7.00E-04	1.92E+01
Chloroform	1.04E-01	1.4	0.3	234	9	70	3285	3.85E-03	1.00E-02	4.00E-02
Methylene Chloride	1.36E-02	1.4	0.3	234	9	70	3285	3.85E-03	6.00E-02	8.72E-04
Tetrachloroethene	1.15E+00	1.4	0.3	234	9	70	3285	3.85E-03	1.00E-02	4.42E-01
									Total Hazard Index	1.96E+01

HYPOTHETICAL SITE RESIDENT
AREA OF CONCERN NO. 1

CT - Groundwater Ingestion

Nonradionuclide Carcinogens

IF = (IR x FC x EF x ED)/(BW x AT)
CR = C x IF x SF

Chemical	C Groundwater Concentration (mg/l)	IR Ingestion Rate (l/day)	FC Fraction Ingested from Source	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
1,1-Dichloroethene	4.00E-03	1.4	0.3	234	9	70	25550	4.95E-04	6.00E-01	1.19E-06
Carbon Tetrachloride	3.49E+00	1.4	0.3	234	9	70	25550	4.95E-04	1.30E-01	2.24E-04
Chloroform	1.04E-01	1.4	0.3	234	9	70	25550	4.95E-04	6.10E-03	3.14E-07
Methylene Chloride	1.36E-02	1.4	0.3	234	9	70	25550	4.95E-04	7.50E-03	5.04E-08
Tetrachloroethene	1.15E+00	1.4	0.3	234	9	70	25550	4.95E-04	5.20E-02	2.95E-05
Trichloroethene	1.10E+00	1.4	0.3	234	9	70	25550	4.95E-04	1.10E-02	6.00E-06
									Total Chemical Cancer Risk	2.61E-04

Radionuclides

IF = IR x FC x EF x ED
CR = C x IF x SF

Chemical	C Groundwater Concentration (pCi/l)	IR Ingestion Rate (l/day)	FC Fraction Ingested from Source	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	IF Intake Factor (l/kg-day)	SF Slope Factor Risk/pCi	CR Cancer Risk
Americium-241	1.90E-01	1.4	0.3	234	9	8.85E+02	2.40E-10	4.03E-08
Plutonium-239/240	2.40E+00	1.4	0.3	234	9	8.85E+02	2.30E-10	4.88E-07
							Total Radionuclide Cancer Risk	5.29E-07
							Total Cancer Risk	2.62E-04

HYPOTHETICAL SITE RESIDENT
AREA OF CONCERN NO. 1

RME - Groundwater Ingestion

Noncarcinogen

$$IF = (IR \times FC \times EF \times ED)/(BW \times AT)$$
$$HQ = (C \times IF)/RfD$$

	C	IR	FC	EF	ED	BW	AT	IF	RfD	HQ
Chemical	Groundwater Concentration (mg/l)	Ingestion Rate (l/day)	Fraction Ingested from Source	Exposure Frequency (days/yr)	Exposure Duration (years)	Body Weight (kg)	Averaging Time (days)	Intake Factor (l/kg-day)	Reference Dose (mg/kg-day)	Hazard Quotient
1,1-Dichloroethene	4.00E-03	2	1	350	30	70	10950	2.74E-02	9.00E-03	1.22E-02
Carbon Tetrachloride	3.49E+00	2	1	350	30	70	10950	2.74E-02	7.00E-04	1.36E+02
Chloroform	1.04E-01	2	1	350	30	70	10950	2.74E-02	1.00E-02	2.85E-01
Methylene Chloride	1.36E-02	2	1	350	30	70	10950	2.74E-02	6.00E-02	6.21E-03
Tetrachloroethene	1.15E+00	2	1	350	30	70	10950	2.74E-02	1.00E-02	3.15E+00
									Total Hazard Index	1.40E+02

HYPOTHETICAL SITE RESIDENT
AREA OF CONCERN NO. 1

RME - Groundwater Ingestion

Nonradionuclide Carcinogens

IF = (IR x FC x EF x ED)/(BW x AT)
CR = C x IF x SF

Chemical	C Groundwater Concentration (mg/l)	IR Ingestion Rate (l/day)	FC Fraction Ingested from Source	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
1,1-Dichloroethene	4.00E-03	2	1	350	30	70	25550	1.17E-02	6.00E-01	2.82E-05
Carbon Tetrachloride	3.49E+00	2	1	350	30	70	25550	1.17E-02	1.30E-01	5.32E-03
Chloroform	1.04E-01	2	1	350	30	70	25550	1.17E-02	6.10E-03	7.45E-06
Methylene Chloride	1.36E-02	2	1	350	30	70	25550	1.17E-02	7.50E-03	1.20E-06
Tetrachloroethene	1.15E+00	2	1	350	30	70	25550	1.17E-02	5.20E-02	7.01E-04
Trichloroethene	1.10E+00	2	1	350	30	70	25550	1.17E-02	1.10E-02	1.42E-04
									Total Chemical Cancer Risk	6.20E-03

Radionuclides

IF = IR x FC x EF x ED
CR = C x IF x SF

Chemical	C Groundwater Concentration (pCi/l)	IR Ingestion Rate (l/day)	FC Fraction Ingested from Source	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	IF Intake Factor (l/kg-day)	SF Slope Factor Risk/pCi	CR Cancer Risk
Americium-241	1.90E-01	2	1	350	30	2.10E+04	2.40E-10	9.58E-07
Radium-226	2.40E+00	2	1	350	30	2.10E+04	2.30E-10	1.16E-05
							Total Radionuclide Cancer Risk	1.25E-05

Total Cancer Risk 6.22E-03

HYPOTHETICAL SITE RESIDENT
AREA OF CONCERN NO. 1

CT - Ingestion of surface water - Walnut Creek

Noncarcinogens

$$IF = (IR \times ET \times EF \times ED)/(BW \times AT)$$
$$HQ = (C \times IF)/RfD$$

	C	IR	ET	EF	ED	BW	AT	IF	RfD	HQ
Chemical	Surface Water Concentration (mg/l)	Ingestion Rate (l/hr)	Exposure Time (hr/day)	Exposure Frequency (days/yr)	Exposure Duration (years)	Body Weight (kg)	Averaging Time (days)	Intake Factor (l/kg-day)	Reference Dose (mg/kg-day)	Hazard Quotient
1,1-Dichloroethene	5.00E-06	0.01	1	5	9	70	3285	1.96E-06	9.00E-03	1.09E-09
Carbon Tetrachloride	4.81E-04	0.01	1	5	9	70	3285	1.96E-06	7.00E-04	1.34E-06
Chloroform	9.30E-05	0.01	1	5	9	70	3285	1.96E-06	1.00E-02	1.82E-08
Methylene Chloride	3.80E-05	0.01	1	5	9	70	3285	1.96E-06	6.00E-02	1.24E-09
Tetrachloroethene	8.03E-04	0.01	1	5	9	70	3285	1.96E-06	1.00E-02	1.57E-07
									Total Hazard Index	1.52E-06

HYPOTHETICAL SITE RESIDENT
AREA OF CONCERN NO. 1

CT - Ingestion of surface water - Walnut Creek

Nonradionuclide carcinogens

IF = (IR x ET x EF x ED)/(BW x AT)
CR = C x IF x SF

Chemical	C Surface Water Concentration (mg/l)	IR Ingestion Rate (l/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
1,1-Dichloroethene	5.00E-06	0.01	1	5	9	70	25550	2.52E-07	6.00E-01	7.55E-13
Carbon Tetrachloride	4.81E-04	0.01	1	5	9	70	25550	2.52E-07	1.30E-01	1.57E-11
Chloroform	9.30E-05	0.01	1	5	9	70	25550	2.52E-07	6.10E-03	1.43E-13
Methylene Chloride	3.80E-05	0.01	1	5	9	70	25550	2.52E-07	7.50E-03	7.17E-14
Tetrachloroethene	8.03E-04	0.01	1	5	9	70	25550	2.52E-07	5.20E-02	1.05E-11
Trichloroethene	6.24E-03	0.01	1	5	9	70	25550	2.52E-07	1.10E-02	1.73E-11
								Total Chemical Cancer Risk		4.45E-11

Radionuclides

IF = IR x ET x EF x ED
CR = C x IF x SF

Radionuclide	C Surface Water Concentration (pCi/l)	IR Ingestion Rate (l/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	IF Intake Factor (l)	SF Slope Factor (Risk/pCi)	CR Cancer Risk
Americium-241	5.00E-03	0.01	1	5	9	4.50E-01	2.40E-10	5.40E-13
Plutonium-239/240	2.60E-02	0.01	1	5	9	4.50E-01	2.30E-10	2.69E-12
						Total Radionuclide Cancer Risk		3.23E-12

Total Cancer Risk 4.77E-11

HYPOTHETICAL SITE RESIDENT
AREA OF CONCERN NO. 1

RME - Ingestion of surface water - Walnut Creek

Noncarcinogens

$$IF = (IR \times ET \times EF \times ED)/(BW \times AT)$$
$$HQ = (C \times IF)/RfD$$

	C	IR	ET	EF	ED	BW	AT	IF	RfD	HQ
Chemical	Surface Water Concentration (mg/l)	Ingestion Rate (l/hr)	Exposure Time (hr/day)	Exposure Frequency (days/yr)	Exposure Duration (years)	Body Weight (kg)	Averaging Time (days)	Intake Factor (l/kg-day)	Reference Dose (mg/kg-day)	Hazard Quotient
1,1-Dichloroethene	5.00E-06	0.05	2.6	7	30	70	10950	3.56E-05	9.00E-03	1.98E-08
Carbon Tetrachloride	4.81E-04	0.05	2.6	7	30	70	10950	3.56E-05	7.00E-04	2.45E-05
Chloroform	9.30E-05	0.05	2.6	7	30	70	10950	3.56E-05	1.00E-02	3.31E-07
Methylene Chloride	3.80E-05	0.05	2.6	7	30	70	10950	3.56E-05	6.00E-02	2.26E-08
Tetrachloroethene	8.03E-04	0.05	2.6	7	30	70	10950	3.56E-05	1.00E-02	2.86E-06
									Total Hazard Index	2.77E-05

HYPOTHETICAL SITE RESIDENT
AREA OF CONCERN NO. 1

RME - Ingestion of surface water - Walnut Creek

Nonradionuclide carcinogens

IF = (IR x ET x EF x ED)/(BW x AT)
CR = C x IF x SF

Chemical	C Surface Water Concentration (mg/l)	IR Ingestion Rate (l/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
1,1-Dichloroethene	5.00E-06	0.05	2.6	7	30	70	25550	1.53E-05	6.00E-01	4.58E-11
Carbon Tetrachloride	4.81E-04	0.05	2.6	7	30	70	25550	1.53E-05	1.30E-01	9.54E-10
Chloroform	9.30E-05	0.05	2.6	7	30	70	25550	1.53E-05	6.10E-03	8.66E-12
Methylene Chloride	3.80E-05	0.05	2.6	7	30	70	25550	1.53E-05	7.50E-03	4.35E-12
Tetrachloroethene	8.03E-04	0.05	2.6	7	30	70	25550	1.53E-05	5.20E-02	6.37E-10
Trichloroethene	6.24E-03	0.05	2.6	7	30	70	25550	1.53E-05	1.10E-02	1.05E-09
								Total Chemical Cancer Risk		2.70E-09

Radionuclides

IF = IR x ET x EF x ED
CR = C x IF x SF

Radionuclide	C Surface Water Concentration (pCi/l)	IR Ingestion Rate (l/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	IF Intake Factor (l)	SF Slope Factor (Risk/pCi)	CR Cancer Risk
Americium-241	5.00E-03	0.05	2.6	7	30	2.73E+01	2.40E-10	3.28E-11
Plutonium-239/240	2.60E-02	0.05	2.6	7	30	2.73E+01	2.30E-10	1.63E-10
						Total Radionuclide Cancer Risk		1.96E-10
						Total Cancer Risk		2.89E-09

HYPOTHETICAL SITE RESIDENT
AREA OF CONCERN NO. 1

CT - Ingestion of surface water - Woman Creek

Noncarcinogens

$$IF = (IR \times ET \times EF \times ED)/(BW \times AT)$$
$$HQ = (C \times IF)/RfD$$

Chemical	C Surface Water Concentration (mg/l)	IR Ingestion Rate (l/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
1,1-Dichloroethene	2.00E-06	0.01	1	5	9	70	3285	1.96E-06	9.00E-03	4.35E-10
Carbon Tetrachloride	2.62E-04	0.01	1	5	9	70	3285	1.96E-06	7.00E-04	7.32E-07
Chloroform	2.15E-04	0.01	1	5	9	70	3285	1.96E-06	1.00E-02	4.21E-08
Methylene Chloride	1.06E-04	0.01	1	5	9	70	3285	1.96E-06	6.00E-02	3.46E-09
Tetrachloroethene	1.16E-04	0.01	1	5	9	70	3285	1.96E-06	1.00E-02	2.27E-08
									Total Hazard Index	8.01E-07

HYPOTHETICAL SITE RESIDENT
AREA OF CONCERN NO. 1

CT - Ingestion of surface water - Woman Creek

Nonradionuclide carcinogens

IF = (IR x ET x EF x ED)/(BW x AT)
CR = C x IF x SF

Chemical	C Surface Water Concentration (mg/l)	IR Ingestion Rate (l/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
1,1-Dichloroethene	2.00E-06	0.01	1	5	9	70	25550	2.52E-07	6.00E-01	3.02E-13
Carbon Tetrachloride	2.62E-04	0.01	1	5	9	70	25550	2.52E-07	1.30E-01	8.57E-12
Chloroform	2.15E-04	0.01	1	5	9	70	25550	2.52E-07	6.10E-03	3.30E-13
Methylene Chloride	1.06E-04	0.01	1	5	9	70	25550	2.52E-07	7.50E-03	2.00E-13
Tetrachloroethene	1.16E-04	0.01	1	5	9	70	25550	2.52E-07	5.20E-02	1.52E-12
Trichloroethene	9.25E-04	0.01	1	5	9	70	25550	2.52E-07	1.10E-02	2.56E-12
								Total Chemical Cancer Risk		1.35E-11

Radionuclides

IF = IR x ET x EF x ED
CR = C x IF x SF

Radionuclide	C Surface Water Concentration (pCi/l)	IR Ingestion Rate (l/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	IF Intake Factor (l)	SF Slope Factor (Risk/pCi)	CR Cancer Risk
Americium-241	6.30E-02	0.01	1	5	9	4.50E-01	2.40E-10	6.80E-12
Plutonium-239/240	2.37E+00	0.01	1	5	9	4.50E-01	2.30E-10	2.45E-10
						Total Radionuclide Cancer Risk		2.52E-10
							Total Cancer Risk	2.66E-10

HYPOTHETICAL SITE RESIDENT
AREA OF CONCERN NO. 1

RME - Ingestion of surface water Woman Creek

Noncarcinogens

IF = (IR x ET x EF x ED)/(BW x AT)
HQ = (C x IF)/RfD

Chemical	C Surface Water Concentration (mg/l)	IR Ingestion Rate (l/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
1,1-Dichloroethene	2.00E-06	0.05	2.6	7	30	70	10950	3.56E-05	9.00E-03	7.91E-09
Carbon Tetrachloride	2.62E-04	0.05	2.6	7	30	70	10950	3.56E-05	7.00E-04	1.33E-05
Chloroform	2.15E-04	0.05	2.6	7	30	70	10950	3.56E-05	1.00E-02	7.66E-07
Methylene Chloride	1.06E-04	0.05	2.6	7	30	70	10950	3.56E-05	6.00E-02	6.29E-08
Tetrachloroethene	1.16E-04	0.05	2.6	7	30	70	10950	3.56E-05	1.00E-02	4.13E-07
									Total Hazard Index	1.46E-05

HYPOTHETICAL ONSITE RESIDENT
AREA OF CONCERN NO. 1

RME - Ingestion of surface water Woman Creek

Nonradionuclide carcinogens

$$IF = (IR \times ET \times EF \times ED)/(BW \times AT)$$
$$CR = C \times IF \times SF$$

	C	IR	ET	EF	ED	BW	AT	IF	SF	CR
Chemical	Surface Water Concentration (mg/l)	Ingestion Rate (l/hr)	Exposure Time (hr/day)	Exposure Frequency (days/yr)	Exposure Duration (years)	Body Weight (kg)	Averaging Time (days)	Intake Factor (l/kg-day)	Slope Factor 1/(mg/kg-day)	Cancer Risk
1,1-Dichloroethene	2.00E-06	0.05	2.6	7	30	70	25550	1.53E-05	6.00E-01	1.83E-11
Carbon Tetrachloride	2.62E-04	0.05	2.6	7	30	70	25550	1.53E-05	1.30E-01	5.20E-10
Chloroform	2.15E-04	0.05	2.6	7	30	70	25550	1.53E-05	6.10E-03	2.00E-11
Methylene Chloride	1.06E-04	0.05	2.6	7	30	70	25550	1.53E-05	7.50E-03	1.21E-11
Tetrachloroethene	1.16E-04	0.05	2.6	7	30	70	25550	1.53E-05	5.20E-02	9.21E-11
Trichloroethene	9.25E-04	0.05	2.6	7	30	70	25550	1.53E-05	1.10E-02	1.55E-10
								Total Chemical Cancer Risk		8.18E-10

Radionuclides

$$IF = IR \times ET \times EF \times ED$$
$$CR = C \times IF \times SF$$

	C	IR	ET	EF	ED	IF	SF	CR
Radionuclide	Surface Water Concentration (pCi/l)	Ingestion Rate (l/hr)	Exposure Time (hr/day)	Exposure Frequency (days/yr)	Exposure Duration (years)	Intake Factor (l)	Slope Factor (Risk/pCi)	Cancer Risk
Americium-241	6.30E-02	0.05	2.6	7	30	2.73E+01	2.40E-10	4.13E-10
Plutonium-239/240	2.37E+00	0.05	2.6	7	30	2.73E+01	2.30E-10	1.49E-08
						Total Radionuclide Cancer Risk		1.53E-08
							Total Cancer Risk	1.61E-08

HYPOTHETICAL SITE RESIDENT
AREA OF CONCERN NO. 1

CT - Dermal contact with surface water - Walnut Creek

Noncarcinogens

IF = (SA x DP x ET x EF x ED x CF)/(BW x AT)
HQ = (C x IF)/RfD

Chemical	C Surface Water Concentration (mg/l)	SA Skin Surface Area (cm^2)	DP Dermal Permeability (cm/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (day/yr)	ED Exposure Duration (years)	CF Conversion Factor (l/cm^3)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
1,1-Dichloroethene	5.00E-06	9275	0.016	1	5	9	0.001	70	3285	2.90E-05	9.00E-03	1.61E-08
Carbon Tetrachloride	4.81E-04	9275	0.022	1	5	9	0.001	70	3285	3.99E-05	7.00E-04	2.74E-05
Chloroform	9.30E-05	9275	0.13	1	5	9	0.001	70	3285	2.36E-04	1.00E-02	2.19E-06
Methylene Chloride	3.80E-05	9275	0.0045	1	5	9	0.001	70	3285	8.17E-06	6.00E-02	5.17E-09
Tetrachloroethene	8.03E-04	9275	0.37	1	5	9	0.001	70	3285	6.72E-04	1.00E-02	5.39E-05
											Total Hazard Index	8.36E-05

Nonradionuclide carcinogens

IF = (SA x DP x ET x EF x ED x CF)/(BW x AT)
CR = C x IF x SF

Chemical	C Surface Water Concentration (mg/l)	SA Skin Surface Area (cm^2)	DP Dermal Permeability (cm/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (day/yr)	ED Exposure Duration (years)	CF Conversion Factor (l/cm^3)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
1,1-Dichloroethene	5.00E-06	9275	0.016	1	5	9	0.001	70	25550	3.73E-06	6.00E-01	1.12E-11
Carbon Tetrachloride	4.81E-04	9275	0.022	1	5	9	0.001	70	25550	5.13E-06	1.30E-01	3.21E-10
Chloroform	9.30E-05	9275	0.13	1	5	9	0.001	70	25550	3.03E-05	6.10E-03	1.72E-11
Methylene Chloride	3.80E-05	9275	0.0045	1	5	9	0.001	70	25550	1.05E-06	7.50E-03	2.99E-13
Tetrachloroethene	8.03E-04	9275	0.37	1	5	9	0.001	70	25550	8.63E-05	5.20E-02	3.61E-09
Trichloroethene	6.24E-03	9275	0.23	1	5	9	0.001	70	25550	5.37E-05	1.10E-02	3.68E-09
											Total Cancer Risk	7.64E-09

HYPOTHETICAL [illegible]TE RESIDENT
AREA OF CONCERN NO. 1

RME - Dermal contact with surface water - Walnut Creek

Noncarcinogens

IF = (SA x DP x ET x EF x ED x CF)/(BW x AT)
HQ = (C x IF)/RfD

Chemical	C Surface Water Concentration (mg/l)	SA Skin Surface Area (cm^2)	DP Dermal Permeability (cm/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (day/yr)	ED Exposure Duration (years)	CF Conversion Factor (l/cm^3)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
1,1-Dichloroethene	5.00E-06	18150	0.016	2.6	7	30	0.001	70	10950	2.07E-04	9.00E-03	1.15E-07
Carbon Tetrachloride	4.81E-04	18150	0.022	2.6	7	30	0.001	70	10950	2.84E-04	7.00E-04	1.95E-04
Chloroform	9.30E-05	18150	0.13	2.6	7	30	0.001	70	10950	1.68E-03	1.00E-02	1.56E-05
Methylene Chloride	3.80E-05	18150	0.0045	2.6	7	30	0.001	70	10950	5.82E-05	6.00E-02	3.68E-08
Tetrachloroethene	8.03E-04	18150	0.37	2.6	7	30	0.001	70	10950	4.78E-03	1.00E-02	3.84E-04
											Total Hazard Index	5.95E-04

Nonradionuclide carcinogens

IF = (SA x DP x ET x EF x ED x CF)/(BW x AT)
CR = C x IF x SF

Chemical	C Surface Water Concentration (mg/l)	SA Skin Surface Area (cm^2)	DP Dermal Permeability (cm/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (day/yr)	ED Exposure Duration (years)	CF Conversion Factor (l/cm^3)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
1,1-Dichloroethene	5.00E-06	18150	0.016	2.6	7	30	0.001	70	25550	8.87E-05	6.00E-01	2.66E-10
Carbon Tetrachloride	4.81E-04	18150	0.022	2.6	7	30	0.001	70	25550	1.22E-04	1.30E-01	7.62E-09
Chloroform	9.30E-05	18150	0.13	2.6	7	30	0.001	70	25550	7.20E-04	6.10E-03	4.09E-10
Methylene Chloride	3.80E-05	18150	0.0045	2.6	7	30	0.001	70	25550	2.49E-05	7.50E-03	7.11E-12
Tetrachloroethene	8.03E-04	18150	0.37	2.6	7	30	0.001	70	25550	2.05E-03	5.20E-02	8.56E-08
Trichloroethene	6.24E-03	18150	0.23	2.6	7	30	0.001	70	25550	1.27E-03	1.10E-02	8.75E-08
											Total Cancer Risk	1.81E-07

HYPOTHETICAL [illegible]TE RESIDENT
AREA OF CONCERN NO. 1

CT - Dermal contact with surface water - Woman Creek

Noncarcinogens

IF = (SA x DP x ET x EF x ED x CF)/(BW x AT)
HQ = (C x IF)/RfD

	C	SA	DP	ET	EF	ED	CF	BW	AT	IF	RfD	HQ
Chemical	Surface Water Concentration (mg/l)	Skin Surface Area (cm^2)	Dermal Permeability (cm/hr)	Exposure Time (hr/day)	Exposure Frequency (day/yr)	Exposure Duration (years)	Conversion Factor (l/cm^3)	Body Weight (kg)	Averaging Time (days)	Intake Factor (l/kg-day)	Reference Dose (mg/kg-day)	Hazard Quotient
1,1-Dichloroethene	2.00E-06	9275	0.016	1	5	9	0.001	70	3285	2.90E-05	9.00E-03	6.45E-09
Carbon Tetrachloride	2.62E-04	9275	0.022	1	5	9	0.001	70	3285	3.99E-05	7.00E-04	1.49E-05
Chloroform	2.15E-04	9275	0.13	1	5	9	0.001	70	3285	2.36E-04	1.00E-02	5.07E-06
Methylene Chloride	1.06E-04	9275	0.0045	1	5	9	0.001	70	3285	8.17E-06	6.00E-02	1.44E-08
Tetrachloroethene	1.16E-04	9275	0.37	1	5	9	0.001	70	3285	6.72E-04	1.00E-02	7.79E-06
											Total Hazard Index	2.78E-05

Nonradionuclide carcinogens

IF = (SA x DP x ET x EF x ED x CF)/(BW x AT)
CR = C x IF x SF

	C	SA	DP	ET	EF	ED	CF	BW	AT	IF	SF	CR
Chemical	Surface Water Concentration (mg/l)	Skin Surface Area (cm^2)	Dermal Permeability (cm/hr)	Exposure Time (hr/day)	Exposure Frequency (day/yr)	Exposure Duration (years)	Conversion Factor (l/cm^3)	Body Weight (kg)	Averaging Time (days)	Intake Factor (l/kg-day)	Slope Factor 1/(mg/kg-day)	Cancer Risk
1,1-Dichloroethene	2.00E-06	9275	0.016	1	5	9	0.001	70	25550	3.73E-06	6.00E-01	4.48E-12
Carbon Tetrachloride	2.62E-04	9275	0.022	1	5	9	0.001	70	25550	5.13E-06	1.30E-01	1.75E-10
Chloroform	2.15E-04	9275	0.13	1	5	9	0.001	70	25550	3.03E-05	6.10E-03	3.98E-11
Methylene Chloride	1.06E-04	9275	0.0045	1	5	9	0.001	70	25550	1.05E-06	7.50E-03	8.35E-13
Tetrachloroethene	1.16E-04	9275	0.37	1	5	9	0.001	70	25550	8.63E-05	5.20E-02	5.21E-10
Trichloroethene	9.25E-04	9275	0.23	1	5	9	0.001	70	25550	5.37E-05	1.10E-02	5.46E-10
											Total Cancer Risk	1.29E-09

HYPOTHETICAL SITE RESIDENT
AREA OF CONCERN NO. 1

RME - Dermal contact with surface water - Woman Creek

Noncarcinogens

IF = (SA x DP x ET x EF x ED x CF)/(BW x AT)
HQ = (C x IF)/RfD

Chemical	C Surface Water Concentration (mg/l)	SA Skin Surface Area (cm^2)	DP Dermal Permeability (cm/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (day/yr)	ED Exposure Duration (years)	CF Conversion Factor (l/cm^3)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
1,1-Dichloroethene	2.00E-06	18150	0.016	2.6	7	30	0.001	70	10950	2.07E-04	9.00E-03	4.60E-08
Carbon Tetrachloride	2.62E-04	18150	0.022	2.6	7	30	0.001	70	10950	2.84E-04	7.00E-04	1.06E-04
Chloroform	2.15E-04	18150	0.13	2.6	7	30	0.001	70	10950	1.68E-03	1.00E-02	3.61E-05
Methylene Chloride	1.06E-04	18150	0.0045	2.6	7	30	0.001	70	10950	5.82E-05	6.00E-02	1.03E-07
Tetrachloroethene	1.16E-04	18150	0.37	2.6	7	30	0.001	70	10950	4.78E-03	1.00E-02	5.55E-05
											Total Hazard Index	1.98E-04

Nonradionuclide carcinogens

IF = (SA x DP x ET x EF x ED x CF)/(BW x AT)
CR = C x IF x SF

Chemical	C Surface Water Concentration (mg/l)	SA Skin Surface Area (cm^2)	DP Dermal Permeability (cm/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (day/yr)	ED Exposure Duration (years)	CF Conversion Factor (l/cm^3)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
1,1-Dichloroethene	2.00E-06	18150	0.016	2.6	7	30	0.001	70	25550	8.87E-05	6.00E-01	1.06E-10
Carbon Tetrachloride	2.62E-04	18150	0.022	2.6	7	30	0.001	70	25550	1.22E-04	1.30E-01	4.15E-09
Chloroform	2.15E-04	18150	0.13	2.6	7	30	0.001	70	25550	7.20E-04	6.10E-03	9.45E-10
Methylene Chloride	1.06E-04	18150	0.0045	2.6	7	30	0.001	70	25550	2.49E-05	7.50E-03	1.98E-11
Tetrachloroethene	1.16E-04	18150	0.37	2.6	7	30	0.001	70	25550	2.05E-03	5.20E-02	1.24E-08
Trichloroethene	9.25E-04	18150	0.23	2.6	7	30	0.001	70	25550	1.27E-03	1.10E-02	1.30E-08
											Total Cancer Risk	3.06E-08

HYPOTHETICAL ONSITE RESIDENT
AREA OF CONCERN NO. 1

CT - Inhalation of VOCs from infiltration

Noncarcinogens

$$IF = (IR \times ET \times EF \times ED)/(BW \times AT)$$
$$HQ = (C \times IF)/RfD$$

	C	IR	ET	EF	ED	BW	AT	IF	RfD	HQ
Chemical	VOC Concentration in air (mg/m^3)	Inhalation Rate (m^3/hr)	Exposure Time (hr/day)	Exposure Frequency (days/yr)	Exposure Duration (years)	Body Weight (kg)	Averaging Time (years)	Intake Factor (m^3/kg-day)	Reference Dose (mg/kg-day)	Hazard Quotient
Methylene Chloride	8.94E-11	0.63	15	234	9	70	3285	8.65E-02	9.00E-01	8.60E-12
									Total Hazard Index	8.60E-12

Carcinogens

$$IF = (IR \times ET \times EF \times ED)/(BW \times AT)$$
$$CR = C \times IF \times SF$$

	C	IR	ET	EF	ED	BW	AT	IF	SF	CR
Chemical	VOC Concentration in air (mg/m^3)	Inhalation Rate (m^3/hr)	Exposure Time (hr/day)	Exposure Frequency (days/yr)	Exposure Duration (years)	Body Weight (kg)	Averaging Time (years)	Intake Factor (m^3/kg-day)	Slope Factor 1/(mg/kg-day)	Cancer Risk
1,1-Dichloroethene	1.94E-10	0.63	15	234	9	70	25550	1.11E-02	1.20E+00	2.59E-12
Carbon Tetrachloride	2.73E-07	0.63	15	234	9	70	25550	1.11E-02	5.20E-02	1.58E-10
Chloroform	1.10E-09	0.63	15	234	9	70	25550	1.11E-02	8.00E-02	9.79E-13
Methylene Chloride	8.94E-11	0.63	15	234	9	70	25550	1.11E-02	1.60E-03	1.59E-15
Tetrachloroethene	3.62E-03	0.63	15	234	9	70	25550	1.11E-02	2.00E-03	8.06E-08
Trichloroethene	3.34E-08	0.63	15	234	9	70	25550	1.11E-02	6.00E-03	2.23E-12
									Total Cancer Risk	8.07E-08

HYPOTHETICAL ONSITE RESIDENT
AREA OF CONCERN NO. 1

RME - Inhalation of VOCs from infiltration

Noncarcinogens

$$IF = (IR \times ET \times EF \times ED)/(BW \times AT)$$
$$HQ = (C \times IF)/RfD$$

	C	IR	ET	EF	ED	BW	AT	IF	RfD	HQ
Chemical	VOC Concentration in air (mg/m^3)	Inhalation Rate (m^3/hr)	Exposure Time (hr/day)	Exposure Frequency (days/yr)	Exposure Duration (years)	Body Weight (kg)	Averaging Time (years)	Intake Factor ($m^3/kg\text{-}day$)	Reference Dose (mg/kg-day)	Hazard Quotient
Methylene Chloride	8.94E-11	0.63	24	350	30	70	10950	2.07E-01	9.00E-01	2.06E-11
									Total Hazard Index	2.06E-11

Carcinogens

$$IF = (IR \times ET \times EF \times ED)/(BW \times AT)$$
$$CR = C \times IF \times SF$$

	C	IR	ET	EF	ED	BW	AT	IF	SF	CR
Chemical	VOC Concentration in air (mg/m^3)	Inhalation Rate (m^3/hr)	Exposure Time (hr/day)	Exposure Frequency (days/yr)	Exposure Duration (years)	Body Weight (kg)	Averaging Time (years)	Intake Factor ($m^3/kg\text{-}day$)	Slope Factor 1/(mg/kg-day)	Cancer Risk
1,1-Dichloroethene	1.94E-10	0.63	24	350	30	70	25550	8.88E-02	1.20E+00	2.07E-11
Carbon Tetrachloride	2.73E-07	0.63	24	350	30	70	25550	8.88E-02	5.20E-02	1.26E-09
Chloroform	1.10E-09	0.63	24	350	30	70	25550	8.88E-02	8.00E-02	7.81E-12
Methylene Chloride	8.94E-11	0.63	24	350	30	70	25550	8.88E-02	1.60E-03	1.27E-14
Tetrachloroethene	3.62E-03	0.63	24	350	30	70	25550	8.88E-02	2.00E-03	6.43E-07
Trichloroethene	3.34E-08	0.63	24	350	30	70	25550	8.88E-02	6.00E-03	1.78E-11
									Total Cancer Risk	6.44E-07

HYPOTHETICAL SITE RESIDENT
AREA OF CONCERN NO. 1

CT - Inhalation of VOCs from groundwater use

Noncarcinogens

$$IF = (IR \times ET \times EF \times ED)/(BW \times AT)$$
$$HQ = (C \times IF)/RfD$$

	C	IR	ET	EF	ED	BW	AT	IF	RfD	HQ
Chemical	VOC Concentration in air (mg/m^3)	Inhalation Rate (m^3/hr)	Exposure Time (hr/day)	Exposure Frequency (days/yr)	Exposure Duration (years)	Body Weight (kg)	Averaging Time (years)	Intake Factor ($m^3/kg\text{-}day$)	Reference Dose (mg/kg-day)	Hazard Quotient
Methylene Chloride	8.84E-04	0.63	15	234	9	70	3285	8.65E-02	9.00E-01	8.50E-05
									Total Hazard Index	8.50E-05

Carcinogens

$$IF = (IR \times ET \times EF \times ED)/(BW \times AT)$$
$$CR = C \times IF \times SF$$

	C	IR	ET	EF	ED	BW	AT	IF	SF	CR
Chemical	VOC Concentration in air (mg/m^3)	Inhalation Rate (m^3/hr)	Exposure Time (hr/day)	Exposure Frequency (days/yr)	Exposure Duration (years)	Body Weight (kg)	Averaging Time (years)	Intake Factor ($m^3/kg\text{-}day$)	Slope Factor 1/(mg/kg-day)	Cancer Risk
1,1-Dichloroethene	2.60E-04	0.63	15	234	9	70	25550	1.11E-02	1.20E+00	3.47E-06
Carbon Tetrachloride	2.26E-01	0.63	15	234	9	70	25550	1.11E-02	5.20E-02	1.31E-04
Chloroform	6.76E-03	0.63	15	234	9	70	25550	1.11E-02	8.00E-02	6.02E-06
Methylene Chloride	8.84E-04	0.63	15	234	9	70	25550	1.11E-02	1.60E-03	1.57E-08
Tetrachloroethene	7.46E-02	0.63	15	234	9	70	25550	1.11E-02	2.00E-03	1.66E-06
Trichloroethene	7.17E-02	0.63	15	234	9	70	25550	1.11E-02	6.00E-03	4.79E-06
									Total Cancer Risk	1.47E-04

HYPOTHETICAL ONSITE RESIDENT
AREA OF CONCERN NO. 1

RME - Inhalation of VOCs from groundwater use

Noncarcinogens

$$IF = (IR \times ET \times EF \times ED)/(BW \times AT)$$
$$HQ = (C \times IF)/RfD$$

	C	IR	ET	EF	ED	BW	AT	IF	RfD	HQ
Chemical	VOC Concentration in air (mg/m^3)	Inhalation Rate (m^3/hr)	Exposure Time (hr/day)	Exposure Frequency (days/yr)	Exposure Duration (years)	Body Weight (kg)	Averaging Time (years)	Intake Factor ($m^3/kg\text{-}day$)	Reference Dose (mg/kg-day)	Hazard Quotient
Methylene Chloride	8.84E-04	0.63	24	350	30	70	10950	2.07E-01	9.00E-01	2.03E-04
									Total Hazard Index	2.03E-04

Carcinogens

$$IF = (IR \times ET \times EF \times ED)/(BW \times AT)$$
$$CR = C \times IF \times SF$$

	C	IR	ET	EF	ED	BW	AT	IF	SF	CR
Chemical	VOC Concentration in air (mg/m^3)	Inhalation Rate (m^3/hr)	Exposure Time (hr/day)	Exposure Frequency (days/yr)	Exposure Duration (years)	Body Weight (kg)	Averaging Time (years)	Intake Factor ($m^3/kg\text{-}day$)	Slope Factor 1/(mg/kg-day)	Cancer Risk
1,1-Dichloroethene	2.60E-04	0.63	24	350	30	70	25550	8.88E-02	1.20E+00	2.77E-05
Carbon Tetrachloride	2.26E-01	0.63	24	350	30	70	25550	8.88E-02	5.20E-02	1.04E-03
Chloroform	6.76E-03	0.63	24	350	30	70	25550	8.88E-02	8.00E-02	4.80E-05
Methylene Chloride	8.84E-04	0.63	24	350	30	70	25550	8.88E-02	1.60E-03	1.26E-07
Tetrachloroethene	7.46E-02	0.63	24	350	30	70	25550	8.88E-02	2.00E-03	1.32E-05
Trichloroethene	7.17E-02	0.63	24	350	30	70	25550	8.88E-02	6.00E-03	3.82E-05
									Total Cancer Risk	1.17E-03

HYPOTHETICAL SITE RESIDENT
AREA OF CONCERN NO. 1

CT - External Radiation

IF = TF x GSF x EF x ED
CR = C x IF x SF

Radionuclide	C Soil Concentration (pCi/g)	TF Gamma Time Factor (T_e)	GSF Gamma Shielding Factor ($1-S_e$)	EF Percent of year Exposed	ED Exposure Duration (years)	IF Intake Factor (years)	SF Slope Factor (1/pCi-yr/g)	CR Cancer Risk
Americium-241	2.95E+01	0.75	0.5	0.64	9	2.16E+00	4.90E-09	3.12E-07
Plutonium-239/240	8.13E+02	0.75	0.5	0.64	9	2.16E+00	1.88E-11	3.30E-08
							Total Cancer Risk	3.45E-07

RME - External Radiation

IF = TF x GSF x EF x ED
CR = C x IF x SF

Radionuclide	C Soil Concentration (pCi/g)	TF Gamma Time Factor (T_e)	GSF Gamma Shielding Factor ($1-S_e$)	EF Percent of year Exposed	ED Exposure Duration (years)	IF Intake Factor (years)	SF Slope Factor (1/pCi-yr/g)	CR Cancer Risk
Americium-241	2.95E+01	1	0.8	0.96	30	2.30E+01	4.90E-09	3.33E-06
Plutonium-239/240	8.13E+02	1	0.8	0.96	30	2.30E+01	1.88E-11	3.52E-07
							Total Cancer Risk	3.68E-06

SUMMARY OF RISK
HYPOTHETICAL ONSITE RESIDENT
10-ACRE MAXIMUM EXPOSURE AREA
IN AREA OF CONCERN NO. 1

	Central Tendency		Reasonable Maximum	
Pathway	Hazard Index	Cancer Risk	Hazard Index	Cancer Risk
Ingestion of surface soil by an adult	1.24E-05	-	5.78E-05	-
Ingestion of surface soil by a child	1.48E-04	-	5.40E-04	
Carcinogenic effects of soil ingestion	-	1.03E-05	-	1.43E-04
Inhalation of particulates from surface soil	-	3.49E-06	-	3.67E-05
Dermal contact with surface soil*	5.98E-07	2.15E-11	1.85E-05	2.22E-09
Ingestion of vegetables with soil deposition	3.85E-08	2.39E-08	2.88E-07	5.95E-07
Ingestion of fruit with soil deposition	5.03E-08	3.12E-08	3.52E-07	7.28E-07
Ingestion of leafy vegetables with root uptake	5.06E-05	4.65E-07	1.89E-04	5.79E-06
Ingestion of other produce with root uptake	6.26E-04	4.86E-05	2.19E-03	4.32E-06
Ingestion of groundwater	2.26E+01	4.25E-04	1.61E+02	1.01E-02
Ingestion of surface water - Walnut Creek	1.52E-06	4.77E-11	2.77E-05	2.89E-09
Ingestion of surface water - Woman Creek	8.01E-07	2.66E-10	1.46E-05	1.61E-08
Dermal contact with surface water - Walnut Creek	8.36E-05	7.64E-09	5.95E-04	1.81E-07
Dermal contact with surface water - Woman Creek	2.78E-05	1.29E-09	1.98E-04	3.06E-08
Inhalation of VOCs from infiltration	1.16E-09	1.34E-10	2.78E-09	1.07E-09
Inhalation of VOCs from groundwater use	2.09E-02	5.69E-04	4.99E-02	4.54E-03
External Radiation	-	9.45E-07	-	1.01E-05
Total	2.26E+01	1.06E-03	1.61E+02	1.48E-02

* Dermal contact with metals (except mercury) and radionuclides is considered insignificant.

HYPOTHETICAL SITE RESIDENT
10-ACRE MAXIMUM EXPOSURE AREA
IN AREA OF CONCERN NO. 1

CT - Adult soil ingestion

Noncarcinogens

IF = (IR-A x ED-A x FC-A x EF x ME x CF)/(BW-A x AT)
HQ = (C x IF)/RfD

	C	IR-A	ED-A	FC-A	CF	ME	EF	BW-A	AT	IF	RfD	HQ
Chemical	Soil Concentration (mg/kg)	Ingestion Rate (mg/day)	Exposure Duration (years)	Fraction Contaminated	Conversion Factor (kg/mg)	Matrix Effect	Exposure Frequency (days/yr)	Body Weight (kg)	Averaging Time (days)	Intake Factor (kg/kg-day)	Reference Dose (mg/kg-day)	Hazard Quotient
Bis(2-ethylhexyl)phthalate	5.10E-01	50	7	0.64	0.000001	1	234	70	2555	2.93E-07	2.00E-02	7.47E-06
Chromium	1.67E+01	50	7	0.64	0.000001	1	234	70	2555	2.93E-07	1.00E+00	4.89E-06
											Total Hazard Index	1.24E-05

RME - Adult soil ingestion

Noncarcinogens

IF = (IR-A x ED-A x FC-A x EF x ME x CF)/(BW-A x AT-A)
HQ = (C x IF)/RfD

	C	IR-A	ED-A	FC-A	ME	EF	CF	BW-A	AT	IF	RfD	HQ
Chemical	Soil Concentration (mg/kg)	Ingestion Rate (mg/day)	Exposure Duration (years)	Fraction Contaminated	Matrix Effect	Exposure Frequency (days/yr)	Conversion Factor (kg/mg)	Body Weight (kg)	Averaging Time (days)	Intake Factor (kg/kg-day)	Reference Dose (mg/kg-day)	Hazard Quotient
Bis(2-ethylhexyl)phthalate	5.10E-01	100	24	1	1	350	0.000001	70	8760	1.37E-06	2.00E-02	3.49E-05
Chromium	1.67E+01	100	24	1	1	350	0.000001	70	8760	1.37E-06	1.00E+00	2.29E-05
											Total Hazard Index	5.78E-05

HYPOTHETICAL ONSITE RESIDENT
10-ACRE MAXIMUM EXPOSURE AREA
IN AREA OF CONCERN NO. 1

CT - Child soil ingestion

Noncarcinogens

IF = (IR-C x ED-C x FC-C x EF x ME x CF)/(BW-C x AT-C)
HQ = (C x IF)/RfD

Chemical	C Soil Concentration (mg/kg)	IR-C Ingestion Rate (mg/day)	ED-C Exposure Duration (years)	FC-C Fraction Contaminated	CF Conversion Factor (kg/mg)	ME Matrix Effect	EF Exposure Frequency (days/yr)	BW-C Body Weight (kg)	AT-C Averaging Time (days)	IF Intake Factor (kg/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
Bis(2-ethylhexyl)phthalate	5.10E-01	100	2	0.82	0.000001	1	234	15	730	3.50E-06	2.00E-02	8.94E-05
Chromium	1.67E+01	100	2	0.82	0.000001	1	234	15	730	3.50E-06	1.00E+00	5.85E-05
											Total Hazard Index	1.48E-04

RME -Child soil ingestion

Noncarcinogens

IF =(IR-C x ED-C x FC-C x EF x ME x CF)/BW-C x AT-C
HQ = (C x IF)/RfD

Chemical	C Soil Concentration (mg/kg)	IR-C Ingestion Rate (mg/day)	ED-C Exposure Duration (years)	FC-C Fraction Contaminated	CF Conversion Factor (kg/mg)	ME Matrix Effect	EF Exposure Frequency (days/yr)	BW-C Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (kg/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
Bis(2-ethylhexyl)phthalate	5.10E-01	200	6	1	0.000001	1	350	15	2190	1.28E-05	2.00E-02	3.26E-04
Chromium	1.67E+01	200	6	1	0.000001	1	350	15	2190	1.28E-05	1.00E+00	2.14E-04
											Total Hazard Index	5.40E-04

HYPOTHETICAL ONSITE RESIDENT
10-ACRE MAXIMUM EXPOSURE AREA
IN AREA OF CONCERN NO. 1

CT - Time-weighted average soil ingestion

Nonradionuclide Carcinogens

$$IF = ([(IR\text{-}C \times ED\text{-}C \times FC\text{-}C)/(BW\text{-}C) + (IR\text{-}A \times ED\text{-}A \times FC\text{-}A)/(BW\text{-}A)] \times EF \times ME \times CF)/AT$$

$$CR = C \times IF \times SF$$

	C	IR-C	ED-C	FC-C	BW-C	IR-A	ED-A	FC-A	BW-A
		Child				Adult			
Chemical	Soil Concentration (mg/kg)	Ingestion Rate (mg/day)	Exposure Duration (years)	Fraction Contaminated	Body Weight (kg)	Ingestion Rate (mg/day)	Exposure Duration (years)	Fraction Contaminated	Body Weight (kg)
Bis(2-ethylhexyl)phthalate	5.10E-01	100	2	0.82	15	50	7	0.64	70

Chemical	CF Conversion Factor (kg/mg)	ME Matrix Effect	EF Exposure Frequency (days/yr)	AT Averaging Time (days)	IF Intake Factor (kg/kg-day)	SF Slope Factor (mg/kg-day)	CR Cancer Risk
Bis(2-ethylhexyl)phthalate	0.000001	1	234	25550	1.29E-07	1.40E-02	9.24E-10
					Total Chemical Cancer Risk		9.24E-10

HYPOTHETICAL ONSITE RESIDENT
10-ACRE MAXIMUM EXPOSURE AREA
IN AREA OF CONCERN NO. 1

CT - Time-weighted average soil ingestion

Radionuclides

$$IF = [(IR\text{-}C \times ED\text{-}C \times FC\text{-}C) + (IR\text{-}A \times ED\text{-}A \times FC\text{-}A)] \times EF \times ME \times CF$$
$$CR = C \times IF \times SF$$

	C	IR-C	ED-C	FC-C	IR-A	ED-A	FC-A	ME	CF
		Child			Adult				
Chemical	Soil Concentration (pCi/g)	Ingestion Rate (mg/day)	Exposure Duration (years)	Fraction Contaminated	Ingestion Rate (mg/day)	Exposure Duration (years)	Fraction Contaminated	Matrix Effect	Conversion Factor (g/mg)
Americium-241	8.77E+01	100	2	0.82	50	7	0.64	1	0.001
Plutonium-239/240	4.03E+02	100	2	0.82	50	7	0.64	1	0.001

	EF	IF	SF	CR
Chemical	Exposure Frequency (days/yr)	Intake Factor (g)	Slope Factor (Risk/pCi)	Cancer Risk
Americium-241	234	9.08E+01	2.40E-10	1.91E-06
Plutonium-239/240	234	9.08E+01	2.30E-10	8.42E-06
		Total Radionuclide Cancer Risk		1.03E-05
		Total Cancer Risk		1.03E-05

HYPOTHETIC. ONSITE RESIDENT
10-ACRE MAXIMUM EXPOSURE AREA
IN AREA OF CONCERN NO. 1

RME - Time-weighted average soil ingestion

Nonradionuclide Carcinogens

$$IF = ([(IR\text{-}C \times ED\text{-}C \times FC\text{-}C)/(BW\text{-}C) + (IR\text{-}A \times ED\text{-}A \times FC\text{-}A)/(BW\text{-}A)] \times EF \times ME \times CF)/AT$$

$$CR = C \times IF \times SF$$

	C	IR-C	ED-C	FC-C	BW-C	IR-A	ED-A	FC-A	BW-A
		Child				Adult			
Chemical	Soil Concentration (mg/kg)	Ingestion Rate (mg/day)	Exposure Duration (years)	Fraction Contaminated	Body Weight (kg)	Ingestion Rate (mg/day)	Exposure Duration (years)	Fraction Contaminated	Body Weight (kg)
Bis(2-ethylhexyl)phthalate	5.10E-01	200	6	1	15	100	24	1	70

	CF	ME	EF	AT	IF	SF	CR
Chemical	Conversion Factor (kg/mg)	Matrix Effect	Exposure Frequency (days/yr)	Averaging Time (days)	Intake Factor (kg/kg-day)	Slope Factor (mg/kg-day)	Cancer Risk
Bis(2-ethylhexyl)phthalate	0.000001	1	350	25550	1.57E-06	1.40E-02	1.12E-08
					Total Chemical Cancer Risk		1.12E-08

HYPOTHETICAL ONSITE RESIDENT
10-ACRE MAXIMUM EXPOSURE AREA
IN AREA OF CONCERN NO. 1

RME - Time-weighted average soil ingestion

Radionuclides

$$IF = [(IR\text{-}C \times ED\text{-}C \times FC\text{-}C) + (IR\text{-}A \times ED\text{-}A \times FC\text{-}A)] \times EF \times ME \times CF$$

$$CR = C \times IF \times SF$$

	C	IR-C	ED-C	FC-C	IR-A	ED-A	FC-A	ME	CF
		Child			Adult				
Radionuclide	Soil Concentration (pCi/g)	Ingestion Rate (mg/day)	Exposure Duration (years)	Fraction Contaminated	Ingestion Rate (mg/day)	Exposure Duration (years)	Fraction Contaminated	Matrix Effect	Conversion Factor (g/mg)
Americium-241	8.77E+01	200	6	1	100	24	1	1	0.001
Plutonium-239/240	4.03E+02	200	6	1	100	24	1	1	0.001

	EF	IF	SF	CR
Radionuclide	Exposure Frequency (days/yr)	Intake Factor (g)	Slope Factor (Risk/pCi)	Cancer Risk
Americium-241	350	1.26E+03	2.40E-10	2.65E-05
Plutonium-239/240	350	1.26E+03	2.30E-10	1.17E-04
		Total Radionuclide Cancer Risk		1.43E-04
			Total Cancer Risk	1.43E-04

HYPOTHETICAL ONSITE RESIDENT
10-ACRE MAXIMUM EXPOSURE AREA
IN AREA OF CONCERN NO. 1

CT Inhalation of Particulates - Radionuclides

IF = IR x ET x EF x ED x DF
CR = IF x C x SF

Radionuclides	C Air Concentration (pCi/m³)	IR Inhalation Rate (m³/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	DF Deposition Factor	IF Intake Factor (m³)	SF Slope Factor (Risk/pCi)	CR Cancer Risk
Americium-241	8.45E-04	0.63	15	234	9	1	1.99E+04	3.20E-08	5.38E-07
Plutonium-239/240	3.90E-03	0.63	15	234	9	1	1.99E+04	3.80E-08	2.95E-06
							Total Radionuclide Cancer Risk		3.49E-06

Total Cancer Risk 3.49E-06

RME Inhalation of Particulates - Radionuclides

IF = IR x ET x EF x ED x DF
CR = IF x C x SF

Radionuclides	C Air Concentration (pCi/m³)	IR Inhalation Rate (m³/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	DF Deposition Factor	IF Intake Factor (m³)	SF Slope Factor (Risk/pCi)	CR Cancer Risk
Americium-241	8.45E-04	0.83	24	350	30	1	2.09E+05	3.20E-08	5.66E-06
Plutonium-239/240	3.90E-03	0.83	24	350	30	1	2.09E+05	3.80E-08	3.10E-05
							Total Radionuclide Cancer Risk		3.67E-05

Total Cancer Risk 3.67E-05

HYPOTHETICAL ONSITE RESIDENT
10-ACRE MAXIMUM EXPOSURE AREA
IN AREA OF CONCERN NO. 1

CT- Dermal contact with surface soil

Noncarcinogens

IF = (SA x FC x EF x ED x AF x AB x CF)/(BW x AT)
HQ = (C x IF)/RfD

Chemical	C Soil Concentration (mg/kg)	SA Skin Surface Area (cm^2)	FC Fraction Contaminated	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	AF Soil Adherence (mg/cm^2)	AB Skin Absorption	CF Conversion Factor (kg/mg)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (kg/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
Bis(2-ethylhexyl)phthalate	5.10E-01	2000	0.64	234	9	0.2	0.01	0.000001	70	3285	2.34E-08	2.00E-02	5.98E-07
											Total Hazard Index		5.98E-07

Nonradionuclide Carcinogens

IF = (SA x FC x EF x ED x AF x AB x CF)/(BW x AT)
CR = C x IF x SF

Chemical	C Soil Concentration (mg/kg)	SA Skin Surface Area (cm^2)	FC Fraction Contaminated	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	AF Soil Adherence (mg/cm^2)	AB Skin Absorption	CF Conversion Factor (kg/mg)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (kg/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
Bis(2-ethylhexyl)phthalate	5.10E-01	2000	0.64	234	9	0.2	0.01	0.000001	70	25550	3.01E-09	1.40E-02	2.15E-11
											Total Cancer Risk		2.15E-11

HYPOTHETICAL SITE RESIDENT
10-ACRE MAXIMUM EXPOSURE AREA
IN AREA OF CONCERN NO. 1

RME- Dermal contact with surface soil

Noncarcinogens

IF = (SA x FC x EF x ED x AF x AB x CF)/(BW x AT)

HQ = (C x IF)/RfD

Chemical	C Soil Concentration (mg/kg)	SA Skin Surface Area (cm^2)	FC Fraction Contaminated	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	AF Soil Adherence (mg/cm^2)	AB Skin Absorption	CF Conversion Factor (kg/mg)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (kg/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
Bis(2-ethylhexyl)phthalate	5.10E-01	5300	1	350	30	1	0.01	0.000001	70	10950	7.26E-07	2.00E-02	1.85E-05
											Total Hazard Index		1.85E-05

RME- Dermal contact with surface soil

Nonradionuclide Carcinogens

IF = (SA x FC x EF x ED x AF x AB x CF)/(BW x AT)

CR = C x IF x SF

Chemical	C Soil Concentration (mg/kg)	SA Skin Surface Area (cm^2)	FC Fraction Contaminated	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	AF Soil Adherence (mg/cm^2)	AB Skin Absorption	CF Conversion Factor (kg/mg)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (kg/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
Bis(2-ethylhexyl)phthalate	5.10E-01	5300	1	350	30	1	0.01	0.000001	70	25550	3.11E-07	1.40E-02	2.22E-09
											Total Cancer Risk		2.22E-09

HYPOTHETICAL ONSITE RESIDENT
10-ACRE MAXIMUM EXPOSURE AREA
IN AREA OF CONCERN NO. 1

CT - Ingestion of vegetables with soil deposition

Noncarcinogens

$$IF = (IR \times FH \times FE \times WO \times ME \times EF \times ED \times CF)/(BW \times AT)$$
$$HQ = (C \times IF)/RfD$$

	C	IR	FH	FE	WO	ME	EF	ED	CF	BW	AT	IF	RfD	HQ
Chemical	Concentration on Produce (mg/kg)	Ingestion Rate (mg/day)	Fraction Homegrown	Fraction Exposed	Washoff Factor	Matrix Effect	Exposure Frequency (days/yr)	Exposure Duration (years)	Conversion Factor (kg/mg)	Body Weight (kg)	Averaging Time (days)	Intake Factor (kg/kg-day)	Reference Dose (mg/kg-day)	Hazard Quotient
Bis(2-ethylhexyl)phthalate	1.06E-05	200000	0.25	0.3	0.5	1	150	9	0.000001	70	3285	4.40E-05	2.00E-02	2.33E-08
Chromium	3.45E-04	200000	0.25	0.3	0.5	1	150	9	0.000001	70	3285	4.40E-05	1.00E+00	1.52E-08
													Total Hazard Index	3.85E-08

HYPOTHETICAL [illegible]ITE RESIDENT
10-ACRE MAXIMUM EXPOSURE AREA
IN AREA OF CONCERN NO. 1

CT - Ingestion of vegetables with soil deposition

Nonradionuclide Carcinogen

IF = (IR x FH x FE x WO x ME x EF x ED x CF)/(BW x AT)
CR = C x IF x SF

	C	IR	FH	FE	WO	ME	EF	ED	CF	BW	AT	IF	SF	CR
Chemical	Concentration on Produce (mg/kg)	Ingestion Rate (mg/day)	Fraction Homegrown	Fraction Exposed	Washoff Factor	Matrix Effect	Exposure Frequency (days/yr)	Exposure Duration (years)	Conversion Factor (kg/mg)	Body Weight (kg)	Averaging Time (days)	Intake Factor (kg/kg-day)	Slope Factor 1/(mg/kg-day)	Cancer Risk
Bis(2-ethylhexyl)phthalate	1.06E-05	200000	0.25	0.3	0.5	1	150	9	0.000001	70	25550	5.66E-06	1.40E-02	8.40E-13
												Total Chemical Cancer Risk		8.40E-13

Radionuclides

IF = IR x FC x WO x ME x EF x ED x CF
CR = C x IF x SF

	C	IR	FH	FE	WO	ME	EF	ED	CF	IF	SF	CR
Radionuclide	Concentration on Produce (pCi/g)	Ingestion Rate (mg/day)	Fraction Homegrown	Fraction Exposed	Washoff Factor	Matrix Effect	Exposure Frequency (days/yr)	Exposure Duration (years)	Conversion Factor (g/mg)	Intake Factor (g)	Slope Factor (Risk/pCi)	Cancer Risk
Americium-241	1.81E-03	200000	0.25	0.3	0.5	1	150	9	0.001	1.01E+04	2.40E-10	4.40E-09
Plutonium-239/240	8.37E-03	200000	0.25	0.3	0.5	1	150	9	0.001	1.01E+04	2.30E-10	1.95E-08
											Total Radionuclide Cancer Risk	2.39E-08

Total Cancer Risk 2.39E-08

HYPOTHETICAL ONSITE RESIDENT
10-ACRE MAXIMUM EXPOSURE AREA
IN AREA OF CONCERN NO. 1

RME - Ingestion of vegetables with soil deposition

Noncarcinogens

$$IF = (IR \times FC \times WO \times ME \times EF \times ED \times CF)/(BW \times AT)$$
$$HQ = (C \times IF)/RfD$$

	C	IR	FH	FE	WO	ME	EF	ED	CF	BW	AT	IF	RfD	HQ
Chemical	Concentration on Produce (mg/kg)	Ingestion Rate (mg/day)	Fraction Homegrown	Fraction Exposed	Washoff Factor	Matrix Effect	Exposure Frequency (days/yr)	Exposure Duration (years)	Conversion Factor (kg/mg)	Body Weight (kg)	Averaging Time (days)	Intake Factor (kg/kg-day)	Reference Dose (mg/kg-day)	Hazard Quotient
Bis(2-ethylhexyl)phthalate	1.06E-05	200000	0.4	0.3	1	1	350	30	0.000001	70	10950	3.29E-04	2.00E-02	1.74E-07
Chromium	3.45E-04	200000	0.4	0.3	1	1	350	30	0.000001	70	10950	3.29E-04	1.00E+00	1.13E-07
													Total Hazard Index	2.88E-07

HYPOTHETICAL SITE RESIDENT
10-ACRE MAXIMUM EXPOSURE AREA
IN AREA OF CONCERN NO. 1

RME - Ingestion of vegetables with soil deposition

Nonradionuclide Carcinogen

IF = (IR x FC x WO x ME x EF x ED x CF)/(BW x AT)
CR = C x IF x SF

	C	IR	FH	FE	WO	ME	EF	ED	CF	BW	AT	IF	SF	CR
Chemical	Concentration on Produce (mg/kg)	Ingestion Rate (mg/day)	Fraction Homegrown	Fraction Exposed	Washoff Factor	Matrix Effect	Exposure Frequency (days/yr)	Exposure Duration (years)	Conversion Factor (kg/mg)	Body Weight (kg)	Averaging Time (days)	Intake Factor (kg/kg-day)	Slope Factor 1/(mg/kg-day)	Cancer Risk
Bis(2-ethylhexyl)phthalate	1.06E-05	200000	0.4	0.3	1	1	350	30	0.000001	70	25550	1.41E-04	1.40E-02	2.09E-11
													Total Chemical Cancer Risk	2.09E-11

Radionuclides

IF = IR x FC x WO x ME x EF x ED x CF
CR = C x IF x SF

	C	IR	FH	FE	WO	ME	EF	ED	CF	IF	SF	CR
Radionuclide	Concentration on Produce (pCi/g)	Ingestion Rate (mg/day)	Fraction Homegrown	Fraction Exposed	Washoff Factor	Matrix Effect	Exposure Frequency (days/yr)	Exposure Duration (years)	Conversion Factor (g/mg)	Intake Factor (g)	Slope Factor (Risk/pCi)	Cancer Risk
Americium-241	1.81E-03	200000	0.4	0.3	1	1	350	30	0.001	2.52E+05	2.40E-10	1.09E-07
Plutonium-239/240	8.37E-03	200000	0.4	0.3	1	1	350	30	0.001	2.52E+05	2.30E-10	4.85E-07
											Total Radionuclide Cancer Risk	5.95E-07

Total Cancer Risk 5.95E-07

HYPOTHETICAL ONSITE RESIDENT
10-ACRE MAXIMUM EXPOSURE AREA
IN AREA OF CONCERN NO. 1

CT - Ingestion of fruit with soil deposition

Noncarcinogens

$$IF = (IR \times FH \times FE \times WO \times ME \times EF \times ED \times CF)/(BW \times AT)$$

$$HQ = (C \times IF)/RfD$$

	C	IR	FH	FE	WO	ME	EF	ED	CF	BW	AT	IF	RfD	HQ
Chemical	Concentration on Produce (mg/kg)	Ingestion Rate (mg/day)	Fraction Homegrown	Fraction Exposed	Washoff Factor	Matrix Effect	Exposure Frequency (days/yr)	Exposure Duration (years)	Conversion Factor (kg/mg)	Body Weight (kg)	Averaging Time (days)	Intake Factor (kg/kg-day)	Reference Dose (mg/kg-day)	Hazard Quotient
Bis(2-ethylhexyl)phthalate	1.06E-05	140000	0.2	0.7	0.5	1	150	9	0.000001	70	3285	5.75E-05	2.00E-02	3.05E-08
Chromium	3.45E-04	140000	0.2	0.7	0.5	1	150	9	0.000001	70	3285	5.75E-05	1.00E+00	1.98E-08
													Total Hazard Index	5.03E-08

HYPOTHETICAL SITE RESIDENT
10-ACRE MAXIMUM EXPOSURE AREA
IN AREA OF CONCERN NO. 1

CT - Ingestion of fruit with soil deposition

Nonradionuclide Carcinogen

IF = (IR x FH x FE x WO x ME x EF x ED x CF)/(BW x AT)
CR = C x IF x SF

	C	IR	FH	FE	WO	ME	EF	ED	CF	BW	AT	IF	SF	CR
Chemical	Concentration on Produce (mg/kg)	Ingestion Rate (mg/day)	Fraction Homegrown	Fraction Exposed	Washoff Factor	Matrix Effect	Exposure Frequency (days/yr)	Exposure Duration (years)	Conversion Factor (kg/mg)	Body Weight (kg)	Averaging Time (days)	Intake Factor (kg/kg-day)	Slope Factor 1/(mg/kg-day)	Cancer Risk
Bis(2-ethylhexyl)phthalate	1.06E-05	140000	0.2	0.7	0.5	1	150	9	0.000001	70	25550	7.40E-06	1.40E-02	1.10E-12
												Total Chemical Cancer Risk		1.10E-12

Radionuclides

IF = IR x FC x WO x ME x EF x ED x CF
CR = C x IF x SF

	C	IR	FH	FE	WO	ME	EF	ED	CF	IF	SF	CR
Radionuclide	Concentration on Produce (pCi/g)	Ingestion Rate (mg/day)	Fraction Homegrown	Fraction Exposed	Washoff Factor	Matrix Effect	Exposure Frequency (days/yr)	Exposure Duration (years)	Conversion Factor (g/mg)	Intake Factor (g)	Slope Factor (Risk/pCi)	Cancer Risk
Americium-241	1.81E-03	140000	0.2	0.7	0.5	1	150	9	0.001	1.32E+04	2.40E-10	5.75E-09
Plutonium-239/240	8.37E-03	140000	0.2	0.7	0.5	1	150	9	0.001	1.32E+04	2.30E-10	2.55E-08
											Total Radionuclide Cancer Risk	3.12E-08

Total Cancer Risk 3.12E-08

HYPOTHETICAL ONSITE RESIDENT
10-ACRE MAXIMUM EXPOSURE AREA
IN AREA OF CONCERN NO. 1

RME - Ingestion of fruit with soil deposition

Noncarcinogens

IF = (IR x FC x WO x ME x EF x ED x CF)/(BW x AT)
HQ = (C x IF)/RfD

	C	IR	FH	FE	WO	ME	EF	ED	CF	BW	AT	IF	RfD	HQ
Chemical	Concentration on Produce (mg/kg)	Ingestion Rate (mg/day)	Fraction Homegrown	Fraction Exposed	Washoff Factor	Matrix Effect	Exposure Frequency (days/yr)	Exposure Duration (years)	Conversion Factor (kg/mg)	Body Weight (kg)	Averaging Time (days)	Intake Factor (kg/kg-day)	Reference Dose (mg/kg-day)	Hazard Quotient
Bis(2-ethylhexyl)phthalate	1.06E-05	140000	0.3	0.7	1	1	350	30	0.000001	70	10950	4.03E-04	2.00E-02	2.13E-07
Chromium	3.45E-04	140000	0.3	0.7	1	1	350	30	0.000001	70	10950	4.03E-04	1.00E+00	1.39E-07
													Total Hazard Index	3.52E-07

HYPOTHETICAL SITE RESIDENT
10-ACRE MAXIMUM EXPOSURE AREA
IN AREA OF CONCERN NO. 1

RME - Ingestion of fruit with soil deposition

Nonradionuclide Carcinogen

IF = (IR x FC x WO x ME x EF x ED x CF)/(BW x AT)
CR = C x IF x SF

	C	IR	FH	FE	WO	ME	EF	ED	CF	BW	AT	IF	SF	CR
Chemical	Concentration on Produce (mg/kg)	Ingestion Rate (mg/day)	Fraction Homegrown	Fraction Exposed	Washoff Factor	Matrix Effect	Exposure Frequency (days/yr)	Exposure Duration (years)	Conversion Factor (kg/mg)	Body Weight (kg)	Averaging Time (days)	Intake Factor (kg/kg-day)	Slope Factor 1/(mg/kg-day)	Cancer Risk
Bis(2-ethylhexyl)phthalate	1.06E-05	140000	0.3	0.7	1	1	350	30	0.000001	70	25550	1.73E-04	1.40E-02	2.56E-11
													Total Chemical Cancer Risk	2.56E-11

Radionuclides

IF = IR x FC x WO x ME x EF x ED x CF
CR = C x IF x SF

	C	IR	FH	FE	WO	ME	EF	ED	CF	IF	SF	CR
Radionuclide	Concentration on Produce (pCi/g)	Ingestion Rate (mg/day)	Fraction Homegrown	Fraction Exposed	Washoff Factor	Matrix Effect	Exposure Frequency (days/yr)	Exposure Duration (years)	Conversion Factor (g/mg)	Intake Factor (g)	Slope Factor (Risk/pCi)	Cancer Risk
Americium-241	1.81E-03	140000	0.3	0.7	1	1	350	30	0.001	3.09E+05	2.40E-10	1.34E-07
Plutonium-239/240	8.37E-03	140000	0.3	0.7	1	1	350	30	0.001	3.09E+05	2.30E-10	5.94E-07
											Total Radionuclide Cancer Risk	7.28E-07

Total Cancer Risk 7.28E-07

HYPOTHETICAL ONSITE RESIDENT
10-ACRE MAXIMUM EXPOSURE AREA
IN AREA OF CONCERN NO. 1

CT - Ingestion of leafy produces with root uptake

Noncarcinogens

$$IF = (IR \times FP \times FH \times FC \times ME \times EF \times ED \times CF)/(BW \times AT)$$
$$HQ = (C \times IF)/RfD$$

	C	IR	FP	FH	ME	EF	ED	CF	BW	AT	IF	RfD	HQ
Chemical	Concentration in Produce mg/kg	Ingestion Rate (mg/day)	Fraction of Total Produce (1)	Fraction Homegrown	Matrix Effect	Exposure Frequency (days/yr)	Exposure Duration (years)	Conversion Factor (kg/mg)	Body Weight (kg)	Averaging Time (days)	Intake Factor (kg/kg-day)	Reference Dose (mg/kg-day)	Hazard Quotient
Bis(2-ethylhexyl)phthalate	3.27E-02	340000	0.06	0.25	1	150	9	0.000001	70	3285	2.99E-05	2.00E-02	4.90E-05
Chromium	5.36E-02	340000	0.06	0.25	1	150	9	0.000001	70	3285	2.99E-05	1.00E+00	1.60E-06
												Total Hazard Index	5.06E-05

HYPOTHETICAL OFFSITE RESIDENT
10-ACRE MAXIMUM EXPOSURE AREA
IN AREA OF CONCERN NO. 1

CT - Ingestion of leafy produces with root uptake

Nonradionuclide Carcinogens

IF = (IR x FC x FP x FH x ME x EF x ED x CF)/(BW x AT)
CR = C x IF x SF

Chemical	C Concentration in Produce mg/kg	IR Ingestion Rate (mg/day)	FP Fraction of Total Produce (1)	FH Fraction Homegrown	ME Matrix Effect	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	CF Conversion Factor (kg/mg)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (kg/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
Bis(2-ethylhexyl)phthalate	3.27E-02	340000	0.06	0.25	1	150	9	0.000001	70	25550	3.85E-06	1.40E-02	1.76E-09
										Total Chemical Cancer Risk			1.76E-09

Radionuclides

IF = IR x FP x FH x FC x ME x EF x ED x CF
CR = C x IF x SF

Radionuclide	C Concentration in Produce (pCi/g)	IR Ingestion Rate (mg/day)	FP Fraction of Total Produce (1)	FH Fraction Homegrown	ME Matrix Effect	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	CF Conversion Factor (g/mg)	IF Intake Factor (g)	SF Slope Factor (Risk/pCi)	CR Cancer Risk
Americium-241	2.06E-01	340000	0.06	0.25	1	150	9	0.001	6.89E+03	2.40E-10	3.40E-07
Plutonium-239/240	7.76E-02	340000	0.06	0.25	1	150	9	0.001	6.89E+03	2.30E-10	1.23E-07
								Total Radionuclide Cancer Risk			4.63E-07
									Total Cancer Risk		4.65E-07

HYPOTHETICAL ONSITE RESIDENT
10-ACRE MAXIMUM EXPOSURE AREA
IN AREA OF CONCERN NO. 1

RME - Ingestion of leafy produces with root uptake

Noncarcinogens

IF = (IR x FC x FP x FH x ME x EF x ED x CF)/(BW x AT)

HQ = (C x IF)/RfD

	C	IR	FP	FH	ME	EF	ED	CF	BW	AT	IF	RfD	HQ
Chemical	Concentration in Produce mg/kg	Ingestion Rate (mg/day)	Fraction of Total Produce (1)	Fraction Homegrown	Matrix Effect	Exposure Frequency (days/yr)	Exposure Duration (years)	Conversion Factor (kg/mg)	Body Weight (kg)	Averaging Time (days)	Intake Factor (kg/kg-day)	Reference Dose (mg/kg-day)	Hazard Quotient
Bis(2-ethylhexyl)phthalate	3.27E-02	340000	0.06	0.4	1	350	30	0.000001	70	10950	1.12E-04	2.00E-02	1.83E-04
Chromium	5.36E-02	340000	0.06	0.4	1	350	30	0.000001	70	10950	1.12E-04	1.00E+00	5.99E-06
												Total Hazard Index	1.89E-04

HYPOTHETICAL ON-SITE RESIDENT
10-ACRE MAXIMUM EXPOSURE AREA
IN AREA OF CONCERN NO. 1

RME - Ingestion of leafy produces with root uptake

Nonradionuclide Carcinogens

IF = (IR x FPx FH x ME x EF x ED x CF)/(BW x AT)
CR = C x IF x SF

Chemical	C Concentration in Produce mg/kg	IR Ingestion Rate (mg/day)	FP Fraction of Total Produce (1)	FH Fraction Homegrown	ME Matrix Effect	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	CF Conversion Factor (kg/mg)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (kg/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
Bis(2-ethylhexyl)phthalate	3.27E-02	340000	0.06	0.4	1	350	30	0.000001	70	25550	4.79E-05	1.40E-02	2.19E-08
											Total Chemical Cancer Risk		2.19E-08

Radionuclides

IF = IR x FC x FP xFH x ME x EF x ED x CF
CR = C x IF x SF

Radionuclide	C Concentration in Produce (pCi/g)	IR Ingestion Rate (mg/day)	FP Fraction of Total Produce (1)	FH Fraction Homegrown	ME Matrix Effect	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	CF Conversion Factor (g/mg)	IF Intake Factor (g)	SF Slope Factor (Risk/pCi)	CR Cancer Risk
Americium-241	2.06E-01	340000	0.06	0.4	1	350	30	0.001	8.57E+04	2.40E-10	4.24E-06
Plutonium-239/240	7.76E-02	340000	0.06	0.4	1	350	30	0.001	8.57E+04	2.30E-10	1.53E-06
								Total Radionuclide Cancer Risk			5.77E-06
									Total Cancer Risk		5.79E-06

(1) Fraction of ingested produce that is leafy; transfer coefficient (Bv) is used to estimate root uptake (Baes et al. 1984)

HYPOTHETICAL ONSITE RESIDENT
10-ACRE MAXIMUM EXPOSURE AREA
IN AREA OF CONCERN NO. 1

CT - Ingestion of fruit and nonleafy produces with root uptake

Noncarcinogens

$$IF = (IR \times FP \times FH \times FC \times ME \times EF \times ED \times CF)/(BW \times AT)$$
$$HQ = (C \times IF)/RfD$$

	C	IR	FP	FH	ME	EF	ED	CF	BW	AT	IF	RfD	HQ
Chemical	Concentration in Produce mg/kg	Ingestion Rate (mg/day)	Fraction of Total Produce (1)	Fraction Homegrown	Matrix Effect	Exposure Frequency (days/yr)	Exposure Duration (years)	Conversion Factor (kg/mg)	Body Weight (kg)	Averaging Time (days)	Intake Factor (kg/kg-day)	Reference Dose (mg/kg-day)	Hazard Quotient
Bis(2-ethylhexyl)phthalate	3.27E-02	340000	0.94	0.2	1	150	9	0.000001	70	3285	3.75E-04	2.00E-02	6.14E-04
Chromium	3.22E-02	340000	0.94	0.2	1	150	9	0.000001	70	3285	3.75E-04	1.00E+00	1.21E-05
												Total Hazard Index	6.26E-04

HYPOTHETICAL ONSITE RESIDENT
10-ACRE MAXIMUM EXPOSURE AREA
IN AREA OF CONCERN NO. 1

CT - Ingestion of fruit and nonleafy produces with root uptake

Nonradionuclide Carcinogens

IF = (IR x FC x FP x FH x ME x EF x ED x CF)/(BW x AT)
CR = C x IF x SF

	C	IR	FP	FH	ME	EF	ED	CF	BW	AT	IF	SF	CR
Chemical	Concentration in Produce mg/kg	Ingestion Rate (mg/day)	Fraction of Total Produce (1)	Fraction Homegrown	Matrix Effect	Exposure Frequency (days/yr)	Exposure Duration (years)	Conversion Factor (kg/mg)	Body Weight (kg)	Averaging Time (days)	Intake Factor (kg/kg-day)	Slope Factor 1/(mg/kg-day)	Cancer Risk
Bis(2-ethylhexyl)phthalate	3.27E-02	340000	0.94	0.2	1	150	9	0.000001	70	25550	4.82E-05	1.40E-02	2.21E-08
												Total Chemical Cancer Risk	4.82E-05

Radionuclides

IF = IR x FP x FH x FC x ME x EF x ED x CF
CR = C x IF x SF

	C	IR	FP	FH	ME	EF	ED	CF	IF	SF	CR
Radionuclide	Concentration in Produce (pCi/g)	Ingestion Rate (mg/day)	Fraction of Total Produce (1)	Fraction Homegrown	Matrix Effect	Exposure Frequency (days/yr)	Exposure Duration (years)	Conversion Factor (g/mg)	Intake Factor (g)	Slope Factor (Risk/pCi)	Cancer Risk
Americium-241	9.38E-03	340000	0.94	0.2	1	150	9	0.001	8.63E+04	2.40E-10	1.94E-07
Plutonium-239/240	7.76E-03	340000	0.94	0.2	1	150	9	0.001	8.63E+04	2.30E-10	1.54E-07
										Total Radionuclide Cancer Risk	3.48E-07
										Total Cancer Risk	4.86E-05

HYPOTHETICAL ONSITE RESIDENT
10-ACRE MAXIMUM EXPOSURE AREA
IN AREA OF CONCERN NO. 1

RME - Ingestion of fruit and nonleafy produces with root uptake

Noncarcinogens

$$IF = (IR \times FC \times FP \times FH \times ME \times EF \times ED \times CF)/(BW \times AT)$$
$$HQ = (C \times IF)/RfD$$

	C	IR	FP	FH	ME	EF	ED	CF	BW	AT	IF	RfD	HQ
Chemical	Concentration in Produce mg/kg	Ingestion Rate (mg/day)	Fraction of Total Produce (1)	Fraction Homegrown	Matrix Effect	Exposure Frequency (days/yr)	Exposure Duration (years)	Conversion Factor (kg/mg)	Body Weight (kg)	Averaging Time (days)	Intake Factor (kg/kg-day)	Reference Dose (mg/kg-day)	Hazard Quotient
Bis(2-ethylhexyl)phthalate	3.27E-02	340000	0.94	0.3	1	350	30	0.000001	70	10950	1.31E-03	2.00E-02	2.15E-03
Chromium	3.22E-02	340000	0.94	0.3	1	350	30	0.000001	70	10950	1.31E-03	1.00E+00	4.23E-05
								Total Hazard Index					2.19E-03

HYPOTHETICAL ONSITE RESIDENT
10-ACRE MAXIMUM EXPOSURE AREA
IN AREA OF CONCERN NO. 1

RME - Ingestion of fruit and nonleafy produces with root uptake

Nonradionuclide Carcinogens

IF = (IR x FPx FH x ME x EF x ED x CF)/(BW x AT)
CR = C x IF x SF

Chemical	C Concentration in Produce mg/kg	IR Ingestion Rate (mg/day)	FP Fraction of Total Produce (1)	FH Fraction Homegrown	ME Matrix Effect	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	CF Conversion Factor (kg/mg)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (kg/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
Bis(2-ethylhexyl)phthalate	3.27E-02	340000	0.94	0.3	1	350	30	0.000001	70	25550	5.63E-04	1.40E-02	2.58E-07
												Total Chemical Cancer Risk	2.58E-07

Radionuclides

IF = IR x FC x FP xFH x ME x EF x ED x CF
CR = C x IF x SF

Radionuclide	C Concentration in Produce (pCi/g)	IR Ingestion Rate (mg/day)	FP Fraction of Total Produce (1)	FH Fraction Homegrown	ME Matrix Effect	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	CF Conversion Factor (g/mg)	IF Intake Factor (g)	SF Slope Factor (Risk/pCi)	CR Cancer Risk
Americium-241	9.38E-03	340000	0.94	0.3	1	350	30	0.001	1.01E+06	2.40E-10	2.27E-06
Plutonium-239/240	7.76E-03	340000	0.94	0.3	1	350	30	0.001	1.01E+06	2.30E-10	1.80E-06
										Total Radionuclide Cancer Risk	4.06E-06
										Total Cancer Risk	4.32E-06

(1) Fraction of ingested produce that is fruit or nonleafy; transfer coefficient (Br) is used to estimate root uptake (Baes et al. 1984)

HYPOTHETICAL ONSITE RESIDENT
10-ACRE MAXIMUM EXPOSURE AREA
IN AREA OF CONCERN NO. 1

CT - Groundwater Ingestion

Noncarcinogen

$$IF = (IR \times FC \times EF \times ED)/(BW \times AT)$$
$$HQ = (C \times IF)/RfD$$

Chemical	C Groundwater Concentration (mg/l)	IR Ingestion Rate (l/day)	FC Fraction Ingested from Source	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
1,1-Dichloroethene	6.40E-02	1.4	0.3	234	9	70	3285	3.85E-03	9.00E-03	2.74E-02
Carbon Tetrachloride	3.56E+00	1.4	0.3	234	9	70	3285	3.85E-03	7.00E-04	1.95E+01
Chloroform	5.18E+00	1.4	0.3	234	9	70	3285	3.85E-03	1.00E-02	1.99E+00
Methylene Chloride	3.35E+00	1.4	0.3	234	9	70	3285	3.85E-03	6.00E-02	2.15E-01
Tetrachloroethene	2.02E+00	1.4	0.3	234	9	70	3285	3.85E-03	1.00E-02	7.78E-01
									Total Hazard Index	2.26E+01

HYPOTHETICAL ONSITE RESIDENT
10-ACRE MAXIMUM EXPOSURE AREA
IN AREA OF CONCERN NO. 1

CT - Groundwater Ingestion

Nonradionuclide Carcinogens

IF = (IR x FC x EF x ED)/(BW x AT)
CR = C x IF x SF

Chemical	C Groundwater Concentration (mg/l)	IR Ingestion Rate (l/day)	FC Fraction Ingested from Source	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
1,1-Dichloroethene	6.40E-02	1.4	0.3	234	9	70	25550	4.95E-04	6.00E-01	1.90E-05
Carbon Tetrachloride	3.56E+00	1.4	0.3	234	9	70	25550	4.95E-04	1.30E-01	2.29E-04
Chloroform	5.18E+00	1.4	0.3	234	9	70	25550	4.95E-04	6.10E-03	1.56E-05
Methylene Chloride	3.35E+00	1.4	0.3	234	9	70	25550	4.95E-04	7.50E-03	1.24E-05
Tetrachloroethene	2.02E+00	1.4	0.3	234	9	70	25550	4.95E-04	5.20E-02	5.20E-05
Trichloroethene	1.60E+01	1.4	0.3	234	9	70	25550	4.95E-04	1.10E-02	8.72E-05
									Total Chemical Cancer Risk	4.15E-04

Radionuclides

IF = IR x FC x EF x ED
CR = C x IF x SF

Chemical	C Groundwater Concentration (pCi/l)	IR Ingestion Rate (l/day)	FC Fraction Ingested from Source	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	IF Intake Factor (l/kg-day)	SF Slope Factor Risk/pCi	CR Cancer Risk
Americium-241	6.70E+00	1.4	0.3	234	9	8.85E+02	2.40E-10	1.42E-06
Plutonium-239/240	4.37E+01	1.4	0.3	234	9	8.85E+02	2.30E-10	8.89E-06
							Total Radionuclide Cancer Risk	1.03E-05
							Total Cancer Risk	4.25E-04

HYPOTHETICAL ONSITE RESIDENT
10-ACRE MAXIMUM EXPOSURE AREA
IN AREA OF CONCERN NO. 1

RME - Groundwater Ingestion

Noncarcinogen

$$IF = (IR \times FC \times EF \times ED)/(BW \times AT)$$
$$HQ = (C \times IF)/RfD$$

	C	IR	FC	EF	ED	BW	AT	IF	RfD	HQ
Chemical	Groundwater Concentration (mg/l)	Ingestion Rate (l/day)	Fraction Ingested from Source	Exposure Frequency (days/yr)	Exposure Duration (years)	Body Weight (kg)	Averaging Time (days)	Intake Factor (l/kg-day)	Reference Dose (mg/kg-day)	Hazard Quotient
1,1-Dichloroethene	6.40E-02	2	1	350	30	70	10950	2.74E-02	9.00E-03	1.95E-01
Carbon Tetrachloride	3.56E+00	2	1	350	30	70	10950	2.74E-02	7.00E-04	1.39E+02
Chloroform	5.18E+00	2	1	350	30	70	10950	2.74E-02	1.00E-02	1.42E+01
Methylene Chloride	3.35E+00	2	1	350	30	70	10950	2.74E-02	6.00E-02	1.53E+00
Tetrachloroethene	2.02E+00	2	1	350	30	70	10950	2.74E-02	1.00E-02	5.54E+00
									Total Hazard Index	1.61E+02

HYPOTHETICAL ONSITE RESIDENT
10-ACRE MAXIMUM EXPOSURE AREA
IN AREA OF CONCERN NO. 1

RME - Groundwater Ingestion

Nonradionuclide Carcinogens

IF = (IR x FC x EF x ED)/(BW x AT)
CR = C x IF x SF

Chemical	C Groundwater Concentration (mg/l)	IR Ingestion Rate (l/day)	FC Fraction Ingested from Source	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
1,1-Dichloroethene	6.40E-02	2	1	350	30	70	25550	1.17E-02	6.00E-01	4.51E-04
Carbon Tetrachloride	3.56E+00	2	1	350	30	70	25550	1.17E-02	1.30E-01	5.43E-03
Chloroform	5.18E+00	2	1	350	30	70	25550	1.17E-02	6.10E-03	3.71E-04
Methylene Chloride	3.35E+00	2	1	350	30	70	25550	1.17E-02	7.50E-03	2.95E-04
Tetrachloroethene	2.02E+00	2	1	350	30	70	25550	1.17E-02	5.20E-02	1.23E-03
Trichloroethene	1.60E+01	2	1	350	30	70	25550	1.17E-02	1.10E-02	2.07E-03
									Total Chemical Cancer Risk	9.85E-03

Radionuclides

IF = IR x FC x EF x ED
CR = C x IF x SF

Chemical	C Groundwater Concentration (pCi/l)	IR Ingestion Rate (l/day)	FC Fraction Ingested from Source	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	IF Intake Factor (l/kg-day)	SF Slope Factor Risk/pCi	CR Cancer Risk
Americium-241	6.70E+00	2	1	350	30	2.10E+04	2.40E-10	3.38E-05
Radium-226	4.37E+01	2	1	350	30	2.10E+04	2.30E-10	2.11E-04
							Total Radionuclide Cancer Risk	2.45E-04
							Total Cancer Risk	1.01E-02

HYPOTHETICAL ONSITE RESIDENT
10-ACRE MAXIMUM EXPOSURE AREA
IN AREA OF CONCERN NO. 1

CT - Ingestion of surface water - Walnut Creek

Noncarcinogens

$$IF = (IR \times ET \times EF \times ED)/(BW \times AT)$$
$$HQ = (C \times IF)/RfD$$

Chemical	C Surface Water Concentration (mg/l)	IR Ingestion Rate (l/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
1,1-Dichloroethene	5.00E-06	0.01	1	5	9	70	3285	1.96E-06	9.00E-03	1.09E-09
Carbon Tetrachloride	4.81E-04	0.01	1	5	9	70	3285	1.96E-06	7.00E-04	1.34E-06
Chloroform	9.30E-05	0.01	1	5	9	70	3285	1.96E-06	1.00E-02	1.82E-08
Methylene Chloride	3.80E-05	0.01	1	5	9	70	3285	1.96E-06	6.00E-02	1.24E-09
Tetrachloroethene	8.03E-04	0.01	1	5	9	70	3285	1.96E-06	1.00E-02	1.57E-07
									Total Hazard Index	1.52E-06

HYPOTHETICAL SITE RESIDENT
10-ACRE MAXIMUM EXPOSURE AREA
IN AREA OF CONCERN NO. 1

CT - Ingestion of surface water - Walnut Creek

Nonradionuclide carcinogens

IF = (IR x ET x EF x ED)/(BW x AT)
CR = C x IF x SF

Chemical	C Surface Water Concentration (mg/l)	IR Ingestion Rate (l/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
1,1-Dichloroethene	5.00E-06	0.01	1	5	9	70	25550	2.52E-07	6.00E-01	7.55E-13
Carbon Tetrachloride	4.81E-04	0.01	1	5	9	70	25550	2.52E-07	1.30E-01	1.57E-11
Chloroform	9.30E-05	0.01	1	5	9	70	25550	2.52E-07	6.10E-03	1.43E-13
Methylene Chloride	3.80E-05	0.01	1	5	9	70	25550	2.52E-07	7.50E-03	7.17E-14
Tetrachloroethene	8.03E-04	0.01	1	5	9	70	25550	2.52E-07	5.20E-02	1.05E-11
Trichloroethene	6.24E-03	0.01	1	5	9	70	25550	2.52E-07	1.10E-02	1.73E-11
								Total Chemical Cancer Risk		4.45E-11

Radionuclides

IF = IR x ET x EF x ED
CR = C x IF x SF

Radionuclide	C Surface Water Concentration (pCi/l)	IR Ingestion Rate (l/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	IF Intake Factor (l)	SF Slope Factor (Risk/pCi)	CR Cancer Risk
Americium-241	5.00E-03	0.01	1	5	9	4.50E-01	2.40E-10	5.40E-13
Plutonium-239/240	2.60E-02	0.01	1	5	9	4.50E-01	2.30E-10	2.69E-12
						Total Radionuclide Cancer Risk		3.23E-12

Total Cancer Risk 4.77E-11

HYPOTHETICAL ONSITE RESIDENT
10-ACRE MAXIMUM EXPOSURE AREA
IN AREA OF CONCERN NO. 1

RME - Ingestion of surface water - Walnut Creek

Noncarcinogens

IF = (IR x ET x EF x ED)/(BW x AT)
HQ = (C x IF)/RfD

	C	IR	ET	EF	ED	BW	AT	IF	RfD	HQ
Chemical	Surface Water Concentration (mg/l)	Ingestion Rate (l/hr)	Exposure Time (hr/day)	Exposure Frequency (days/yr)	Exposure Duration (years)	Body Weight (kg)	Averaging Time (days)	Intake Factor (l/kg-day)	Reference Dose (mg/kg-day)	Hazard Quotient
1,1-Dichloroethene	5.00E-06	0.05	2.6	7	30	70	10950	3.56E-05	9.00E-03	1.98E-08
Carbon Tetrachloride	4.81E-04	0.05	2.6	7	30	70	10950	3.56E-05	7.00E-04	2.45E-05
Chloroform	9.30E-05	0.05	2.6	7	30	70	10950	3.56E-05	1.00E-02	3.31E-07
Methylene Chloride	3.80E-05	0.05	2.6	7	30	70	10950	3.56E-05	6.00E-02	2.26E-08
Tetrachloroethene	8.03E-04	0.05	2.6	7	30	70	10950	3.56E-05	1.00E-02	2.86E-06
									Total Hazard Index	2.77E-05

HYPOTHETICAL SITE RESIDENT
10-ACRE MAXIMUM EXPOSURE AREA
IN AREA OF CONCERN NO. 1

RME - Ingestion of surface water - Walnut Creek

Nonradionuclide carcinogens

IF = (IR x ET x EF x ED)/(BW x AT)
CR = C x IF x SF

Chemical	C Surface Water Concentration (mg/l)	IR Ingestion Rate (l/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
1,1-Dichloroethene	5.00E-06	0.05	2.6	7	30	70	25550	1.53E-05	6.00E-01	4.58E-11
Carbon Tetrachloride	4.81E-04	0.05	2.6	7	30	70	25550	1.53E-05	1.30E-01	9.54E-10
Chloroform	9.30E-05	0.05	2.6	7	30	70	25550	1.53E-05	6.10E-03	8.66E-12
Methylene Chloride	3.80E-05	0.05	2.6	7	30	70	25550	1.53E-05	7.50E-03	4.35E-12
Tetrachloroethene	8.03E-04	0.05	2.6	7	30	70	25550	1.53E-05	5.20E-02	6.37E-10
Trichloroethene	6.24E-03	0.05	2.6	7	30	70	25550	1.53E-05	1.10E-02	1.05E-09
								Total Chemical Cancer Risk		2.70E-09

Radionuclides

IF = IR x ET x EF x ED
CR = C x IF x SF

Radionuclide	C Surface Water Concentration (pCi/l)	IR Ingestion Rate (l/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	IF Intake Factor (l)	SF Slope Factor (Risk/pCi)	CR Cancer Risk
Americium-241	5.00E-03	0.05	2.6	7	30	2.73E+01	2.40E-10	3.28E-11
Plutonium-239/240	2.60E-02	0.05	2.6	7	30	2.73E+01	2.30E-10	1.63E-10
						Total Radionuclide Cancer Risk		1.96E-10

Total Cancer Risk 2.89E-09

HYPOTHETICAL ONSITE RESIDENT
10-ACRE MAXIMUM EXPOSURE AREA
IN AREA OF CONCERN NO. 1

CT - Ingestion of surface water - Woman Creek

Noncarcinogens

$$IF = (IR \times ET \times EF \times ED)/(BW \times AT)$$
$$HQ = (C \times IF)/RfD$$

Chemical	C Surface Water Concentration (mg/l)	IR Ingestion Rate (l/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
1,1-Dichloroethene	2.00E-06	0.01	1	5	9	70	3285	1.96E-06	9.00E-03	4.35E-10
Carbon Tetrachloride	2.62E-04	0.01	1	5	9	70	3285	1.96E-06	7.00E-04	7.32E-07
Chloroform	2.15E-04	0.01	1	5	9	70	3285	1.96E-06	1.00E-02	4.21E-08
Methylene Chloride	1.06E-04	0.01	1	5	9	70	3285	1.96E-06	6.00E-02	3.46E-09
Tetrachloroethene	1.16E-04	0.01	1	5	9	70	3285	1.96E-06	1.00E-02	2.27E-08
									Total Hazard Index	8.01E-07

HYPOTHETICAL SITE RESIDENT
10-ACRE MAXIMUM EXPOSURE AREA
IN AREA OF CONCERN NO. 1

CT - Ingestion of surface water - Woman Creek

Nonradionuclide carcinogens

IF = (IR x ET x EF x ED)/(BW x AT)
CR = C x IF x SF

Chemical	C Surface Water Concentration (mg/l)	IR Ingestion Rate (l/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
1,1-Dichloroethene	2.00E-06	0.01	1	5	9	70	25550	2.52E-07	6.00E-01	3.02E-13
Carbon Tetrachloride	2.62E-04	0.01	1	5	9	70	25550	2.52E-07	1.30E-01	8.57E-12
Chloroform	2.15E-04	0.01	1	5	9	70	25550	2.52E-07	6.10E-03	3.30E-13
Methylene Chloride	1.06E-04	0.01	1	5	9	70	25550	2.52E-07	7.50E-03	2.00E-13
Tetrachloroethene	1.16E-04	0.01	1	5	9	70	25550	2.52E-07	5.20E-02	1.52E-12
Trichloroethene	9.25E-04	0.01	1	5	9	70	25550	2.52E-07	1.10E-02	2.56E-12
								Total Chemical Cancer Risk		1.35E-11

Radionuclides

IF = IR x ET x EF x ED
CR = C x IF x SF

Radionuclide	C Surface Water Concentration (pCi/l)	IR Ingestion Rate (l/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	IF Intake Factor (l)	SF Slope Factor (Risk/pCi)	CR Cancer Risk
Americium-241	6.30E-02	0.01	1	5	9	4.50E-01	2.40E-10	6.80E-12
Plutonium-239/240	2.37E+00	0.01	1	5	9	4.50E-01	2.30E-10	2.45E-10
							Total Radionuclide Cancer Risk	2.52E-10
							Total Cancer Risk	2.66E-10

HYPOTHETICAL ONSITE RESIDENT
10-ACRE MAXIMUM EXPOSURE AREA
IN AREA OF CONCERN NO. 1

RME - Ingestion of surface water Woman Creek

Noncarcinogens

$$IF = (IR \times ET \times EF \times ED)/(BW \times AT)$$
$$HQ = (C \times IF)/RfD$$

	C	IR	ET	EF	ED	BW	AT	IF	RfD	HQ
Chemical	Surface Water Concentration (mg/l)	Ingestion Rate (l/hr)	Exposure Time (hr/day)	Exposure Frequency (days/yr)	Exposure Duration (years)	Body Weight (kg)	Averaging Time (days)	Intake Factor (l/kg-day)	Reference Dose (mg/kg-day)	Hazard Quotient
1,1-Dichloroethene	2.00E-06	0.05	2.6	7	30	70	10950	3.56E-05	9.00E-03	7.91E-09
Carbon Tetrachloride	2.62E-04	0.05	2.6	7	30	70	10950	3.56E-05	7.00E-04	1.33E-05
Chloroform	2.15E-04	0.05	2.6	7	30	70	10950	3.56E-05	1.00E-02	7.66E-07
Methylene Chloride	1.06E-04	0.05	2.6	7	30	70	10950	3.56E-05	6.00E-02	6.29E-08
Tetrachloroethene	1.16E-04	0.05	2.6	7	30	70	10950	3.56E-05	1.00E-02	4.13E-07
									Total Hazard Index	1.46E-05

HYPOTHETICAL C[illegible]TE RESIDENT
10-ACRE MAXIMUM EXPOSURE AREA
IN AREA OF CONCERN NO. 1

RME - Ingestion of surface water Woman Creek

Nonradionuclide carcinogens

IF = (IR x ET x EF x ED)/(BW x AT)
CR = C x IF x SF

	C	IR	ET	EF	ED	BW	AT	IF	SF	CR
Chemical	Surface Water Concentration (mg/l)	Ingestion Rate (l/hr)	Exposure Time (hr/day)	Exposure Frequency (days/yr)	Exposure Duration (years)	Body Weight (kg)	Averaging Time (days)	Intake Factor (l/kg-day)	Slope Factor 1/(mg/kg-day)	Cancer Risk
1,1-Dichloroethene	2.00E-06	0.05	2.6	7	30	70	25550	1.53E-05	6.00E-01	1.83E-11
Carbon Tetrachloride	2.62E-04	0.05	2.6	7	30	70	25550	1.53E-05	1.30E-01	5.20E-10
Chloroform	2.15E-04	0.05	2.6	7	30	70	25550	1.53E-05	6.10E-03	2.00E-11
Methylene Chloride	1.06E-04	0.05	2.6	7	30	70	25550	1.53E-05	7.50E-03	1.21E-11
Tetrachloroethene	1.16E-04	0.05	2.6	7	30	70	25550	1.53E-05	5.20E-02	9.21E-11
Trichloroethene	9.25E-04	0.05	2.6	7	30	70	25550	1.53E-05	1.10E-02	1.55E-10
								Total Chemical Cancer Risk		8.18E-10

Radionuclides

IF = IR x ET x EF x ED
CR = C x IF x SF

	C	IR	ET	EF	ED	IF	SF	CR
Radionuclide	Surface Water Concentration (pCi/l)	Ingestion Rate (l/hr)	Exposure Time (hr/day)	Exposure Frequency (days/yr)	Exposure Duration (years)	Intake Factor (l)	Slope Factor (Risk/pCi)	Cancer Risk
Americium-241	6.30E-02	0.05	2.6	7	30	2.73E+01	2.40E-10	4.13E-10
Plutonium-239/240	2.37E+00	0.05	2.6	7	30	2.73E+01	2.30E-10	1.49E-08
						Total Radionuclide Cancer Risk		1.53E-08
						Total Cancer Risk		1.61E-08

HYPOTHETICAL ONSITE RESIDENT
10-ACRE MAXIMUM EXPOSURE AREA
IN AREA OF CONCERN NO. 1

CT - Dermal contact with surface water - Walnut Creek

Noncarcinogens

$$IF = (SA \times DP \times ET \times EF \times ED \times CF)/(BW \times AT)$$
$$HQ = (C \times IF)/RfD$$

Chemical	C Surface Water Concentration (mg/l)	SA Skin Surface Area (cm^2)	DP Dermal Permeability (cm/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (day/yr)	ED Exposure Duration (years)	CF Conversion Factor (l/cm^3)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
1,1-Dichloroethene	5.00E-06	9275	0.016	1	5	9	0.001	70	3285	2.90E-05	9.00E-03	1.61E-08
Carbon Tetrachloride	4.81E-04	9275	0.022	1	5	9	0.001	70	3285	3.99E-05	7.00E-04	2.74E-05
Chloroform	9.30E-05	9275	0.13	1	5	9	0.001	70	3285	2.36E-04	1.00E-02	2.19E-06
Methylene Chloride	3.80E-05	9275	0.0045	1	5	9	0.001	70	3285	8.17E-06	6.00E-02	5.17E-09
Tetrachloroethene	8.03E-04	9275	0.37	1	5	9	0.001	70	3285	6.72E-04	1.00E-02	5.39E-05
											Total Hazard Index	8.36E-05

Nonradionuclide carcinogens

$$IF = (SA \times DP \times ET \times EF \times ED \times CF)/(BW \times AT)$$
$$CR = C \times IF \times SF$$

Chemical	C Surface Water Concentration (mg/l)	SA Skin Surface Area (cm^2)	DP Dermal Permeability (cm/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (day/yr)	ED Exposure Duration (years)	CF Conversion Factor (l/cm^3)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
1,1-Dichloroethene	5.00E-06	9275	0.016	1	5	9	0.001	70	25550	3.73E-06	6.00E-01	1.12E-11
Carbon Tetrachloride	4.81E-04	9275	0.022	1	5	9	0.001	70	25550	5.13E-06	1.30E-01	3.21E-10
Chloroform	9.30E-05	9275	0.13	1	5	9	0.001	70	25550	3.03E-05	6.10E-03	1.72E-11
Methylene Chloride	3.80E-05	9275	0.0045	1	5	9	0.001	70	25550	1.05E-06	7.50E-03	2.99E-13
Tetrachloroethene	8.03E-04	9275	0.37	1	5	9	0.001	70	25550	8.63E-05	5.20E-02	3.61E-09
Trichloroethene	6.24E-03	9275	0.23	1	5	9	0.001	70	25550	5.37E-05	1.10E-02	3.68E-09
											Total Cancer Risk	7.64E-09

HYPOTHETICAL SITE RESIDENT
10-ACRE MAXIMUM EXPOSURE AREA
IN AREA OF CONCERN NO. 1

RME - Dermal contact with surface water - Walnut Creek

Noncarcinogens

IF = (SA x DP x ET x EF x ED x CF)/(BW x AT)
HQ = (C x IF)/RfD

Chemical	C Surface Water Concentration (mg/l)	SA Skin Surface Area (cm^2)	DP Dermal Permeability (cm/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (day/yr)	ED Exposure Duration (years)	CF Conversion Factor (l/cm^3)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
1,1-Dichloroethene	5.00E-06	18150	0.016	2.6	7	30	0.001	70	10950	2.07E-04	9.00E-03	1.15E-07
Carbon Tetrachloride	4.81E-04	18150	0.022	2.6	7	30	0.001	70	10950	2.84E-04	7.00E-04	1.95E-04
Chloroform	9.30E-05	18150	0.13	2.6	7	30	0.001	70	10950	1.68E-03	1.00E-02	1.56E-05
Methylene Chloride	3.80E-05	18150	0.0045	2.6	7	30	0.001	70	10950	5.82E-05	6.00E-02	3.68E-08
Tetrachloroethene	8.03E-04	18150	0.37	2.6	7	30	0.001	70	10950	4.78E-03	1.00E-02	3.84E-04
											Total Hazard Index	5.95E-04

Nonradionuclide carcinogens

IF = (SA x DP x ET x EF x ED x CF)/(BW x AT)
CR = C x IF x SF

Chemical	C Surface Water Concentration (mg/l)	SA Skin Surface Area (cm^2)	DP Dermal Permeability (cm/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (day/yr)	ED Exposure Duration (years)	CF Conversion Factor (l/cm^3)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
1,1-Dichloroethene	5.00E-06	18150	0.016	2.6	7	30	0.001	70	25550	8.87E-05	6.00E-01	2.66E-10
Carbon Tetrachloride	4.81E-04	18150	0.022	2.6	7	30	0.001	70	25550	1.22E-04	1.30E-01	7.62E-09
Chloroform	9.30E-05	18150	0.13	2.6	7	30	0.001	70	25550	7.20E-04	6.10E-03	4.09E-10
Methylene Chloride	3.80E-05	18150	0.0045	2.6	7	30	0.001	70	25550	2.49E-05	7.50E-03	7.11E-12
Tetrachloroethene	8.03E-04	18150	0.37	2.6	7	30	0.001	70	25550	2.05E-03	5.20E-02	8.56E-08
Trichloroethene	6.24E-03	18150	0.23	2.6	7	30	0.001	70	25550	1.27E-03	1.10E-02	8.75E-08
											Total Cancer Risk	1.81E-07

HYPOTHETICAL ONSITE RESIDENT
10 ACRE MAXIMUM EXPOSURE AREA
IN AREA OF CONCERN NO. 1

CT - Dermal contact with surface water - Woman Creek

Noncarcinogens

$$IF = (SA \times DP \times ET \times EF \times ED \times CF)/(BW \times AT)$$
$$HQ = (C \times IF)/RfD$$

	C	SA	DP	ET	EF	ED	CF	BW	AT	IF	RfD	HQ
Chemical	Surface Water Concentration (mg/l)	Skin Surface Area (cm^2)	Dermal Permeability (cm/hr)	Exposure Time (hr/day)	Exposure Frequency (day/yr)	Exposure Duration (years)	Conversion Factor (l/cm^3)	Body Weight (kg)	Averaging Time (days)	Intake Factor (l/kg-day)	Reference Dose (mg/kg-day)	Hazard Quotient
1,1-Dichloroethene	2.00E-06	9275	0.016	1	5	9	0.001	70	3285	2.90E-05	9.00E-03	6.45E-09
Carbon Tetrachloride	2.62E-04	9275	0.022	1	5	9	0.001	70	3285	3.99E-05	7.00E-04	1.49E-05
Chloroform	2.15E-04	9275	0.13	1	5	9	0.001	70	3285	2.36E-04	1.00E-02	5.07E-06
Methylene Chloride	1.06E-04	9275	0.0045	1	5	9	0.001	70	3285	8.17E-06	6.00E-02	1.44E-08
Tetrachloroethene	1.16E-04	9275	0.37	1	5	9	0.001	70	3285	6.72E-04	1.00E-02	7.79E-06
											Total Hazard Index	2.78E-05

Nonradionuclide carcinogens

$$IF = (SA \times DP \times ET \times EF \times ED \times CF)/(BW \times AT)$$
$$CR = C \times IF \times SF$$

	C	SA	DP	ET	EF	ED	CF	BW	AT	IF	SF	CR
Chemical	Surface Water Concentration (mg/l)	Skin Surface Area (cm^2)	Dermal Permeability (cm/hr)	Exposure Time (hr/day)	Exposure Frequency (day/yr)	Exposure Duration (years)	Conversion Factor (l/cm^3)	Body Weight (kg)	Averaging Time (days)	Intake Factor (l/kg-day)	Slope Factor 1/(mg/kg-day)	Cancer Risk
1,1-Dichloroethene	2.00E-06	9275	0.016	1	5	9	0.001	70	25550	3.73E-06	6.00E-01	4.48E-12
Carbon Tetrachloride	2.62E-04	9275	0.022	1	5	9	0.001	70	25550	5.13E-06	1.30E-01	1.75E-10
Chloroform	2.15E-04	9275	0.13	1	5	9	0.001	70	25550	3.03E-05	6.10E-03	3.98E-11
Methylene Chloride	1.06E-04	9275	0.0045	1	5	9	0.001	70	25550	1.05E-06	7.50E-03	8.35E-13
Tetrachloroethene	1.16E-04	9275	0.37	1	5	9	0.001	70	25550	8.63E-05	5.20E-02	5.21E-10
Trichloroethene	9.25E-04	9275	0.23	1	5	9	0.001	70	25550	5.37E-05	1.10E-02	5.46E-10
											Total Cancer Risk	1.29E-09

HYPOTHETICAL SITE RESIDENT
10 ACRE MAXIMUM EXPOSURE AREA
IN AREA OF CONCERN NO. 1

RME - Dermal contact with surface water - Woman Creek

Noncarcinogens

IF = (SA x DP x ET x EF x ED x CF)/(BW x AT)
HQ = (C x IF)/RfD

Chemical	C Surface Water Concentration (mg/l)	SA Skin Surface Area (cm^2)	DP Dermal Permeability (cm/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (day/yr)	ED Exposure Duration (years)	CF Conversion Factor (l/cm^3)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
1,1-Dichloroethene	2.00E-06	18150	0.016	2.6	7	30	0.001	70	10950	2.07E-04	9.00E-03	4.60E-08
Carbon Tetrachloride	2.62E-04	18150	0.022	2.6	7	30	0.001	70	10950	2.84E-04	7.00E-04	1.06E-04
Chloroform	2.15E-04	18150	0.13	2.6	7	30	0.001	70	10950	1.68E-03	1.00E-02	3.61E-05
Methylene Chloride	1.06E-04	18150	0.0045	2.6	7	30	0.001	70	10950	5.82E-05	6.00E-02	1.03E-07
Tetrachloroethene	1.16E-04	18150	0.37	2.6	7	30	0.001	70	10950	4.78E-03	1.00E-02	5.55E-05
											Total Hazard Index	1.98E-04

Nonradionuclide carcinogens

IF = (SA x DP x ET x EF x ED x CF)/(BW x AT)
CR = C x IF x SF

Chemical	C Surface Water Concentration (mg/l)	SA Skin Surface Area (cm^2)	DP Dermal Permeability (cm/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (day/yr)	ED Exposure Duration (years)	CF Conversion Factor (l/cm^3)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
1,1-Dichloroethene	2.00E-06	18150	0.016	2.6	7	30	0.001	70	25550	8.87E-05	6.00E-01	1.06E-10
Carbon Tetrachloride	2.62E-04	18150	0.022	2.6	7	30	0.001	70	25550	1.22E-04	1.30E-01	4.15E-09
Chloroform	2.15E-04	18150	0.13	2.6	7	30	0.001	70	25550	7.20E-04	6.10E-03	9.45E-10
Methylene Chloride	1.06E-04	18150	0.0045	2.6	7	30	0.001	70	25550	2.49E-05	7.50E-03	1.98E-11
Tetrachloroethene	1.16E-04	18150	0.37	2.6	7	30	0.001	70	25550	2.05E-03	5.20E-02	1.24E-08
Trichloroethene	9.25E-04	18150	0.23	2.6	7	30	0.001	70	25550	1.27E-03	1.10E-02	1.30E-08
											Total Cancer Risk	3.06E-08

HYPOTHETICAL ONSITE RESIDENT
10-ACRE MAXIMUM EXPOSURE AREA
IN AREA OF CONCERN NO. 1

CT - Inhalation of VOCs from infiltration

Noncarcinogens

$$IF = (IR \times ET \times EF \times ED)/(BW \times AT)$$
$$HQ = (C \times IF)/RfD$$

Chemical	C VOC Concentration in air (mg/m^3)	IR Inhalation Rate (m^3/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	BW Body Weight (kg)	AT Averaging Time (years)	IF Intake Factor ($m^3/kg\text{-}day$)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
Methylene Chloride	1.21E-08	0.63	15	234	9	70	3285	8.65E-02	9.00E-01	1.16E-09
									Total Hazard Index	1.16E-09

Carcinogens

$$IF = (IR \times ET \times EF \times ED)/(BW \times AT)$$
$$CR = C \times IF \times SF$$

Chemical	C VOC Concentration in air (mg/m^3)	IR Inhalation Rate (m^3/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	BW Body Weight (kg)	AT Averaging Time (years)	IF Intake Factor ($m^3/kg\text{-}day$)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
1,1-Dichloroethene	1.54E-09	0.63	15	234	9	70	25550	1.11E-02	1.20E+00	2.06E-11
Carbon Tetrachloride	1.13E-07	0.63	15	234	9	70	25550	1.11E-02	5.20E-02	6.54E-11
Chloroform	2.91E-08	0.63	15	234	9	70	25550	1.11E-02	8.00E-02	2.59E-11
Methylene Chloride	1.21E-08	0.63	15	234	9	70	25550	1.11E-02	1.60E-03	2.15E-13
Tetrachloroethene	1.76E-07	0.63	15	234	9	70	25550	1.11E-02	2.00E-03	3.92E-12
Trichloroethene	2.64E-07	0.63	15	234	9	70	25550	1.11E-02	6.00E-03	1.76E-11
									Total Cancer Risk	1.34E-10

HYPOTHETIC ONSITE RESIDENT
10-ACRE MAXIMUM EXPOSURE AREA
IN AREA OF CONCERN NO. 1

RME - Inhalation of VOCs from infiltration

Noncarcinogens

$$IF = (IR \times ET \times EF \times ED)/(BW \times AT)$$
$$HQ = (C \times IF)/RfD$$

	C	IR	ET	EF	ED	BW	AT	IF	RfD	HQ
Chemical	VOC Concentration in air (mg/m^3)	Inhalation Rate (m^3/hr)	Exposure Time (hr/day)	Exposure Frequency (days/yr)	Exposure Duration (years)	Body Weight (kg)	Averaging Time (years)	Intake Factor ($m^3/kg\text{-}day$)	Reference Dose (mg/kg-day)	Hazard Quotient
Methylene Chloride	1.21E-08	0.63	24	350	30	70	10950	2.07E-01	9.00E-01	2.78E-09
									Total Hazard Index	2.78E-09

Carcinogens

$$IF = (IR \times ET \times EF \times ED)/(BW \times AT)$$
$$CR = C \times IF \times SF$$

	C	IR	ET	EF	ED	BW	AT	IF	SF	CR
Chemical	VOC Concentration in air (mg/m^3)	Inhalation Rate (m^3/hr)	Exposure Time (hr/day)	Exposure Frequency (days/yr)	Exposure Duration (years)	Body Weight (kg)	Averaging Time (years)	Intake Factor ($m^3/kg\text{-}day$)	Slope Factor 1/(mg/kg-day)	Cancer Risk
1,1-Dichloroethene	1.54E-09	0.63	24	350	30	70	25550	8.88E-02	1.20E+00	1.64E-10
Carbon Tetrachloride	1.13E-07	0.63	24	350	30	70	25550	8.88E-02	5.20E-02	5.22E-10
Chloroform	2.91E-08	0.63	24	350	30	70	25550	8.88E-02	8.00E-02	2.07E-10
Methylene Chloride	1.21E-08	0.63	24	350	30	70	25550	8.88E-02	1.60E-03	1.72E-12
Tetrachloroethene	1.76E-07	0.63	24	350	30	70	25550	8.88E-02	2.00E-03	3.12E-11
Trichloroethene	2.64E-07	0.63	24	350	30	70	25550	8.88E-02	6.00E-03	1.41E-10
									Total Cancer Risk	1.07E-09

HYPOTHETICAL ONSITE RESIDENT
10-ACRE MAXIMUM EXPOSURE AREA
IN AREA OF CONCERN NO. 1

CT - Inhalation of VOCs from groundwater use

Noncarcinogens

$$IF = (IR \times ET \times EF \times ED)/(BW \times AT)$$
$$HQ = (C \times IF)/RfD$$

	C	IR	ET	EF	ED	BW	AT	IF	RfD	HQ
Chemical	VOC Concentration in air (mg/m^3)	Inhalation Rate (m^3/hr)	Exposure Time (hr/day)	Exposure Frequency (days/yr)	Exposure Duration (years)	Body Weight (kg)	Averaging Time (years)	Intake Factor ($m^3/kg\text{-}day$)	Reference Dose (mg/kg-day)	Hazard Quotient
Methylene Chloride	2.17E-01	0.63	15	234	9	70	3285	8.65E-02	9.00E-01	2.09E-02
									Total Hazard Index	2.09E-02

Carcinogens

$$IF = (IR \times ET \times EF \times ED)/(BW \times AT)$$
$$CR = C \times IF \times SF$$

	C	IR	ET	EF	ED	BW	AT	IF	SF	CR
Chemical	VOC Concentration in air (mg/m^3)	Inhalation Rate (m^3/hr)	Exposure Time (hr/day)	Exposure Frequency (days/yr)	Exposure Duration (years)	Body Weight (kg)	Averaging Time (years)	Intake Factor ($m^3/kg\text{-}day$)	Slope Factor 1/(mg/kg-day)	Cancer Risk
1,1-Dichloroethene	4.42E-03	0.63	15	234	9	70	25550	1.11E-02	1.20E+00	5.90E-05
Carbon Tetrachloride	2.32E-01	0.63	15	234	9	70	25550	1.11E-02	5.20E-02	1.34E-04
Chloroform	3.37E-01	0.63	15	234	9	70	25550	1.11E-02	8.00E-02	3.00E-04
Methylene Chloride	2.17E-01	0.63	15	234	9	70	25550	1.11E-02	1.60E-03	3.86E-06
Tetrachloroethene	1.31E-01	0.63	15	234	9	70	25550	1.11E-02	2.00E-03	2.92E-06
Trichloroethene	1.04E+00	0.63	15	234	9	70	25550	1.11E-02	6.00E-03	6.94E-05
									Total Cancer Risk	5.69E-04

HYPOTHETICA. ISITE RESIDENT
10-ACRE MAXIMUM EXPOSURE AREA
IN AREA OF CONCERN NO. 1

RME - Inhalation of VOCs from groundwater use

Noncarcinogens

$$IF = (IR \times ET \times EF \times ED)/(BW \times AT)$$
$$HQ = (C \times IF)/RfD$$

Chemical	C VOC Concentration in air (mg/m^3)	IR Inhalation Rate (m^3/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	BW Body Weight (kg)	AT Averaging Time (years)	IF Intake Factor ($m^3/kg\text{-}day$)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
Methylene Chloride	2.17E-01	0.63	24	350	30	70	10950	2.07E-01	9.00E-01	4.99E-02
									Total Hazard Index	4.99E-02

Carcinogens

$$IF = (IR \times ET \times EF \times ED)/(BW \times AT)$$
$$CR = C \times IF \times SF$$

Chemical	C VOC Concentration in air (mg/m^3)	IR Inhalation Rate (m^3/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	BW Body Weight (kg)	AT Averaging Time (years)	IF Intake Factor ($m^3/kg\text{-}day$)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
1,1-Dichloroethene	4.42E-03	0.63	24	350	30	70	25550	8.88E-02	1.20E+00	4.71E-04
Carbon Tetrachloride	2.32E-01	0.63	24	350	30	70	25550	8.88E-02	5.20E-02	1.07E-03
Chloroform	3.37E-01	0.63	24	350	30	70	25550	8.88E-02	8.00E-02	2.39E-03
Methylene Chloride	2.17E-01	0.63	24	350	30	70	25550	8.88E-02	1.60E-03	3.08E-05
Tetrachloroethene	1.31E-01	0.63	24	350	30	70	25550	8.88E-02	2.00E-03	2.33E-05
Trichloroethene	1.04E+00	0.63	24	350	30	70	25550	8.88E-02	6.00E-03	5.54E-04
									Total Cancer Risk	4.54E-03

HYPOTHETICAL ONSITE RESIDENT
10-ACRE MAXIMUM EXPOSURE AREA
IN AREA OF CONCERN NO. 1

CT - External Radiation

IF = TF x GSF x EF x ED
CR = C x IF x SF

	C	TF	GSF	EF	ED	IF	SF	CR
Radionuclide	Soil Concentration (pCi/g)	Gamma Time Factor (T_e)	Gamma Shielding Factor ($1-S_e$)	Percent of year Exposed	Exposure Duration (years)	Intake Factor (years)	Slope Factor (1/pCi-yr/g)	Cancer Risk
Americium-241	8.77E+01	0.75	0.5	0.64	9	2.16E+00	4.90E-09	9.28E-07
Plutonium-239/240	4.03E+02	0.75	0.5	0.64	9	2.16E+00	1.88E-11	1.64E-08
							Total Cancer Risk	9.45E-07

RME - External Radiation

IF = TF x GSF x EF x ED
CR = C x IF x SF

	C	TF	GSF	EF	ED	IF	SF	CR
e+	Soil Concentration	Gamma Time Factor (T_e)	Gamma Shielding Factor ($1-S_e$)	Percent of year Exposed	Exposure Duration (years)	Intake Factor (years)	Slope Factor (1/pCi-yr/g)	Cancer Risk
Americium-241	8.77E+01	1	0.8	0.96	30	2.30E+01	4.90E-09	9.90E-06
Plutonium-239/240	4.03E+02	1	0.8	0.96	30	2.30E+01	1.88E-11	1.75E-07
							Total Cancer Risk	1.01E-05

SUMMARY OF RISKS
FUTURE INDUSTRIAL/OFFICE WORKER
30-ACRE MAXIMUM EXPOSURE AREA
IN AREA OF CONCERN NO. 1

	Central Tendency		Reasonable Maximum	
Pathway	Hazard Index	Cancer Risk	Hazard Index	Cancer Risk
Ingestion of surface soil	1.02E-03	1.73E-06	1.30E-02	1.37E-04
Inhalation of particulates from surface soil	-	3.35E-06	-	3.50E-05
Dermal contact with surface soil*	1.03E-02	9.05E-08	6.52E-02	3.59E-06
Inhalation of Indoor VOCs	1.09E-09	5.67E-11	1.83E-09	5.92E-10
External Radiation	-	1.35E-07	-	1.53E-06
Total	1.13E-02	5.31E-06	7.82E-02	1.77E-04

* Dermal contact with metals (except mercury) and radionuclides is considered insignificant.

FUTURE INDUSTRIAL/OFFICE WORKER
30-ACRE MAXIMUM EXPOSURE AREA
IN AREA OF CONCERN NO. 1

CT - Soil ingestion

Noncarcinogens

IF =(IR x ED x FC x EF x ME x CF)/(BW x AT)
HQ = (C x IF)/RfD

Chemical	C Soil Concentration (mg/kg)	IR Ingestion Rate (mg/day)	ED Exposure Duration (years)	FC Fraction Contaminated	EF Exposure Frequency (days/yr)	ME Matrix Effect	CF Conversion Factor (kg/mg)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (kg/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
Aroclor-1254	6.14E-01	5	4	0.9	219	0.5	0.000001	70	1460	1.93E-08	2.00E-05	5.92E-04
Aroclor-1260	4.44E-01	5	4	0.9	219	0.5	0.000001	70	1460	1.93E-08	2.00E-05	4.28E-04
Bis-2(ethylhexyl)phthalate	3.66E-01	5	4	0.9	219	1	0.000001	70	1460	3.86E-08	2.00E-02	7.06E-07
Chromium	1.35E+01	5	4	0.9	219	1	0.000001	70	1460	3.86E-08	1.00E+00	5.21E-07
											Total Hazard Index	1.02E-03

Nonradionuclide Carcinogens

IF =(IR x ED x FC x EF x ME x CF)/(BW x AT)
CR = C x IF x SF

Chemical	C Soil Concentration (mg/kg)	IR Ingestion Rate (mg/day)	ED Exposure Duration (years)	FC Fraction Contaminated	EF Exposure Frequency (days/yr)	ME Matrix Effect	CF Conversion Factor (kg/mg)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (kg/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
Aroclor-1254	6.14E-01	5	4	0.9	219	0.5	0.000001	70	25550	1.10E-09	7.70E+00	5.21E-09
Aroclor-1260	4.44E-01	5	4	0.9	219	0.5	0.000001	70	25550	1.10E-09	7.70E+00	3.77E-09
Bis-2(ethylhexyl)phthalate	3.66E-01	5	4	0.9	219	1	0.000001	70	25550	2.20E-09	1.40E-02	1.13E-11
											Total Chemical Cancer Risk	8.99E-09

Radionuclides

IF =IR x ED x FC x EF x ME x CF
CR = C x IF x SF

Radionuclide	C Soil Concentration (pCi/g)	IR Ingestion Rate (mg/day)	ED Exposure Duration (years)	FC Fraction Contaminated	EF Exposure Frequency (days/yr)	ME Matrix Effect	CF Conversion Factor (g/mg)	IF Intake Factor (g)	SF Slope Factor (Risk/pCi)	CR Cancer Risk
Americium-241	6.94E+01	5	4	0.9	219	1	0.001	3.94E+00	2.40E-10	6.57E-08
Plutonium-239/240	1.83E+03	5	4	0.9	219	1	0.001	3.94E+00	2.30E-10	1.66E-06
									Total Radionuclide Cancer Risk	1.72E-06

Total Cancer Risk 1.73E-06

FUTURE INDUSTRIAL OFFICE WORKER
30-ACRE MAXIMUM EXPOSURE AREA
IN AREA OF CONCERN NO. 1

RME - soil ingestion

Noncarcinogens

IF =(IR x ED x FC x EF x ME x CF)/(BW x AT)
HQ = (C x IF)/RfD

	C	IR	ED	FC	EF	ME	CF	BW	AT	IF	RfD	HQ
Chemical	Soil Concentration (mg/kg)	Ingestion Rate (mg/day)	Exposure Duration (years)	Fraction Contaminated	Exposure Frequency (days/yr)	Matrix Effect	Conversion Factor (kg/mg)	Body Weight (kg)	Averaging Time (days)	Intake Factor (kg/kg-day)	Reference Dose (mg/kg-day)	Hazard Quotient
Aroclor-1254	6.14E-01	50	25	1	250	0.5	0.000001	70	9125	2.45E-07	2.00E-05	7.51E-03
Aroclor-1260	4.44E-01	50	25	1	250	0.5	0.000001	70	9125	2.45E-07	2.00E-05	5.43E-03
Bis-2(ethylhexyl)phthalate	3.66E-01	50	25	1	250	1	0.000001	70	9125	4.89E-07	2.00E-02	8.95E-06
Chromium	1.35E+01	50	25	1	250	1	0.000001	70	9125	4.89E-07	1.00E+00	6.60E-06
											Total Hazard Index	1.30E-02

Nonradionuclide Carcinogens

IF =(IR x ED x FC x EF x ME x CF)/(BW x AT)
CR = C x IF x SF

	C	IR	ED	FC	EF	ME	CF	BW	AT	IF	SF	CR
Chemical	Soil Concentration (mg/kg)	Ingestion Rate (mg/day)	Exposure Duration (years)	Fraction Contaminated	Exposure Frequency (days/yr)	Matrix Effect	Conversion Factor (kg/mg)	Body Weight (kg)	Averaging Time (days)	Intake Factor (kg/kg-day)	Slope Factor 1/(mg/kg-day)	Cancer Risk
Aroclor-1254	6.14E-01	50	25	1	250	0.5	0.000001	70	25550	8.74E-08	7.70E+00	4.13E-07
Aroclor-1260	4.44E-01	50	25	1	250	0.5	0.000001	70	25550	8.74E-08	7.70E+00	2.99E-07
Bis-2(ethylhexyl)phthalate	3.66E-01	50	25	1	250	1	0.000001	70	25550	1.75E-07	1.40E-02	8.95E-10
											Total Chemical Cancer Risk	7.13E-07

Radionuclides

IF =IR x ED x FC x EF x ME x CF
CR = C x IF x SF

	C	IR	ED	FC	EF	ME	CF	IF	SF	CR
Radionuclide	Soil Concentration (pCi/g)	Ingestion Rate (mg/day)	Exposure Duration (years)	Fraction Contaminated	Exposure Frequency (days/yr)	Matrix Effect	Conversion Factor (g/mg)	Intake Factor (g)	Slope Factor (Risk/pCi)	Cancer Risk
Americium-241	6.94E+01	50	25	1	250	1	0.001	3.13E+02	2.40E-10	5.21E-06
Plutonium-239/240	1.83E+03	50	25	1	250	1	0.001	3.13E+02	2.30E-10	1.31E-04
									Total Radionuclide Cancer Risk	1.36E-04

Total Cancer Risk 1.37E-04

FUTURE INDUSTRIAL/OFFICE WORKER
30-ACRE MAXIMUM EXPOSURE AREA
IN AREA OF CONCERN NO. 1

CT Inhalation of Particulates - Radionuclides

IF = IR x ET x EF x ED x DF
CR = IF x C x SF

Radionuclides	C Air Concentration (pCi/m^3)	IR Inhalation Rate (m^3/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	DF Deposition Factor	IF Intake Factor (m^3)	SF Slope Factor (Risk/pCi)	CR Cancer Risk
Americium-241	8.11E-04	0.63	7.2	219	4	1	3.97E+03	3.20E-08	1.03E-07
Plutonium-239/240	2.15E-02	0.63	7.2	219	4	1	3.97E+03	3.80E-08	3.25E-06
							Total Radionuclide Cancer Risk		3.35E-06

Total Cancer Risk 3.35E-06

RME Inhalation of Particulates - Radionuclides

IF = IR x ET x EF x ED x DF
CR = IF x C x SF

Radionuclides	C Air Concentration (pCi/m^3)	IR Inhalation Rate (m^3/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	DF Deposition Factor	IF Intake Factor (m^3)	SF Slope Factor (Risk/pCi)	CR Cancer Risk
Americium-241	8.11E-04	0.83	8	250	25	1	4.15E+04	3.20E-08	1.08E-06
Plutonium-239/240	2.15E-02	0.83	8	250	25	1	4.15E+04	3.80E-08	3.39E-05
							Total Radionuclide Cancer Risk		3.50E-05

Total Cancer Risk 3.50E-05

FUTURE INDUSTRI[illegible]FICE WORKER
30-ACRE MAXIMUM EXPOSURE AREA
IN AREA OF CONCERN NO. 1

CT- Dermal contact with soil

Noncarcinogens

IF = (SA x FC x EF x ED x AF x AB x CF)/(BW x AT)
HQ = (C x IF)/RfD

Chemical	C Soil Concentration (mg/kg)	SA Skin Surface Area (cm^2)	FC Fraction Contaminated	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	AF Soil Adherence (mg/cm^2)	AB Skin Absorption	CF Conversion Factor (kg/mg)	BW Body Weight (kg)	AT Averaging Time (days)
Aroclor-1254	6.14E-01	2100	0.9	219	4	0.2	0.06	0.000001	70	1460
Aroclor-1260	4.44E-01	2100	0.9	219	4	0.2	0.06	0.000001	70	1460
Bis-2(ethylhexyl)phthalate	3.66E-01	2100	0.9	219	4	0.2	0.01	0.000001	70	1460

Chemical	IF Intake Factor (kg/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Hazard Quotient
Aroclor-1254	1.94E-07	2.00E-05	5.97E-03
Aroclor-1260	1.94E-07	2.00E-05	4.32E-03
Bis-2(ethylhexyl)phthalate	3.24E-08	2.00E-02	5.93E-07
Total Hazard Index			1.03E-02

CT- Dermal contact with soil

Nonradionuclide Carcinogens

IF = (SA x FC x EF x ED x AF x AB x CF)/(BW x AT)
CR = C x IF x SF

Chemical	C Soil Concentration (mg/kg)	SA Skin Surface Area (cm^2)	FC Fraction Contaminated	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	AF Soil Adherence (mg/cm^2)	AB Skin Absorption	CF Conversion Factor (kg/mg)	BW Body Weight (kg)	AT Averaging Time (days)
Aroclor-1254	6.14E-01	2100	0.9	219	4	0.2	0.06	0.000001	70	25550
Aroclor-1260	4.44E-01	2100	0.9	219	4	0.2	0.06	0.000001	70	25550
Bis-2(ethylhexyl)phthalate	3.66E-01	2100	0.9	219	4	0.2	0.01	0.000001	70	25550

Chemical	IF Intake Factor (kg/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
Aroclor-1254	1.11E-08	7.70E+00	5.25E-08
Aroclor-1260	1.11E-08	7.70E+00	3.80E-08
Bis-2(ethylhexyl)phthalate	1.85E-09	1.40E-02	9.49E-12
Total Cancer Risk			9.05E-08

FUTURE INDUSTRIAL/OFFICE WORKER
30-ACRE MAXIMUM EXPOSURE AREA
IN AREA OF CONCERN NO. 1

RME- Dermal contact with soil

Noncarcinogens

IF = (SA x FC x EF x ED x AF x AB x CF)/(BW x AT)

HQ = (C x IF)/RfD

Chemical	C Soil Concentration (mg/kg)	SA Skin Surface Area (cm^2)	FC Fraction Contaminated	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	AF Soil Adherence (mg/cm^2)	AB Skin Absorption	CF Conversion Factor (kg/mg)	BW Body Weight (kg)	AT Averaging Time (days)
Aroclor-1254	6.14E-01	2100	1	250	25	1	0.06	0.000001	70	9125
Aroclor-1260	4.44E-01	2100	1	250	25	1	0.06	0.000001	70	9125
Bis-2(ethylhexyl)phthalate	3.66E-01	2100	1	250	25	1	0.01	0.000001	70	9125

Chemical	IF Intake Factor (kg/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
Aroclor-1254	1.23E-06	2.00E-05	3.78E-02
Aroclor-1260	1.23E-06	2.00E-05	2.74E-02
Bis-2(ethylhexyl)phthalate	2.05E-07	2.00E-02	3.76E-06
Total Hazard Index			6.52E-02

RME- Dermal contact with soil

Nonradionuclide Carcinogens

IF = (SA x FC x EF x ED x AF x AB x CF)/(BW x AT)

CR = C x IF x SF

Chemical	C Soil Concentration (mg/kg)	SA Skin Surface Area (cm^2)	FC Fraction Contaminated	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	AF Soil Adherence (mg/cm^2)	AB Skin Absorption	CF Conversion Factor (kg/mg)	BW Body Weight (kg)	AT Averaging Time (days)
Aroclor-1254	6.14E-01	2100	1	250	25	1	0.06	0.000001	70	25550
Aroclor-1260	4.44E-01	2100	1	250	25	1	0.06	0.000001	70	25550
Bis-2(ethylhexyl)phthalate	3.66E-01	2100	1	250	25	1	0.01	0.000001	70	25550

Chemical	IF Intake Factor (kg/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
Aroclor-1254	4.40E-07	7.70E+00	2.08E-06
Aroclor-1260	4.40E-07	7.70E+00	1.51E-06
Bis-2(ethylhexyl)phthalate	7.34E-08	1.40E-02	3.76E-10
Total Cancer Risk			3.59E-06

FUTURE INDUSTRIAL OFFICE WORKER
30-ACRE MAXIMUM EXPOSURE AREA
IN AREA OF CONCERN NO. 1

CT - Inhalation of VOCs from infiltration

Noncarcinogens

$$IF = (IR \times ET \times EF \times ED)/(BW \times AT)$$
$$HQ = (C \times IF)/RfD$$

Chemical	C VOC Concentration in building air (mg/m^3)	IR Inhalation Rate (m^3/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	BW Body Weight (kg)	AT Averaging Time (years)	IF Intake Factor ($m^3/kg\text{-}day$)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
Methylene chloride	2.53E-08	0.63	7.2	219	4	70	1460	3.89E-02	9.00E-01	1.09E-09
									Total Hazard Index	1.09E-09

Carcinogens

$$IF = (IR \times ET \times EF \times ED)/(BW \times AT)$$
$$CR = C \times IF \times SF$$

Chemical	C VOC Concentration in building air (mg/m^3)	IR Inhalation Rate (m^3/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	BW Body Weight (kg)	AT Averaging Time (years)	IF Intake Factor ($m^3/kg\text{-}day$)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
1,1-Dichloroethene	3.21E-09	0.63	7.2	219	4	70	25550	2.22E-03	1.20E+00	8.56E-12
Carbon Tetrachloride	2.36E-07	0.63	7.2	219	4	70	25550	2.22E-03	5.20E-02	2.73E-11
Chloroform	6.09E-08	0.63	7.2	219	4	70	25550	2.22E-03	8.00E-02	1.08E-11
Methylene chloride	2.53E-08	0.63	7.2	219	4	70	25550	2.22E-03	1.60E-03	8.99E-14
Tetrachloroethene	5.83E-07	0.63	7.2	219	4	70	25550	2.22E-03	2.00E-03	2.59E-12
Trichloroethene	5.52E-07	0.63	7.2	219	4	70	25550	2.22E-03	6.00E-03	7.36E-12
									Total Cancer Risk	5.67E-11

FUTURE INDUSTRIAL/OFFICE WORKER
30-ACRE MAXIMUM EXPOSURE AREA
IN AREA OF CONCERN NO. 1

RME - Inhalation of VOCs from infiltration

Noncarcinogens

$$IF = (IR \times ET \times EF \times ED)/(BW \times AT)$$
$$HQ = (C \times IF)/RfD$$

Chemical	C VOC Concentration in building air (mg/m^3)	IR Inhalation Rate (m^3/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	BW Body Weight (kg)	AT Averaging Time (years)	IF Intake Factor ($m^3/kg\text{-}day$)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
Methylene chloride	2.53E-08	0.83	8	250	25	70	9125	6.50E-02	9.00E-01	1.83E-09
									Total Hazard Index	1.83E-09

Carcinogens

$$IF = (IR \times ET \times EF \times ED)/(BW \times AT)$$
$$CR = C \times IF \times SF$$

Chemical	C VOC Concentration in building air (mg/m^3)	IR Inhalation Rate (m^3/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	BW Body Weight (kg)	AT Averaging Time (years)	IF Intake Factor ($m^3/kg\text{-}day$)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
1,1-Dichloroethene	3.21E-09	0.83	8	250	25	70	25550	2.32E-02	1.20E+00	8.94E-11
Carbon Tetrachloride	2.36E-07	0.83	8	250	25	70	25550	2.32E-02	5.20E-02	2.85E-10
Chloroform	6.09E-08	0.83	8	250	25	70	25550	2.32E-02	8.00E-02	1.13E-10
Methylene chloride	2.53E-08	0.83	8	250	25	70	25550	2.32E-02	1.60E-03	9.39E-13
Tetrachloroethene	5.83E-07	0.83	8	250	25	70	25550	2.32E-02	2.00E-03	2.71E-11
Trichloroethene	5.52E-07	0.83	8	250	25	70	25550	2.32E-02	6.00E-03	7.69E-11
									Total Cancer Risk	5.92E-10

FUTURE INDUSTRIAL OFFICE WORKER
30-ACRE MAXIMUM EXPOSURE AREA
IN AREA OF CONCERN NO. 1

CT - External Radiation

IF = TF x GSF x EF x ED
CR = C x IF x SF

Radionuclide	C Soil Concentration (pCi/g)	TF Gamma Time Factor (T_e)	GSF Gamma Shielding Factor ($1-S_e$)	EF Percent of year Exposed	ED Exposure Duration (years)	IF Intake Factor (years)	SF Slope Factor (1/pCi-yr/g)	CR Cancer Risk
Americium-241	6.94E+01	0.3	0.5	0.6	4	3.60E-01	4.90E-09	1.22E-07
Plutonium-239/240	1.83E+03	0.3	0.5	0.6	4	3.60E-01	1.88E-11	1.24E-08
							Total Cancer Risk	1.35E-07

RME - External Radiation

IF = TF x GSF x EF x ED
CR = C x IF x SF

Radionuclide	C Soil Concentration (pCi/g)	TF Gamma Time Factor (T_e)	GSF Gamma Shielding Factor ($1-S_e$)	EF Percent of year Exposed	ED Exposure Duration (years)	IF Intake Factor (years)	SF Slope Factor (1/pCi-yr/g)	CR Cancer Risk
Americium-241	6.94E+01	0.3	0.8	0.68	25	4.08E+00	4.90E-09	1.39E-06
Plutonium-239/240	1.83E+03	0.3	0.8	0.68	25	4.08E+00	1.88E-11	1.40E-07
							Total Cancer Risk	1.53E-06

SUMMARY OF RISK
FUTURE ONSITE ECOLOGICAL RESEARCHER
50-ACRE MAXIMUM EXPOSURE AREA
IN AREA OF CONCERN NO. 1

	Central Tendency		Reasonable Maximum	
Pathway	Hazard Index	Cancer Risk	Hazard Index	Cancer Risk
Ingestion of surface soil	1.70E-03	1.46E-06	6.05E-03	5.20E-06
Inhalation of particulates from surface soil	-	5.95E-07	-	1.11E-06
Dermal contact with surface soil*	5.79E-03	3.19E-08	3.22E-02	1.77E-07
Ingestion of surface water - Walnut Creek	2.13E-06	1.86E-11	1.82E-05	1.59E-10
Ingestion of surface water - Woman Creek	1.12E-06	1.03E-10	9.59E-06	8.85E-10
Dermal contact with surface water - Walnut Creek	1.17E-04	2.97E-09	2.00E-04	5.09E-09
Dermal contact with surface water - Woman Creek	3.89E-05	5.00E-10	6.66E-05	8.58E-10
External Radiation	-	3.36E-08	-	4.21E-08
Total	7.64E-03	2.12E-06	3.85E-02	6.55E-06

* Dermal contact with metals (except mercury) and radionuclides is considered insignificant.

FUTURE ONSITE ECOLOGICAL RESEARCHER
50-ACRE MAXIMUM EXPOSURE AREA
IN AREA OF CONCERN NO. 1

CT - Soil ingestion

Noncarcinogens

IF =(IR x ED x FC x EF x ME x CF)/(BW x AT)
HQ = (C x IF)/RfD

Chemical	C Soil Concentration (mg/kg)	IR Ingestion Rate (mg/day)	ED Exposure Duration (years)	FC Fraction Contaminated	EF Exposure Frequency (days/yr)	ME Matrix Effect	CF Conversion Factor (kg/mg)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (kg/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
Aroclor-1254	5.18E-01	33	2.5	0.9	65	0.5	0.000001	70	915	3.77E-08	2.00E-05	9.76E-04
Aroclor-1260	3.81E-01	33	2.5	0.9	65	0.5	0.000001	70	915	3.77E-08	2.00E-05	7.18E-04
Bis(2-ethylhexyl)phthalate	3.30E-01	33	2.5	0.9	65	1	0.000001	70	915	7.54E-08	2.00E-02	1.24E-06
Chromium	1.29E+01	33	2.5	0.9	65	1	0.000001	70	915	7.54E-08	1.00E+00	9.72E-07
											Total Hazard Index	1.70E-03

Nonradionuclide Carcinogens

IF =(IR x ED x FC x EF x ME x CF)/(BW x AT)
CR = C x IF x SF

Chemical	C Soil Concentration (mg/kg)	IR Ingestion Rate (mg/day)	ED Exposure Duration (years)	FC Fraction Contaminated	EF Exposure Frequency (days/yr)	ME Matrix Effect	CF Conversion Factor (kg/mg)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (kg/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
Aroclor-1254	5.18E-01	33	2.5	0.9	65	0.5	0.000001	70	25550	1.35E-09	7.70E+00	5.38E-09
Aroclor-1260	3.81E-01	33	2.5	0.9	65	0.5	0.000001	70	25550	1.35E-09	7.70E+00	3.96E-09
Bis(2-ethylhexyl)phthalate	3.30E-01	33	2.5	0.9	65	1	0.000001	70	25550	2.70E-09	1.40E-02	1.25E-11
											Total Chemical Cancer Risk	9.35E-09

Radionuclides

IF =IR x ED x FC x EF x ME x CF
CR = C x IF x SF

Radionuclide	C Soil Concentration (pCi/g)	IR Ingestion Rate (mg/day)	ED Exposure Duration (years)	FC Fraction Contaminated	EF Exposure Frequency (days/yr)	ME Matrix Effect	CF Conversion Factor (g/mg)	IF Intake Factor (g)	SF Slope Factor (Risk/pCi)	CR Cancer Risk
Americium-241	5.88E+01	33	2.5	0.9	65	1	0.001	4.83E+00	2.40E-10	6.81E-08
Plutonium-239/240	1.24E+03	33	2.5	0.9	65	1	0.001	4.83E+00	2.30E-10	1.38E-06
									Total Radionuclide Cancer Risk	1.45E-06

Total Cancer Risk 1.46E-06

FUTURE ONSITE ECOLOGICAL RESEARCHER
50-ACRE MAXIMUM EXPOSURE AREA
IN AREA OF CONCERN NO. 1

RME - Soil ingestion

Noncarcinogens

IF = (IR x ED x FC x EF x ME x CF)/(BW x AT)
HQ = (C x IF)/RfD

Chemical	C Soil Concentration (mg/kg)	IR Ingestion Rate (mg/day)	ED Exposure Duration (years)	FC Fraction Contaminated	EF Exposure Frequency (days/yr)	ME Matrix Effect	CF Conversion Factor (kg/mg)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (kg/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
Aroclor-1254	5.18E-01	106	2.5	1	65	0.5	0.000001	70	915	1.34E-07	2.00E-05	3.48E-03
Aroclor-1260	3.81E-01	106	2.5	1	65	0.5	0.000001	70	915	1.34E-07	2.00E-05	2.56E-03
Bis(2-ethylhexyl)phthalate	3.30E-01	106	2.5	1	65	1	0.000001	70	915	2.69E-07	2.00E-02	4.44E-06
Chromium	1.29E+01	106	2.5	1	65	1	0.000001	70	915	2.69E-07	1.00E+00	3.47E-06
											Total Hazard Index	6.05E-03

Nonradionuclide Carcinogens

IF =(IR x ED x FC x EF x ME x CF)/(BW x AT)
CR = C x IF x SF

Chemical	C Soil Concentration (mg/kg)	IR Ingestion Rate (mg/day)	ED Exposure Duration (years)	FC Fraction Contaminated	EF Exposure Frequency (days/yr)	ME Matrix Effect	CF Conversion Factor (kg/mg)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (kg/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
Aroclor-1254	5.18E-01	106	2.5	1	65	0.5	0.000001	70	25550	4.82E-09	7.70E+00	1.92E-08
Aroclor-1260	3.81E-01	106	2.5	1	65	0.5	0.000001	70	25550	4.82E-09	7.70E+00	1.41E-08
Bis(2-ethylhexyl)phthalate	3.30E-01	106	2.5	1	65	1	0.000001	70	25550	9.63E-09	1.40E-02	4.45E-11
											Total Chemical Cancer Risk	3.34E-08

Radionuclides

IF =IR x ED x FC x EF x ME x CF
CR = C x IF x SF

Radionuclide	C Soil Concentration (pCi/g)	IR Ingestion Rate (mg/day)	ED Exposure Duration (years)	FC Fraction Contaminted	EF Exposure Frequency (days/yr)	ME Matrix Effect	CF Conversion Factor (g/mg)	IF Intake Factor (g)	SF Slope Factor (Risk/pCi)	CR Cancer Risk
Americium-241	5.88E+01	106	2.5	1	65	1	0.001	1.72E+01	2.40E-10	2.43E-07
Plutonium-239/240	1.24E+03	106	2.5	1	65	1	0.001	1.72E+01	2.30E-10	4.93E-06
									Total Radionuclide Cancer Risk	5.17E-06

Total Cancer Risk 5.20E-06

FUTURE ONSITE ECOLOGICAL RESEARCHER
50-ACRE MAXIMUM EXPOSURE AREA
IN AREA OF CONCERN NO. 1

CT Inhalation of Particulates - Radionuclides

IF = IR x ET x EF x ED x DF
CR = IF x C x SF

Radionuclides	C Air Concentration (pCi/m^3)	IR Inhalation Rate (m^3/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	DF Deposition Factor	IF Intake Factor (m^3)	SF Slope Factor (Risk/pCi)	CR Cancer Risk
Americium-241	7.28E-04	0.83	7.2	65	2.5	1	9.71E+02	3.20E-08	2.26E-08
Plutonium-239/240	1.55E-02	0.83	7.2	65	2.5	1	9.71E+02	3.80E-08	5.72E-07
								Total Radionuclide Cancer Risk	5.95E-07

Total Cancer Risk 5.95E-07

RME Inhalation of Particulates - Radionuclides

IF = IR x ET x EF x ED x DF
CR = IF x C x SF

Radionuclides	C Air Concentration (pCi/m^3)	IR Inhalation Rate (m^3/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	DF Deposition Factor	IF Intake Factor (m^3)	SF Slope Factor (Risk/pCi)	CR Cancer Risk
Americium-241	7.28E-04	1.4	8	65	2.5	1	1.82E+03	3.20E-08	4.24E-08
Plutonium-239/240	1.55E-02	1.4	8	65	2.5	1	1.82E+03	3.80E-08	1.07E-06
								Total Radionuclide Cancer Risk	1.11E-06

Total Cancer Risk 1.11E-06

FUTURE ONSITE ECOLOGICAL RESEARCHER
50-ACRE MAXIMUM EXPOSURE AREA
IN AREA OF CONCERN NO. 1

CT- Dermal contact with soil

Noncarcinogens

$$IF = (SA \times FC \times EF \times ED \times AF \times AB \times CF)/(BW \times AT)$$
$$HQ = (C \times IF)/RfD$$

Chemical	C Soil Concentration (mg/kg)	SA Skin Surface Area (cm^2)	FC Fraction Contaminated	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	AF Soil Adherence (mg/cm^2)	AB Skin Absorption	CF Conversion Factor (kg/mg)	BW Body Weight (kg)	AT Averaging Time (days)
Aroclor-1254	5.18E-01	4700	0.9	65	2.5	0.2	0.06	0.000001	70	915
Aroclor-1260	3.81E-01	4700	0.9	65	2.5	0.2	0.06	0.000001	70	915
Bis(2-ethylhexyl)phthalate	3.30E-01	4700	0.9	65	2.5	0.2	0.01	0.000001	70	915

Chemical	IF Intake Factor (kg/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
Aroclor-1254	1.29E-07	2.00E-05	3.34E-03
Aroclor-1260	1.29E-07	2.00E-05	2.45E-03
Bis(2-ethylhexyl)phthalate	2.15E-08	2.00E-02	3.54E-07
	Total Hazard Index		5.79E-03

FUTURE ONSITE ECOLOGICAL RESEARCHER
50-ACRE MAXIMUM EXPOSURE AREA
IN AREA OF CONCERN NO. 1

CT- Dermal contact with soil

Nonradionuclide Carcinogens

$$IF = (SA \times FC \times EF \times ED \times AF \times AB \times CF)/(BW \times AT)$$

$$CR = C \times IF \times SF$$

Chemical	C Soil Concentration (mg/kg)	SA Skin Surface Area (cm^2)	FC Fraction Contaminated	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	AF Soil Adherence (mg/cm^2)	AB Skin Absorption	CF Conversion Factor (kg/mg)	BW Body Weight (kg)	AT Averaging Time (days)
Aroclor-1254	5.18E-01	4700	0.9	65	2.5	0.2	0.06	0.000001	70	25550
Aroclor-1260	3.81E-01	4700	0.9	65	2.5	0.2	0.06	0.000001	70	25550
Bis(2-ethylhexyl)phthalate	3.30E-01	4700	0.9	65	2.5	0.2	0.01	0.000001	70	25550

Chemical	IF Intake Factor (kg/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
Aroclor-1254	4.61E-09	7.70E+00	1.84E-08
Aroclor-1260	4.61E-09	7.70E+00	1.35E-08
Bis(2-ethylhexyl)phthalate	7.69E-10	1.40E-02	3.55E-12
	Total Cancer Risk		3.19E-08

FUTURE ONSITE ECOLOGICAL RESEARCHER
50-ACRE MAXIMUM EXPOSURE AREA
IN AREA OF CONCERN NO. 1

RME- Dermal contact with soil

Noncarcinogens

$$IF = (SA \times FC \times EF \times ED \times AF \times AB \times CF)/(BW \times AT)$$

$$HQ = (C \times IF)/RfD$$

	C	SA	FC	EF	ED	AF	AB	CF	BW	AT
Chemical	Soil Concentration (mg/kg)	Skin Surface Area (cm^2)	Fraction Contaminated	Exposure Frequency (days/yr)	Exposure Duration (years)	Soil Adherence (mg/cm^2)	Skin Absorption	Conversion Factor (kg/mg)	Body Weight (kg)	Averaging Time (days)
Aroclor-1254	5.18E-01	4700	1	65	2.5	1	0.06	0.000001	70	915
Aroclor-1260	3.81E-01	4700	1	65	2.5	1	0.06	0.000001	70	915
Bis(2-ethylhexyl)phthalate	3.30E-01	4700	1	65	2.5	1	0.01	0.000001	70	915

	IF	RfD	HQ
Chemical	Intake Factor (kg/kg-day)	Reference Dose (mg/kg-day)	Hazard Quotient
Aroclor-1254	7.15E-07	2.00E-05	1.85E-02
Aroclor-1260	7.15E-07	2.00E-05	1.36E-02
Bis(2-ethylhexyl)phthalate	1.19E-07	2.00E-02	1.97E-06
	Total Hazaard Index		3.22E-02

FUTURE ONSITE ECO. ICAL RESEARCHER
50-ACRE MAXIMUM EXPOSURE AREA
IN AREA OF CONCERN NO. 1

RME- Dermal contact with soil

Nonradionuclide Carcinogens

$$IF = (SA \times FC \times EF \times ED \times AF \times AB \times CF)/(BW \times AT)$$

$$CR = C \times IF \times SF$$

Chemical	C Soil Concentration (mg/kg)	SA Skin Surface Area (cm^2)	FC Fraction Contaminated	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	AF Soil Adherence (mg/cm^2)	AB Skin Absorption	CF Conversion Factor (kg/mg)	BW Body Weight (kg)	AT Averaging Time (days)
Aroclor-1254	5.18E-01	4700	1	65	2.5	1	0.06	0.000001	70	25550
Aroclor-1260	3.81E-01	4700	1	65	2.5	1	0.06	0.000001	70	25550
Bis(2-ethylhexyl)phthalate	3.30E-01	4700	1	65	2.5	1	0.01	0.000001	70	25550

Chemical	IF Intake Factor (kg/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
Aroclor-1254	2.56E-08	7.70E+00	1.02E-07
Aroclor-1260	2.56E-08	7.70E+00	7.52E-08
Bis(2-ethylhexyl)phthalate	4.27E-09	1.40E-02	1.97E-11
	Total Cancer Risk		1.77E-07

FUTURE ONSITE ECOLOGICAL RESEARCHER
50-ACRE MAXIMUM EXPOSURE AREA
IN AREA OF CONCERN NO. 1

CT - Ingestion of surface water - Walnut Creek

Noncarcinogens

$$IF = (IR \times ET \times EF \times ED)/(BW \times AT)$$
$$HQ = (C \times IF)/RfD$$

Chemical	C Surface Water Concentration (mg/l)	IR Ingestion Rate (l/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
1,1-Dichloroethene	5.00E-06	0.01	1	7	2.5	70	915	2.73E-06	9.00E-03	1.52E-09
Carbon Tetrachloride	4.81E-04	0.01	1	7	2.5	70	915	2.73E-06	7.00E-04	1.88E-06
Chloroform	9.30E-05	0.01	1	7	2.5	70	915	2.73E-06	1.00E-02	2.54E-08
Methylene Chloride	3.80E-05	0.01	1	7	2.5	70	915	2.73E-06	6.00E-02	1.73E-09
Tetrachloroethene	8.03E-04	0.01	1	7	2.5	70	915	2.73E-06	1.00E-02	2.19E-07
									Total Hazard Index	2.13E-06

FUTURE ONSITE ECOLOGICAL RESEARCHER
50-ACRE MAXIMUM EXPOSURE AREA
IN AREA OF CONCERN NO. 1

CT - Ingestion of surface water - Walnut Creek

Nonradionuclide carcinogens

IF = (IR x ET x EF x ED)/(BW x AT)
CR = C x IF x SF

Chemical	C Surface Water Concentration (mg/l)	IR Ingestion Rate (l/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
1,1-Dichloroethene	5.00E-06	0.01	1	7	2.5	70	25550	9.78E-08	6.00E-01	2.94E-13
Carbon Tetrachloride	4.81E-04	0.01	1	7	2.5	70	25550	9.78E-08	1.30E-01	6.12E-12
Chloroform	9.30E-05	0.01	1	7	2.5	70	25550	9.78E-08	6.10E-03	5.55E-14
Methylene Chloride	3.80E-05	0.01	1	7	2.5	70	25550	9.78E-08	7.50E-03	2.79E-14
Tetrachloroethene	8.03E-04	0.01	1	7	2.5	70	25550	9.78E-08	5.20E-02	4.09E-12
Trichloroethene	6.24E-03	0.01	1	7	2.5	70	25550	9.78E-08	1.10E-02	6.72E-12
								Total Chemical Cancer Risk		1.73E-11

Radionuclides

IF = IR x ET x EF x ED
CR = C x IF x SF

Radionuclide	C Surface Water Concentration (pCi/l)	IR Ingestion Rate (l/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	IF Intake Factor (l)	SF Slope Factor (Risk/pCi)	CR Cancer Risk
Americium-241	5.00E-03	0.01	1	7	2.5	1.75E-01	2.40E-10	2.10E-13
Plutonium-239/240	2.60E-02	0.01	1	7	2.5	1.75E-01	2.30E-10	1.05E-12
						Total Radionuclide Cancer Risk		1.26E-12

Total Cancer Risk 1.86E-11

FUTURE ONSITE ECOLOGICAL RESEARCHER
50-ACRE MAXIMUM EXPOSURE AREA
IN AREA OF CONCERN NO. 1

RME - Ingestion of surface water - Walnut Creek

Noncarcinogens

$$IF = (IR \times ET \times EF \times ED)/(BW \times AT)$$
$$HQ = (C \times IF)/RfD$$

Chemical	C Surface Water Concentration (mg/l)	IR Ingestion Rate (l/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
1,1-Dichloroethene	5.00E-06	0.05	1	12	2.5	70	915	2.34E-05	9.00E-03	1.30E-08
Carbon Tetrachloride	4.81E-04	0.05	1	12	2.5	70	915	2.34E-05	7.00E-04	1.61E-05
Chloroform	9.30E-05	0.05	1	12	2.5	70	915	2.34E-05	1.00E-02	2.18E-07
Methylene Chloride	3.80E-05	0.05	1	12	2.5	70	915	2.34E-05	6.00E-02	1.48E-08
Tetrachloroethene	8.03E-04	0.05	1	12	2.5	70	915	2.34E-05	1.00E-02	1.88E-06
									Total Hazard Index	1.82E-05

FUTURE ONSITE ECOLOGICAL RESEARCHER
50-ACRE MAXIMUM EXPOSURE AREA
IN AREA OF CONCERN NO. 1

RME - Ingestion of surface water - Walnut Creek

Nonradionuclide carcinogens

IF = (IR x ET x EF x ED)/(BW x AT)
CR = C x IF x SF

	C	IR	ET	EF	ED	BW	AT	IF	SF	CR
Chemical	Surface Water Concentration (mg/l)	Ingestion Rate (l/hr)	Exposure Time (hr/day)	Exposure Frequency (days/yr)	Exposure Duration (years)	Body Weight (kg)	Averaging Time (days)	Intake Factor (l/kg-day)	Slope Factor 1/(mg/kg-day)	Cancer Risk
1,1-Dichloroethene	5.00E-06	0.05	1	12	2.5	70	25550	8.39E-07	6.00E-01	2.52E-12
Carbon Tetrachloride	4.81E-04	0.05	1	12	2.5	70	25550	8.39E-07	1.30E-01	5.24E-11
Chloroform	9.30E-05	0.05	1	12	2.5	70	25550	8.39E-07	6.10E-03	4.76E-13
Methylene Chloride	3.80E-05	0.05	1	12	2.5	70	25550	8.39E-07	7.50E-03	2.39E-13
Tetrachloroethene	8.03E-04	0.05	1	12	2.5	70	25550	8.39E-07	5.20E-02	3.50E-11
Trichloroethene	6.24E-03	0.05	1	12	2.5	70	25550	8.39E-07	1.10E-02	5.76E-11
								Total Chemical Cancer Risk		1.48E-10

Radionuclides

IF = IR x ET x EF x ED
CR = C x IF x SF

	C	IR	ET	EF	ED	IF	SF	CR
Radionuclide	Surface Water Concentration (pCi/l)	Ingestion Rate (l/hr)	Exposure Time (hr/day)	Exposure Frequency (days/yr)	Exposure Duration (years)	Intake Factor (l)	Slope Factor (Risk/pCi)	Cancer Risk
Americium-241	5.00E-03	0.05	1	12	2.5	1.50E+00	2.40E-10	1.80E-12
Plutonium-239/240	2.60E-02	0.05	1	12	2.5	1.50E+00	2.30E-10	8.97E-12
							Total Radionuclide Cancer Risk	1.08E-11
							Total Cancer Risk	1.59E-10

FUTURE ONSITE ECOLOGICAL RESEARCHER
50-ACRE MAXIMUM EXPOSURE AREA
IN AREA OF CONCERN NO. 1

CT - Ingestion of surface water - Woman Creek

Noncarcinogens

$$IF = (IR \times ET \times EF \times ED)/(BW \times AT)$$
$$HQ = (C \times IF)/RfD$$

Chemical	C Surface Water Concentration (mg/l)	IR Ingestion Rate (l/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
1,1-Dichloroethene	2.00E-06	0.01	1	7	2.5	70	915	2.73E-06	9.00E-03	6.07E-10
Carbon Tetrachloride	2.62E-04	0.01	1	7	2.5	70	915	2.73E-06	7.00E-04	1.02E-06
Chloroform	2.15E-04	0.01	1	7	2.5	70	915	2.73E-06	1.00E-02	5.87E-08
Methylene Chloride	1.06E-04	0.01	1	7	2.5	70	915	2.73E-06	6.00E-02	4.83E-09
Tetrachloroethene	1.16E-04	0.01	1	7	2.5	70	915	2.73E-06	1.00E-02	3.17E-08
									Total Hazard Index	1.12E-06

FUTURE ONSITE ECOL ICAL RESEARCHER
50-ACRE MAXIMUM EXPOSURE AREA
IN AREA OF CONCERN NO. 1

CT - Ingestion of surface water - Woman Creek

Nonradionuclide carcinogens

IF = (IR x ET x EF x ED)/(BW x AT)
CR = C x IF x SF

Chemical	C Surface Water Concentration (mg/l)	IR Ingestion Rate (l/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
1,1-Dichloroethene	2.00E-06	0.01	1	7	2.5	70	25550	9.78E-08	6.00E-01	1.17E-13
Carbon Tetrachloride	2.62E-04	0.01	1	7	2.5	70	25550	9.78E-08	1.30E-01	3.33E-12
Chloroform	2.15E-04	0.01	1	7	2.5	70	25550	9.78E-08	6.10E-03	1.28E-13
Methylene Chloride	1.06E-04	0.01	1	7	2.5	70	25550	9.78E-08	7.50E-03	7.78E-14
Tetrachloroethene	1.16E-04	0.01	1	7	2.5	70	25550	9.78E-08	5.20E-02	5.90E-13
Trichloroethene	9.25E-04	0.01	1	7	2.5	70	25550	9.78E-08	1.10E-02	9.96E-13
								Total Chemical Cancer Risk		5.24E-12

Radionuclides

IF = IR x ET x EF x ED
CR = C x IF x SF

Radionuclide	C Surface Water Concentration (pCi/l)	IR Ingestion Rate (l/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	IF Intake Factor (l)	SF Slope Factor (Risk/pCi)	CR Cancer Risk
Americium-241	6.30E-02	0.01	1	7	2.5	1.75E-01	2.40E-10	2.65E-12
Plutonium-239/240	2.37E+00	0.01	1	7	2.5	1.75E-01	2.30E-10	9.54E-11
							Total Radionuclide Cancer Risk	9.80E-11

Total Cancer Risk 1.03E-10

FUTURE ONSITE ECOLOGICAL RESEARCHER
50-ACRE MAXIMUM EXPOSURE AREA
IN AREA OF CONCERN NO. 1

RME - Ingestion of surface water Woman Creek

Noncarcinogens

$$IF = (IR \times ET \times EF \times ED)/(BW \times AT)$$
$$HQ = (C \times IF)/RfD$$

	C	IR	ET	EF	ED	BW	AT	IF	RfD	HQ
Chemical	Surface Water Concentration (mg/l)	Ingestion Rate (l/hr)	Exposure Time (hr/day)	Exposure Frequency (days/yr)	Exposure Duration (years)	Body Weight (kg)	Averaging Time (days)	Intake Factor (l/kg-day)	Reference Dose (mg/kg-day)	Hazard Quotient
1,1-Dichloroethene	2.00E-06	0.05	1	12	2.5	70	915	2.34E-05	9.00E-03	5.20E-09
Carbon Tetrachloride	2.62E-04	0.05	1	12	2.5	70	915	2.34E-05	7.00E-04	8.77E-06
Chloroform	2.15E-04	0.05	1	12	2.5	70	915	2.34E-05	1.00E-02	5.04E-07
Methylene Chloride	1.06E-04	0.05	1	12	2.5	70	915	2.34E-05	6.00E-02	4.14E-08
Tetrachloroethene	1.16E-04	0.05	1	12	2.5	70	915	2.34E-05	1.00E-02	2.72E-07
									Total Hazard Index	9.59E-06

FUTURE ONSITE ECOLOGICAL RESEARCHER
50-ACRE MAXIMUM EXPOSURE AREA
IN AREA OF CONCERN NO. 1

RME - Ingestion of surface water Woman Creek

Nonradionuclide carcinogens

$$IF = (IR \times ET \times EF \times ED)/(BW \times AT)$$
$$CR = C \times IF \times SF$$

	C	IR	ET	EF	ED	BW	AT	IF	SF	CR
Chemical	Surface Water Concentration (mg/l)	Ingestion Rate (l/hr)	Exposure Time (hr/day)	Exposure Frequency (days/yr)	Exposure Duration (years)	Body Weight (kg)	Averaging Time (days)	Intake Factor (l/kg-day)	Slope Factor 1/(mg/kg-day)	Cancer Risk
1,1-Dichloroethene	2.00E-06	0.05	1	12	2.5	70	25550	8.39E-07	6.00E-01	1.01E-12
Carbon Tetrachloride	2.62E-04	0.05	1	12	2.5	70	25550	8.39E-07	1.30E-01	2.86E-11
Chloroform	2.15E-04	0.05	1	12	2.5	70	25550	8.39E-07	6.10E-03	1.10E-12
Methylene Chloride	1.06E-04	0.05	1	12	2.5	70	25550	8.39E-07	7.50E-03	6.67E-13
Tetrachloroethene	1.16E-04	0.05	1	12	2.5	70	25550	8.39E-07	5.20E-02	5.06E-12
Trichloroethene	9.25E-04	0.05	1	12	2.5	70	25550	8.39E-07	1.10E-02	8.53E-12
								Total Chemical Cancer Risk		4.49E-11

Radionuclides

$$IF = IR \times ET \times EF \times ED$$
$$CR = C \times IF \times SF$$

	C	IR	ET	EF	ED	IF	SF	CR
Radionuclide	Surface Water Concentration (pCi/l)	Ingestion Rate (l/hr)	Exposure Time (hr/day)	Exposure Frequency (days/yr)	Exposure Duration (years)	Intake Factor (l)	Slope Factor (Risk/pCi)	Cancer Risk
Americium-241	6.30E-02	0.05	1	12	2.5	1.50E+00	2.40E-10	2.27E-11
Plutonium-239/240	2.37E+00	0.05	1	12	2.5	1.50E+00	2.30E-10	8.18E-10
							Total Radionuclide Cancer Risk	8.40E-10

Total Cancer Risk 8.85E-10

FUTURE ONSITE ECOLOGICAL RESEARCHER
50-ACRE MAXIMUM EXPOSURE AREA
IN AREA OF CONCERN NO. 1

CT - Dermal contact with surface water - Walnut Creek

Noncarcinogens

IF = (SA x DP x ET x EF x ED x CF)/(BW x AT)
HQ = (C x IF)/RfD

Chemical	C Surface Water Concentration (mg/l)	SA Skin Surface Area (cm^2)	DP Dermal Permeability (cm/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (day/yr)	ED Exposure Duration (years)	CF Conversion Factor (l/cm^3)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
1,1-Dichloroethene	5.00E-06	9275	0.016	1	7	2.5	0.001	70	915	4.05E-05	9.00E-03	2.25E-08
Carbon Tetrachloride	4.81E-04	9275	0.022	1	7	2.5	0.001	70	915	5.58E-05	7.00E-04	3.83E-05
Chloroform	9.30E-05	9275	0.13	1	7	2.5	0.001	70	915	3.29E-04	1.00E-02	3.06E-06
Methylene Chloride	3.80E-05	9275	0.0045	1	7	2.5	0.001	70	915	1.14E-05	6.00E-02	7.22E-09
Tetrachloroethene	8.03E-04	9275	0.37	1	7	2.5	0.001	70	915	9.38E-04	1.00E-02	7.53E-05
											Total Hazard Index	1.17E-04

Nonradionuclide carcinogens

IF = (SA x DP x ET x EF x ED x CF)/(BW x AT)
CR = C x IF x SF

Chemical	C Surface Water Concentration (mg/l)	SA Skin Surface Area (cm^2)	DP Dermal Permeability (cm/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (day/yr)	ED Exposure Duration (years)	CF Conversion Factor (l/cm^3)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
1,1-Diohloroethene	5.00E-06	9275	0.016	1	7	2.5	0.001	70	25550	1.45E-06	6.00E-01	4.36E-12
Carbon Tetrachloride	4.81E-04	9275	0.022	1	7	2.5	0.001	70	25550	2.00E-06	1.30E-01	1.25E-10
Chloroform	9.30E-05	9275	0.13	1	7	2.5	0.001	70	25550	1.18E-05	6.10E-03	6.69E-12
Methylene Chloride	3.80E-05	9275	0.0045	1	7	2.5	0.001	70	25550	4.08E-07	7.50E-03	1.16E-13
Tetrachloroethene	8.03E-04	9275	0.37	1	7	2.5	0.001	70	25550	3.36E-05	5.20E-02	1.40E-09
Trichloroethene	6.24E-03	9275	0.23	1	7	2.5	0.001	70	25550	2.09E-05	1.10E-02	1.43E-09
											Total Cancer Risk	2.97E-09

FUTURE ONSITE ECO. | .CAL RESEARCHER
50-ACRE MAXIMUM EXPOSURE AREA
IN AREA OF CONCERN NO. 1

RME - Dermal contact with surface water - Walnut Creek

Noncarcinogens

IF = (SA x DP x ET x EF x ED x CF)/(BW x AT)
HQ = (C x IF)/RfD

Chemical	C Surface Water Concentration (mg/l)	SA Skin Surface Area (cm^2)	DP Dermal Permeability (cm/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (day/yr)	ED Exposure Duration (years)	CF Conversion Factor (l/cm^3)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
1,1-Dichloroethene	5.00E-06	9275	0.016	1	12	2.5	0.001	70	915	6.95E-05	9.00E-03	3.86E-08
Carbon Tetrachloride	4.81E-04	9275	0.022	1	12	2.5	0.001	70	915	9.56E-05	7.00E-04	6.57E-05
Chloroform	9.30E-05	9275	0.13	1	12	2.5	0.001	70	915	5.65E-04	1.00E-02	5.25E-06
Methylene Chloride	3.80E-05	9275	0.0045	1	12	2.5	0.001	70	915	1.95E-05	6.00E-02	1.24E-08
Tetrachloroethene	8.03E-04	9275	0.37	1	12	2.5	0.001	70	915	1.61E-03	1.00E-02	1.29E-04
											Total Hazard Index	2.00E-04

Nonradionuclide carcinogens

IF = (SA x DP x ET x EF x ED x CF)/(BW x AT)
CR = C x IF x SF

Chemical	C Surface Water Concentration (mg/l)	SA Skin Surface Area (cm^2)	DP Dermal Permeability (cm/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (day/yr)	ED Exposure Duration (years)	CF Conversion Factor (l/cm^3)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
1,1-Dichloroethene	5.00E-06	9275	0.016	1	12	2.5	0.001	70	25550	2.49E-06	6.00E-01	7.47E-12
Carbon Tetrachloride	4.81E-04	9275	0.022	1	12	2.5	0.001	70	25550	3.42E-06	1.30E-01	2.14E-10
Chloroform	9.30E-05	9275	0.13	1	12	2.5	0.001	70	25550	2.02E-05	6.10E-03	1.15E-11
Methylene Chloride	3.80E-05	9275	0.0045	1	12	2.5	0.001	70	25550	7.00E-07	7.50E-03	2.00E-13
Tetrachloroethene	8.03E-04	9275	0.37	1	12	2.5	0.001	70	25550	5.76E-05	5.20E-02	2.40E-09
Trichloroethene	6.24E-03	9275	0.23	1	12	2.5	0.001	70	25550	3.58E-05	1.10E-02	2.46E-09
											Total Cancer Risk	5.09E-09

FUTURE ONSITE ECOLOGICAL RESEARCHER
50-ACRE MAXIMUM EXPOSURE AREA
IN AREA OF CONCERN NO. 1

CT - Dermal contact with surface water - Woman Creek

Noncarcinogens

IF = (SA x DP x ET x EF x ED x CF)/(BW x AT)
HQ = (C x IF)/RfD

Chemical	C Surface Water Concentration (mg/l)	SA Skin Surface Area (cm^2)	DP Dermal Permeability (cm/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (day/yr)	ED Exposure Duration (years)	CF Conversion Factor (l/cm^3)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	RfD Reference Dose (mg/kg-day	HQ Hazard Quotient
1,1-Dichloroethene	2.00E-06	9275	0.016	1	7	2.5	0.001	70	915	4.05E-05	9.00E-03	9.01E-09
Carbon Tetrachloride	2.62E-04	9275	0.022	1	7	2.5	0.001	70	915	5.58E-05	7.00E-04	2.09E-05
Chloroform	2.15E-04	9275	0.13	1	7	2.5	0.001	70	915	3.29E-04	1.00E-02	7.08E-06
Methylene Chloride	1.06E-04	9275	0.0045	1	7	2.5	0.001	70	915	1.14E-05	6.00E-02	2.01E-08
Tetrachloroethene	1.16E-04	9275	0.37	1	7	2.5	0.001	70	915	9.38E-04	1.00E-02	1.09E-05
											Total Hazard Index	3.89E-05

Nonradionuclide carcinogens

IF = (SA x DP x ET x EF x ED x CF)/(BW x AT)
CR = C x IF x SF

Chemical	C Surface Water Concentration (mg/l)	SA Skin Surface Area (cm^2)	DP Dermal Permeability (cm/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (day/yr)	ED Exposure Duration (years)	CF Conversion Factor (l/cm^3)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	SF Slope Factor /(mg/kg-da	CR Cancer Risk
1,1-Dichloroethene	2.00E-06	9275	0.016	1	7	2.5	0.001	70	25550	1.45E-06	6.00E-01	1.74E-12
Carbon Tetrachloride	2.62E-04	9275	0.022	1	7	2.5	0.001	70	25550	2.00E-06	1.30E-01	6.80E-11
Chloroform	2.15E-04	9275	0.13	1	7	2.5	0.001	70	25550	1.18E-05	6.10E-03	1.55E-11
Methylene Chloride	1.06E-04	9275	0.0045	1	7	2.5	0.001	70	25550	4.08E-07	7.50E-03	3.25E-13
Tetrachloroethene	1.16E-04	9275	0.37	1	7	2.5	0.001	70	25550	3.36E-05	5.20E-02	2.03E-10
Trichloroethene	9.25E-04	9275	0.23	1	7	2.5	0.001	70	25550	2.09E-05	1.10E-02	2.12E-10
											Total Cancer Risk	5.00E-10

FUTURE ONSITE ECOLOGICAL RESEARCHER
50-ACRE MAXIMUM EXPOSURE AREA
IN AREA OF CONCERN NO. 1

RME - Dermal contact with surface water - Woman Creek

Noncarcinogens

$$IF = (SA \times DP \times ET \times EF \times ED \times CF)/(BW \times AT)$$
$$HQ = (C \times IF)/RfD$$

Chemical	C Surface Water Concentration (mg/l)	SA Skin Surface Area (cm^2)	DP Dermal Permeability (cm/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (day/yr)	ED Exposure Duration (years)	CF Conversion Factor (l/cm^3)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
1,1-Dichloroethene	2.00E-06	9275	0.016	1	12	2.5	0.001	70	915	6.95E-05	9.00E-03	1.54E-08
Carbon Tetrachloride	2.62E-04	9275	0.022	1	12	2.5	0.001	70	915	9.56E-05	7.00E-04	3.58E-05
Chloroform	2.15E-04	9275	0.13	1	12	2.5	0.001	70	915	5.65E-04	1.00E-02	1.21E-05
Methylene Chloride	1.06E-04	9275	0.0045	1	12	2.5	0.001	70	915	1.95E-05	6.00E-02	3.45E-08
Tetrachloroethene	1.16E-04	9275	0.37	1	12	2.5	0.001	70	915	1.61E-03	1.00E-02	1.86E-05
											Total Hazard Index	6.66E-05

Nonradionuclide carcinogens

$$IF = (SA \times DP \times ET \times EF \times ED \times CF)/(BW \times AT)$$
$$CR = C \times IF \times SF$$

Chemical	C Surface Water Concentration (mg/l)	SA Skin Surface Area (cm^2)	DP Dermal Permeability (cm/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (day/yr)	ED Exposure Duration (years)	CF Conversion Factor (l/cm^3)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	SF Slope Factor 1/(mg/kg-day	CR Cancer Risk
1,1-Dichloroethene	2.00E-06	9275	0.016	1	12	2.5	0.001	70	25550	2.49E-06	6.00E-01	2.99E-12
Carbon Tetrachloride	2.62E-04	9275	0.022	1	12	2.5	0.001	70	25550	3.42E-06	1.30E-01	1.17E-10
Chloroform	2.15E-04	9275	0.13	1	12	2.5	0.001	70	25550	2.02E-05	6.10E-03	2.65E-11
Methylene Chloride	1.06E-04	9275	0.0045	1	12	2.5	0.001	70	25550	7.00E-07	7.50E-03	5.57E-13
Tetrachloroethene	1.16E-04	9275	0.37	1	12	2.5	0.001	70	25550	5.76E-05	5.20E-02	3.47E-10
Trichloroethene	9.25E-04	9275	0.23	1	12	2.5	0.001	70	25550	3.58E-05	1.10E-02	3.64E-10
											Total Cancer Risk	8.58E-10

FUTURE ONSITE ECOLOGICAL RESEARCHER
50-ACRE MAXIMUM EXPOSURE AREA
IN AREA OF CONCERN NO. 1

CT - External Radiation

IF = TF x GSF x EF x ED
CR = C x IF x SF

Radionuclide	C Soil Concentration (pCi/g)	TF Gamma Time Factor (T_e)	GSF Gamma Shielding Factor ($1-S_e$)	EF Percent of year Exposed	ED Exposure Duration (years)	IF Intake Factor (years)	SF Slope Factor (1/pCi-yr/g)	CR Cancer Risk
Americium-241	5.88E+01	0.3	0.8	0.18	2.5	1.08E-01	4.90E-09	3.11E-08
Plutonium-239/240	1.24E+03	0.3	0.8	0.18	2.5	1.08E-01	1.88E-11	2.53E-09
							Total Cancer Risk	3.36E-08

RME - External Radiation

IF = TF x GSF x EF x ED
CR = C x IF x SF

Radionuclide	C Soil Concentration (pCi/g)	TF Gamma Time Factor (T_e)	GSF Gamma Shielding Factor ($1-S_e$)	EF Percent of year Exposed	ED Exposure Duration (years)	IF Intake Factor (years)	SF Slope Factor (1/pCi-yr/g)	CR Cancer Risk
Americium-241	5.88E+01	0.3	1	0.18	2.5	1.35E-01	4.90E-09	3.89E-08
Plutonium-239/240	1.24E+03	0.3	1	0.18	2.5	1.35E-01	1.88E-11	3.16E-09
							Total Cancer Risk	4.21E-08

SUMMARY OF RISKS
CURRENT ONSITE WORKER
AREA OF CONCERN NO. 2

	Central Tendency		Reasonable Maximum	
Pathway	Hazard Index	Cancer Risk	Hazard Index	Cancer Risk
Ingestion of surface soil	2.44E-07	3.66E-09	1.55E-06	1.45E-07
Inhalation of particulates from surface soil	-	5.78E-09	-	4.58E-08
Dermal contact with surface soil*	4.90E-08	7.85E-13	3.11E-07	3.11E-11
External Radiation	-	4.62E-10	-	5.23E-09
Total	2.93E-07	9.90E-09	1.86E-06	1.96E-07

* Dermal contact with metals (except mercury) and radionuclides is considered insignificant.

CURRENT ONSITE WORKER
AREA OF CONCERN NO. 2

CT - Surface soil ingestion

Noncarcinogens

IF =(IR x ED x FC x EF x ME x CF x WF)/(BW x AT)
HQ = (C x IF)/RfD

Chemical	C Soil Concentration (mg/kg)	IR Ingestion Rate (mg/day)	ED Exposure Duration (years)	FC Fraction Contaminated	EF Exposure Frequency (days/yr)	ME Matrix Effect	CF Conversion Factor (kg/mg)	WF Weighting Factor	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (kg/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
Bis(2-ethylhexyl)phthalate	1.10E-01	10	4	0.9	219	1	0.000001	0.17	70	1460	1.31E-08	2.00E-02	7.21E-08
Chromium	1.31E+01	10	4	0.9	219	1	0.000001	0.17	70	1460	1.31E-08	1.00E+00	1.72E-07
												Total Hazard Index	2.44E-07

Nonradionuclide Carcinogens

IF =(IR x ED x FC x EF x ME x CF x WF)/(BW x AT)
CR = C x IF x SF

Chemical	C Soil Concentration (mg/kg)	IR Ingestion Rate (mg/day)	ED Exposure Duration (years)	FC Fraction Contaminated	EF Exposure Frequency (days/yr)	ME Matrix Effect	CF Conversion Factor (kg/mg)	WF Weighting Factor	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (kg/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
Bis(2-ethylhexyl)phthalate	1.10E-01	10	4	0.9	219	1	0.000001	0.17	70	25550	7.49E-10	1.40E-02	1.15E-12
												Total Chemical Cancer Risk	1.15E-12

Radionuclides

IF =IR x ED x FC x EF x ME x CF x WF
CR = C x IF x SF

Radionuclides	C Soil Concentration (pCi/g)	IR Ingestion Rate (mg/day)	ED Exposure Duration (years)	FC Fraction Contaminated	EF Exposure Frequency (days/yr)	ME Matrix Effect	CF Conversion Factor (g/mg)	WF Weighting Factor	IF Intake Factor (g)	SF Slope Factor (Risk/pCi)	CR Cancer Risk
Americium-241	1.50E+00	10	4	0.9	219	1	0.001	0.17	1.34E+00	2.40E-10	4.83E-10
Plutonium-239/240	1.03E+01	10	4	0.9	219	1	0.001	0.17	1.34E+00	2.30E-10	3.18E-09
										Total Radionuclide Cancer Risk	3.66E-09

Total Cancer Risk 3.66E-09

CURRENT ON | : WORKER
AREA OF CONCERN NO. 2

RME - Surface soil ingestion

Noncarcinogens

IF =(IR x ED x FC x EF x ME x CF x WF)/(BW x AT)
HQ = (C x IF)/RfD

	C	IR	ED	FC	EF	ME	CF	WF	BW	AT	IF	RfD	HQ
Chemical	Soil Concentration (mg/kg)	Ingestion Rate (mg/day)	Exposure Duration (years)	Fraction Contaminated	Exposure Frequency (days/yr)	Matrix Effect	Conversion Factor (kg/mg)	Weighting Factor	Body Weight (kg)	Averaging Time (days)	Intake Factor (kg/kg-day)	Reference Dose (mg/kg-day)	Hazard Quotient
Bis(2-ethylhexyl)phthalate	1.10E-01	50	25	1	250	1	0.000001	0.17	70	9125	8.32E-08	2.00E-02	4.57E-07
Chromium	1.31E+01	50	25	1	250	1	0.000001	0.17	70	9125	8.32E-08	1.00E+00	1.09E-06
												Total Hazard Index	1.55E-06

Nonradionuclide Carcinogens

IF =(IR x ED x FC x EF x ME x CF x WF)/(BW x AT)
CR = C x IF x SF

	C	IR	ED	FC	EF	ME	CF	WF	BW	AT	IF	SF	CR
Chemical	Soil Concentration (mg/kg)	Ingestion Rate (mg/day)	Exposure Duration (years)	Fraction Contaminated	Exposure Frequency (days/yr)	Matrix Effect	Conversion Factor (kg/mg)	Weighting Factor	Body Weight (kg)	Averaging Time (days)	Intake Factor (kg/kg-day)	Slope Factor 1/(mg/kg-day)	Cancer Risk
Bis(2-ethylhexyl)phthalate	1.10E-01	50	25	1	250	1	0.000001	0.17	70	25550	2.97E-08	1.40E-02	4.57E-11
												Total Chemical Cancer Risk	4.57E-11

Radionuclides

IF =IR x ED x FC x EF x ME x CF x WF
CR = C x IF x SF

	C	IR	ED	FC	EF	ME	CF	WF	IF	SF	CR
Radionuclide	Soil Concentration (pCi/g)	Ingestion Rate (mg/day)	Exposure Duration (years)	Fraction Contaminated	Exposure Frequency (days/yr)	Matrix Effect	Conversion Factor (g/mg)	Weighting Factor	Intake Factor (g)	Slope Factor (Risk/pCi)	Cancer Risk
Americium-241	1.50E+00	50	25	1	250	1	0.001	0.17	5.31E+01	2.40E-10	1.91E-08
Plutonium-239/240	1.03E+01	50	25	1	250	1	0.001	0.17	5.31E+01	2.30E-10	1.26E-07
										Total Radionuclide Cancer Risk	1.45E-07

Total Cancer Risk 1.45E-07

CURRENT ONSITE WORKER
AREA OF CONCERN NO. 2

CT Inhalation of Particulates - Radionuclides

IF = IR x ET x EF x ED x DF x WF
CR = IF x C x SF

Radionuclides	C Air Concentration (pCi/m³)	IR Inhalation Rate (m³/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	DF Deposition Factor	WF Weighting Factor	IF Intake Factor (m³)	SF Slope Factor (Risk/pCi)	CR Cancer Risk
Americium-241	2.13E-05	0.83	7.2	219	4	1	0.17	8.90E+02	3.20E-08	6.07E-10
Plutonium-239/240	1.53E-04	0.83	7.2	219	4	1	0.17	8.90E+02	3.80E-08	5.17E-09
								Total Radionuclide Risk		5.78E-09

RME Inhalation of Particulates - Radionuclides

IF = IR x ET x EF x ED x DF x WF
CR = IF x C x SF

Radionuclides	C Air Concentration (pCi/m³)	IR Inhalation Rate (m³/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	DF Deposition Factor	WF Weighting Factor	IF Intake Factor (m³)	SF Slope Factor (Risk/pCi)	CR Cancer Risk
Americium-241	2.13E-05	0.83	8	250	25	1	0.17	7.06E+03	3.20E-08	4.81E-09
Plutonium-239/240	1.53E-04	0.83	8	250	25	1	0.17	7.06E+03	3.80E-08	4.10E-08
								Total Radionuclide Risk		4.58E-08

Total Cancer Risk 4.58E-08

CURRENT ON-SITE WORKER
AREA OF CONCERN NO. 2

CT- Dermal contact with surface soil

Noncarcinogens

IF = (SA x FC x EF x ED x AF x AB x CF x WF)/(BW x AT)
HQ = (C x IF)/RfD

Chemical	C Soil Concentration (mg/kg)	SA Skin Surface Area (cm^2)	FC Fraction Contaminated	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	AF Soil Adherence (mg/cm^2)	AB Skin Absorption	CF Conversion Factor (kg/mg)	WF Weighting Factor	BW Body Weight (kg)	AT Averaging Time (days)
Bis-2(ethylhexyl)phthalate	1.10E-01	3400	0.9	219	4	0.2	0.01	0.000001	0.17	70	1460

Chemical	IF Intake Factor (kg/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
Bis-2(ethylhexyl)phthalate	8.92E-09	2.00E-02	4.90E-08
		Total Hazard Index	4.90E-08

Nonradionuclide Carcinogens

IF = (SA x FC x EF x ED x AF x AB x CF x WF)/(BW x AT)
CR = C x IF x SF

Chemical	C Soil Concentration (mg/kg)	SA Skin Surface Area (cm^2)	FC Fraction Contaminated	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	AF Soil Adherence (mg/cm^2)	AB Skin Absorption	CF Conversion Factor (kg/mg)	WF Weighting Factor	BW Body Weight (kg)	AT Averaging Time (days)
Bis-2(ethylhexyl)phthalate	1.10E-01	3400	0.9	219	4	0.2	0.01	0.000001	0.17	70	25550

Chemical	IF Intake Factor (kg/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
Bis-2(ethylhexyl)phthalate	5.10E-10	1.40E-02	7.85E-13
		Total Cancer Risk	7.85E-13

CURRENT ONSITE WORKER
AREA OF CONCERN NO. 2

RME- Dermal contact with surface soil

Noncarcinogens

IF = (SA x FC x EF x ED x AF x AB x CF x WF)/(BW x AT)
HQ = (C x IF)/RfD

Chemical	C Soil Concentration (mg/kg)	SA Skin Surface Area (cm^2)	FC Fraction Contaminted	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	AF Soil Adherence (mg/cm^2)	AB Skin Absorption	CF Conversion Factor (kg/mg)	WF Weighting Factor	BW Body Weight (kg)	AT Averaging Time (days)
Bis-2(ethylhexyl)phthalate	1.10E-01	3400	1	250	25	1	0.01	0.000001	0.17	70	9125

Chemical	IF Intake Factor (kg/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
Bis-2(ethylhexyl)phthalate	5.66E-08	2.00E-02	3.11E-07
		Total Hazard Index	3.11E-07

Nonradionuclide Carcinogens

IF = (SA x FC x EF x ED x AF x AB x CF x WF)/(BW x AT)
CR = C x IF x SF

Chemical	C Soil Concentration (mg/kg)	SA Skin Surface Area (cm^2)	FC Fraction Contaminated	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	AF Soil Adherence (mg/cm^2)	AB Skin Absorption	CF Conversion Factor (kg/mg)	WF Weighting Factor	BW Body Weight (kg)	AT Averaging Time (days)
Bis-2(ethylhexyl)phthalate	1.10E-01	3400	1	250	25	1	0.01	0.000001	0.17	70	25550

Chemical	IF Intake Factor (kg/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
Bis-2(ethylhexyl)phthalate	2.02E-08	1.40E-02	3.11E-11
		Total Cancer Risk	3.11E-11

CURRENT ON[illegible] WORKER
AREA OF CONCERN NO. 2

CT - External Radiation

IF = TF x GSF x EF x ED x WF
CR = C x IF x SF

Radionuclide	C Soil Concentration (pCi/g)	TF Gamma Time Factor (Te)	GSF Gamma Shielding Factor (1-Se)	EF Percent of year Exposed	ED Exposure Duration (years)	WF Weighting Factor	IF Intake Factor (years)	SF Slope Factor (1/pCi-yr/g)	CR Cancer Risk
Americium-241	1.50E+00	0.3	0.5	0.6	4	0.17	6.12E-02	4.90E-09	4.50E-10
Plutonium-239/240	1.03E+01	0.3	0.5	0.6	4	0.17	6.12E-02	1.88E-11	1.19E-11
								Total Cancer Risk	4.62E-10

RME - External Radiation

IF = TF x GSF x EF x ED x WF
CR = C x IF x SF

Radionuclide	C Soil Concentration (pCi/g)	TF Gamma Time Factor (Te)	GSF Gamma Shielding Factor (1-Se)	EF Percent of year Exposed	ED Exposure Duration (years)	WF Weighting Factor	IF Intake Factor (years)	SF Slope Factor (1/pCi-yr/g)	CR Cancer Risk
Americium-241	1.50E+00	0.3	0.8	0.68	25	0.17	6.94E-01	4.90E-09	5.10E-09
Plutonium-239/240	1.03E+01	0.3	0.8	0.68	25	0.17	6.94E-01	1.88E-11	1.34E-10
								Total Cancer Risk	5.23E-09

SUMMARY OF RISKS
FUTURE INDUSTRIAL/OFFICE WORKER
AREA OF CONCERN NO. 2

	Central Tendency		Reasonable Maximum	
Pathway	Hazard Index	Cancer Risk	Hazard Index	Cancer Risk
Ingestion of surface soil	7.17E-07	1.08E-08	9.10E-06	8.53E-07
Inhalation of particulates from surface soil	-	2.58E-08	-	2.70E-07
Dermal contact with surface soil*	1.78E-07	2.85E-12	1.13E-06	1.13E-10
Inhalation of indoor VOCs	8.51E-12	1.13E-14	1.42E-11	1.18E-13
External Radiation	-	2.72E-09	-	3.08E-08
Total	8.96E-07	3.93E-08	1.02E-05	1.15E-06

* Dermal contact with metals (except mercury) and radionuclides is considered insignificant.

FUTURE INDUSTRIAL OFFICE WORKER
AREA OF CONCERN NO. 2

CT - Soil ingestion

Noncarcinogens

IF =(IR x ED x FC x EF x ME x CF)/(BW x AT)
HQ = (C x IF)/RfD

Chemical	C Soil Concentration (mg/kg)	IR Ingestion Rate (mg/day)	ED Exposure Duration (years)	FC Fraction Contaminated	EF Exposure Frequency (days/yr)	ME Matrix Effect	CF Conversion Factor (kg/mg)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (kg/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
Bis(2-ethylhexyl)phthalate	1.10E-01	5	4	0.9	219	1	0.000001	70	1460	3.86E-08	2.00E-02	2.12E-07
Chromium	1.31E+01	5	4	0.9	219	1	0.000001	70	1460	3.86E-08	1.00E+00	5.05E-07
											Total Hazard Index	7.17E-07

Nonradionuclide Carcinogens

IF =(IR x ED x FC x EF x ME x CF)/(BW x AT)
CR = C x IF x SF

Chemical	C Soil Concentration (mg/kg)	IR Ingestion Rate (mg/day)	ED Exposure Duration (years)	FC Fraction Contaminated	EF Exposure Frequency (days/yr)	ME Matrix Effect	CF Conversion Factor (kg/mg)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (kg/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
Bis(2-ethylhexyl)phthalate	1.10E-01	5	4	0.9	219	1	0.000001	70	25550	2.20E-09	1.40E-02	3.39E-12
											Total Chemical Cancer Risk	3.39E-12

Radionuclides

IF =IR x ED x FC x EF x ME x CF
CR = C x IF x SF

Radionuclide	C Soil Concentration (pCi/g)	IR Ingestion Rate (mg/day)	ED Exposure Duration (years)	FC Fraction Contaminated	EF Exposure Frequency (days/yr)	ME Matrix Effect	CF Conversion Factor (g/mg)	IF Intake Factor (g)	SF Slope Factor (Risk/pCi)	CR Cancer Risk
Americium-241	1.50E+00	5	4	0.9	219	1	0.001	3.94E+00	2.40E-10	1.42E-09
Plutonium-239/240	1.03E+01	5	4	0.9	219	1	0.001	3.94E+00	2.30E-10	9.34E-09
									Total Radionuclide Cancer Risk	1.08E-08

Total Cancer Risk 1.08E-08

FUTURE INDUSTRIAL/OFFICE WORKER
AREA OF CONCERN NO. 2

RME - soil ingestion

Noncarcinogens

IF =(IR x ED x FC x EF x ME x CF)/(BW x AT)
HQ = (C x IF)/RfD

Chemical	C Soil Concentration (mg/kg)	IR Ingestion Rate (mg/day)	ED Exposure Duration (years)	FC Fraction Contaminated	EF Exposure Frequency (days/yr)	ME Matrix Effect	CF Conversion Factor (kg/mg)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (kg/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
Bis(2-ethylhexyl)phthalate	1.10E-01	50	25	1	250	1	0.000001	70	9125	4.89E-07	2.00E-02	2.69E-06
Chromium	1.31E+01	50	25	1	250	1	0.000001	70	9125	4.89E-07	1.00E+00	6.41E-06
											Total Hazard Index	9.10E-06

Nonradionuclide Carcinogens

IF =(IR x ED x FC x EF x ME x CF)/(BW x AT)
CR = C x IF x SF

Chemical	C Soil Concentration (mg/kg)	IR Ingestion Rate (mg/day)	ED Exposure Duration (years)	FC Fraction Contaminated	EF Exposure Frequency (days/yr)	ME Matrix Effect	CF Conversion Factor (kg/mg)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (kg/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
Bis(2-ethylhexyl)phthalate	1.10E-01	50	25	1	250	1	0.000001	70	25550	1.75E-07	1.40E-02	2.69E-10
											Total Chemical Cancer Risk	2.69E-10

Radionuclides

IF =IR x ED x FC x EF x ME x CF
CR = C x IF x SF

Radionuclide	C Soil Concentration (pCi/g)	IR Ingestion Rate (mg/day)	ED Exposure Duration (years)	FC Fraction Contaminated	EF Exposure Frequency (days/yr)	ME Matrix Effect	CF Conversion Factor (g/mg)	IF Intake Factor (g)	SF Slope Factor (Risk/pCi)	CR Cancer Risk
Americium-241	1.50E+00	50	25	1	250	1	0.001	3.13E+02	2.40E-10	1.13E-07
Plutonium-239/240	1.03E+01	50	25	1	250	1	0.001	3.13E+02	2.30E-10	7.40E-07
									Total Radionuclide Cancer Risk	8.53E-07

Total Cancer Risk 8.53E-07

FUTURE INDUSTRIAL OFFICE WORKER
AREA OF CONCERN NO. 2

CT Inhalation of Particulates - Radionuclides

IF = IR x ET x EF x ED x DF
CR = IF x C x SF x DF

Radionuclides	C Air Concentration (pCi/m^3)	IR Inhalation Rate (m^3/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	DF Deposition Factor	IF Intake Factor (m^3)	SF Slope Factor (Risk/pCi)	CR Cancer Risk
Americium-241	2.13E-05	0.63	7.2	219	4	1	3.97E+03	3.20E-08	2.71E-09
Plutonium-239/240	1.53E-04	0.63	7.2	219	4	1	3.97E+03	3.80E-08	2.31E-08
								Total Radionuclide Cancer Risk	2.58E-08
								Total Cancer Risk	2.58E-08

RME Inhalation of Particulates - Radionuclides

IF = IR x ET x EF x ED x DF
CR = IF x C x SF

Radionuclides	C Air Concentration (pCi/m^3)	IR Inhalation Rate (m^3/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	DF Deposition Factor	IF Intake Factor (m^3)	SF Slope Factor (Risk/pCi)	CR Cancer Risk
Americium-241	2.13E-05	0.83	8	250	25	1	4.15E+04	3.20E-08	2.83E-08
Plutonium-239/240	1.53E-04	0.83	8	250	25	1	4.15E+04	3.80E-08	2.41E-07
								Total Radionuclide Cancer Risk	2.70E-07
								Total Cancer Risk	2.70E-07

FUTURE INDUSTRIAL/OFFICE WORKER
AREA OF CONCERN NO. 2

CT- Dermal contact with soil

Noncarcinogens

IF = (SA x FC x EF x ED x AF x AB x CF)/(BW x AT)
HQ = (C x IF)/RfD

Chemical	C Soil Concentration (mg/kg)	SA Skin Surface Area (cm^2)	FC Fraction Contaminated	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	AF Soil Adherence (mg/cm^2)	AB Skin Absorption	CF Conversion Factor (kg/mg)	BW Body Weight (kg)	AT Averaging Time (days)
Bis-2(ethylhexyl)phthalate	1.10E-01	2100	0.9	219	4	0.2	0.01	0.000001	70	1460

Chemical	IF Intake Factor (kg/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
Bis-2(ethylhexyl)phthalate	3.24E-08	2.00E-02	1.782E-07
	Total Hazard Index		1.782E-07

CT- Dermal contact with soil

Nonradionuclide Carcinogens

IF = (SA x FC x EF x ED x AF x AB x CF)/(BW x AT)
CR = C x IF x SF

Chemical	C Soil Concentration (mg/kg)	SA Skin Surface Area (cm^2)	FC Fraction Contaminated	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	AF Soil Adherence (mg/cm^2)	AB Skin Absorption	CF Conversion Factor (kg/mg)	BW Body Weight (kg)	AT Averaging Time (days)
Bis-2(ethylhexyl)phthalate	1.10E-01	2100	0.9	219	4	0.2	0.01	0.000001	70	25550

Chemical	IF Intake Factor (kg/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
Bis-2(ethylhexyl)phthalate	1.85E-09	1.40E-02	2.85E-12
	Total Cancer Risk		2.85E-12

FUTURE INDUSTR |)FFICE WORKER
AREA OF CONCERN NO. 2

RME- Dermal contact with soil

Noncarcinogens

IF = (SA x FC x EF x ED x AF x AB x CF)/(BW x AT)

HQ = (C x IF)/RfD

Chemical	C Soil Concentration (mg/kg)	SA Skin Surface Area (cm^2)	FC Fraction Contaminated	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	AF Soil Adherence (mg/cm^2)	AB Skin Absorption	CF Conversion Factor (kg/mg)	BW Body Weight (kg)	AT Averaging Time (days)
Bis-2(ethylhexyl)phthalate	1.10E-01	2100	1	250	25	1	0.01	0.000001	70	9125

Chemical	IF Intake Factor (kg/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
Bis-2(ethylhexyl)phthalate	2.05E-07	2.00E-02	1.13E-06
	Total Hazard Index		1.13E-06

RME- Dermal contact with soil

Nonradionuclide Carcinogens

IF = (SA x FC x EF x ED x AF x AB x CF)/(BW x AT)

CR = C x IF x SF

Chemical	C Soil Concentration (mg/kg)	SA Skin Surface Area (cm^2)	FC Fraction Contaminated	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	AF Soil Adherence (mg/cm^2)	AB Skin Absorption	CF Conversion Factor (kg/mg)	BW Body Weight (kg)	AT Averaging Time (days)
Bis-2(ethylhexyl)phthalate	1.10E-01	2100	1	250	25	1	0.01	0.000001	70	25550

Chemical	IF Intake Factor (kg/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
Bis-2(ethylhexyl)phthalate	7.34E-08	1.40E-02	1.13E-10
	Total Cancer Risk		1.13E-10

FUTURE INDUSTRIAL/OFFICE WORKER
AREA OF CONCERN NO. 2

CT - Inhalation of VOCs from infiltration

Noncarcinogens

$$IF = (IR \times ET \times EF \times ED)/(BW \times AT)$$
$$HQ = (C \times IF)/RfD$$

Chemical	C VOC Concentration in building air (mg/m^3)	IR Inhalation Rate (m^3/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	BW Body Weight (kg)	AT Averaging Time (years)	IF Intake Factor ($m^3/kg\text{-}day$)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
Methylene chloride	1.97E-10	0.63	7.2	219	4	70	1460	3.89E-02	9.00E-01	8.51E-12
									Total Hazard Index	8.51E-12

Carcinogens

$$IF = (IR \times ET \times EF \times ED)/(BW \times AT)$$
$$CR = C \times IF \times SF$$

Chemical	C VOC Concentration in building air (mg/m^3)	IR Inhalation Rate (m^3/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	BW Body Weight (kg)	AT Averaging Time (years)	IF Intake Factor ($m^3/kg\text{-}day$)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
Chloroform	3.84E-11	0.63	7.2	219	4	70	25550	2.22E-03	8.00E-02	6.83E-15
Methylene chloride	1.97E-10	0.63	7.2	219	4	70	25550	2.22E-03	1.60E-03	7.00E-16
Tetrachloroethene	2.62E-10	0.63	7.2	219	4	70	25550	2.22E-03	2.00E-03	1.16E-15
Trichloroethene	1.93E-10	0.63	7.2	219	4	70	25550	2.22E-03	6.00E-03	2.57E-15
									Total Cancer Risk	1.13E-14

FUTURE INDUSTR | OFFICE WORKER
AREA OF CONCERN NO. 2

RME - Inhalation of VOCs from infiltration

Noncarcinogens

$$IF = (IR \times ET \times EF \times ED)/(BW \times AT)$$
$$HQ = (C \times IF)/RfD$$

	C	IR	ET	EF	ED	BW	AT	IF	RfD	HQ
Chemical	VOC Concentration in building air (mg/m^3)	Inhalation Rate (m^3/hr)	Exposure Time (hr/day)	Exposure Frequency (days/yr)	Exposure Duration (years)	Body Weight (kg)	Averaging Time (years)	Intake Factor (m^3/kg-day)	Reference Dose (mg/kg-day)	Hazard Quotient
Methylene chloride	1.97E-10	0.83	8	250	25	70	9125	6.50E-02	9.00E-01	1.42E-11
									Total Hazard Index	1.42E-11

Carcinogens

$$IF = (IR \times ET \times EF \times ED)/(BW \times AT)$$
$$CR = C \times IF \times SF$$

	C	IR	ET	EF	ED	BW	AT	IF	SF	CR
Chemical	VOC Concentration in building air (mg/m^3)	Inhalation Rate (m^3/hr)	Exposure Time (hr/day)	Exposure Frequency (days/yr)	Exposure Duration (years)	Body Weight (kg)	Averaging Time (years)	Intake Factor (m^3/kg-day)	Slope Factor 1/(mg/kg-day)	Cancer Risk
Chloroform	3.84E-11	0.83	8	250	25	70	25550	2.32E-02	8.00E-02	7.13E-14
Methylene chloride	1.97E-10	0.83	8	250	25	70	25550	2.32E-02	1.60E-03	7.31E-15
Tetrachloroethene	2.62E-10	0.83	8	250	25	70	25550	2.32E-02	2.00E-03	1.22E-14
Trichloroethene	1.93E-10	0.83	8	250	25	70	25550	2.32E-02	6.00E-03	2.69E-14
									Total Cancer Risk	1.18E-13

FUTURE INDUSTRIAL/OFFICE WORKER
AREA OF CONCERN NO. 2

CT - External Radiation

IF = TF x GSF x EF x ED
CR = C x IF x SF

Radionuclide	C Soil Concentration (pCi/g)	TF Gamma Time Factor (T_e)	GSF Gamma Shielding Factor ($1-S_e$)	EF Percent of year Exposed	ED Exposure Duration (years)	IF Intake Factor (years)	SF Slope Factor (1/pCi-yr/g)	CR Cancer Risk
Americium-241	1.50E+00	0.3	0.5	0.6	4	3.60E-01	4.90E-09	2.65E-09
Plutonium-239/240	1.03E+01	0.3	0.5	0.6	4	3.60E-01	1.88E-11	6.97E-11
							Total Cancer Risk	2.72E-09

RME - External Radiation

IF = TF x GSF x EF x ED
CR = C x IF x SF

Radionuclide	C Soil Concentration (pCi/g)	TF Gamma Time Factor (T_e)	GSF Gamma Shielding Factor ($1-S_e$)	EF Percent of year Exposed	ED Exposure Duration (years)	IF Intake Factor (years)	SF Slope Factor (1/pCi-yr/g)	CR Cancer Risk
Americium-241	1.50E+00	0.3	0.8	0.68	25	4.08E+00	4.90E-09	3.00E-08
Plutonium-239/240	1.03E+01	0.3	0.8	0.68	25	4.08E+00	1.88E-11	7.90E-10
							Total Cancer Risk	3.08E-08

SUMMARY OF RISK
FUTURE ONSITE ECOLOGICAL RESEARCHER
AREA OF CONCERN NO. 2

	Central Tendency		Reasonable Maximum	
Pathway	Hazard Index	Cancer Risk	Hazard Index	Cancer Risk
Ingestion of surface soil	1.40E-06	1.32E-08	5.00E-06	4.70E-08
Inhalation of particulates from surface soil	-	6.31E-09	-	1.18E-08
Dermal contact with surface soil*	1.18E-07	1.18E-12	6.56E-07	6.58E-12
Ingestion of surface water - Walnut Creek	2.13E-06	1.86E-11	1.82E-05	1.59E-10
Ingestion of surface water - Woman Creek	1.12E-06	1.03E-10	9.59E-06	8.85E-10
Dermal contact with surface water- Walnut Creek	1.17E-04	2.97E-09	2.00E-04	5.09E-09
Dermal contact with surface water - Woman Creek	3.89E-05	5.00E-10	6.66E-05	8.58E-10
External Radiation	-	8.15E-10	-	1.02E-09
Total	1.60E-04	2.39E-08	3.00E-04	6.69E-08

* Dermal contact with metals (except mercury) and radionuclides is considered insignificant.

FUTURE ONSITE ECOLOGICAL RESEARCHER
AREA OF CONCERN NO. 2

CT - Soil ingestion

Noncarcinogens

IF =(IR x ED x FC x EF x ME x CF)/(BW x AT)
HQ = (C x IF)/RfD

	C	IR	ED	FC	EF	ME	CF	BW	AT	IF	RfD	HQ
Chemical	Soil Concentration (mg/kg)	Ingestion Rate (mg/day)	Exposure Duration (years)	Fraction Contaminated	Exposure Frequency (days/yr)	Matrix Effect	Conversion Factor (kg/mg)	Body Weight (kg)	Averaging Time (days)	Intake Factor (kg/kg-day)	Reference Dose (mg/kg-day)	Hazard Quotient
Bis(2-ethylhexyl)phthalate	1.10E-01	33	2.5	0.9	65	1	0.000001	70	915	7.54E-08	2.00E-02	4.14E-07
Chromium	1.31E+01	33	2.5	0.9	65	1	0.000001	70	915	7.54E-08	1.00E+00	9.87E-07
											Total Hazard Index	1.40E-06

Nonradionuclide Carcinogens

IF =(IR x ED x FC x EF x ME x CF)/(BW x AT)
CR = C x IF x SF

	C	IR	ED	FC	EF	ME	CF	BW	AT	IF	SF	CR
Chemical	Soil Concentration (mg/kg)	Ingestion Rate (mg/day)	Exposure Duration (years)	Fraction Contaminated	Exposure Frequency (days/yr)	Matrix Effect	Conversion Factor (kg/mg)	Body Weight (kg)	Averaging Time (days)	Intake Factor (kg/kg-day)	Slope Factor 1/(mg/kg-day)	Cancer Risk
Bis(2-ethylhexyl)phthalate	1.10E-01	33	2.5	0.9	65	1	0.000001	70	25550	2.70E-09	1.40E-02	4.16E-12
											Total Chemical Cancer Risk	4.16E-12

Radionuclides

IF =IR x ED x FC x EF x ME x CF
CR = C x IF x SF

	C	IR	ED	FC	EF	ME	CF	IF	SF	CR
Radionuclide	Soil Concentration (pCi/g)	Ingestion Rate (mg/day)	Exposure Duration (years)	Fraction Contaminated	Exposure Frequency (days/yr)	Matrix Effect	Conversion Factor (g/mg)	Intake Factor (g)	Slope Factor (Risk/pCi)	Cancer Risk
Americium-241	1.50E+00	33	2.5	0.9	65	1	0.001	4.83E+00	2.40E-10	1.74E-09
Plutonium-239/240	1.03E+01	33	2.5	0.9	65	1	0.001	4.83E+00	2.30E-10	1.14E-08
									Total Radionuclide Cancer Risk	1.32E-08

Total Cancer Risk 1.32E-08

FUTURE ONSITE ECOL ICAL RESEARCHER
AREA OF CONCERN NO. 2

RME - soil ingestion

Noncarcinogens

IF =(IR x ED x FC x EF x ME x CF)/(BW x AT)
HQ = (C x IF)/RfD

	C	IR	ED	FC	EF	ME	CF	BW	AT	IF	RfD	HQ
Chemical	Soil Concentration (mg/kg)	Ingestion Rate (mg/day)	Exposure Duration (years)	Fraction Contaminated	Exposure Frequency (days/yr)	Matrix Effect	Conversion Factor (kg/mg)	Body Weight (kg)	Averaging Time (days)	Intake Factor (kg/kg-day)	Reference Dose (mg/kg-day)	Hazard Quotient
Bis(2-ethylhexyl)phthalate	1.10E-01	106	2.5	1	65	1	0.000001	70	915	2.69E-07	2.00E-02	1.48E-06
Chromium	1.31E+01	106	2.5	1	65	1	0.000001	70	915	2.69E-07	1.00E+00	3.52E-06
											Total Hazard Index	5.00E-06

Nonradionuclide Carcinogens

IF =(IR x ED x FC x EF x ME x CF)/(BW x AT)
CR = C x IF x SF

	C	IR	ED	FC	EF	ME	CF	BW	AT	IF	SF	CR
Chemical	Soil Concentration (mg/kg)	Ingestion Rate (mg/day)	Exposure Duration (years)	Fraction Contaminated	Exposure Frequency (days/yr)	Matrix Effect	Conversion Factor (kg/mg)	Body Weight (kg)	Averaging Time (days)	Intake Factor (kg/kg-day)	Slope Factor 1/(mg/kg-day)	Cancer Risk
Bis(2-ethylhexyl)phthalate	1.10E-01	106	2.5	1	65	1	0.000001	70	25550	9.63E-09	1.40E-02	1.48E-11
											Total Chemical Cancer Risk	1.48E-11

Radionuclides

IF =IR x ED x FC x EF x ME x CF
CR = C x IF x SF

	C	IR	ED	FC	EF	ME	CF	IF	SF	CR
Radionuclide	Soil Concentration (pCi/g)	Ingestion Rate (mg/day)	Exposure Duration (years)	Fraction Contaminted	Exposure Frequency (days/yr)	Matrix Effect	Conversion Factor (g/mg)	Intake Factor (g)	Slope Factor (Risk/pCi)	Cancer Risk
Americium-241	1.50E+00	106	2.5	1	65	1	0.001	1.72E+01	2.40E-10	6.20E-09
Plutonium-239/240	1.03E+01	106	2.5	1	65	1	0.001	1.72E+01	2.30E-10	4.08E-08
									Total Radionuclide Cancer Risk	4.70E-08
									Total Cancer Risk	4.70E-08

FUTURE ONSITE ECOLOGICAL RESEARCHER
AREA OF CONCERN NO. 2

CT Inhalation of Particulates - Radionuclides

IF = IR x ET x EF x ED x DF
CR = IF x C x SF

Radionuclides	C Air Concentration (pCi/m^3)	IR Inhalation Rate (m^3/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	DF Deposition Factor	IF Intake Factor (m^3)	SF Slope Factor (Risk/pCi)	CR Cancer Risk
Americium-241	2.13E-05	0.83	7.2	65	2.5	1	9.71E+02	3.20E-08	6.62E-10
Plutonium-239/240	1.53E-04	0.83	7.2	65	2.5	1	9.71E+02	3.80E-08	5.65E-09
								Total Radionuclide Cancer Risk	6.31E-09
								Total Cancer Risk	6.31E-09

RME Inhalation of Particulates - Radionuclides

IF = IR x ET x EF x ED x DF
CR = IF x C x SF

Radionuclides	C Air Concentration (pCi/m^3)	IR Inhalation Rate (m^3/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	DF Deposition Factor	IF Intake Factor (m^3)	SF Slope Factor (Risk/pCi)	CR Cancer Risk
Americium-241	2.13E-05	1.4	8	65	2.5	1	1.82E+03	3.20E-08	1.24E-09
Plutonium-239/240	1.53E-04	1.4	8	65	2.5	1	1.82E+03	3.80E-08	1.06E-08
								Total Radionuclide Cancer Risk	1.18E-08
								Total Cancer Risk	1.18E-08

FUTURE ONSITE ECOL ICAL RESEARCHER
AREA OF CONCERN NO. 2

CT- Dermal contact with soil

Noncarcinogens

$$IF = (SA \times FC \times EF \times ED \times AF \times AB \times CF)/(BW \times AT)$$
$$HQ = (C \times IF)/RfD$$

	C	SA	FC	EF	ED	AF	AB	CF	BW	AT
Chemical	Soil Concentration (mg/kg)	Skin Surface Area (cm^2)	Fraction Contaminated	Exposure Frequency (days/yr)	Exposure Duration (years)	Soil Adherence (mg/cm^2)	Skin Absorption	Conversion Factor (kg/mg)	Body Weight (kg)	Averaging Time (days)
Bis-2(ethylhexyl)phthalate	1.10E-01	4700	0.9	65	2.5	0.2	0.01	0.000001	70	915

	IF	RfD	HQ
Chemical	Intake Factor (kg/kg-day)	Reference Dose (mg/kg-day)	Hazard Quotient
Bis-2(ethylhexyl)phthalate	2.15E-08	2.00E-02	1.18E-07
	Total Hazard Index		1.18E-07

FUTURE ONSITE ECOLOGICAL RESEARCHER
AREA OF CONCERN NO. 2

CT- Dermal contact with soil

Nonradionuclide Carcinogens

$$IF = (SA \times FC \times EF \times ED \times AF \times AB \times CF)/(BW \times AT)$$
$$CR = C \times IF \times SF$$

Chemical	C Soil Concentration (mg/kg)	SA Skin Surface Area (cm^2)	FC Fraction Contaminated	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	AF Soil Adherence (mg/cm^2)	AB Skin Absorption	CF Conversion Factor (kg/mg)	BW Body Weight (kg)	AT Averaging Time (days)
Bis-2(ethylhexyl)phthalate	0.11	4700	0.9	65	2.5	0.2	0.01	0.000001	70	25550

Chemical	IF Intake Factor (kg/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
Bis-2(ethylhexyl)phthalate	7.69E-10	1.40E-02	1.18E-12
	Total Cancer Risk		1.18E-12

FUTURE ONSITE ECO. ICAL RESEARCHER
AREA OF CONCERN NO. 2

RME- Dermal contact with soil

Noncarcinogens

$$IF = (SA \times FC \times EF \times ED \times AF \times AB \times CF)/(BW \times AT)$$

$$HQ = (C \times IF)/RfD$$

Chemical	C Soil Concentration (mg/kg)	SA Skin Surface Area (cm^2)	FC Fraction Contaminated	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	AF Soil Adherence (mg/cm^2)	AB Skin Absorption	CF Conversion Factor (kg/mg)	BW Body Weight (kg)	AT Averaging Time (days)
Bis-2(ethylhexyl)phthalate	0.11	4700	1	65	2.5	1	0.01	0.000001	70	915

Chemical	IF Intake Factor (kg/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
Bis-2(ethylhexyl)phthalate	1.19E-07	2.00E-02	6.56E-07
	Total Hazard Index		6.56E-07

FUTURE ONSITE ECOLOGICAL RESEARCHER
AREA OF CONCERN NO. 2

RME- Dermal contact with soil

Nonradionuclide Carcinogens

$$IF = (SA \times FC \times EF \times ED \times AF \times AB \times CF)/(BW \times AT)$$

$$CR = C \times IF \times SF$$

Chemical	C Soil Concentration (mg/kg)	SA Skin Surface Area (cm^2)	FC Fraction Contaminated	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	AF Soil Adherence (mg/cm^2)	AB Skin Absorption	CF Conversion Factor (kg/mg)	BW Body Weight (kg)	AT Averaging Time (days)
Bis-2(ethylhexyl)phthalate	0.11	4700	1	65	2.5	1	0.01	0.000001	70	25550

Chemical	IF Intake Factor (kg/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
Bis-2(ethylhexyl)phthalate	4.27E-09	1.40E-02	6.58E-12
	Total Cancer Risk		6.58E-12

FUTURE ONSITE ECOL CAL RESEARCHER
AREA OF CONCERN NO. 2

CT - Ingestion of surface water - Walnut Creek

Noncarcinogens

$$IF = (IR \times ET \times EF \times ED)/(BW \times AT)$$
$$HQ = (C \times IF)/RfD$$

	C	IR	ET	EF	ED	BW	AT	IF	RfD	HQ
Chemical	Surface Water Concentration (mg/l)	Ingestion Rate (l/hr)	Exposure Time (hr/day)	Exposure Frequency (days/yr)	Exposure Duration (years)	Body Weight (kg)	Averaging Time (days)	Intake Factor (l/kg-day)	Reference Dose (mg/kg-day)	Hazard Quotient
1,1-Dichloroethene	5.00E-06	0.01	1	7	2.5	70	915	2.73E-06	9.00E-03	1.52E-09
Carbon Tetrachloride	4.81E-04	0.01	1	7	2.5	70	915	2.73E-06	7.00E-04	1.88E-06
Chloroform	9.30E-05	0.01	1	7	2.5	70	915	2.73E-06	1.00E-02	2.54E-08
Methylene Chloride	3.80E-05	0.01	1	7	2.5	70	915	2.73E-06	6.00E-02	1.73E-09
Tetrachloroethene	8.03E-04	0.01	1	7	2.5	70	915	2.73E-06	1.00E-02	2.19E-07
									Total Hazard Index	2.13E-06

FUTURE ONSITE ECOLOGICAL RESEARCHER
AREA OF CONCERN NO. 2

CT - Ingestion of surface water - Walnut Creek

Nonradionuclide carcinogens

IF = (IR x ET x EF x ED)/(BW x AT)
CR = C x IF x SF

Chemical	C Surface Water Concentration (mg/l)	IR Ingestion Rate (l/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
1,1-Dichloroethene	5.00E-06	0.01	1	7	2.5	70	25550	9.78E-08	6.00E-01	2.94E-13
Carbon Tetrachloride	4.81E-04	0.01	1	7	2.5	70	25550	9.78E-08	1.30E-01	6.12E-12
Chloroform	9.30E-05	0.01	1	7	2.5	70	25550	9.78E-08	6.10E-03	5.55E-14
Methylene Chloride	3.80E-05	0.01	1	7	2.5	70	25550	9.78E-08	7.50E-03	2.79E-14
Tetrachloroethene	8.03E-04	0.01	1	7	2.5	70	25550	9.78E-08	5.20E-02	4.09E-12
Trichloroethene	6.24E-03	0.01	1	7	2.5	70	25550	9.78E-08	1.10E-02	6.72E-12
								Total Chemical Cancer Risk		1.73E-11

Radionuclides

IF = IR x ET x EF x ED
CR = C x IF x SF

Radionuclide	C Surface Water Concentration (pCi/l)	IR Ingestion Rate (l/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	IF Intake Factor (l)	SF Slope Factor (Risk/pCi)	CR Cancer Risk
Americium-241	5.00E-03	0.01	1	7	2.5	1.75E-01	2.40E-10	2.10E-13
Plutonium-239/240	2.60E-02	0.01	1	7	2.5	1.75E-01	2.30E-10	1.05E-12
						Total Radionuclide Cancer Risk		1.26E-12

Total Cancer Risk 1.86E-11

FUTURE ONSITE ECO ICAL RESEARCHER
AREA OF CONCERN NO. 2

RME - Ingestion of surface water - Walnut Creek

Noncarcinogens

IF = (IR x ET x EF x ED)/(BW x AT)
HQ = (C x IF)/RfD

Chemical	C Surface Water Concentration (mg/l)	IR Ingestion Rate (l/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
1,1-Dichloroethene	5.00E-06	0.05	1	12	2.5	70	915	2.34E-05	9.00E-03	1.30E-08
Carbon Tetrachloride	4.81E-04	0.05	1	12	2.5	70	915	2.34E-05	7.00E-04	1.61E-05
Chloroform	9.30E-05	0.05	1	12	2.5	70	915	2.34E-05	1.00E-02	2.18E-07
Methylene Chloride	3.80E-05	0.05	1	12	2.5	70	915	2.34E-05	6.00E-02	1.48E-08
Tetrachloroethene	8.03E-04	0.05	1	12	2.5	70	915	2.34E-05	1.00E-02	1.88E-06
									Total Hazard Index	1.82E-05

FUTURE ONSITE ECOLOGICAL RESEARCHER
AREA OF CONCERN NO. 2

RME - Ingestion of surface water - Walnut Creek

Nonradionuclide carcinogens

$$IF = (IR \times ET \times EF \times ED)/(BW \times AT)$$
$$CR = C \times IF \times SF$$

Chemical	C Surface Water Concentration (mg/l)	IR Ingestion Rate (l/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
1,1-Dichloroethene	5.00E-06	0.05	1	12	2.5	70	25550	8.39E-07	6.00E-01	2.52E-12
Carbon Tetrachloride	4.81E-04	0.05	1	12	2.5	70	25550	8.39E-07	1.30E-01	5.24E-11
Chloroform	9.30E-05	0.05	1	12	2.5	70	25550	8.39E-07	6.10E-03	4.76E-13
Methylene Chloride	3.80E-05	0.05	1	12	2.5	70	25550	8.39E-07	7.50E-03	2.39E-13
Tetrachloroethene	8.03E-04	0.05	1	12	2.5	70	25550	8.39E-07	5.20E-02	3.50E-11
Trichloroethene	6.24E-03	0.05	1	12	2.5	70	25550	8.39E-07	1.10E-02	5.76E-11
								Total Chemical Cancer Risk		1.48E-10

Radionuclides

$$IF = IR \times ET \times EF \times ED$$
$$CR = C \times IF \times SF$$

Radionuclide	C Surface Water Concentration (pCi/l)	IR Ingestion Rate (l/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	IF Intake Factor (l)	SF Slope Factor (Risk/pCi)	CR Cancer Risk
Americium-241	5.00E-03	0.05	1	12	2.5	1.50E+00	2.40E-10	1.80E-12
Plutonium-239/240	2.60E-02	0.05	1	12	2.5	1.50E+00	2.30E-10	8.97E-12
						Total Radionuclide Cancer Risk		1.08E-11

Total Cancer Risk 1.59E-10

FUTURE ONSITE ECOL .CAL RESEARCHER
AREA OF CONCERN NO. 2

CT - Ingestion of surface water - Woman Creek

Noncarcinogens

IF = (IR x ET x EF x ED)/(BW x AT)
HQ = (C x IF)/RfD

Chemical	C Surface Water Concentration (mg/l)	IR Ingestion Rate (l/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
1,1-Dichloroethene	2.00E-06	0.01	1	7	2.5	70	915	2.73E-06	9.00E-03	6.07E-10
Carbon Tetrachloride	2.62E-04	0.01	1	7	2.5	70	915	2.73E-06	7.00E-04	1.02E-06
Chloroform	2.15E-04	0.01	1	7	2.5	70	915	2.73E-06	1.00E-02	5.87E-08
Methylene Chloride	1.06E-04	0.01	1	7	2.5	70	915	2.73E-06	6.00E-02	4.83E-09
Tetrachloroethene	1.16E-04	0.01	1	7	2.5	70	915	2.73E-06	1.00E-02	3.17E-08
									Total Hazard Index	1.12E-06

FUTURE ONSITE ECOLOGICAL RESEARCHER
AREA OF CONCERN NO. 2

CT - Ingestion of surface water - Woman Creek

Nonradionuclide carcinogens

IF = (IR x ET x EF x ED)/(BW x AT)
CR = C x IF x SF

Chemical	C Surface Water Concentration (mg/l)	IR Ingestion Rate (l/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
1,1-Dichloroethene	2.00E-06	0.01	1	7	2.5	70	25550	9.78E-08	6.00E-01	1.17E-13
Carbon Tetrachloride	2.62E-04	0.01	1	7	2.5	70	25550	9.78E-08	1.30E-01	3.33E-12
Chloroform	2.15E-04	0.01	1	7	2.5	70	25550	9.78E-08	6.10E-03	1.28E-13
Methylene Chloride	1.06E-04	0.01	1	7	2.5	70	25550	9.78E-08	7.50E-03	7.78E-14
Tetrachloroethene	1.16E-04	0.01	1	7	2.5	70	25550	9.78E-08	5.20E-02	5.90E-13
Trichloroethene	9.25E-04	0.01	1	7	2.5	70	25550	9.78E-08	1.10E-02	9.96E-13
									Total Chemical Cancer Risk	5.24E-12

Radionuclides

IF = IR x ET x EF x ED
CR = C x IF x SF

Radionuclide	C Surface Water Concentration (pCi/l)	IR Ingestion Rate (l/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	IF Intake Factor (l)	SF Slope Factor (Risk/pCi)	CR Cancer Risk
Americium-241	6.30E-02	0.01	1	7	2.5	1.75E-01	2.40E-10	2.65E-12
Plutonium-239/240	2.37E+00	0.01	1	7	2.5	1.75E-01	2.30E-10	9.54E-11
							Total Radionuclide Cancer Risk	9.80E-11

Total Cancer Risk 1.03E-10

FUTURE ONSITE ECOL ICAL RESEARCHER
AREA OF CONCERN NO. 2

RME - Ingestion of surface water Woman Creek

Noncarcinogens

IF = (IR x ET x EF x ED)/(BW x AT)
HQ = (C x IF)/RfD

	C	IR	ET	EF	ED	BW	AT	IF	RfD	HQ
Chemical	Surface Water Concentration (mg/l)	Ingestion Rate (l/hr)	Exposure Time (hr/day)	Exposure Frequency (days/yr)	Exposure Duration (years)	Body Weight (kg)	Averaging Time (days)	Intake Factor (l/kg-day)	Reference Dose (mg/kg-day)	Hazard Quotient
1,1-Dichloroethene	2.00E-06	0.05	1	12	2.5	70	915	2.34E-05	9.00E-03	5.20E-09
Carbon Tetrachloride	2.62E-04	0.05	1	12	2.5	70	915	2.34E-05	7.00E-04	8.77E-06
Chloroform	2.15E-04	0.05	1	12	2.5	70	915	2.34E-05	1.00E-02	5.04E-07
Methylene Chloride	1.06E-04	0.05	1	12	2.5	70	915	2.34E-05	6.00E-02	4.14E-08
Tetrachloroethene	1.16E-04	0.05	1	12	2.5	70	915	2.34E-05	1.00E-02	2.72E-07
									Total Hazard Index	9.59E-06

FUTURE ONSITE ECOLOGICAL RESEARCHER
AREA OF CONCERN NO. 2

RME - Ingestion of surface water Woman Creek

Nonradionuclide carcinogens

IF = (IR x ET x EF x ED)/(BW x AT)
CR = C x IF x SF

Chemical	C Surface Water Concentration (mg/l)	IR Ingestion Rate (l/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
1,1-Dichloroethene	2.00E-06	0.05	1	12	2.5	70	25550	8.39E-07	6.00E-01	1.01E-12
Carbon Tetrachloride	2.62E-04	0.05	1	12	2.5	70	25550	8.39E-07	1.30E-01	2.86E-11
Chloroform	2.15E-04	0.05	1	12	2.5	70	25550	8.39E-07	6.10E-03	1.10E-12
Methylene Chloride	1.06E-04	0.05	1	12	2.5	70	25550	8.39E-07	7.50E-03	6.67E-13
Tetrachloroethene	1.16E-04	0.05	1	12	2.5	70	25550	8.39E-07	5.20E-02	5.06E-12
Trichloroethene	9.25E-04	0.05	1	12	2.5	70	25550	8.39E-07	1.10E-02	8.53E-12
									Total Chemical Cancer Risk	4.49E-11

Radionuclides

IF = IR x ET x EF x ED
CR = C x IF x SF

Radionuclide	C Surface Water Concentration (pCi/l)	IR Ingestion Rate (l/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	IF Intake Factor (l)	SF Slope Factor (Risk/pCi)	CR Cancer Risk
Americium-241	6.30E-02	0.05	1	12	2.5	1.50E+00	2.40E-10	2.27E-11
Plutonium-239/240	2.37E+00	0.05	1	12	2.5	1.50E+00	2.30E-10	8.18E-10
							Total Radionuclide Cancer Risk	8.40E-10
							Total Cancer Risk	8.85E-10

FUTURE ONSITE ECC | SICAL RESEARCHER
AREA OF CONCERN NO. 2

CT - Dermal contact with surface water - Walnut Creek

Noncarcinogens

IF = (SA x DP x ET x EF x ED x CF)/(BW x AT)
HQ = (C x IF)/RfD

	C	SA	DP	ET	EF	ED	CF	BW	AT	IF	RfD	HQ
Chemical	Surface Water Concentration (mg/l)	Skin Surface Area (cm^2)	Dermal Permeability (cm/hr)	Exposure Time (hr/day)	Exposure Frequency (day/yr)	Exposure Duration (years)	Conversion Factor (l/cm^3)	Body Weight (kg)	Averaging Time (days)	Intake Factor (l/kg-day)	Reference Dose (mg/kg-day)	Hazard Quotient
1,1-Dichloroethene	5.00E-06	9275	0.016	1	7	2.5	0.001	70	915	4.05E-05	9.00E-03	2.25E-08
Carbon Tetrachloride	4.81E-04	9275	0.022	1	7	2.5	0.001	70	915	5.58E-05	7.00E-04	3.83E-05
Chloroform	9.30E-05	9275	0.13	1	7	2.5	0.001	70	915	3.29E-04	1.00E-02	3.06E-06
Methylene Chloride	3.80E-05	9275	0.0045	1	7	2.5	0.001	70	915	1.14E-05	6.00E-02	7.22E-09
Tetrachloroethene	8.03E-04	9275	0.37	1	7	2.5	0.001	70	915	9.38E-04	1.00E-02	7.53E-05
											Total Hazard Index	1.17E-04

Nonradionuclide carcinogens

IF = (SA x DP x ET x EF x ED x CF)/(BW x AT)
CR = C x IF x SF

	C	SA	DP	ET	EF	ED	CF	BW	AT	IF	SF	CR
Chemical	Surface Water Concentration (mg/l)	Skin Surface Area (cm^2)	Dermal Permeability (cm/hr)	Exposure Time (hr/day)	Exposure Frequency (day/yr)	Exposure Duration (years)	Conversion Factor (l/cm^3)	Body Weight (kg)	Averaging Time (days)	Intake Factor (l/kg-day)	Slope Factor 1/(mg/kg-day)	Cancer Risk
1,1-Dichloroethene	5.00E-06	9275	0.016	1	7	2.5	0.001	70	25550	1.45E-06	6.00E-01	4.36E-12
Carbon Tetrachloride	4.81E-04	9275	0.022	1	7	2.5	0.001	70	25550	2.00E-06	1.30E-01	1.25E-10
Chloroform	9.30E-05	9275	0.13	1	7	2.5	0.001	70	25550	1.18E-05	6.10E-03	6.69E-12
Methylene Chloride	3.80E-05	9275	0.0045	1	7	2.5	0.001	70	25550	4.08E-07	7.50E-03	1.16E-13
Tetrachloroethene	8.03E-04	9275	0.37	1	7	2.5	0.001	70	25550	3.36E-05	5.20E-02	1.40E-09
Trichloroethene	6.24E-03	9275	0.23	1	7	2.5	0.001	70	25550	2.09E-05	1.10E-02	1.43E-09
											Total Cancer Risk	2.97E-09

FUTURE ONSITE ECOLOGICAL RESEARCHER
AREA OF CONCERN NO. 2

RME - Dermal contact with surface water - Walnut Creek

Noncarcinogens

$$IF = (SA \times DP \times ET \times EF \times ED \times CF)/(BW \times AT)$$
$$HQ = (C \times IF)/RfD$$

Chemical	C Surface Water Concentration (mg/l)	SA Skin Surface Area (cm^2)	DP Dermal Permeability (cm/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (day/yr)	ED Exposure Duration (years)	CF Conversion Factor (l/cm^3)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
1,1-Dichloroethene	5.00E-06	9275	0.016	1	12	2.5	0.001	70	915	6.95E-05	9.00E-03	3.86E-08
Carbon Tetrachloride	4.81E-04	9275	0.022	1	12	2.5	0.001	70	915	9.56E-05	7.00E-04	6.57E-05
Chloroform	9.30E-05	9275	0.13	1	12	2.5	0.001	70	915	5.65E-04	1.00E-02	5.25E-06
Methylene Chloride	3.80E-05	9275	0.0045	1	12	2.5	0.001	70	915	1.95E-05	6.00E-02	1.24E-08
Tetrachloroethene	8.03E-04	9275	0.37	1	12	2.5	0.001	70	915	1.61E-03	1.00E-02	1.29E-04
											Total Hazard Index	2.00E-04

Nonradionuclide carcinogens

$$IF = (SA \times DP \times ET \times EF \times ED \times CF)/(BW \times AT)$$
$$CR = C \times IF \times SF$$

Chemical	C Surface Water Concentration (mg/l)	SA Skin Surface Area (cm^2)	DP Dermal Permeability (cm/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (day/yr)	ED Exposure Duration (years)	CF Conversion Factor (l/cm^3)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
1,1-Dichloroethene	5.00E-06	9275	0.016	1	12	2.5	0.001	70	25550	2.49E-06	6.00E-01	7.47E-12
Carbon Tetrachloride	4.81E-04	9275	0.022	1	12	2.5	0.001	70	25550	3.42E-06	1.30E-01	2.14E-10
Chloroform	9.30E-05	9275	0.13	1	12	2.5	0.001	70	25550	2.02E-05	6.10E-03	1.15E-11
Methylene Chloride	3.80E-05	9275	0.0045	1	12	2.5	0.001	70	25550	7.00E-07	7.50E-03	2.00E-13
Tetrachloroethene	8.03E-04	9275	0.37	1	12	2.5	0.001	70	25550	5.76E-05	5.20E-02	2.40E-09
Trichloroethene	6.24E-03	9275	0.23	1	12	2.5	0.001	70	25550	3.58E-05	1.10E-02	2.46E-09
											Total Cancer Risk	5.09E-09

FUTURE ONSITE ECOL CAL RESEARCHER
AREA OF CONCERN NO. 2

CT - Dermal contact with surface water - Woman Creek

Noncarcinogens

IF = (SA x DP x ET x EF x ED x CF)/(BW x AT)
HQ = (C x IF)/RfD

Chemical	C Surface Water Concentration (mg/l)	SA Skin Surface Area (cm^2)	DP Dermal Permeability (cm/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (day/yr)	ED Exposure Duration (years)	CF Conversion Factor (l/cm^3)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
1,1-Dichloroethene	2.00E-06	9275	0.016	1	7	2.5	0.001	70	915	4.05E-05	9.00E-03	9.01E-09
Carbon Tetrachloride	2.62E-04	9275	0.022	1	7	2.5	0.001	70	915	5.58E-05	7.00E-04	2.09E-05
Chloroform	2.15E-04	9275	0.13	1	7	2.5	0.001	70	915	3.29E-04	1.00E-02	7.08E-06
Methylene Chloride	1.06E-04	9275	0.0045	1	7	2.5	0.001	70	915	1.14E-05	6.00E-02	2.01E-08
Tetrachloroethene	1.16E-04	9275	0.37	1	7	2.5	0.001	70	915	9.38E-04	1.00E-02	1.09E-05
											Total Hazard Index	3.89E-05

Nonradionuclide carcinogens

IF = (SA x DP x ET x EF x ED x CF)/(BW x AT)
CR = C x IF x SF

Chemical	C Surface Water Concentration (mg/l)	SA Skin Surface Area (cm^2)	DP Dermal Permeability (cm/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (day/yr)	ED Exposure Duration (years)	CF Conversion Factor (l/cm^3)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	SF Slope Factor 1/(mg/kg-day	CR Cancer Risk
1,1-Dichloroethene	2.00E-06	9275	0.016	1	7	2.5	0.001	70	25550	1.45E-06	6.00E-01	1.74E-12
Carbon Tetrachloride	2.62E-04	9275	0.022	1	7	2.5	0.001	70	25550	2.00E-06	1.30E-01	6.80E-11
Chloroform	2.15E-04	9275	0.13	1	7	2.5	0.001	70	25550	1.18E-05	6.10E-03	1.55E-11
Methylene Chloride	1.06E-04	9275	0.0045	1	7	2.5	0.001	70	25550	4.08E-07	7.50E-03	3.25E-13
Tetrachloroethene	1.16E-04	9275	0.37	1	7	2.5	0.001	70	25550	3.36E-05	5.20E-02	2.03E-10
Trichloroethene	9.25E-04	9275	0.23	1	7	2.5	0.001	70	25550	2.09E-05	1.10E-02	2.12E-10
											Total Cancer Risk	5.00E-10

FUTURE ONSITE ECOLOGICAL RESEARCHER
AREA OF CONCERN NO. 2

RME - Dermal contact with surface water - Woman Creek

Noncarcinogens

IF = (SA x DP x ET x EF x ED x CF)/(BW x AT)
HQ = (C x IF)/RfD

Chemical	C Surface Water Concentration (mg/l)	SA Skin Surface Area (cm^2)	DP Dermal Permeability (cm/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (day/yr)	ED Exposure Duration (years)	CF Conversion Factor (l/cm^3)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
1,1-Dichloroethene	2.00E-06	9275	0.016	1	12	2.5	0.001	70	915	6.95E-05	9.00E-03	1.54E-08
Carbon Tetrachloride	2.62E-04	9275	0.022	1	12	2.5	0.001	70	915	9.56E-05	7.00E-04	3.58E-05
Chloroform	2.15E-04	9275	0.13	1	12	2.5	0.001	70	915	5.65E-04	1.00E-02	1.21E-05
Methylene Chloride	1.06E-04	9275	0.0045	1	12	2.5	0.001	70	915	1.95E-05	6.00E-02	3.45E-08
Tetrachloroethene	1.16E-04	9275	0.37	1	12	2.5	0.001	70	915	1.61E-03	1.00E-02	1.86E-05
											Total Hazard Index	6.66E-05

Nonradionuclide carcinogens

IF = (SA x DP x ET x EF x ED x CF)/(BW x AT)
CR = C x IF x SF

Chemical	C Surface Water Concentration (mg/l)	SA Skin Surface Area (cm^2)	DP Dermal Permeability (cm/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (day/yr)	ED Exposure Duration (years)	CF Conversion Factor (l/cm^3)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	SF Slope Factor 1/(mg/kg-day	CR Cancer Risk
1,1-Dichloroethene	2.00E-06	9275	0.016	1	12	2.5	0.001	70	25550	2.49E-06	6.00E-01	2.99E-12
Carbon Tetrachloride	2.62E-04	9275	0.022	1	12	2.5	0.001	70	25550	3.42E-06	1.30E-01	1.17E-10
Chloroform	2.15E-04	9275	0.13	1	12	2.5	0.001	70	25550	2.02E-05	6.10E-03	2.65E-11
Methylene Chloride	1.06E-04	9275	0.0045	1	12	2.5	0.001	70	25550	7.00E-07	7.50E-03	5.57E-13
Tetrachloroethene	1.16E-04	9275	0.37	1	12	2.5	0.001	70	25550	5.76E-05	5.20E-02	3.47E-10
Trichloroethene	9.25E-04	9275	0.23	1	12	2.5	0.001	70	25550	3.58E-05	1.10E-02	3.64E-10
											Total Cancer Risk	8.58E-10

FUTURE ONSITE ECOL | .CAL RESEARCHER
AREA OF CONCERN NO. 2

CT - External Radiation

IF = TF x GSF x EF x ED
CR = C x IF x SF

Radionuclide	C Soil Concentration (pCi/g)	TF Gamma Time Factor (T_e)	GSF Gamma Shielding Factor ($1-S_e$)	EF Percent of year Exposed	ED Exposure Duration (years)	IF Intake Factor (years)	SF Slope Factor (1/pCi-yr/g)	CR Cancer Risk
Americium-241	1.50E+00	0.3	0.8	0.18	2.5	1.08E-01	4.90E-09	7.94E-10
Plutonium-239/240	1.03E+01	0.3	0.8	0.18	2.5	1.08E-01	1.88E-11	2.09E-11
							Total Cancer Risk	8.15E-10

RME - External Radiation

IF = TF x GSF x EF x ED
CR = C x IF x SF

Radionuclide	C Soil Concentration (pCi/g)	TF Gamma Time Factor (T_e)	GSF Gamma Shielding Factor ($1-S_e$)	EF Percent of year Exposed	ED Exposure Duration (years)	IF Intake Factor (years)	SF Slope Factor (1/pCi-yr/g)	CR Cancer Risk
Americium-241	1.50E+00	0.3	1	0.18	2.5	1.35E-01	4.90E-09	9.92E-10
Plutonium-239/240	1.03E+01	0.3	1	0.18	2.5	1.35E-01	1.88E-11	2.61E-11
							Total Cancer Risk	1.02E-09

SUMMARY OF RISK
FUTURE ONSITE CONSTRUCTION WORKER
AREA OF CONCERN NO. 2

	Central Tendency		Reasonable Maximum	
Pathway	Hazard Index	Cancer Risk	Hazard Index	Cancer Risk
Ingestion of subsurface soil	3.23E-03	2.52E-08	1.82E-02	1.41E-07
Inhalation of particulates from surface and subsurface soil	-	1.75E-09	-	2.18E-09
Dermal contact with subsurface soil*	-	-	-	-
External Radiation	-	1.53E-09	-	1.91E-09
Total	3.23E-03	2.85E-08	1.82E-02	1.46E-07

*Dermal absorption of metals and radionuclides is considered insignificant.

FUTURE ONSITE CON. UCTION WORKER
AREA OF CONCERN NO. 2

CT - Subsurface soil ingestion

Noncarcinogens

IF =(IR x ED x FC x EF x ME x CF)/(BW x AT)
HQ = (C x IF)/RfD

	C	IR	ED	FC	EF	ME	CF	BW	AT	IF	RfD	HQ
Chemical	Soil Concentration (mg/kg)	Ingestion Rate (mg/day)	Exposure Duration (years)	Fraction Contaminated	Exposure Frequency (days/yr)	Matrix Effect	Conversion Factor (kg/mg)	Body Weight (kg)	Averaging Time (days)	Intake Factor (kg/kg-day)	Reference Dose (mg/kg-day)	Hazard Quotient
Arsenic	1.19E+01	95	1	0.9	30	0.8	0.000001	70	365	8.03E-08	3.00E-04	3.19E-03
Cadmium (Food)	4.90E-01	95	1	0.9	30	1	0.000001	70	365	1.00E-07	1.00E-03	4.92E-05
											Total Hazard Index	3.23E-03

CT - Subsurface soil ingestion

Nonradionuclide Carcinogens

IF =(IR x ED x FC x EF x ME x CF)/(BW x AT)
CR = C x IF x SF

	C	IR	ED	FC	EF	ME	CF	BW	AT	IF	SF	CR
Chemical	Soil Concentration (mg/kg)	Ingestion Rate (mg/day)	Exposure Duration (years)	Fraction Contaminated	Exposure Frequency (days/yr)	Matrix Effect	Conversion Factor (kg/mg)	Body Weight (kg)	Averaging Time (days)	Intake Factor (kg/kg-day)	Slope Factor 1/(mg/kg-day)	Cancer Risk
Arsenic	1.19E+01	95	1	0.9	30	0.8	0.000001	70	25550	1.15E-09	1.70E+00	2.32E-08
											Total Chemical Cancer Risk	2.32E-08

Radionuclides

IF =IR x ED x FC x EF x ME x CF
CR = C x IF x SF

	C	IR	ED	FC	EF	ME	CF	IF	SF	CR
Radionuclide	Soil Concentration (pCi/g))	Ingestion Rate (mg/day)	Exposure Duration (years)	Fraction Contaminated	Exposure Frequency (days/yr)	Matrix Effect	Conversion Factor (g/mg)	Intake Factor (kg/kg-day)	Slope Factor 1/(mg/kg-day)	Cancer Risk
Americium-241	8.50E-01	95	1	0.9	30	1	0.001	2.57E+00	2.40E-10	5.23E-10
Plutonium-239/240	2.30E+00	95	1	0.9	30	1	0.001	2.57E+00	2.30E-10	1.36E-09
Uranium-233/234	1.20E+00	95	1	0.9	30	1	0.001	2.57E+00	1.60E-11	4.92E-11
Uranium-235	7.00E-02	95	1	0.9	30	1	0.001	2.57E+00	1.60E-11	2.87E-12
Uranium-238	1.11E+00	95	1	0.9	30	1	0.001	2.57E+00	2.00E-11	5.69E-11
									Total Radionuclide Cancer Risk	1.99E-09

Total Cancer Risk 2.52E-08

FUTURE ONSITE CONSTRUCTION WORKER
AREA OF CONCERN NO. 2

RME - Subsurface soil ingestion

Noncarcinogens

IF =(IR x ED x FC x EF x ME x CF)/(BW x AT)
HQ = (C x IF)/RfD

Chemical	C Soil Concentration (mg/kg)	IR Ingestion Rate (mg/day)	ED Exposure Duration (years)	FC Fraction Contaminated	EF Exposure Frequency (days/yr)	ME Matrix Effect	CF Conversion Factor (kg/mg)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (kg/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
Arsenic	1.19E+01	480	1	1	30	0.8	0.000001	70	365	4.51E-07	3.00E-04	1.79E-02
Cadmium (Food)	4.99E-01	480	1	1	30	1	0.000001	70	365	5.64E-07	1.00E-03	2.76E-04
											Total Hazard Index	1.82E-02

RME - Subsurface soil ingestion

Nonradionuclide Carcinogens

IF =(IR x ED x FC x EF x ME x CF)/(BW x AT)
CR = C x IF x SF

Chemical	C Soil Concentration (mg/kg)	IR Ingestion Rate (mg/day)	ED Exposure Duration (years)	FC Fraction Contaminated	EF Exposure Frequency (days/yr)	ME Matrix Effect	CF Conversion Factor (kg/mg)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (kg/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
Arsenic	1.19E+01	480	1	1	30	0.8	0.000001	70	25550	6.44E-09	1.70E+00	1.30E-07
											Total Chemical Cancer Risk	1.30E-07

Radionuclides

IF =IR x ED x FC x EF x ME x CF
CR = C x IF x SF

Radionuclide	C Soil Concentration (pCi/g))	IR Ingestion Rate (mg/day)	ED Exposure Duration (years)	FC Fraction Contaminated	EF Exposure Frequency (days/yr)	ME Matrix Effect	CF Conversion Factor (g/mg)	IF Intake Factor (kg/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
Americium-241	8.50E-01	480	1	1	30	1	0.001	1.44E+01	2.40E-10	2.94E-09
Plutonium-239/240	2.30E+00	480	1	1	30	1	0.001	1.44E+01	2.30E-10	7.62E-09
Uranium-233/234	1.20E+00	480	1	1	30	1	0.001	1.44E+01	1.60E-11	2.76E-10
Uranium-235	7.00E-02	480	1	1	30	1	0.001	1.44E+01	1.60E-11	1.61E-11
Uranium-238	1.11E+00	480	1	1	30	1	0.001	1.44E+01	2.00E-11	3.20E-10
									Total Radionuclide Cancer Risk	1.12E-08

Total Cancer Risk 1.41E-07

FUTURE ONSITE CONSTRUCTION WORKER
AREA OF CONCERN NO. 2

CT Inhalation of Particulates - Nonradionuclide Carcinogens

IF = (IR x ET x EF x ED x DF)/(BW x AT)
CR = IF x C x SF

	C	IR	ET	EF	ED	DF	BW	AT	IF	SF	CR
Chemical	Air Concentration (mg/m^3)	Inhalation Rate (m^3/hr)	Exposure Time (hr/day)	Exposure Frequency (days/yr)	Exposure Duration (years)	Deposition Factor	Body Weight (kg)	Averaging Time (days)	Intake Factor ($m^3/kg\text{-}day$)	Slope Factor 1/(mg/kg-day)	Cancer Risk
Arsenic	1.34E-10	1.25	7.2	30	1	1	70	25550	1.51E-04	1.50E+01	3.03E-13
Cadmium (food)	5.54E-12	1.25	7.2	30	1	1	70	25550	1.51E-04	6.30E+00	5.27E-15
										Total Chemical Cancer Risk	3.09E-13

Radionuclides

IF = IR x ET x EF x ED x DF
CR = IF x C x SF

	C	IR	ET	EF	ED	DF	IF	SF	CR
Radionuclides	Air Concentration (pCi/m^3)	Inhalation Rate (m^3/hr)	Exposure Time (hr/day)	Exposure Frequency (days/yr)	Exposure Duration (years)	Deposition Factor	Intake Factor (m^3)	Slope Factor (Risk/pCi)	Cancer Risk
Americium-241	2.13E-05	1.25	7.2	30	1	1	2.70E+02	3.20E-08	1.84E-10
Plutonium-239/240	1.53E-04	1.25	7.2	30	1	1	2.70E+02	3.80E-08	1.57E-09
Uranium-233/234	1.36E-08	1.25	7.2	30	1	1	2.70E+02	2.60E-08	9.55E-14
Uranium-235	7.92E-10	1.25	7.2	30	1	1	2.70E+02	2.50E-08	5.35E-15
Uranium-238	1.25E-08	1.25	7.2	30	1	1	2.70E+02	2.40E-08	8.10E-14
								Total Radionuclide Cancer Risk	1.75E-09
								Total Cancer Risk	1.75E-09

FUTURE ONSITE CONSTRUCTION WORKER
AREA OF CONCERN NO. 2

RME Inhalation of Particulates - Nonradionuclide Carcinogens

$$IF = (IR \times ET \times EF \times ED \times DF)/(BW \times AT)$$
$$CR = IF \times C \times SF$$

	C	IR	ET	EF	ED	DF	BW	AT	IF	SF	CR
Chemical	Air Concentration (mg/m^3)	Inhalation Rate (m^3/hr)	Exposure Time (hr/day)	Exposure Frequency (days/yr)	Exposure Duration (years)	Deposition Factor	Body Weight (kg)	Averaging Time (days)	Intake Factor (m^3/kg-day)	Slope Factor 1/(mg/kg-day)	Cancer Risk
Arsenic	1.34E-10	1.4	8	30	1	1	70	25550	1.88E-04	1.50E+01	3.78E-13
Cadmium (food)	5.54E-12	1.4	8	30	1	1	70	25550	1.88E-04	6.30E+00	6.56E-15
										Total Chemical Cancer Risk	3.84E-13

Radionuclides

$$IF = IR \times ET \times EF \times ED \times DF$$
$$CR = IF \times C \times SF$$

	C	IR	ET	EF	ED	DF	IF	SF	CR
Radionuclides	Air Concentration (pCi/m^3)	Inhalation Rate (m^3/hr)	Exposure Time (hr/day)	Exposure Frequency (days/yr)	Exposure Duration (years)	Deposition Factor	Intake Factor (m^3)	Slope Factor (Risk/pCi)	Cancer Risk
Americium-241	2.13E-05	1.4	8	30	1	1	3.36E+02	3.20E-08	2.29E-10
Plutonium-239/240	1.53E-04	1.4	8	30	1	1	3.36E+02	3.80E-08	1.95E-09
Uranium-233/234	1.36E-08	1.4	8	30	1	1	3.36E+02	2.60E-08	1.19E-13
Uranium-235	7.92E-10	1.4	8	30	1	1	3.36E+02	2.50E-08	6.65E-15
Uranium-238	1.25E-08	1.4	8	30	1	1	3.36E+02	2.40E-08	1.01E-13
								Total Radionuclide Cancer Risk	2.18E-09

Total Cancer Risk 2.18E-09

FUTURE ONSITE CONSTRUCTION WORKER
AREA OF CONCERN NO. 2

CT - External Radiation

IF = TF x GSF x EF x ED
CR = C x IF x SF

Radionuclide	C Soil Concentration (pCi/g)	TF Gamma Time Factor (Te)	GSF Gamma Shielding Factor (1-Se)	EF Percent of year Exposed	ED Exposure Duration (years)	IF Intake Factor (years)	SF Slope Factor (1/pCi-yr/g)	CR Cancer Risk
Americium-241	8.50E-01	0.3	0.8	0.082	1	1.97E-02	4.90E-09	8.20E-11
Plutonium-239/240	2.30E+00	0.3	0.8	0.082	1	1.97E-02	1.88E-11	8.51E-13
Uranium-233/234	1.20E+00	0.3	0.8	0.082	1	1.97E-02	3.00E-11	7.08E-13
Uranium-235	7.00E-02	0.3	0.8	0.082	1	1.97E-02	2.40E-07	3.31E-10
Uranium-238	1.11E+00	0.3	0.8	0.082	1	1.97E-02	5.10E-08	1.11E-09
							Total Cancer Risk	1.53E-09

RME - External Radiation

IF = TF x GSF x EF x ED
CR = C x IF x SF

Radionuclide	C Soil Concentration (pCi/g)	TF Gamma Time Factor (Te)	GSF Gamma Shielding Factor (1-Se)	EF Percent of year Exposed	ED Exposure Duration (years)	IF Intake Factor (years)	SF Slope Factor (1/pCi-yr/g)	CR Cancer Risk
Americium-241	8.50E-01	0.3	1	0.082	1	2.46E-02	4.90E-09	1.02E-10
Plutonium-239/240	2.30E+00	0.3	1	0.082	1	2.46E-02	1.88E-11	1.06E-12
Uranium-233/234	1.20E+00	0.3	1	0.082	1	2.46E-02	3.00E-11	8.86E-13
Uranium-235	7.00E-02	0.3	1	0.082	1	2.46E-02	2.40E-07	4.13E-10
Uranium-238	1.11E+00	0.3	1	0.082	1	2.46E-02	5.10E-08	1.39E-09
							Total Cancer Risk	1.91E-09

SUMMARY OF RISK
OPEN SPACE USER
AREA OF CONCERN NO. 2

	Central Tendency		Reasonable Maximum	
Pathway	Hazard Index	Cancer Risk	Hazard Index	Cancer Risk
Ingestion of surface soil by an adult	5.82E-08	-	9.10E-07	-
Ingestion of surface soil by a child	5.10E-07	-	8.49E-06	-
Carcinogenic effects of soil ingestion	-	2.35E-09	-	1.23E-07
Inhalation of particulates from surface soil	-	7.28E-10	-	3.41E-08
Dermal contact with surface soil*	1.29E-09	4.65E-14	1.43E-07	1.71E-11
Ingestion of surface water - Walnut Creek	1.90E-06	5.96E-11	2.28E-05	2.39E-09
Ingestion of surface water - Woman Creek	1.00E-06	3.32E-10	1.20E-05	1.33E-08
Dermal contact with surface water - Walnut Creek	2.05E-05	1.87E-09	2.51E-04	7.64E-08
Dermal contact with surface water - Woman Creek	6.83E-06	3.16E-10	8.35E-05	1.29E-08
External Radiation	-	1.52E-10	-	3.08E-09
Total	3.08E-05	5.81E-09	3.79E-04	2.65E-07

* Dermal contact with metals (except mercury) and radionuclides is considered insignificant.

OPEN SP | USER
AREA OF CONCERN NO. 2

CT - Adult soil ingestion

Noncarcinogens

IF =(IR-A x ED-A x EF x ME x CF)/(BW-A x AT)
HQ = (C x IF)/RfD

Chemical	C Soil Concentration (mg/kg)	IR-A Ingestion Rate (mg/visit)	ED-A Exposure Duration (years)	CF Conversion Factor (kg/mg)	ME Matrix Effect	EF Exposure Frequency (visits/yr)	BW-A Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (kg/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
Bis(2-ethylhexyl)phthalate	1.10E-01	8	7	0.000001	1	10	70	2555	3.13E-09	2.00E-02	1.72E-08
Chromium	1.31E+01	8	7	0.000001	1	10	70	2555	3.13E-09	1.00E+00	4.10E-08
										Total Hazard Index	5.82E-08

RME - Adult soil ingestion

Noncarcinogens

IF = (IR-A x ED-A x EF x ME x CF)/(BW-A x AT-A)
HQ = (C x IF)/RfD

Chemical	C Soil Concentration (mg/kg)	IR-A Ingestion Rate (mg/visit)	ED-A Exposure Duration (years)	ME Matrix Effect	EF Exposure Frequency (visits/yr)	CF Conversion Factor (kg/mg)	BW-A Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (kg/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
Bis(2-ethylhexyl)phthalate	1.10E-01	50	24	1	25	0.000001	70	8760	4.89E-08	2.00E-02	2.69E-07
Chromium	1.31E+01	50	24	1	25	0.000001	70	8760	4.89E-08	1.00E+00	6.41E-07
										Total Hazard Index	9.10E-07

OPEN SPACE USER
AREA OF CONCERN NO. 2

CT - Child soil ingestion

Noncarcinogens

IF = (IR-C x ED-C x EF x ME x CF)/(BW-C x AT-C)
HQ = (C x IF)/RfD

Chemical	C Soil Concentration (mg/kg)	IR-C Ingestion Rate (mg/visit)	ED-C Exposure Duration (years)	CF Conversion Factor (kg/mg)	ME Matrix Effect	EF Exposure Frequency (visits/yr)	BW-C Body Weight (kg)	AT-C Averaging Time (days)	IF Intake Factor (kg/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
Bis(2-ethylhexyl)phthalate	1.10E-01	15	2	0.000001	1	10	15	730	2.74E-08	2.00E-02	1.51E-07
Chromium	1.31E+01	15	2	0.000001	1	10	15	730	2.74E-08	1.00E+00	3.59E-07
										Total Hazard Index	5.10E-07

RME -Child soil ingestion

Noncarcinogens

IF =(IR-C x ED-C x EF x ME x CF)/BW-C x AT-C
HQ = (C x IF)/RfD

Chemical	C Soil Concentration (mg/kg)	IR-C Ingestion Rate (mg/visit)	ED-C Exposure Duration (years)	CF Conversion Factor (kg/mg)	ME Matrix Effect	EF Exposure Frequency (visits/yr)	BW-C Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (kg/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
Bis(2-ethylhexyl)phthalate	1.10E-01	100	6	0.000001	1	25	15	2190	4.57E-07	2.00E-02	2.51E-06
Chromium	1.31E+01	100	6	0.000001	1	25	15	2190	4.57E-07	1.00E+00	5.98E-06
										Total Hazard Index	8.49E-06

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AREA OF CONCERN NO. 2

CT - Time-weighted average soil ingestion

Nonradionuclide Carcinogens

$$IF = ([(IR\text{-}C \times ED\text{-}C / (BW\text{-}C) + (IR\text{-}A \times ED\text{-}A)/(BW\text{-}A)]) \times EF \times ME \times CF)/AT$$

$$CR = C \times IF \times SF$$

	C	IR-C	ED-C	BW-C	IR-A	ED-A	BW-A
		Child			Adult		
Chemical	Soil Concentration (mg/kg)	Ingestion Rate (mg/visit)	Exposure Duration (years)	Body Weight (kg)	Ingestion Rate (mg/visit)	Exposure Duration (years)	Body Weight (kg)
Bis(2-ethylhexyl)phthalate	1.10E-01	15	2	15	8	7	70

	CF	ME	EF	AT	IF	SF	CR
Chemical	Conversion Factor (kg/mg)	Matrix Effect	Exposure Frequency (visits/yr)	Averaging Time (days)	Intake Factor (kg/kg-day)	Slope Factor (mg/kg-day)	Cancer Risk
Bis(2-ethylhexyl)phthalate	0.000001	1	10	25550	1.10E-09	1.40E-02	1.69E-12
					Total Chemical Cancer Risk		1.69E-12

OPEN SPACE USER
AREA OF CONCERN NO. 2

CT - Time-weighted average soil ingestion

Radionuclides

$$IF = [(IR\text{-}C \times ED\text{-}C) + (IR\text{-}A \times ED\text{-}A] \times EF \times ME \times CF$$
$$CR = C \times IF \times SF$$

	C	IR-C	ED-C	IR-A	ED-A	ME	CF	EF	IF	SF	CR
		Child		Adult							
Chemical	Soil Concentration (pCi/g)	Ingestion Rate (mg/visit)	Exposure Duration (years)	Ingestion Rate (mg/visit)	Exposure Duration (years)	Matrix Effect	Conversion Factor (g/mg)	Exposure Frequency (visits/yr)	Intake Factor (g)	Slope Factor (Risk/pCi)	Cancer Risk
Americium-241	1.50E+00	15	2	8	7	1	0.001	10	0.86	2.40E-10	3.10E-10
Plutonium-239/240	1.03E+01	15	2	8	7	1	0.001	10	0.86	2.30E-10	2.04E-09
										Total Radionuclide Cancer Risk	2.35E-09
										Total Cancer Risk	2.35E-09

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AREA OF CONCERN NO. 2

RME - Time-weighted average soil ingestion

Nonradionuclide Carcinogens

$$IF = ([(IR\text{-}C \times ED\text{-}C / (BW\text{-}C) + (IR\text{-}A \times ED\text{-}A)/(BW\text{-}A)]) \times EF \times ME \times CF)/AT$$

$$CR = C \times IF \times SF$$

	C	IR-C	ED-C	BW-C	IR-A	ED-A	BW-A
		Child			Adult		
Chemical	Soil Concentration (mg/kg)	Ingestion Rate (mg/visit)	Exposure Duration (years)	Body Weight (kg)	Ingestion Rate (mg/visit)	Exposure Duration (years)	Body Weight (kg)
Bis(2-ethylhexyl)phthalate	1.10E-01	100	6	15	50	24	70

	CF	ME	EF	AT	IF	SF	CR
Chemical	Conversion Factor (kg/mg)	Matrix Effect	Exposure Frequency (visits/yr)	Averaging Time (days)	Intake Factor (kg/kg-day)	Slope Factor (mg/kg-day)	Cancer Risk
Bis(2-ethylhexyl)phthalate	0.000001	1	25	25550	5.59E-08	1.40E-02	8.61E-11
					Total Chemical Cancer Risk		8.61E-11

OPEN SPACE USER
AREA OF CONCERN NO. 2

RME - Time-weighted average soil ingestion

Radionuclides

$$IF = [(IR\text{-}C \times ED\text{-}C \times FC\text{-}C) + (IR\text{-}A \times ED\text{-}A \times FC\text{-}A)] \times EF \times ME \times CF$$

$$CR = C \times IF \times SF$$

	C	IR-C	ED-C	IR-A	ED-A	ME	CF	EF	IF	SF	CR
		Child		Adult							
Radionuclide	Soil Concentration (pCi/g)	Ingestion Rate (mg/visit)	Exposure Duration (years)	Ingestion Rate (mg/visit)	Exposure Duration (years)	Matrix Effect	Conversion Factor (g/mg)	Exposure Frequency (visits/yr)	Intake Factor (g)	Slope Factor (Risk/pCi)	Cancer Risk
Americium-241	1.50E+00	100	6	50	24	1	0.001	25	4.50E+01	2.40E-10	1.62E-08
Plutonium-239/240	1.03E+01	100	6	50	24	1	0.001	25	4.50E+01	2.30E-10	1.07E-07
									Total Radionuclide Cancer Risk		1.23E-07

Total Cancer Risk 1.23E-07

OPEN S E USER
AREA OF CONCERN NO. 2

CT Inhalation of Particulates - Radionuclides

IF = IR x ET x EF x ED
CR = IF x C x SF

Radionuclides	C Air Concentration (pCi/m^3)	IR Inhalation Rate (m^3/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	DF Deposition Factor	IF Intake Factor (m^3)	SF Slope Factor (Risk/pCi)	CR Cancer Risk
Americium-241	2.13E-05	0.83	1.5	10	9	1	1.12E+02	3.20E-08	7.64E-11
Plutonium-239/240	1.53E-04	0.83	1.5	10	9	1	1.12E+02	3.80E-08	6.51E-10
								Total Radionuclide Cancer Risk	7.28E-10

Total Cancer Risk 7.28E-10

RME Inhalation of Particulates - Radionuclides

IF = IR x ET x EF x ED
CR = IF x C x SF

Radionuclides	C Air Concentration (pCi/m^3)	IR Inhalation Rate (m^3/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	DF Deposition Factor	IF Intake Factor (m^3)	SF Slope Factor (Risk/pCi)	CR Cancer Risk
Americium-241	2.13E-05	1.4	5	25	30	1	5.25E+03	3.20E-08	3.58E-09
Plutonium-239/240	1.53E-04	1.4	5	25	30	1	5.25E+03	3.80E-08	3.05E-08
								Total Radionuclide Cancer Risk	3.41E-08

Total Cancer Risk 3.41E-08

OPEN SPACE USER
AREA OF CONCERN NO. 2

CT- Dermal contact with soil

Noncarcinogens

$$IF = (SA \times FC \times EF \times ED \times AF \times AB \times CF)/(BW \times AT)$$
$$HQ = (C \times IF)/RfD$$

Chemical	C Soil Concentration (mg/kg)	SA Skin Surface Area (cm^2)	FC Fraction Contaminated	EF Exposure Frequency (visits/yr)	ED Exposure Duration (years)	AF Soil Adherence (mg/cm^2)	AB Skin Absorption	CF Conversion Factor (kg/mg)	BW Body Weight (kg)	AT Averaging Time (days)
Bis(2-ethylhexyl)phthalate	1.10E-01	2000	0.15	10	9	0.2	0.01	0.000001	70	3285

Chemical	IF Intake Factor (kg/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
Bis(2-ethylhexyl)phthalate	2.35E-10	2.00E-02	1.29E-09
	Total Hazard Index		1.29E-09

CT- Dermal contact with soil

Nonradionuclide Carcinogens

IF = (SA x FC x EF x ED x AF x AB x CF)/(BW x AT)

CR = C x IF x SF

	C	SA	FC	EF	ED	AF	AB	CF	BW	AT
Chemical	Soil Concentration (mg/kg)	Skin Surface Area (cm^2)	Fraction Contaminated	Exposure Frequency (visits/yr)	Exposure Duration (years)	Soil Adherence (mg/cm^2)	Skin Absorption	Conversion Factor (kg/mg)	Body Weight (kg)	Averaging Time (days)
Bis(2-ethylhexyl)phthalate	1.10E-01	2000	0.15	10	9	0.2	0.01	0.000001	70	25550

	IF	SF	CR
Chemical	Intake Factor (kg/kg-day)	Slope Factor 1/(mg/kg-day)	Cancer Risk
Bis(2-ethylhexyl)phthalate	3.02E-11	1.40E-02	4.65E-14
	Total Cancer Risk		4.65E-14

OPEN SPACE USER
AREA OF CONCERN NO. 2

RME- Dermal contact with soil

Noncarcinogens

$$IF = (SA \times FC \times EF \times ED \times AF \times AB \times CF)/(BW \times AT)$$

$$HQ = (C \times IF)/RfD$$

Chemical	C Soil Concentration (mg/kg)	SA Skin Surface Area (cm^2)	FC Fraction Contaminated	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	AF Soil Adherence (mg/cm^2)	AB Skin Absorption	CF Conversion Factor (kg/mg)	BW Body Weight (kg)	AT Averaging Time (days)
Bis(2-ethylhexyl)phthalate	1.10E-01	5300	0.5	25	30	1	0.01	0.000001	70	10950

Chemical	IF Intake Factor (kg/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
Bis(2-ethylhexyl)phthalate	2.59E-08	2.00E-02	1.43E-07
	Total Hazard Index		1.43E-07

OPEN SI E USER
AREA OF CONCERN NO. 2

RME- Dermal contact with soil

Nonradionuclide Carcinogens

$$IF = (SA \times FC \times EF \times ED \times AF \times AB \times CF)/(BW \times AT)$$

$$CR = C \times IF \times SF$$

	C	SA	FC	EF	ED	AF	AB	CF	BW	AT
Chemical	Soil Concentration (mg/kg)	Skin Surface Area (cm^2)	Fraction Contaminated	Exposure Frequency (visits/yr)	Exposure Duration (years)	Soil Adherence (mg/cm^2)	Skin Absorption	Conversion Factor (kg/mg)	Body Weight (kg)	Averaging Time (days)
Bis(2-ethylhexyl)phthalate	1.10E-01	5300	0.5	25	30	1	0.01	0.000001	70	25550

	IF	SF	CR
Chemical	Intake Factor (kg/kg-day)	Slope Factor 1/(mg/kg-day)	Cancer Risk
Bis(2-ethylhexyl)phthalate	1.11E-08	1.40E-02	1.71E-11
	Total Cancer Risk		1.71E-11

OPEN SPACE USER
AREA OF CONCERN NO. 2

CT - Ingestion of surface water - Walnut Creek

Noncarcinogens

IF = (IR x ET x EF x ED)/(BW x AT)
HQ = (C x IF)/RfD

	C	IR	ET	EF	ED	BW	AT	IF	RfD	HQ
Chemical	Surface Water Concentration (mg/l)	Ingestion Rate (l/hr)	Exposure Time (hr/visit)	Exposure Frequency (visits/yr)	Exposure Duration (years)	Body Weight (kg)	Averaging Time (days)	Intake Factor (l/kg-day)	Reference Dose (mg/kg-day)	Hazard Quotient
1,1-Dichloroethene	5.00E-06	0.025	0.5	5	9	70	3285	2.45E-06	9.00E-03	1.36E-09
Carbon Tetrachloride	4.81E-04	0.025	0.5	5	9	70	3285	2.45E-06	7.00E-04	1.68E-06
Chloroform	9.30E-05	0.025	0.5	5	9	70	3285	2.45E-06	1.00E-02	2.27E-08
Methylene Chloride	3.80E-05	0.025	0.5	5	9	70	3285	2.45E-06	6.00E-02	1.55E-09
Tetrachloroethene	8.03E-04	0.025	0.5	5	9	70	3285	2.45E-06	1.00E-02	1.96E-07
									Total Hazard Index	1.90E-06

OPEN SP USER
AREA OF CONCERN NO. 2

CT - Ingestion of surface water - Walnut Creek

Nonradionuclide carcinogens

IF = (IR x ET x EF x ED)/(BW x AT)
CR = C x IF x SF

Chemical	C Surface Water Concentration (mg/l)	IR Ingestion Rate (l/hr)	ET Exposure Time (hr/visit)	EF Exposure Frequency (visits/yr)	ED Exposure Duration (years)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
1,1-Dichloroethene	5.00E-06	0.025	0.5	5	9	70	25550	3.15E-07	6.00E-01	9.44E-13
Carbon Tetrachloride	4.81E-04	0.025	0.5	5	9	70	25550	3.15E-07	1.30E-01	1.97E-11
Chloroform	9.30E-05	0.025	0.5	5	9	70	25550	3.15E-07	6.10E-03	1.78E-13
Methylene Chloride	3.80E-05	0.025	0.5	5	9	70	25550	3.15E-07	7.50E-03	8.96E-14
Tetrachloroethene	8.03E-04	0.025	0.5	5	9	70	25550	3.15E-07	5.20E-02	1.31E-11
Trichloroethene	6.24E-03	0.025	0.5	5	9	70	25550	3.15E-07	1.10E-02	2.16E-11
								Total Chemical Cancer Risk		5.56E-11

Radionuclides

IF = IR x ET x EF x ED
CR = C x IF x SF

Radionuclide	C Surface Water Concentration (pCi/l)	IR Ingestion Rate (l/hr)	ET Exposure Time (hr/visit)	EF Exposure Frequency (visits/yr)	ED Exposure Duration (years)	IF Intake Factor (l)	SF Slope Factor (Risk/pCi)	CR Cancer Risk
Americium-241	5.00E-03	0.025	0.5	5	9	5.63E-01	2.40E-10	6.75E-13
Plutonium-239/240	2.60E-02	0.025	0.5	5	9	5.63E-01	2.30E-10	3.36E-12
							Total Radionuclide Cancer Risk	4.04E-12
							Total Cancer Risk	5.96E-11

OPEN SPACE USER
AREA OF CONCERN NO. 2

RME - Ingestion of surface water - Walnut Creek

Noncarcinogens

$$IF = (IR \times ET \times EF \times ED)/(BW \times AT)$$
$$HQ = (C \times IF)/RfD$$

Chemical	C Surface Water Concentration (mg/l)	IR Ingestion Rate (l/hr)	ET Exposure Time (hr/visit)	EF Exposure Frequency (visits/yr)	ED Exposure Duration (years)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
1,1-Dichloroethene	5.00E-06	0.05	1	15	30	70	10950	2.94E-05	9.00E-03	1.63E-08
Carbon Tetrachloride	4.81E-04	0.05	1	15	30	70	10950	2.94E-05	7.00E-04	2.02E-05
Chloroform	9.30E-05	0.05	1	15	30	70	10950	2.94E-05	1.00E-02	2.73E-07
Methylene Chloride	3.80E-05	0.05	1	15	30	70	10950	2.94E-05	6.00E-02	1.86E-08
Tetrachloroethene	8.03E-04	0.05	1	15	30	70	10950	2.94E-05	1.00E-02	2.36E-06
									Total Hazard Index	2.28E-05

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AREA OF CONCERN NO. 2

RME - Ingestion of surface water - Walnut Creek

Nonradionuclide carcinogens

IF = (IR x ET x EF x ED)/(BW x AT)
CR = C x IF x SF

Chemical	C Surface Water Concentration (mg/l)	IR Ingestion Rate (l/hr)	ET Exposure Time (hr/visit)	EF Exposure Frequency (visits/yr)	ED Exposure Duration (years)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
1,1-Dichloroethene	5.00E-06	0.05	1	15	30	70	25550	1.26E-05	6.00E-01	3.77E-11
Carbon Tetrachloride	4.81E-04	0.05	1	15	30	70	25550	1.26E-05	1.30E-01	7.87E-10
Chloroform	9.30E-05	0.05	1	15	30	70	25550	1.26E-05	6.10E-03	7.14E-12
Methylene Chloride	3.80E-05	0.05	1	15	30	70	25550	1.26E-05	7.50E-03	3.59E-12
Tetrachloroethene	8.03E-04	0.05	1	15	30	70	25550	1.26E-05	5.20E-02	5.25E-10
Trichloroethene	6.24E-03	0.05	1	15	30	70	25550	1.26E-05	1.10E-02	8.64E-10
									Total Chemical Cancer Risk	2.22E-09

Radionuclides

IF = IR x ET x EF x ED
CR = C x IF x SF

Radionuclide	C Surface Water Concentration (pCi/l)	IR Ingestion Rate (l/hr)	ET Exposure Time (hr/visit)	EF Exposure Frequency (visits/yr)	ED Exposure Duration (years)	IF Intake Factor (l)	SF Slope Factor (Risk/pCi)	CR Cancer Risk
Americium-241	5.00E-03	0.05	1	15	30	2.25E+01	2.40E-10	2.70E-11
Plutonium-239/240	2.60E-02	0.05	1	15	30	2.25E+01	2.30E-10	1.35E-10
							Total Radionuclide Cancer Risk	1.62E-10
							Total Cancer Risk	2.39E-09

OPEN SPACE USER
AREA OF CONCERN NO. 2

CT - Ingestion of surface water - Woman Creek

Noncarcinogens

$$IF = (IR \times ET \times EF \times ED)/(BW \times AT)$$
$$HQ = (C \times IF)/RfD$$

Chemical	C Surface Water Concentration (mg/l)	IR Ingestion Rate (l/hr)	ET Exposure Time (hr/visit)	EF Exposure Frequency (visits/yr)	ED Exposure Duration (years)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
1,1-Dichloroethene	2.00E-06	0.025	0.5	5	9	70	3285	2.45E-06	9.00E-03	5.44E-10
Carbon Tetrachloride	2.62E-04	0.025	0.5	5	9	70	3285	2.45E-06	7.00E-04	9.16E-07
Chloroform	2.15E-04	0.025	0.5	5	9	70	3285	2.45E-06	1.00E-02	5.26E-08
Methylene Chloride	1.06E-04	0.025	0.5	5	9	70	3285	2.45E-06	6.00E-02	4.32E-09
Tetrachloroethene	1.16E-04	0.025	0.5	5	9	70	3285	2.45E-06	1.00E-02	2.84E-08
									Total Hazard Index	1.00E-06

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AREA OF CONCERN NO. 2

CT - Ingestion of surface water - Woman Creek

Nonradionuclide carcinogens

IF = (IR x ET x EF x ED)/(BW x AT)
CR = C x IF x SF

Chemical	C Surface Water Concentration (mg/l)	IR Ingestion Rate (l/hr)	ET Exposure Time (hr/visit)	EF Exposure Frequency (visits/yr)	ED Exposure Duration (years)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
1,1-Dichloroethene	2.00E-06	0.025	0.5	5	9	70	25550	3.15E-07	6.00E-01	3.77E-13
Carbon Tetrachloride	2.62E-04	0.025	0.5	5	9	70	25550	3.15E-07	1.30E-01	1.07E-11
Chloroform	2.15E-04	0.025	0.5	5	9	70	25550	3.15E-07	6.10E-03	4.12E-13
Methylene Chloride	1.06E-04	0.025	0.5	5	9	70	25550	3.15E-07	7.50E-03	2.50E-13
Tetrachloroethene	1.16E-04	0.025	0.5	5	9	70	25550	3.15E-07	5.20E-02	1.90E-12
Trichloroethene	9.25E-04	0.025	0.5	5	9	70	25550	3.15E-07	1.10E-02	3.20E-12
								Total Chemical Cancer Risk		1.68E-11

Radionuclides

IF = IR x ET x EF x ED
CR = C x IF x SF

Radionuclide	C Surface Water Concentration (pCi/l)	IR Ingestion Rate (l/hr)	ET Exposure Time (hr/visit)	EF Exposure Frequency (visits/yr)	ED Exposure Duration (years)	IF Intake Factor (l)	SF Slope Factor (Risk/pCi)	CR Cancer Risk
Americium-241	6.30E-02	0.025	0.5	5	9	5.63E-01	2.40E-10	8.51E-12
Plutonium-239/240	2.37E+00	0.025	0.5	5	9	5.63E-01	2.30E-10	3.07E-10
							Total Radionuclide Cancer Risk	3.15E-10
							Total Cancer Risk	3.32E-10

OPEN SPACE USER
AREA OF CONCERN NO. 2

RME - Ingestion of surface water Woman Creek

Noncarcinogens

$$IF = (IR \times ET \times EF \times ED)/(BW \times AT)$$
$$HQ = (C \times IF)/RfD$$

Chemical	C Surface Water Concentration (mg/l)	IR Ingestion Rate (l/hr)	ET Exposure Time (hr/visit)	EF Exposure Frequency (visits/yr)	ED Exposure Duration (years)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
1,1-Dichloroethene	2.00E-06	0.05	1	15	30	70	10950	2.94E-05	9.00E-03	6.52E-09
Carbon Tetrachloride	2.62E-04	0.05	1	15	30	70	10950	2.94E-05	7.00E-04	1.10E-05
Chloroform	2.15E-04	0.05	1	15	30	70	10950	2.94E-05	1.00E-02	6.31E-07
Methylene Chloride	1.06E-04	0.05	1	15	30	70	10950	2.94E-05	6.00E-02	5.19E-08
Tetrachloroethene	1.16E-04	0.05	1	15	30	70	10950	2.94E-05	1.00E-02	3.41E-07
									Total Hazard Index	1.20E-05

RME - Ingestion of surface water Woman Creek

Nonradionuclide carcinogens

IF = (IR x ET x EF x ED)/(BW x AT)
CR = C x IF x SF

Chemical	C Surface Water Concentration (mg/l)	IR Ingestion Rate (l/hr)	ET Exposure Time (hr/visit)	EF Exposure Frequency (visits/yr)	ED Exposure Duration (years)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
1,1-Dichloroethene	2.00E-06	0.05	1	15	30	70	25550	1.26E-05	6.00E-01	1.51E-11
Carbon Tetrachloride	2.62E-04	0.05	1	15	30	70	25550	1.26E-05	1.30E-01	4.28E-10
Chloroform	2.15E-04	0.05	1	15	30	70	25550	1.26E-05	6.10E-03	1.65E-11
Methylene Chloride	1.06E-04	0.05	1	15	30	70	25550	1.26E-05	7.50E-03	1.00E-11
Tetrachloroethene	1.16E-04	0.05	1	15	30	70	25550	1.26E-05	5.20E-02	7.59E-11
Trichloroethene	9.25E-04	0.05	1	15	30	70	25550	1.26E-05	1.10E-02	1.28E-10
								Total Chemical Cancer Risk		6.74E-10

Radionuclides

IF = IR x ET x EF x ED
CR = C x IF x SF

Radionuclide	C Surface Water Concentration (pCi/l)	IR Ingestion Rate (l/hr)	ET Exposure Time (hr/visit)	EF Exposure Frequency (visits/yr)	ED Exposure Duration (years)	IF Intake Factor (l)	SF Slope Factor (Risk/pCi)	CR Cancer Risk
Americium-241	6.30E-02	0.05	1	15	30	2.25E+01	2.40E-10	3.40E-10
Plutonium-239/240	2.37E+00	0.05	1	15	30	2.25E+01	2.30E-10	1.23E-08
							Total Radionuclide Cancer Risk	1.26E-08
							Total Cancer Risk	1.33E-08

OPEN SPACE USER
AREA OF CONCERN NO. 2

CT - Dermal contact with surface water - Walnut Creek

Noncarcinogens

IF = (SA x DP x ET x EF x ED x CF)/(BW x AT)
HQ = (C x IF)/RfD

Chemical	C Surface Water Concentration (mg/l)	SA Skin Surface Area (cm^2)	DP Dermal Permeability (cm/hr)	ET Exposure Time (hr/visit)	EF Exposure Frequency (visits/yr)	ED Exposure Duration (years)	CF Conversion Factor (l/cm^3)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
1,1-Dichloroethene	5.00E-06	4550	0.016	0.5	5	9	0.001	70	3285	7.12E-06	9.00E-03	3.96E-09
Carbon Tetrachloride	4.81E-04	4550	0.022	0.5	5	9	0.001	70	3285	9.79E-06	7.00E-04	6.73E-06
Chloroform	9.30E-05	4550	0.13	0.5	5	9	0.001	70	3285	5.79E-05	1.00E-02	5.38E-07
Methylene Chloride	3.80E-05	4550	0.0045	0.5	5	9	0.001	70	3285	2.00E-06	6.00E-02	1.27E-09
Tetrachloroethene	8.03E-04	4550	0.37	0.5	5	9	0.001	70	3285	1.65E-04	1.00E-02	1.32E-05
											Total Hazard Index	2.05E-05

Nonradionuclide carcinogens

IF = (SA x DP x ET x EF x ED x CF)/(BW x AT)
CR = C x IF x SF

Chemical	C Surface Water Concentration (mg/l)	SA Skin Surface Area (cm^2)	DP Dermal Permeability (cm/hr)	ET Exposure Time (hr/visit)	EF Exposure Frequency (visits/yr)	ED Exposure Duration (years)	CF Conversion Factor (l/cm^3)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
1,1-Dichloroethene	5.00E-06	4550	0.016	0.5	5	9	0.001	70	25550	9.16E-07	6.00E-01	2.75E-12
Carbon Tetrachloride	4.81E-04	4550	0.022	0.5	5	9	0.001	70	25550	1.26E-06	1.30E-01	7.87E-11
Chloroform	9.30E-05	4550	0.13	0.5	5	9	0.001	70	25550	7.44E-06	6.10E-03	4.22E-12
Methylene Chloride	3.80E-05	4550	0.0045	0.5	5	9	0.001	70	25550	2.58E-07	7.50E-03	7.34E-14
Tetrachloroethene	8.03E-04	4550	0.37	0.5	5	9	0.001	70	25550	2.12E-05	5.20E-02	8.84E-10
Trichloroethene	6.24E-03	4550	0.23	0.5	5	9	0.001	70	25550	1.32E-05	1.10E-02	9.04E-10
											Total Cancer Risk	1.87E-09

RME - Dermal contact with surface water - Walnut Creek

Noncarcinogens

IF = (SA x DP x ET x EF x ED x CF)/(BW x AT)
HQ = (C x IF)/RfD

Chemical	C Surface Water Concentration (mg/l)	SA Skin Surface Area (cm^2)	DP Dermal Permeability (cm/hr)	ET Exposure Time (hr/visit)	EF Exposure Frequency (visits/yr)	ED Exposure Duration (years)	CF Conversion Factor (l/cm^3)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
1,1-Dichloroethene	5.00E-06	9275	0.016	1	15	30	0.001	70	10950	8.71E-05	9.00E-03	4.84E-08
Carbon Tetrachloride	4.81E-04	9275	0.022	1	15	30	0.001	70	10950	1.20E-04	7.00E-04	8.23E-05
Chloroform	9.30E-05	9275	0.13	1	15	30	0.001	70	10950	7.08E-04	1.00E-02	6.58E-06
Methylene Chloride	3.80E-05	9275	0.0045	1	15	30	0.001	70	10950	2.45E-05	6.00E-02	1.55E-08
Tetrachloroethene	8.03E-04	9275	0.37	1	15	30	0.001	70	10950	2.01E-03	1.00E-02	1.62E-04
											Total Hazard Index	2.51E-04

Nonradionuclide carcinogens

IF = (SA x DP x ET x EF x ED x CF)/(BW x AT)
CR = C x IF x SF

Chemical	C Surface Water Concentration (mg/l)	SA Skin Surface Area (cm^2)	DP Dermal Permeability (cm/hr)	ET Exposure Time (hr/visit)	EF Exposure Frequency (visits/yr)	ED Exposure Duration (years)	CF Conversion Factor (l/cm^3)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
1,1-Dichloroethene	5.00E-06	9275	0.016	1	15	30	0.001	70	25550	3.73E-05	6.00E-01	1.12E-10
Carbon Tetrachloride	4.81E-04	9275	0.022	1	15	30	0.001	70	25550	5.13E-05	1.30E-01	3.21E-09
Chloroform	9.30E-05	9275	0.13	1	15	30	0.001	70	25550	3.03E-04	6.10E-03	1.72E-10
Methylene Chloride	3.80E-05	9275	0.0045	1	15	30	0.001	70	25550	1.05E-05	7.50E-03	2.99E-12
Tetrachloroethene	8.03E-04	9275	0.37	1	15	30	0.001	70	25550	8.63E-04	5.20E-02	3.61E-08
Trichloroethene	6.24E-03	9275	0.23	1	15	30	0.001	70	25550	5.37E-04	1.10E-02	3.68E-08
											Total Cancer Risk	7.64E-08

OPEN SPACE USER
AREA OF CONCERN NO. 2

CT - Dermal contact with surface water - Woman Creek

Noncarcinogens

IF = (SA x DP x ET x EF x ED x CF)/(BW x AT)
HQ = (C x IF)/RfD

Chemical	C Surface Water Concentration (mg/l)	SA Skin Surface Area (cm^2)	DP Dermal Permeability (cm/hr)	ET Exposure Time (hr/visit)	EF Exposure Frequency (visits/yr)	ED Exposure Duration (years)	CF Conversion Factor (l/cm^3)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
1,1-Dichloroethene	2.00E-06	4550	0.016	0.5	5	9	0.001	70	3285	7.12E-06	9.00E-03	1.58E-09
Carbon Tetrachloride	2.62E-04	4550	0.022	0.5	5	9	0.001	70	3285	9.79E-06	7.00E-04	3.67E-06
Chloroform	2.15E-04	4550	0.13	0.5	5	9	0.001	70	3285	5.79E-05	1.00E-02	1.24E-06
Methylene Chloride	1.06E-04	4550	0.0045	0.5	5	9	0.001	70	3285	2.00E-06	6.00E-02	3.54E-09
Tetrachloroethene	1.16E-04	4550	0.37	0.5	5	9	0.001	70	3285	1.65E-04	1.00E-02	1.91E-06
											Total Hazard Index	6.83E-06

Nonradionuclide carcinogens

IF = (SA x DP x ET x EF x ED x CF)/(BW x AT)
CR = C x IF x SF

Chemical	C Surface Water Concentration (mg/l)	SA Skin Surface Area (cm^2)	DP Dermal Permeability (cm/hr)	ET Exposure Time (hr/visit)	EF Exposure Frequency (visits/yr)	ED Exposure Duration (years)	CF Conversion Factor (l/cm^3)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	SF Slope Factor 1/(mg/kg-day	CR Cancer Risk
1,1-Dichloroethene	2.00E-06	4550	0.016	0.5	5	9	0.001	70	25550	9.16E-07	6.00E-01	1.10E-12
Carbon Tetrachloride	2.62E-04	4550	0.022	0.5	5	9	0.001	70	25550	1.26E-06	1.30E-01	4.29E-11
Chloroform	2.15E-04	4550	0.13	0.5	5	9	0.001	70	25550	7.44E-06	6.10E-03	9.76E-12
Methylene Chloride	1.06E-04	4550	0.0045	0.5	5	9	0.001	70	25550	2.58E-07	7.50E-03	2.05E-13
Tetrachloroethene	1.16E-04	4550	0.37	0.5	5	9	0.001	70	25550	2.12E-05	5.20E-02	1.28E-10
Trichloroethene	9.25E-04	4550	0.23	0.5	5	9	0.001	70	25550	1.32E-05	1.10E-02	1.34E-10
											Total Cancer Risk	3.16E-10

RME - Dermal contact with surface water - Woman Creek

Noncarcinogens

IF = (SA x DP x ET x EF x ED x CF)/(BW x AT)
HQ = (C x IF)/RfD

Chemical	C Surface Water Concentration (mg/l)	SA Skin Surface Area (cm^2)	DP Dermal Permeability (cm/hr)	ET Exposure Time (hr/visit)	EF Exposure Frequency (visits/yr)	ED Exposure Duration (years)	CF Conversion Factor (l/cm^3)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
1,1-Dichloroethene	2.00E-06	9275	0.016	1	15	30	0.001	70	10950	8.71E-05	9.00E-03	1.94E-08
Carbon Tetrachloride	2.62E-04	9275	0.022	1	15	30	0.001	70	10950	1.20E-04	7.00E-04	4.48E-05
Chloroform	2.15E-04	9275	0.13	1	15	30	0.001	70	10950	7.08E-04	1.00E-02	1.52E-05
Methylene Chloride	1.06E-04	9275	0.0045	1	15	30	0.001	70	10950	2.45E-05	6.00E-02	4.33E-08
Tetrachloroethene	1.16E-04	9275	0.37	1	15	30	0.001	70	10950	2.01E-03	1.00E-02	2.34E-05
											Total Hazard Index	8.35E-05

Nonradionuclide carcinogens

IF = (SA x DP x ET x EF x ED x CF)/(BW x AT)
CR = C x IF x SF

Chemical	C Surface Water Concentration (mg/l)	SA Skin Surface Area (cm^2)	DP Dermal Permeability (cm/hr)	ET Exposure Time (hr/visit)	EF Exposure Frequency (visits/yr)	ED Exposure Duration (years)	CF Conversion Factor (l/cm^3)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	SF Slope Factor 1/(mg/kg-day	CR Cancer Risk
1,1-Dichloroethene	2.00E-06	9275	0.016	1	15	30	0.001	70	25550	3.73E-05	6.00E-01	4.48E-11
Carbon Tetrachloride	2.62E-04	9275	0.022	1	15	30	0.001	70	25550	5.13E-05	1.30E-01	1.75E-09
Chloroform	2.15E-04	9275	0.13	1	15	30	0.001	70	25550	3.03E-04	6.10E-03	3.98E-10
Methylene Chloride	1.06E-04	9275	0.0045	1	15	30	0.001	70	25550	1.05E-05	7.50E-03	8.35E-12
Tetrachloroethene	1.16E-04	9275	0.37	1	15	30	0.001	70	25550	8.63E-04	5.20E-02	5.21E-09
Trichloroethene	9.25E-04	9275	0.23	1	15	30	0.001	70	25550	5.37E-04	1.10E-02	5.46E-09
											Total Cancer Risk	1.29E-08

OPEN SPACE USER
AREA OF CONCERN NO. 2

CT - External Radiation

IF = TF x GSF x EF x ED
CR = C x IF x SF

Radionuclide	C Soil Concentration (pCi/g)	TF Gamma Time Factor (T_e)	GSF Gamma Shielding Factor ($1-S_e$)	EF Percent of year Exposed	ED Exposure Duration (years)	IF Intake Factor (years)	SF Slope Factor (1/pCi-yr/g)	CR Cancer Risk
Americium-241	1.50E+00	0.1	0.8	0.028	9	2.02E-02	4.90E-09	1.48E-10
Plutonium-239/240	1.03E+01	0.1	0.8	0.028	9	2.02E-02	1.88E-11	3.90E-12
							Total Cancer Risk	1.52E-10

RME - External Radiation

IF = TF x GSF x EF x ED
CR = C x IF x SF

Radionuclide	C Soil Concentration (pCi/g)	TF Gamma Time Factor (T_e)	GSF Gamma Shielding Factor ($1-S_e$)	EF Percent of year Exposed	ED Exposure Duration (years)	IF Intake Factor (years)	SF Slope Factor (1/pCi-yr/g)	CR Cancer Risk
Americium-241	1.50E+00	0.2	1	0.068	30	4.08E-01	4.90E-09	3.00E-09
Plutonium-239/240	1.03E+01	0.2	1	0.068	30	4.08E-01	1.88E-11	7.90E-11
							Total Cancer Risk	3.08E-09

SUMMARY OF RISK
HYPOTHETICAL ONSITE RESIDENT
AREA OF CONCERN NO. 2

	Central Tendency		Reasonable Maximum	
Pathway	Hazard Index	Cancer Risk	Hazard Index	Cancer Risk
Ingestion of surface soil by an adult	5.45E-06	-	2.55E-05	-
Ingestion of surface soil by a child	6.52E-05	-	2.38E-04	
Carcinogenic effects of soil ingestion	-	2.48E-07	-	3.44E-06
Inhalation of particulates from surface soil	-	1.29E-07	-	1.36E-06
Dermal contact with surface soil*	1.29E-07	4.64E-12	3.99E-06	4.79E-10
Ingestion of vegetables with soil deposition	2.60E-08	8.75E-10	1.94E-07	2.18E-08
Ingestion of fruit with soil deposition	3.39E-08	1.14E-09	2.37E-07	2.67E-08
Ingestion of leafy vegetables with root uptake	1.18E-05	9.35E-09	4.42E-05	1.16E-07
Ingestion of other produce with root uptake	1.42E-04	1.20E-08	4.97E-04	8.47E-08
Ingestion of groundwater	6.04E-04	3.10E-07	4.30E-03	7.35E-06
Ingestion of surface water - Walnut Creek	1.52E-06	4.77E-11	2.77E-05	2.89E-09
Ingestion of surface water - Woman Creek	8.01E-07	2.66E-10	1.46E-05	1.61E-08
Dermal contact with surface water - Walnut Creek	8.36E-05	7.64E-09	5.95E-04	1.81E-07
Dermal contact with surface water - Woman Creek	2.78E-05	1.29E-09	1.98E-04	3.06E-08
Inhalation of VOCs from infiltration	1.89E-11	5.64E-14	4.53E-11	4.50E-13
Inhalation of VOCs from groundwater use	2.07E-05	3.09E-08	4.95E-05	2.47E-07
External Radiation	-	1.63E-08	-	1.74E-07
Total	9.63E-04	7.67E-07	6.00E-03	1.31E-05

* Dermal contact with metals (except mercury) and radionuclides is considered insignificant.

HYPOTHETICAL ONSITE RESIDENT
AREA OF CONCERN NO. 2

CT - Adult soil ingestion

Noncarcinogens

IF =(IR-A x ED-A x FC-A x EF x ME x CF)/(BW-A x AT)
HQ = (C x IF)/RfD

	C	IR-A	ED-A	FC-A	CF	ME	EF	BW-A	AT	IF	RfD	HQ
Chemical	Soil Concentration (mg/kg)	Ingestion Rate (mg/day)	Exposure Duration (years)	Fraction Contaminated	Conversion Factor (kg/mg)	Matrix Effect	Exposure Frequency (days/yr)	Body Weight (kg)	Averaging Time (days)	Intake Factor (kg/kg-day)	Reference Dose (mg/kg-day)	Hazard Quotient
Bis(2-ethylhexyl)phthalate	1.10E-01	50	7	0.64	0.000001	1	234	70	2555	2.93E-07	2.00E-02	1.61E-06
Chromium	1.31E+01	50	7	0.64	0.000001	1	234	70	2555	2.93E-07	1.00E+00	3.84E-06
											Total Hazard Index	5.45E-06

RME - Adult soil ingestion

Noncarcinogens

IF = (IR-A x ED-A x FC-A x EF x ME x CF)/(BW-A x AT-A)
HQ = (C x IF)/RfD

	C	IR-A	ED-A	FC-A	ME	EF	CF	BW-A	AT	IF	RfD	HQ
Chemical	Soil Concentration (mg/kg)	Ingestion Rate (mg/day)	Exposure Duration (years)	Fraction Contaminated	Matrix Effect	Exposure Frequency (days/yr)	Conversion Factor (kg/mg)	Body Weight (kg)	Averaging Time (days)	Intake Factor (kg/kg-day)	Reference Dose (mg/kg-day)	Hazard Quotient
Bis(2-ethylhexyl)phthalate	1.10E-01	100	24	1	1	350	0.000001	70	8760	1.37E-06	2.00E-02	7.53E-06
Chromium	1.31E+01	100	24	1	1	350	0.000001	70	8760	1.37E-06	1.00E+00	1.79E-05
											Total Hazard Index	2.55E-05

HYPOTHETICAL ITE RESIDENT
AREA OF CONCERN NO. 2

CT - Child soil ingestion

Noncarcinogens

IF = (IR-C x ED-C x FC-C x EF x ME x CF)/(BW-C x AT-C)
HQ = (C x IF)/RfD

	C	IR-C	ED-C	FC-C	CF	ME	EF	BW-C	AT-C	IF	RfD	HQ
Chemical	Soil Concentration (mg/kg)	Ingestion Rate (mg/day)	Exposure Duration (years)	Fraction Contaminated	Conversion Factor (kg/mg)	Matrix Effect	Exposure Frequency (days/yr)	Body Weight (kg)	Averaging Time (days)	Intake Factor (kg/kg-day)	Reference Dose (mg/kg-day)	Hazard Quotient
Bis(2-ethylhexyl)phthalate	1.10E-01	100	2	0.82	0.000001	1	234	15	730	3.50E-06	2.00E-02	1.93E-05
Chromium	1.31E+01	100	2	0.82	0.000001	1	234	15	730	3.50E-06	1.00E+00	4.59E-05
											Total Hazard Index	6.52E-05

RME -Child soil ingestion

Noncarcinogens

IF =(IR-C x ED-C x FC-C x EF x ME x CF)/BW-C x AT-C
HQ = (C x IF)/RfD

	C	IR-C	ED-C	FC-C	CF	ME	EF	BW-C	AT	IF	RfD	HQ
Chemical	Soil Concentration (mg/kg)	Ingestion Rate (mg/day)	Exposure Duration (years)	Fraction Contaminated	Conversion Factor (kg/mg)	Matrix Effect	Exposure Frequency (days/yr)	Body Weight (kg)	Averaging Time (days)	Intake Factor (kg/kg-day)	Reference Dose (mg/kg-day)	Hazard Quotient
Bis(2-ethylhexyl)phthalate	1.10E-01	200	6	1	0.000001	1	350	15	2190	1.28E-05	2.00E-02	7.03E-05
Chromium	1.31E+01	200	6	1	0.000001	1	350	15	2190	1.28E-05	1.00E+00	1.67E-04
											Total Hazard Index	2.38E-04

HYPOTHETICAL ONSITE RESIDENT
AREA OF CONCERN NO. 2

CT - Time-weighted average soil ingestion

Nonradionuclide Carcinogens

$$IF = ([(IR\text{-}C \times ED\text{-}C \times FC\text{-}C)/(BW\text{-}C) + (IR\text{-}A \times ED\text{-}A \times FC\text{-}A)/(BW\text{-}A)] \times EF \times ME \times CF)/AT$$

$$CR = C \times IF \times SF$$

	C	IR-C	ED-C	FC-C	BW-C	IR-A	ED-A	FC-A	BW-A
		Child				Adult			
Chemical	Soil Concentration (mg/kg)	Ingestion Rate (mg/day)	Exposure Duration (years)	Fraction Contaminated	Body Weight (kg)	Ingestion Rate (mg/day)	Exposure Duration (years)	Fraction Contaminated	Body Weight (kg)
Bis(2-ethylhexyl)phthalate	1.10E-01	100	2	0.82	15	50	7	0.64	70

	CF	ME	EF	AT	IF	SF	CR
Chemical	Conversion Factor (kg/mg)	Matrix Effect	Exposure Frequency (days/yr)	Averaging Time (days)	Intake Factor (kg/kg-day)	Slope Factor (mg/kg-day)	Cancer Risk
Bis(2-ethylhexyl)phthalate	0.000001	1	234	25550	1.29E-07	1.40E-02	1.99E-10
					Total Chemical Cancer Risk		1.99E-10

HYPOTHETICAL SITE RESIDENT
AREA OF CONCERN NO. 2

CT - Time-weighted average soil ingestion

Radionuclides

$$IF = [(IR\text{-}C \times ED\text{-}C \times FC\text{-}C) + (IR\text{-}A \times ED\text{-}A \times FC\text{-}A)] \times EF \times ME \times CF$$
$$CR = C \times IF \times SF$$

	C	IR-C	ED-C	FC-C	IR-A	ED-A	FC-A	ME	CF
		Child			Adult				
Chemical	Soil Concentration (pCi/g)	Ingestion Rate (mg/day)	Exposure Duration (years)	Fraction Contaminated	Ingestion Rate (mg/day)	Exposure Duration (years)	Fraction Contaminated	Matrix Effect	Conversion Factor (g/mg)
Americium-241	1.50E+00	100	2	0.82	50	7	0.64	1	0.001
Plutonium-239/240	1.03E+01	100	2	0.82	50	7	0.64	1	0.001

	EF	IF	SF	CR
Chemical	Exposure Frequency (days/yr)	Intake Factor (g)	Slope Factor (Risk/pCi)	Cancer Risk
Americium-241	234	9.08E+01	2.40E-10	3.27E-08
Plutonium-239/240	234	9.08E+01	2.30E-10	2.15E-07
		Total Radionuclide Cancer Risk		2.48E-07
			Total Cancer Risk	2.48E-07

HYPOTHETICAL ONSITE RESIDENT
AREA OF CONCERN NO. 2

RME - Time-weighted average soil ingestion

Nonradionuclide Carcinogens

$$IF = ([(IR\text{-}C \times ED\text{-}C \times FC\text{-}C)/(BW\text{-}C) + (IR\text{-}A \times ED\text{-}A \times FC\text{-}A)/(BW\text{-}A)] \times EF \times ME \times CF)/AT$$

$$CR = C \times IF \times SF$$

	C	IR-C	ED-C	FC-C	BW-C	IR-A	ED-A	FC-A	BW-A
		Child				Adult			
Chemical	Soil Concentration (mg/kg)	Ingestion Rate (mg/day)	Exposure Duration (years)	Fraction Contaminated	Body Weight (kg)	Ingestion Rate (mg/day)	Exposure Duration (years)	Fraction Contaminated	Body Weight (kg)
Bis(2-ethylhexyl)phthalate	1.10E-01	200	6	1	15	100	24	1	70

	CF	ME	EF	AT	IF	SF	CR
Chemical	Conversion Factor (kg/mg)	Matrix Effect	Exposure Frequency (days/yr)	Averaging Time (days)	Intake Factor (kg/kg-day)	Slope Factor (mg/kg-day)	Cancer Risk
Bis(2-ethylhexyl)phthalate	0.000001	1	350	25550	1.57E-06	1.40E-02	2.41E-09
					Total Chemical Cancer Risk		2.41E-09

HYPOTHETICAL SITE RESIDENT
AREA OF CONCERN NO. 2

RME - Time-weighted average soil ingestion

Radionuclides

$$IF = [(IR\text{-}C \times ED\text{-}C \times FC\text{-}C) + (IR\text{-}A \times ED\text{-}A \times FC\text{-}A)] \times EF \times ME \times CF$$
$$CR = C \times IF \times SF$$

	C	IR-C	ED-C	FC-C	IR-A	ED-A	FC-A	ME	CF
		Child			Adult				
Radionuclide	Soil Concentration (pCi/g)	Ingestion Rate (mg/day)	Exposure Duration (years)	Fraction Contaminated	Ingestion Rate (mg/day)	Exposure Duration (years)	Fraction Contaminated	Matrix Effect	Conversion Factor (g/mg)
Americium-241	1.50E+00	200	6	1	100	24	1	1	0.001
Plutonium-239/240	1.03E+01	200	6	1	100	24	1	1	0.001

	EF	IF	SF	CR
Radionuclide	Exposure Frequency (days/yr)	Intake Factor (g)	Slope Factor (Risk/pCi)	Cancer Risk
Americium-241	350	1.26E+03	2.40E-10	4.54E-07
Plutonium-239/240	350	1.26E+03	2.30E-10	2.98E-06
		Total Radionuclide Cancer Risk		3.44E-06

Total Cancer Risk 3.44E-06

HYPOTHETICAL ONSITE RESIDENT
AREA OF CONCERN NO. 2

CT Inhalation of Particulates - Radionuclides

IF = IR x ET x EF x ED x DF
CR = IF x C x SF

Radionuclides	C Air Concentration (pCi/m^3)	IR Inhalation Rate (m^3/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	DF Deposition Factor	IF Intake Factor (m^3)	SF Slope Factor (Risk/pCi)	CR Cancer Risk
Americium-241	2.13E-05	0.63	15	234	9	1	1.99E+04	3.20E-08	1.36E-08
Plutonium-239/240	1.53E-04	0.63	15	234	9	1	1.99E+04	3.80E-08	1.16E-07
								Total Radionuclide Cancer Risk	1.29E-07

Total Cancer Risk 1.29E-07

RME Inhalation of Particulates - Radionuclides

IF = IR x ET x EF x ED x DF
CR = IF x C x SF

Radionuclides	C Air Concentration (pCi/m^3)	IR Inhalation Rate (m^3/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	DF Deposition Factor	IF Intake Factor (m^3)	SF Slope Factor (Risk/pCi)	CR Cancer Risk
Americium-241	2.13E-05	0.83	24	350	30	1	2.09E+05	3.20E-08	1.43E-07
Plutonium-239/240	1.53E-04	0.83	24	350	30	1	2.09E+05	3.80E-08	1.22E-06
								Total Radionuclide Cancer Risk	1.36E-06

Total Cancer Risk 1.36E-06

HYPOTHETICAL SITE RESIDENT
AREA OF CONCERN NO. 2

CT- Dermal contact with surface soil

Noncarcinogens

IF = (SA x FC x EF x ED x AF x AB x CF)/(BW x AT)
HQ = (C x IF)/RfD

	C	SA	FC	EF	ED	AF	AB	CF	BW	AT	IF	RfD	HQ
Chemical	Soil Concentration (mg/kg)	Skin Surface Area (cm^2)	Fraction Contaminated	Exposure Frequency (days/yr)	Exposure Duration (years)	Soil Adherence (mg/cm^2)	Skin Absorption	Conversion Factor (kg/mg)	Body Weight (kg)	Averaging Time (days)	Intake Factor (kg/kg-day)	Reference Dose (mg/kg-day)	Hazard Quotient
Bis(2-ethylhexyl)phthalate	1.10E-01	2000	0.64	234	9	0.2	0.01	0.000001	70	3285	2.34E-08	2.00E-02	1.29E-07
											Total Hazard Index		1.29E-07

Nonradionuclide Carcinogens

IF = (SA x FC x EF x ED x AF x AB x CF)/(BW x AT)
CR = C x IF x SF

	C	SA	FC	EF	ED	AF	AB	CF	BW	AT	IF	SF	CR
Chemical	Soil Concentration (mg/kg)	Skin Surface Area (cm^2)	Fraction Contaminated	Exposure Frequency (days/yr)	Exposure Duration (years)	Soil Adherence (mg/cm^2)	Skin Absorption	Conversion Factor (kg/mg)	Body Weight (kg)	Averaging Time (days)	Intake Factor (kg/kg-day)	Slope Factor 1/(mg/kg-day)	Cancer Risk
Bis(2-ethylhexyl)phthalate	1.10E-01	2000	0.64	234	9	0.2	0.01	0.000001	70	25550	3.01E-09	1.40E-02	4.64E-12
											Total Cancer Risk		4.64E-12

HYPOTHETICAL ONSITE RESIDENT
AREA OF CONCERN NO. 2

RME- Dermal contact with surface soil

Noncarcinogens

IF = (SA x FC x EF x ED x AF x AB x CF)/(BW x AT)

HQ = (C x IF)/RfD

	C	SA	FC	EF	ED	AF	AB	CF	BW	AT	IF	RfD	HQ
Chemical	Soil Concentration (mg/kg)	Skin Surface Area (cm^2)	Fraction Contaminated	Exposure Frequency (days/yr)	Exposure Duration (years)	Soil Adherence (mg/cm^2)	Skin Absorption	Conversion Factor (kg/mg)	Body Weight (kg)	Averaging Time (days)	Intake Factor (kg/kg-day)	Reference Dose (mg/kg-day)	Hazard Quotient
Bis(2-ethylhexyl)phthalate	1.10E-01	5300	1	350	30	1	0.01	0.000001	70	10950	7.26E-07	2.00E-02	3.99E-06
											Total Hazard Index		3.99E-06

RME- Dermal contact with surface soil

Nonradionuclide Carcinogens

IF = (SA x FC x EF x ED x AF x AB x CF)/(BW x AT)

CR = C x IF x SF

	C	SA	FC	EF	ED	AF	AB	CF	BW	AT	IF	SF	CR
Chemical	Soil Concentration (mg/kg)	Skin Surface Area (cm^2)	Fraction Contaminated	Exposure Frequency (days/yr)	Exposure Duration (years)	Soil Adherence (mg/cm^2)	Skin Absorption	Conversion Factor (kg/mg)	Body Weight (kg)	Averaging Time (days)	Intake Factor (kg/kg-day)	Slope Factor 1/(mg/kg-day)	Cancer Risk
Bis(2-ethylhexyl)phthalate	1.10E-01	5300	1	350	30	1	0.01	0.000001	70	25550	3.11E-07	1.40E-02	4.79E-10
											Total Cancer Risk		4.79E-10

HYPOTHETICAL SITE RESIDENT
AREA OF CONCERN NO. 2

CT - Ingestion of vegetables with soil deposition

Noncarcinogens

$$IF = (IR \times FH \times FE \times WO \times ME \times EF \times ED \times CF)/(BW \times AT)$$
$$HQ = (C \times IF)/RfD$$

	C	IR	FH	FE	WO	ME	EF	ED	CF	BW	AT	IF	RfD	HQ
Chemical	Concentration on Produce (mg/kg)	Ingestion Rate (mg/day)	Fraction Homegrown	Fraction Exposed	Washoff Factor	Matrix Effect	Exposure Frequency (days/yr)	Exposure Duration (years)	Conversion Factor (kg/mg)	Body Weight (kg)	Averaging Time (days)	Intake Factor (kg/kg-day)	Reference Dose (mg/kg-day)	Hazard Quotient
Bis(2-ethylhexyl)phthalate	3.49E-06	200000	0.25	0.3	0.5	1	150	9	0.000001	70	3285	4.40E-05	2.00E-02	7.68E-09
Chromium	4.15E-04	200000	0.25	0.3	0.5	1	150	9	0.000001	70	3285	4.40E-05	1.00E+00	1.83E-08
													Total Hazard Index	2.60E-08

HYPOTHETICAL ONSITE RESIDENT
AREA OF CONCERN NO. 2

CT - Ingestion of vegetables with soil deposition

Nonradionuclide Carcinogen

IF = (IR x FH x FE x WO x ME x EF x ED x CF)/(BW x AT)
CR = C x IF x SF

	C	IR	FH	FE	WO	ME	EF	ED	CF	BW	AT	IF	SF	CR
Chemical	Concentration on Produce (mg/kg)	Ingestion Rate (mg/day)	Fraction Homegrown	Fraction Exposed	Washoff Factor	Matrix Effect	Exposure Frequency (days/yr)	Exposure Duration (years)	Conversion Factor (kg/mg)	Body Weight (kg)	Averaging Time (days)	Intake Factor (kg/kg-day)	Slope Factor 1/(mg/kg-day)	Cancer Risk
Bis(2-ethylhexyl)phthalate	3.49E-06	200000	0.25	0.3	0.5	1	150	9	0.000001	70	25550	5.66E-06	1.40E-02	2.77E-13
													Total Chemical Cancer Risk	2.77E-13

Radionuclides

IF = IR x FC x WO x ME x EF x ED x CF
CR = C x IF x SF

	C	IR	FH	FE	WO	ME	EF	ED	CF	IF	SF	CR
Radionuclide	Concentration on Produce (pCi/g)	Ingestion Rate (mg/day)	Fraction Homegrown	Fraction Exposed	Washoff Factor	Matrix Effect	Exposure Frequency (days/yr)	Exposure Duration (years)	Conversion Factor (g/mg)	Intake Factor (g)	Slope Factor (Risk/pCi)	Cancer Risk
Americium-241	4.57E-05	200000	0.25	0.3	0.5	1	150	9	0.001	1.01E+04	2.40E-10	1.11E-10
Plutonium-239/240	3.28E-04	200000	0.25	0.3	0.5	1	150	9	0.001	1.01E+04	2.30E-10	7.64E-10
											Total Radionuclide Cancer Risk	8.75E-10
											Total Cancer Risk	8.75E-10

HYPOTHETICAL SITE RESIDENT
AREA OF CONCERN NO. 2

RME - Ingestion of vegetables with soil deposition

Nonradionuclide Carcinogen

IF = (IR x FC x WO x ME x EF x ED x CF)/(BW x AT)
CR = C x IF x SF

	C	IR	FH	FE	WO	ME	EF	ED	CF	BW	AT	IF	SF	CR
Chemical	Concentration on Produce (mg/kg)	Ingestion Rate (mg/day)	Fraction Homegrown	Fraction Exposed	Washoff Factor	Matrix Effect	Exposure Frequency (days/yr)	Exposure Duration (years)	Conversion Factor (kg/mg)	Body Weight (kg)	Averaging Time (days)	Intake Factor (kg/kg-day)	Slope Factor 1/(mg/kg-day)	Cancer Risk
Bis(2-ethylhexyl)phthalate	3.49E-06	200000	0.4	0.3	1	1	350	30	0.000001	70	25550	1.41E-04	1.40E-02	6.88E-12
													Total Chemical Cancer Risk	6.88E-12

Radionuclides

IF = IR x FC x WO x ME x EF x ED x CF
CR = C x IF x SF

	C	IR	FH	FE	WO	ME	EF	ED	CF	IF	SF	CR
Radionuclide	Concentration on Produce (pCi/g)	Ingestion Rate (mg/day)	Fraction Homegrown	Fraction Exposed	Washoff Factor	Matrix Effect	Exposure Frequency (days/yr)	Exposure Duration (years)	Conversion Factor (g/mg)	Intake Factor (g)	Slope Factor (Risk/pCi)	Cancer Risk
Americium-241	4.57E-05	200000	0.4	0.3	1	1	350	30	0.001	2.52E+05	2.40E-10	2.76E-09
Plutonium-239/240	3.28E-04	200000	0.4	0.3	1	1	350	30	0.001	2.52E+05	2.30E-10	1.90E-08
											Total Radionuclide Cancer Risk	2.18E-08

Total Cancer Risk 2.18E-08

HYPOTHETICAL ONSITE RESIDENT
AREA OF CONCERN NO. 2

CT - Ingestion of fruit with soil deposition

Noncarcinogens

$$IF = (IR \times FH \times FE \times WO \times ME \times EF \times ED \times CF)/(BW \times AT)$$

$$HQ = (C \times IF)/RfD$$

	C	IR	FH	FE	WO	ME	EF	ED	CF	BW	AT	IF	RfD	HQ
Chemical	Concentration on Produce (mg/kg)	Ingestion Rate (mg/day)	Fraction Homegrown	Fraction Exposed	Washoff Factor	Matrix Effect	Exposure Frequency (days/yr)	Exposure Duration (years)	Conversion Factor (kg/mg)	Body Weight (kg)	Averaging Time (days)	Intake Factor (kg/kg-day)	Reference Dose (mg/kg-day)	Hazard Quotient
Bis(2-ethylhexyl)phthalate	3.49E-06	140000	0.2	0.7	0.5	1	150	9	0.000001	70	3285	5.75E-05	2.00E-02	1.00E-08
Chromium	4.15E-04	140000	0.2	0.7	0.5	1	150	9	0.000001	70	3285	5.75E-05	1.00E+00	2.39E-08
													Total Hazard Index	3.39E-08

HYPOTHETICAL SITE RESIDENT
AREA OF CONCERN NO. 2

CT - Ingestion of fruit with soil deposition

Nonradionuclide Carcinogen

IF = (IR x FH x FE x WO x ME x EF x ED x CF)/(BW x AT)
CR = C x IF x SF

Chemical	C Concentration on Produce (mg/kg)	IR Ingestion Rate (mg/day)	FH Fraction Homegrown	FE Fraction Exposed	WO Washoff Factor	ME Matrix Effect	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	CF Conversion Factor (kg/mg)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (kg/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
Bis(2-ethylhexyl)phthalate	3.49E-06	140000	0.2	0.7	0.5	1	150	9	0.000001	70	25550	7.40E-06	1.40E-02	3.61E-13
													Total Chemical Cancer Risk	3.61E-13

Radionuclides

IF = IR x FC x WO x ME x EF x ED x CF
CR = C x IF x SF

Radionuclide	C Concentration on Produce (pCi/g)	IR Ingestion Rate (mg/day)	FH Fraction Homegrown	FE Fraction Exposed	WO Washoff Factor	ME Matrix Effect	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	CF Conversion Factor (g/mg)	IF Intake Factor (g)	SF Slope Factor (Risk/pCi)	CR Cancer Risk
Americium-241	4.57E-05	140000	0.2	0.7	0.5	1	150	9	0.001	1.32E+04	2.40E-10	1.45E-10
Plutonium-239/240	3.28E-04	140000	0.2	0.7	0.5	1	150	9	0.001	1.32E+04	2.30E-10	9.98E-10
											Total Radionuclide Cancer Risk	1.14E-09

Total Cancer Risk 1.14E-09

HYPOTHETICAL ONSITE RESIDENT
AREA OF CONCERN NO. 2

RME - Ingestion of fruit with soil deposition

Noncarcinogens

IF = (IR x FC x WO x ME x EF x ED x CF)/(BW x AT)
HQ = (C x IF)/RfD

Chemical	C Concentration on Produce (mg/kg)	IR Ingestion Rate (mg/day)	FH Fraction Homegrown	FE Fraction Exposed	WO Washoff Factor	ME Matrix Effect	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	CF Conversion Factor (kg/mg)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (kg/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
Bis(2-ethylhexyl)phthalate	3.49E-06	140000	0.3	0.7	1	1	350	30	0.000001	70	10950	4.03E-04	2.00E-02	7.03E-08
Chromium	4.15E-04	140000	0.3	0.7	1	1	350	30	0.000001	70	10950	4.03E-04	1.00E+00	1.67E-07
													Total Hazard Index	2.37E-07

HYPOTHETICAL SITE RESIDENT
AREA OF CONCERN NO. 2

RME - Ingestion of fruit with soil deposition

Nonradionuclide Carcinogen

IF = (IR x FC x WO x ME x EF x ED x CF)/(BW x AT)
CR = C x IF x SF

	C	IR	FH	FE	WO	ME	EF	ED	CF	BW	AT	IF	SF	CR
Chemical	Concentration on Produce (mg/kg)	Ingestion Rate (mg/day)	Fraction Homegrown	Fraction Exposed	Washoff Factor	Matrix Effect	Exposure Frequency (days/yr)	Exposure Duration (years)	Conversion Factor (kg/mg)	Body Weight (kg)	Averaging Time (days)	Intake Factor (kg/kg-day)	Slope Factor 1/(mg/kg-day)	Cancer Risk
Bis(2-ethylhexyl)phthalate	3.49E-06	140000	0.3	0.7	1	1	350	30	0.000001	70	25550	1.73E-04	1.40E-02	8.43E-12
												Total Chemical Cancer Risk		8.43E-12

Radionuclides

IF = IR x FC x WO x ME x EF x ED x CF
CR = C x IF x SF

	C	IR	FH	FE	WO	ME	EF	ED	CF	IF	SF	CR
Radionuclide	Concentration on Produce (pCi/g)	Ingestion Rate (mg/day)	Fraction Homegrown	Fraction Exposed	Washoff Factor	Matrix Effect	Exposure Frequency (days/yr)	Exposure Duration (years)	Conversion Factor (g/mg)	Intake Factor (g)	Slope Factor (Risk/pCi)	Cancer Risk
Americium-241	4.57E-05	140000	0.3	0.7	1	1	350	30	0.001	3.09E+05	2.40E-10	3.39E-09
Plutonium-239/240	3.28E-04	140000	0.3	0.7	1	1	350	30	0.001	3.09E+05	2.30E-10	2.33E-08
											Total Radionuclide Cancer Risk	2.67E-08

Total Cancer Risk 2.67E-08

HYPOTHETICAL ONSITE RESIDENT
AREA OF CONCERN NO. 2

CT - Ingestion of leafy produces with root uptake

Noncarcinogens

$$IF = (IR \times FP \times FH \times FC \times ME \times EF \times ED \times CF)/(BW \times AT)$$
$$HQ = (C \times IF)/RfD$$

	C	IR	FP	FH	ME	EF	ED	CF	BW	AT	IF	RfD	HQ
Chemical	Concentration in Produce mg/kg	Ingestion Rate (mg/day)	Fraction of Total Produce (1)	Fraction Homegrown	Matrix Effect	Exposure Frequency (days/yr)	Exposure Duration (years)	Conversion Factor (kg/mg)	Body Weight (kg)	Averaging Time (days)	Intake Factor (kg/kg-day)	Reference Dose (mg/kg-day)	Hazard Quotient
Bis(2-ethylhexyl)phthalate	7.06E-03	340000	0.06	0.25	1	150	9	0.000001	70	3285	2.99E-05	2.00E-02	1.06E-05
Chromium	4.21E-02	340000	0.06	0.25	1	150	9	0.000001	70	3285	2.99E-05	1.00E+00	1.26E-06
												Total Hazard Index	1.18E-05

HYPOTHETICAL ONSITE RESIDENT
AREA OF CONCERN NO. 2

CT - Ingestion of leafy produces with root uptake

Nonradionuclide Carcinogens

IF = (IR x FC x FP x FH x ME x EF x ED x CF)/(BW x AT)
CR = C x IF x SF

Chemical	C Concentration in Produce mg/kg	IR Ingestion Rate (mg/day)	FP Fraction of Total Produce (1)	FH Fraction Homegrown	ME Matrix Effect	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	CF Conversion Factor (kg/mg)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (kg/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
Bis(2-ethylhexyl)phthalate	7.06E-03	340000	0.06	0.25	1	150	9	0.000001	70	25550	3.85E-06	1.40E-02	3.80E-10
										Total Chemical Cancer Risk			3.80E-10

Radionuclides

IF = IR x FP x FH x FC x ME x EF x ED x CF
CR = C x IF x SF

Radionuclide	C Concentration in Produce (pCi/g)	IR Ingestion Rate (mg/day)	FP Fraction of Total Produce (1)	FH Fraction Homegrown	ME Matrix Effect	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	CF Conversion Factor (g/mg)	IF Intake Factor (g)	SF Slope Factor (Risk/pCi)	CR Cancer Risk
Americium-241	3.53E-03	340000	0.06	0.25	1	150	9	0.001	6.89E+03	2.40E-10	5.83E-09
Plutonium-239/240	1.98E-03	340000	0.06	0.25	1	150	9	0.001	6.89E+03	2.30E-10	3.14E-09
								Total Radionuclide Cancer Risk			8.97E-09
								Total Cancer Risk			9.35E-09

HYPOTHETICAL ONSITE RESIDENT
AREA OF CONCERN NO. 2

RME - Ingestion of leafy produces with root uptake

Noncarcinogens

$$IF = (IR \times FC \times FP \times FH \times ME \times EF \times ED \times CF)/(BW \times AT)$$

$$HQ = (C \times IF)/RfD$$

	C	IR	FP	FH	ME	EF	ED	CF	BW	AT	IF	RfD	HQ
Chemical	Concentration in Produce mg/kg	Ingestion Rate (mg/day)	Fraction of Total Produce (1)	Fraction Homegrown	Matrix Effect	Exposure Frequency (days/yr)	Exposure Duration (years)	Conversion Factor (kg/mg)	Body Weight (kg)	Averaging Time (days)	Intake Factor (kg/kg-day)	Reference Dose (mg/kg-day)	Hazard Quotient
Bis(2-ethylhexyl)phthalate	7.06E-03	340000	0.06	0.4	1	350	30	0.000001	70	10950	1.12E-04	2.00E-02	3.95E-05
Chromium	4.21E-02	340000	0.06	0.4	1	350	30	0.000001	70	10950	1.12E-04	1.00E+00	4.71E-06
												Total Hazard Index	4.42E-05

HYPOTHETICAL ONSITE RESIDENT
AREA OF CONCERN NO. 2

RME - Ingestion of leafy produces with root uptake

Nonradionuclide Carcinogens

IF = (IR x FPx FH x ME x EF x ED x CF)/(BW x AT)
CR = C x IF x SF

Chemical	C Concentration in Produce mg/kg	IR Ingestion Rate (mg/day)	FP Fraction of Total Produce (1)	FH Fraction Homegrown	ME Matrix Effect	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	CF Conversion Factor (kg/mg)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (kg/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
Bis(2-ethylhexyl)phthalate	7.06E-03	340000	0.06	0.4	1	350	30	0.000001	70	25550	4.79E-05	1.40E-02	4.74E-09
											Total Chemical Cancer Risk		4.74E-09

Radionuclides

IF = IR x FC x FP xFH x ME x EF x ED x CF
CR = C x IF x SF

Radionuclide	C Concentration in Produce (pCi/g)	IR Ingestion Rate (mg/day)	FP Fraction of Total Produce (1)	FH Fraction Homegrown	ME Matrix Effect	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	CF Conversion Factor (g/mg)	IF Intake Factor (g)	SF Slope Factor (Risk/pCi)	CR Cancer Risk
Americium-241	3.53E-03	340000	0.06	0.4	1	350	30	0.001	8.57E+04	2.40E-10	7.26E-08
Plutonium-239/240	1.98E-03	340000	0.06	0.4	1	350	30	0.001	8.57E+04	2.30E-10	3.90E-08
								Total Radionuclide Cancer Risk			1.12E-07
								Total Cancer Risk			1.16E-07

(1) Fraction of ingested produce that is leafy; transfer coefficient (Bv) is used to estimate root uptake (Baes et al. 1984)

HYPOTHETICAL ONSITE RESIDENT
AREA OF CONCERN NO. 2

CT - Ingestion of fruit and nonleafy produces with root uptake

Noncarcinogens

$$IF = (IR \times FP \times FH \times FC \times ME \times EF \times ED \times CF)/(BW \times AT)$$
$$HQ = (C \times IF)/RfD$$

	C	IR	FP	FH	ME	EF	ED	CF	BW	AT	IF	RfD	HQ
Chemical	Concentration in Produce mg/kg	Ingestion Rate (mg/day)	Fraction of Total Produce (1)	Fraction Homegrown	Matrix Effect	Exposure Frequency (days/yr)	Exposure Duration (years)	Conversion Factor (kg/mg)	Body Weight (kg)	Averaging Time (days)	Intake Factor (kg/kg-day)	Reference Dose (mg/kg-day)	Hazard Quotient
Bis(2-ethylhexyl)phthalate	7.06E-03	340000	0.94	0.2	1	150	9	0.000001	70	3285	3.75E-04	2.00E-02	1.32E-04
Chromium	2.52E-02	340000	0.94	0.2	1	150	9	0.000001	70	3285	3.75E-04	1.00E+00	9.46E-06
												Total Hazard Index	1.42E-04

HYPOTHETICAL SITE RESIDENT
AREA OF CONCERN NO. 2

CT - Ingestion of fruit and nonleafy produces with root uptake

Nonradionuclide Carcinogens

IF = (IR x FC x FP x FH x ME x EF x ED x CF)/(BW x AT)
CR = C x IF x SF

Chemical	C Concentration in Produce mg/kg	IR Ingestion Rate (mg/day)	FP Fraction of Total Produce (1)	FH Fraction Homegrown	ME Matrix Effect	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	CF Conversion Factor (kg/mg)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (kg/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
Bis(2-ethylhexyl)phthalate	7.06E-03	340000	0.94	0.2	1	150	9	0.000001	70	25550	4.82E-05	1.40E-02	4.77E-09
												Total Chemical Cancer Risk	4.77E-09

Radionuclides

IF = IR x FP x FH x FC x ME x EF x ED x CF
CR = C x IF x SF

Radionuclide	C Concentration in Produce (pCi/g)	IR Ingestion Rate (mg/day)	FP Fraction of Total Produce (1)	FH Fraction Homegrown	ME Matrix Effect	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	CF Conversion Factor (g/mg)	IF Intake Factor (g)	SF Slope Factor (Risk/pCi)	CR Cancer Risk
Americium-241	1.61E-04	340000	0.94	0.2	1	150	9	0.001	8.63E+04	2.40E-10	3.33E-09
Plutonium-239/240	1.98E-04	340000	0.94	0.2	1	150	9	0.001	8.63E+04	2.30E-10	3.93E-09
										Total Radionuclide Cancer Risk	7.26E-09
										Total Cancer Risk	1.20E-08

HYPOTHETICAL ONSITE RESIDENT
AREA OF CONCERN NO. 2

RME - Ingestion of fruit and nonleafy produces with root uptake

Noncarcinogens

IF = (IR x FC x FP x FH x ME x EF x ED x CF)/(BW x AT)
HQ = (C x IF)/RfD

Chemical	C Concentration in Produce mg/kg	IR Ingestion Rate (mg/day)	FP Fraction of Total Produce (1)	FH Fraction Homegrown	ME Matrix Effect	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	CF Conversion Factor (kg/mg)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (kg/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
Bis(2-ethylhexyl)phthalate	7.06E-03	340000	0.94	0.3	1	350	30	0.000001	70	10950	1.31E-03	2.00E-02	4.64E-04
Chromium	2.52E-02	340000	0.94	0.3	1	350	30	0.000001	70	10950	1.31E-03	1.00E+00	3.31E-05
								Total Hazard Index					4.97E-04

HYPOTHETICAL INSITE RESIDENT
AREA OF CONCERN NO. 2

RME - Ingestion of fruit and nonleafy produces with root uptake

Nonradionuclide Carcinogens

IF = (IR x FPx FH x ME x EF x ED x CF)/(BW x AT)
CR = C x IF x SF

Chemical	C Concentration in Produce mg/kg	IR Ingestion Rate (mg/day)	FP Fraction of Total Produce (1)	FH Fraction Homegrown	ME Matrix Effect	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	CF Conversion Factor (kg/mg)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (kg/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
Bis(2-ethylhexyl)phthalate	7.06E-03	340000	0.94	0.3	1	350	30	0.000001	70	25550	5.63E-04	1.40E-02	5.56E-08
										Total Chemical Cancer Risk			5.56E-08

Radionuclides

IF = IR x FC x FP xFH x ME x EF x ED x CF
CR = C x IF x SF

Radionuclide	C Concentration in Produce (pCi/g)	IR Ingestion Rate (mg/day)	FP Fraction of Total Produce (1)	FH Fraction Homegrown	ME Matrix Effect	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	CF Conversion Factor (g/mg)	IF Intake Factor (g)	SF Slope Factor (Risk/pCi)	CR Cancer Risk
Americium-241	1.61E-04	340000	0.94	0.3	1	350	30	0.001	1.01E+06	2.40E-10	3.89E-08
Plutonium-239/240	1.98E-04	340000	0.94	0.3	1	350	30	0.001	1.01E+06	2.30E-10	4.58E-08
										Total Radionuclide Cancer Risk	8.47E-08

Total Cancer Risk 1.40E-07

(1) Fraction of ingested produce that is fruit or nonleafy; transfer coefficient (Br) is used to estimate root uptake (Baes et al. 1984)

HYPOTHETICAL ONSITE RESIDENT
AREA OF CONCERN NO. 2

CT - Groundwater Ingestion

Noncarcinogen

$$IF = (IR \times FC \times EF \times ED)/(BW \times AT)$$
$$HQ = (C \times IF)/RfD$$

Chemical	C Groundwater Concentration (mg/l)	IR Ingestion Rate (l/day)	FC Fraction Ingested from Source	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
Chloroform	4.00E-04	1.4	0.3	234	9	70	3285	3.85E-03	1.00E-02	1.54E-04
Methylene Chloride	3.30E-03	1.4	0.3	234	9	70	3285	3.85E-03	6.00E-02	2.12E-04
Tetrachloroethene	6.20E-04	1.4	0.3	234	9	70	3285	3.85E-03	1.00E-02	2.38E-04
									Total Hazard Index	6.04E-04

HYPOTHETICAL SITE RESIDENT
AREA OF CONCERN NO. 2

CT - Groundwater Ingestion

Nonradionuclide Carcinogens

IF = (IR x FC x EF x ED)/(BW x AT)
CR = C x IF x SF

Chemical	C Groundwater Concentration (mg/l)	IR Ingestion Rate (l/day)	FC Fraction Ingested from Source	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
Chloroform	4.00E-04	1.4	0.3	234	9	70	25550	4.95E-04	6.10E-03	1.21E-09
Methylene Chloride	3.30E-03	1.4	0.3	234	9	70	25550	4.95E-04	7.50E-03	1.22E-08
Tetrachloroethene	6.20E-04	1.4	0.3	234	9	70	25550	4.95E-04	5.20E-02	1.59E-08
Trichloroethene	7.00E-04	1.4	0.3	234	9	70	25550	4.95E-04	1.10E-02	3.81E-09
									Total Chemical Cancer Risk	3.32E-08

Radionuclides

IF = IR x FC x EF x ED
CR = C x IF x SF

Chemical	C Groundwater Concentration (pCi/l)	IR Ingestion Rate (l/day)	FC Fraction Ingested from Source	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	IF Intake Factor (l/kg-day)	SF Slope Factor Risk/pCi	CR Cancer Risk
Americium-241	2.20E-01	1.4	0.3	234	9	8.85E+02	2.40E-10	4.67E-08
Plutonium-239/240	1.13E+00	1.4	0.3	234	9	8.85E+02	2.30E-10	2.30E-07
							Total Radionuclide Cancer Risk	2.77E-07
							Total Cancer Risk	3.10E-07

CURRENT OFF-SITE RESIDENT
INDIANA SOUTH
AREA OF CONCERN NO. 2

CT Inhalation of Particulates - Radionuclides

IF = IR x ET x EF x ED x DF
CR = IF x C x SF

Radionuclides	C Air Concentration[1] (pCi/m^3)	IR Inhalation Rate (m^3/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	DF Deposition Factor	IF Intake Factor (m^3)	SF Slope Factor (Risk/pCi)	CR Cancer Risk
Americium-241	1.44E-10	0.63	15	234	9	1	1.99E+04	3.20E-08	9.17E-14
Plutonium-239/240	1.02E-09	0.63	15	234	9	1	1.99E+04	3.80E-08	7.71E-13
								Total Radionuclide Cancer Risk	8.63E-13
								Total Cancer Risk	8.63E-13

RME Inhalation of Particulates - Radionuclides

IF = IR x ET x EF x ED x DF
CR = IF x C x SF

Radionuclides	C Air Concentration[1] (pCi/m^3)	IR Inhalation Rate (m^3/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	DF Deposition Factor	IF Intake Factor (m^3)	SF Slope Factor (Risk/pCi)	CR Cancer Risk
Americium-241	1.44E-10	0.83	24	350	30	1	2.09E+05	3.20E-08	9.64E-13
Plutonium-239/240	1.02E-09	0.83	24	350	30	1	2.09E+05	3.80E-08	8.11E-12
								Total Radionuclide Cancer Risk	9.07E-12
								Total Cancer Risk	9.07E-12

SUMMARY OF RISK
CURRENT OFFSITE RESIDENT
SOUTHEAST
AREA OF CONCERN NO. 2

	Central Tendency		Reasonable Maximum	
Pathway	Hazard Index	Cancer Risk	Hazard Index	Cancer Risk
Ingestion of surface soil by an adult	2.76E-12	-	1.29E-11	-
Ingestion of surface soil by a child	3.30E-11	-	1.20E-10	-
Carcinogenic effects of soil ingestion	-	1.24E-13	-	1.73E-12
Inhalation of particulates from surface soil	0.00E+00	5.72E-11	0.00E+00	6.01E-10
Dermal contact with surface soil*	6.53E-14	2.35E-18	2.02E-12	2.43E-16
Ingestion of vegetables with soil deposition	3.41E-11	1.14E-12	2.55E-10	2.84E-11
Ingestion of fruit with soil deposition	4.46E-11	1.49E-12	3.12E-10	3.48E-11
Total	1.15E-10	5.99E-11	7.03E-10	6.66E-10

* Dermal contact with metals (except mercury) and radionuclides is considered insignificant.

HYPOTHETICAL ONSITE RESIDENT
AREA OF CONCERN NO. 2

RME - Groundwater Ingestion

Noncarcinogen

IF = (IR x FC x EF x ED)/(BW x AT)
HQ = (C x IF)/RfD

	C	IR	FC	EF	ED	BW	AT	IF	RfD	HQ
Chemical	Groundwater Concentration (mg/l)	Ingestion Rate (l/day)	Fraction Ingested from Source	Exposure Frequency (days/yr)	Exposure Duration (years)	Body Weight (kg)	Averaging Time (days)	Intake Factor (l/kg-day)	Reference Dose (mg/kg-day)	Hazard Quotient
Chloroform	4.00E-04	2	1	350	30	70	10950	2.74E-02	1.00E-02	1.10E-03
Methylene Chloride	3.30E-03	2	1	350	30	70	10950	2.74E-02	6.00E-02	1.51E-03
Tetrachloroethene	6.20E-04	2	1	350	30	70	10950	2.74E-02	1.00E-02	1.70E-03
									Total Hazard Index	4.30E-03

HYPOTHETICAL SITE RESIDENT
AREA OF CONCERN NO. 2

RME - Groundwater Ingestion

Nonradionuclide Carcinogens

IF = (IR x FC x EF x ED)/(BW x AT)
CR = C x IF x SF

Chemical	C Groundwater Concentration (mg/l)	IR Ingestion Rate (l/day)	FC Fraction Ingested from Source	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
Chloroform	4.00E-04	2	1	350	30	70	25550	1.17E-02	6.10E-03	2.86E-08
Methylene Chloride	3.30E-03	2	1	350	30	70	25550	1.17E-02	7.50E-03	2.91E-07
Tetrachloroethene	6.20E-04	2	1	350	30	70	25550	1.17E-02	5.20E-02	3.79E-07
Trichloroethene	7.00E-04	2	1	350	30	70	25550	1.17E-02	1.10E-02	9.04E-08
									Total Chemical Cancer Risk	7.88E-07

Radionuclides

IF = IR x FC x EF x ED
CR = C x IF x SF

Chemical	C Groundwater Concentration (pCi/l)	IR Ingestion Rate (l/day)	FC Fraction Ingested from Source	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	IF Intake Factor (l/kg-day)	SF Slope Factor Risk/pCi	CR Cancer Risk
Americium-241	2.20E-01	2	1	350	30	2.10E+04	2.40E-10	1.11E-06
Radium-226	1.13E+00	2	1	350	30	2.10E+04	2.30E-10	5.46E-06
							Total Radionuclide Cancer Risk	6.57E-06

Total Cancer Risk 7.35E-06

HYPOTHETICAL ONSITE RESIDENT
AREA OF CONCERN NO. 2

RME - Ingestion of vegetables with soil deposition

Noncarcinogens

IF = (IR x FC x WO x ME x EF x ED x CF)/(BW x AT)
HQ = (C x IF)/RfD

	C	IR	FH	FE	WO	ME	EF	ED	CF	BW	AT	IF	RfD	HQ
Chemical	Concentration on Produce (mg/kg)	Ingestion Rate (mg/day)	Fraction Homegrown	Fraction Exposed	Washoff Factor	Matrix Effect	Exposure Frequency (days/yr)	Exposure Duration (years)	Conversion Factor (kg/mg)	Body Weight (kg)	Averaging Time (days)	Intake Factor (kg/kg-day)	Reference Dose (mg/kg-day)	Hazard Quotient
Bis(2-ethylhexyl)phthalate	3.49E-06	200000	0.4	0.3	1	1	350	30	0.000001	70	10950	3.29E-04	2.00E-02	5.74E-08
Chromium	4.15E-04	200000	0.4	0.3	1	1	350	30	0.000001	70	10950	3.29E-04	1.00E+00	1.36E-07
													Total Hazard Index	1.94E-07

HYPOTHETICAL SITE RESIDENT
AREA OF CONCERN NO. 2

CT - Ingestion of surface water - Walnut Creek

Noncarcinogens

$$IF = (IR \times ET \times EF \times ED)/(BW \times AT)$$
$$HQ = (C \times IF)/RfD$$

	C	IR	ET	EF	ED.	BW	AT	IF	RfD	HQ
Chemical	Surface Water Concentration (mg/l)	Ingestion Rate (l/hr)	Exposure Time (hr/day)	Exposure Frequency (days/yr)	Exposure Duration (years)	Body Weight (kg)	Averaging Time (days)	Intake Factor (l/kg-day)	Reference Dose (mg/kg-day)	Hazard Quotient
1,1-Dichloroethene	5.00E-06	0.01	1	5	9	70	3285	1.96E-06	9.00E-03	1.09E-09
Carbon Tetrachloride	4.81E-04	0.01	1	5	9	70	3285	1.96E-06	7.00E-04	1.34E-06
Chloroform	9.30E-05	0.01	1	5	9	70	3285	1.96E-06	1.00E-02	1.82E-08
Methylene Chloride	3.80E-05	0.01	1	5	9	70	3285	1.96E-06	6.00E-02	1.24E-09
Tetrachloroethene	8.03E-04	0.01	1	5	9	70	3285	1.96E-06	1.00E-02	1.57E-07
									Total Hazard Index	1.52E-06

HYPOTHETICAL ONSITE RESIDENT
AREA OF CONCERN NO. 2

CT - Ingestion of surface water - Walnut Creek

Nonradionuclide carcinogens

IF = (IR x ET x EF x ED)/(BW x AT)
CR = C x IF x SF

Chemical	C Surface Water Concentration (mg/l)	IR Ingestion Rate (l/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
1,1-Dichloroethene	5.00E-06	0.01	1	5	9	70	25550	2.52E-07	6.00E-01	7.55E-13
Carbon Tetrachloride	4.81E-04	0.01	1	5	9	70	25550	2.52E-07	1.30E-01	1.57E-11
Chloroform	9.30E-05	0.01	1	5	9	70	25550	2.52E-07	6.10E-03	1.43E-13
Methylene Chloride	3.80E-05	0.01	1	5	9	70	25550	2.52E-07	7.50E-03	7.17E-14
Tetrachloroethene	8.03E-04	0.01	1	5	9	70	25550	2.52E-07	5.20E-02	1.05E-11
Trichloroethene	6.24E-03	0.01	1	5	9	70	25550	2.52E-07	1.10E-02	1.73E-11
								Total Chemical Cancer Risk		4.45E-11

Radionuclides

IF = IR x ET x EF x ED
CR = C x IF x SF

Radionuclide	C Surface Water Concentration (pCi/l)	IR Ingestion Rate (l/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	IF Intake Factor (l)	SF Slope Factor (Risk/pCi)	CR Cancer Risk
Americium-241	5.00E-03	0.01	1	5	9	4.50E-01	2.40E-10	5.40E-13
Plutonium-239/240	2.60E-02	0.01	1	5	9	4.50E-01	2.30E-10	2.69E-12
						Total Radionuclide Cancer Risk		3.23E-12

Total Cancer Risk 4.77E-11

HYPOTHETICAL SITE RESIDENT
AREA OF CONCERN NO. 2

RME - Ingestion of surface water - Walnut Creek

Noncarcinogens

$$IF = (IR \times ET \times EF \times ED)/(BW \times AT)$$
$$HQ = (C \times IF)/RfD$$

Chemical	C Surface Water Concentration (mg/l)	IR Ingestion Rate (l/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
1,1-Dichloroethene	5.00E-06	0.05	2.6	7	30	70	10950	3.56E-05	9.00E-03	1.98E-08
Carbon Tetrachloride	4.81E-04	0.05	2.6	7	30	70	10950	3.56E-05	7.00E-04	2.45E-05
Chloroform	9.30E-05	0.05	2.6	7	30	70	10950	3.56E-05	1.00E-02	3.31E-07
Methylene Chloride	3.80E-05	0.05	2.6	7	30	70	10950	3.56E-05	6.00E-02	2.26E-08
Tetrachloroethene	8.03E-04	0.05	2.6	7	30	70	10950	3.56E-05	1.00E-02	2.86E-06
									Total Hazard Index	2.77E-05

HYPOTHETICAL ONSITE RESIDENT
AREA OF CONCERN NO. 2

RME - Ingestion of surface water - Walnut Creek

Nonradionuclide carcinogens

$$IF = (IR \times ET \times EF \times ED)/(BW \times AT)$$
$$CR = C \times IF \times SF$$

Chemical	C Surface Water Concentration (mg/l)	IR Ingestion Rate (l/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
1,1-Dichloroethene	5.00E-06	0.05	2.6	7	30	70	25550	1.53E-05	6.00E-01	4.58E-11
Carbon Tetrachloride	4.81E-04	0.05	2.6	7	30	70	25550	1.53E-05	1.30E-01	9.54E-10
Chloroform	9.30E-05	0.05	2.6	7	30	70	25550	1.53E-05	6.10E-03	8.66E-12
Methylene Chloride	3.80E-05	0.05	2.6	7	30	70	25550	1.53E-05	7.50E-03	4.35E-12
Tetrachloroethene	8.03E-04	0.05	2.6	7	30	70	25550	1.53E-05	5.20E-02	6.37E-10
Trichloroethene	6.24E-03	0.05	2.6	7	30	70	25550	1.53E-05	1.10E-02	1.05E-09
								Total Chemical Cancer Risk		2.70E-09

Radionuclides

$$IF = IR \times ET \times EF \times ED$$
$$CR = C \times IF \times SF$$

Radionuclide	C Surface Water Concentration (pCi/l)	IR Ingestion Rate (l/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	IF Intake Factor (l)	SF Slope Factor (Risk/pCi)	CR Cancer Risk
Americium-241	5.00E-03	0.05	2.6	7	30	2.73E+01	2.40E-10	3.28E-11
Plutonium-239/240	2.60E-02	0.05	2.6	7	30	2.73E+01	2.30E-10	1.63E-10
						Total Radionuclide Cancer Risk		1.96E-10
							Total Cancer Risk	2.89E-09

HYPOTHETICAL SITE RESIDENT
AREA OF CONCERN NO. 2

CT - Ingestion of surface water - Woman Creek

Noncarcinogens

$$IF = (IR \times ET \times EF \times ED)/(BW \times AT)$$
$$HQ = (C \times IF)/RfD$$

	C	IR	ET	EF	ED	BW	AT	IF	RfD	HQ
Chemical	Surface Water Concentration (mg/l)	Ingestion Rate (l/hr)	Exposure Time (hr/day)	Exposure Frequency (days/yr)	Exposure Duration (years)	Body Weight (kg)	Averaging Time (days)	Intake Factor (l/kg-day)	Reference Dose (mg/kg-day)	Hazard Quotient
1,1-Dichloroethene	2.00E-06	0.01	1	5	9	70	3285	1.96E-06	9.00E-03	4.35E-10
Carbon Tetrachloride	2.62E-04	0.01	1	5	9	70	3285	1.96E-06	7.00E-04	7.32E-07
Chloroform	2.15E-04	0.01	1	5	9	70	3285	1.96E-06	1.00E-02	4.21E-08
Methylene Chloride	1.06E-04	0.01	1	5	9	70	3285	1.96E-06	6.00E-02	3.46E-09
Tetrachloroethene	1.16E-04	0.01	1	5	9	70	3285	1.96E-06	1.00E-02	2.27E-08
									Total Hazard Index	8.01E-07

HYPOTHETICAL ONSITE RESIDENT
AREA OF CONCERN NO. 2

CT - Ingestion of surface water - Woman Creek

Nonradionuclide carcinogens

IF = (IR x ET x EF x ED)/(BW x AT)
CR = C x IF x SF

Chemical	C Surface Water Concentration (mg/l)	IR Ingestion Rate (l/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
1,1-Dichloroethene	2.00E-06	0.01	1	5	9	70	25550	2.52E-07	6.00E-01	3.02E-13
Carbon Tetrachloride	2.62E-04	0.01	1	5	9	70	25550	2.52E-07	1.30E-01	8.57E-12
Chloroform	2.15E-04	0.01	1	5	9	70	25550	2.52E-07	6.10E-03	3.30E-13
Methylene Chloride	1.06E-04	0.01	1	5	9	70	25550	2.52E-07	7.50E-03	2.00E-13
Tetrachloroethene	1.16E-04	0.01	1	5	9	70	25550	2.52E-07	5.20E-02	1.52E-12
Trichloroethene	9.25E-04	0.01	1	5	9	70	25550	2.52E-07	1.10E-02	2.56E-12
								Total Chemical Cancer Risk		1.35E-11

Radionuclides

IF = IR x ET x EF x ED
CR = C x IF x SF

Radionuclide	C Surface Water Concentration (pCi/l)	IR Ingestion Rate (l/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	IF Intake Factor (l)	SF Slope Factor (Risk/pCi)	CR Cancer Risk
Americium-241	6.30E-02	0.01	1	5	9	4.50E-01	2.40E-10	6.80E-12
Plutonium-239/240	2.37E+00	0.01	1	5	9	4.50E-01	2.30E-10	2.45E-10
						Total Radionuclide Cancer Risk		2.52E-10
							Total Cancer Risk	2.66E-10

HYPOTHETICAL SITE RESIDENT
AREA OF CONCERN NO. 2

RME - Ingestion of surface water Woman Creek

Noncarcinogens

$$IF = (IR \times ET \times EF \times ED)/(BW \times AT)$$
$$HQ = (C \times IF)/RfD$$

Chemical	C Surface Water Concentration (mg/l)	IR Ingestion Rate (l/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
1,1-Dichloroethene	2.00E-06	0.05	2.6	7	30	70	10950	3.56E-05	9.00E-03	7.91E-09
Carbon Tetrachloride	2.62E-04	0.05	2.6	7	30	70	10950	3.56E-05	7.00E-04	1.33E-05
Chloroform	2.15E-04	0.05	2.6	7	30	70	10950	3.56E-05	1.00E-02	7.66E-07
Methylene Chloride	1.06E-04	0.05	2.6	7	30	70	10950	3.56E-05	6.00E-02	6.29E-08
Tetrachloroethene	1.16E-04	0.05	2.6	7	30	70	10950	3.56E-05	1.00E-02	4.13E-07
									Total Hazard Index	1.46E-05

HYPOTHETICAL ONSITE RESIDENT
AREA OF CONCERN NO. 2

RME - Ingestion of surface water Woman Creek

Nonradionuclide carcinogens

IF = (IR x ET x EF x ED)/(BW x AT)
CR = C x IF x SF

Chemical	C Surface Water Concentration (mg/l)	IR Ingestion Rate (l/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
1,1-Dichloroethene	2.00E-06	0.05	2.6	7	30	70	25550	1.53E-05	6.00E-01	1.83E-11
Carbon Tetrachloride	2.62E-04	0.05	2.6	7	30	70	25550	1.53E-05	1.30E-01	5.20E-10
Chloroform	2.15E-04	0.05	2.6	7	30	70	25550	1.53E-05	6.10E-03	2.00E-11
Methylene Chloride	1.06E-04	0.05	2.6	7	30	70	25550	1.53E-05	7.50E-03	1.21E-11
Tetrachloroethene	1.16E-04	0.05	2.6	7	30	70	25550	1.53E-05	5.20E-02	9.21E-11
Trichloroethene	9.25E-04	0.05	2.6	7	30	70	25550	1.53E-05	1.10E-02	1.55E-10
								Total Chemical Cancer Risk		8.18E-10

Radionuclides

IF = IR x ET x EF x ED
CR = C x IF x SF

Radionuclide	C Surface Water Concentration (pCi/l)	IR Ingestion Rate (l/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	IF Intake Factor (l)	SF Slope Factor (Risk/pCi)	CR Cancer Risk
Americium-241	6.30E-02	0.05	2.6	7	30	2.73E+01	2.40E-10	4.13E-10
Plutonium-239/240	2.37E+00	0.05	2.6	7	30	2.73E+01	2.30E-10	1.49E-08
						Total Radionuclide Cancer Risk		1.53E-08
							Total Cancer Risk	1.61E-08

HYPOTHETICAL SITE RESIDENT
AREA OF CONCERN NO. 2

CT - Dermal contact with surface water - Walnut Creek

Noncarcinogens

IF = (SA x DP x ET x EF x ED x CF)/(BW x AT)
HQ = (C x IF)/RfD

Chemical	C Surface Water Concentration (mg/l)	SA Skin Surface Area (cm^2)	DP Dermal Permeability (cm/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (day/yr)	ED Exposure Duration (years)	CF Conversion Factor (l/cm^3)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
1,1-Dichloroethene	5.00E-06	9275	0.016	1	5	9	0.001	70	3285	2.90E-05	9.00E-03	1.61E-08
Carbon Tetrachloride	4.81E-04	9275	0.022	1	5	9	0.001	70	3285	3.99E-05	7.00E-04	2.74E-05
Chloroform	9.30E-05	9275	0.13	1	5	9	0.001	70	3285	2.36E-04	1.00E-02	2.19E-06
Methylene Chloride	3.80E-05	9275	0.0045	1	5	9	0.001	70	3285	8.17E-06	6.00E-02	5.17E-09
Tetrachloroethene	8.03E-04	9275	0.37	1	5	9	0.001	70	3285	6.72E-04	1.00E-02	5.39E-05
											Total Hazard Index	8.36E-05

Nonradionuclide carcinogens

IF = (SA x DP x ET x EF x ED x CF)/(BW x AT)
CR = C x IF x SF

Chemical	C Surface Water Concentration (mg/l)	SA Skin Surface Area (cm^2)	DP Dermal Permeability (cm/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (day/yr)	ED Exposure Duration (years)	CF Conversion Factor (l/cm^3)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
1,1-Dichloroethene	5.00E-06	9275	0.016	1	5	9	0.001	70	25550	3.73E-06	6.00E-01	1.12E-11
Carbon Tetrachloride	4.81E-04	9275	0.022	1	5	9	0.001	70	25550	5.13E-06	1.30E-01	3.21E-10
Chloroform	9.30E-05	9275	0.13	1	5	9	0.001	70	25550	3.03E-05	6.10E-03	1.72E-11
Methylene Chloride	3.80E-05	9275	0.0045	1	5	9	0.001	70	25550	1.05E-06	7.50E-03	2.99E-13
Tetrachloroethene	8.03E-04	9275	0.37	1	5	9	0.001	70	25550	8.63E-05	5.20E-02	3.61E-09
Trichloroethene	6.24E-03	9275	0.23	1	5	9	0.001	70	25550	5.37E-05	1.10E-02	3.68E-09
											Total Cancer Risk	7.64E-09

HYPOTHETICAL ONSITE RESIDENT
AREA OF CONCERN NO. 2

RME - Dermal contact with surface water - Walnut Creek

Noncarcinogens

IF = (SA x DP x ET x EF x ED x CF)/(BW x AT)
HQ = (C x IF)/RfD

Chemical	C Surface Water Concentration (mg/l)	SA Skin Surface Area (cm^2)	DP Dermal Permeability (cm/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (day/yr)	ED Exposure Duration (years)	CF Conversion Factor (l/cm^3)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
1,1-Dichloroethene	5.00E-06	18150	0.016	2.6	7	30	0.001	70	10950	2.07E-04	9.00E-03	1.15E-07
Carbon Tetrachloride	4.81E-04	18150	0.022	2.6	7	30	0.001	70	10950	2.84E-04	7.00E-04	1.95E-04
Chloroform	9.30E-05	18150	0.13	2.6	7	30	0.001	70	10950	1.68E-03	1.00E-02	1.56E-05
Methylene Chloride	3.80E-05	18150	0.0045	2.6	7	30	0.001	70	10950	5.82E-05	6.00E-02	3.68E-08
Tetrachloroethene	8.03E-04	18150	0.37	2.6	7	30	0.001	70	10950	4.78E-03	1.00E-02	3.84E-04
											Total Hazard Index	5.95E-04

Nonradionuclide carcinogens

IF = (SA x DP x ET x EF x ED x CF)/(BW x AT)
CR = C x IF x SF

Chemical	C Surface Water Concentration (mg/l)	SA Skin Surface Area (cm^2)	DP Dermal Permeability (cm/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (day/yr)	ED Exposure Duration (years)	CF Conversion Factor (l/cm^3)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
1,1-Dichloroethene	5.00E-06	18150	0.016	2.6	7	30	0.001	70	25550	8.87E-05	6.00E-01	2.66E-10
Carbon Tetrachloride	4.81E-04	18150	0.022	2.6	7	30	0.001	70	25550	1.22E-04	1.30E-01	7.62E-09
Chloroform	9.30E-05	18150	0.13	2.6	7	30	0.001	70	25550	7.20E-04	6.10E-03	4.09E-10
Methylene Chloride	3.80E-05	18150	0.0045	2.6	7	30	0.001	70	25550	2.49E-05	7.50E-03	7.11E-12
Tetrachloroethene	8.03E-04	18150	0.37	2.6	7	30	0.001	70	25550	2.05E-03	5.20E-02	8.56E-08
Trichloroethene	6.24E-03	18150	0.23	2.6	7	30	0.001	70	25550	1.27E-03	1.10E-02	8.75E-08
											Total Cancer Risk	1.81E-07

HYPOTHETICA ISITE RESIDENT
AREA OF CONCERN NO. 2

CT - Dermal contact with surface water - Woman Creek

Noncarcinogens

IF = (SA x DP x ET x EF x ED x CF)/(BW x AT)
HQ = (C x IF)/RfD

Chemical	C Surface Water Concentration (mg/l)	SA Skin Surface Area (cm^2)	DP Dermal Permeability (cm/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (day/yr)	ED Exposure Duration (years)	CF Conversion Factor (l/cm^3)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
1,1-Dichloroethene	2.00E-06	9275	0.016	1	5	9	0.001	70	3285	2.90E-05	9.00E-03	6.45E-09
Carbon Tetrachloride	2.62E-04	9275	0.022	1	5	9	0.001	70	3285	3.99E-05	7.00E-04	1.49E-05
Chloroform	2.15E-04	9275	0.13	1	5	9	0.001	70	3285	2.36E-04	1.00E-02	5.07E-06
Methylene Chloride	1.06E-04	9275	0.0045	1	5	9	0.001	70	3285	8.17E-06	6.00E-02	1.44E-08
Tetrachloroethene	1.16E-04	9275	0.37	1	5	9	0.001	70	3285	6.72E-04	1.00E-02	7.79E-06
											Total Hazard Index	2.78E-05

Nonradionuclide carcinogens

IF = (SA x DP x ET x EF x ED x CF)/(BW x AT)
CR = C x IF x SF

Chemical	C Surface Water Concentration (mg/l)	SA Skin Surface Area (cm^2)	DP Dermal Permeability (cm/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (day/yr)	ED Exposure Duration (years)	CF Conversion Factor (l/cm^3)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
1,1-Dichloroethene	2.00E-06	9275	0.016	1	5	9	0.001	70	25550	3.73E-06	6.00E-01	4.48E-12
Carbon Tetrachloride	2.62E-04	9275	0.022	1	5	9	0.001	70	25550	5.13E-06	1.30E-01	1.75E-10
Chloroform	2.15E-04	9275	0.13	1	5	9	0.001	70	25550	3.03E-05	6.10E-03	3.98E-11
Methylene Chloride	1.06E-04	9275	0.0045	1	5	9	0.001	70	25550	1.05E-06	7.50E-03	8.35E-13
Tetrachloroethene	1.16E-04	9275	0.37	1	5	9	0.001	70	25550	8.63E-05	5.20E-02	5.21E-10
Trichloroethene	9.25E-04	9275	0.23	1	5	9	0.001	70	25550	5.37E-05	1.10E-02	5.46E-10
											Total Cancer Risk	1.29E-09

HYPOTHETICAL ONSITE RESIDENT
AREA OF CONCERN NO. 2

RME - Dermal contact with surface water - Woman Creek

Noncarcinogens

IF = (SA x DP x ET x EF x ED x CF)/(BW x AT)
HQ = (C x IF)/RfD

Chemical	C Surface Water Concentration (mg/l)	SA Skin Surface Area (cm^2)	DP Dermal Permeability (cm/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (day/yr)	ED Exposure Duration (years)	CF Conversion Factor (l/cm^3)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
1,1-Dichloroethene	2.00E-06	18150	0.016	2.6	7	30	0.001	70	10950	2.07E-04	9.00E-03	4.60E-08
Carbon Tetrachloride	2.62E-04	18150	0.022	2.6	7	30	0.001	70	10950	2.84E-04	7.00E-04	1.06E-04
Chloroform	2.15E-04	18150	0.13	2.6	7	30	0.001	70	10950	1.68E-03	1.00E-02	3.61E-05
Methylene Chloride	1.06E-04	18150	0.0045	2.6	7	30	0.001	70	10950	5.82E-05	6.00E-02	1.03E-07
Tetrachloroethene	1.16E-04	18150	0.37	2.6	7	30	0.001	70	10950	4.78E-03	1.00E-02	5.55E-05
											Total Hazard Index	1.98E-04

Nonradionuclide carcinogens

IF = (SA x DP x ET x EF x ED x CF)/(BW x AT)
CR = C x IF x SF

Chemical	C Surface Water Concentration (mg/l)	SA Skin Surface Area (cm^2)	DP Dermal Permeability (cm/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (day/yr)	ED Exposure Duration (years)	CF Conversion Factor (l/cm^3)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
1,1-Dichloroethene	2.00E-06	18150	0.016	2.6	7	30	0.001	70	25550	8.87E-05	6.00E-01	1.06E-10
Carbon Tetrachloride	2.62E-04	18150	0.022	2.6	7	30	0.001	70	25550	1.22E-04	1.30E-01	4.15E-09
Chloroform	2.15E-04	18150	0.13	2.6	7	30	0.001	70	25550	7.20E-04	6.10E-03	9.45E-10
Methylene Chloride	1.06E-04	18150	0.0045	2.6	7	30	0.001	70	25550	2.49E-05	7.50E-03	1.98E-11
Tetrachloroethene	1.16E-04	18150	0.37	2.6	7	30	0.001	70	25550	2.05E-03	5.20E-02	1.24E-08
Trichloroethene	9.25E-04	18150	0.23	2.6	7	30	0.001	70	25550	1.27E-03	1.10E-02	1.30E-08
											Total Cancer Risk	3.06E-08

HYPOTHETICAL SITE RESIDENT
AREA OF CONCERN NO. 2

CT - Inhalation of VOCs from infiltration

Noncarcinogens

IF = (IR x ET x EF x ED)/(BW x AT)
HQ = (C x IF)/RfD

Chemical	C VOC Concentration in air (mg/m^3)	IR Inhalation Rate (m^3/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	BW Body Weight (kg)	AT Averaging Time (years)	IF Intake Factor ($m^3/kg\text{-}day$)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
Methylene Chloride	1.97E-10	0.63	15	234	9	70	3285	8.65E-02	9.00E-01	1.89E-11
									Total Hazard Index	1.89E-11

Carcinogens

IF = (IR x ET x EF x ED)/(BW x AT)
CR = C x IF x SF

Chemical	C VOC Concentration in air (mg/m^3)	IR Inhalation Rate (m^3/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	BW Body Weight (kg)	AT Averaging Time (years)	IF Intake Factor ($m^3/kg\text{-}day$)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
Chloroform	3.84E-11	0.63	15	234	9	70	25550	1.11E-02	8.00E-02	3.42E-14
Methylene Chloride	1.97E-10	0.63	15	234	9	70	25550	1.11E-02	1.60E-03	3.51E-15
Tetrachloroethene	2.62E-10	0.63	15	234	9	70	25550	1.11E-02	2.00E-03	5.83E-15
Trichloroethene	1.93E-10	0.63	15	234	9	70	25550	1.11E-02	6.00E-03	1.29E-14
									Total Cancer Risk	5.64E-14

HYPOTHETICAL ONSITE RESIDENT
AREA OF CONCERN NO. 2

RME - Inhalation of VOCs from infiltration

Noncarcinogens

IF = (IR x ET x EF x ED)/(BW x AT)
HQ = (C x IF)/RfD

	C	IR	ET	EF	ED	BW	AT	IF	RfD	HQ
Chemical	VOC Concentration in air (mg/m^3)	Inhalation Rate (m^3/hr)	Exposure Time (hr/day)	Exposure Frequency (days/yr)	Exposure Duration (years)	Body Weight (kg)	Averaging Time (years)	Intake Factor (m^3/kg-day)	Reference Dose (mg/kg-day)	Hazard Quotient
Methylene Chloride	1.97E-10	0.63	24	350	30	70	10950	2.07E-01	9.00E-01	4.53E-11
									Total Hazard Index	4.53E-11

Carcinogens

IF = (IR x ET x EF x ED)/(BW x AT)
CR = C x IF x SF

	C	IR	ET	EF	ED	BW	AT	IF	SF	CR
Chemical	VOC Concentration in air (mg/m^3)	Inhalation Rate (m^3/hr)	Exposure Time (hr/day)	Exposure Frequency (days/yr)	Exposure Duration (years)	Body Weight (kg)	Averaging Time (years)	Intake Factor (m^3/kg-day)	Slope Factor 1/(mg/kg-day)	Cancer Risk
Chloroform	3.84E-11	0.63	24	350	30	70	25550	8.88E-02	8.00E-02	2.73E-13
Methylene Chloride	1.97E-10	0.63	24	350	30	70	25550	8.88E-02	1.60E-03	2.80E-14
Tetrachloroethene	2.62E-10	0.63	24	350	30	70	25550	8.88E-02	2.00E-03	4.65E-14
Trichloroethene	1.93E-10	0.63	24	350	30	70	25550	8.88E-02	6.00E-03	1.03E-13
									Total Cancer Risk	4.50E-13

HYPOTHETICAL SITE RESIDENT
AREA OF CONCERN NO. 2

CT - Inhalation of VOCs from groundwater use

Noncarcinogens

$$IF = (IR \times ET \times EF \times ED)/(BW \times AT)$$
$$HQ = (C \times IF)/RfD$$

	C	IR	ET	EF	ED	BW	AT	IF	RfD	HQ
Chemical	VOC Concentration in air (mg/m^3)	Inhalation Rate (m^3/hr)	Exposure Time (hr/day)	Exposure Frequency (days/yr)	Exposure Duration (years)	Body Weight (kg)	Averaging Time (years)	Intake Factor ($m^3/kg\text{-}day$)	Reference Dose (mg/kg-day)	Hazard Quotient
Methylene Chloride	2.15E-04	0.63	15	234	9	70	3285	8.65E-02	9.00E-01	2.07E-05
									Total Hazard Index	2.07E-05

Carcinogens

$$IF = (IR \times ET \times EF \times ED)/(BW \times AT)$$
$$CR = C \times IF \times SF$$

	C	IR	ET	EF	ED	BW	AT	IF	SF	CR
Chemical	VOC Concentration in air (mg/m^3)	Inhalation Rate (m^3/hr)	Exposure Time (hr/day)	Exposure Frequency (days/yr)	Exposure Duration (years)	Body Weight (kg)	Averaging Time (years)	Intake Factor ($m^3/kg\text{-}day$)	Slope Factor 1/(mg/kg-day)	Cancer Risk
Chloroform	2.60E-05	0.63	15	234	9	70	25550	1.11E-02	8.00E-02	2.31E-08
Methylene Chloride	2.15E-04	0.63	15	234	9	70	25550	1.11E-02	1.60E-03	3.83E-09
Tetrachloroethene	4.03E-05	0.63	15	234	9	70	25550	1.11E-02	2.00E-03	8.97E-10
Trichloroethene	4.55E-05	0.63	15	234	9	70	25550	1.11E-02	6.00E-03	3.04E-09
									Total Cancer Risk	3.09E-08

HYPOTHETICAL ONSITE RESIDENT
AREA OF CONCERN NO. 2

RME - Inhalation of VOCs from groundwater use

Noncarcinogens

IF = (IR x ET x EF x ED)/(BW x AT)
HQ = (C x IF)/RfD

	C	IR	ET	EF	ED	BW	AT	IF	RfD	HQ
Chemical	VOC Concentration in air (mg/m^3)	Inhalation Rate (m^3/hr)	Exposure Time (hr/day)	Exposure Frequency (days/yr)	Exposure Duration (years)	Body Weight (kg)	Averaging Time (years)	Intake Factor (m^3/kg-day)	Reference Dose (mg/kg-day)	Hazard Quotient
Methylene Chloride	2.15E-04	0.63	24	350	30	70	10950	2.07E-01	9.00E-01	4.95E-05
									Total Hazard Index	4.95E-05

Carcinogens

IF = (IR x ET x EF x ED)/(BW x AT)
CR = C x IF x SF

	C	IR	ET	EF	ED	BW	AT	IF	SF	CR
Chemical	VOC Concentration in air (mg/m^3)	Inhalation Rate (m^3/hr)	Exposure Time (hr/day)	Exposure Frequency (days/yr)	Exposure Duration (years)	Body Weight (kg)	Averaging Time (years)	Intake Factor (m^3/kg-day)	Slope Factor 1/(mg/kg-day)	Cancer Risk
Chloroform	2.60E-05	0.63	24	350	30	70	25550	8.88E-02	8.00E-02	1.85E-07
Methylene Chloride	2.15E-04	0.63	24	350	30	70	25550	8.88E-02	1.60E-03	3.05E-08
Tetrachloroethene	4.03E-05	0.63	24	350	30	70	25550	8.88E-02	2.00E-03	7.15E-09
Trichloroethene	4.55E-05	0.63	24	350	30	70	25550	8.88E-02	6.00E-03	2.42E-08
									Total Cancer Risk	2.47E-07

HYPOTHETICAL SITE RESIDENT
AREA OF CONCERN NO. 2

CT - External Radiation

IF = TF x GSF x EF x ED
CR = C x IF x SF

Radionuclide	C Soil Concentration (pCi/g)	TF Gamma Time Factor (T_e)	GSF Gamma Shielding Factor ($1-S_e$)	EF Percent of year Exposed	ED Exposure Duration (years)	IF Intake Factor (years)	SF Slope Factor (1/pCi-yr/g)	CR Cancer Risk
Americium-241	1.50E+00	0.75	0.5	0.64	9	2.16E+00	4.90E-09	1.59E-08
Plutonium-239/240	1.03E+01	0.75	0.5	0.64	9	2.16E+00	1.88E-11	4.18E-10
							Total Cancer Risk	1.63E-08

RME - External Radiation

IF = TF x GSF x EF x ED
CR = C x IF x SF

Radionuclide	C Soil Concentration (pCi/g)	TF Gamma Time Factor (T_e)	GSF Gamma Shielding Factor ($1-S_e$)	EF Percent of year Exposed	ED Exposure Duration (years)	IF Intake Factor (years)	SF Slope Factor (1/pCi-yr/g)	CR Cancer Risk
Americium-241	1.50E+00	1	0.8	0.96	30	2.30E+01	4.90E-09	1.69E-07
Plutonium-239/240	1.03E+01	1	0.8	0.96	30	2.30E+01	1.88E-11	4.46E-09
							Total Cancer Risk	1.74E-07

SUMMARY OF RISK
CURRENT OFFSITE RESIDENT
SOUTHEAST
AREA OF CONCERN NO. 1

	Central Tendency		Reasonable Maximum	
Pathway	Hazard Index	Cancer Risk	Hazard Index	Cancer Risk
Ingestion of surface soil by a child*	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Ingestion of surface soil by an adult*	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Carcinogenic effects of soil ingestion*	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Inhalation of particulates from surface soil	0.00E+00	1.40E-09	0.00E+00	1.47E-08
Dermal contact with surface soil*	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Ingestion of vegetables with soil deposition*	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Ingestion of fruit with soil deposition*	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total	0.00E+00	1.40E-09	0.00E+00	1.47E-08

* Windborne contaminants from AOC No. 1 are not deposited in significant concentrations at this location.

CURRENT OFFSITE RESIDENT
SOUTHEAST
AREA OF CONCERN NO. 1

CT Inhalation of Particulates - Radionuclides

IF = IR x ET x EF x ED x DF
CR = IF x C x SF

	C	IR	ET	EF	ED	DF	IF	SF	CR
Radionuclides	Air Concentration[1] (pCi/m^3)	Inhalation Rate (m^3/hr)	Exposure Time (hr/day)	Exposure Frequency (days/yr)	Exposure Duration (years)	Deposition Factor	Intake Factor (m^3)	Slope Factor (Risk/pCi)	Cancer Risk
Americium-241	6.49E-08	0.63	15	234	9	1	1.99E+04	3.20E-08	4.13E-11
Plutonium-239/240	1.79E-06	0.63	15	234	9	1	1.99E+04	3.80E-08	1.35E-09
								Total Radionuclide Cancer Risk	1.40E-09
								Total Cancer Risk	1.40E-09

RME Inhalation of Particulates - Radionuclides

IF = IR x ET x EF x ED x DF
CR = IF x C x SF

	C	IR	ET	EF	ED	DF	IF	SF	CR
Radionuclides	Air Concentration[1] (pCi/m^3)	Inhalation Rate (m^3/hr)	Exposure Time (hr/day)	Exposure Frequency (days/yr)	Exposure Duration (years)	Deposition Factor	Intake Factor (m^3)	Slope Factor (Risk/pCi)	Cancer Risk
Americium-241	6.49E-08	0.83	24	350	30	1	2.09E+05	3.20E-08	4.34E-10
Plutonium-239/240	1.79E-06	0.83	24	350	30	1	2.09E+05	3.80E-08	1.42E-08
								Total Radionuclide Cancer Risk	1.47E-08
								Total Cancer Risk	1.47E-08

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In accordance with EPA guidance (EPA 1989a, 1992a; EPA Region VIII 1994), the 95% upper confidence limit (95% UCL) on the mean is used as the exposure point concentration for calculating the central tendency and reasonable maximum risk in Superfund risk assessments. The 95% UCL is an estimate of the average contaminant concentration in an exposure area and is used instead of the mean in order to account for the uncertainty in calculating the true mean from a small data set.

This Attachment contains (1) a discussion of the statistical methods that were used to test the distribution of the data (normal or lognormal) and to calculate the concentration term, (2) tables showing all sample results used in the calculations, and (3) probability plots and histograms for selected data sets.

GENERAL STATISTICAL METHODS

For normally distributed data, the 95% UCL is calculated according to the following equation:

$$UCL_{1-\alpha} = \mu + \frac{t_{1-\alpha,n-1}}{\sqrt{n-1}} s \qquad \textbf{(H.1)}$$

For lognormally distributed data, the following equation is used:

$$UCL_{1-\alpha} = \exp\left(\bar{y} + 0.5 s_y^2 + \frac{s_y H_{1-\alpha}}{\sqrt{n-1}}\right) \qquad \textbf{(H.2)}$$

The parameters μ and s are the mean and standard deviation of the original data; y and s_y are the mean and standard deviation of the log-transformed data; n is the sample size; t is the Student's t value at significance level of α (0.05) with (n-1) degrees of freedom; and H is the H statistic at a significance level of α. Values for the H statistic were taken from an expanded $H_{0.95}$ table with small increments of n and s_y (WCC 1993).

It is not always possible to correctly identify the distribution of a small sample (n = 20 to 50), which is the size of many environmental data sets (Hahn and Shapiro 1967; Shumway et al. 1989). Distributions other than normal or lognormal are also possible. However, only the normal and lognormal distributions were used in this report because (1) the limited data cannot justify other models, (2) risk assessment guidance recommends the normal and lognormal models, and (3) available methods to test models other than normal or lognormal are not readily available.

Distribution testing and calculating summary statistics for the original or the log-transformed data were performed using statistical procedures recommended by EPA (1989b) or generally accepted in engineering practice. The following standard statistical methods were applied, depending on the characteristics of the data set:

- Wilk-Shapiro test for normality (EPA 1992b).
- Probability plotting test for normality (EPA 1992b).
- Robust probability plotting for estimating mean and standard deviation. This method has been well documented and proved to be very powerful in statistical analysis, especially in cases where multiple detection limits are reported (Helsel 1990; Helsel and Cohn 1988; Hirsch and Stedinger 1987).
- Aitchison's method for estimating mean and standard deviation (EPA 1992a).

A flow chart of the statistical procedures used in calculating the 95% UCL for different categories of data sets is shown following the references at the end of this discussion. Different procedures were applied depending on frequency of non-detects (NDs), sample size (some were too small to test distribution), and presence of zero or negative concentrations. Each of these cases is discussed below.

CASE 1: FREQUENCY OF NON-DETECTS ≤ 15%

If the total number of NDs within a data set was less than 15% of the total observations, the NDs were replaced by one-half the Sample Quantitation Limit (SQL). The distribution was tested using the entire data set (detected values and one-half of the SQL for NDs). The test of normality was performed using the Wilk-Shapiro test. If the data set was neither normally nor lognormally distributed, a lognormal distribution was assumed. Following the test for

normality, the mean and standard deviation were calculated on either the original data or the log-transformed data, as appropriate.

CASE 2: FREQUENCY OF 15% < NON-DETECTS ≤ 90%

When the frequency of NDs exceeds 15%, the simple substitution method for NDs used in (1) (i.e., one-half the SQL) generally produces biased estimates of the mean and standard deviation and is not recommended (EPA 1989b; EPA 1992b; Helsel 1990). Distributional methods such as maximum likelihood estimates and robust probability plotting method are recommended instead (EPA 1992b; Helsel 1990). Aitchison's adjustment has been recommended by EPA (1992b) to estimate statistics of censored data.

Aitchison's Adjustment

For volatile organic compounds (VOCs) with a frequency of NDs between 15% and 90%, normality was tested using detects-only probability plotting (EPA 1992b) and Aitchison's adjustment was used in calculating the mean and standard deviation. In performing Aitchison's adjustment, NDs are assumed to be zero, on the assumption that the contaminant is not present in the sample. The assumption that the VOCs reported as ND are not present in the sample was considered appropriate because the aggregation of data sets for risk assessment was based on pre-defined exposure areas and consequently some sets include samples from relatively uncontaminated locations as well as from highly contaminated locations. Therefore, where the VOC was not detected in a subsurface soil sample or was never detected in a well, it was deemed acceptable to assume it was not present at that location and apply Aitchison's adjustment to estimate the mean and standard deviation.

This technique was applied to the following analytes:

Medium	Chemical	Exposure Area Data Set
Subsurface Soil	Tetrachloroethene	AOC No. 1, 30 acres, 10 acres

Medium	Chemical	Exposure Area Data Set
Groundwater	Carbon tetrachloride	AOC No. 1, 30 acres
	Chloroform	AOC No. 1, 30 acres
	1,1-Dichloroethene	AOC No. 1, 30 acres, 10 acres
	Methylene chloride	AOC No. 1, 30 acres, 10 acres
	Tetrachloroethene	AOC No. 1
	Trichloroethene	AOC No. 1, 30 acres

To compute Aitchison's adjustment, it is assumed that the detected sample results follow an underlying normal distribution (determined by detects-only probability plotting). If the detected results follow a lognormal distribution, Aitchison's adjustment is computed on the logarithms of the data. The adjusted overall mean and square of the standard deviation are calculated using the following equations:

$$\hat{\mu} = \left(1 - \frac{d}{n}\right) \bar{x}^* \qquad \textbf{(H.3)}$$

$$\hat{\sigma}^2 = \frac{n - (d+1)}{n-1}(S*)^2 + \frac{d}{n}\left(\frac{n-d}{n-1}\right)(\bar{x}^*)^2 \qquad \text{(H.4)}$$

where:

d	=	Number of non-detects
n	=	Number of samples
$\bar{x}$ *	=	Mean of the detected values
s *	=	Standard deviation of the detected values
μ	=	Adjusted overall mean
$\hat{\sigma}^2$	=	Square of the adjusted overall standard deviation

The standard deviation is then the square root of $\hat{\sigma}^2$.

Robust Probability Plotting

For metals and radionuclides with a frequency of NDs between 15% and 90%, normality was tested using either censored or detects-only probability plotting (EPA 1992b). Data censoring is described in (5) below. To estimate means and standard deviations, the adjusted maximum likelihood method (Cohn 1988) and/or the robust probability plotting method was used with a computer program developed by Helsel and Cohn (1991). These techniques were applied to cadmium, mercury, Am-241, and Pu-239/240 in subsurface soil.

Robust probability plotting methods combine results reported above the detection limit with extrapolated values for NDs by assuming a distributional shape in order to estimate summary statistics. A distribution is fitted to the detected results using probability plotting procedures. The fitted distribution is then used to extrapolate values below the reporting limit. These extrapolated values are not considered estimates for specific samples, but are used collectively only to estimate summary statistics. A brief summary of the method used in this report is described below:

- Determine the probability plotting positions of each observation (detected and non-detected), p_i, by using an appropriate plotting position formula, such as the Weibull, Blom, or the Hazen plotting formula. For multiple detection limits, a method by Hirsch and Stedinger (1987) was used to determine the plotting position.

- For the plotting positions obtained above, calculate the corresponding normal score, NS, from the inverse cumulative normal distribution,

$$N.S. = F^{-1}(p_i)$$

- Develop a regression model of the original data or log-transformed data (detected values only) vs. normal score.

- Use the regression model to extrapolate concentrations for the non-detected values according to their normal score.

- Use the detected concentrations and the extrapolated concentrations to calculate the summary statistics.

CASE 3: FREQUENCY OF NON-DETECTS > 90%

If the total number of NDs in a data set was more than 90%, distribution testing is not meaningful and was not performed. Under such a circumstance, the reasonable maximum detected concentration adopted for risk assessment was either (1) the maximum detected concentration or (2) the 95% UCL on the mean, using one-half of the detection limit for non-detects and assuming normally distributed data.

CASE 4: SAMPLE SIZE TOO SMALL

When the sample size was too small (generally 5 or less with no NDs, or 10 or less 10 with more than 5 NDs) to warrant a normality test and to establish meaningful statistical parameters, the data set was assumed to be normally distributed and the statistics were calculated by substituting one-half the SQL for NDs. In some cases with a large percentage of NDs, the maximum detected concentration was adopted as the reasonable maximum exposure concentration for risk assessment.

CASE 5: DATA SETS WITH ZERO OR NEGATIVE CONCENTRATIONS

For radionuclide data sets with zero or negative concentrations, the zeros and negatives were treated as NDs with a detection limit of the minimum positive detected concentration. This adjustment was necessary to yield an all-positive data set prior to log-transformation and had less effect on the distribution than adding a constant to all results. The calculation of means and standard deviations followed the procedures as specified in cases 1, 2, and 4, depending on the frequency of NDs (including zeros and negatives) in the data sets.

Two alternate methods of estimating the mean and standard deviation of data sets with zero or negative values were considered: a three-parameter lognormal method and an "add-on" method in which a small positive constant is added to all results to yield a data set with all positive values. Neither method was adopted, for the reasons presented below.

For data sets with zero or negative concentrations, a three-parameter lognormal distribution could be used to calculate the 95% UCL of the mean. However, the procedures to estimate the three parameters and the 95% UCLs are too complicated to be applied here and are probably not warranted for purposes of risk assessment because simpler methods appear to provide adequate estimates of exposure concentrations.

In the "add-on" method, a two-parameter lognormal distribution was assumed to be applicable to the data if an appropriate positive constant ("add-on") was added to each result; that is $z_i = (x_i + \tau)$, where x_i is the sample value, τ is a positive constant, and z_i is positive. The mean and standard deviation of $\ln(z_i)$ were then calculated, and the 95% UCL of the mean for z was determined by Equation (H.2). The 95% UCL of the mean for x was estimated as the 95% UCL of the mean for z minus τ. The add-on method was compared with the robust probability plotting method. It was found that the add-on method is very sensitive to the positive value (τ) chosen and did not provide good estimates of the statistics. As a result, the add-on method was not used to calculate the 95% UCLs of the mean.

RESULTS

The data used to calculate 95% UCL concentrations and summary statistics are shown in tables accompanying this attachment. Probability plots are also included for selected data sets (Figures 1 through 18, which precede the data tables).

DISCUSSION

This section discusses the selection of the concentration terms for chromium, Am-241, and Pu-239/240 in surface soil and for chemicals of concern (COCs) in groundwater in the 10- and 30-acre exposure areas. These were indicated with the footnote "d" in Tables H5-1 and H5-3.

Surface Soil

Chromium: For chromium in the 10-, 30-, and 50-acre exposure areas, the 95% UCL calculated with the t statistic (assuming normal distribution) was selected as the concentration term for risk assessment and for on-site air modeling. In all three areas, chromium

concentrations ranged from 5.4 to 26 mg/kg. For the 10-acre area (Table 5), the six results in the data set did not fit either a normal or lognormal distribution very well, and the calculation of the 95% UCL was sensitive to the small sample size and range of results (sample results = 5.4, 6.0, 6.7, 10.1, 10.8, and 26 mg/kg). The normal 95% UCL of 16.7 was selected as a reasonable maximum average concentration rather than the lognormal value of 21.8 because it appears less influenced by small sample size and the maximum value in the data set. For the 30- and 50-acre areas, the normal and lognormal UCLs were virtually the same (see Tables 7 and 9).

Americium and plutonium: For Am-241 and Pu-239/240 in surface soil, the 95% UCLs calculated with the t statistic (assuming normal distribution) were selected as the concentration terms for use in risk assessment and air modeling. For Am-241, in AOC No. 1 and in the 10-, 30-, and 50-acre areas, the lognormal UCLs exceeded the maximum detected concentrations, so the normal UCLs were used as reasonable maximum estimates of the average concentration to which people would be exposed (see Tables 2, 6, 8, and 10 and Figures 1, 5, 7, and 9). Maximum detected concentrations were not used because they were much higher than most results in the data sets and were therefore not considered representative of average concentrations. The same was true for Pu-239/240 in the 10-acre and 30-acre exposure areas (see Tables 6 and 8 and Figures 6 and 8).

For Pu-239/240 in AOC No. 1 (Table 2 and Figure 2), the lognormal UCL was 2,010 pCi/g and the normal UCL was 813 pCi/g. Both UCLs are biased by two extreme sample results of 7,300 pCi/g and 5,700 pCi/g. These two sample results were 5 to 7 times greater than the next highest concentration (950 pCi/g) and over 10 times higher than other results in the data set, which are below 400 pCi/g. The normal UCL was selected as the more reasonable estimate of an average exposure concentration.

A similar situation held for Pu-239/240 in the 50-acre exposure area (Table 10 and Figure 10), where both the lognormal UCL (5,454 pCi/g) and the normal UCL (1,244 pCi/g) were highly biased by one extreme sample result of 7,300 pCi/g, which is 7 times higher than the next highest sample result of 950 pCi/g and over 10 times higher than other results in the data set. The normal UCL was selected as the more reasonable choice, although it too overestimates an average concentration to which people would be exposed in the 50-acre area.

In AOC No. 2 (Table 4 and Figures 3 and 4), the normal UCL for Am-241 was 1.5 pCi/g and the lognormal UCL was 1.8 pCi/g; the normal UCL for Pu-239/240 was 10.3 pCi/g and the lognormal UCL was 12.3 pCi/g. Although good fits were found to the lognormal distributions, the normal UCLs had been used as the source term for offsite air dispersion modeling and the small differences between the normal and lognormal UCLs did not appear warrant remodeling with new source terms. For consistency, the same concentration was retained the exposure term in risk assessment. The small differences between the normal and lognormal UCLs will not affect the outcome of the risk assessment for AOC No. 2.

Groundwater COCs in the 10- and 30-Acre Exposure Areas

Concentrations of COCs in groundwater in the 10-acre exposure area were used to calculate ingestion and inhalation risks from hypothetical domestic use of groundwater and as source terms for soil gas transport modeling to estimate indoor air concentrations of VOCs. Groundwater concentrations of VOCs in the 30-acre exposure area were used only as source terms for soil gas transport modeling (industrial exposure to indoor air).

For domestic use of groundwater in the 10-acre area (Tables 23 and 24 and Figures 11 through 18), 95% UCLs calculated with the t statistic were used as the concentration term for risk assessment because for six of the eight COCs (all but 1,1-dichloroethene and methylene chloride), the lognormal UCL greatly exceeded the maximum concentration and in the other two cases, although the lognormal UCL did not exceed the maximum, it appeared unusually biased by one or more extreme values in the data set and the normal UCL was considered a more appropriate estimate of the average concentration to which people would be exposed. Figures 11 through 18 show that the concentration terms are conservative estimates of exposure concentrations.

For soil gas transport modeling to estimate indoor air concentrations of VOCs in the 10- and 30-acre areas, the maximum well averages were used as source concentrations (Tables 23 and 25).

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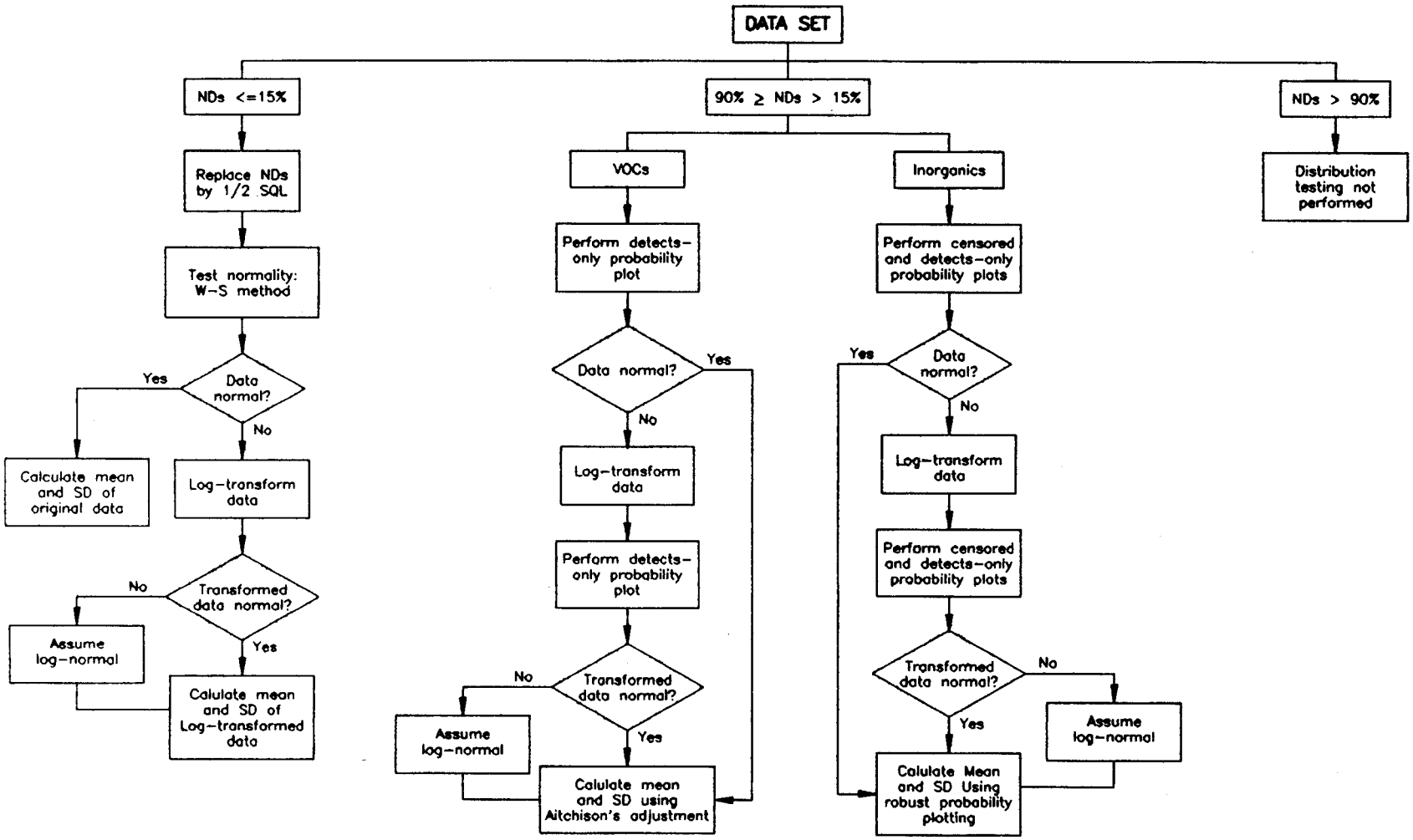


EXPLANATION

ND = NONDETECT
SQL = SAMPLE QUANTITATION LIMIT
W-S = WILK-SHAPIRO
VOCs = VOLATILE ORGANIC COMPOUNDS
SD = STANDARD DEVIATION

U.S. DEPARTMENT OF ENERGY
Rocky Flats Environmental Technology Site
Golden, Colorado

OPERABLE UNIT NO.2
PHASE II RFI/RI REPORT
HEALTH RISK ASSESSMENT

FLOW CHART OF STATISTICAL PROCEDURES FOR CALCULATING MEAN AND STANDARD DEVIATION

APPENDIX H
ATTACHMENT 1

MARCH 1995

OU2R8858 1=1

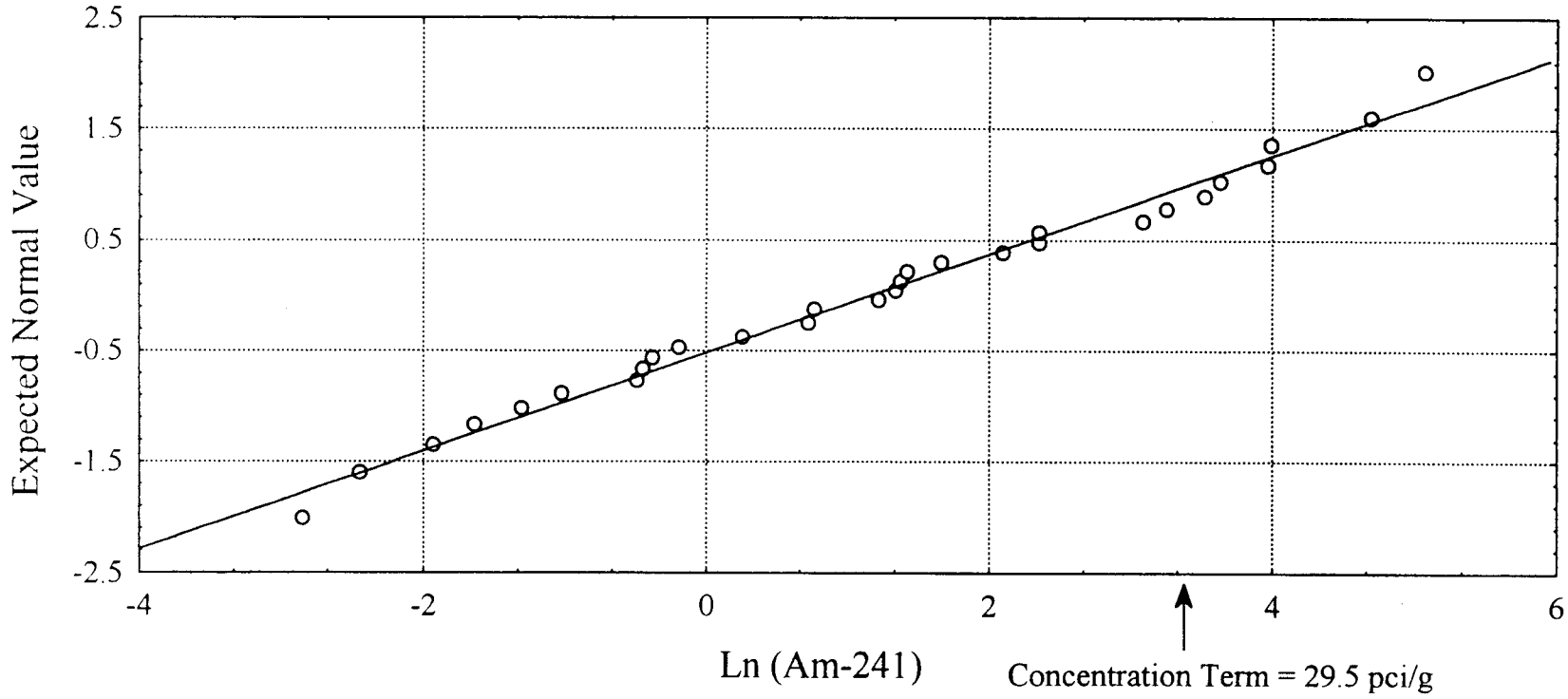
Attachment H1

Figure 1

Am-241 in Surface Soil

AOC No. 1

Normal Probability Plot



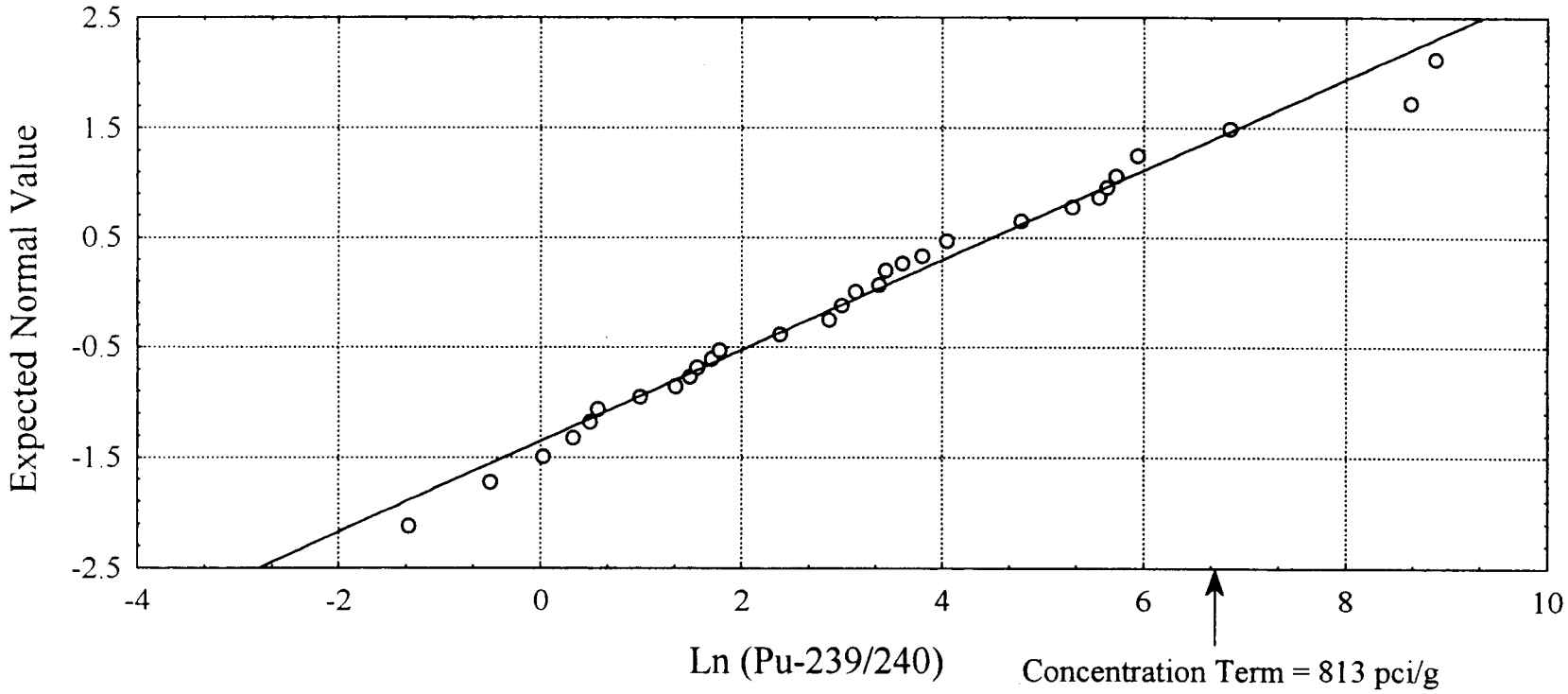
Attachment H1

Figure 2

Pu-239/240 in Surface Soil

AOC No. 1

Normal Probability Plot



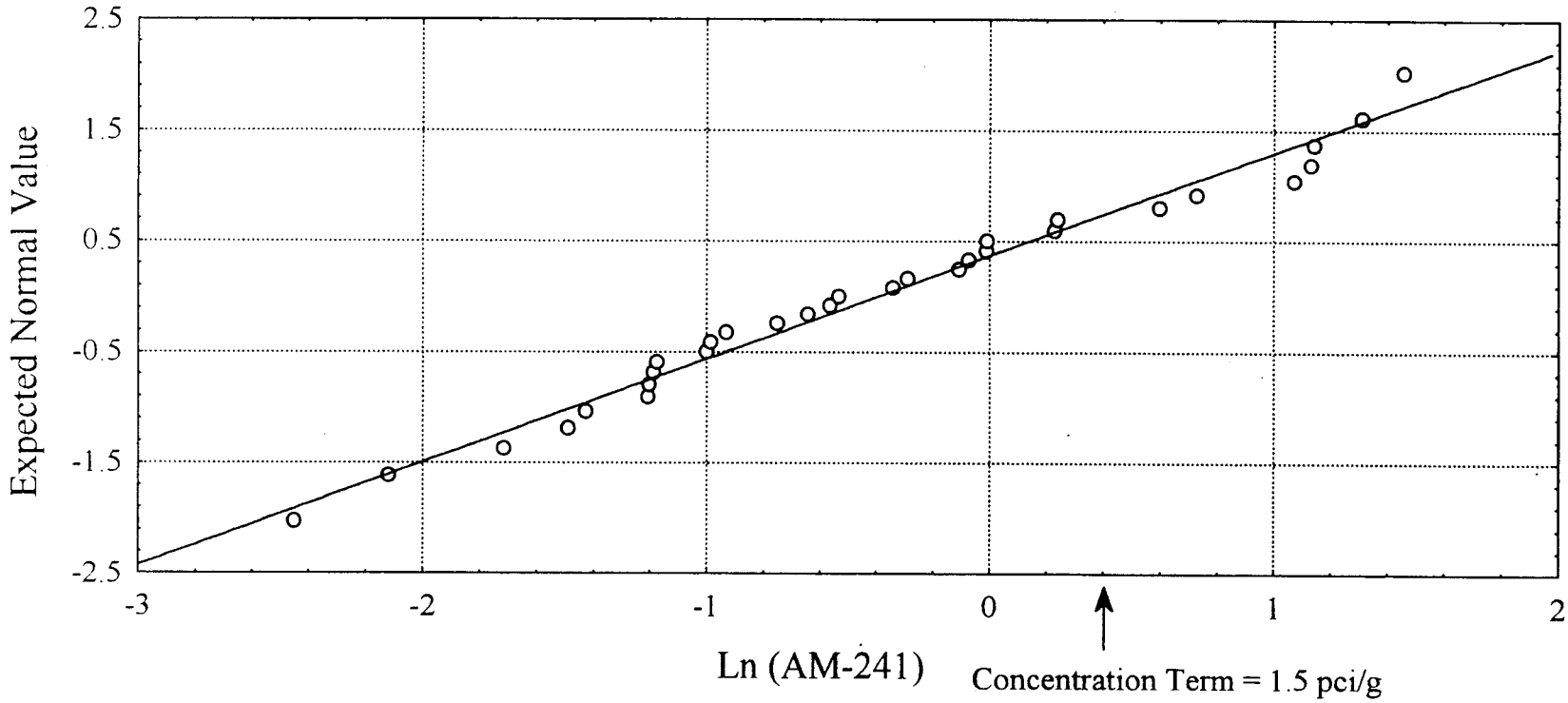
Attachment H1

Figure 3

Am-241 in Surface Soil

AOC No. 2

Normal Probability Plot



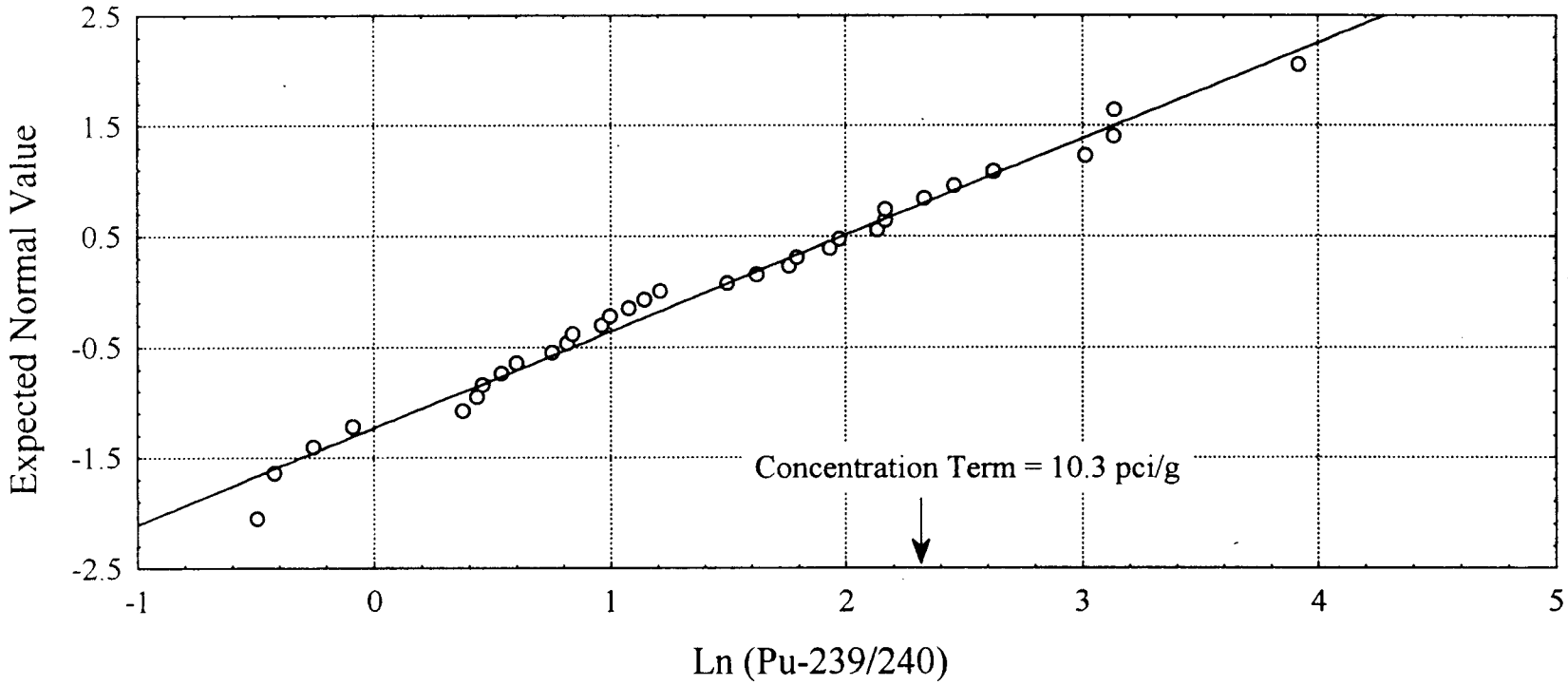
Attachment H1

Figure 4

Pu-239/240 in Surface Soil

AOC No. 2

Normal Probability Plot



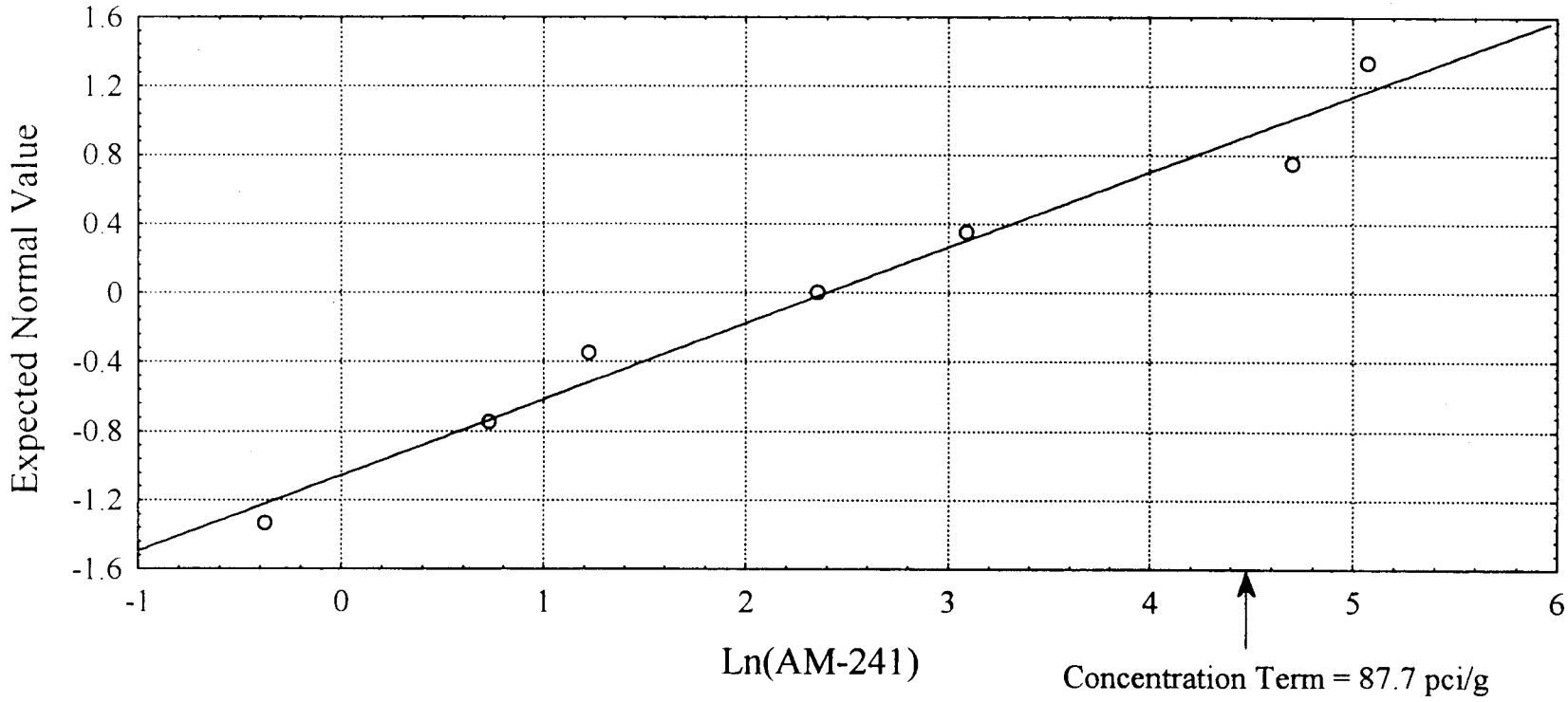
Attachment H1

Figure 5

Am-241 in Surface Soil

10 acres

Normal Probability Plot



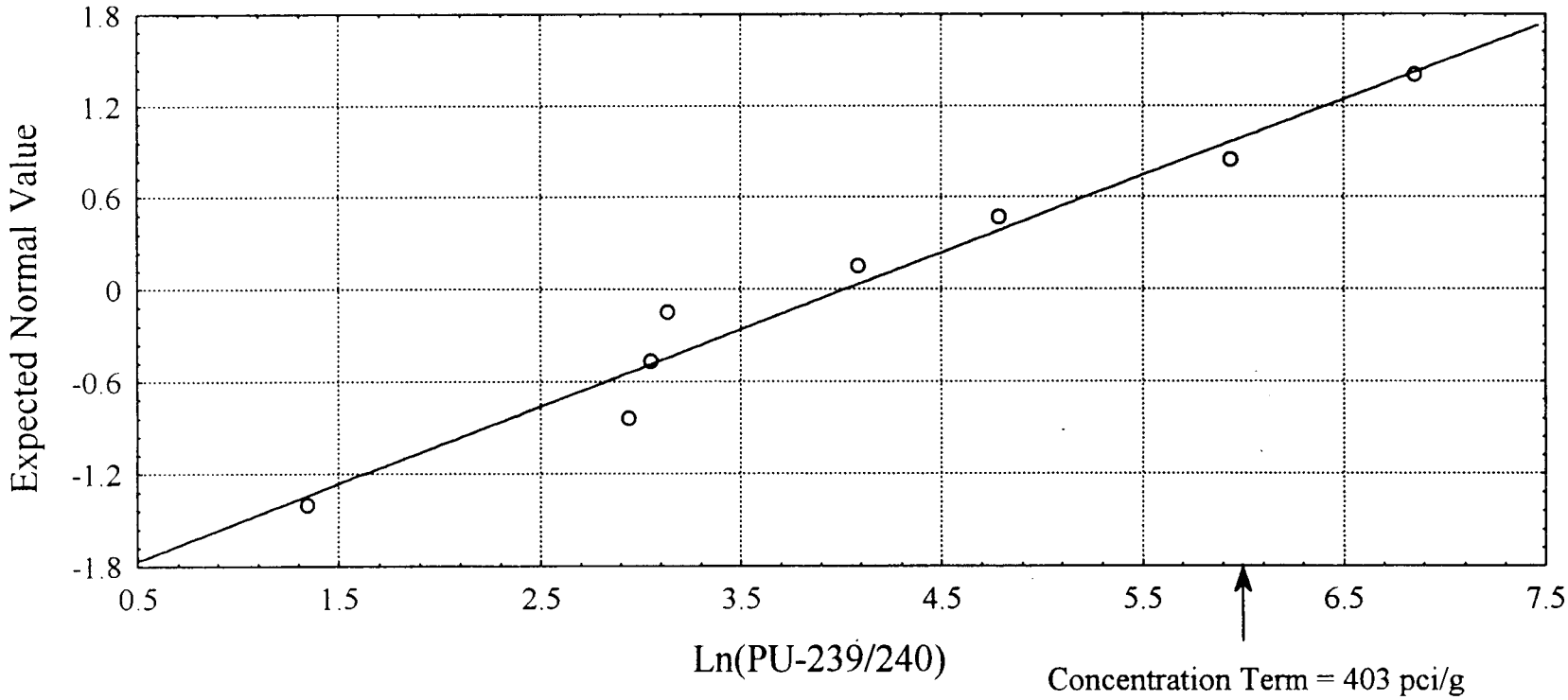
Attachment H1

Figure 6

Pu-239/240 in Surface Soil

10 acres

Normal Probability Plot



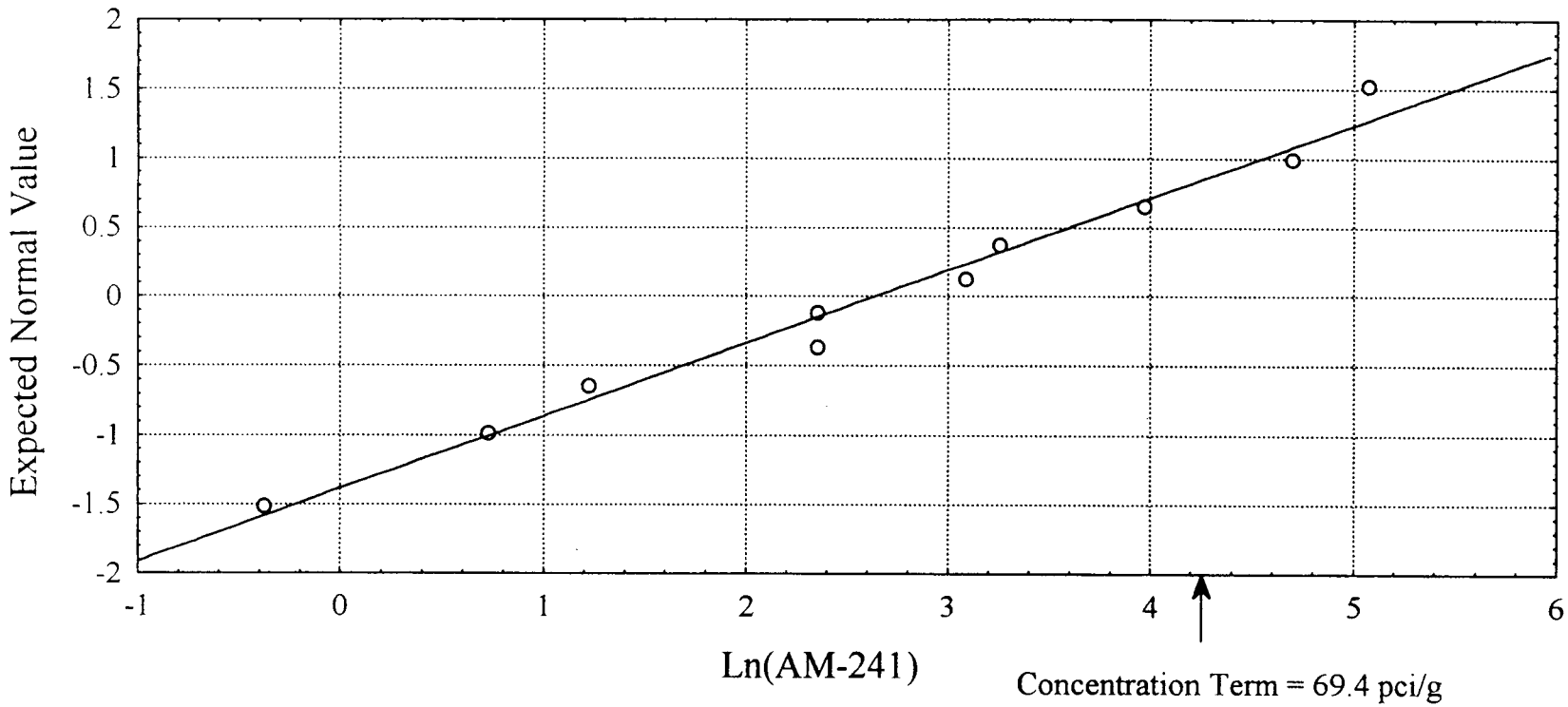
Attachment H1

Figure 7

Am-241 in Surface Soil

30 acres

Normal Probability Plot



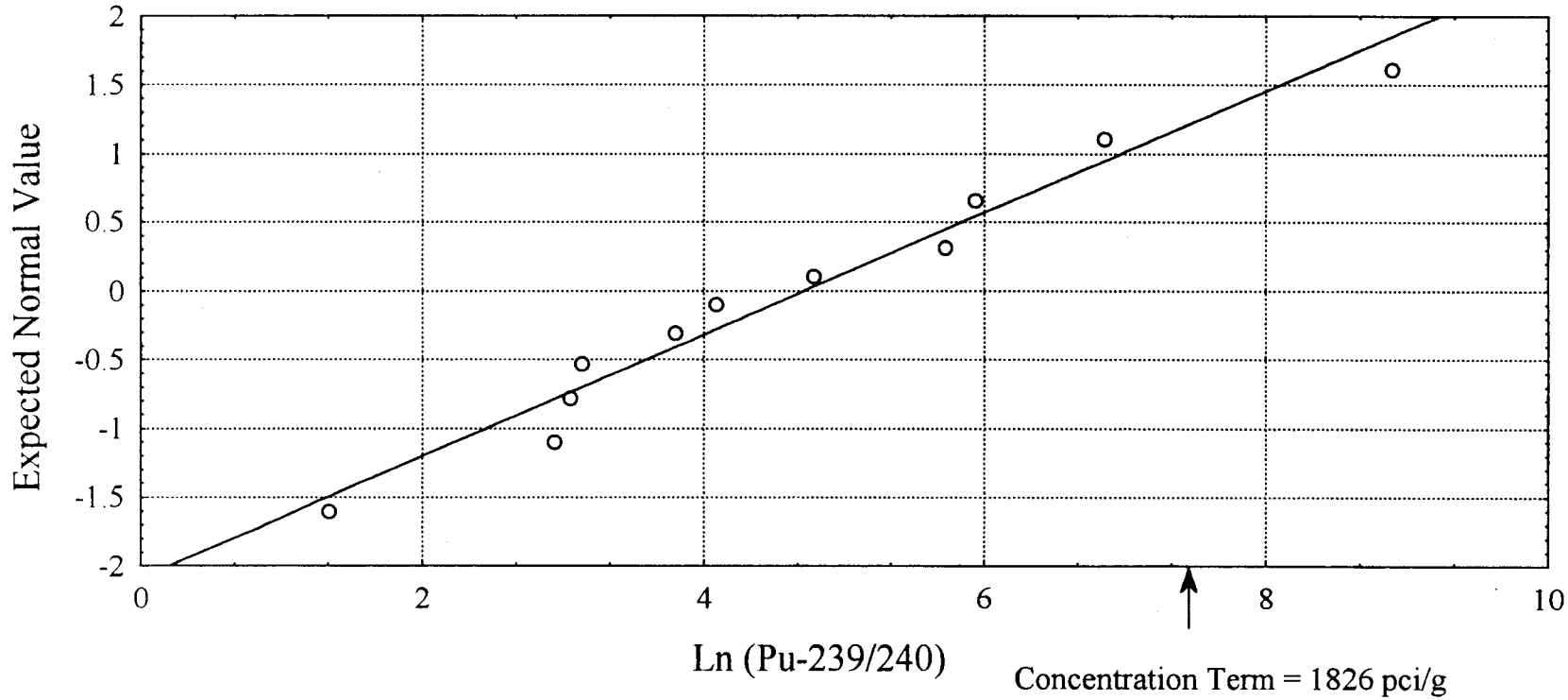
Attachment H1

Figure 8

Pu-239/240 in Surface Soil

30 acres

Normal Probability Plot



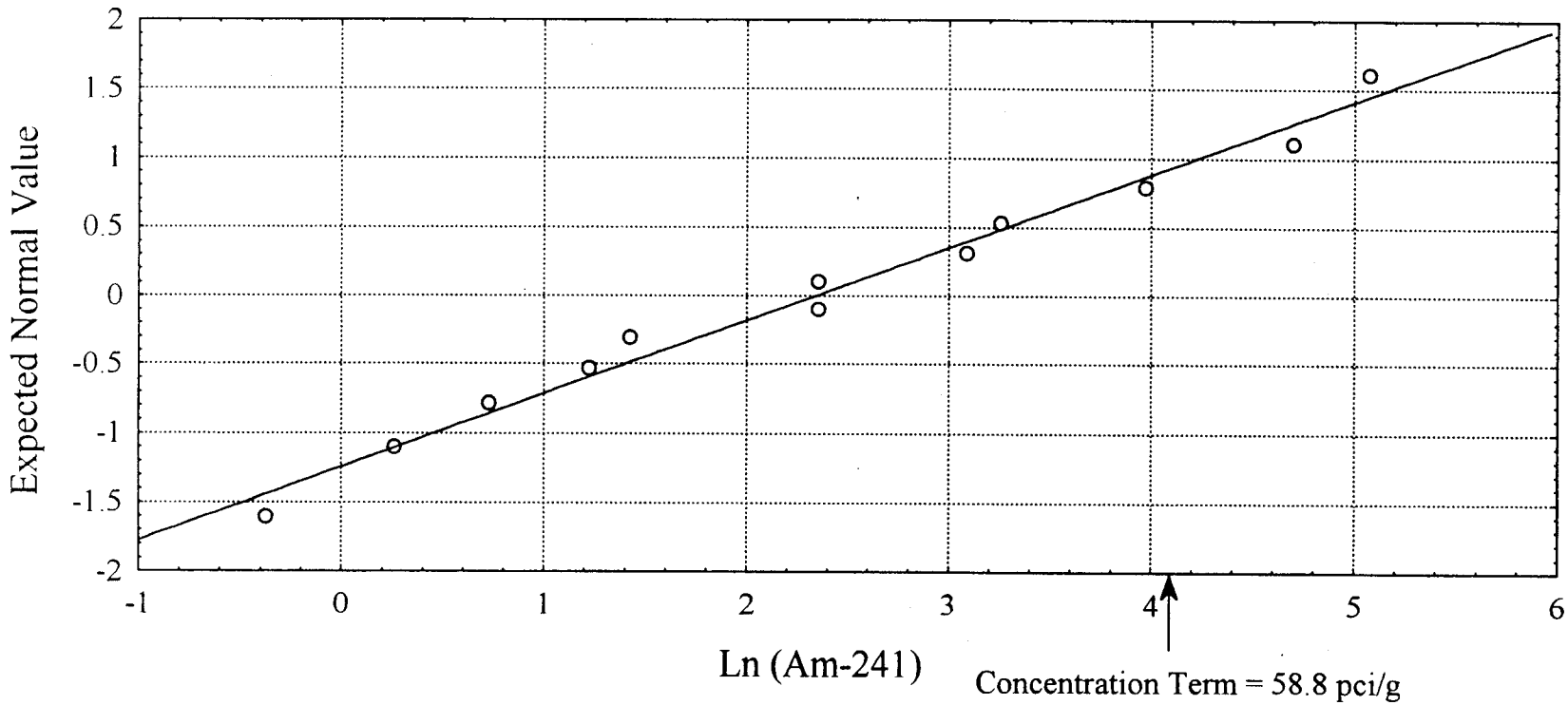
Attachment H1

Figure 9

Am-241 in Surface Soil

50 acres

Normal Probability Plot



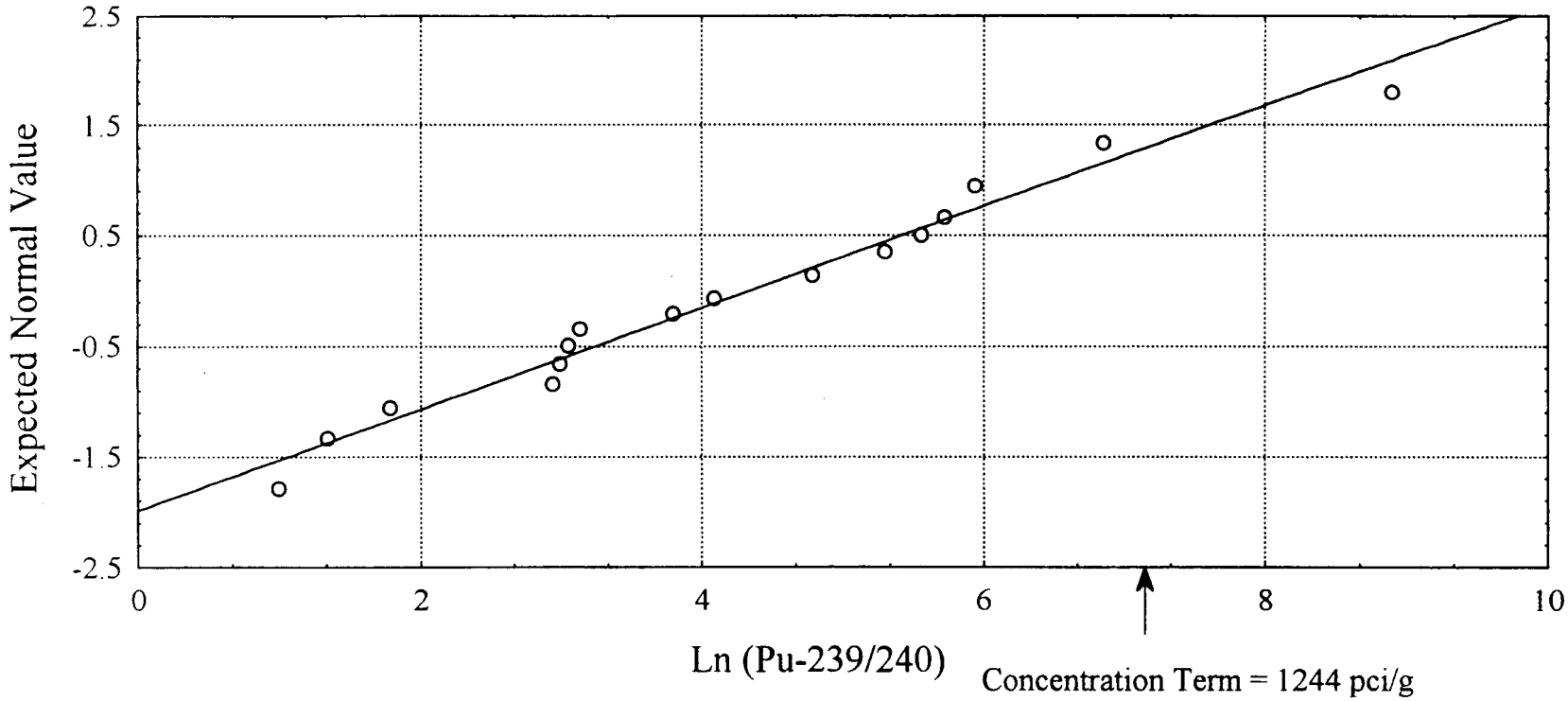
Attachment H1

Figure 10

Pu-239/240 in Surface Soil

50 acres

Normal Probability Plot



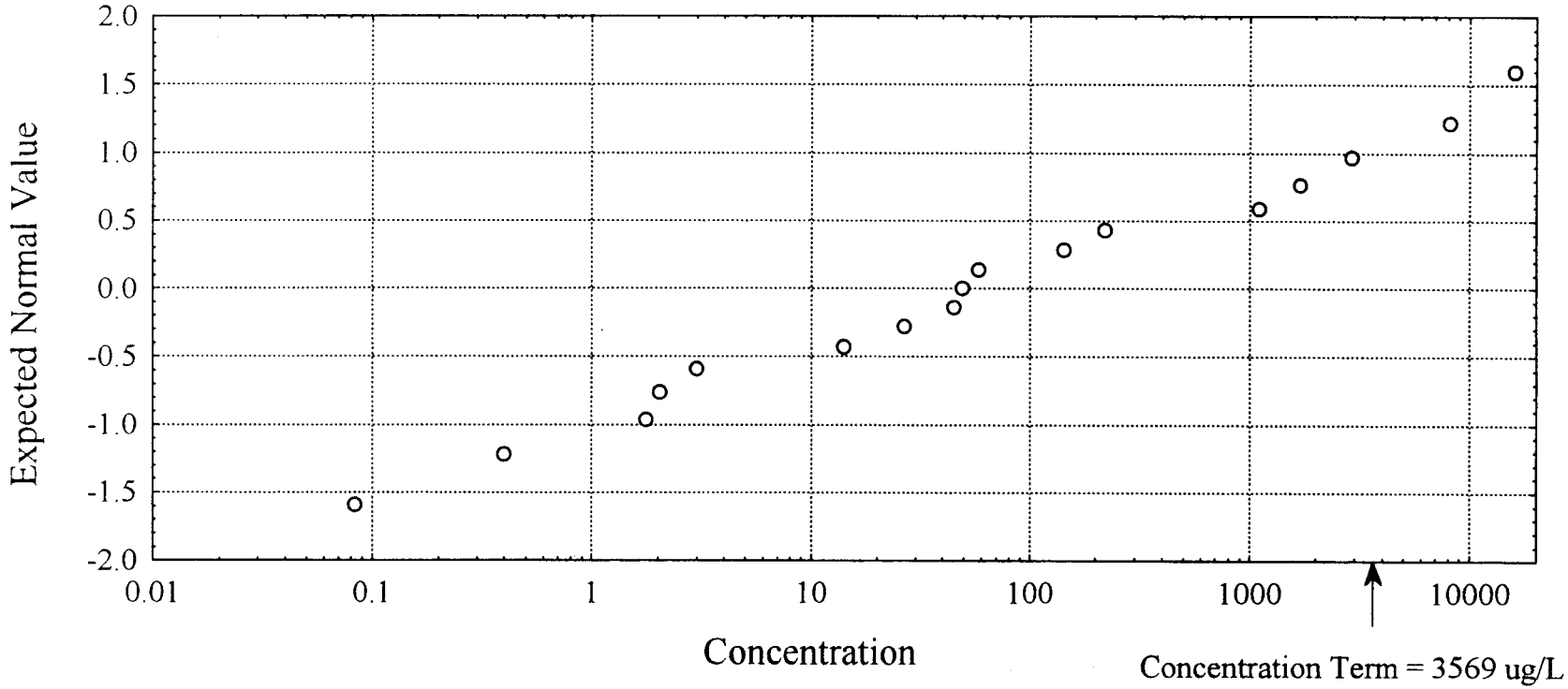
Attachment H1

Figure 11

Carbon Tetrachloride in Groundwater

10 acres

Probability Plot



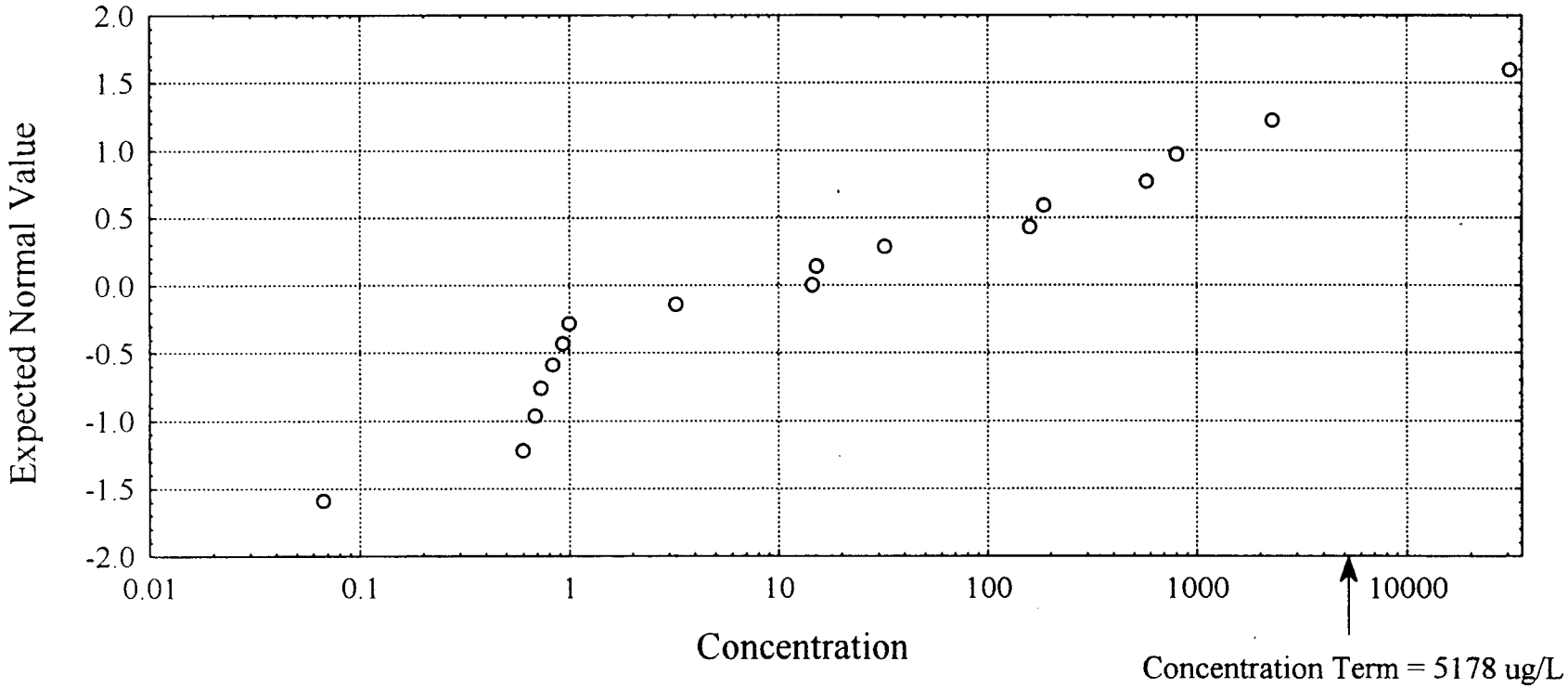
Attachment H1

Figure 12

Chloroform in Groundwater

10 acres

Probability Plot



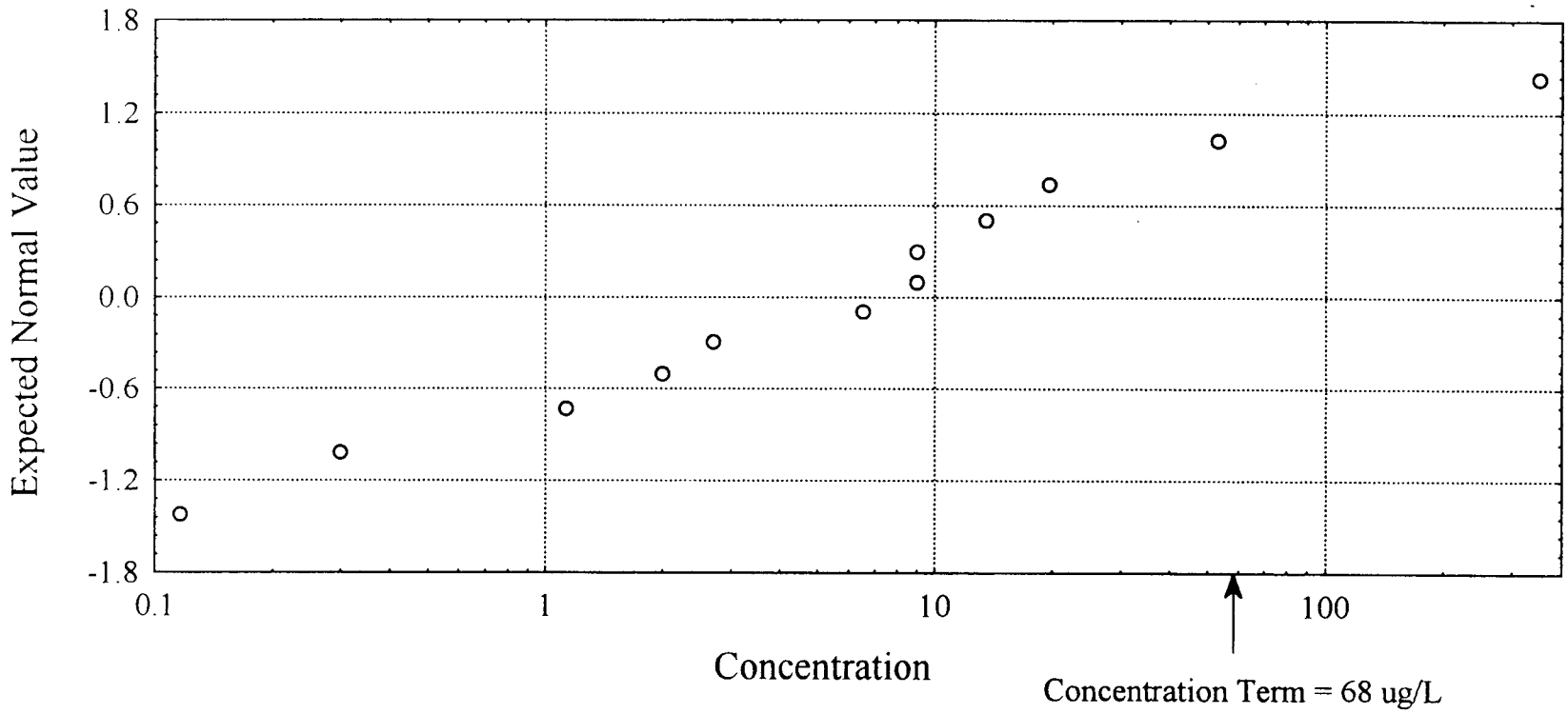
Attachment H1

Figure 13

1,1-Dichloroethene in Groundwater

10 acres

Detects-Only Probability Plot



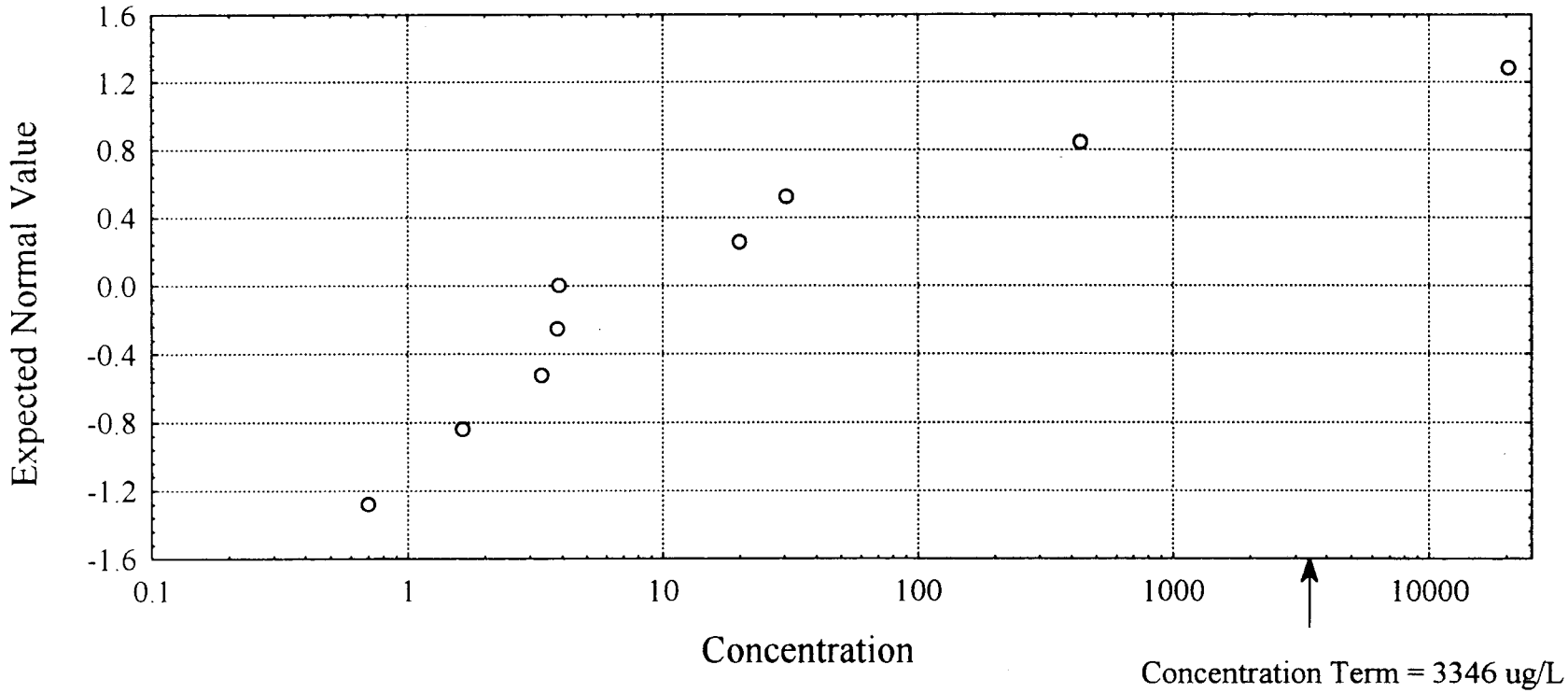
Attachment H1

Figure 14

Methylene Chloride in Groundwater

10 acres

Detects-Only Probability Plot



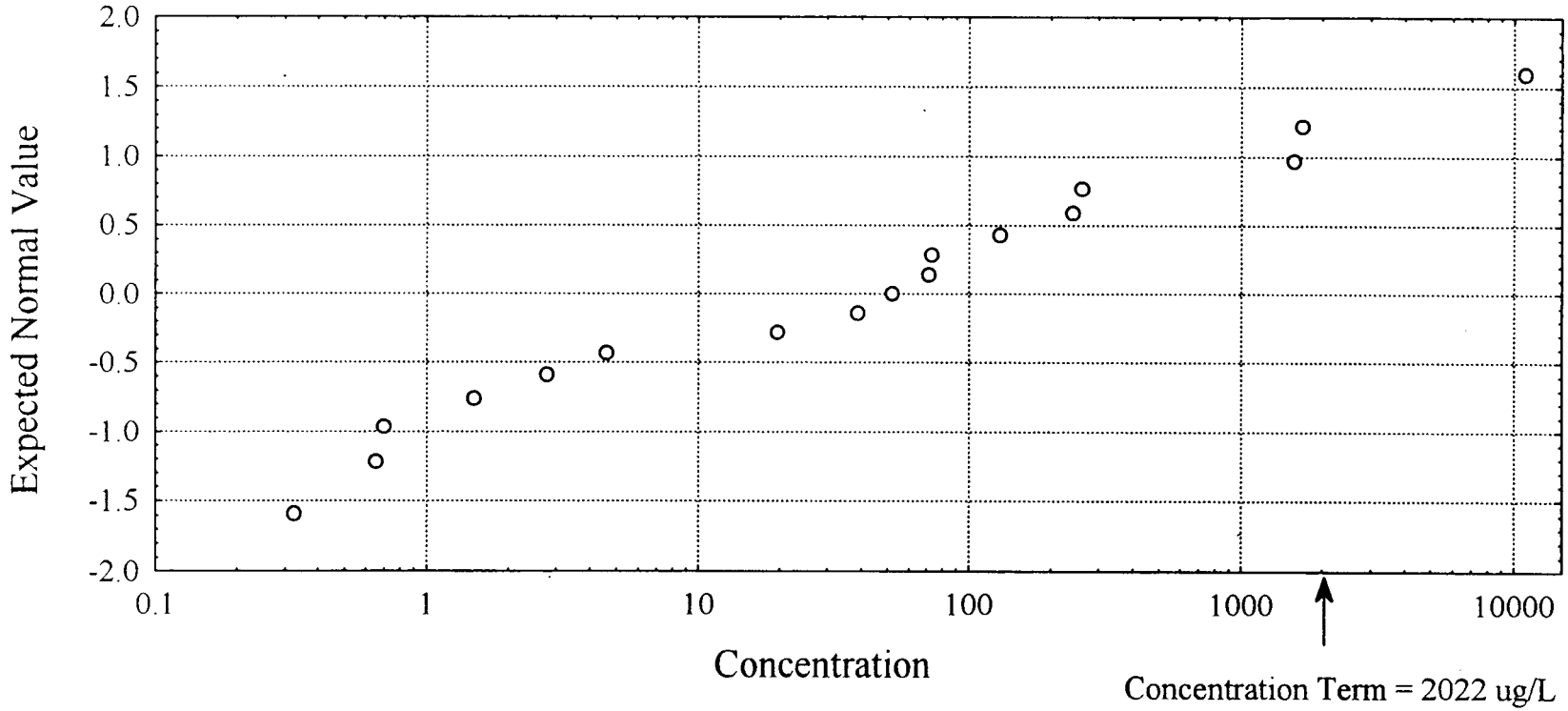
Attachment H1

Figure 15

Tetrachloroethene

10 acres

Probability Plot



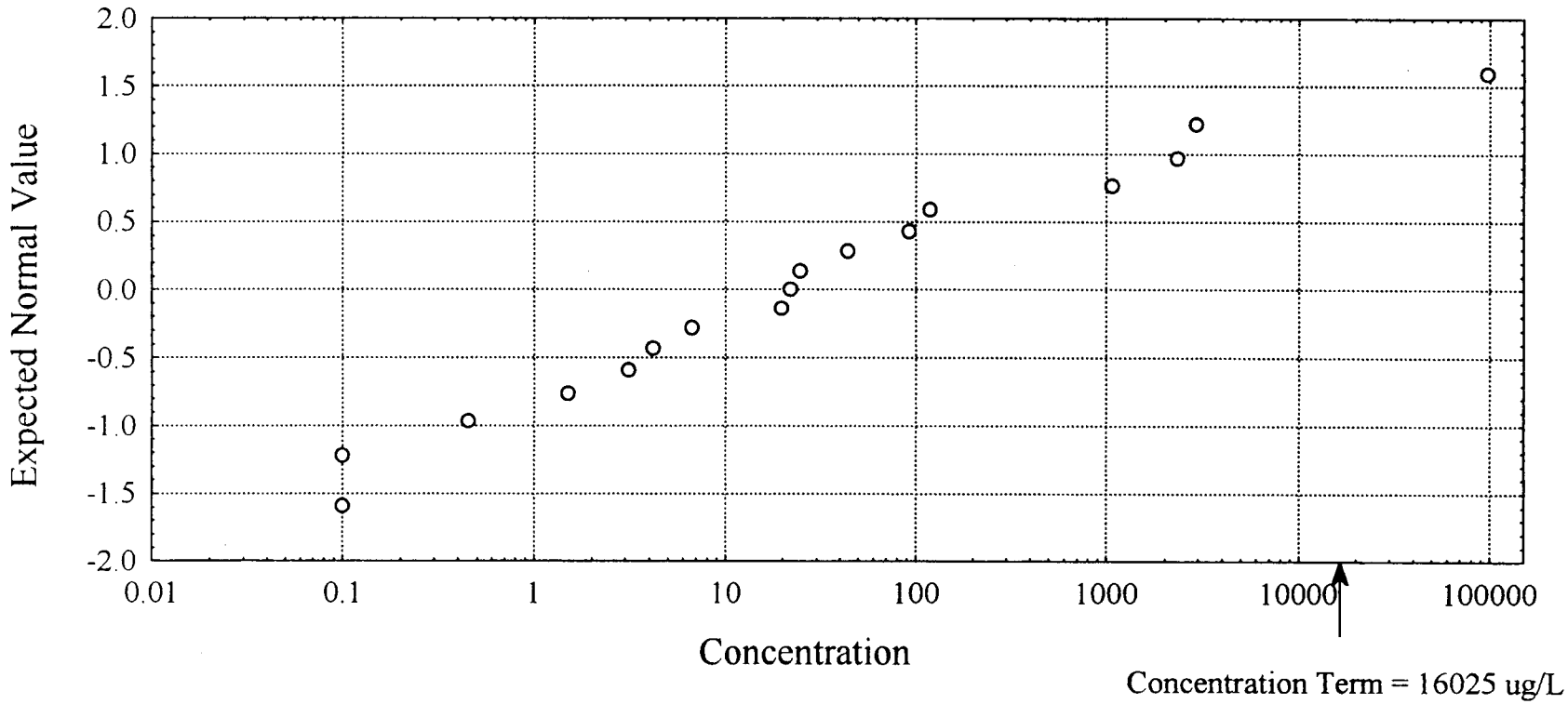
Attachment H1

Figure 16

Trichloroethene in Groundwater

10 acres

Probability Plot



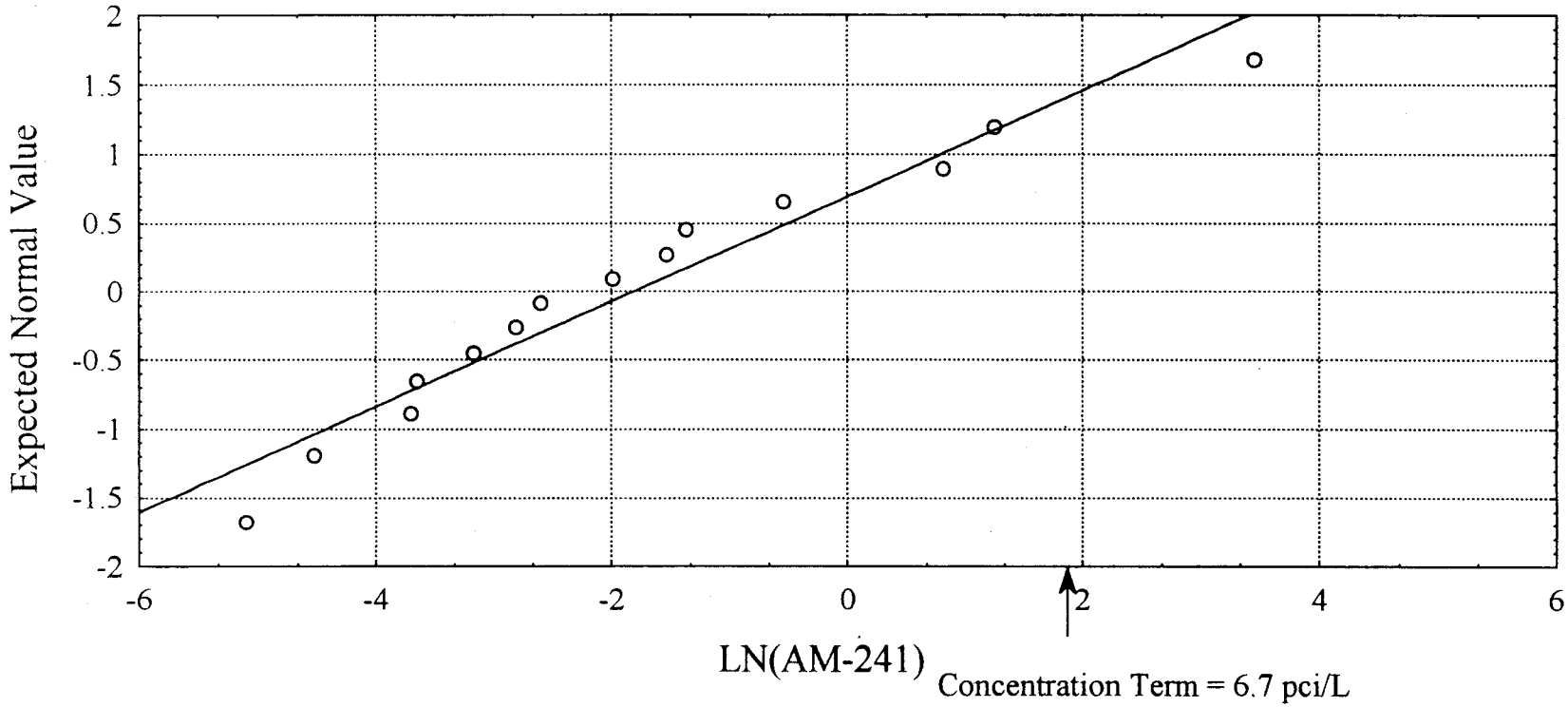
Attachment H1

Figure 17

Am-241 in Groundwater

10 acres

Normal Probability Plot



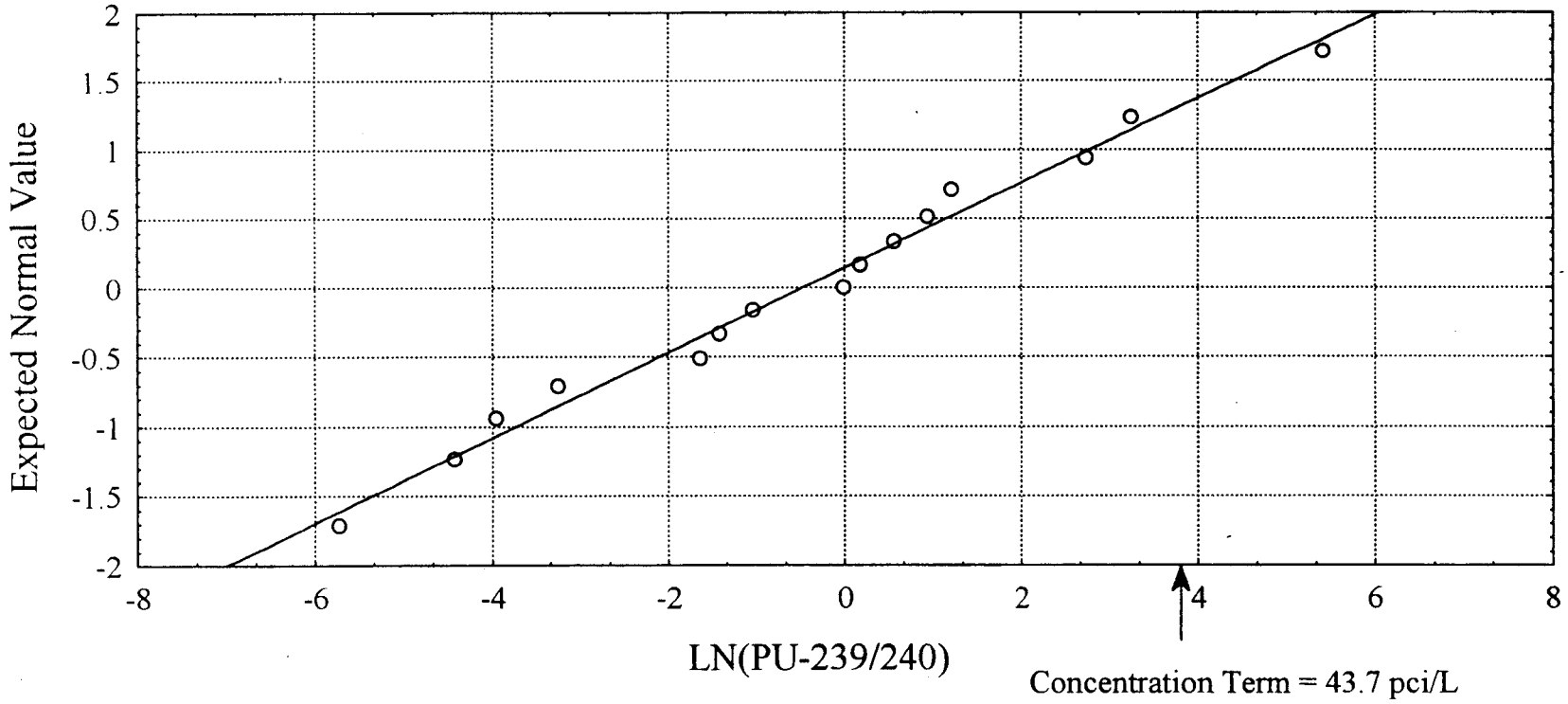
Attachment H1

Figure 18

Pu-239/240 in Groundwater

10 acres

Normal Probability Plot



ATTACHMENT H1
TABLE LEGEND

(1) = Calculated on well averages
AOC = Area of Concern
CRDL = Contract Required Detection Limit
mg/kg = milligram per kilogram
pCi/g = picocuries per gram
pCi/L = picocuries per liter
RME = Reasonable Maximum Exposure
SQL = Sample Quantitation Limit
UCL = Upper Confidence Limit
µg/kg = microgram per kilogram
µg/L = microgram per liter
[ ] = Detected Results

ATTACHMENT H1
TABLE 1
95% UCL CONCENTRATION
AOC NO. 1
SURFACE SOIL ORGANICS AND METALS

			AROCLOR-1254 (ug/kg)					AROCLOR-1260 (ug/kg)				
Location	Field ID	Sample Date	Result	SQL	CDRL	Qual	Valid. Qual	Result	SQL	CDRL	Qual	Valid. Qual
SS200093	SS20000WC	3/9/93	85.00	170.00	160.00	U	V	85.00	170.00	160.00	U	V
SS200193	SS20001WC	3/22/93	95.00	190.00	160.00	U	V	95.00	190.00	160.00	U	V
SS200293	SS20002WC	3/9/93	970.00	970.00	160.00		V	660.00	660.00	160.00		V
SS200393	SS20003WC	3/9/93	190.00	190.00	160.00		V	240.00	240.00	160.00		V
SS200493	SS20004WC	3/22/93	85.00	170.00	160.00	U	V	85.00	170.00	160.00	U	V
SS200593	SS20005WC	3/9/93	100.00	200.00	160.00	U	V	100.00	200.00	160.00	U	V
SS200693	SS20006WC	3/23/93	85.00	170.00	160.00	U	V	85.00	170.00	160.00	U	V
SS200793	SS20007WC	3/10/93	90.00	180.00	160.00	U	V	90.00	180.00	160.00	U	V
SS200893	SS20008WC	3/23/93	90.00	180.00	160.00	U	V	90.00	180.00	160.00	U	V
SS200993	SS20009WC	3/10/93	95.00	190.00	160.00	U	V	95.00	190.00	160.00	U	V
SS201193	SS20011WC	3/18/93	95.00	190.00	160.00	U	V	95.00	190.00	160.00	U	V
SS201293	SS20012WC	3/19/93	100.00	200.00	160.00	U	V	100.00	200.00	160.00	U	V
PT031	SS01121ST											
PT021	SS01122ST											
PT037	SS01123ST											
PT034	SS01124ST											
PT028	SS01125ST											
PT016	SS01126ST											
PT015	SS01127ST											
PT053	SS01128ST											
PT072	SS01129ST											
PT067	SS01131ST											
PT064	SS01133ST											
PT057	SS01148ST											
PT076	SS01161ST											
PT074	SS01162ST											
Number of Samples			12					12				
Number of Detects			2					2				
Minimum Detected			190.00					240.00				
Maximum Detected			970.00					660.00				
Average			173.33					151.67				
Standard Deviation			241.77					158.67				
t-value			1.796					1.796				
95% UCL			298.68					233.93				
Mean of Ln(x)			NA					NA				
S.D. of ln(x)			NA					NA				
H(0.95,n)			NA					NA				
95% UCL based on Lognormal			NA					NA				

ATTACHMENT H1
TABLE 1
95% UCL CONCENTRATION
AOC NO. 1
SURFACE SOIL ORGANICS AND METALS

			BIS(2-ETHYLHEXYL)PHTHALATE (ug/kg)					CHROMIUM (mg/kg)				
Location	Field ID	Sample Date	Result	SQL	CDRL	Qual	Valid. Qual	Result	SQL	CDRL	Qual	Valid. Qual
SS200093	SS20000WC	3/9/93	97.00	97.00	330.00	J	A	10.20	10.20	2.00		V
SS200193	SS20001WC	3/22/93	510.00	510.00	330.00		V	26.00	26.00	10.00		V
SS200293	SS20002WC	3/9/93	52.00	52.00	330.00	J	A	10.20	10.20	2.00		V
SS200393	SS20003WC	3/9/93	185.00	370.00	330.00	U	V	9.20	9.20	2.00		V
SS200493	SS20004WC	3/22/93	175.00	350.00	330.00	U	V	11.30	11.30	10.00		V
SS200593	SS20005WC	3/9/93	205.00	410.00	330.00	U	V	11.10	11.10	2.00		V
SS200693	SS20006WC	3/23/93	175.00	350.00	330.00	U	V	10.80	10.80	10.00		V
SS200793	SS20007WC	3/10/93	190.00	380.00	330.00	U	V	13.00	13.00	2.00		V
SS200893	SS20008WC	3/23/93	185.00	370.00	330.00	U	V	29.50	29.50	10.00		V
SS200993	SS20009WC	3/10/93	195.00	390.00	330.00	U	V	15.50	15.50	2.00		V
SS201193	SS20011WC	3/18/93	200.00	400.00	330.00	U	V	9.90	9.90	10.00		JA
SS201293	SS20012WC	3/19/93	76.00	76.00	330.00	J	A	15.30	15.30	10.00		V
PT031	SS01121ST							8.60	8.60	2.00		V
PT021	SS01122ST							10.10	10.10	2.00		V
PT037	SS01123ST							10.80	10.80	2.00		V
PT034	SS01124ST							7.20	7.20	2.00		V
PT028	SS01125ST							6.00	6.00	2.00		V
PT016	SS01126ST							6.70	6.70	2.00		V
PT015	SS01127ST							5.40	5.40	2.00		V
PT053	SS01128ST							9.20	9.20	2.00		V
PT072	SS01129ST							11.90	11.90	2.00	*	JA
PT067	SS01131ST							10.20	10.20	2.00		V
PT064	SS01133ST							19.90	19.90	2.00	*	JA
PT057	SS01148ST							10.80	10.80	2.00		V
PT076	SS01161ST							6.70	6.70	2.00		V
PT074	SS01162ST							9.60	9.60	2.00		V
Number of Samples			12					26				
Number of Detects			4.00					26				
Minimum Detected			52.00					5.40				
Maximum Detected			510.00					29.50				
Average			187.08					11.73				
Standard Deviation			109.48					5.55				
t-value			1.796					1.708				
95% UCL			243.85					13.60				
Mean of Ln(x)			NA					2.38				
S.D. of ln(x)			NA					0.40				
H(0.95,n)			NA					1.88				
95% UCL based on Lognormal			NA					13.58				

ATTACHMENT H1
TABLE 2
95% UCL CONCENTRATION
AOC NO. 1
SURFACE SOIL RADIONUCLIDES

			AMERICIUM-241 (pCi/g)					PLUTONIUM-239,240 (pCi/g)				
Location	Field ID	Sample Date	Result	SQL	CDRL	Qual	Valid. Qual	Result	SQL	CDRL	Qual	Valid. Qual
PT065	SS00729STU2	10/8/91	0.19	0.19	0.01		A	1.39	1.39	0.00		V
PT052	SS00730STU2	10/8/91	1.30	1.30	0.00		A	5.95	5.95	0.02		A
PT078	SS00731STU2	10/8/91	5.29	5.29	0.00		A	29.18	29.18	0.02		A
PT077	SS00735STU2	10/8/91	0.83	0.83	0.01		A	5.50	5.50	0.00		V
PT022	SS00763STU2	10/14/91	3.83	3.83	0.00		A	36.78	36.78	0.03		
PT038	SS00770STU2	10/14/91	0.09	0.09	0.00		V	0.61	0.61	0.01		V
PT023	SS00771STU2	10/14/91	0.15	0.15	0.01		V	1.78	1.78	0.00		A
PT011	SS00772STU2	10/14/91	0.06	0.06	0.01		V	0.27	0.27	0.01		V
PT010	SS00777STU2	10/14/91	0.69	0.69	0.01		V	3.83	3.83	0.01		V
PT032	SS00778STU2	10/14/91	10.55	10.55	0.08		V	44.72	44.72	0.04		V
PT061	SS00788STU2	11/25/91						2.70	2.70	0.06		A
PT045	SS00789STU2	11/25/91						260.00	260.00	0.84		A
PT054	SS00790STU2	11/26/91						120.00	120.00	1.10		A
PT073	SS00791STU2	11/26/91						31.00	31.00	0.10		A
PT066	SS00792STU2	11/26/91	54.00	54.00	0.04	B	A	57.00	57.00	0.04		A
PT055	SS00793STU2	11/26/91						200.00	200.00	0.35		A
PT056	SS00794STU2	11/26/91						6.40	6.40	0.11		A
PT046	SS00795STU2	11/26/91						7300.00	7300.00	1.80		A
PT049	SS00796STU2	11/26/91						29.00	29.00	0.16		A
PT036	SS00797STU2	11/26/91	34.00	34.00	0.33		A	5700.00	5700.00	2.30		A
PT035	SS00798STU2	11/26/91	26.00	26.00	0.45		A	380.00	380.00	0.27		A
PT030	SS00801STU2	11/27/91	38.00	38.00	0.18		A	280.00	280.00	0.92		A
PT020	SS00802STU2	11/27/91	3.40	3.40	0.06		A	23.00	23.00	0.04		V
PT029	SS00804STU2	11/27/91	160.00	160.00	0.24		A	950.00	950.00	0.83		A
PT028	SS00805STU2	11/27/91	110.00	110.00	0.08		A	380.00	380.00	0.58		A
PT019	SS00807STU2	11/27/91	22.00	22.00	0.07		A	120.00	120.00	0.76		A
PT031	SS01121ST	11/10/92	0.64	0.64	0.00		A	4.77	4.77	0.01		A
PT021	SS01122ST	11/10/92	10.53	10.53	0.01		A	59.63	59.63	0.02		A
PT037	SS01123ST	11/10/92	3.97	3.97	0.00		A	17.62	17.62	0.01		A
PT034	SS01124ST	11/10/92	53.02	53.02	0.00			307.30	307.30	0.44		
PT016	SS01126ST	11/10/92	2.07	2.07	0.01		A	21.16	21.16	0.02		A
PT015	SS01127ST	11/10/92						18.94	18.94	0.01		A
PT053	SS01128ST	11/10/92	4.15	4.15	0.05		A	19.99	19.99	0.41		A
PT072	SS01129ST	11/10/92	2.07	2.07	0.01		A	11.58	11.58	0.02		A
PT067	SS01131ST	11/10/92	8.15	8.15	0.01			47.78	47.78	0.01		
PT064	SS01133ST	11/10/92	0.27	0.27	0.00			1.03	1.03	0.05		
PT057	SS01148ST	11/11/92	0.61	0.61	0.01		A	4.44	4.44	0.04		A
PT076	SS01161ST	11/11/92	0.36	0.36	0.01		A	1.64	1.64	0.02		A
PT074	SS01162ST	11/11/92	2.15	2.15	0.02		A	10.84	10.84	0.02		A

ATTACHMENT H1
TABLE 2
95% UCL CONCENTRATION
AOC NO. 1
SURFACE SOIL RADIONUCLIDES

			AMERICIUM-241 (pCi/g)					PLUTONIUM-239,240 (pCi/g)				
Location	Field ID	Sample Date	Result	SQL	CDRL	Qual	Valid. Qual	Result	SQL	CDRL	Qual	Valid. Qual
Number of Samples			30					39				
Number of Detects			30					39				
Minimum Detected Concentration			0.06					0.27				
Maxium Detected Concentration			160.00					7300.00				
Average			18.61					422.97				
Standard Deviation			35.21					1435.10				
t-value			1.699					1.697				
95%UCL			29.53					812.94				
Mean of Ln(x)			1.16335					3.277595				
S.D. of Ln(x)			2.16391					2.340646				
H(0.95,n)			4.0816					4.18416				
95% UCL based on Lognormal			171.52					2,010				

ATTACHMENT H1
TABLE 3
95% UCL CONCENTRATION
AOC NO. 2
SURFACE SOIL ORGANICS AND METALS

			BIS(2-ETHYLHEXYL)PHTHALATE (ug/kg)					CHROMIUM (mg/kg)				
Location	Field ID	Sample Date	Result	SQL	CDRL	Qual	Valid. Qual	Result	SQL	CDRL	Qual	Valid. Qual
SS201093	SS20010WC	3/15/93		410.00	330.00	U	V	9.00	9.00	10.00		JA
SS201393	SS20013WC	3/22/93	190.00	380.00	330.00	U	V	14.20	14.20	10.00		V
SS201493	SS20014WC	3/22/93		390.00	330.00	U	V	14.80	14.80	10.00		V
SS201593	SS20015WC	3/15/93		430.00	330.00	U	V	13.80	13.80	10.00		JA
SS201693	SS20016WC	3/17/93		390.00	330.00	U	V	15.70	15.70	10.00		JA
SS201793	SS20017WC	3/22/93	190.00	380.00	330.00	U	V	13.90	13.90	10.00		V
SS201893	SS20018WC	3/22/93		400.00	330.00	U	V	12.70	12.70	10.00		V
SS201993	SS20019WC	3/15/93		430.00	330.00	U	V	15.90	15.90	10.00		JA
SS202093	SS20020WC	3/15/93	49.00	49.00	330.00	J	A	8.60	8.60	10.00		JA
SS202193	SS20021WC	3/15/93	56.00	56.00	330.00	J	A	12.80	12.80	10.00		JA
SS202293	SS20022WC	3/17/93		380.00	330.00	U	V	8.50	8.50	10.00		JA
SS202393	SS20023WC	3/19/93		410.00	330.00	U	V	12.00	12.00	10.00		V
SS202493	SS20024WC	3/18/93		400.00	330.00	U	V	15.30	15.30	10.00		JA
SS202593	SS20025WC	3/16/93		450.00	330.00	U	V	16.30	16.30	10.00		JA
SS202693	SS20026WC	3/16/93		400.00	330.00	U	V	10.00	10.00	10.00		JA
SS202793	SS20027WC	3/17/93		420.00	330.00	U	V	12.50	12.50	10.00		JA
SS202893	SS20028WC	3/19/93	110.00	110.00	330.00	J	A	14.60	14.60	10.00		V
SS202993	SS20029WC	3/18/93		420.00	330.00	U	V	17.40	17.40	10.00		JA
SS203093	SS20030WC	3/18/93	66.00	66.00	330.00	J	A	14.60	14.60	10.00		JA
SS203193	SS20031WC	3/18/93	70.00	70.00	330.00	J	A	14.80	14.80	10.00		JA
SS203293	SS20032WC	3/16/93		410.00	330.00	U	V	9.00	9.00	10.00		JA
SS203393	SS20033WC	3/16/93		430.00	330.00	U	V	8.60	8.60	10.00		JA
SS203493	SS20034WC	3/17/93		410.00	330.00	U	V	15.70	15.70	10.00		JA
SS203593	SS20035WC	3/17/93		410.00	330.00	U	V	10.60	10.60	10.00		JA
SS203693	SS20036WC	3/18/93		420.00	330.00	U	V	18.60	18.60	10.00		JA
SS203793	SS20037WC	3/18/93		400.00	330.00	U	V	13.70	13.70	2.00		V
SS203893	SS20038WC	3/19/93		420.00	330.00	U	V	13.60	13.60	10.00		V
SS203993	SS20039WC	3/19/93		400.00	330.00	U	V	15.40	15.40	10.00		V
PT123	SS01111ST							19.20	19.20	2.00	*	JA
PT109	SS01112ST							7.90	7.90	2.00	*	JA
PT107	SS01114ST							8.50	8.50	2.00		V
PT095	SS01115ST							6.00	6.00	2.00		V
PT096	SS01116ST							6.00	6.00	2.00		V
PT104	SS01134ST							12.80	12.80	2.00	*	JA
PT105	SS01137ST							13.20	13.20	2.00	*	JA
PT114	SS01138ST							13.90	13.90	2.00	*	JA
PT119	SS01139ST							13.50	13.50	2.00	*	JA
PT118	SS01156ST							7.20	7.20	2.00		V
PT120	SS01157ST							10.10	10.10	2.00		V
PT102	SS01158ST							8.90	8.90	2.00		V
PT101	SS01159ST							8.40	8.40	2.00		V
PT092	SS01160ST							6.80	6.80	2.00		V
PT079	SS01169ST							10.60	10.60	2.00		V
Number of Samples			7					43				
Number of Detects			5					43				
Minimum Detected			49.00					6.00				
Maximum Detected			110.00					19.20				
Average			104.43					12.22				
Standard Deviation			57.02					3.41				
t-value			1.943					1.684				
95% UCL			146.30					13.10				
Mean of Ln(x)			NA					2.460				
S.D. of ln(x)			NA					0.306				
H(0.95,n)			NA					1.777				
95% UCL based on Lognormal			NA					13.34				

ATTACHMENT H1
TABLE 4
95% UCL CONCENTRATION
AOC NO. 2
SURFACE SOIL RADIONUCLIDES

			AMERICIUM-241 (pCi/g)					PLUTONIUM-239,240 (pCi/g)				
Location	Field ID	Sample Date	Result	SQL	CDRL	Qual	Valid. Qual	Result	SQL	CDRL	Qual	Valid. Qual
PT087	SS00732STU2	10/8/91	2.07	2.07	0.01		A	10.30	10.30	0.03		A
PT088	SS00733STU2	10/8/91	3.14	3.14	0.00		A	20.34	20.34	0.02		A
PT094	SS00734STU2	10/8/91	2.92	2.92	0.00		A	13.81	13.81	0.03		A
PT086	SS00736STU2	10/8/91	0.93	0.93	0.00		A	8.74	8.74	0.01		V
PT085	SS00740STU2	10/10/91	0.90	0.90	0.00		A	3.35	3.35	0.03		A
PT084	SS00741STU2	10/10/91	0.31	0.31	0.01		A	1.58	1.58	0.01		V
PT100	SS00742STU2	10/10/91	0.18	0.18	0.01		A	0.78	0.78	0.01		A
PT093	SS00743STU2	10/10/91	1.27	1.27	0.00		A	6.90	6.90	0.03		A
PT106	SS00744STU2	10/10/91	1.82	1.82	0.00		A	11.70	11.70	0.01		A
PT113	SS00745STU2	10/10/91	0.99	0.99	0.01		A	5.80	5.80	0.03		A
PT112	SS00746STU2	10/10/91	0.30	0.30	0.00		A	1.54	1.54	0.01		A
PT121	SS00747STU2	10/10/91	0.59	0.59	0.00		A	2.61	2.61	0.01		A
PT122	SS00748STU2	10/10/91	0.39	0.39	0.01		A	2.26	2.26	0.01		A
PT108	SS00752STU2	10/11/91	0.37	0.37	0.01		A	2.71	2.71	0.03		A
PT115	SS00754STU2	10/11/91	0.09	0.09	0.00		A	0.61	0.61	0.03		
PT080	SS00764STU2	10/14/91	1.26	1.26	0.00		A	8.74	8.74	0.03		
PT081	SS00765STU2	10/14/91	0.71	0.71	0.00		A	6.00	6.00	0.03		
PT068	SS00799STU2	11/27/91	4.30	4.30	0.08		A	23.00	23.00	0.08		V
PT123	SS01111ST	11/10/92	0.12	0.12	0.00		A	0.91	0.91	0.01		A
PT109	SS01112ST	11/10/92	0.23	0.23	0.01		A	1.46	1.46	0.11		A
PT107	SS01114ST	11/10/92	0.53	0.53	0.01		A	3.14	3.14	0.01		A
PT095	SS01115ST							5.06	5.06	0.01		A
PT096	SS01116ST	11/10/92	0.37	0.37	0.01		A	8.45	8.45	0.13		
PT104	SS01134ST	11/11/92	0.47	0.47	0.00		A	2.94	2.94	0.01		A
PT105	SS01137ST	11/11/92	0.24	0.24	0.01		A	1.82	1.82	0.01		A
PT114	SS01138ST	11/11/92	0.75	0.75	0.01		A	4.47	4.47	0.01		A
PT119	SS01139ST	11/11/92	0.30	0.30	0.01		A	1.71	1.71	0.02		A
PT118	SS01156ST							0.66	0.66	0.01		A
PT120	SS01157ST	11/11/92	0.99	0.99	0.01		A	7.20	7.20	0.01		A
PT102	SS01158ST	11/11/92	3.10	3.10	0.01			50.30	50.30	0.01		A
PT101	SS01159ST	11/11/92	0.57	0.57	0.01		A	2.32	2.32	0.01		
PT092	SS01160ST	11/11/92	0.31	0.31	0.01		A	2.12	2.12	0.01		A
PT079	SS01169ST	11/11/92	3.71	3.71	0.01			22.96	22.96	0.02		A
Number of Samples			31					33				
Number of Detects			31					33				
Minimum Detected			0.09					0.61				
Maxium Detected			4.30					50.30				
Average			1.10					7.46				
Standard Deviation			1.14					9.71				
t-value			1.697					1.697				
95% UCL			1.45					10.33				
Mean of Ln(x)			-0.40					1.41				
S.D. of ln(x)			1.03					1.10				
H(0.95,n)			2.46					2.53				
95% UCL based on Lognormal			1.81					12.32				

ATTACHMENT H1
TABLE 5
95% UCL CONCENTRATION
AOC NO.1, 10-ACRE AREA
SURFACE SOIL ORGANICS AND METALS

			BIS(2-ETHYLHEXYL)PHTHALATE (ug/kg)					CHROMIUM (mg/kg)				
Location	Field ID	Sample Date	Result	SQL	CDRL	Qual	Valid. Qual	Result	SQL	CDRL	Qual	Valid. Qual
SS200193	SS20001WC	3/22/93	510.00	510.00	330.00		V	26.00	26.00	10.00		V
SS200693	SS20006WC	3/23/93	175.00	350.00	330.00	U	V	10.80	10.80	10.00		V
PT015	SS01127ST							5.40	5.40	2.00		V
PT016	SS01126ST							6.70	6.70	2.00		V
PT021	SS01122ST							10.10	10.10	2.00		V
PT028	SS01125ST							6.00	6.00	2.00		V
Number of Samples			2					6				
Number of Detects			1					6				
Minimum Detected			510.00					5.40				
Maximum Detected			510.00					26.00				
Average			342.50					10.83				
Standard Deviation			167.50					7.08				
t-value			6.314					2.015				
95% UCL			1090.33					16.66				
Mean of Ln(x)								2.222				
S.D. of ln(x)								0.580				
H(0.95,n)								2.672				
95% UCL based on Lognormal								21.81				

ATTACHMENT H1
TABLE 6
95% UCL CONCENTRATION
AOC NO.1, 10-ACRE AREA
SURFACE SOIL RADIONUCLIDES

		AMERICIUM-241 (pCi/g)						PLUTONIUM-239,240 (pCi/g)				
Location	Field ID	Sample Date	Result	SQL	CDRL	Qual	Valid. Qual	Result	SQL	CDRL	Qual	Valid. Qual
PT020	SS00802STU2	11/27/91	3.40	3.40	0.06		A	23.00	23.00	0.04		V
PT029	SS00804STU2	11/27/91	160.00	160.00	0.24		A	950.00	950.00	0.83		A
PT015	SS01127ST	11/10/92						18.94	18.94	0.01		A
PT019	SS00807STU2	11/27/91	22.00	22.00	0.07		A	120.00	120.00	0.76		A
PT016	SS01126ST	11/10/92	2.07	2.07	0.01		A	21.16	21.16	0.02		A
PT028	SS00805STU2	11/27/91	110.00	110.00	0.08		A	380.00	380.00	0.58		A
PT021	SS01122ST	11/10/92	10.53	10.53	0.01		A	59.63	59.63	0.02		A
PT010	SS00777STU2	10/14/91	0.69	0.69	0.01		V	3.83	3.83	0.01		V
Number of Samples			7					8				
Number of Detects			7					8				
Minimum Detected			0.69					3.83				
Maximum Detected			160.00					950.00				
Average			44.10					197.07				
Standard Deviation			59.40					307.31				
t-value			1.943					1.895				
95% UCL			87.72					402.96				
Mean of Ln(x)			2.40					4.02				
S.D. of ln(x)			2.03					1.79				
H(0.95,n)			6.85					5.56				
95% UCL based on Lognormal			25,640					11,777				

ATTACHMENT H1
TABLE 7
95% UCL CONCENTRATION
AOC NO. 1, 30-ACRE AREA
SURFACE SOIL ORGANICS AND METALS

			AROCLOR-1254 (ug/kg)					AROCLOR-1260 (ug/kg)				
Location	Field ID	Sample Date	Result	SQL	CDRL	Qual	Valid. Qual	Result	SQL	CDRL	Qual	Valid. Qual
SS200193	SS20001WC	3/22/93	95.00	190.00	160.00	U	V	95.00	190.00	160.00	U	V
SS200293	SS20002WC	3/9/93	970.00	970.00	160.00		V	660.00	660.00	160.00		V
SS200393	SS20003WC	3/9/93	190.00	190.00	160.00		V	240.00	240.00	160.00		V
SS200493	SS20004WC	3/22/93	85.00	170.00	160.00	U	V	85.00	170.00	160.00	U	V
SS200693	SS20006WC	3/23/93	85.00	170.00	160.00	U	V	85.00	170.00	160.00	U	V
PT015	SS01127ST											
PT016	SS01126ST											
PT021	SS01122ST											
PT028	SS01125ST											
PT034	SS01124ST											
Number of Samples			5					5				
Number of Detects			2					2				
Minimum Detected			190.00					240.00				
Maximum Detected			970.00					660.00				
Average			285.00					233.00				
Standard Deviation			344.78					221.46				
t-value			2.132					2.132				
95% UCL			613.73					444.16				
Mean of Ln(x)			NA					NA				
S.D. of ln(x)			NA					NA				
H(0.95,n)			NA					NA				
95% UCL based on Lognormal			NA					NA				

ATTACHMENT H1
TABLE 7
95% UCL CONCENTRATION
AOC NO. 1, 30-ACRE AREA
SURFACE SOIL ORGANICS AND METALS

			BIS(2-ETHYLHEXYL)PHTHALATE (ug/kg)					CHROMIUM (mg/kg)				
Location	Field ID	Sample Date	Result	SQL	CDRL	Qual	Valid. Qual	Result	SQL	CDRL	Qual	Valid. Qual
SS200193	SS20001WC	3/22/93	510.00	510.00	330.00		V	26.00	26.00	10.00		V
SS200293	SS20002WC	3/9/93	52.00	52.00	330.00	J	A	10.20	10.20	2.00		V
SS200393	SS20003WC	3/9/93	185.00	370.00	330.00	U	V	9.20	9.20	2.00		V
SS200493	SS20004WC	3/22/93	175.00	350.00	330.00	U	V	11.30	11.30	10.00		V
SS200693	SS20006WC	3/23/93	175.00	350.00	330.00	U	V	10.80	10.80	10.00		V
PT015	SS01127ST							5.40	5.40	2.00		V
PT016	SS01126ST							6.70	6.70	2.00		V
PT021	SS01122ST							10.10	10.10	2.00		V
PT028	SS01125ST							6.00	6.00	2.00		V
PT034	SS01124ST							7.20	7.20	2.00		V
Number of Samples			5					10				
Number of Detects			2					10				
Minimum Detected			52.00					5.40				
Maximum Detected			510.00					26.00				
Average			219.40					10.29				
Standard Deviation			153.36					5.60				
t-value			2.132					1.83				
95% UCL			365.62					13.54				
Mean of Ln(x)			NA					2.227				
S.D. of ln(x)			NA					0.446				
H(0.95,n)			NA					2.148				
95% UCL based on Lognormal			NA					14.10				

ATTACHMENT H1
TABLE 8
95% UCL CONCENTRATION
AOC NO. 1, 30-ACRE AREA
SURFACE SOIL RADIONUCLIDES

		AMERICIUM-241 (pCi/g)						PLUTONIUM-239,240 (pCi/g)				
Location	Field ID	Sample Date	Result	SQL	CDRL	Qual	Valid. Qual	Result	SQL	CDRL	Qual	Valid. Qual
PT020	SS00802STU2	11/27/91	3.40	3.40	0.06		A	23.00	23.00	0.04		V
PT029	SS00804STU2	11/27/91	160.00	160.00	0.24		A	950.00	950.00	0.83		A
PT015	SS01127ST	11/10/92						18.94	18.94	0.01		A
PT019	SS00807STU2	11/27/91	22.00	22.00	0.07		A	120.00	120.00	0.76		A
PT028	SS00805STU2	11/27/91	110.00	110.00	0.08		A	380.00	380.00	0.58		A
PT032	SS00778STU2	10/14/91	10.55	10.55	0.08		V	44.72	44.72	0.04		V
PT034	SS01124ST	11/10/92	53.02	53.02	0.00			307.30	307.30	0.44		
PT035	SS00798STU2	11/26/91	26.00	26.00	0.45		A	380.00	380.00	0.27		A
PT016	SS01126ST	11/10/92	2.07	2.07	0.01		A	21.16	21.16	0.02		A
PT021	SS01122ST	11/10/92	10.53	10.53	0.01		A	59.63	59.63	0.02		A
PT010	SS00777STU2	10/14/91	0.69	0.69	0.01		V	3.83	3.83	0.01		V
PT046	SS00795STU2	11/26/91						7300.00	7300.00	1.80		A
Number of Samples			10					12				
Number of Detects			10					12				
Minimum Detected			0.69					3.83				
Maximum Detected			160.00					7300.00				
Average			39.83					800.71				
Standard Deviation			51.04					1977.02				
t-value			1.833					1.796				
95% UCL			69.41					1825.72				
Mean of Ln(x)			2.64					4.71				
S.D. of ln(x)			1.75					2.07				
H(0.95,n)			4.79					5.11				
95% UCL based on Lognormal			1,043					22,813				

ATTACHMENT H1
TABLE 9
95% UCL CONCENTRATION
AOC NO. 1, 50-ACRE AREA
SURFACE SOIL ORGANICS AND METALS

			AROCLOR-1254 (ug/kg)					AROCLOR-1260 (ug/kg)				
Location	Field ID	Sample Date	Result	SQL	CDRL	Qual	Valid. Qual	Result	SQL	CDRL	Qual	Valid. Qual
SS200193	SS20001WC	3/22/93	95.00	190.00	160.00	U	V	95.00	190.00	160.00	U	V
SS200293	SS20002WC	3/9/93	970.00	970.00	160.00		V	660.00	660.00	160.00		V
SS200393	SS20003WC	3/9/93	190.00	190.00	160.00		V	240.00	240.00	160.00		V
SS200493	SS20004WC	3/22/93	85.00	170.00	160.00	U	V	85.00	170.00	160.00	U	V
SS200693	SS20006WC	3/23/93	85.00	170.00	160.00	U	V	85.00	170.00	160.00	U	V
SS200793*	SS20007WC	3/10/93	90.00	180.00	160.00	U	V	90.00	180.00	160.00	U	V
PT015	SS01127ST											
PT016	SS01126ST											
PT021	SS01122ST											
PT028	SS01125ST											
PT034	SS01124ST											
PT053	SS01128ST											
PT067	SS01131ST											
Number of Samples			6					6				
Number of Detects			2					2				
Minimum Detected			190.00					240.00				
Maximum Detected			970.00					660.00				
Average			252.50					209.17				
Standard Deviation			323.02					209.07				
t-value			2.015					2.015				
95% UCL			518.22					381.15				
Mean of Ln(x)			NA					NA				
S.D. of ln(x)			NA					NA				
H(0.95,n)			NA					NA				
95% UCL based on Lognormal			NA					NA				

ATTACHMENT H1
TABLE 9
95% UCL CONCENTRATION
AOC NO. 1, 50-ACRE AREA
SURFACE SOIL ORGANICS AND METALS

			BIS(2-ETHYLHEXYL)PHTHALATE (ug/kg)					CHROMIUM (mg/kg)				
Location	Field ID	Sample Date	Result	SQL	CDRL	Qual	Valid. Qual	Result	SQL	CDRL	Qual	Valid. Qual
SS200193	SS20001WC	3/22/93	510.00	510.00	330.00	A	V	26.00	26.00	10.00		V
SS200293	SS20002WC	3/9/93	52.00	52.00	330.00	J	A	10.20	10.20	2.00		V
SS200393	SS20003WC	3/9/93	185.00	370.00	330.00	U	V	9.20	9.20	2.00		V
SS200493	SS20004WC	3/22/93	175.00	350.00	330.00	U	V	11.30	11.30	10.00		V
SS200693	SS20006WC	3/23/93	175.00	350.00	330.00	U	V	10.80	10.80	10.00		V
SS200793*	SS20007WC	3/10/93	190.00	380.00	330.00	U	V	13.00	13.00	2.00		V
PT015	SS01127ST							5.40	5.40	2.00		V
PT016	SS01126ST							6.70	6.70	2.00		V
PT021	SS01122ST							10.10	10.10	2.00		V
PT028	SS01125ST							6.00	6.00	2.00		V
PT034	SS01124ST							7.20	7.20	2.00		V
PT053	SS01128ST							9.20	9.20	2.00		V
PT067	SS01131ST							10.20	10.20	2.00		V
Number of Samples			6					13				
Number of Detects			2					13				
Minimum Detected			52.00					5.40				
Maximum Detected			510.00					26.00				
Average			214.50					10.41				
Standard Deviation			140.43					4.98				
t-value			2.015					1.782				
95% UCL			330.02					12.87				
Mean of Ln(x)			NA					2.260				
S.D. of ln(x)			NA					0.398				
H(0.95,n)			NA					2.005				
95% UCL based on Lognormal			NA					13.06				

ATTACHMENT H1
TABLE 10
95% UCL CONCENTRATION
AOC NO. 1, 50-ACRE AREA
SURFACE SOIL RADIONUCLIDES

		AMERICIUM-241 (pCi/g)						PLUTONIUM-239,240 (pCi/g)				
Location	Field ID	Sample Date	Result	SQL	CDRL	Qual	Valid. Qual	Result	SQL	CDRL	Qual	Valid. Qual
PT020	SS00802STU2	11/27/91	3.40	3.40	0.06		A	23.00	23.00	0.04		V
PT029	SS00804STU2	11/27/91	160.00	160.00	0.24		A	950.00	950.00	0.83		A
PT015	SS01127ST	11/10/92						18.94	18.94	0.01		A
PT019	SS00807STU2	11/27/91	22.00	22.00	0.07		A	120.00	120.00	0.76		A
PT028	SS00805STU2	11/27/91	110.00	110.00	0.08		A	380.00	380.00	0.58		A
PT032	SS00778STU2	10/14/91	10.55	10.55	0.08		V	44.72	44.72	0.04		V
PT034	SS01124ST	11/10/92	53.02	53.02	0.00			307.30	307.30	0.44		
PT035	SS00798STU2	11/26/91	26.00	26.00	0.45		A	380.00	380.00	0.27		A
PT016	SS01126ST	11/10/92	2.07	2.07	0.01		A	21.16	21.16	0.02		A
PT021	SS01122ST	11/10/92	10.53	10.53	0.01		A	59.63	59.63	0.02		A
PT010	SS00777STU2	10/14/91	0.69	0.69	0.01		V	3.83	3.83	0.01		V
PT046	SS00795STU2	11/26/91						7300.00	7300.00	1.80		A
PT045	SS00789STU2	11/25/91						260.00	260.00	0.84		A
PT055	SS00793STU2	11/26/91						200.00	200.00	0.35		A
PT054	SS00790STU2	11/26/91						120.00	120.00	1.10		A
PT053	SS01128ST	11/10/92	4.15	4.15	0.05		A	19.99	19.99	0.41		A
PT052	SS00730STU2	10/8/91	1.30	1.30	0.00		A	5.95	5.95	0.02		A
PT061	SS00788STU2	11/25/91						2.70	2.70	0.06		A
Number of Samples			12					18				
Number of Detects			12					18				
Minimum Detected			0.69					2.70				
Maximum Detected			160.00					7300.00				
Average			33.64					567.62				
Standard Deviation			48.60					1648.57				
t-value			1.796					1.740				
95% UCL			58.84					1243.74				
Mean of Ln(x)			2.34					4.33				
S.D. of ln(x)			1.75					2.04				
H(0.95,n)			4.41					4.42				
95% UCL based on Lognormal			484.5					5,454				

ATTACHMENT H1
TABLE 11
95% UCL CONCENTRATION
AOC NO. 1
SUBSURFACE SOIL VOCs

					TETRACHLOROETHENE (ug/kg)				
Location	Field ID	Sample Date	Depth From	Depth To	Result	SQL	CDRL	Qual	Valid. Qual
B217389	5589BR0002	9/26/89	0	2	3.00	6.00	5.00	U	V
B217389	5589BR0204	9/26/89	2	3.8	4.50	9.00	5.00	UJ	A
B217389	5589BR0405	9/26/89	4	5	4.00	8.00	5.00	UJ	A
B217389	5589BR0708	9/26/89	7	8	2.50	5.00	5.00	U	V
B217389	5589BR1011	9/26/89	10	10.8	2.50	5.00	5.00	U	V
B217389	5589BR1213	9/26/89	12	13	2.50	5.00	5.00	UJ	A
B217389	5589BR1315	9/26/89	13	14.6	2.50	5.00	5.00	U	V
B217589	5789BR0002	10/17/89	0	2	2.50	5.00	5.00	UJ	A
B217589	5789BR0406	10/17/89	4	5	2.50	5.00	5.00	U	V
B217589	5789BR0910	10/17/89	9	10	3.00	6.00	5.00	U	V
B217589	5789BR1214	10/17/89	12	13	2.50	5.00	5.00	U	V
B315289	5989BR1012	10/26/89	10	11	2.50	5.00	5.00	UJ	A
B215389	B2153890204	10/31/89	2	4	2.50	5.00	5.00	U	V
B215389	B2153890608	10/31/89	6	7.5	2.50	5.00	5.00	U	V
B215389	B2153891011	10/31/89	10	11	2.50	5.00	5.00	U	V
B218189	B2181890002	11/6/89	0	0.8	2.50	5.00	5.00	UJ	A
B218189	B2181890810	11/6/89	8	9.8	2.50	5.00	5.00	U	V
B218189	B2181891214	11/6/89	12	13.8	2.50	5.00	5.00	U	V
B218189	B2181891618	11/6/89	16	17	2.00	4.00	5.00	U	V
B218189	B2181892022	11/6/89	20	22	2.50	5.00	5.00	U	V
B218189	B2181892931	11/6/89	29	30.6	2.50	5.00	5.00	U	V
B218189	B2181893536	11/7/89	35	36	2.00	4.00	5.00	U	V
B218589	B2185890002	11/10/89	0	1.4	3.00	6.00	5.00	U	V
B218589	B2185890406	11/10/89	4	6	2.50	5.00	5.00	U	V
B218589	B2185890810	11/10/89	8	9.3	2.50	5.00	5.00	U	V
B218589	B2185891214	10/10/89	12	13	2.50	5.00	5.00	U	V
B218589	B2185891618	11/10/89	16	17	2.50	5.00	5.00	U	V
B218689	B2186890002	11/13/89	0	2	3.00	6.00	5.00	U	V
B218689	B2186890406	11/13/89	4	5.3	3.00	6.00	5.00	U	V
B218689	B2186890810	11/13/89	8	9.5	2.50	5.00	5.00	U	V
B218689	B2186891214	11/13/89	12	13.3	2.50	5.00	5.00	U	V
B218789	B2187890002	11/15/89	0	1.5	3.00	6.00	5.00	U	V
B218789	B2187890406	11/15/89	4	5.3	3.00	6.00	5.00	U	V
B218789	B2187890810	11/15/89	8	9.2	2.50	5.00	5.00	U	V
B218989	B2189890002	11/27/89	0	1.7	2.50	5.00	5.00	U	V
B218989	B2189890406	11/27/89	4	5.4	2.50	5.00	5.00	U	V
B218989	B2189890810	11/27/89	8	8.9	2.50	5.00	5.00	U	V
B218989	B2189891214	11/27/89	12	13	2.50	5.00	5.00	U	V
B318889	B3188890406	11/17/89	4	5.2	2.50	5.00	5.00	U	V
B318889	B3188890810	11/17/89	8	8.9	2.50	5.00	5.00	U	V
B319789	B3197890002	1/18/90	0	2	2.00	2.00	5.00	J	A
B319789	B3197890406	1/18/90	4	5	2.50	5.00	5.00	U	V
B319789	B3197890810	1/18/90	8	9.3	2.50	5.00	5.00	U	V
B319789	B3197891214	1/18/90	12	14	3.00	6.00	5.00	U	V
B319789	B3197891618	1/18/90	16	17.5	2.50	5.00	5.00	U	V
B319789	B3197892022	1/18/90	20	22	3.00	6.00	5.00	U	V
B319789	B3197892426	1/18/90	24	26	3.00	6.00	5.00	U	V
B319789	B3197892830	1/18/90	28	30	3.00	6.00	5.00	U	V
B319789	B3197893234	1/18/90	32	34	3.00	6.00	5.00	U	V
00591	BH00022WCU2	10/9/91	5.5	5.7	3.00	6.00	5.00	U	V
01191	BH00030WCU2	10/17/91	8.7	8.9	3.00	6.00	5.00	U	
03491	BH00040WCU2	11/8/91	6.1	6.3	3.00	6.00	5.00	U	
11991	BH00042WCU2	11/11/91	8.7	8.9	3.00	6.00	5.00	U	
03891	BH00044WCU2	11/11/91	7.8	8.1	3.00	6.00	5.00	U	
02391	BH00046WCU2	11/12/91	8.6	8.9	3.00	6.00	5.00	U	
02791	BH00050WCU2	11/13/91	13.6	13.9	1.00	1.00	5.00	J	

ATTACHMENT H1
TABLE 11
95% UCL CONCENTRATION
AOC NO. 1
SUBSURFACE SOIL VOCs

					TETRACHLOROETHENE (ug/kg)				
Location	Field ID	Sample Date	Depth From	Depth To	Result	SQL	CDRL	Qual	Valid. Qual
B217389	5589BR0002	9/26/89	0	2	3.00	6.00	5.00	U	V
03091	BH00052WCU2	11/14/91	18.6	18.9	3.00	6.00	5.00	U	
12591	BH00070WCU2	12/30/91	21.8	22	3.00	6.00	5.00	U	V
12691	BH00072WCU2	1/2/92	22.8	23	3.00	6.00	5.00	U	V
11291	BH00080WCU2	9/18/91	26.6	26.8	3.00	6.00	5.00	U	V
05391	BH00082WCU2	9/20/91	26.6	26.8	3.00	6.00	5.00	U	V
03791	BH00098WCU2	10/10/91	5.6	5.8	3.00	6.00	5.00	U	V
03791	BH00100WCU2	10/10/91	29.2	29.4	2.50	5.00	5.00	U	V
11591	BH00103WCU2	10/14/91	4.1	4.3	3.00	6.00	5.00	U	V
11691	BH00105WCU2	10/15/91	29.5	29.7	2.50	5.00	5.00	U	V
03391	BH00107WCU2	10/18/91	13	13.2	2.50	5.00	5.00	U	
02191	BH00115WCU2	11/4/91	20.2	20.4	150.00	150.00	5.00	D	JA
01491	BH00135WCU2	12/4/91	3.4	3.6	5.00	5.00	5.00	J	
12391	BH00140WCU2	12/20/91	26.4	26.6	2.50	5.00	5.00	U	V
10191	BH00152WCU2	12/2/91	2.8	3	13000000.00	13000000.00	620000.00	D	
10191	BH00154WCU2	12/3/91	6.3	6.5	310000.00	310000.00	12000.00		
10191	BH00155WCU2	12/3/91	7.8	8	530000.00	530000.00	25000.00		
10191	BH00157WCU2	12/3/91	9.9	10.1	5200.00	5200.00	6200.00	J	
10191	BH00158WCU2	12/3/91	10.5	10.7	1600.00	1600.00	1600.00	J	
10191	BH00159WCU2	12/3/91	13.1	13.3	4700.00	4700.00	6200.00	J	
10291	BH00175WCU2	12/6/91	2.8	3	12000.00	12000.00	620.00		V
10291	BH00176WCU2	12/6/91	7.1	7.3	2.50	5.00	5.00	U	V
10291	BH00178WCU2	12/6/91	10.6	10.8	2.00	2.00	5.00	J	A
10491	BH00199WCU2	12/11/91	3.4	3.6	2.50	5.00	5.00	U	V
10491	BH00201WCU2	12/11/91	6.8	7	2.50	5.00	5.00	U	V
10491	BH00202WCU2	12/11/91	10.6	10.8	4.00	4.00	5.00	J	A
10891	BH00215WCU2	12/13/91	2.3	2.5	3.00	6.00	5.00	U	V
10891	BH00223WCU2	12/16/91	10.8	11	2.50	5.00	5.00	U	V
10891	BH00224WCU2	12/16/91	14.5	14.7	2.50	5.00	5.00	U	V
10891	BH00226WCU2	12/16/91	18.9	19.1	2.50	5.00	5.00	U	V
10891	BH00227WCU2	12/16/91	22.6	22.8	2.50	5.00	5.00	U	V
10891	BH00229WCU2	12/16/91	27.2	27.4	2.50	5.00	5.00	U	V
10891	BH00231WCU2	12/16/91	31.3	31.5	2.50	5.00	5.00	U	V
10891	BH00233WCU2	12/16/91	35.5	35.7	2.50	5.00	5.00	U	V
10891	BH00235WCU2	12/16/91	39.4	39.6	2.50	5.00	5.00	U	V
10991	BH00240WCU2	12/17/91	2.5	2.7	2.50	5.00	5.00	U	V
10991	BH00242WCU2	12/17/91	6.9	7.1	2.50	5.00	5.00	U	V
10991	BH00243WCU2	12/17/91	10.5	10.7	2.50	5.00	5.00	U	V
10991	BH00245WCU2	12/17/91	14.2	14.4	2.50	5.00	5.00	U	V
10991	BH00246WCU2	12/17/91	18.7	18.9	2.50	5.00	5.00	U	V
10991	BH00249WCU2	12/18/91	23.3	23.5	3.00	6.00	5.00	U	V
10991	BH00251WCU2	12/18/91	27.4	27.6	2.50	5.00	5.00	U	V
10991	BH00253WCU2	12/18/91	30.6	30.8	2.50	5.00	5.00	U	V
10991	BH00254WCU2	12/18/91	35	35.2	2.50	5.00	5.00	U	V
10991	BH00256WCU2	12/18/91	39.2	39.4	2.50	5.00	5.00	U	V
10791	BH00264WCU2	1/7/92	6.8	7	2.50	5.00	5.00	U	V
10791	BH00266WCU2	1/7/92	8.3	8.5	2.50	5.00	5.00	U	V
10791	BH00267WCU2	1/7/92	15.8	16	3.00	6.00	5.00	U	V
10791	BH00268WCU2	1/7/92	18.6	18.8	2.50	5.00	5.00	U	V
10791	BH00270WCU2	1/8/92	23.6	23.8	2.50	5.00	5.00	U	V
10791	BH00272WCU2	1/8/92	26.4	26.6	2.50	5.00	5.00	U	V
10791	BH00273WCU2	1/8/92	31.8	32	3.00	6.00	5.00	U	V
10791	BH00275WCU2	1/8/92	35.8	36	3.00	6.00	5.00	U	V
10791	BH00276WCU2	1/8/92	39.8	40	2.50	5.00	5.00	U	V
10791	BH00278WCU2	1/8/92	43.8	44	2.50	5.00	5.00	U	V
08391	BH00284WCU2	1/20/92	4.3	4.5	3.00	6.00	5.00	U	V

ATTACHMENT H1
TABLE 11
95% UCL CONCENTRATION
AOC NO. 1
SUBSURFACE SOIL VOCs

					TETRACHLOROETHENE (ug/kg)				
Location	Field ID	Sample Date	Depth From	Depth To	Result	SQL	CDRL	Qual	Valid. Qual
B217389	5589BR0002	9/26/89	0	2	3.00	6.00	5.00	U	V
08391	BH00285WCU2	1/20/92	9.2	9.4	3.00	6.00	5.00	U	JA
08391	BH00286WCU2	1/20/92	12.2	12.4	3.00	6.00	5.00	U	JA
08391	BH00288WCU2	1/20/92	16.1	16.3	3.00	6.00	5.00	U	V
08391	BH00290WCU2	1/20/92	21.6	21.8	3.00	6.00	5.00	U	V
08391	BH00291WCU2	1/20/92	24.3	24.5	2.50	5.00	5.00	U	V
08391	BH00293WCU2	1/20/92	29.7	29.9	5.00	5.00	5.00	J	A
08391	BH00295WCU2	1/20/92	32.9	33.1	3.00	6.00	5.00	U	V
08391	BH00297WCU2	1/21/92	37.7	37.9	2.00	2.00	5.00	J	A
08191	BH00303WCU2	1/23/92	1.2	1.4	3.00	6.00	5.00	U	V
08191	BH00304WCU2	1/23/92	7.2	7.4	2.50	5.00	5.00	U	V
08191	BH00306WCU2	1/23/92	10.3	10.5	2.50	5.00	5.00	U	V
08191	BH00308WCU2	1/23/92	14.8	15	2.50	5.00	5.00	U	V
08191	BH00310WCU2	1/23/92	19.7	19.9	3.00	6.00	5.00	U	V
08191	BH00313WCU2	1/23/92	26.1	26.3	3.00	6.00	5.00	U	V
08191	BH00315WCU2	1/23/92	31.7	31.9	3.00	6.00	5.00	U	V
08191	BH00316WCU2	1/24/92	35	35.2	2.50	5.00	5.00	U	V
08091	BH00321WCU2	1/28/92	2.9	3.1	3.00	6.00	5.00	U	V
07991	BH00330WCU2	2/3/92	2.8	3	2.50	5.00	5.00	U	JA
07991	BH00331WCU2	2/3/92	6.7	6.9	3.00	6.00	5.00	U	V
07991	BH00333WCU2	2/3/92	11.4	11.6	3.00	6.00	5.00	U	V
07991	BH00335WCU2	2/3/92	15.2	15.4	3.00	6.00	5.00	U	V
06991	BH00350WCU2	2/26/92	2.2	2.4	3.00	6.00	5.00	U	V
09991	BH00353WCU2	12/2/91	3.1	3.3	5.00	5.00	5.00	J	
09991	BH00354WCU2	12/2/91	6.8	7	8.00	8.00	5.00		
09991	BH00356WCU2	12/2/91	11	11.2	13.00	13.00	5.00		
09991	BH00358WCU2	12/2/91	15.6	15.8	48.00	48.00	5.00		
09991	BH00359WCU2	12/2/91	17.6	17.8	100.00	100.00	5.00		
09991	BH00360WCU2	12/2/91	19.6	19.8	180.00	180.00	5.00		
09891	BH00363WCU2	12/3/91	3.1	3.3	2.50	5.00	5.00	U	
09891	BH00364WCU2	12/3/91	6.3	6.5	1.00	1.00	5.00	J	
09891	BH00366WCU2	12/3/91	10.5	10.7	3.00	3.00	5.00	J	
10391	BH00371WCU2	12/9/91	3.1	3.3	3.00	6.00	5.00	U	V
10391	BH00372WCU2	12/9/91	6.7	6.9	3.00	6.00	5.00	U	V
10391	BH00374WCU2	12/9/91	10.6	10.8	2.50	5.00	5.00	U	V
10391	BH00376WCU2	12/9/91	14.6	14.8	2.50	5.00	5.00	U	V
10391	BH00378WCU2	12/9/91	23.1	23.3	3.00	6.00	5.00	U	V
07891	BH00393WCU2	12/12/91	2.8	3	3.00	6.00	5.00	U	V
07891	BH00396WCU2	12/12/91	6.5	6.7	2.50	5.00	5.00	U	V
07891	BH00397WCU2	12/12/91	10.5	10.7	2.50	5.00	5.00	U	V
07891	BH00399WCU2	12/12/91	16.1	16.3	2.50	5.00	5.00	U	V
10691	BH00406WCU2	1/10/92	2.8	3	3.00	6.00	5.00	U	V
10691	BH00408WCU2	1/10/92	6.6	6.8	3.00	6.00	5.00	U	V
10691	BH00409WCU2	1/10/92	11.4	11.6	2.50	5.00	5.00	U	V
10691	BH00411WCU2	1/10/92	15.1	15.3	2.50	5.00	5.00	U	V
10691	BH00413WCU2	1/10/92	19.8	20	3.00	6.00	5.00	U	V
10691	BH00414WCU2	1/10/92	23.8	24	3.00	6.00	5.00	U	V
10691	BH00417WCU2	1/13/92	26.8	27	2.50	5.00	5.00	U	V
10691	BH00418WCU2	1/13/92	30.6	30.8	3.00	6.00	5.00	U	V
08591	BH00428WCU2	1/14/92	2.5	2.7	3.00	6.00	5.00	U	V
08591	BH00430WCU2	1/15/92	7.5	7.7	3.00	6.00	5.00	U	V
08591	BH00432WCU2	1/15/92	10.7	10.9	2.50	5.00	5.00	U	V
08591	BH00433WCU2	1/15/92	14.6	14.8	2.50	5.00	5.00	U	V
08591	BH00435WCU2	1/15/92	26	26.2	3.00	6.00	5.00	U	V
08591	BH00437WCU2	1/15/92	35.8	36	5.00	5.00	5.00	J	A
08591	BH00439WCU2	1/15/92	39.4	39.6	3.00	6.00	5.00	U	V

ATTACHMENT H1
TABLE 11
95% UCL CONCENTRATION
AOC NO. 1
SUBSURFACE SOIL VOCs

					TETRACHLOROETHENE (ug/kg)				
Location	Field ID	Sample Date	Depth From	Depth To	Result	SQL	CDRL	Qual	Valid. Qual
B217389	5589BR0002	9/26/89	0	2	3.00	6.00	5.00	U	V
08491	BH00446WCU2	1/20/92	2.5	2.7	3.00	6.00	5.00	U	V
08491	BH00447WCU2	1/20/92	6.9	7.1	2.50	5.00	5.00	U	JA
08491	BH00449WCU2	1/29/92	10.5	10.7	3.00	6.00	5.00	U	JA
08491	BH00451WCU2	1/20/92	14.4	14.6	2.50	5.00	5.00	U	V
08291	BH00456WCU2	1/22/92	2.7	2.9	15.00	30.00	5.00	U	V
08291	BH00457WCU2	1/22/92	7.5	7.7	2.50	5.00	5.00	U	V
08291	BH00459WCU2	1/22/92	10.7	10.9	3.00	6.00	5.00	U	V
10591	BH00466WCU2	2/4/92	6	6.2	3.00	6.00	5.00	U	V
10591	BH00467WCU2	2/4/92	15.8	16	2.00	2.00	5.00	J	A
10591	BH00468WCU2	2/4/92	10.6	10.8	2.50	5.00	5.00	U	V
10591	BH00470WCU2	2/4/92	17.6	17.8	3.00	6.00	5.00	U	V
07391	BH00473WCU2	2/10/92	2.6	2.8	2.00	2.00	5.00	J	A
07091	BH00482WCU2	2/12/92	3.1	3.3	2.50	5.00	5.00	U	V
07091	BH00483WCU2	2/12/92	6.6	6.8	2.50	5.00	5.00	U	V
07091	BH00485WCU2	2/12/92	13.1	13.3	2.50	5.00	5.00	U	V
06791	BH00488WCU2	2/13/92	2.2	2.4	3.00	6.00	5.00	U	V
06791	BH00489WCU2	2/13/92	6.6	6.8	2.50	5.00	5.00	U	V
06791	BH00492WCU2	2/14/92	11	11.2	3.00	6.00	5.00	U	V
08791	BH00503WCU2	2/21/92	1.7	1.9	4.00	4.00	5.00	J	A
08791	BH00504WCU2	2/21/92	4.8	5	2.50	5.00	5.00	U	V
08791	BH00506WCU2	2/21/92	10.6	10.8	3.00	6.00	5.00	U	V
08791	BH00508WCU2	2/21/92	12.5	12.7	2.50	5.00	5.00	U	V
06691	BH00516WCU2	2/25/92	2.4	2.6	3.00	6.00	5.00	U	V
06691	BH00517WCU2	2/25/92	6.3	6.5	28.00	28.00	5.00		V
06691	BH00519WCU2	2/25/92	10.5	10.7	2.50	5.00	5.00	U	V
08691	BH00528WCU2	2/27/92	3	3.2	6.00	12.00	5.00	U	V
08691	BH00529WCU2	2/27/92	6.5	6.7	3.00	6.00	5.00	U	V
08691	BH00531WCU2	2/27/92	10.5	10.7	2.50	5.00	5.00	U	V
08891	BH00547WCU2	3/3/92	3.2	3.4	9.00	9.00	5.00		V
08891	BH00548WCU2	3/3/92	6.6	6.8	1.00	1.00	5.00	J	A
08891	BH00551WCU2	3/3/92	10.6	10.8	3.00	6.00	5.00	U	V
02591	BH00571WCU2	3/13/92	36.6	36.8	3.50	7.00	5.00	U	V
03991	BH00579WCU2	3/20/92	27.4	27.6	3.00	6.00	5.00	U	V
00991	BH00629WCU2	2/5/92	13.3	13.5	3.00	6.00	5.00	U	V
01091	BH00631WCU2	2/6/92	3.6	3.8	3.00	6.00	5.00	U	V
07291	BH00716WCU2	3/2/92	2.7	2.9	2.50	5.00	5.00	U	V
07291	BH00717WCU2	3/2/92	10.3	10.5	2.50	5.00	5.00	U	V
09091	BH00725WCU2	3/3/92	2.4	2.6	3.00	6.00	5.00	U	V
09091	BH00726WCU2	3/3/92	6.6	6.8	2.50	5.00	5.00	U	V
09091	BH00728WCU2	3/3/92	10.2	10.4	3.00	6.00	5.00	U	V
08991	BH00739WCU2	3/10/92	2.4	2.6	3.00	6.00	5.00	U	V
08991	BH00740WCU2	3/10/92	6.3	6.5	3.00	6.00	5.00	U	V
08991	BH00742WCU2	3/10/92	10.7	10.9	2.50	5.00	5.00	U	V
08991	BH00744WCU2	3/10/92	14.5	14.7	2.50	5.00	5.00	U	V
13491	BH00771WCU2	4/8/92	9.1	9.3	3.00	6.00	5.00	U	V
00791	BH00775WCU2	4/14/92	15.8	16	3.00	6.00	5.00	U	V
00791	BH00776WCU2	4/14/92	19.4	19.6	3.00	6.00	5.00	U	V
09191	BH00959WCU2	3/6/92	2.7	2.9	3.00	6.00	5.00	U	V
09191	BH00961WCU2	3/6/92	7	7.2	3.00	6.00	5.00	U	V
07191	BH00977WCU2	3/12/92	2.7	2.9	3.00	6.00	5.00	U	V
07191	BH00978WCU2	3/12/92	7.1	7.3	3.00	6.00	5.00	U	V
07191	BH00981WCU2	3/13/92	10.5	10.7	2.50	5.00	5.00	U	V
07691	BH01202WCU2	2/21/92	3.7	3.9	3.00	6.00	5.00	U	V
09691	BH01208WCU2	2/24/92	3.5	3.7	3.00	6.00	5.00	U	V
09791	BH01216WCU2	2/25/92	3.9	4.1	2.00	2.00	5.00	J	A

ATTACHMENT H1
TABLE 11
95% UCL CONCENTRATION
AOC NO. 1
SUBSURFACE SOIL VOCs

					TETRACHLOROETHENE (ug/kg)				
Location	Field ID	Sample Date	Depth From	Depth To	Result	SQL	CDRL	Qual	Valid. Qual
B217389	5589BR0002	9/26/89	0	2	3.00	6.00	5.00	U	V
09791	BH01217WCU2	2/25/92	7.8	8	2.00	2.00	5.00	J	A
07591	BH01225WCU2	2/26/92	3.9	4.1	3.00	6.00	5.00	U	V
07591	BH01226WCU2	2/26/92	7.8	8	3.00	6.00	5.00	U	V
07491	BH01231WCU2	2/26/92	2.8	3	3.00	6.00	5.00	U	V
12791	BH01237WCU2	2/27/92	2.8	3	3.00	6.00	5.00	U	V
12791	BH01238WCU2	2/27/92	7.8	8	3.00	6.00	5.00	U	V
06591	BH01247WCU2	3/2/92	3.6	3.8	3.00	6.00	5.00	U	V
06591	BH01248WCU2	3/2/92	7.4	7.6	2.50	5.00	5.00	U	V
09391	BH01287WCU2	3/17/92	2.8	3	3.00	6.00	5.00	U	V
09391	BH01288WCU2	3/17/92	7.5	7.7	3.00	6.00	5.00	U	V
09591	BH01292WCU2	3/17/92	2.8	3	3.00	6.00	5.00	U	V
21793	BH20285WC	6/3/93	23.1	23.4	130.00	130.00	5.00		V
21793	BH20315WC	6/3/93	27.5	27.8	170.00	170.00	5.00		V
21793	BH20316WC	6/3/93	31.6	31.9	100.00	100.00	5.00		V
21793	BH20317WC	6/3/93	35.1	35.4	32.00	32.00	5.00		V
21793	BH20318WC	6/3/93	39	39.3	4.00	4.00	5.00	J	A
21793	BH20326WC	6/3/93	42.9	43.2	5.00	5.00	5.00	J	A
21793	BH20327WC	6/3/93	47	47.3	5.00	5.00	5.00	J	A
21793	BH20328WC	6/3/93	49.7	50	7.00	7.00	5.00		V
24793	BH20600WC	8/9/93	7.7	8	1100000.00	1100000.00	5.00		V
24793	BH20601WC	8/9/93	7.7	8	260000.00	260000.00	5.00		V
24493	BH20604WC	8/12/93	7.4	7.7	2.50	5.00	5.00	U	Y
24693	BH20607WC	8/12/93	7.5	7.8	2.00	2.00	5.00	J	Y
24593	BH20608WC	8/13/93	7.5	7.8	2.50	5.00	5.00	U	Y
24093	BH20611WC	8/16/93	1.6	1.8	15.00	15.00	11.00		Y
24093	BH20613WC	8/16/93	7.6	7.8	3.00	6.00	6.00	U	Y
24093	BH20614WC	8/16/93	15.1	15.3	23.00	23.00	6.00		Y
24193	BH20625WC	8/23/93	7.5	7.8	2.50	5.00	5.00	U	Y
BH2287	BH22870009	7/9/87	0	9.3	12.50	25.00		U	
BH2287	BH22871018	7/9/87	10.6	18.4	12.50	25.00		U	
BH2387	BH23870008	7/7/87	0	7.5	12.50	25.00		U	
BH2387	BH238708CT	7/7/87	7.2	8.2	12.50	25.00		U	
BH2487	BH24870002	7/8/87	0	2.43	2.50	5.00	5.00	U	
BH2487	BH248705CT	7/8/87	2.43	4.85	12.50	25.00		U	
BH2587	BH25870009	6/18/87	0	9	130.00	130.00			
BH2687	BH26870003	7/16/87	0.3	2.5	3.00	6.00	6.00	U	
BH2787	BH27870010	7/6/87	0	4.8	12.50	25.00		U	
BH2887	BH288700WT	7/13/87	0	0.9	12.50	25.00		U	
BH2887	BH28870104	7/13/87	0.9	3.75	12.50	25.00		U	
BH2987	BH29870010	6/12/87	0	10	12.50	25.00		U	
BH2987	BH298713CT	6/12/87	9.7	12.7	12.50	25.00		U	
46792	BH30300IT	6/2/92	1.75	2	3.50	7.00	5.00	U	V
46792	BH30301IT	6/2/92	0	5	3.00	6.00	5.00	U	V
46792	BH30302IT	6/2/92	5	10	2.50	5.00	5.00	U	V
46792	BH30303IT	6/2/92	10	15	3.00	6.00	5.00	U	V
BH3087	BH30870010	6/16/87	0	9	2.50	5.00	5.00	U	
BH3087	BH30871020	6/16/87	11.5	17.15	12.50	25.00		U	
BH3187	BH31870013	8/4/87	0	11.7	16.00	16.00		J	
BH3187	BH318713CT	8/4/87	11.7	12.6	20.00	20.00		J	
BH3187	BH318716BR	8/4/87	15.7	22.85	12.50	25.00		U	
BH3287	BH32870008	8/3/87	0	8	12.50	25.00		U	
BH3287	BH32870815	8/3/87	8	15	12.50	25.00		U	
BH3287	BH328716CT	8/3/87	15.1	16.2	12.50	25.00		U	
BH3387	BH33870004	7/30/87	0	4	12.50	25.00		U	
BH3387	BH33870815	7/30/87	7.8	14.7	12.50	25.00		U	

ATTACHMENT H1
TABLE 11
95% UCL CONCENTRATION
AOC NO. 1
SUBSURFACE SOIL VOCs

					TETRACHLOROETHENE (ug/kg)				
Location	Field ID	Sample Date	Depth From	Depth To	Result	SQL	CDRL	Qual	Valid. Qual
B217389	5589BR0002	9/26/89	0	2	3.00	6.00	5.00	U	V
BH3487	BH34870008	7/29/87	0	8	12.50	25.00		U	
BH3487	BH34870815	7/29/87	8	14.7	12.50	25.00		U	
BH3487	BH348708CL	7/29/87	6.6	8	12.50	25.00		U	
BH3587	BH35870012	7/27/87	0	12.3	12.50	25.00		U	
BH3687	BH36870005	7/20/87	0	5	12.50	25.00		U	
BH3687	BH36870515	7/20/87	5	15	12.50	25.00		U	
BH3787	BH37870005	7/16/87	0	5	3.00	6.00	6.00	U	
BH3787	BH37871113	7/17/87	11	12.3	12.50	25.00		U	
BH3787	BH378721CT	7/17/87	18	21.7	12.50	25.00		U	
BH3887	BH38870010	7/14/87	0	9.5	12.50	25.00		U	
BH3887	BH388720BR	7/14/87	20.4	21.3	12.50	25.00		U	
BH3987	BH398702DH	8/12/87	2	3.4	12.50	25.00		U	
BH3987	BH398704DH	8/12/87	4	5.5	12.50	25.00		U	
BH3987	BH398707DH	8/12/87	7	8	12.50	25.00		U	
BH3987	BH398712UC	8/12/87	12	14	12.50	25.00		U	
BH4087	BH408704UC	8/13/87	4	6.8	12.50	25.00		U	
BH4087	BH408707CT	8/13/87	7	9.3	12.50	25.00		U	
BH4087	BH408709BR	8/13/87	9.5	12	12.50	25.00		U	
BH4187	BH41870912	8/17/87	9.5	10.8	12.50	25.00		U	
BH4187	BH418712UC	8/17/87	12	14.5	12.50	25.00		U	
BH4187	BH418714CT	8/17/87	14.5	17	12.50	25.00		U	
BH4187	BH418717BR	8/17/87	17	19.5	12.50	25.00		U	
BH4287	BH42870709	8/18/87	7	8.3	12.50	25.00		U	
BH4387	BH438704DH	9/4/87	4	5.3	12.50	25.00		U	
BH4387	BH438707DH	9/4/87	7	7.9	12.50	25.00		U	
BH4387	BH438709DH	9/4/87	9.5	10.3	12.50	25.00		U	
BH4387	BH438712DH	9/4/87	12	12.9	12.50	25.00		U	
BH4387	BH438714DH	9/4/87	14.5	15.8	12.50	25.00		U	
BH4487	BH448704DH	9/9/87	4	6.2	12.50	25.00		U	
BH4487	BH448714DH	9/9/87	14.5	16.4	12.50	25.00		U	
BH4587	BH45870709	8/28/87	7	9.5	12.50	25.00		U	
BH4587	BH45871417	8/28/87	14.5	16.5	12.50	25.00		U	
BH4687	BH46870709	9/2/87	7	9	12.50	25.00		U	
BH4787	BH478704DH	9/11/87	4	5.32	12.50	25.00		U	
BH4787	BH478706DH	9/11/87	6	7.15	12.50	25.00		U	
BH4787	BH478708DH	9/11/87	8	9	12.50	25.00		U	
BH4787	BH478709DH	9/11/87	9.5	10.52	12.50	25.00		U	
BH4787	BH478711DH	9/11/87	11.5	12.66	12.50	25.00		U	
BH4787	BH478713DH	9/11/87	13.5	14.78	12.50	25.00		U	
BH4787	BH478715DH	9/11/87	15	15.65	12.50	25.00		U	
BH4787	BH478720DH	9/14/87	20.5	21	12.50	25.00		U	
BH4787	BH478722WT	9/14/87	22.5	24.3	12.50	25.00		U	
BH4787	BH478726CT	9/15/87	26.2	27.2	12.50	25.00		U	
BH4887	BH48870006	9/16/87	6	7.14	12.50	25.00		U	
BH4887	BH488710UC	9/17/87	6	7.14	12.50	25.00		U	
BH4887	BH488713CT	9/17/87	13	15.11	12.50	25.00		U	
BH4887	BH488715BR	9/17/87	15	16.7	12.50	25.00		U	
BH4987	BH49870008	9/18/87	6	7.3	12.50	25.00		U	
BH4987	BH49870816	9/18/87	8	15.54	12.50	25.00		U	
BH5087	BH508712UC	9/17/87	12	12.9	12.50	25.00		U	
BH5087	BH508715CT	9/17/87	14.5	17	12.50	25.00		U	
BH5087	BH508717BR	9/17/87	17	19.5	12.50	25.00		U	
BH5187	BH51870009	9/18/87	0	9	12.50	25.00		U	
BH5187	BH518712WT	9/22/87	12	14.4	12.50	25.00		U	
BH5187	BH518714CT	9/22/87	14.5	17	12.50	25.00		U	

ATTACHMENT H1
TABLE 11
95% UCL CONCENTRATION
AOC NO. 1
SUBSURFACE SOIL VOCs

					TETRACHLOROETHENE (ug/kg)				
Location	Field ID	Sample Date	Depth From	Depth To	Result	SQL	CDRL	Qual	Valid. Qual
B217389	5589BR0002	9/26/89	0	2	3.00	6.00	5.00	U	V
BH5187	BH518717BR	9/22/87	17	19.5	12.50	25.00		U	
BH5287	BH52870010	9/22/87	0	9.5	12.50	25.00		U	
BH5287	BH528712DH	9/22/87	12	13	12.50	25.00		U	
BH5287	BH528722CT	9/22/87	22	24	12.50	25.00		U	
BH5287	BH528724BR	9/22/87	24	25	12.50	25.00		U	
BH5387	BH538700DH	9/11/87	0	18.8	12.50	25.00		U	
BH5387	BH538702DH	9/11/87	2	3.5	12.50	25.00		U	
BH5387	BH538706DH	9/11/87	6	7.8	12.50	25.00		U	
BH5387	BH538708DH	9/11/87	8	9.9	12.50	25.00		U	
BH5487	BH548702WT	9/15/87	2	4	12.50	25.00		U	
BH5487	BH548706DH	9/16/87	6	7.5	12.50	25.00		U	
BH5487	BH548708DH	9/16/87	8	9.65	12.50	25.00		U	
BH5487	BH548710DH	9/16/87	10	11.5	12.50	25.00		U	
BH5487	BH548712DH	9/16/87	12.2	14.2	12.50	25.00		U	
BH5487	BH54871424	9/18/87	14.2	22.8	12.50	25.00		U	
BH5487	BH54872334	9/21/87	23.5	32.8	12.50	25.00		U	
BH5487	BH548738WT	9/21/87	38.5	39	12.50	25.00		U	
BH5587	BH558702DH	9/15/87	2	3.3	12.50	25.00		U	
BH5587	BH558710DH	9/15/87	9.5	10.9	12.50	25.00		U	
BH5587	BH558712WT	9/15/87	12	14	12.50	25.00		U	
BH5587	BH55871424	9/15/87	14.5	23.5	12.50	25.00		U	
BH5587	BH558727UC	9/15/87	27	29.2	12.50	25.00		U	
BH5587	BH558729CT	9/9/87	29.5	32	12.50	25.00		U	
BH5587	BH558732BR	9/15/87	32	34.1	12.50	25.00		U	
BH5687	BH568702DH	9/10/87	2	3.5	12.50	25.00		U	
BH5687	BH568709DH	9/10/87	9.5	10.4	12.50	25.00		U	
BH5687	BH568712DH	9/10/87	12	14	12.50	25.00		U	
34591	MW00325EBU1	9/18/91	0	6	3.00	6.00	5.00	U	V
Number of Samples					359				
Number of Detects					48				
Minimum Detected					1.00				
Maximum Detected					13000000.00				
Average					42413.85				
Standard Deviation					688158.86				
t-value					1.645				
95% UCL					102159.65				
Mean of Ln(x)					3.450				
S.D. of Ln(x)					4.068				
H(0.95,n)					3.291				
95% UCL based on Lognormal					250,760				

ATTACHMENT H1
TABLE 12
95% UCL CONCENTRATIONS
AOC NO. 1
SUBSURFACE SOIL METALS

					ARSENIC (mg/kg)					CADMIUM (mg/kg)					MERCURY (mg/kg)				
Location	Field ID	Sample Date	Depth From	Depth To	Result	SQL	CDRL	Qual	Valid Qual	Result	SQL	CDRL	Qual	Valid Qual	Result	SQL	CDRL	Qual	Valid Qual
06591	BH01249WCU2	3/2/92	2.1	8	8.20	8.20	2.00		JA	0.33	0.66	1.00	U	JA	0.16	0.16	0.10		JA
06591	BH01251WCU2	3/2/92	8	14	4.60	4.60	2.00		JA	0.35	0.69	1.00	U	JA	0.03	0.06	0.10	U	JA
06691	BH00518WCU2	2/25/92	2	8	2.90	2.90	2.00	B	JA						0.03	0.06	0.10	U	V
06691	BH00520WCU2	2/25/92	8	14	2.00	2.00	2.00	B	JA	0.33	0.65	1.00	U	V	0.03	0.06	0.10	U	V
06691	BH00522WCU2	2/25/92	14	20	1.20	1.20	2.00	B	JA	0.33	0.65	1.00	U	V	0.03	0.06	0.10	U	V
06791	BH00490WCU2	2/13/92	2	8	4.80	4.80	2.00		JA	0.34	0.68	1.00	U	JA	0.04	0.07	0.10	U	JA
06791	BH00493WCU2	2/14/92	8	14	3.60	3.60	2.00		JA						0.06	0.06	0.10	B	JA
06791	BH00496WCU2	2/14/92	14	20	1.65	3.30	2.00	U	JA	0.33	0.65	1.00	U	JA	0.03	0.06	0.10	U	JA
06891	BH00540WCU2	2/28/92	2	6	2.60	2.60	2.00		V	0.35	0.69	1.00	U	V	0.06	0.06	0.10	B	V
06991	BH00701WCU2	2/26/92	2	8	2.20	2.20	2.00		V	0.33	0.65	1.00	U	V	0.08	0.08	0.10	B	V
07091	BH00484WCU2	2/12/92	2	8	3.00	3.00	2.00		V	0.33	0.66		U	V	0.03	0.06	0.10	U	JA
07091	BH00486WCU2	2/12/92	8	14	2.50	2.50	2.00		V	0.34	0.67		U	V	0.03	0.06	0.10	U	V
07191	BH00979WCU2	3/12/92	2	8	6.20	6.20	2.00	B	JA	0.34	0.68	1.00	U	V	0.03	0.06	0.10	U	V
07191	BH00982WCU2	3/13/92	8	14	6.10	6.10	2.00	B	JA	0.33	0.65	1.00	U	V	0.03	0.06	0.10	U	V
07291	BH00718WCU2	3/2/92	2	8	4.30	4.30	2.00		JA	0.34	0.67	1.00	U	JA	0.14	0.14	0.10		JA
07291	BH00719WCU2	3/2/92	8	14	5.40	5.40	2.00		JA	0.33	0.65	1.00	U	JA	0.03	0.05	0.10	U	JA
07291	BH00721WCU2	3/2/92	14	20	5.90	5.90	2.00		JA	0.33	0.66	1.00	U	JA	0.04	0.07	0.10	U	JA
07391	BH00475WCU2	2/10/92	2	8	6.30	6.30	2.00	B	V	0.33	0.66		U	V	0.03	0.06	0.10	U	V
07491	BH01233WCU2	2/26/92	2	8.2	4.80	4.80	2.00		V	0.34	0.68	1.00	U	V	0.03	0.06	0.10	U	V
07591	BH01227WCU2	2/26/92	2.1	8.2	4.50	4.50	2.00	B	V	0.35	0.70	1.00	U	V	0.11	0.11	0.10	B	V
07591	BH01229WCU2	2/26/92	8.2	14.1	1.90	1.90	2.00	B	JA	0.35	0.69	1.00	U	V	0.09	0.09	0.10	B	V
07691	BH01204WCU2	2/21/92	2	8	7.30	7.30	2.00	B	V	0.36	0.72	1.00	U	V	0.10	0.10	0.10	B	V
07891	BH00394WCU2	12/12/91	2.1	8	3.00	6.00	2.00	U	JA						0.03	0.06	0.10	U	
07891	BH00398WCU2	12/12/91	8	14	3.00	6.00	2.00	U	JA						0.03	0.06	0.10	U	
07891	BH00402WCU2	12/12/91	16	22	3.00	3.00	2.00			0.16	0.31	1.00	U		0.03	0.06	0.10	U	
07991	BH00332WCU2	2/3/92	2	8	2.10	4.20	2.00	U	JA						0.10	0.10	0.10	B	V
07991	BH00334WCU2	2/3/92	8	14	6.30	6.30	2.00		V	0.16	0.32	1.00	U	V	0.03	0.06	0.10	U	V
07991	BH00336WCU2	2/3/92	14	20	3.80	3.80	2.00		V	0.17	0.34	1.00	U	V	0.04	0.07	0.10	U	V
08091	BH00324WCU2	1/28/92	2	8	2.60	2.60	2.00		JA						0.03	0.06	0.10	U	V
08091	BH00326WCU2	1/28/92	8	14	6.10	6.10	2.00	B	V	0.16	0.32	1.00	U	V	0.03	0.06	0.10	U	V
08191	BH00305WCU2	1/23/92	0.9	8	2.50	2.50	2.00		V						0.03	0.06	0.10	U	
08191	BH00307WCU2	1/23/92	8	14	5.80	5.80	2.00	B	JA						0.04	0.07	0.10	U	V
08191	BH00309WCU2	1/23/92	14	20	3.20	3.20	2.00		V	0.18	0.35	1.00	U	V	0.04	0.07	0.10	U	V
08191	BH00312WCU2	1/23/92	20	26	4.00	4.00	2.00		V	0.18	0.35	1.00	U	V	0.03	0.06	0.10	U	V
08191	BH00314WCU2	1/24/92	26	32	0.95	1.90	2.00	U	JA	0.18	0.35	1.00	U	V	0.03	0.06	0.10	U	V
08191	BH00317WCU2	1/24/92	32	38	2.20	2.20	2.00	B	V	0.17	0.34	1.00	U	V	0.03	0.06	0.10	U	V
08291	BH00458WCU2	1/22/92	2	8	5.10	5.10	2.00		V						0.07	0.07	0.10	B	V
08291	BH00460WCU2	1/22/92	8	14	4.40	4.40	2.00		V	0.17	0.33	1.00	U	V	0.03	0.06	0.10	U	V
08391	BH00283WCU2	1/20/92	3	10	3.00	3.00	2.00	B	JA						0.13	0.13	0.10		V
08391	BH00287WCU2	1/20/92	10	16	1.80	1.80	2.00	B	V	0.15	0.29	1.00	U	V	0.03	0.05	0.10	U	V
08391	BH00289WCU2	1/20/92	16	22	3.70	3.70	2.00		V	0.17	0.34	1.00	U	V	0.06	0.06	0.10	B	V
08391	BH00292WCU2	1/20/92	22	28	2.40	2.40	2.00		V	0.17	0.34	1.00	U	V	0.03	0.06	0.10	U	V
08391	BH00294WCU2	1/20/92	28	34	3.10	3.10	2.00		V	0.18	0.35	1.00	U	V	0.04	0.07	0.10	U	V
08391	BH00298WCU2	1/21/92	34	40	2.00	2.00	2.00	B	V	0.17	0.34	1.00	U	V	0.03	0.06	0.10	U	V
08491	BH00448WCU2	1/20/92	2	8	5.60	5.60	2.00	B	JA						0.11	0.11	0.10	B	V
08491	BH00450WCU2	1/20/92	8	14	7.40	7.40	2.00	B	JA	0.17	0.33	1.00	U	JA	0.08	0.08	0.10	B	V
08491	BH00453WCU2	1/20/92	14	20	2.20	2.20	2.00	B	V	0.17	0.34	1.00	U	V	0.07	0.07	0.10	B	V
08591	BH00431WCU2	1/15/92	8	14	9.50	9.50	2.00	B	V						0.03	0.06	0.10	U	V
08591	BH00434WCU2	1/15/92	14	20	4.00	4.00	2.00	B	V						0.03	0.06	0.10	U	V
08591	BH00436WCU2	1/15/92	20	26	4.60	4.60	2.00	B	V						0.04	0.07	0.10	U	
08591	BH00438WCU2	1/15/92	32	38	5.50	5.50	2.00	B	V						0.04	0.07	0.10	U	
08591	BH00440WCU2	1/15/92	38	44	18.40	18.40	2.00		V	0.17	0.34	1.00	U	JA	0.03	0.06	0.10	U	V
08691	BH00530WCU2	2/27/92	2	8	3.30	3.30	2.00		JA						0.04	0.07	0.10	U	V
08691	BH00533WCU2	2/27/92	8	14	4.60	4.60	2.00		JA	0.32	0.64	1.00	U	V	0.03	0.06	0.10	U	V
08791	BH00505WCU2	2/21/92	0.9	6	2.10	2.10	2.00	B	V	0.34	0.67	1.00	U	V	0.03	0.06	0.10	U	V

ATTACHMENT H1
TABLE 12
95% UCL CONCENTRATIONS
AOC NO. 1
SUBSURFACE SOIL METALS

					ARSENIC (mg/kg)					CADMIUM (mg/kg)					MERCURY (mg/kg)				
Location	Field ID	Sample Date	Depth From	Depth To	Result	SQL	CDRL	Qual	Valid Qual	Result	SQL	CDRL	Qual	Valid Qual	Result	SQL	CDRL	Qual	Valid Qual
08791	BH00507WCU2	2/21/92	6	12	4.10	4.10	2.00		V	0.33	0.65	1.00	U	V	0.03	0.06	0.10	U	V
08791	BH00510WCU2	2/21/92	12	18	2.50	2.50	2.00		V	0.34	0.68	1.00	U	V	0.03	0.06	0.10	U	V
08891	BH00550WCU2	3/3/92	2	8	1.60	1.60	2.00	B	V	0.35	0.69	1.00	U	V	0.08	0.08	0.10	B	V
08891	BH00552WCU2	3/3/92	8	14	5.60	5.60	2.00		V	0.32	0.64	1.00	U	V	0.03	0.06	0.10	U	V
08991	BH00741WCU2	3/10/92	2	8	3.50	3.50	2.00	B	V						0.06	0.06	0.10	B	V
08991	BH00743WCU2	3/10/92	8	14	6.90	6.90	2.00		V	0.33	0.66	1.00	U	V	0.03	0.06	0.10	U	V
08991	BH00745WCU2	3/10/92	14	20	1.55	3.10	2.00	U	JA	0.33	0.66	1.00	U	V	0.03	0.05	0.10	U	V
09091	BH00727WCU2	3/3/92	2	8	4.30	4.30	2.00		V	0.36	0.72	1.00	U	V	0.04	0.07	0.10	U	V
09091	BH00729WCU2	3/3/92	8	14	3.80	3.80	2.00		V	0.40	0.79	1.00	U	V	0.03	0.06	0.10	U	V
09191	BH00962WCU2	3/6/92	2	8	2.00	2.00	2.00	B	V						0.03	0.06	0.10	U	V
09191	BH00965WCU2	3/6/92	8	12	4.50	4.50	2.00		V	0.33	0.66	1.00	U	V	0.03	0.06	0.10	U	V
09291	BH01274WCU2	3/12/92	2	8	6.60	6.60	2.00		JA	0.38	0.75	1.00	U	V	0.06	0.06	0.10	B	V
09391	BH01289WCU2	3/17/92	2	8	2.40	2.40	2.00	B	V	0.37	0.73	1.00	U	V	0.11	0.11	0.10	B	V
09391	BH01290WCU2	3/17/92	8	10	3.00	3.00	2.00		V						0.10	0.10	0.10	B	V
09491	BH01244WCU2	2/28/92	2.2	8	6.60	6.60	2.00		V	0.35	0.69	1.00	U	V	0.07	0.07	0.10	B	V
09591	BH01293WCU2	3/17/92	2	8	4.80	4.80	2.00		V	0.36	0.71	1.00	U	V	0.03	0.05	0.10	U	V
09691	BH01207WCU2	2/24/92	2.2	8.6	2.60	2.60	2.00		V	0.37	0.73	1.00	U	V	0.11	0.11	0.10	B	V
09791	BH01218WCU2	2/25/92	2.1	8.2	2.90	2.90	2.00	B	JA						0.04	0.07	0.10	U	V
09891	BH00365WCU2	12/3/91	3	8.2	6.50	6.50	2.00	B	JA	0.22	0.44	1.00	U		0.03	0.06	0.10	U	JA
09891	BH00367WCU2	12/3/91	8.2	14.2	4.80	4.80	2.00		JA	0.21	0.42	1.00	U		0.18	0.18	0.10		JA
09991	BH00355WCU2	12/2/91	2	8	4.20	4.20	2.00	B	JA	0.22	0.43	1.00	U		0.03	0.06	0.10	U	JA
09991	BH00357WCU2	12/2/91	8	14	4.00	4.00	2.00		JA	0.22	0.44	1.00	U		0.03	0.06	0.10	U	JA
[illegible]991	BH00361WCU2	12/2/91	14	20	13.50	13.50	2.00		JA	0.23	0.46	1.00	U		0.04	0.07	0.10	U	JA
[illegible]191	BH00156WCU2	12/3/91	4.2	8	9.20	9.20	2.00	B	JA	0.88	0.88	1.00			0.49	0.49	0.10		JA
10191	BH00160WCU2	12/3/91	8	14.1	4.80	4.80	2.00		JA	0.22	0.43	1.00	U		0.03	0.06	0.10	U	JA
10291	BH00177WCU2	12/6/91	2	8	5.90	5.90	2.00	B	JA	10.50	10.50	1.00		JA	6.00	6.00	0.10		JA
10291	BH00179WCU2	12/6/91	8	14	6.10	6.10	2.00	B	JA						0.03	0.06	0.10	U	JA
10291	BH00182WCU2	12/9/91	14	20	7.70	7.70	2.00	B	JA						0.03	0.06	0.10	U	JA
10391	BH00373WCU2	12/9/91	2.2	8.1	7.00	7.00	2.00	B	JA						0.03	0.06	0.10	U	JA
10391	BH00375WCU2	12/9/91	8.1	14	8.90	8.90	2.00	B	JA						0.03	0.06	0.10	U	JA
10391	BH00377WCU2	12/9/91	14	20	7.10	7.10	2.00	B	JA						0.03	0.06	0.10	U	JA
10391	BH00379WCU2	12/9/91	20	26	6.10	6.10	2.00		JA	0.22	0.44	1.00	U	JA	0.04	0.07	0.10	U	JA
10491	BH00200WCU2	12/11/91	2	8	3.40	6.80	2.00	U	JA	0.17	0.34	1.00	U	JA	0.03	0.06	0.10	U	JA
10491	BH00203WCU2	12/11/91	8	14	9.50	9.50	2.00	B	JA						0.03	0.06	0.10	U	JA
10491	BH00205WCU2	12/11/91	14	20	3.30	6.60	2.00	U	JA						0.04	0.07	0.10	U	JA
10591	BH00465WCU2	2/4/92	14	18	0.83	0.83	2.00	B	JA	0.19	0.37	1.00	U	V	0.04	0.07	0.10	U	V
10591	BH00469WCU2	2/4/92	8	14	5.80	5.80	2.00		V	0.18	0.36	1.00	U	V	0.03	0.06	0.10	U	V
10691	BH00407WCU2	1/10/92	2	8	4.60	4.60	2.00	B	V						0.04	0.07	0.10	U	V
10691	BH00410WCU2	1/10/92	8	14	5.90	5.90	2.00	B	V						0.04	0.07	0.10	U	V
10691	BH00412WCU2	1/10/92	14	20	6.10	6.10	2.00	B	V						0.04	0.07	0.10	U	V
10691	BH00415WCU2	1/10/92	20	26	5.20	5.20	2.00	B	V						0.04	0.07	0.10	U	V
10691	BH00419WCU2	1/13/92	26	32	1.60	3.20	2.00	U	V						0.03	0.06	0.10	U	V
10691	BH00421WCU2	1/13/92	32	38	1.80	3.60	2.00	U	V						0.04	0.07	0.10	U	V
10791	BH00265WCU2	1/7/92	14	20	6.20	6.20	2.00	B		0.18	0.35	1.00	U		0.04	0.07	0.10	U	
10791	BH00271WCU2	1/8/92	20	26	5.00	5.00	2.00		V	0.16	0.32	1.00	U	JA	0.03	0.06	0.10	U	V
10791	BH00274WCU2	1/8/92	26	32	4.30	4.30	2.00	B	V						0.03	0.06	0.10	U	V
10791	BH00277WCU2	1/8/92	32	38	4.00	4.00	2.00	B	V						0.04	0.07	0.10	U	V
10791	BH00279WCU2	1/8/92	38	44	1.55	3.10	2.00	U	V	0.16	0.32	1.00	U	JA	0.03	0.06	0.10	U	V
10791	BH00281WCU2	1/8/92	44	50	6.60	6.60	2.00	B	V	0.17	0.34	1.00	U	JA	0.03	0.06	0.10	U	V
10891	BH00220WCU2	12/13/91	2	8	4.80	4.80	2.00	B	JA	0.16	0.32	1.00	U	JA	0.03	0.06	0.10	U	JA
[illegible]891	BH00222WCU2	12/16/91	8	14	7.30	7.30	2.00	B	JA						0.03	0.06	0.10	U	JA
10891	BH00225WCU2	12/16/91	14	20	4.80	4.80	2.00	B	JA						0.04	0.07	0.10	U	JA
10891	BH00228WCU2	12/16/91	20	26	4.70	4.70	2.00	B	JA	0.17	0.34	1.00	U	V	0.03	0.06	0.10	U	JA
10891	BH00230WCU2	12/16/91	26	32	2.90	2.90	2.00		JA						0.03	0.06	0.10	U	JA
10891	BH00232WCU2	12/16/91	32	38	2.90	2.90	2.00		JA	0.16	0.32	1.00	U		0.03	0.06	0.10	U	

ATTACHMENT H1
TABLE 12
95% UCL CONCENTRATIONS
AOC NO. 1
SUBSURFACE SOIL METALS

					ARSENIC (mg/kg)					CADMIUM (mg/kg)					MERCURY (mg/kg)				
Location	Field ID	Sample Date	Depth From	Depth To	Result	SQL	CDRL	Qual	Valid Qual	Result	SQL	CDRL	Qual	Valid Qual	Result	SQL	CDRL	Qual	Valid Qual
10891	BH00234WCU2	12/16/91	38	44	3.00	3.00	2.00			0.16	0.32	1.00	U		0.04	0.07	0.10	U	
10991	BH00241WCU2	12/17/91	2	8	2.60	2.60	2.00	B		0.17	0.33	1.00	U		0.03	0.06	0.10	U	
10991	BH00247WCU2	12/17/91	14	20	5.00	5.00	2.00			0.17	0.33	1.00	U		0.04	0.07	0.10	U	
10991	BH00250WCU2	12/18/91	20	26	1.75	3.50	2.00	U	JA						0.04	0.07	0.10	U	JA
10991	BH00252WCU2	12/18/91	26	32	4.50	4.50	2.00	B	JA						0.03	0.06	0.10	U	JA
10991	BH00255WCU2	12/18/91	32	38	1.65	3.30	2.00	U	JA						0.04	0.07	0.10	U	JA
10991	BH00258WCU2	12/18/91	38	44	2.50	2.50	2.00		JA						0.03	0.06	0.10	U	JA
12791	BH01239WCU2	2/27/92	2	8.1	1.40	1.40	2.00	B	JA	0.35	0.69	1.00	U	V	0.08	0.08	0.10	B	V
12791	BH01240WCU2	2/27/92	8.1	10	1.70	1.70	2.00	B	JA	0.36	0.71	1.00	U	V	0.21	0.21	0.10		V
13091	BH00347WCU2	2/19/92	14	20	1.90	1.90	2.00	B	V	0.33	0.66	1.00	U	V	0.03	0.06	0.10	U	V
21793	BH20319WC	6/3/93	20.7	26.7	9.80	9.80	2.00		JA	0.50	1.00	1.00	U	JA	0.06	0.06	0.10	B	V
21793	BH20320WC	6/3/93	26.7	31.9	5.20	5.20	2.00		JA	0.36	0.72	1.00	U	V	0.06	0.06	0.10	B	V
21793	BH20321WC	6/3/93	31.9	37.4	3.80	3.80	2.00		JA	1.50	1.50	1.00		JA	0.15	0.15	0.10		V
21793	BH20322WC	6/3/93	37.4	43.2	1.70	1.70	2.00	B	JA	0.36	0.72	1.00	U	V	0.07	0.07	0.10	B	V
21793	BH20325WC	6/3/93	43.2	50	2.50	2.50	2.00		JA	0.36	0.71	1.00	U	V	0.06	0.06	0.10	B	V
24793	BH20600WC	8/9/93	7.7	8	1.40	1.40	2.00	B	JA	0.36	0.72	1.00	U	V	0.03	0.05	0.10	U	V
24793	BH20601WC	8/9/93	7.7	8	1.40	1.40	2.00	B	V	0.36	0.71	1.00	U	V	0.03	0.05	0.10	U	V
46692	BH30379IT	7/30/92	0	15	4.70	4.70	2.00		V	0.50	1.00	1.00	U	V	0.23	0.23	0.10		V
46792	BH30301IT	6/2/92	0	5	3.90	3.90	2.00		V	0.33	0.66	1.00	U	JA	0.06	0.11	0.04	U	V
46792	BH30302IT	6/2/92	5	10	5.30	5.30	2.00		V	0.21	0.41	1.00	U	V	0.06	0.11	0.04	U	V
46792	BH30303IT	6/2/92	10	15	14.90	14.90	2.00		V	1.40	1.40	1.00		V	0.06	0.12	0.04	U	V
46892	BH30380IT	7/30/92	0	10	3.50	3.50	2.00		V	0.49	0.98	1.00	U	V	0.03	0.06	0.10	U	V
B215389	B2153890003	10/31/89	0	3	5.10	5.10	2.00		V	0.36	0.71	1.00	U	V					
B215389	B2153890307	11/1/89	3	7	3.50	3.50	2.00		V	1.10	1.10	1.00		A					
B215389	B2153890711	11/1/89	7	11	4.40	4.40	2.00		V	0.34	0.67	1.00	U	V					
B217389	5589BR0003	9/26/89	0	3	5.10	5.10	2.40			0.60	1.20	1.20	U		0.06	0.12	0.12	U	
B217389	5589BR0307	9/26/89	3	5	4.70	4.70	2.00		V						0.14	0.14	0.30		A
B217389	5589BR0711	9/26/89	7	10.8	4.40	4.40	2.00		V						0.06	0.11	0.30	U	V
B217389	5589BR1215	9/26/89	12	14.6	6.50	6.50	2.00		V	0.21	0.41	1.00	U	V	0.06	0.11	0.30	U	V
B217589	5789BR0003	10/17/89	0	3	4.80	4.80	2.00		V	0.23	0.45	1.00	U	V	0.22	0.22	0.30		A
B217589	5789BR0408	10/17/89	4	7.2	3.20	3.20	2.00		V	0.22	0.44	1.00	U	V	0.21	0.21	0.30		A
B217589	5789BR0913	10/17/89	9	13	4.70	4.70	2.00		V	0.22	0.44	1.00	U	V	0.21	0.21	0.30		A
B218189	B2181890003	11/6/89	0	3	1.10	2.20	2.20	U		0.55	1.10	1.10	U		0.15	0.15	0.14		
B218189	B2181890305	11/6/89	3	5	2.10	2.10	2.00	J	A	0.29	0.58	1.00	U	V	0.07	0.13	0.30	U	V
B218189	B2181890509	11/6/89	5	9	0.91	0.91	2.00	J	A	0.29	0.57	1.00	U	V	0.06	0.11	0.30	U	V
B218189	B2181890913	11/6/89	9	13	0.86	0.86	2.00	J	A	0.32	0.64	1.00	U	V	0.06	0.11	0.30	U	V
B218189	B2181891317	11/6/89	13	17	1.20	1.20	2.00	J	A	0.31	0.62	1.00	U	V	0.06	0.11	0.30	U	V
B218189	B2181891721	11/6/89	18	21	1.30	1.30	2.00	J	A	0.27	0.53	1.00	U	V	0.06	0.12	0.30	U	V
B218189	B2181892126	11/6/89	21	25.5	1.50	1.50	2.00	J	A	0.28	0.56	1.00	U	V	0.06	0.11	0.30	U	V
B218189	B2181892630	11/6/89	26	30	0.63	0.63	2.00	J	A	0.27	0.54	1.00	U	V	0.06	0.11	0.30	U	V
B218189	B2181893034	11/6/89	30	34	0.22	0.43	2.00	UJ	A	0.30	0.59	1.00	U	V	0.06	0.11	0.30	U	V
B218589	B2185890003	10/10/89	0	3	4.00	4.00	2.00		V	0.34	0.67	1.00	UJ	A	0.13	0.13	0.30		A
B218589	B2185890306	11/10/89	3	6	5.00	5.00	2.00		V	0.35	0.69	1.00	UJ	A	0.13	0.13	0.30		A
B218589	B2185890610	10/10/89	6	9.3	3.90	3.90	2.00		V	0.33	0.66	1.00	UJ	A	0.05	0.10	0.30	UJ	A
B218589	B2185891012	11/10/89	10	11	5.00	5.00	2.00		V	0.33	0.66	1.00	UJ	A	0.10	0.10	0.30		A
B218589	B2185891214	10/10/89	12	13	2.10	2.10	2.00		V	0.33	0.66	1.00	UJ	A	0.06	0.11	0.30	UJ	A
B218589	B2185891418	10/10/89	14	17	2.00	2.00	2.00	B	V	0.33	0.66	1.00	UJ	A	0.05	0.10	0.30	UJ	A
B218689	B2186890003	11/13/89	0	3	2.60	2.60	2.30			0.55	1.10	1.10	U		0.24	0.24	0.20		
B218689	B2186890307	11/13/89	3	7	3.20	3.20	2.00		V	0.34	0.68	1.00	UJ	A	0.17	0.17	0.30		A
B218689	B2186890711	11/13/89	8	11	2.90	2.90	2.00		V	0.33	0.65	1.00	UJ	A	0.12	0.12	0.30		
B218689	B2186891113	11/13/89	12	13	3.00	3.00	2.00		V	0.33	0.65	1.00	UJ	A	0.12	0.12	0.30		
B218789	B2187890003	15-Nov-89	0	2.9	4.20	4.20	2.30			0.60	1.20	1.20	U		0.24	0.24	0.20		
B218789	B2187890408	15-Nov-89	4	7.5	2.50	2.50	2.00		V	0.33	0.66	1.00	UJ	A	0.12	0.12	0.30		A
B218789	B2187890812	15-Nov-89	8	11	4.40	4.40	2.00		V	0.32	0.64	1.00	UJ	A	0.11	0.21	0.30	UJ	A
B218989	B2189890003	11/27/89	0	3	4.60	4.60	0.45			0.33	0.65	0.65	U		0.04	0.09	0.09	U	

ATTACHMENT H1
TABLE 12
95% UCL CONCENTRATIONS
AOC NO. 1
SUBSURFACE SOIL METALS

					ARSENIC (mg/kg)					CADMIUM (mg/kg)					MERCURY (mg/kg)				
Location	Field ID	Sample Date	Depth From	Depth To	Result	SQL	CDRL	Qual	Valid Qual	Result	SQL	CDRL	Qual	Valid Qual	Result	SQL	CDRL	Qual	Valid Qual
B218989	B2189890307	11/27/89	3	7.1	5.10	5.10	2.00		V	0.24	0.47	1.00	U	V	0.07	0.07	0.30		A
B218989	B2189890711	11/27/89	7.1	10.6	3.30	3.30	2.00		V	0.23	0.45	1.00	U	V	0.04	0.08	0.30	UJ	A
B218989	B2189891115	11/27/89	12	13	2.30	2.30	2.00		V	0.24	0.47	1.00	U	V	0.04	0.08	0.30	UJ	A
B218989	B2189891518	11/27/89	14	14.2	2.90	2.90	2.00		V	0.23	0.46	1.00	U	V	0.04	0.07	0.30	UJ	A
B315289	5989BR0003	10/26/89	0	3	4.80	4.80	2.10			1.60	1.60	1.00			0.28	0.28	0.11		
B315289	5989BR0306	10/26/89	2	4	3.70	3.70	2.30			0.55	1.10	1.10	U		0.05	0.10	0.10	U	
B315289	5989BR0711	10/26/89	7	11	3.30	3.30	2.00		A	0.32	0.64	1.00	U	V					
B315289	5989BR1115	10/26/89	11	14.5	8.80	8.80	2.00		A	0.35	0.70	1.00	U	V					
B315289	5989BR1518	10/26/89	15	18	5.80	5.80	2.00		A	0.36	0.71	1.00	U	V					
B318889	B3188890003	11/17/89	0	3	3.20	3.20	1.60			0.48	0.96	0.96	U		0.06	0.11	0.11	U	
B318889	B3188890307	11/17/89	3	7	2.50	2.50	2.00		V	0.28	0.56	1.00	U	V	0.05	0.10	0.30	U	V
B318889	B3188890711	11/17/89	8	11	2.70	2.70	2.00		V	0.31	0.62	1.00	U	V	0.06	0.11	0.30	U	V
B319789	B3197890003	1/18/90	0	3	4.40	4.40	0.48			0.26	0.51	0.89	U		0.13	0.13	0.09		
B319789	B3197890307	1/18/90	3	7	6.10	6.10	2.00		V						0.10	0.10	0.30		V
B319789	B3197890711	1/18/90	7	11	5.20	5.20	2.00		V	0.21	0.42	1.00	U	V	0.04	0.08	0.30	U	V
B319789	B3197891115	1/18/90	12	15	4.10	4.10	2.00		V	0.25	0.50	1.00	U	V	0.04	0.08	0.30	U	V
B319789	B3197891518	1/18/90	15	17.5	2.80	2.80	2.00		V	0.24	0.48	1.00	U	V	0.04	0.08	0.30	U	V
B319789	B3197891822	1/18/90	18	22	8.40	8.40	2.00		V	0.28	0.56	1.00	U	V	0.05	0.10	0.30	U	V
B319789	B3197892226	1/18/90	22	26.2	5.60	5.60	2.00		V	0.27	0.53	1.00	U	V	0.06	0.11	0.30	U	V
B319789	B3197892632	1/18/90	28	32	3.40	3.40	2.00		V	0.27	0.54	1.00	U	V	0.05	0.10	0.30	U	V
B319789	B3197893236	1/18/90	32	36	5.30	5.30	2.00		V	0.27	0.53	1.00	U	V	0.06	0.11	0.30	U	V
B319789	B3197893840	1/22/90	38	40	9.20	9.20	2.00		V	0.27	0.53	1.00	U	V	0.06	0.12	0.30	U	V
[illegible]2287	BH22870009	7/9/87	0	9.3	2.60	2.60			N	1.40	1.40			N	0.18	0.18			N
[illegible]2287	BH22871018	7/9/87	10.6	18.4	13.60	13.60			N	2.00	2.00			N	0.05	0.10		U	N
BH2387	BH23870008	7/7/87	0	7.5	6.40	6.40			N	3.20	3.20			N	0.19	0.19			N
BH2387	BH238708CT	7/7/87	7.2	8.2	7.10	7.10			N	3.80	3.80			N	0.10	0.10			N
BH2487	BH24870002	7/8/87	0	2.43	11.00	11.00			N	0.57	1.14		U	N	0.05	0.10		U	N
BH2487	BH248705CT	7/8/87	2.43	4.85	3.20	3.20			N	0.50	1.00		U	N	0.05	0.10		U	N
BH2587	BH25870009	6/18/87	0	9	5.40	5.40			N	4.60	4.60			N	0.05	0.10		U	N
BH2687	BH26870003	7/16/87	0.3	2.5	17.80	17.80			N	0.61	1.22		U	N	0.05	0.10		U	N
BH2787	BH27870010	7/6/87	0	4.8	8.70	8.70			N	5.40	5.40			N	0.05	0.10		U	N
BH2887	BH288700WT	7/13/87	0	0.9	3.50	3.50			N	1.60	1.60			N	0.05	0.10		U	N
BH2887	BH28870104	7/13/87	0.9	3.75	4.90	4.90			N	2.10	2.10			N	0.05	0.10		U	N
BH2987	BH29870010	6/12/87	0	10	3.60	3.60			N	1.90	1.90			N	114.00	114.00			N
BH2987	BH298713CT	6/12/87	9.7	12.7	2.90	2.90			N	1.50	1.50			N	0.20	0.20			N
BH3087	BH30870010	6/16/87	0	9	7.88	7.88			N	0.50	1.00		U	N	0.05	0.10		U	N
BH3187	BH31870013	8/4/87	0	11.7	12.00	12.00			N	0.50	1.00		U	N	0.05	0.10		U	N
BH3187	BH318713CT	8/4/87	11.7	12.6	14.00	14.00			N	0.50	1.00		U	N	0.05	0.10		U	N
BH3187	BH318716BR	8/4/87	15.7	22.9	6.70	6.70			N	0.50	1.00		U	N	0.05	0.10		U	N
BH3287	BH32870008	8/3/87	0	8	8.40	8.40			N	0.50	1.00		U	N	0.13	0.13			N
BH3287	BH32870815	8/3/87	8	15	7.80	7.80			N	0.50	1.00		U	N	0.34	0.34			N
BH3287	BH328716CT	8/3/87	15.1	16.2	10.00	10.00			N	0.50	1.00		U	N	0.05	0.10		U	N
BH3387	BH33870004	7/30/87	0	4	11.00	11.00			N	3.70	3.70			N	0.05	0.10		U	N
BH3387	BH33870815	7/30/87	7.8	14.7	15.00	15.00			N	1.20	1.20			N	0.05	0.10		U	N
BH3487	BH34870008	7/29/87	0	8	7.30	7.30			N	1.10	1.10			N	0.05	0.10		U	N
BH3487	BH34870815	7/29/87	8	14.7	9.50	9.50			N	3.10	3.10			N	0.05	0.10		U	N
BH3487	BH348708CL	7/29/87	6.6	8	7.50	7.50			N	2.00	2.00			N	0.05	0.10		U	N
BH3587	BH35870012	7/27/87	0	12.3	13.00	13.00			N	0.50	1.00		U	N	0.05	0.10		U	N
BH3687	BH36870005	7/20/87	0	5	5.30	5.30			N	1.30	1.30			N	0.05	0.10		U	N
BH3687	BH36870515	7/20/87	5	15	8.20	8.20			N	2.40	2.40			N	0.05	0.10		U	N
[illegible]3787	BH37870005	7/16/87	0	5	7.00	7.00			N	0.55	1.10		U	N	0.05	0.10		U	N
[illegible]3787	BH37871113	7/17/87	11	12.3	7.50	7.50			N	3.20	3.20			N	0.05	0.10		U	N
BH3787	BH378721CT	7/17/87	18	21.7	5.70	5.70			N	2.90	2.90			N	0.05	0.10		U	N
BH3887	BH38870010	7/14/87	0	9.5	9.60	9.60			N	2.20	2.20			N	0.05	0.10		U	N
BH3887	BH388720BR	7/14/87	20.4	21.3	8.20	8.20			N	1.80	1.80			N	0.05	0.10		U	N

ATTACHMENT H1
TABLE 12
95% UCL CONCENTRATIONS
AOC NO. 1
SUBSURFACE SOIL METALS

					ARSENIC (mg/kg)					CADMIUM (mg/kg)					MERCURY (mg/kg)				
Location	Field ID	Sample Date	Depth From	Depth To	Result	SQL	CDRL	Qual	Valid Qual	Result	SQL	CDRL	Qual	Valid Qual	Result	SQL	CDRL	Qual	Valid Qual
BH3987	BH398702DH	8/12/87	2	3.4	26.00	26.00			N	6.20	6.20			N	0.05	0.10		U	N
BH3987	BH398704DH	8/12/87	4	5.5	6.60	6.60			N	0.50	1.00		U	N	0.05	0.10		U	N
BH3987	BH398707DH	8/12/87	7	8	12.00	12.00			N	1.50	1.50			N	0.05	0.10		U	N
BH3987	BH398712UC	8/12/87	12	14	17.00	17.00			N	2.10	2.10			N	0.05	0.10		U	N
BH4087	BH408704UC	8/13/87	4	6.8	15.00	15.00			N	2.20	2.20			N	0.05	0.10		U	N
BH4087	BH408707CT	8/13/87	7	9.3	8.40	8.40			N	0.50	1.00		U	N	0.05	0.10		U	N
BH4087	BH408709BR	8/13/87	9.5	12	6.00	6.00			N	0.50	1.00		U	N	0.05	0.10		U	N
BH4187	BH41870012	8/17/87	0	10.8	12.00	12.00			N	1.40	1.40			N	0.05	0.10		U	N
BH4187	BH418712UC	8/17/87	12	14.5	12.00	12.00			N	1.40	1.40			N	0.05	0.10		U	N
BH4187	BH418714CT	8/17/87	14.5	17	13.00	13.00			N	2.30	2.30			N	0.05	0.10		U	N
BH4187	BH418717BR	8/17/87	17	19.5	13.00	13.00			N	1.60	1.60			N	0.05	0.10		U	N
BH4287	BH42870009	8/18/87	0	8.3	15.00	15.00			N	2.20	2.20			N	0.05	0.10		U	N
BH4387	BH438704DH	9/4/87	4	5.3	2.80	2.80			N	2.20	2.20			N	0.05	0.10		U	N
BH4387	BH438709DH	9/4/87	9.5	10.3	4.00	4.00			N	2.50	2.50			N	0.05	0.10		U	N
BH4387	BH438712DH	9/4/87	12	12.9	2.20	2.20			N	1.70	1.70			N	0.05	0.10		U	N
BH4387	BH438714DH	9/4/87	14.5	15.8	2.40	2.40			N	3.20	3.20			N	0.13	0.13			N
BH4487	BH448704DH	9/9/87	4	6.2	4.90	4.90			N	2.10	2.10			N	0.05	0.10		U	N
BH4487	BH448714DH	9/9/87	14.5	16.4	2.80	2.80			N	1.40	1.40			N	0.05	0.10		U	N
BH4587	BH45870009	8/31/87	0	9.5	10.00	10.00			N	3.40	3.40			N	0.05	0.10		U	N
BH4587	BH45870917	8/31/87	9.5	17	11.00	11.00			N	2.90	2.90			N	0.05	0.10		U	N
BH4687	BH46870009	9/2/87	0	9	3.00	3.00			N	2.30	2.30			N	0.05	0.10		U	N
BH4687	BH46870919	9/2/87	9.5	17.8	2.60	2.60			N	2.30	2.30			N	0.05	0.10		U	N
BH4787	BH478704DH	9/11/87	4	5.32	11.70	11.70			N	1.40	1.40			N	0.05	0.10		U	
BH4787	BH478706DH	9/11/87	6	7.15	9.80	9.80			N	1.90	1.90			N	0.05	0.10		U	
BH4787	BH478708DH	9/11/87	8	9	7.30	7.30			N	2.60	2.60			N	0.05	0.10		U	N
BH4787	BH478709DH	9/11/87	9.5	10.5	7.90	7.90			N	1.20	1.20			N	0.05	0.10		U	N
BH4787	BH478711DH	9/11/87	11.5	12.7	5.30	5.30			N	1.20	1.20			N	0.05	0.10		U	N
BH4787	BH478713DH	9/11/87	13.5	14.8	3.60	3.60			N	1.00	1.00			N	0.05	0.10		U	N
BH4787	BH478720DH	9/14/87	20.5	21	4.30	4.30			N	0.50	1.00		U	N	0.05	0.10		U	N
BH4787	BH478722WT	9/14/87	22.5	24.3	3.20	3.20			N	0.50	1.00		U	N	0.05	0.10		U	N
BH4787	BH478726CT	9/15/87	26.2	27.2	3.40	3.40			N	0.50	1.00		U	N	0.05	0.10		U	N
BH4887	BH48870006	9/16/87	6	7.14	22.80	22.80			N	2.40	2.40			N	0.05	0.10		U	N
BH4887	BH488713CT	9/17/87	13.2	15.1	12.30	12.30			N	1.60	1.60			N	0.05	0.10		U	N
BH4887	BH488715BR	9/17/87	15.2	16.7	10.10	10.10			N	1.90	1.90			N	0.12	0.12			N
BH4987	BH49870008	9/18/87	6	7.3	13.70	13.70			N	2.40	2.40			N	0.30	0.30			N
BH4987	BH49870816	9/18/87	8	15.5	9.50	9.50			N	3.60	3.60			N	0.05	0.10		U	N
BH5087	BH508712UC	9/17/87	12	12.9	11.40	11.40			N	2.70	2.70			N	0.12	0.12			N
BH5087	BH508715CT	9/17/87	14.5	17	10.80	10.80			N	1.60	1.60			N	0.22	0.22			N
BH5087	BH508717BR	9/17/87	17	19.5	16.20	16.20			N	1.60	1.60			N	0.29	0.29			N
BH5187	BH51870009	9/18/87	0	9	28.40	28.40			N	5.60	5.60			N	0.15	0.15			N
BH5187	BH518712WT	9/22/87	12	14.4	3.40	3.40			N	0.50	1.00		U	N	0.14	0.14			N
BH5187	BH518714CT	9/22/87	14.5	17	2.80	2.80			N	1.20	1.20			N	0.17	0.17			N
BH5187	BH518717BR	9/22/87	17	19.5	3.80	3.80			N	0.50	1.00		U	N	0.12	0.12			N
BH5287	BH52870010	9/22/87	0	9.5	4.80	4.80			N	1.20	1.20			N	0.15	0.15			N
BH5287	BH528712DH	9/22/87	12	13	5.70	5.70			N	1.00	1.00			N	0.23	0.23			N
BH5287	BH528722CT	9/22/87	22	24	8.40	8.40			N	1.30	1.30			N	0.05	0.10		U	N
BH5287	BH528724BR	9/22/87	24	25	6.20	6.20			N	1.60	1.60			N	0.12	0.12			N
BH5387	BH538700DH	9/11/87	0	18.8	8.90	8.90			N	2.30	2.30			N	0.05	0.10		U	N
BH5387	BH538702DH	9/11/87	2	3.5	14.60	14.60			N	2.00	2.00			N	0.05	0.10		U	N
BH5387	BH538706DH	9/11/87	6	7.8	6.80	6.80			N	1.30	1.30			N	0.05	0.10		U	N
BH5387	BH538708DH	9/11/87	8	9.9	7.00	7.00			N	1.40	1.40			N	0.05	0.10		U	
BH5487	BH548702WT	9/15/87	2	4	3.10	3.10			N	0.50	1.00		U	N	0.05	0.10		U	
BH5487	BH548706DH	9/16/87	6	7.5	29.60	29.60			N	2.10	2.10			N	0.05	0.10		U	N
BH5487	BH548708DH	9/16/87	8	9.65	10.70	10.70			N	1.20	1.20			N	0.34	0.34			N
BH5487	BH548710DH	9/16/87	10	11.5	12.50	12.50			N	1.80	1.80			N	0.05	0.10		U	N

ATTACHMENT H1
TABLE 12
95% UCL CONCENTRATIONS
AOC NO. 1
SUBSURFACE SOIL METALS

					ARSENIC (mg/kg)					CADMIUM (mg/kg)					MERCURY (mg/kg)				
Location	Field ID	Sample Date	Depth From	Depth To	Result	SQL	CDRL	Qual	Valid Qual	Result	SQL	CDRL	Qual	Valid Qual	Result	SQL	CDRL	Qual	Valid Qual
BH5487	BH548712DH	9/16/87	12.2	14.2	14.60	14.60			N	2.00	2.00			N	0.05	0.10		U	N
BH5487	BH54871424	9/18/87	14.2	22.8	30.80	30.80			N	5.50	5.50			N	0.05	0.10		U	N
BH5487	BH54872334	9/21/87	23.5	32.8	5.50	5.50			N	1.90	1.90			N	0.05	0.10		U	N
BH5487	BH548738WT	9/21/87	38.5	39	1.00	2.00		U	N	0.50	1.00		U	N	0.05	0.10		U	N
BH5587	BH558702DH	9/15/87	2	3.3	12.70	12.70			N	2.40	2.40			N	0.05	0.10		U	N
BH5587	BH558710DH	9/15/87	9.5	10.9	4.60	4.60			N	1.40	1.40			N	0.05	0.10		U	N
BH5587	BH558712WT	9/15/87	12	14	5.70	5.70			N	1.70	1.70			N	0.05	0.10		U	N
BH5587	BH55871424	9/15/87	14.5	23.5	12.80	12.80			N	3.80	3.80			N	0.05	0.10		U	N
BH5587	BH558727UC	9/15/87	27	29.2	3.10	3.10			N	1.30	1.30			N	0.05	0.10		U	N
BH5587	BH558729CT	9/9/87	29.5	32	1.00	2.00		U	N	1.10	1.10			N	0.05	0.10		U	N
BH5587	BH558732BR	9/15/87	32	34.1	1.00	2.00		U	N	0.50	1.00		U	N	0.05	0.10		U	N
BH5687	BH568702DH	9/10/87	2	3.5	3.50	3.50			N	1.70	1.70			N	0.19	0.19			N
BH5687	BH568709DH	9/10/87	9.5	10.4	4.70	4.70			N	1.40	1.40			N	0.05	0.10		U	N
BH5687	BH568712DH	9/10/87	12	14	4.00	4.00			N	1.80	1.80			N	0.05	0.10		U	N
Number of Samples					289					244					283				
Number of Detects					271					85					73				
Minimum Detected					0.63					0.88					0.06				
Maximum Detected					30.80					10.50					114.00				
Average					5.86					0.99					0.49				
Standard Deviation					4.59					1.24					6.77				
t-value					1.645					1.645					1.645				
95% UCL					6.30					1.13					1.15				
Mean of Ln(x)					1.520					-0.23					-3.879				
S.D. of ln(x)					0.718					0.813					1.604				
H(0.95,n)					1.721					1.821					2.165				
95% UCL based on Lognormal					6.36					1.219					0.092				

ATTACHMENT H1
TABLE 13
95% UCL CONCENTRATION
AOC NO. 1
SUBSURFACE SOIL RADIONUCLIDES

					AMERICIUM-241 (pCi/g)					PLUTONIUM-239,240 (pCi/g)					URANIUM-238 (pCi/g)				
Location	Field ID	Sample Date	Depth From	Depth To	Result	SQL	CDRL	Qual	Valid. Qual	Result	SQL	CDRL	Qual	Valid. Qual	Result	SQL	CDRL	Qual	Valid. Qual
00291	BH00574WCU2	2/6/92	8.3	8.4						5.700	5.700	0.004		V	1.000	1.000	0.035	B	V
06591	BH01249WCU2	3/2/92	2.1	8	0.002	0.004	0.005	U	A	-0.001	-0.001	0.005	U	V	0.970	0.970	0.011	B	A
06591	BH01251WCU2	3/2/92	8	14						0.004	0.007	0.022	U	V	0.980	0.980	0.009	B	A
06691	BH00518WCU2	2/25/92	2	8	7.200	7.200	0.012		A	68.000	68.000	0.913		A	0.650	0.650	0.025	B	A
06691	BH00520WCU2	2/25/92	8	14	0.820	0.820	0.014		V	5.600	5.600	0.027		A	1.300	1.300	0.039		A
06691	BH00522WCU2	2/25/92	14	20	0.040	0.040	0.018		V	0.680	0.680	0.005		A	0.970	0.970	0.011	B	A
06791	BH00490WCU2	2/13/92	2	8	0.120	0.120	0.011		V	0.830	0.830	0.011		A	0.850	0.850	0.024	B	A
06791	BH00493WCU2	2/14/92	8	14	0.014	0.014	0.004	J	A	0.056	0.056	0.003		V	0.900	0.900	0.025	B	V
06791	BH00496WCU2	2/14/92	14	20	0.000	0.000	0.011	U	A	0.004	0.004	0.002	J	V	0.890	0.890	0.019	B	V
06891	BH00540WCU2	2/28/92	2	6	0.005	0.010	0.011	U	V	0.020	0.020	0.004	J	A	0.430	0.430	0.020	B	A
06991	BH00701WCU2	2/26/92	2	8	0.018	0.018	0.005		A	0.061	0.061	0.002		A	0.477	0.477	0.004		A
07091	BH00484WCU2	2/12/92	2	8	0.024	0.024	0.004		V	0.550	0.550	0.005		V	0.780	0.780	0.020		A
07091	BH00486WCU2	2/12/92	8	14						4.900	4.900	0.005		V	0.990	0.990	0.017	B	A
07191	BH00979WCU2	3/12/92	2	8	0.039	0.039	0.005		A	0.100	0.100	0.007		V	0.660	0.660	0.027	B	A
07191	BH00982WCU2	3/13/92	8	14	0.013	0.013	0.002	J	A	0.048	0.048	0.010		A	0.600	0.600	0.040	B	A
07291	BH00718WCU2	3/2/92	2	8	0.460	0.460	0.024	B	A	3.400	3.400	0.005		V	0.780	0.780	0.006	B	A
07291	BH00719WCU2	3/2/92	8	14	-0.002	-0.004	0.017	U	V	0.031	0.031	0.016		V	1.400	1.400	0.013	B	A
07291	BH00721WCU2	3/2/92	14	20	0.005	0.005	0.004	J	V	0.005	0.009	0.011	U	A	1.100	1.100	0.005	B	A
07391	BH00475WCU2	2/10/92	2	8	0.031	0.031	0.005		V	0.140	0.140	0.002		V	1.200	1.200	0.014	B	V
07491	BH01233WCU2	2/26/92	2	8.2	0.008	0.016	0.019	U	A	0.013	0.013	0.002	BJ	JA	1.200	1.200	0.030	B	A
07591	BH01227WCU2	2/26/92	2.1	8.2						0.010	0.010	0.009	J	V	1.000	1.000	0.028	B	A
07591	BH01229WCU2	2/26/92	8.2	14.1	0.002	0.004	0.008	U	V	0.011	0.011	0.007	J	V	15.000	15.000	0.021	B	A
07691	BH01204WCU2	2/21/92	2	8	0.000	0.000	0.003	U	A	0.001	0.001	0.005	U	V	1.100	1.100	0.018	B	
07891	BH00394WCU2	12/12/91	2.1	8	0.049	0.049	0.000		A	0.253	0.253	0.000		A	0.746	0.746	0.034		
07891	BH00398WCU2	12/12/91	8	14	0.006	0.006	0.000	J	A	0.034	0.034	0.000		A	0.651	0.651	0.000		A
07891	BH00402WCU2	12/12/91	16	22	0.004	0.004	0.000	J	A	0.034	0.034	0.000		A	2.950	2.950	0.005		A
07991	BH00332WCU2	2/3/92	2	8						0.122	0.122	0.000		A	0.426	0.426	0.010		A
07991	BH00334WCU2	2/3/92	8	14						0.003	0.003	0.000		A	0.522	0.522	0.006		A
08091	BH00324WCU2	1/28/92	2	8	0.008	0.008	0.000		A	0.019	0.019	0.001		A	0.334	0.334	0.000		A
08091	BH00326WCU2	1/28/92	8	14	0.010	0.010	0.004		A	0.005	0.005	0.000		A	0.444	0.444	0.003		A
08191	BH00305WCU2	1/23/92	0.9	8						0.022	0.022	0.013	J	A	0.620	0.620	0.008	B	A
08191	BH00307WCU2	1/23/92	8	14	0.002	0.003	0.004	U	V	0.006	0.006	0.004	J	A	0.950	0.950	0.014	B	A
08191	BH00309WCU2	1/23/92	14	20	0.002	0.004	0.005	U	V	0.006	0.006	0.004	J	A	0.720	0.720	0.014	B	A
08191	BH00312WCU2	1/23/92	20	26						0.014	0.014	0.002	J	A	0.780	0.780	0.004	B	A
08191	BH00314WCU2	1/24/92	26	32	0.046	0.046	0.010		V	0.002	0.003	0.005	U	V	0.730	0.730	0.010	B	A
08191	BH00317WCU2	1/24/92	32	38	0.013	0.013	0.006	J	A	0.023	0.023	0.007	J	V	0.770	0.770	0.013	B	A
08291	BH00458WCU2	1/22/92	2	8	0.013	0.013	0.003	J	A	0.033	0.033	0.008		A	0.530	0.530	0.014	B	V
08291	BH00460WCU2	1/22/92	8	14	0.003	0.006	0.009	U	V	0.032	0.032	0.003		A	1.000	1.000	0.026	B	V
08391	BH00283WCU2	1/20/92	3	10	-0.002	-0.003	0.020	U	V	0.001	0.001	0.011	U	V	0.710	0.710	0.049	B	V
08391	BH00287WCU2	1/20/92	10	16	0.002	0.002	0.002	J	V	0.007	0.007	0.001	J	V	0.850	0.850	0.014	B	V
08391	BH00289WCU2	1/20/92	16	22	0.002	0.004	0.006	U	V	0.002	0.002	0.002	J	V	0.900	0.900	0.028	B	V
08391	BH00292WCU2	1/20/92	22	28	-0.002	-0.004	0.011	U	V	0.000	0.000	0.005	U	V	0.930	0.930	0.041	B	V
08391	BH00294WCU2	1/20/92	28	34	0.000	0.000	0.006	U	A	-0.001	-0.001	0.008	U	V	0.760	0.760	0.037	B	V
08391	BH00298WCU2	1/21/92	34	40	0.000	0.000	0.017	U	V	0.001	0.001	0.001	J	V	0.780	0.780	0.017	B	V
08491	BH00448WCU2	1/20/92	2	8	0.003	0.005	0.010	U	A	0.084	0.084	0.002		V	0.800	0.800	0.014	B	V
08491	BH00450WCU2	1/20/92	8	14						0.240	0.240	0.009		V	0.950	0.950	0.017	B	V
08491	BH00453WCU2	1/20/92	14	20	-0.001	-0.002	0.008	U	V	0.001	0.002	0.007	U	V	0.680	0.680	0.015	B	V
08591	BH00431WCU2	1/15/92	8	14	0.004	0.004	0.003	J	V	0.003	0.005	0.007	U	A	0.800	0.800	0.015	B	V
08591	BH00434WCU2	1/15/92	14	20	0.000	0.000	0.009	U	V	-0.001	-0.001	0.008	U	V	0.780	0.780	0.075		V
08591	BH00436WCU2	1/15/92	20	26	-0.001	-0.001	0.006	U	V	0.001	0.001	0.010	U	V	0.860	0.860	0.110		
08591	BH00438WCU2	1/15/92	32	38	0.001	0.001	0.002	U	V	0.001	0.001	0.009	U	V	0.540	0.540	0.013	B	
08591	BH00440WCU2	1/15/92	38	44	0.005	0.005	0.002	J	V	0.001	0.001	0.002	U	V	0.790	0.790	0.033	B	
08691	BH00530WCU2	2/27/92	2	8	1.800	1.800	0.010	B	A	11.000	11.000	0.013		A	0.620	0.620	0.025	B	A
08691	BH00533WCU2	2/27/92	8	14	0.013	0.013	0.003	BJ	A	0.077	0.077	0.005		A	0.970	0.970	0.028	B	A
08791	BH00505WCU2	2/21/92	0.9	6	0.270	0.270	0.010		V	0.035	0.035	0.019		V	0.870	0.870	0.015	B	V

ATTACHMENT H1
TABLE 13
95% UCL CONCENTRATION
AOC NO. 1
SUBSURFACE SOIL RADIONUCLIDES

					AMERICIUM-241 (pCi/g)					PLUTONIUM-239,240 (pCi/g)					URANIUM-238 (pCi/g)				
Location	Field ID	Sample Date	Depth From	Depth To	Result	SQL	CDRL	Qual	Valid. Qual	Result	SQL	CDRL	Qual	Valid. Qual	Result	SQL	CDRL	Qual	Valid. Qual
08791	BH00507WCU2	2/21/92	6	12	0.011	0.011	0.007	J	A	0.037	0.037	0.002		V	0.720	0.720	0.038		V
08791	BH00510WCU2	2/21/92	12	18	0.003	0.005	0.006	U	A	0.001	0.002	0.005	U	V	1.400	1.400	0.012	B	V
08891	BH00550WCU2	3/3/92	2	8	0.880	0.880	0.029	B	A	27.000	27.000	0.048		A	2.100	2.100	0.020	B	A
08891	BH00552WCU2	3/3/92	8	14	0.470	0.470	0.071	B	A	14.000	14.000	0.110		A	1.200	1.200	0.010	B	A
08991	BH00741WCU2	3/10/92	2	8						9.910	9.910	0.017		A	0.556	0.556	0.004		A
08991	BH00743WCU2	3/10/92	8	14						0.757	0.757	0.000		A	0.478	0.478	0.004		A
08991	BH00745WCU2	3/10/92	14	20	0.091	0.091	0.000		A	0.476	0.476	0.002		A	0.544	0.544	0.004		A
09091	BH00727WCU2	3/3/92	2	8	0.290	0.290	0.003		V	3.000	3.000	0.010		V	1.300	1.300	0.015	B	V
09091	BH00729WCU2	3/3/92	8	14	0.021	0.021	0.004		V	0.030	0.030	0.007		V	0.890	0.890	0.027		V
09191	BH00962WCU2	3/6/92			6.800	6.800	0.097		A						1.500	1.500	0.028		V
09191	BH00965WCU2	3/6/92	8	12	0.520	0.520	0.010		V	2.200	2.200	0.002		V	0.370	0.370	0.013	B	V
09291	BH01274WCU2	3/12/92	2	8	0.009	0.017	0.022	U	A	0.002	0.003	0.010	U	V	1.200	1.200	0.009	B	A
09491	BH01244WCU2	2/28/92	2.2	8	-0.002	-0.003	0.018	U	A	0.002	0.004	0.005	U	V	1.300	1.300	0.009	B	A
09691	BH01207WCU2	2/24/92	2.2	8.6	0.009	0.017	0.022	U	V	0.009	0.009	0.003	J	V	1.100	1.100	0.023	B	A
09791	BH01218WCU2	2/25/92	2.1	8.2	0.006	0.012	0.017	U	V	0.002	0.003	0.005	U	V	1.400	1.400	0.014	B	A
09891	BH00365WCU2	12/3/91	3	8.2	0.000	0.000	0.020	J		0.021	0.021	0.030	J		0.718	0.718	0.300		
09891	BH00367WCU2	12/3/91	8.2	14.2	0.003	0.003	0.020	J		0.070	0.070	0.030			0.726	0.726	0.300		
09991	BH00355WCU2	12/2/91	2	8	0.016	0.016	0.020	J		0.149	0.149	0.030			0.740	0.740	0.300		
09991	BH00357WCU2	12/2/91	8	14	0.001	0.001	0.020	J		0.019	0.019	0.030	J		0.856	0.856	0.300		
09991	BH00361WCU2	12/2/91	14	20	0.001	0.001	0.020	J		0.000	0.000	0.030	J		1.043	1.043	0.300		
10191	BH00156WCU2	12/3/91	4.2	8	0.598	0.598	0.000		A	3.120	3.120	0.016		A	26.370	26.370	0.038		A
10191	BH00160WCU2	12/3/91	8	14.1	0.010	0.010	0.000	J	A	0.067	0.067	0.000		A	0.754	0.754	0.029		A
0291	BH00177WCU2	12/6/91	2	8	3.293	3.293	0.020			15.120	15.120	0.030			113.100	#####	0.300		
10291	BH00179WCU2	12/6/91	8	14	0.007	0.007	0.020	J		0.021	0.021	0.030	J		0.772	0.772	0.300		
10291	BH00182WCU2	12/9/91	14	20	0.000	0.000	0.000	J	A	0.022	0.022	0.000	J	A	0.543	0.543	0.041		A
10391	BH00373WCU2	12/9/91	2.2	8.1	0.007	0.007	0.020	J		0.026	0.026	0.030	J		0.717	0.717	0.300		
10391	BH00375WCU2	12/9/91	8.1	14	0.006	0.006	0.020	J		0.094	0.094	0.030			0.654	0.654	0.300		
10391	BH00377WCU2	12/9/91	14	20	0.018	0.018	0.020	J		0.008	0.008	0.030	J		0.817	0.817	0.300		
10391	BH00379WCU2	12/9/91	20	26	0.022	0.022	0.020			0.031	0.031	0.030			0.697	0.697	0.300		
10491	BH00200WCU2	12/11/91	2	8	0.027	0.027	0.000		A	0.031	0.031	0.012		A	0.587	0.587	0.028		A
10491	BH00203WCU2	12/11/91	8	14	0.021	0.021	0.000		A	0.012	0.012	0.000	J	A	0.996	0.996	0.000		A
10491	BH00205WCU2	12/11/91	14	20	0.004	0.004	0.000	J	A	0.034	0.034	0.011		A	0.870	0.870	0.021		A
10591	BH00465WCU2	2/4/92	14	18	0.003	0.006	0.011	U	A	0.160	0.160	0.012		A	0.900	0.900	0.069	B	V
10591	BH00469WCU2	2/4/92	8	14	0.042	0.042	0.002		A	0.390	0.390	0.002		A	0.910	0.910	0.018	B	V
10691	BH00407WCU2	1/10/92	2	8	0.001	0.001	0.005	U	A	0.027	0.027	0.009	J	A	0.470	0.470	0.035	B	V
10691	BH00410WCU2	1/10/92	8	14	0.005	0.005	0.005	J	A	0.006	0.006	0.002	J	A	0.800	0.800	0.014	B	V
10691	BH00412WCU2	1/10/92	14	20	0.013	0.013	0.013	J	A	0.051	0.051	0.005		A	1.100	1.100	0.059	B	V
10691	BH00415WCU2	1/10/92	20	26	0.026	0.026	0.005		A	0.100	0.100	0.007		A	0.790	0.790	0.018	B	V
10691	BH00419WCU2	1/13/92	26	32	0.003	0.005	0.010	U	A	0.020	0.020	0.005	J	A	1.100	1.100	0.160		V
10691	BH00421WCU2	1/13/92	32	38	0.042	0.042	0.017		A	0.340	0.340	0.004		A	0.920	0.920	0.052	B	V
10791	BH00265WCU2	1/7/92	14	20	0.003	0.006	0.012	U	A	0.120	0.120	0.011		A	0.760	0.760	0.008	B	A
10791	BH00271WCU2	1/8/92	20	26	0.005	0.010	0.012	U	V	0.022	0.022	0.002	J	V	0.620	0.620	0.057		V
10791	BH00274WCU2	1/8/92	26	32	0.012	0.012	0.012	J	A	0.001	0.001	0.009	U	V	0.820	0.820	0.058		V
10791	BH00277WCU2	1/8/92	32	38	0.003	0.005	0.010	U	V	0.001	0.001	0.002	U	V	0.890	0.890	0.047	B	V
10791	BH00279WCU2	1/8/92	38	44	-0.003	-0.005	0.018	U	V	0.002	0.002	0.002	J	V	0.740	0.740	0.027	B	V
10791	BH00281WCU2	1/8/92	44	50	0.004	0.008	0.009	U	V	0.004	0.004	0.003	J	V	0.930	0.930	0.031	B	V
10891	BH00220WCU2	12/13/91	2	8	0.015	0.015	0.000	J	A	0.538	0.538	0.000		A	0.717	0.717	0.000		A
10891	BH00222WCU2	12/16/91	8	14	0.010	0.010	0.000		A	0.017	0.017	0.000		A	0.548	0.548	0.034		A
10891	BH00225WCU2	12/16/91	14	20	0.011	0.011	0.004		A	0.055	0.055	0.000		A	1.660	1.660	0.024		A
10891	BH00228WCU2	12/16/91	20	26	0.003	0.003	0.000		A	0.014	0.014	0.013		A	0.899	0.899	0.048		A
0891	BH00230WCU2	12/16/91	26	32	0.001	0.001	0.000		A	0.022	0.022	0.000		A	0.745	0.745	0.029		A
10891	BH00232WCU2	12/16/91	32	38	0.000	0.000	0.000		A	0.000	0.000	0.000		A	0.584	0.584	0.015		A
10891	BH00234WCU2	12/16/91	38	44	0.001	0.001	0.004		A	0.016	0.016	0.009		A	0.816	0.816	0.024		A
10991	BH00241WCU2	12/17/91	2	8	0.054	0.054	0.000		A	0.223	0.223	0.011		A	0.410	0.410	0.021		A
10991	BH00244WCU2	12/17/91	8	14	0.038	0.038	0.000		A	0.346	0.346	0.000		A					

ATTACHMENT H1
TABLE 13
95% UCL CONCENTRATION
AOC NO. 1
SUBSURFACE SOIL RADIONUCLIDES

					AMERICIUM-241 (pCi/g)					PLUTONIUM-239,240 (pCi/g)					URANIUM-238 (pCi/g)				
Location	Field ID	Sample Date	Depth From	Depth To	Result	SQL	CDRL	Qual	Valid. Qual	Result	SQL	CDRL	Qual	Valid. Qual	Result	SQL	CDRL	Qual	Valid. Qual
10991	BH00247WCU2	12/17/91	14	20	0.007	0.007	0.000	J	A	0.028	0.028	0.000	J	A	0.769	0.769	0.020		A
10991	BH00250WCU2	12/18/91	20	26						0.007	0.007	0.003	BJ	V	0.980	0.980	0.110		A
10991	BH00252WCU2	12/18/91	26	32						0.001	0.002	0.003	U	V	0.930	0.930	0.011		V
10991	BH00255WCU2	12/18/91	32	38						0.018	0.018	0.006	BJ	V	1.000	1.000	0.034	B	V
10991	BH00258WCU2	12/18/91	38	44	0.003	0.005	0.007	U	A	0.040	0.040	0.004	B	V	0.730	0.730	0.013	B	V
12791	BH01239WCU2	2/27/92	2	8.1	0.002	0.004	0.011	U	V	0.008	0.008	0.005	J	V	1.200	1.200	0.009	B	A
12791	BH01240WCU2	2/27/92	8.1	10	0.003	0.005	0.007	U	V	0.001	0.001	0.005	U	V	1.000	1.000	0.008	B	A
13091	BH00347WCU2	2/19/92	14	20	0.008	0.015	0.020	U	A	0.042	0.042	0.003		V	1.000	1.000	0.020	B	V
21793	BH20319WC	6/3/93	20.7	26.7	0.002	0.002	0.004			0.001	0.001	0.002			0.946	0.946	0.019		
21793	BH20320WC	6/3/93	26.7	31.9	0.004	0.004	0.005			0.002	0.002	0.002			1.045	1.045	0.020		
21793	BH20321WC	6/3/93	31.9	37.4	0.002	0.002	0.003			0.003	0.003	0.003			1.321	1.321	0.048		
21793	BH20322WC	6/3/93	37.4	43.2	0.003	0.003	0.005			0.001	0.001	0.002			1.299	1.299	0.081		
21793	BH20325WC	6/3/93	43.2	50	0.002	0.002	0.009			0.003	0.003	0.002			1.596	1.596	0.034		
46792	BH30301IT	6/2/92	0	5	4.852	4.852	0.000		V	31.410	31.410	0.000		A	1.420	1.420	0.000		V
46792	BH30302IT	6/2/92			0.000	0.000	0.000	J	V						0.607	0.607	0.020		V
46792	BH30303IT	6/2/92	10	15	0.002	0.002	0.005	J	V	0.003	0.003	0.008	J	A	0.696	0.696	0.000		V
B215389	B2153890003	10/31/89	0	3	0.031	0.031	0.007			0.131	0.131	0.004			1.040	1.040	0.000		
B215389	B2153890307	11/1/89	3	7	0.010	0.010	0.000			0.048	0.048	0.008			0.540	0.540	0.000		
B215389	B2153890711	11/1/89	7	11	0.002	0.002	0.013			0.012	0.012	0.007			0.780	0.780	0.000		
B217389	5589BR0003	9/26/89	0	3						0.364	0.364	0.000			0.780	0.780	0.000		
B217389	5589BR0307	9/26/89	3	5	0.007	0.007	0.004		A	0.015	0.015	0.000			0.790	0.790	0.110		
B217389	5589BR0711	9/26/89	7	10.8	0.011	0.011	0.008		A	0.032	0.032	0.000			0.710	0.710	0.120		
B217389	5589BR1215	9/26/89	12	14.6	0.007	0.007	0.000		A	0.005	0.005	0.000			0.340	0.340	0.130		
B217589	5789BR0003	10/17/89	0	3						0.645	0.645	0.009							
B218189	B2181890003	11/6/89	0	3	0.068	0.068	0.000			0.118	0.118	0.015		A	0.390	0.390	0.000		A
B218189	B2181890305	11/6/89	3	5	0.008	0.008	0.019			0.018	0.018	0.000		A	0.670	0.670	0.000		A
B218189	B2181890509	11/6/89	5	9	0.026	0.026	0.017			0.008	0.008	0.000		A	0.260	0.260	0.000		A
B218189	B2181890913	11/6/89	9	13	0.011	0.011	0.053			0.005	0.005	0.012		A	0.530	0.530	0.000		A
B218189	B2181891317	11/6/89	13	17	0.011	0.011	0.006			0.006	0.006	0.000		A	0.620	0.620	0.000		A
B218189	B2181891721	11/6/89	18	21	0.007	0.007	0.015			-0.007	-0.007	0.033			0.400	0.400	0.000		A
B218189	B2181892126	11/6/89	21	25.5	0.012	0.012	0.000			0.021	0.021	0.003			0.500	0.500	0.000		A
B218189	B2181892630	11/6/89	26	30	0.003	0.003	0.018			0.010	0.010	0.012		A	0.340	0.340	0.000		A
B218189	B2181893034	11/6/89	30	34	0.016	0.016	0.010			0.010	0.010	0.000		A	0.500	0.500	0.000		A
B218589	B2185890003	10/10/89	0	3	0.100	0.100	0.007		V	0.633	0.633	0.000		A	0.400	0.400	0.060		
B218589	B2185890306	11/10/89	3	6	0.007	0.007	0.007		V	0.030	0.030	0.006		A	0.260	0.260	0.000		
B218589	B2185890610	10/10/89	6	9.3	0.003	0.003	0.006		V	0.008	0.008	0.000		A	0.410	0.410	0.040		
B218589	B2185891012	11/10/89	10	11	0.001	0.001	0.006		V	0.008	0.008	0.013		A	0.940	0.940	0.140		
B218589	B2185891214	10/10/89	12	13	0.011	0.011	0.000		V	0.007	0.007	0.000		A	0.420	0.420	0.000		
B218589	B2185891418	10/10/89	14	17	0.008	0.008	0.012		V	0.017	0.017	0.000		A	0.640	0.640	0.000		
B218689	B2186890003	11/13/89	0	3	0.864	0.864	0.007		V	2.860	2.860	0.006		A	0.530	0.530	0.040		
B218689	B2186890307	11/13/89	3	7	0.010	0.010	0.006		V	0.112	0.112	0.000		A	0.710	0.710	0.000		
B218689	B2186891113	11/13/89	12	13	0.007	0.007	0.012		V	0.010	0.010	0.004		A	0.400	0.400	0.090		
B218789	B2187890003	11/15/89	0	2.9	0.256	0.256	0.010		A	1.604	1.604	0.013		A	0.330	0.330	0.000		A
B218789	B2187890408	11/15/89	4	7.5	0.018	0.018	0.000		A	0.063	0.063	0.004		A	0.270	0.270	0.020		A
B218989	B2189890003	11/27/89													0.280	0.280	0.240		A
B218989	B2189890307	11/27/89													0.500	0.500	[illegible]130		A
B218989	B2189890711	11/27/89	7.1	10.6						0.020	0.020	0.014			0.150	0.150	.140		A
B218989	B2189891115	11/27/89	12	13						-0.005	-0.005	0.020			0.080	0.080	.180		A
B218989	B2189891518	11/27/89	14	14.2						0.009	0.009	0.015			0.530	0.530	0.000		A
B318889	B3188890003	11/17/89													0.200	0.200	0.090		A
B318889	B3188890307	11/17/89													0.320	0.320	0.240		
B318889	B3188890711	11/17/89													0.350	0.350	0.000		A
B319789	B3197890003	1/18/90	0	3	0.003	0.003	0.010			0.018	0.018	0.003			0.300	0.300	0.000		
B319789	B3197890307	1/18/90	3	7	0.006	0.006	0.008			0.014	0.014	0.009			0.330	0.330	0.000		
B319789	B3197890711	1/18/90	7	11	0.006	0.006	0.005			0.004	0.004	0.006			0.710	0.710	0.180		

ATTACHMENT H1
TABLE 13
95% UCL CONCENTRATION
AOC NO. 1
SUBSURFACE SOIL RADIONUCLIDES

					AMERICIUM-241 (pCi/g)					PLUTONIUM-239,240 (pCi/g)					URANIUM-238 (pCi/g)				
Location	Field ID	Sample Date	Depth From	Depth To	Result	SQL	CDRL	Qual	Valid. Qual	Result	SQL	CDRL	Qual	Valid. Qual	Result	SQL	CDRL	Qual	Valid. Qual
B319789	B3197891115	1/18/90	12	15	-0.002	-0.002	0.013			0.002	0.002	0.010			0.480	0.480	0.060		
B319789	B3197891518	1/18/90	15	17.5	0.002	0.002	0.014			0.017	0.017	0.006			0.490	0.490	0.100		
B319789	B3197891822	1/18/90	18	22	0.002	0.002	0.015			0.007	0.007	0.000			0.410	0.410	0.100		
B319789	B3197892226	1/18/90	22	26.2	0.008	0.008	0.007			0.008	0.008	0.006			0.700	0.700	0.000		
B319789	B3197892632	1/18/90	28	32	0.001	0.001	0.012			0.006	0.006	0.004			0.560	0.560	0.000		
B319789	B3197893236	1/18/90	32	36	0.004	0.004	0.000			0.009	0.009	0.005			0.500	0.500	0.000		
B319789	B3197893840	1/22/90	38	40	0.005	0.005	0.012			0.005	0.005	0.005			0.630	0.630	0.000		
BH2287	BH22870009	7/9/87	0	9.3	0.020	0.020			N	0.060	0.060				0.280	0.280			N
BH2287	BH22871018	7/9/87	10.6	18.4	0.000	0.000			N	0.040	0.040				0.310	0.310			N
BH2387	BH23870008	7/7/87	0	7.5	0.100	0.100			N	1.100	1.100				0.230	0.230			N
BH2387	BH238708CT	7/7/87	7.2	8.2	0.100	0.100			N	0.090	0.090				0.440	0.440			N
BH2487	BH24870002	7/8/87	0	2.43	11.000	11.000			N	94.000	94.000				0.470	0.470			N
BH2487	BH248705CT	7/8/87	2.43	4.85	0.010	0.010			N	0.010	0.010				0.780	0.780			N
BH2587	BH25870009	6/18/87	0	9	-0.030	-0.030			N	0.060	0.060				1.100	1.100			N
BH2687	BH26870003	7/16/87	0.3	2.5	12.000	12.000			N	83.000	83.000				1.000	1.000			N
BH2787	BH27870010	7/6/87	0	4.8	0.440	0.440			N	3.800	3.800				0.180	0.180			N
BH2887	BH288700WT	7/13/87	0	0.9	0.240	0.240			N	2.000	2.000				1.400	1.400			N
BH2887	BH28870104	7/13/87	0.9	3.75	0.020	0.020			N	-0.050	-0.050				0.860	0.860			N
BH2987	BH29870010	6/12/87	0	10	0.090	0.090			N	0.590	0.590				0.290	0.290			N
BH2987	BH298713CT	6/12/87	9.7	12.7	0.150	0.150			N	0.060	0.060				0.370	0.370			N
BH3087	BH30870010	6/16/87	0	9	22.000	22.000			N	180.000	180.000				0.650	0.650			N
BH3087	BH30871020	6/16/87	11.5	17.15	-0.010	-0.010			N	0.060	0.060				0.490	0.490			N
BH3187	BH31870013	8/4/87	0	11.7	0.010	0.010			N	0.080	0.080				0.790	0.790			N
BH3187	BH318713CT	8/4/87	11.7	12.6	-0.040	-0.040			N	0.020	0.020				0.510	0.510			N
BH3187	BH318716BR	8/4/87	15.7	22.85	0.000	0.000			N	-0.050	-0.050				0.670	0.670			N
BH3287	BH32870008	8/3/87	0	8	-0.060	-0.060			N	0.330	0.330				0.610	0.610			N
BH3287	BH32870815	8/3/87	8	15	-0.020	-0.020			N	0.060	0.060				0.390	0.390			N
BH3287	BH328716CT	8/3/87	15.1	16.2	-0.050	-0.050			N	0.030	0.030				0.320	0.320			N
BH3387	BH33870004	7/30/87	0	4	0.040	0.040			N	0.140	0.140				0.420	0.420			N
BH3387	BH33870815	7/30/87	7.8	14.7	-0.050	-0.050			N	-0.040	-0.040				0.410	0.410			N
BH3487	BH34870008	7/29/87	0	8	-0.020	-0.020			N	-0.080	-0.080				0.380	0.380			N
BH3487	BH34870815	7/29/87	8	14.7	0.000	0.000			N	-0.040	-0.040				0.530	0.530			N
BH3487	BH348708CL	7/29/87	6.6	8	-0.020	-0.020			N	0.000	0.000				0.400	0.400			N
BH3587	BH35870012	7/27/87	0	12.3	0.400	0.400			N	1.500	1.500				0.520	0.520			N
BH3687	BH36870005	7/20/87	0	5	0.040	0.040			N	0.530	0.530				1.700	1.700			N
BH3687	BH36870515	7/20/87	5	15	0.030	0.030			N	-0.030	-0.030				0.420	0.420			N
BH3787	BH37870005	7/16/87	0	5	0.480	0.480			N	2.600	2.600				3.100	3.100			N
BH3787	BH37871113	7/17/87	11	12.3	-0.020	-0.020			N	-0.060	-0.060				0.600	0.600			N
BH3787	BH378721CT	7/17/87	18	21.7	0.060	0.060			N	-0.060	-0.060				0.550	0.550			N
BH3887	BH38870010	7/14/87	0	9.5	-0.010	-0.010			N	0.080	0.080				0.360	0.360			N
BH3887	BH388720BR	7/14/87	20.4	21.3	0.080	0.080			N	-0.050	-0.050				0.810	0.810			N
BH3987	BH398702DH	8/12/87	2	3.4	0.010	0.010			N	0.030	0.030				0.440	0.440			N
BH3987	BH398704DH	8/12/87	4	5.5	-0.030	-0.030			N	-0.010	-0.010				0.680	0.680			N
BH3987	BH398707DH	8/12/87	7	8	0.020	0.020			N	0.000	0.000				0.480	0.480			N
BH3987	BH398712UC	8/12/87	12	14	0.060	0.060			N	0.020	0.020				0.630	0.630			N
BH4087	BH408704UC	8/13/87	4	6.8	0.120	0.120			N	-0.030	-0.030				0.480	0.480			N
BH4087	BH408707CT	8/13/87	7	9.3	-0.040	-0.040			N	-0.030	-0.030				0.630	0.630			N
BH4087	BH408709BR	8/13/87	9.5	12	0.060	0.060			N	0.070	0.070				0.540	0.540			N
BH4187	BH41870012	8/17/87	0	10.8	-0.010	-0.010			N	0.170	0.170				0.650	0.650			N
BH4187	BH418712UC	8/17/87	12	14.5	0.050	0.050			N	-0.020	-0.020				0.490	0.490			N
BH4187	BH418714CT	8/17/87	14.5	17	-0.020	-0.020			N	-0.070	-0.070				0.900	0.900			N
BH4187	BH418717BR	8/17/87	17	19.5	0.020	0.020			N	-0.060	-0.060				0.780	0.780			N
BH4287	BH42870009	8/18/87	0	8.3	0.070	0.070			N	0.180	0.180				0.470	0.470			N
BH4387	BH438704DH	9/4/87	4	5.3	-0.030	-0.030			N	0.090	0.090				0.420	0.420			N
BH4387	BH438707DH	9/4/87	7	7.9	-0.020	-0.020			N	0.050	0.050				0.580	0.580			N

ATTACHMENT H1
TABLE 13
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AOC NO. 1
SUBSURFACE SOIL RADIONUCLIDES

					AMERICIUM-241 (pCi/g)					PLUTONIUM-239,240 (pCi/g)					URANIUM-238 (pCi/g)				
Location	Field ID	Sample Date	Depth From	Depth To	Result	SQL	CDRL	Qual	Valid. Qual	Result	SQL	CDRL	Qual	Valid. Qual	Result	SQL	CDRL	Qual	Valid. Qual
BH4387	BH438709DH	9/4/87	9.5	10.3	0.010	0.010			N	-0.030	-0.030				0.530	0.530			N
BH4387	BH438712DH	9/4/87	12	12.9	0.010	0.010			N	-0.030	-0.030				0.450	0.450			N
BH4387	BH438714DH	9/4/87	14.5	15.8	-0.010	-0.010			N	0.100	0.100				0.360	0.360			N
BH4487	BH448704DH	9/9/87	4	6.2	-0.020	-0.020			N	0.070	0.070				0.750	0.750			N
BH4487	BH448714DH	9/9/87	14.5	16.4	-0.020	-0.020			N	-0.020	-0.020				0.720	0.720			N
BH4587	BH45870009	8/31/87	0	9.5	0.030	0.030			N	0.090	0.090				0.460	0.460			N
BH4587	BH45870917	8/31/87	9.5	17	0.010	0.010			N	-0.050	-0.050				1.500	1.500			N
BH4687	BH46870009	9/2/87	0	9	-0.020	-0.020			N	0.060	0.060				0.800	0.800			N
BH4687	BH46870919	9/2/87	9.5	17.8	0.010	0.010			N	0.280	0.280				0.570	0.570			N
BH4787	BH478704DH	9/11/87	4	5.32	0.060	0.060			N	0.010	0.010				0.570	0.570			N
BH4787	BH478706DH	9/11/87	6	7.15	0.060	0.060			N	0.020	0.020				0.590	0.590			N
BH4787	BH478708DH	9/11/87	8	9	0.000	0.000			N	0.060	0.060				0.540	0.540			N
BH4787	BH478709DH	9/11/87	9.5	10.52	0.040	0.040			N	0.000	0.000				0.730	0.730			N
BH4787	BH478711DH	9/11/87	11.5	12.66	0.100	0.100			N	0.010	0.010				0.440	0.440			N
BH4787	BH478713DH	9/11/87	13.5	14.78	0.000	0.000			N	0.000	0.000				0.660	0.660			N
BH4787	BH478715DH	9/11/87	15	15.65	0.060	0.060			N	0.020	0.020				0.400	0.400			N
BH4787	BH478720DH	9/14/87	20.5	21	0.090	0.090			N	0.030	0.030				0.360	0.360			N
BH4787	BH478722WT	9/14/87	22.5	24.3	0.050	0.050			N	-0.030	-0.030				0.440	0.440			N
BH4787	BH478726CT	9/15/87	26.2	27.2	-0.020	-0.020			N	0.010	0.010				0.820	0.820			N
BH4887	BH48870006	9/16/87	6	7.14	0.020	0.020			N	0.150	0.150				0.450	0.450			N
BH4887	BH488710UC	9/17/87	6	7.14	0.030	0.030			N	0.030	0.030				0.510	0.510			N
BH4887	BH488713CT	9/17/87	13.2	15.11	0.010	0.010			N	0.020	0.020				0.660	0.660			N
BH4887	BH488715BR	9/17/87	15.2	16.7	-0.020	-0.020			N	-0.010	-0.010				0.710	0.710			
BH4987	BH49870008	9/18/87	6	7.3	0.020	0.020			N	0.100	0.100				0.410	0.410			
BH4987	BH49870816	9/18/87	8	15.54	0.010	0.010			N	-0.010	-0.010				0.500	0.500			N
BH5087	BH508712UC	9/17/87	12	12.9	0.020	0.020			N	-0.010	-0.010				0.450	0.450			N
BH5087	BH508715CT	9/17/87	14.5	17	0.000	0.000			N	0.130	0.130				0.920	0.920			N
BH5087	BH508717BR	9/17/87	17	19.5	0.020	0.020			N	-0.010	-0.010				0.830	0.830			N
BH5187	BH518712WT	9/22/87	12	14.4	0.050	0.050			N	-0.060	-0.060				0.590	0.590			N
BH5187	BH518714CT	9/22/87	14.5	17	0.010	0.010			N	-0.010	-0.010				0.540	0.540			N
BH5187	BH518717BR	9/22/87	17	19.5	0.000	0.000			N	0.040	0.040				0.520	0.520			N
BH5287	BH52870010	9/22/87	0	9.5	0.140	0.140			N	0.580	0.580				0.740	0.740			N
BH5287	BH528712DH	9/22/87	12	13	0.100	0.100			N	-0.030	-0.030				0.460	0.460			N
BH5287	BH528722CT	9/22/87	22	24	0.030	0.030			N	0.000	0.000				0.630	0.630			N
BH5287	BH528724BR	9/22/87	24	25	-0.030	-0.030			N	0.020	0.020				0.890	0.890			N
BH5387	BH538700DH	9/11/87	0	18.8	0.530	0.530			N	6.000	6.000				0.630	0.630			N
BH5387	BH538702DH	9/11/87	2	3.5	0.060	0.060			N	0.980	0.980				0.320	0.320			N
BH5387	BH538706DH	9/11/87	6	7.8	0.020	0.020			N	0.140	0.140				0.520	0.520			N
BH5387	BH538708DH	9/11/87	8	9.9	0.040	0.040			N	0.130	0.130				0.380	0.380			N
BH5487	BH54870009	9/18/87	0	0	-0.030	-0.030			N	0.000	0.000				0.380	0.380			N
BH5487	BH548702WT	9/15/87	2	4	0.050	0.050			N	0.310	0.310				0.530	0.530			N
BH5487	BH548706DH	9/16/87	6	7.5	-0.040	-0.040			N	0.020	0.020				0.400	0.400			N
BH5487	BH548708DH	9/16/87	8	9.65	0.030	0.030			N	-0.010	-0.010				0.410	0.410			N
BH5487	BH548710DH	9/16/87	10	11.5	-0.010	-0.010			N	0.110	0.110				0.340	0.340			N
BH5487	BH548712DH	9/16/87	12.2	14.2	0.000	0.000			N	0.110	0.110				0.590	0.590			N
BH5487	BH54871424	9/18/87	14.2	22.8	0.010	0.010			N	-0.030	-0.030				0.330	0.330			N
BH5487	BH54872334	9/21/87	23.5	32.8	0.060	0.060			N	-0.010	-0.010				0.340	0.340			N
BH5487	BH548738WT	9/21/87	38.5	39	0.080	0.080			N	0.000	0.000				0.370	0.370			N
BH5587	BH558702DH	9/15/87	2	3.3	-0.030	-0.030			N	0.060	0.060				0.490	0.490			N
BH5587	BH558710DH	9/15/87	9.5	10.9	-0.060	-0.060			N	0.090	0.090				0.360	0.360			N
BH5587	BH558712WT	9/15/87	12	14	-0.050	-0.050			N	0.070	0.070				0.420	0.420			
BH5587	BH55871424	9/15/87	14.5	23.5	0.100	0.100			N	0.070	0.070				0.430	0.430			N
BH5587	BH558727UC	9/15/87	27	29.2	0.010	0.010			N	0.080	0.080				0.330	0.330			N
BH5587	BH558729CT	9/9/87	29.5	32	0.000	0.000			N	0.030	0.030				0.540	0.540			N
BH5587	BH558732BR	9/15/87	32	34.1	-0.020	-0.020			N	0.050	0.050				0.880	0.880			N

ATTACHMENT H1
TABLE 13
95% UCL CONCENTRATION
AOC NO. 1
SUBSURFACE SOIL RADIONUCLIDES

					AMERICIUM-241 (pCi/g)					PLUTONIUM-239,240 (pCi/g)					URANIUM-238 (pCi/g)				
Location	Field ID	Sample Date	Depth From	Depth To	Result	SQL	CDRL	Qual	Valid. Qual	Result	SQL	CDRL	Qual	Valid. Qual	Result	SQL	CDRL	Qual.	Valid. Qual
BH5687	BH568702DH	9/10/87	2	3.5	0.010	0.010			N	-0.030	-0.030				0.780	0.780			N
BH5687	BH568709DH	9/10/87	9.5	10.4	0.040	0.040			N	-0.070	-0.070				0.410	0.410			N
BH5687	BH568712DH	9/10/87	12	14	0.090	0.090			N	-0.070	-0.070				0.380	0.380			N
Number of Samples					254					271					276				
Number of Detects					217					249					276				
Minimum Detected					-0.060					-0.080					0.080				
Maximum Detected					22.000					180.000					113.100				
Average					0.315					2.211					1.258				
Standard Deviation					1.845					14.115					6.980				
t-value					1.645					1.645					1.645				
95% UCL					0.505					3.621					1.949				
Mean of Ln(x)					-4.914					-3.988					-0.415				
S.D. of ln(x)					2.626					3.086					0.636				
H(0.95,n)					3.087					3.560					1.835				
95% UCL based on Lognormal					0.323					4.147					0.867				

ATTACHMENT H1
TABLE 13
95% UCL CONCENTRATION
AOC NO. 1
SUBSURFACE SOIL RADIONUCLIDES

			URANIUM-235 (pCi/g)							URANIUM-233,234 (pCi/g)				
Location	Field ID	Sample Date	Result	SQL	CDRL	Qual	Valid. Qual	Depth From	Depth To	Result	SQL	CDRL	Qual	Valid. Qual
00291	BH00574WCU2	2/6/92	0.084	0.084	0.010	J	V	8.3	8.4	1.100	1.100	0.031	B	V
06591	BH01249WCU2	3/2/92	0.023	0.023	0.006	J	A	2.1	8	0.660	0.660	0.019		A
06591	BH01251WCU2	3/2/92	0.043	0.043	0.016	J	A	8	14	0.690	0.690	0.024		A
06691	BH00518WCU2	2/25/92	0.004	0.007	0.030	U	A	2	8	0.510	0.510	0.030	B	A
06691	BH00520WCU2	2/25/92	0.053	0.053	0.015	J	A	8	14	0.710	0.710	0.015	B	A
06691	BH00522WCU2	2/25/92	0.082	0.082	0.011	J	A	14	20	0.660	0.660	0.040	B	A
06791	BH00490WCU2	2/13/92	0.051	0.051	0.014	BJ	A	2	8	0.700	0.700	0.024	B	A
06791	BH00493WCU2	2/14/92	0.067	0.067	0.039	J	V	8	14	0.590	0.590	0.015	B	V
06791	BH00496WCU2	2/14/92	0.047	0.047	0.019	J	V	14	20	0.720	0.720	0.019	B	V
06891	BH00540WCU2	2/28/92	0.034	0.034	0.010	J	A	2	6	0.480	0.480	0.016	B	A
06991	BH00701WCU2	2/26/92	0.042	0.042	0.004		A	2	8	0.477	0.477	0.004		A
07091	BH00484WCU2	2/12/92	0.017	0.017	0.005	J	A	2	8	0.850	0.850	0.016		A
07091	BH00486WCU2	2/12/92	0.024	0.024	0.010	J	A	8	14	0.730	0.730	0.031		A
07191	BH00979WCU2	3/12/92	0.030	0.030	0.015	J	A	2	8	0.560	0.560	0.027	B	A
07191	BH00982WCU2	3/13/92	0.037	0.037	0.015	J	A	8	14	0.740	0.740	0.026	B	A
07291	BH00718WCU2	3/2/92	0.049	0.049	0.010	J	A	2	8	0.730	0.730	0.021		A
07291	BH00719WCU2	3/2/92	0.004	0.007	0.020	U	A	8	14	0.760	0.760	0.013		A
07291	BH00721WCU2	3/2/92	0.056	0.056	0.005	J	A	14	20	0.730	0.730	0.005	B	A
07391	BH00475WCU2	2/10/92	0.052	0.052	0.014	J	V	2	8	0.980	0.980	0.038	B	V
07491	BH01233WCU2	2/26/92	0.051	0.051	0.030	J	A	2	8.2	1.200	1.200	0.011	B	A
07591	BH01227WCU2	2/26/92	0.037	0.037	0.028	BJ	A	2.1	8.2	0.980	0.980	0.043	B	A
07591	BH01229WCU2	2/26/92	2.100	2.100	0.021	B	A	8.2	14.1	55.000	55.000	0.021	B	A
07691	BH01204WCU2	2/21/92	0.036	0.036	0.018	J	V	2	8	0.840	0.840	0.018	B	V
07891	BH00394WCU2	12/12/91	0.056	0.056	0.024	J	A	8	14	0.423	0.423	0.034		A
07891	BH00398WCU2	12/12/91	0.010	0.010	0.000	J	A	16	22	0.625	0.625	0.033		A
07891	BH00402WCU2	12/12/91	0.127	0.127	0.005		A	2	8	2.880	2.880	0.006		A
07991	BH00332WCU2	2/3/92	0.019	0.019	0.024		A	8	14	0.447	0.447	0.009		A
07991	BH00334WCU2	2/3/92	0.155	0.155	0.006		A	14	20	0.575	0.575	0.009		A
08091	BH00324WCU2	1/28/92	0.018	0.018	0.003		A	2	8	0.315	0.315	0.003		A
08091	BH00326WCU2	1/28/92	0.025	0.025	0.000		A	8	14	0.351	0.351	0.000		A
08191	BH00305WCU2	1/23/92	0.034	0.034	0.008	J	A	0.9	8	0.580	0.580	0.015	B	A
08191	BH00307WCU2	1/23/92	0.043	0.043	0.007	J	A	8	14	0.830	0.830	0.007	B	A
08191	BH00309WCU2	1/23/92	0.043	0.043	0.017	J	A	14	20	0.640	0.640	0.028		A
08191	BH00312WCU2	1/23/92	0.025	0.025	0.004	J	A	20	26	0.560	0.560	0.007	B	A
08191	BH00314WCU2	1/24/92	0.011	0.021	0.027	U	A	26	32	0.690	0.690	0.032	B	A
08191	BH00317WCU2	1/24/92	0.031	0.031	0.013	BJ	A	32	38	0.580	0.580	0.033	B	A
08291	BH00458WCU2	1/22/92	-0.001	-0.001	0.014	U	V	2	8	0.660	0.660	0.025	B	V
08291	BH00460WCU2	1/22/92	0.020	0.020	0.009	J	V	8	14	0.930	0.930	0.014	B	V
08391	BH00283WCU2	1/20/92	0.007	0.013	0.021	U	V	3	10	0.700	0.700	0.038	B	V
08391	BH00287WCU2	1/20/92	0.060	0.060	0.014	J	V	10	16	0.690	0.690	0.014	B	V
08391	BH00289WCU2	1/20/92	0.010	0.010	0.008	J	V	16	22	0.950	0.950	0.014	B	V
08391	BH00292WCU2	1/20/92	0.055	0.055	0.041	J	V	22	28	1.100	1.100	0.024	B	V
08391	BH00294WCU2	1/20/92	0.054	0.054	0.016	J	V	28	34	0.700	0.700	0.024	B	V
08391	BH00298WCU2	1/21/92	0.095	0.095	0.010	J	V	34	40	0.720	0.720	0.026	B	V
08491	BH00448WCU2	1/20/92	0.050	0.050	0.008	J	V	2	8	0.760	0.760	0.022	B	V
08491	BH00450WCU2	1/20/92	0.049	0.049	0.010	J	V	8	14	0.830	0.830	0.017	B	V
08491	BH00453WCU2	1/20/92	0.010	0.019	0.024	U	V	14	20	0.600	0.600	0.028	B	V
08591	BH00431WCU2	1/15/92	0.052	0.052	0.015	J	V	8	14	0.780	0.780	0.015	B	V
08591	BH00434WCU2	1/15/92	0.032	0.032	0.016	J	V	14	20	0.580	0.580	0.010	B	V
08591	BH00436WCU2	1/15/92	0.130	0.130	0.061	J	A	20	26	0.730	0.730	0.096		A
08591	BH00438WCU2	1/15/92	0.026	0.026	0.021	J	V	32	38	0.500	0.500	0.013	B	V
08591	BH00440WCU2	1/15/92	0.031	0.031	0.013	J	V	38	44	0.720	0.720	0.021	B	V
08691	BH00530WCU2	2/27/92	0.011	0.011	0.010	J	A	2	8	0.740	0.740	0.010	B	A
08691	BH00533WCU2	2/27/92	0.011	0.022	0.028	U	A	8	14	0.860	0.860	0.010	B	A
08791	BH00505WCU2	2/21/92	0.054	0.054	0.015	J	V	0.9	6	0.870	0.870	0.015	B	V

ATTACHMENT H1
TABLE 13
95% UCL CONCENTRATION
AOC NO. 1
SUBSURFACE SOIL RADIONUCLIDES

			URANIUM-235 (pCi/g)							URANIUM-233,234 (pCi/g)				
Location	Field ID	Sample Date	Result	SQL	CDRL	Qual	Valid. Qual	Depth From	Depth To	Result	SQL	CDRL	Qual	Valid. Qual
08791	BH00507WCU2	2/21/92	0.033	0.033	0.016	J	V	6	12	0.630	0.630	0.025	B	V
08791	BH00510WCU2	2/21/92	0.091	0.091	0.047	J	V	12	18	1.400	1.400	0.012	B	V
08891	BH00550WCU2	3/3/92	0.021	0.041	0.052	U	A	2	8	1.200	1.200	0.020	B	A
08891	BH00552WCU2	3/3/92	0.000	0.000	0.010	U	A	8	14	1.200	1.200	0.010	B	A
08991	BH00741WCU2	3/10/92	0.020	0.020	0.004		A	2	8	0.512	0.512	0.004		A
08991	BH00743WCU2	3/10/92	0.030	0.030	0.004		A	8	14	0.344	0.344	0.004		A
08991	BH00745WCU2	3/10/92	0.051	0.051	0.004		A	14	20	0.401	0.401	0.004		A
09091	BH00727WCU2	3/3/92	0.051	0.051	0.015	J	V	2	8	1.200	1.200	0.034		V
09091	BH00729WCU2	3/3/92	0.058	0.058	0.027	J	V	8	14	0.720	0.720	0.010		V
09191	BH00962WCU2	3/6/92	0.110	0.110	0.028	J	V	2	8	1.300	1.300	0.011		V
09191	BH00965WCU2	3/6/92	0.092	0.092	0.013	J	V	8	12	0.380	0.380	0.013		V
09291	BH01274WCU2	3/12/92	0.065	0.065	0.016	J	A	2	8	1.400	1.400	0.009	B	A
09491	BH01244WCU2	2/28/92	0.057	0.057	0.014	J	A	2.2	8	1.000	1.000	0.006	B	A
09691	BH01207WCU2	2/24/92	0.016	0.016	0.014	BJ	A	2.2	8.6	0.950	0.950	0.023	B	A
09791	BH01218WCU2	2/25/92	0.031	0.031	0.023	BJ	A	2.1	8.2	1.200	1.200	0.048	B	A
09891	BH00365WCU2	12/3/91	0.033	0.033	0.300	J		3	8.2	0.505	0.505	0.300		
09891	BH00367WCU2	12/3/91	-0.001	-0.001	0.300	J		8.2	14.2	0.740	0.740	0.300		
09991	BH00355WCU2	12/2/91	0.048	0.048	0.300	J		2	8	0.045	0.045	0.300	J	
09991	BH00357WCU2	12/2/91	0.027	0.027	0.300	J		8	14	0.664	0.664	0.300		
09991	BH00361WCU2	12/2/91	0.045	0.045	0.300	J		14	20	0.580	0.580	0.300		
10191	BH00156WCU2	12/3/91	0.751	0.751	0.000		A	4.2	8	14.350	14.350	0.027		A
10191	BH00160WCU2	12/3/91	0.028	0.028	0.021	J	A	8	14.1	0.702	0.702	0.036		A
10291	BH00177WCU2	12/6/91	11.500	11.500	0.300			2	8	191.700	191.700	0.300		
10291	BH00179WCU2	12/6/91	0.068	0.068	0.300	J		8	14	0.828	0.828	0.300		
10291	BH00182WCU2	12/9/91	0.011	0.011	0.000	J	A	14	20	0.606	0.606	0.024		A
10391	BH00373WCU2	12/9/91	0.020	0.020	0.300	J		2.2	8.1	0.455	0.455	0.300		
10391	BH00375WCU2	12/9/91	-0.002	-0.002	0.300	J		8.1	14	0.723	0.723	0.300		
10391	BH00377WCU2	12/9/91	0.011	0.011	0.300	J		14	20	0.673	0.673	0.300		
10391	BH00379WCU2	12/9/91	-0.003	-0.003	0.300	J		20	26	0.539	0.539	0.300		
10491	BH00200WCU2	12/11/91	0.036	0.036	0.020	J	A	2	8	0.387	0.387	0.028		A
10491	BH00203WCU2	12/11/91	0.028	0.028	0.021	J	A	8	14	0.551	0.551	0.021		A
10491	BH00205WCU2	12/11/91	0.049	0.049	0.021	J	A	14	20	0.569	0.569	0.030		A
10591	BH00465WCU2	2/4/92	0.030	0.030	0.015	J	V	14	18	0.580	0.580	0.042	B	V
10591	BH00469WCU2	2/4/92	0.061	0.061	0.028	J	V	8	14	0.750	0.750	0.015	B	V
10691	BH00407WCU2	1/10/92	0.068	0.068	0.019	J	V	2	8	0.360	0.360	0.031	B	V
10691	BH00410WCU2	1/10/92	0.017	0.017	0.014	J	V	8	14	0.840	0.840	0.038	B	V
10691	BH00412WCU2	1/10/92	0.031	0.031	0.023	J	V	14	20	0.850	0.850	0.036	B	V
10691	BH00415WCU2	1/10/92	0.037	0.037	0.018	J	V	20	26	0.670	0.670	0.011	B	V
10691	BH00419WCU2	1/13/92	0.045	0.045	0.034	J	V	26	32	0.840	0.840	0.020	B	V
10691	BH00421WCU2	1/13/92	0.027	0.027	0.020	J	V	32	38	0.860	0.860	0.037	B	V
10791	BH00265WCU2	1/7/92	0.048	0.048	0.014	J	A	14	20	0.840	0.840	0.008	B	A
10791	BH00271WCU2	1/8/92	0.180	0.180	0.019	J	V	20	26	0.630	0.630	0.019	B	V
10791	BH00274WCU2	1/8/92	0.006	0.012	0.019	U	V	26	32	0.690	0.690	0.030	B	V
10791	BH00277WCU2	1/8/92	0.150	0.150	0.014	J	V	32	38	0.680	0.680	0.057	B	V
10791	BH00279WCU2	1/8/92	0.038	0.038	0.016	J	V	38	44	0.780	0.780	0.016	B	V
10791	BH00281WCU2	1/8/92	0.014	0.014	0.012	J	V	44	50	0.690	0.690	0.031	B	V
10891	BH00220WCU2	12/13/91	0.020	0.020	0.000	J	A	2	8	0.582	0.582	0.021		A
10891	BH00222WCU2	12/16/91	0.000	0.000	0.000		A	8	14	0.537	0.537	0.034		A
10891	BH00225WCU2	12/16/91	0.077	0.077	0.034		A	14	20	2.469	2.469	0.042		A
10891	BH00228WCU2	12/16/91	0.076	0.076	0.034		A	20	26	0.878	0.878	0.042		A
10891	BH00230WCU2	12/16/91	0.138	0.138	0.019		A	26	32	0.754	0.754	0.035		A
10891	BH00232WCU2	12/16/91	0.032	0.032	0.021		A	32	38	0.503	0.503	0.026		A
10891	BH00234WCU2	12/16/91	0.020	0.020	0.014		A	38	44	0.745	0.745	0.000		A
10991	BH00241WCU2	12/17/91	0.004	0.004	0.036	J	A	2	8	0.543	0.543	0.000		A
10991	BH00244WCU2	12/17/91												

ATTACHMENT H1
TABLE 13
95% UCL CONCENTRATION
AOC NO. 1
SUBSURFACE SOIL RADIONUCLIDES

			URANIUM-235 (pCi/g)							URANIUM-233,234 (pCi/g)				
Location	Field ID	Sample Date	Result	SQL	CDRL	Qual	Valid. Qual	Depth From	Depth To	Result	SQL	CDRL	Qual	Valid. Qual
10991	BH00247WCU2	12/17/91	0.036	0.036	0.020	J	A	14	20	0.486	0.486	0.000		A
10991	BH00250WCU2	12/18/91	0.043	0.043	0.036	J	A	20	26	0.770	0.770	0.095		A
10991	BH00252WCU2	12/18/91	0.110	0.110	0.019	J	V	26	32	0.800	0.800	0.011		V
10991	BH00255WCU2	12/18/91	-0.003	-0.005	0.056	U	V	32	38	0.840	0.840	0.056		V
10991	BH00258WCU2	12/18/91	0.062	0.062	0.023	J	V	38	44	0.570	0.570	0.023		V
12791	BH01239WCU2	2/27/92	0.026	0.026	0.005	J	A	2	8.1	1.300	1.300	0.021		A
12791	BH01240WCU2	2/27/92	0.058	0.058	0.012	J	A	8.1	10	0.960	0.960	0.005	B	A
13091	BH00347WCU2	2/19/92	-0.002	-0.003	0.033	U	V	14	20	1.000	1.000	0.020	B	V
21793	BH20319WC	6/3/93	0.049	0.049	0.019			20.7	26.7	0.982	0.982	0.024		
21793	BH20320WC	6/3/93	0.040	0.040	0.020			26.7	31.9	0.967	0.967	0.035		
21793	BH20321WC	6/3/93	0.040	0.040	0.025			31.9	37.4	1.223	1.223	0.044		
21793	BH20322WC	6/3/93	0.052	0.052	0.064			37.4	43.2	1.169	1.169	0.094		
21793	BH20325WC	6/3/93	0.191	0.191	0.034			43.2	50	1.787	1.787	0.034		
46792	BH30301IT	6/2/92	0.152	0.152	0.279	J	V	0	5	0.886	0.886	0.342		V
46792	BH30302IT	6/2/92	0.017	0.017	0.020	J	V	5	10	0.615	0.615	0.028		V
46792	BH30303IT	6/2/92	0.027	0.027	0.000	J	V	10	15	0.418	0.418	0.027		V
B215389	B2153890003	10/31/89	0.090	0.090	0.000			0	3	0.770	0.770	0.000		
B215389	B2153890307	11/1/89	0.070	0.070	0.000			3	7	0.270	0.270	0.000		
B215389	B2153890711	11/1/89	0.065	0.065	0.000			7	11	1.110	1.110	0.000		
B217389	5589BR0003	9/26/89	0.090	0.090	0.000			0	3	1.430	1.430	0.100		
B217389	5589BR0307	9/26/89	0.020	0.020	0.110			3	5	1.000	1.000	0.160		
B217389	5589BR0711	9/26/89	0.050	0.050	0.120			7	10.8	0.470	0.470	0.000		
B217389	5589BR1215	9/26/89	0.020	0.020	0.090			12	14.6	0.380	0.380	0.130		
B217589	5789BR0003	10/17/89												
B218189	B2181890003	11/6/89	0.040	0.040	0.000		A	0	3	0.490	0.490	0.000		A
B218189	B2181890305	11/6/89	0.020	0.020	0.000		A	3	5	0.370	0.370	0.000		A
B218189	B2181890509	11/6/89	0.030	0.030	0.000		A	5	9	0.150	0.150	0.000		A
B218189	B2181890913	11/6/89	0.040	0.040	0.000		A	9	13	0.360	0.360	0.000		A
B218189	B2181891317	11/6/89	0.050	0.050	0.000		A	13	17	0.260	0.260	0.000		A
B218189	B2181891721	11/6/89	0.030	0.030	0.000		A	18	21	0.400	0.400	0.000		A
B218189	B2181892126	11/6/89	0.020	0.020	0.000		A	21	25.5	0.230	0.230	0.000		A
B218189	B2181892630	11/6/89	0.060	0.060	0.000		A	26	30	0.140	0.140	0.000		A
B218189	B2181893034	11/6/89	0.060	0.060	0.000		A	30	34	0.360	0.360	0.000		A
B218589	B2185890003	10/10/89	0.030	0.030	0.000			0	3	0.320	0.320	0.000		
B218589	B2185890306	11/10/89	0.090	0.090	0.000			3	6	0.410	0.410	0.130		
B218589	B2185890610	10/10/89	0.030	0.030	0.000			6	9.3	0.270	0.270	0.000		
B218589	B2185891012	11/10/89	0.050	0.050	0.000			10	11	0.300	0.300	0.140		
B218589	B2185891214	10/10/89	0.030	0.030	0.000			12	13	0.390	0.390	0.000		
B218589	B2185891418	10/10/89	0.030	0.030	0.000			14	17	0.470	0.470	0.050		
B218689	B2186890003	11/13/89	0.020	0.020	0.000			0	3	0.540	0.540	0.000		
B218689	B2186890307	11/13/89	0.050	0.050	0.000			3	7	0.640	0.640	0.150		
B218689	B2186891113	11/13/89	0.030	0.030	0.000			12	13	0.440	0.440	0.090		
B218789	B2187890003	11/15/89	0.010	0.010	0.000		A	0	2.9	0.430	0.430	0.030		A
B218789	B2187890408	11/15/89	0.010	0.010	0.000		A	4	7.5	0.360	0.360	0.000		A
B218989	B2189890003	11/27/89	0.030	0.030	0.170		A	0	3	0.280	0.280	0.120		A
B218989	B2189890307	11/27/89	0.060	0.060	0.000		A	3	7.1	0.410	0.410	0.000		A
B218989	B2189890711	11/27/89	0.030	0.030	0.140		A	7.1	10.6	0.470	0.470	0.140		A
B218989	B2189891115	11/27/89	-0.040	-0.040	0.180		A	12	13	0.510	0.510	0.180		A
B218989	B2189891518	11/27/89	0.040	0.040	0.000		A	14	14.2	0.270	0.270	0.200		A
B318889	B3188890003	11/17/89	0.060	0.060	0.000		A	0	3	0.300	0.300	0.090		A
B318889	B3188890307	11/17/89	0.050	0.050	0.240		A	3	7	0.680	0.680	0.240		A
B318889	B3188890711	11/17/89	0.040	0.040	0.000		A	8	11	0.140	0.140	0.160		A
B319789	B3197890003	1/18/90	0.060	0.060	0.000			0	3	0.950	0.950	0.000		
B319789	B3197890307	1/18/90	0.000	0.000	0.000			3	7	0.300	0.300	0.000		
B319789	B3197890711	1/18/90	0.000	0.000	0.130			7	11	0.400	0.400	0.200		

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TABLE 13
95% UCL CONCENTRATION
AOC NO. 1
SUBSURFACE SOIL RADIONUCLIDES

			URANIUM-235 (pCi/g)							URANIUM-233,234 (pCi/g)				
Location	Field ID	Sample Date	Result	SQL	CDRL	Qual	Valid. Qual	Depth From	Depth To	Result	SQL	CDRL	Qual	Valid. Qual
B319789	B3197891115	1/18/90	0.000	0.000	0.000			12	15	0.470	0.470	0.080		
B319789	B3197891518	1/18/90	0.070	0.070	0.000			15	17.5	0.670	0.670	0.050		
B319789	B3197891822	1/18/90	0.000	0.000	0.210			18	22	0.550	0.550	0.100		
B319789	B3197892226	1/18/90	0.000	0.000	0.090			22	26.2	0.870	0.870	0.130		
B319789	B3197892632	1/18/90	0.000	0.000	0.000			28	32	0.630	0.630	0.000		
B319789	B3197893236	1/18/90	0.020	0.020	0.030			32	36	0.540	0.540	0.040		
B319789	B3197893840	1/22/90	0.020	0.020	0.030			38	40	0.660	0.660	0.000		
BH2287	BH22870009	7/9/87								0.330	0.330			N
BH2287	BH22871018	7/9/87								0.140	0.140			N
BH2387	BH23870008	7/7/87								0.150	0.150			N
BH2387	BH238708CT	7/7/87								0.320	0.320			N
BH2487	BH24870002	7/8/87								0.280	0.280			N
BH2487	BH248705CT	7/8/87								0.540	0.540			N
BH2587	BH25870009	6/18/87								0.990	0.990			N
BH2687	BH26870003	7/16/87								1.100	1.100			N
BH2787	BH27870010	7/6/87								0.090	0.090			N
BH2887	BH288700WT	7/13/87								1.100	1.100			N
BH2887	BH28870104	7/13/87								0.870	0.870			N
BH2987	BH29870010	6/12/87								0.450	0.450			N
BH2987	BH298713CT	6/12/87								0.480	0.480			N
BH3087	BH30870010	6/16/87								0.700	0.700			N
BH3087	BH30871020	6/16/87								0.380	0.380			N
BH3187	BH31870013	8/4/87								0.720	0.720			N
BH3187	BH318713CT	8/4/87								0.770	0.770			N
BH3187	BH318716BR	8/4/87								0.700	0.700			N
BH3287	BH32870008	8/3/87								0.480	0.480			N
BH3287	BH32870815	8/3/87								0.550	0.550			N
BH3287	BH328716CT	8/3/87								0.420	0.420			N
BH3387	BH33870004	7/30/87								0.360	0.360			N
BH3387	BH33870815	7/30/87								0.310	0.310			N
BH3487	BH34870008	7/29/87								0.320	0.320			N
BH3487	BH34870815	7/29/87								0.310	0.310			N
BH3487	BH348708CL	7/29/87								0.570	0.570			N
BH3587	BH35870012	7/27/87								0.410	0.410			N
BH3687	BH36870005	7/20/87								1.200	1.200			N
BH3687	BH36870515	7/20/87								0.810	0.810			N
BH3787	BH37870005	7/16/87								1.300	1.300			N
BH3787	BH37871113	7/17/87								0.490	0.490			N
BH3787	BH378721CT	7/17/87								0.210	0.210			N
BH3887	BH38870010	7/14/87								0.440	0.440			N
BH3887	BH388720BR	7/14/87								0.480	0.480			N
BH3987	BH398702DH	8/12/87												
BH3987	BH398704DH	8/12/87												
BH3987	BH398707DH	8/12/87												
BH3987	BH398712UC	8/12/87												
BH4087	BH408704UC	8/13/87												
BH4087	BH408707CT	8/13/87												
BH4087	BH408709BR	8/13/87												
BH4187	BH41870012	8/17/87								0.940	0.940			N
BH4187	BH418712UC	8/17/87								0.430	0.430			N
BH4187	BH418714CT	8/17/87								0.570	0.570			N
BH4187	BH418717BR	8/17/87								0.630	0.630			N
BH4287	BH42870009	8/18/87								0.420	0.420			N
BH4387	BH438704DH	9/4/87								0.450	0.450			N
BH4387	BH438707DH	9/4/87								0.640	0.640			N

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TABLE 13
95% UCL CONCENTRATION
AOC NO. 1
SUBSURFACE SOIL RADIONUCLIDES

			URANIUM-235 (pCi/g)							URANIUM-233,234 (pCi/g)				
Location	Field ID	Sample Date	Result	SQL	CDRL	Qual	Valid. Qual	Depth From	Depth To	Result	SQL	CDRL	Qual	Valid. Qual
BH4387	BH438709DH	9/4/87								0.360	0.360			N
BH4387	BH438712DH	9/4/87								0.420	0.420			N
BH4387	BH438714DH	9/4/87								0.280	0.280			N
BH4487	BH448704DH	9/9/87								0.860	0.860			N
BH4487	BH448714DH	9/9/87								0.980	0.980			N
BH4587	BH45870009	8/31/87								0.430	0.430			N
BH4587	BH45870917	8/31/87								1.400	1.400			N
BH4687	BH46870009	9/2/87								0.610	0.610			N
BH4687	BH46870919	9/2/87								0.480	0.480			N
BH4787	BH478704DH	9/11/87								0.540	0.540			N
BH4787	BH478706DH	9/11/87								0.760	0.760			N
BH4787	BH478708DH	9/11/87								0.530	0.530			N
BH4787	BH478709DH	9/11/87								0.660	0.660			N
BH4787	BH478711DH	9/11/87								0.350	0.350			N
BH4787	BH478713DH	9/11/87								0.650	0.650			N
BH4787	BH478715DH	9/11/87								0.320	0.320			N
BH4787	BH478720DH	9/14/87								0.480	0.480			N
BH4787	BH478722WT	9/14/87								0.420	0.420			N
BH4787	BH478726CT	9/15/87								0.630	0.630			N
BH4887	BH48870006	9/16/87								0.520	0.520			N
BH4887	BH488710UC	9/17/87								0.450	0.450			N
BH4887	BH488713CT	9/17/87								0.760	0.760			N
BH4887	BH488715BR	9/17/87								0.540	0.540			N
BH4987	BH49870008	9/18/87								0.610	0.610			N
BH4987	BH49870816	9/18/87								0.600	0.600			N
BH5087	BH508712UC	9/17/87								0.510	0.510			N
BH5087	BH508715CT	9/17/87								0.430	0.430			N
BH5087	BH508717BR	9/17/87								0.510	0.510			N
BH5187	BH518712WT	9/22/87								0.470	0.470			N
BH5187	BH518714CT	9/22/87								0.420	0.420			N
BH5187	BH518717BR	9/22/87								0.400	0.400			N
BH5287	BH52870010	9/22/87								1.000	1.000			N
BH5287	BH528712DH	9/22/87								0.440	0.440			N
BH5287	BH528722CT	9/22/87								0.370	0.370			N
BH5287	BH528724BR	9/22/87								0.850	0.850			N
BH5387	BH538700DH	9/11/87								0.720	0.720			N
BH5387	BH538702DH	9/11/87								0.450	0.450			N
BH5387	BH538706DH	9/11/87								0.430	0.430			N
BH5387	BH538708DH	9/11/87								0.430	0.430			N
BH5487	BH54870009	9/18/87								0.370	0.370			N
BH5487	BH548702WT	9/15/87								0.410	0.410			N
BH5487	BH548706DH	9/16/87								0.480	0.480			N
BH5487	BH548708DH	9/16/87								0.410	0.410			N
BH5487	BH548710DH	9/16/87								0.380	0.380			N
BH5487	BH548712DH	9/16/87								0.560	0.560			N
BH5487	BH54871424	9/18/87								0.530	0.530			N
BH5487	BH54872334	9/21/87								0.440	0.440			N
BH5487	BH548738WT	9/21/87								0.450	0.450			N
BH5587	BH558702DH	9/15/87								0.370	0.370			N
BH5587	BH558710DH	9/15/87								0.470	0.470			N
BH5587	BH558712WT	9/15/87								0.460	0.460			N
BH5587	BH55871424	9/15/87								0.480	0.480			N
BH5587	BH558727UC	9/15/87								0.400	0.400			N
BH5587	BH558729CT	9/9/87								0.640	0.640			N
BH5587	BH558732BR	9/15/87								0.710	0.710			N

ATTACHMENT H1
TABLE 13
95% UCL CONCENTRATION
AOC NO. 1
SUBSURFACE SOIL RADIONUCLIDES

			URANIUM-235 (pCi/g)							URANIUM-233,234 (pCi/g)				
Location	Field ID	Sample Date	Result	SQL	CDRL	Qual	Valid. Qual	Depth From	Depth To	Result	SQL	CDRL	Qual	Valid. Qual
BH5687	BH568702DH	9/10/87								0.610	0.610			N
BH5687	BH568709DH	9/10/87								0.480	0.480			N
BH5687	BH568712DH	9/10/87								0.390	0.390			N
Number of Samples			170							269				
Number of Detects			158							269				
Minimum Detected			-0.040							0.045				
Maximum Detected			11.500							191.700				
Average			0.126							1.604				
Standard Deviation			0.891							12.106				
t-value			1.645							1.645				
95% UCL			0.238							2.818				
Mean of Ln(x)			-3.380							-0.509				
S.D. of ln(x)			1.029							0.695				
H(0.95,n)			2.087							1.745				
95% UCL based on Lognormal			0.068							0.824				

ATTACHMENT H1
TABLE 14
95% UCL CONCENTRATION
AOC NO. 2
SUBSURFACE SOIL METALS

					ARSENIC (mg/kg)					CADMIUM (mg/kg)				
Location	Field ID	Sample Date	Depth From	Depth To	Result	SQL	CDRL	Qual	Valid. Qual	Result	SQL	CDRL	Qual	Valid. Qual
0286	BP00042IT	7/9/92	0	11	2.50	2.50	2.00		V	0.500	1.000	1.000	U	V
40391	BH00021EB	10/8/91	0	6	4.70	4.70	2.00		V	0.215	0.430	1.000	UN	V
40491	BH00097EB	11/7/91	0	2.5	7.15	7.15	2.00	B	JA	1.100	1.100	1.000	B	JA
40491	BH00099EB	11/7/91	6	10.4	7.90	7.90	2.00		V	0.225	0.450	1.000	U	V
40591	BH00031EB	10/9/91	0	6	3.40	3.40	2.00		V	0.210	0.420	1.000	U	V
40591	BH00034EB	10/9/91	6	12	1.90	1.90	2.00	B	V	0.230	0.460	1.000	U	V
40591	BH00036EB	10/9/91	12	14	2.00	2.00	2.00	B	V	0.225	0.450	1.000	U	V
40691	BH00041EB	10/10/91	0	6	4.90	4.90	2.00	N	JA	0.220	0.440	1.000	U	V
40691	BH00043EB	10/10/91	6	12	1.30	1.30	2.00	BN	JA	0.225	0.450	1.000	U	V
41591	BH00087EB	11/6/91	0	5	25.93	25.93	2.00	B	JA					
41691	BH00104EB	11/7/91	0	3.8	4.70	4.70	2.00		V	0.225	0.450	1.000	U	V
Number of Samples					11					10				
Number of Detects					11					1				
Minimum Detected					1.30					1.10				
Maximum Detected					25.93					1.10				
Average					6.03					0.34				
Standard Deviation					6.61					0.27				
t-value					1.812					1.833				
95% UCL					9.65					0.49				
Mean of Ln(x)					1.428					NA				
S.D. of ln(x)					0.831					NA				
H(0.95,n)					2.675					NA				
95% UCL based on Lognormal					11.91					NA				

ATTACHMENT H1
TABLE 15
95% UCL CONCENTRATION
AOC NO. 2
SUBSURFACE SOIL RADIONUCLIDES

					AMERICIUM-241 (pCi/g)					PLUTONIUM-239,240 (pCi/g)					URANIUM-233,234 (pCi/g)				
Location	Field ID	Sample Date	Depth From	Depth To	Result	SQL	CDRL	Qual	Valid. Qual	Result	SQL	CDRL	Qual	Valid. Qual	Result	SQL	CDRL	Qual	Valid. Qual
0286	BP00042IT	7/9/92	0	11	0.014	0.014	0.000		A	0.019	0.019	0.000		A	0.845	0.845	0.000		A
11091	BH00002WCU2	8/29/91	8.6	8.8	0.004	0.004	0.020	J		0.002	0.002	0.030	J		1.201	1.201	0.300		
40391	BH00021EB	10/8/91	0	6	0.183	0.183	0.053			0.692	0.692	0.020							
40491	BH00097EB	11/7/91	0	2.5	0.008	0.016	0.020	U		0.120	0.120	0.003		V					
40491	BH00099EB	11/7/91	6	10.4	0.027	0.054	0.210	U		0.002	0.002	0.002	J	V					
40591	BH00031EB	10/9/91	0	6	0.041	0.041	0.029			0.101	0.101	0.010							
40591	BH00034EB	10/9/91	6	12	0.000	0.000	0.067			0.002	0.002	0.010							
40591	BH00036EB	10/9/91	12	14	0.006	0.006	0.050			0.003	0.003	0.007							
40691	BH00041EB	10/10/91	0	6	0.056	0.056	0.019			0.283	0.283	0.007							
40691	BH00043EB	10/10/91	6	12	0.017	0.017	0.032			0.000	0.000	0.011							
41591	BH00087EB	11/6/91	0	5	0.006	0.012	0.067	U		0.190	0.190	0.005		A					
41691	BH00104EB	11/7/91	0	3.8	0.850	0.850	0.058			2.300	2.300	0.005							
Number of Samples					12					12					2				
Number of Detects					9					12					2				
Minimum Detected					0.004					0.000					0.845				
Maximum Detected					0.850					2.300					1.201				
Average					0.101					0.309					1.023				
Standard Deviation					0.231					0.630					0.178				
t-value					1.796					1.796					6.314				
95% UCL					0.221					0.636					1.818				
Mean of Ln(x)					-4.302					-3.746					NA				
S.D. of ln(x)					1.868					3.078					NA				
H(0.95,n)					4.643					7.368					NA				
95% UCL based on Lognormal					1.06					2,516					NA				

ATTACHMENT H1
TABLE 15
95% UCL CONCENTRATION
AOC NO. 2
SUBSURFACE SOIL RADIONUCLIDES

					URANIUM-235 (pCi/g)					URANIUM-238 (pCi/g)				
Location	Field ID	Sample Date	Depth From	Depth To	Result	SQL	CDRL	Qual	Valid. Qual	Result	SQL	CDRL	Qual	Valid. Qual
0286	BP00042IT	7/9/92	0	11	0.065	0.065	0.000		A	0.872	0.872	0.169		A
11091	BH00002WCU2	8/29/91	8.6	8.8	0.067	0.067	0.300	J		1.110	1.110	0.300		
40391	BH00021EB	10/8/91	0	6										
40491	BH00097EB	11/7/91	0	2.5										
40491	BH00099EB	11/7/91	6	10.4										
40591	BH00031EB	10/9/91	0	6										
40591	BH00034EB	10/9/91	6	12										
40591	BH00036EB	10/9/91	12	14										
40691	BH00041EB	10/10/91	0	6										
40691	BH00043EB	10/10/91	6	12										
41591	BH00087EB	11/6/91	0	5										
41691	BH00104EB	11/7/91	0	3.8										
Number of Samples					2					2				
Number of Detects					2					2				
Minimum Detected					0.065					0.872				
Maximum Detected					0.067					1.110				
Average					0.066					0.991				
Standard Deviation					0.001					0.119				
t-value					6.314					6.314				
95% UCL					0.071					1.522				
Mean of Ln(x)					NA					NA				
S.D. of ln(x)					NA					NA				
H(0.95,n)					NA					NA				
95% UCL based on Lognormal					NA					NA				

ATTACHMENT H1
TABLE 16
95% UCL CONCENTRATION
AOC NO. 1, 10-ACRE AREA
SUBSURFACE SOIL VOCs

					TETRACHLOROETHENE (ug/kg)				
Location	Field ID	Sample Date	Depth From	Depth To	Result	SQL	CDRL	Qual	Valid. Qual
BH2387	BH23870008	7/7/87	0	7.5	12.50	25.00		U	
BH2387	BH238708CT	7/7/87	7.2	8.2	12.50	25.00		U	
BH2487	BH24870002	7/8/87	0	2.43	2.50	5.00	5.00	U	
BH2487	BH248705CT	7/8/87	2.43	4.85	12.50	25.00		U	
BH2587	BH25870009	6/18/87	0	9	130.00	130.00			
BH2787	BH27870010	7/6/87	0	4.8	12.50	25.00		U	
BH2887	BH288700WT	7/13/87	0	0.9	12.50	25.00		U	
BH2887	BH28870104	7/13/87	0.9	3.75	12.50	25.00		U	
06691	BH00516WCU2	2/25/92	2.4	2.6	3.00	6.00	5.00	U	V
06691	BH00517WCU2	2/25/92	6.3	6.5	28.00	28.00	5.00		V
06691	BH00519WCU2	2/25/92	10.5	10.7	2.50	5.00	5.00	U	V
06791	BH00488WCU2	2/13/92	2.2	2.4	3.00	6.00	5.00	U	V
06791	BH00489WCU2	2/13/92	6.6	6.8	2.50	5.00	5.00	U	V
06791	BH00492WCU2	2/14/92	11	11.2	3.00	6.00	5.00	U	V
06991	BH00350WCU2	2/26/92	2.2	2.4	3.00	6.00	5.00	U	V
07091	BH00482WCU2	2/12/92	3.1	3.3	2.50	5.00	5.00	U	V
07091	BH00483WCU2	2/12/92	6.6	6.8	2.50	5.00	5.00	U	V
07091	BH00485WCU2	2/12/92	13.1	13.3	2.50	5.00	5.00	U	V
07191	BH00977WCU2	3/12/92	2.7	2.9	3.00	6.00	5.00	U	V
07191	BH00978WCU2	3/12/92	7.1	7.3	3.00	6.00	5.00	U	V
07191	BH00981WCU2	3/13/92	10.5	10.7	2.50	5.00	5.00	U	V
07291	BH00716WCU2	3/2/92	2.7	2.9	2.50	5.00	5.00	U	V
07291	BH00717WCU2	3/2/92	10.3	10.5	2.50	5.00	5.00	U	V
07491	BH01231WCU2	2/26/92	2.8	3	3.00	6.00	5.00	U	V
07591	BH01225WCU2	2/26/92	3.9	4.1	3.00	6.00	5.00	U	V
07591	BH01226WCU2	2/26/92	7.8	8	3.00	6.00	5.00	U	V
08691	BH00528WCU2	2/27/92	3	3.2	6.00	12.00	5.00	U	V
08691	BH00529WCU2	2/27/92	6.5	6.7	3.00	6.00	5.00	U	V
08691	BH00531WCU2	2/27/92	10.5	10.7	2.50	5.00	5.00	U	V
08791	BH00503WCU2	2/21/92	1.7	1.9	4.00	4.00	5.00	J	A
08791	BH00504WCU2	2/21/92	4.8	5	2.50	5.00	5.00	U	V
08791	BH00506WCU2	2/21/92	10.6	10.8	3.00	6.00	5.00	U	V
08791	BH00508WCU2	2/21/92	12.5	12.7	2.50	5.00	5.00	U	V
08891	BH00547WCU2	3/3/92	3.2	3.4	9.00	9.00	5.00		V
08891	BH00548WCU2	3/3/92	6.6	6.8	1.00	1.00	5.00	J	A
08891	BH00551WCU2	3/3/92	10.6	10.8	3.00	6.00	5.00	U	V
08991	BH00739WCU2	3/10/92	2.4	2.6	3.00	6.00	5.00	U	V
08991	BH00740WCU2	3/10/92	6.3	6.5	3.00	6.00	5.00	U	V
08991	BH00742WCU2	3/10/92	10.7	10.9	2.50	5.00	5.00	U	V
08991	BH00744WCU2	3/10/92	14.5	14.7	2.50	5.00	5.00	U	V
09091	BH00725WCU2	3/3/92	2.4	2.6	3.00	6.00	5.00	U	V
09091	BH00726WCU2	3/3/92	6.6	6.8	2.50	5.00	5.00	U	V
09091	BH00728WCU2	3/3/92	10.2	10.4	3.00	6.00	5.00	U	V
09191	BH00959WCU2	3/6/92	2.7	2.9	3.00	6.00	5.00	U	V
09191	BH00961WCU2	3/6/92	7	7.2	3.00	6.00	5.00	U	V
09791	BH01216WCU2	2/25/92	3.9	4.1	2.00	2.00	5.00	J	A
09791	BH01217WCU2	2/25/92	7.8	8	2.00	2.00	5.00	J	A
12791	BH01237WCU2	2/27/92	2.8	3	3.00	6.00	5.00	U	V
12791	BH01238WCU2	2/27/92	7.8	8	3.00	6.00	5.00	U	V
BH3087	BH30870010	6/16/87	0	9	2.50	5.00	5.00	U	
BH3087	BH30871020	6/16/87	11.5	17.15	12.50	25.00		U	

ATTACHMENT H1
TABLE 16
95% UCL CONCENTRATION
AOC NO. 1, 10-ACRE AREA
SUBSURFACE SOIL VOCs

					TETRACHLOROETHENE (ug/kg)				
Location	Field ID	Sample Date	Depth From	Depth To	Result	SQL	CDRL	Qual	Valid. Qual
Number of Samples					51				
Number of Detects					7				
Minimum Detected					1.00				
Maximum Detected					130.00				
Avarage					7.25				
Standard Deviation					18.00				
t-value					1.684				
95% UCL					11.49				
Mean of Ln(x)					1.623				
S.D. of ln(x)					1.723				
H(0.95,n)					3.165				
95% UCL based on Lognormal					48.37				

ATTACHMENT H1
TABLE 17
95% UCL CONCENTRATION
AOC NO. 1, 30-ACRE AREA
SUBSURFACE SOIL VOCs

					TETRACHLOROETHENE (ug/kg)				
Location	Field ID	Sample Date	Depth From	Depth To	Result	SQL	CDRL	Qual	Valid. Qual
BH2387	BH23870008	7/7/87	0	7.5	12.50	25.00		U	
BH2387	BH238708CT	7/7/87	7.2	8.2	12.50	25.00		U	
BH2487	BH24870002	7/8/87	0	2.43	2.50	5.00	5.00	U	
BH2487	BH248705CT	7/8/87	2.43	4.85	12.50	25.00		U	
BH2587	BH25870009	6/18/87	0	9	130.00	130.00			
BH2787	BH27870010	7/6/87	0	4.8	12.50	25.00		U	
BH2887	BH288700WT	7/13/87	0	0.9	12.50	25.00		U	
BH2887	BH28870104	7/13/87	0.9	3.75	12.50	25.00		U	
06691	BH00516WCL	2/25/92	2.4	2.6	3.00	6.00	5.00	U	V
06691	BH00517WCL	2/25/92	6.3	6.5	28.00	28.00	5.00		V
06691	BH00519WCL	2/25/92	10.5	10.7	2.50	5.00	5.00	U	V
06791	BH00488WCL	2/13/92	2.2	2.4	3.00	6.00	5.00	U	V
06791	BH00489WCL	2/13/92	6.6	6.8	2.50	5.00	5.00	U	V
06791	BH00492WCL	2/14/92	11	11.2	3.00	6.00	5.00	U	V
06991	BH00350WCL	2/26/92	2.2	2.4	3.00	6.00	5.00	U	V
07091	BH00482WCL	2/12/92	3.1	3.3	2.50	5.00	5.00	U	V
07091	BH00483WCL	2/12/92	6.6	6.8	2.50	5.00	5.00	U	V
07091	BH00485WCL	2/12/92	13.1	13.3	2.50	5.00	5.00	U	V
07191	BH00977WCL	3/12/92	2.7	2.9	3.00	6.00	5.00	U	V
07191	BH00978WCL	3/12/92	7.1	7.3	3.00	6.00	5.00	U	V
07191	BH00981WCL	3/13/92	10.5	10.7	2.50	5.00	5.00	U	V
07291	BH00716WCL	3/2/92	2.7	2.9	2.50	5.00	5.00	U	V
07291	BH00717WCL	3/2/92	10.3	10.5	2.50	5.00	5.00	U	V
07491	BH01231WCL	2/26/92	2.8	3	3.00	6.00	5.00	U	V
07591	BH01225WCL	2/26/92	3.9	4.1	3.00	6.00	5.00	U	V
07591	BH01226WCL	2/26/92	7.8	8	3.00	6.00	5.00	U	V
08691	BH00528WCL	2/27/92	3	3.2	6.00	12.00	5.00	U	V
08691	BH00529WCL	2/27/92	6.5	6.7	3.00	6.00	5.00	U	V
08691	BH00531WCL	2/27/92	10.5	10.7	2.50	5.00	5.00	U	V
08791	BH00503WCL	2/21/92	1.7	1.9	4.00	4.00	5.00	J	A
08791	BH00504WCL	2/21/92	4.8	5	2.50	5.00	5.00	U	V
08791	BH00506WCL	2/21/92	10.6	10.8	3.00	6.00	5.00	U	V
08791	BH00508WCL	2/21/92	12.5	12.7	2.50	5.00	5.00	U	V
08891	BH00547WCL	3/3/92	3.2	3.4	9.00	9.00	5.00		V
08891	BH00548WCL	3/3/92	6.6	6.8	1.00	1.00	5.00	J	A
08891	BH00551WCL	3/3/92	10.6	10.8	3.00	6.00	5.00	U	V
08991	BH00739WCL	3/10/92	2.4	2.6	3.00	6.00	5.00	U	V
08991	BH00740WCL	3/10/92	6.3	6.5	3.00	6.00	5.00	U	V
08991	BH00742WCL	3/10/92	10.7	10.9	2.50	5.00	5.00	U	V
08991	BH00744WCL	3/10/92	14.5	14.7	2.50	5.00	5.00	U	V
09091	BH00725WCL	3/3/92	2.4	2.6	3.00	6.00	5.00	U	V
09091	BH00726WCL	3/3/92	6.6	6.8	2.50	5.00	5.00	U	V
09091	BH00728WCL	3/3/92	10.2	10.4	3.00	6.00	5.00	U	V
09191	BH00959WCL	3/6/92	2.7	2.9	3.00	6.00	5.00	U	V
09191	BH00961WCL	3/6/92	7	7.2	3.00	6.00	5.00	U	V
09791	BH01216WCL	2/25/92	3.9	4.1	2.00	2.00	5.00	J	A
09791	BH01217WCL	2/25/92	7.8	8	2.00	2.00	5.00	J	A
12791	BH01237WCL	2/27/92	2.8	3	3.00	6.00	5.00	U	V
12791	BH01238WCL	2/27/92	7.8	8	3.00	6.00	5.00	U	V
BH3287	BH32870008	8/3/87	0	8	12.50	25.00		U	
BH3287	BH32870815	8/3/87	8	15	12.50	25.00		U	
BH3287	BH328716CT	8/3/87	15.1	16.2	12.50	25.00		U	
BH3387	BH33870004	7/30/87	0	4	12.50	25.00		U	
BH3387	BH33870815	7/30/87	7.8	14.7	12.50	25.00		U	
BH3487	BH34870008	7/29/87	0	8	12.50	25.00		U	
BH3487	BH34870815	7/29/87	8	14.7	12.50	25.00		U	

ATTACHMENT H1
TABLE 17
95% UCL CONCENTRATION
AOC NO. 1, 30-ACRE AREA
SUBSURFACE SOIL VOCs

					TETRACHLOROETHENE (ug/kg)				
Location	Field ID	Sample Date	Depth From	Depth To	Result	SQL	CDRL	Qual	Valid. Qual
BH3487	BH348708CL	7/29/87	6.6	8	12.50	25.00		U	
BH3587	BH35870012	7/27/87	0	12.3	12.50	25.00		U	
BH3687	BH36870005	7/20/87	0	5	12.50	25.00		U	
BH3687	BH36870515	7/20/87	5	15	12.50	25.00		U	
BH3787	BH37870005	7/16/87	0	5	3.00	6.00	6.00	U	
BH3787	BH37871113	7/17/87	11	12.3	12.50	25.00		U	
BH3787	BH378721CT	7/17/87	18	21.7	12.50	25.00		U	
BH3887	BH38870010	7/14/87	0	9.5	12.50	25.00		U	
BH3887	BH388720BR	7/14/87	20.4	21.3	12.50	25.00		U	
09891	BH00363WCL	12/3/91	3.1	3.3	2.50	5.00	5.00	U	
09891	BH00364WCL	12/3/91	6.3	6.5	1.00	1.00	5.00	J	
09891	BH00366WCL	12/3/91	10.5	10.7	3.00	3.00	5.00	J	
09991	BH00353WCL	12/2/91	3.1	3.3	5.00	5.00	5.00	J	
09991	BH00354WCL	12/2/91	6.8	7	8.00	8.00	5.00		
09991	BH00356WCL	12/2/91	11	11.2	13.00	13.00	5.00		
09991	BH00358WCL	12/2/91	15.6	15.8	48.00	48.00	5.00		
09991	BH00359WCL	12/2/91	17.6	17.8	100.00	100.00	5.00		
09991	BH00360WCL	12/2/91	19.6	19.8	180.00	180.00	5.00		
21793	BH20285WC	6/3/93	23.1	23.4	130.00	130.00	5.00		V
21793	BH20315WC	6/3/93	27.5	27.8	170.00	170.00	5.00		V
21793	BH20316WC	6/3/93	31.6	31.9	100.00	100.00	5.00		V
21793	BH20317WC	6/3/93	35.1	35.4	32.00	32.00	5.00		V
21793	BH20318WC	6/3/93	39	39.3	4.00	4.00	5.00	J	A
21793	BH20326WC	6/3/93	42.9	43.2	5.00	5.00	5.00	J	A
21793	BH20327WC	6/3/93	47	47.3	5.00	5.00	5.00	J	A
21793	BH20328WC	6/3/93	49.7	50	7.00	7.00	5.00		V
B315289	5989BR1012	10/26/89	10	11	2.50	5.00	5.00	UJ	A
02191	BH00115WCL	11/4/91	20.2	20.4	150.00	150.00	5.00	D	JA
BH3087	BH30870010	6/16/87	0	9	2.50	5.00	5.00	U	
BH3087	BH30871020	6/16/87	11.5	17.15	12.50	25.00		U	

Number of Samples	86
Number of Detects	24
Minimum Detected	1.00
Maximum Detected	180.00
Average	17.74
Standard Deviation	37.18
t-value	1.671
95% UCL	24.44
Mean of Ln(x)	1.917
S.D. of Ln(x)	1.903
H(0.95,n)	3.230
95% UCL based on Lognormal	81.0

ATTACHMENT H1
TABLE 18
95% UCL CONCENTRATION
AOC NO. 1
GROUNDWATER VOCs

			CARBON TETRACHLORIDE (ug/L)					Valid.	CHLOROFORM (ug/L)					Valid.	1,1-DICHLOROETHENE (ug/L)					Valid
Location	Field ID	Sample Date	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual
00191	GW02596IT	3/16/92	19.0		19.0	0.02		Z	1.4		1.4	0.01		V	0.2		0.4	0.04	U	JA
00191	GW02909IT	5/21/92	35.0		35.0	0.02		JA	1.6		1.6	0.01		JA						
00191	GW03435IT	9/1/92	33.0		33.0	0.70		JA	2.0		2.0	0.20		V	0.3		0.3	0.10		V
00191	GW03861IT	11/18/92	110.0	49.3	110.0	0.40		V	8.0	3.3	8.0	0.10		V	1.0	0.3 M	2.0	0.30	U	V
00291	GW02581IT	3/11/92	4.0		4.0	0.02			99.0		99.0	0.01			0.9		0.9	0.04	B-RV	
00291	GW02910IT	5/21/92							21.0		21.0	0.01		A						
00291	GW03436IT	9/8/92	1.0		1.0	0.10		V	18.0		18.0	0.15		V	0.1		0.1	0.10	U	V
00291	GW03868IT	11/30/92	0.2	1.7	0.4	0.40	U	V	7.0	36.3	7.0	0.10		V	0.2	0.4	0.3	0.30	U	V
00391	GW02158IT	12/17/91	79.0		79.0	0.02		A	22.0		22.0	0.01		A	2.6		2.6	0.04		JA
00391	GW02526IT	2/28/92	890.0		890.0	0.02		A	36.0		36.0	0.01		JA	3.1		3.1	0.04		V
00391	GW02915IT	5/21/92	620.0		620.0	0.02		A	29.0		29.0	0.01		JA	2.2		2.2	0.04		JA
00391	GW03453IT	9/8/92	1100.0		1100.0	28.00		JA	46.0		46.0	0.15	E	JA	3.0		3.0	0.10		V
00391	GW03888IT	11/11/92	930.0	723.8	930.0	0.40	D	V	37.0	34.0	37.0	0.10		V	2.0	2.6	4.0	0.30	U	V
00491	GW02159IT	12/18/91	52.2		52.2	0.02		A	30.0		30.0	0.01		A	0.4		0.4	0.04		V
00491	GW02527IT	2/28/92	440.0		440.0	0.02		JA	108.0		108.0	0.01		JA	0.5		0.5	0.04		JA
00491	GW02916IT	5/20/92	500.0		500.0	0.02		JA	113.0		113.0	0.01		JA						
00491	GW03462IT	9/1/92	440.0		440.0	14.00		JA	140.0		140.0	1.50		JA	1.0		1.0	0.10		V
00491	GW03889IT	11/9/92	240.0	334.4	240.0	0.40	D	V	91.0	96.4	91.0	0.10	D	V	0.4	0.6	0.4	0.30		V
00691	GW02918IT	5/19/92	0.1	0.1 U	0.2	0.02	U		0.1	0.1 U	0.1	0.01	U		0.1	0.1 U	0.2	0.04	U	
01291	GW02930IT	5/21/92	9.0		9.0	0.02		JA	11.0		22.0	0.01	U	JA	0.1		0.2	0.04	U	JA
01291	GW03464IT	9/2/92	10.0	9.5	10.0	0.10		V	23.0	17.0	23.0	0.75		JA	0.1	0.1 U	0.1	0.10	U	V
01391	GW02857IT	5/26/92	0.1		0.2	0.02	U		0.1		0.1	0.01	U		0.1		0.2	0.04	U	
01391	GW03259IT	7/30/92	0.2		0.4	0.40	U	V	0.1		0.1	0.10	U	V	0.2		0.2	0.30	J	V
01391	GW03813IT	11/9/92	0.2	0.2 U	0.4	0.40	U	V	0.1	0.1 U	0.1	0.10	U	V	0.2	0.2	0.3	0.30	U	V
01491	GW02597IT	3/18/92	0.1		0.2	0.02	U	V	0.1		0.1	0.01	U	V	0.1		0.2	0.04	U	JA
01491	GW02858IT	5/15/92	0.1		0.2	0.02	U		0.1		0.1	0.01	U		0.1		0.2	0.04	U	
01491	GW03260IT	7/30/92	0.2		0.4	0.40	U	V	0.1		0.1	0.10	U	V	0.2		0.3	0.30	U	V
01491	GW03814IT	11/19/92	0.2	0.2 U	0.4	0.40	U	V	0.1	0.1 U	0.1	0.10	U	V	0.2	0.1 U	0.3	0.30	U	V
01791	GW02173IT	12/19/91	0.1		0.2	0.02	U	V	0.1		0.1	0.01	U	V	0.1		0.2	0.04	U	V
01791	GW02598IT	3/17/92	0.1		0.2	0.02	U	V	0.1		0.1	0.01	U	V	0.1		0.2	0.04	U	JA
01791	GW02871IT	5/14/92	0.1		0.2	0.02	U		0.1		0.1	0.01	U		0.1		0.2	0.04	U	
01791	GW03283IT	8/3/92	0.1		0.1	0.10	U	V	0.1		0.2	0.20	U	V	0.1		0.1	0.10	U	V
01791	GW03817IT	11/5/92	0.2	0.1 U	0.4	0.40	U	V	0.1	0.1 U	0.1	0.10	U	V	0.2	0.1 U	0.3	0.30	U	V
01891	GW02178IT	12/23/91	0.1		0.2	0.02	U	V	0.1		0.1	0.01	U	V	0.1		0.2	0.04	U	V

ATTACHMENT H1
TABLE 18
95% UCL CONCENTRATION
AOC NO. 1
GROUNDWATER VOCs

			CARBON TETRACHLORIDE (ug/L)					Valid.	CHLOROFORM (ug/L)					Valid.	1,1-DICHLOROETHENE (ug/L)					Valid
Location	Field ID	Sample Date	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual
01891	GW02509IT	2/27/92	0.1		0.2	0.02	U	V	0.1		0.1	0.01	U	V	0.1		0.2	0.04	U	V
01891	GW02872IT	5/13/92	0.1		0.2	0.02	U		0.1		0.1	0.01	U		0.1		0.2	0.04	U	
01891	GW03284IT	7/29/92	0.2	0.1 U	0.4	0.40	U	V	0.1	0.1 U	0.1	0.10	U	V	0.2	0.1 U	0.3	0.30	U	V
01991	GW02853IT	6/4/92	40.0		40.0	0.02		JA	5.0		10.0	0.01	U	V	10.0		20.0	0.04	U	V
01991	GW03350IT	9/14/92	62.0		62.0	1.40		JA	12.0		12.0	0.15		V	0.3		0.3	0.10		V
01991	GW03907IT	10/23/92	51.0	51.0	51.0	0.50		A	18.0	11.7	18.0	0.50		V	0.3	3.5	0.5	0.50	U	V
02091	GW02138IT	12/14/91							0.6		0.6	0.01		JA	0.1		0.2	0.04	U	V
02091	GW02510IT	2/26/92	0.6		0.6	0.02		JA	0.2		0.2	0.01		JA	0.1		0.2	0.04	U	V
02091	GW02873IT	5/15/92	0.4		0.4	0.02			0.7		0.7	0.01			0.1		0.2	0.04	U	
02091	GW03285IT	7/31/92	0.6		0.6	0.10		V	0.2		0.2	0.20		V	0.1		0.1	0.10	U	V
02091	GW03819IT	11/6/92	20.0	0.6 M	40.0	0.40	U	V	5.0	0.7 M	10.0	0.10	U	V	15.0	3.1 U	30.0	0.30	U	V
02291	GW02113IT	12/16/91	3.1		6.1	0.02	U	JA	3.6		3.6	0.01		JA	8.0		8.0	0.04		JA
02291	GW02511IT	2/26/92	0.1		0.2	0.02	U	V	2.6		2.6	0.01		JA	5.5		5.5	0.04		JA
02291	GW02874IT	5/14/92	0.5		0.5	0.02			3.1		3.1	0.01			8.6		8.6	0.04		
02291	GW03286IT	7/31/92	0.8		0.8	0.10		JA	5.0		5.0	0.20		JA	10.0		10.0	0.13		JA
02291	GW03820IT	10/29/92	0.5	0.8 M	0.5	0.50		V	4.0	3.7	4.0	0.50		V	11.0	8.6	11.0	0.50		V
02391	GW02166IT	12/18/91	0.1	0.1 U	0.2	0.02	U	V	1.8	1.8	1.8	0.01		V	0.1	0.1 U	0.2	0.04	U	V
02491	GW02114IT	12/16/91	0.1		0.2	0.02	U	V	0.1		0.1	0.01	U	V	0.1		0.2	0.04	U	V
02491	GW02572IT	3/11/92	0.4		0.4	0.02			0.1		0.1	0.01	U		0.1		0.2	0.04	U	
02491	GW02875IT	5/15/92	0.1		0.2	0.02	U		0.1		0.1	0.01	U		0.1		0.2	0.04	U	
02491	GW03287IT	7/31/92	0.1		0.1	0.10	U	V	0.1		0.2	0.20	U	V	0.1		0.1	0.10	U	V
02491	GW03821IT	11/9/92	0.2	0.2	0.4	0.40	U	V	0.1	0.1 U	0.1	0.10	U	V	0.2	0.1 U	0.3	0.30	U	V
02591	GW03015IT	6/9/92	0.5		0.5	0.02		V	0.1		0.1	0.01	U	V	0.1		0.2	0.04	U	V
02591	GW03314IT	8/11/92	0.6		0.6	0.10		V	0.2		0.2	0.20		V	0.1		0.1	0.10	U	V
02591	GW03904IT	10/20/92	0.6	0.6	0.6	0.50		V	0.3	0.2	0.5	0.50	U	V	0.3	0.1 U	0.5	0.50	U	V
02891	GW02167IT	12/18/91	0.1	0.1 U	0.2	0.02	U	V	4.0	4.0	4.0	0.01		V	0.1	0.1 U	0.2	0.04	U	V
02991	GW02441IT	3/12/92	400.0		400.0	0.02			59.0		59.0	0.01			3.9		3.9	0.04	B-RV	
02991	GW02854IT	5/8/92	960.0		960.0	0.02		JA	71.0		71.0	0.01		JA	2.0		2.0	0.04		JA
02991	GW03351IT	8/21/92	560.0		560.0	7.00		V	28.0		28.0	0.15		A	2.0		2.0	0.10		V
02991	GW03908IT	10/20/92	630.0	637.5	630.0	12.00		JA	30.0	47.0	30.0	0.50		A	3.0	2.7	3.0	0.50		JA
03091	GW02134IT	12/14/91	58.0		58.0	0.02		A	3.3		3.3	0.01		V	1.0		1.0	0.04		V
03091	GW02568IT	3/5/92	174.0		174.0	0.02		A	3.5		3.5	0.01		JA	1.4		1.4	0.04		JA
03091	GW02881IT	5/12/92	140.0		140.0	0.02		JA	4.0		4.0	0.01		JA	2.0		2.0	0.04		JA
03091	GW03409IT	8/19/92	450.0		450.0	3.50		JA	3.0		3.0	0.20		V	2.0		2.0	0.10		V

ATTACHMENT H1
TABLE 18
95% UCL CONCENTRATION
AOC NO. 1
GROUNDWATER VOCs

			CARBON TETRACHLORIDE (ug/L)					Valid.	CHLOROFORM (ug/L)					Valid.	1,1-DICHLOROETHENE (ug/L)					Valid
Location	Field ID	Sample Date	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual
03091	GW03914IT	10/22/92	100.0	184.4	100.0	0.50		A	5.0	3.8	5.0	0.50		JA	2.0	1.7	2.0	0.50		JA
03191	GW02156IT	12/19/91	0.1		0.2	0.02	U	JA	0.1		0.1	0.01	U	JA	0.1		0.2	0.04	U	JA
03191	GW02165IT	12/18/91													0.1		0.2	0.04	U	V
03191	GW02882IT	5/12/92	3.4		3.4	0.02		V	0.1		0.1	0.01	U	V	0.1		0.2	0.04	U	V
03191	GW03386IT	8/14/92	2.0		2.0	0.10		V	0.4		0.4	0.20		V	0.1		0.1	0.10	U	V
03191	GW03915IT	10/28/92	2.0	1.9	2.0	0.40		V	0.3	0.2	0.3	0.10		V	0.2	0.1 U	0.3	0.30	U	V
03391	GW02092IT	12/5/91	63.4		63.4	0.02		A	12.2		12.2	0.01		A	3.1		3.1	0.04		V
03391	GW02547IT	3/13/92	170.0		170.0	0.02			12.0		12.0	0.01			8.2		8.2	0.04	B-RV	
03391	GW03006IT	6/2/92	450.0		450.0	0.02		JA	14.0		14.0	0.01		A	2.5		5.0	0.04	U	JA
03391	GW03123IT	7/9/92	430.0		430.0	0.40	D	V	13.0		13.0	0.10		V	3.0		3.0	0.30		V
03391	GW03896IT	10/16/92	940.0	410.7	940.0	0.50	E	A	33.0	16.8	33.0	0.50		A	8.0	5.0	8.0	0.50		JA
03591	GW02161IT	12/19/91	43.0		43.0	0.02		A	14.8		14.8	0.01		A	0.2		0.2	0.04		V
03591	GW02567IT	3/5/92	60.0		60.0	0.02		A	19.0		19.0	0.01		JA						
03591	GW02883IT	6/4/92	140.0		140.0	0.02		V	5.0		10.0	0.01	U	V	10.0		20.0	0.04	U	V
03591	GW03387IT	8/13/92	160.0		160.0	1.40		JA	20.0		20.0	0.15		V	0.1		0.1	0.10	U	V
03591	GW03916IT	10/23/92	42.0	89.0	42.0	0.50		A	20.0	15.8	20.0	0.50		JA	0.3	2.6 U	0.5	0.50	U	JA
03691	GW03048IT	6/8/92	550.0		550.0	0.02		V	20.0		20.0	0.01		V	10.0		20.0	0.04	U	V
03691	GW03124IT	7/8/92	410.0		410.0	0.40	D	V	24.0		24.0	0.10		V	5.0		5.0	0.30		V
03691	GW03897IT	10/21/92	98.0	352.7	98.0	0.50		A		22.0					7.0	7.3	7.0	0.50		JA
03791	GW02093IT	12/6/91	68.0		68.0	0.02		A	24.0		24.0	0.01		A	4.8		4.8	0.04		V
03791	GW02557IT	3/19/92	460.0		460.0	0.02	E	JA	43.0		43.0	0.01		V	7.0		7.0	0.04		JA
03791	GW03007IT	6/10/92	1100.0		1100.0	0.02		A	23.0		23.0	0.01		V	10.0		20.0	0.04	U	V
03791	GW03125IT	7/10/92	700.0		700.0	0.40	D	V	21.0		21.0	0.10		V	4.0		4.0	0.30		V
03791	GW03898IT	10/16/92	87.0	483.0	87.0	0.50	E	A	5.0	23.2	5.0	0.50		JA	1.0	5.4	1.0	0.50		JA
03991	GW03010IT	6/23/92	23.0		23.0	0.40		V	0.8		0.8	0.10		V	0.2		0.3	0.30	U	V
03991	GW03126IT	7/8/92	13.0		13.0	0.40		V	0.6		0.6	0.10		V	0.2		0.3	0.30	U	V
03991	GW03899IT	10/21/92	10.0	15.3	10.0	0.50		JA	0.7	0.7	0.7	0.50		JA	0.3	0.2 U	0.5	0.50	U	JA
04091	GW03013IT	6/24/92	3.0		3.0	0.40		V	1.0		1.0	0.10		V	0.2		0.3	0.30	U	V
04091	GW03317IT	8/12/92	4.0		4.0	0.10		V	0.9		0.9	0.20		V	0.1		0.1	0.10	U	V
04091	GW03902IT	10/22/92	5.0	4.0	5.0	0.50		V	0.6	0.8	0.6	0.50		V	0.3	0.2 U	0.5	0.50	U	V
04191	GW02582IT	3/13/92	0.1		0.2	0.02	U		8.7		8.7	0.01			0.1		0.2	0.04	U	
04191	GW02923IT	5/19/92							5.2		5.2	0.01		JA	0.1		0.2	0.04	U	JA
04191	GW03319IT	8/27/92	0.1		0.1	0.10	U	V	2.0		2.0	0.20		V	0.1		0.1	0.10	U	V
04191	GW03871IT	12/7/92	0.2	0.1 U	0.4	0.40	U	V	0.5	4.1	0.5	0.10		V	0.2	0.1 U	0.3	0.30	U	V

ATTACHMENT H1
TABLE 18
95% UCL CONCENTRATION
AOC NO. 1
GROUNDWATER VOCs

			CARBON TETRACHLORIDE (ug/L)					Valid.	CHLOROFORM (ug/L)					Valid.	1,1-DICHLOROETHENE (ug/L)					Valid
Location	Field ID	Sample Date	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual
04291	GW02924IT	5/19/92	0.1		0.2	0.02	U		1.7		1.7	0.01			0.1		0.2	0.04	U	
04291	GW03320IT	9/2/92	0.1	0.1	0.1	0.10		V	2.0	1.9	2.0	0.20		V	0.1	0.1 U	0.1	0.10	U	V
04491	GW03321IT	9/2/92	0.1	0.1 U	0.1	0.10	U	V	0.4	0.4	0.4	0.20		V	0.1	0.1 U	0.1	0.10	U	V
04591	GW02175IT	12/20/91													0.1		0.2	0.04	U	JA
04591	GW02525IT	3/3/92																		
04591	GW02931IT	5/22/92	4.3		4.3	0.02			0.5		0.5	0.01			0.1		0.2	0.04	U	
04591	GW03450IT	8/31/92	2.0		2.0	0.10		JA	0.6		0.6	0.20		JA	0.1		0.1	0.10	U	JA
04591	GW03882IT	12/8/92	1.0	2.4	1.0	0.40		V	0.1	0.4	0.1	0.10	U	V	0.2	0.1 U	0.3	0.30	U	V
04691	GW02439IT	3/12/92	1.6		1.6	0.02			0.6		0.6	0.01			0.1		0.2	0.04	U	
04691	GW02932IT	5/22/92																		
04691	GW03451IT	9/2/92	1.0		1.0	0.10		V	0.6		0.6	0.20		V	0.1		0.1	0.10	U	V
04691	GW03881IT	12/7/92	1.0	1.2	1.0	0.40		V	0.1	0.4	0.1	0.10	U	V	0.2	0.1 U	0.3	0.30	U	V
04891	GW03235IT	8/19/92	0.1	0.1 U	0.1	0.10	U	V	0.2	0.2	0.2	0.20		V	0.1	0.1 U	0.1	0.10	U	V
04991	GW02939IT	5/21/92	0.2		0.2	0.02		JA	0.2		0.2	0.01		JA	0.1		0.2	0.04	U	JA
04991	GW03236IT	7/27/92	0.2		0.2	0.40	J	A	0.2		0.2	0.10		V	0.2		0.3	0.30	U	V
04991	GW03725IT	10/28/92	0.2	0.2	0.4	0.40	U	V	0.1	0.2	0.1	0.10		V	0.2	0.1 U	0.3	0.30	U	V
05091	GW02177IT	12/23/91													0.1		0.2	0.04	U	V
05091	GW02570IT	3/6/92																		
05091	GW02619IT	3/26/92	1.0		1.0	0.02	B	JA	0.5		0.5	0.01		JA	0.1		0.2	0.04	U	JA
05091	GW02940IT	5/20/92	1.4		1.4	0.02		JA							0.1		0.2	0.04	U	JA
05091	GW03237IT	7/28/92																		
05091	GW03726IT	10/28/92	0.9	1.1	0.9	0.40		V	0.5	0.5	0.5	0.10		V	0.2	0.1 U	0.3	0.30	U	V
05191	GW02160IT	12/17/91	12.0		12.0	0.02	E	A	2.6		2.6	0.01		V	0.1		0.2	0.04	U	V
05191	GW02571IT	3/5/92	18.0		18.0	0.02		A	2.5		2.5	0.01		JA						
05191	GW02941IT	5/21/92	10.0		10.0	0.02		JA												
05191	GW03238IT	7/24/92	17.0		17.0	0.40		V	2.0		2.0	0.10		V	0.2		0.3	0.30	U	V
05191	GW03727IT	10/28/92	21.0	15.6	21.0	0.40		V	2.0	2.3	2.0	0.10		V	0.2	0.1 U	0.3	0.30	U	V
05391	GW02084IT	12/5/91	12.0		12.0	0.02		A	1.3		1.3	0.01		JA	0.1		0.2	0.04	U	V
05391	GW02566IT	3/5/92	19.0		19.0	0.02		A	2.0		2.0	0.01		JA						
05391	GW02884IT	6/11/92	6.9		6.9	0.02		V	0.6		0.6	0.01		V	0.1		0.2	0.04	U	V
05391	GW03388IT	9/10/92	7.0		7.0	0.10		V	0.7		0.7	0.20		V	0.1		0.1	0.10	U	V
05391	GW03917IT	10/28/92	7.0	10.4	7.0	0.40		V	0.1	0.9	0.1	0.10	U	V	0.2	0.1 U	0.3	0.30	U	V
05691	GW02061IT	12/4/91	64.5		64.5	0.02		A	11.6		11.6	0.01		A	0.3		0.3	0.04		V
05691	GW02549IT	3/12/92	47.1		47.1	0.02			4.6		4.6	0.01			0.4		0.4	0.04	B-RV	

ATTACHMENT H1
TABLE 18
95% UCL CONCENTRATION
AOC NO. 1
GROUNDWATER VOCs

			CARBON TETRACHLORIDE (ug/L)					Valid.	CHLOROFORM (ug/L)					Valid.	1,1-DICHLOROETHENE (ug/L)					Valid
Location	Field ID	Sample Date	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual
05691	GW02885IT	5/28/92	830.0		830.0	0.02			25.0		50.0	0.01	U		50.0		100.0	0.04	U	
05691	GW03389IT	8/21/92	210.0		210.0	3.50		V	6.0		6.0	0.20		V	0.6		0.6	0.10		V
05691	GW03918IT	11/9/92	180.0	266.3	180.0	0.40	D	V	6.0	10.6	6.0	0.10		V	0.4	0.6 M	0.4	0.30		V
06091	GW02062IT	12/4/91													0.1		0.2	0.04	U	V
06091	GW02576IT	3/12/92	0.9		0.9	0.02			0.2		0.2	0.01			0.1		0.2	0.04	U	
06091	GW03014IT	6/11/92	1.0		1.0	0.02		V	0.1		0.1	0.01	U	V	0.1		0.2	0.04	U	V
06091	GW03318IT	8/6/92	2.0		2.0	0.10		V	0.3		0.3	0.20		V	0.1		0.1	0.10	U	V
06091	GW03903IT	10/19/92	4.0	2.0	4.0	0.50		V	0.6	0.3	0.6	0.50		V	0.3	0.1 U	0.5	0.50	U	V
06591	GW02895IT	5/19/92	19.0		19.0	0.02	J	A	81.0		81.0	0.01		JA	4.1		4.1	0.04		JA
06591	GW03427IT	8/27/92	43.0		43.0	3.50		JA	400.0		400.0	3.80		JA	3.0		3.0	0.10		V
06591	GW03847IT	11/17/92	370.0	144.0	370.0	0.40		V	78.0	186.3	78.0	0.10		V	1.0	2.7	1.0	0.30	J	A
06691	GW02896IT	5/18/92	20000.0		20000.0	0.02	E		25000		25000	0.01	E		14.0		14.0	0.04		
06691	GW03428IT	8/28/92	12000.0		12000.0	700.00		JA	39000		39000	750.00		JA	26.0		26.0	0.13		A
06691	GW03848IT	11/17/92	16000.0	16000.0	16000.0	0.40	D	V	28000	30667	28000	0.10	D	V	19.0	19.7	38.0	0.30	U	V
06791	GW02897IT	5/20/92							0.9		0.9	0.01		JA	0.1		0.2	0.04	U	JA
06791	GW03454IT	8/27/92	3.0	3.0	3.0	0.10		V	0.8	0.8	0.8	0.20		V	0.1	0.1 U	0.1	0.10	U	V
06891	GW02898IT	5/20/92	0.1		0.2	0.02	U	JA	0.1		0.1	0.01	U	JA	0.1		0.2	0.04	U	JA
06891	GW03429IT	8/26/92	0.1		0.1	0.10	U	V	0.1		0.2	0.20	U	V	0.1		0.1	0.10	U	V
06891	GW03851IT	11/18/92	0.1	0.1	0.1	0.40	J	A	0.1	0.1 U	0.1	0.10	U	V	0.2	0.1 U	0.3	0.30	U	V
06991	GW02899IT	5/18/92	5.2		5.2	0.02			0.4		0.4	0.01			0.4		0.4	0.04		
06991	GW03430IT	8/26/92	31.0		31.0	1.40		V	1.0		1.0	0.20		V	2.0		2.0	0.10		V
06991	GW03850IT	11/18/92	44.0	26.7	44.0	0.40		V	0.4	0.6	0.8	0.10	U	V	1.0	1.1	2.0	0.30	U	V
07191	GW02900IT	5/18/92	2.5		2.5	0.02			0.1		0.1	0.01	U		1.4		1.4	0.04		
07191	GW03455IT	8/27/92	0.6		0.6	0.10		V	1.0		1.0	0.20		V	21.0		21.0	0.13		V
07191	GW03864IT	11/16/92	3.0	2.0	6.0	0.40	U	V	1.0	0.7	2.0	0.10	U	V	18.0	13.5	18.0	0.30		V
07291	GW02901IT	5/20/92	50.0		100.0	0.02	U	JA	25.0		50.0	0.01	U	JA	50.0		100.0	0.04	U	JA
07291	GW03456IT	8/28/92	0.4		0.4	0.10		V	1.0		1.0	0.20		V	0.1		0.1	0.10	U	V
07291	GW03857IT	11/16/92	0.2	0.4 M	0.4	0.40	U	V	0.1	1.0 M	0.1	0.10		V	0.2	16.7 U	0.3	0.30	U	V
07391	GW02599IT	3/16/92	2300.0		2300.0	0.02		V	1500.0		1500.0	0.01		V	260.0		260.0	0.04		JA
07391	GW02902IT	5/21/92							1700.0		1700.0	0.01		JA	15.0		15.0	0.04		JA
07391	GW03457IT	8/28/92	0.1		0.1	0.10	U	JA	4500.0		4500.0	1500.00		JA	380.0		380.0	0.13		A
07391	GW03862IT	11/16/92	1000.0	1100.0	2000.0	0.40	U	V	1500.0	2300.0	1500.0	0.10		V	750.0	351.3	1500.0	0.30	U	V
07891	GW02434IT	3/12/92	360.0		360.0	0.02			45.0		45.0	0.01			1.4		1.4	0.04		
07891	GW02855IT	5/7/92	170.0		170.0	0.02		JA	31.0		31.0	0.01	E	V	0.7		0.7	0.04		V

ATTACHMENT H1
TABLE 18
95% UCL CONCENTRATION
AOC NO. 1
GROUNDWATER VOCs

			CARBON TETRACHLORIDE (ug/L)					Valid.	CHLOROFORM (ug/L)					Valid.	1,1-DICHLOROETHENE (ug/L)					Valid
Location	Field ID	Sample Date	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual
07891	GW03353IT	8/20/92	130.0		130.0	1.40		V	42.0		42.0	1.50		V	0.1		0.1	0.10	U	V
07891	GW03909IT	10/23/92	110.0	192.5	110.0	0.50		A	45.0	40.8	45.0	0.50		A	0.7	0.7	0.7	0.50		JA
07991	GW02579IT	3/12/92	50.0		50.0	0.02			20.0		20.0	0.01			0.4		0.4	0.04	B-RV	
07991	GW02925IT	5/20/92	90.0		90.0	0.02		JA	33.0		33.0	0.01		JA	0.3		0.3	0.04		JA
07991	GW03322IT	8/26/92	16.0		16.0	0.70		V	26.0		26.0	0.75		V	0.1		0.1	0.10	U	V
07991	GW03874IT	12/4/92	49.0	51.3	49.0	0.40		V	20.0	24.8	20.0	0.10		V	0.3	0.3	0.6	0.30	U	V
08091	GW02580IT	3/12/92	0.1		0.2	0.02	U		12.0		12.0	0.01			0.1		0.2	0.04	U	
08091	GW02926IT	5/19/92	0.3		0.3	0.02			3.8		3.8	0.01			0.1		0.2	0.04	U	
08091	GW03323IT	8/27/92	0.1	0.1	0.1	0.10	U	V	2.0	5.9	2.0	0.20		V	0.1	0.1 U	0.1	0.10	U	V
08391	GW03478IT	9/3/92	9.0	9.0	9.0	0.10		V	9.0	9.0	9.0	0.20		V	0.2	0.2	0.2	0.10		V
08591	GW02577IT	3/12/92	2.7	2.7	2.7	0.02			2.7	2.7	2.7	0.01			0.1	0.1 U	0.2	0.04	U	
08891	GW03065IT	6/23/92	2300.0		2300.0	0.40		V	450.0		450.0	0.10		V	75.0		150.0	0.30	U	V
08891	GW03431IT	8/31/92	17000.0		17000.0	350.00		JA	560.0		560.0	3.80		JA	62.0		62.0	3.20		JA
08891	GW03849IT	11/17/92	5300.0	8200.0	5300.0	0.40		V	1400.0	803.3	1400.0	0.10		V	22.5	53.2	45.0	0.30	U	V
09091	GW02903IT	5/20/92	65.0		65.0	0.02		JA	1.1		1.1	0.01		JA	0.1		0.2		U	JA
09091	GW03432IT	8/31/92	25.0		25.0	0.28		JA	0.7		0.7	0.20		V	0.1		0.1	0.10		V
09091	GW03852IT	11/18/92	46.0	45.3	46.0	0.40	E	A	1.0	0.9	1.0	0.10		JA	0.2	0.1 M	0.3	0.30	U	JA
09691	GW02608IT	3/18/92	61.0		61.0	0.02		V	26.0		26.0	0.01		V	3.4		3.4	0.04		JA
09691	GW02904IT	5/22/92	22.0		22.0	0.02			13.0		13.0	0.01			1.8		1.8	0.04		
09691	GW03458IT	8/31/92	120.0		120.0	28.00		JA	0.1		0.2	0.20	U	JA	6.0		6.0	0.10		JA
09691	GW03865IT	11/17/92	31.0	58.5	31.0	0.40	J	V	22.0	15.3	22.0	0.10		V	15.0	6.0 M	30.0	0.30	U	V
0987	GW01317IT	5/20/91	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V
0987	GW01667IT	8/16/91	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V
0987	GW02088IT	12/16/91	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V
0987	GW02402IT	3/6/92	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V
0987	GW02942IT	5/26/92	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	JA	2.5		5.0	5.00	U	V
0987	GW03179IT	7/16/92	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V
0987	GW03708IT	12/10/92	2.5	2.5 U	5.0	5.00	U	V	2.5	2.5 U	5.0	5.00	U	V	2.5	2.5 U	5.0	5.00	U	V
1087	GW01668IT	8/28/91	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V
1087	GW02919IT	5/26/92	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	JA	2.5		5.0	5.00	U	V
1087	GW03180IT	7/16/92	2.5	2.5 U	5.0	5.00	U	V	2.5	2.5 U	5.0	5.00	U	V	2.5	2.5 U	5.0	5.00	U	V
10991	GW02436IT	2/6/92													0.1		0.2	0.04	U	V
10991	GW02943IT	5/22/92	0.1		0.2	0.02	U		0.1		0.1	0.01	U		0.1		0.2	0.04	U	
10991	GW03289IT	7/28/92	1.0		1.0	0.40		V	0.3		0.3	0.10		V	0.2		0.3	0.30	U	V

ATTACHMENT H1
TABLE 18
95% UCL CONCENTRATION
AOC NO. 1
GROUNDWATER VOCs

			CARBON TETRACHLORIDE (ug/L)					Valid.	CHLOROFORM (ug/L)					Valid.	1,1-DICHLOROETHENE (ug/L)					Valid
Location	Field ID	Sample Date	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual
10991	GW03728IT	10/23/92	1.0	0.7	1.0	0.50		JA	0.3	0.2	0.5	0.50	U	JA	0.3	0.2 U	0.5	0.50	U	JA
11491	GW02886IT	5/28/92	800.0	800.0	800.0	0.02			25.0	25.0 U	50.0	0.01	U		50.0	50.0 U	100.0	0.04	U	
11691	GW02174IT	12/23/91	56.3		56.3	0.02		A	23.6		23.6	0.01		A	11.7		11.7	0.04		A
11691	GW02551IT	3/18/92	550.0		550.0	0.02		V	50.0		100.0	0.01	U	V	16.0		16.0	0.04	E	A
11691	GW03011IT	6/8/92	770.0		770.0	0.02		V	29.0		29.0	0.01		V	10.0		20.0	0.04	U	V
11691	GW03127IT	7/10/92	470.0		470.0	0.40		V	33.0		33.0	0.10		V	7.0		7.0	0.30		V
11691	GW03900IT	10/20/92	600.0	489.3	600.0	12.00		JA	37.0	34.5	37.0	0.50		A	13.0	11.5	13.0	0.50		JA
11791	GW02432IT	2/6/92	470.0		470.0	0.02		V	85.0		85.0	0.01		V	1.4		1.4	0.04		V
11791	GW02917IT	5/20/92							0.8		0.8	0.01		JA						
11791	GW03465IT	9/8/92	820.0		820.0	0.14		JA	130.0		130.0	0.15		JA	2.0		2.0			V
11791	GW03890IT	11/11/92	280.0		280.0	0.40		V	42.0		42.0	0.10		V	1.0		2.0	0.30	U	V
11791	GW03891IT	11/12/92	17.0	396.8	17.0	5.00		V	2.5	52.1	5.0	5.00	U	V	2.5	1.7	5.0	5.00	U	V
1187	GW01090IT	4/17/91	400.0		400.0	5.00	D	V	82.0		82.0	5.00		V	5.0		5.0	5.00		V
1187	GW01648IT	9/6/91	610.0		610.0	5.00		V	92.0		92.0	5.00	J	A	50.0		100.0	5.00	U	V
1187	GW02004IT	11/21/91	520.0		520.0	5.00	D	V	100.0		100.0	5.00		V	6.0		6.0	5.00		V
1187	GW02386IT	2/22/92	680.0		680.0	5.00		V	110.0		110.0	5.00	B	V	50.0		100.0	5.00	U	V
1187	GW02920IT	5/19/92	400.0		400.0	5.00	D	V	76.0		76.0	5.00	B	V	5.0		5.0	5.00		V
1187	GW03460IT	9/1/92	580.0		580.0	250.00		JA	87.0		87.0	5.00		V	7.0		7.0	5.00		V
1187	GW03887IT	11/19/92	650.0	548.6	650.0	5.00		V	92.0	91.3	92.0	5.00	J	A	50.0	7.0 M	100.0	5.00	U	V
11891	GW02117IT	12/19/91	58.4		58.4	0.02		A	11.3		11.3	0.01		A	2.8		2.8	0.04		V
11891	GW02552IT	2/28/92	530.0		530.0	0.02		A	16.0		16.0	0.01		JA	6.6		6.6	0.04		V
11891	GW03012IT	6/2/92	580.0		580.0	0.02		JA	14.0		14.0	0.01		A	3.0		6.0	0.04	U	JA
11891	GW03128IT	7/9/92	410.0		410.0	0.40	D	V	12.0		12.0	0.10		V	3.0		3.0	0.30		V
11891	GW03901IT	10/16/92	130.0	341.7	130.0	0.50	E	A	4.0	11.5	4.0	0.50		JA	1.0	3.3	1.0	0.50		JA
12091	GW02116IT	12/19/91	0.1		0.2	0.02	U	V	0.1		0.1	0.01	U	V	0.1		0.2	0.04	U	V
12091	GW02514IT	2/27/92							0.1		0.1	0.01	U	V	0.1		0.2	0.04	U	V
12091	GW02876IT	5/13/92	0.1		0.2	0.02	U		0.1		0.1	0.01	U		0.1		0.2	0.04	U	
12091	GW03290IT	7/29/92	0.2		0.4	0.40	U	V	0.1		0.1	0.10	U	V	0.2		0.3	0.30	U	V
12091	GW03822IT	11/10/92	0.2	0.2 U	0.4	0.40	U	V	0.1	0.1 U	0.1	0.10	U	V	0.2	0.1 U	0.3	0.30	U	V
12191	GW02440IT	3/16/92	220.0		220.0	0.02		A	7.5		7.5	0.01		V	3.1		3.1	0.04		JA
12191	GW02862IT	6/3/92	350.0		350.0	0.02		JA	10.0		10.0	0.01		V	7.5		15.0	0.04	U	JA
12191	GW03410IT	8/19/92	470.0		470.0	3.50		JA	12.0		12.0	0.15		V	10.0		10.0	0.13		V
12191	GW03910IT	10/21/92	48.0	272.0	48.0	0.50		A	0.3	7.4	0.5	0.50	U	JA	0.3	5.2	0.5	0.50	U	JA
12291	GW02607IT																			

ATTACHMENT H1
TABLE 18
95% UCL CONCENTRATION
AOC NO. 1
GROUNDWATER VOCs

			CARBON TETRACHLORIDE (ug/L)					Valid.	CHLOROFORM (ug/L)					Valid.	1,1-DICHLOROETHENE (ug/L)					Valid
Location	Field ID	Sample Date	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual
12291	GW02859IT	5/29/92	0.1		0.2	0.02	U		0.1		0.1	0.01	U		0.1		0.2	0.04	U	
12291	GW03261IT	7/31/92	0.2	0.2 U	0.4	0.40	U	V	0.1	0.1 U	0.1	0.10	U	V	0.2	0.1 U	0.3	0.30	U	V
12391	GW02438IT	2/12/92	5.4		5.4	0.02		V	0.5		0.5	0.01		V	0.1		0.2	0.04	U	V
12391	GW02887IT	5/14/92	6.6		6.6	0.02			2.1		2.1	0.01			0.1		0.2	0.04	U	
12391	GW03421IT	9/15/92	5.0		5.0	0.10		V	1.0		1.0	0.20		V	0.1		0.1	0.10	U	V
12391	GW03919IT	12/3/92	4.0	5.3	4.0	0.40		V	1.0	1.2	1.0	0.10		V	0.2	0.1 U	0.3	0.30	U	V
12491	GW02435IT	2/7/92	0.5		0.5	0.02		V	8.3		8.3	0.01		V	0.1		0.2	0.04	U	V
12491	GW02888IT	5/14/92	5.2		5.2	0.02			0.8		0.8	0.01			0.1		0.2	0.04	U	
12491	GW03422IT	9/14/92	2.0		2.0	0.10		V	0.6		0.6	0.20		V	0.1		0.1	0.10	U	V
12491	GW03922IT	10/22/92	2.0	2.4	2.0	0.50		JA	0.5	2.6	0.5	0.50		JA	0.3	0.1 U	0.5	0.50	U	JA
12691	GW02437IT	2/13/92	540.0		540.0	0.02		JA	38.6		38.6	0.01		JA	2.1		2.1	0.04		JA
12691	GW02889IT	5/29/92	4500.0		4500.0	0.02			160.0		160.0	0.01			50.0		100.0	0.04	U	
12691	GW03423IT	9/10/92	840.0		840.0	18.00		JA	22.0		22.0	0.15		A	2.0		2.0	0.10		V
12691	GW03923IT	10/23/92	110.0	1497.5	110.0	0.50		A	29.0	62.4	29.0	0.50		A	3.0	3.0 M	3.0	0.50		JA
1287	GW01647IT	9/9/91	8.5		17.0	5.00	U	V	10.0		10.0	5.00	J	A	8.5		17.0	5.00	U	V
1287	GW02002IT	11/20/91	9.0		9.0	5.00		V	11.0		11.0	5.00		V	2.5		5.0	5.00	U	V
1287	GW02387IT	2/22/92	20.0		20.0	5.00		V	18.0		18.0	5.00		V	1.0		1.0	5.00	J	A
1287	GW02921IT	5/18/92	17.0		17.0	5.00		V	16.0		16.0	5.00	B	V	2.5		5.0	5.00	U	V
1287	GW03441IT	9/1/92	16.0	14.1	16.0	5.00		V	18.0	14.6	18.0	5.00		V	2.0	2.0 M	2.0	5.00	J	A
12991	GW02601IT	3/17/92	640.0		640.0	0.02		A	59.0		59.0	0.01		JA	6.4		6.4	0.04		JA
12991	GW02911IT	5/22/92	1100.0		1100.0	0.02			28.0		28.0	0.01			2.3		2.3	0.04		
12991	GW03437IT	8/28/92	2800.0		2800.0	14.00		A	43.0		43.0	3.80		JA	6.0		6.0	0.10		V
12991	GW03867IT	11/30/92	2700.0	1810.0	2700.0	0.40	D	V	31.0	40.3	31.0	0.10		V	5.0	4.9	5.0	0.30		V
13091	GW02912IT	5/22/92	0.1		0.2	0.02	U		1.2		1.2	0.01			0.1		0.2	0.04	U	
13091	GW03440IT	9/9/92	0.2		0.2	0.10		V	0.3		0.3	0.20		V	0.1		0.1	0.10	U	V
13091	GW03860IT	11/16/92	5.0	1.8	5.0	0.40		V	0.7	0.7	0.7	0.10		V	0.2	0.1 U	0.3	0.30	U	V
13191	GW02905IT	5/19/92	1800.0		1800.0	0.02		JA	740.0		740.0	0.01		JA	9.5		9.5	0.04		JA
13191	GW03433IT	9/2/92	1900.0		1900.0	7.00		A	460.0		460.0	7.50		JA	13.0		13.0	0.13		V
13191	GW03855IT	11/17/92	1400.0	1700.0	1400.0	0.40	D	V	540.0	580.0	540.0	0.10		V	4.5	9.0	9.0	0.30	U	V
13291	GW02906IT	5/21/92	220.0	220.0	220.0	0.02		JA	160.0	160.0	160.0	0.01		JA						
13391	GW03016IT	6/8/92	0.4		0.4	0.02		JA	0.1		0.1	0.01		JA	0.1		0.2	0.04	U	JA
13391	GW03354IT	8/20/92	0.7		0.7	0.10		V	0.3		0.3	0.20		V	0.1		0.1	0.10	U	V
13391	GW03906IT	10/20/92	1.0	0.7	1.0	0.50		V	0.3	0.2	0.5	0.50	U	V	0.3	0.1 U	0.5	0.50	U	V
13491	GW03063IT	6/24/92	8.0		8.0	0.40		V	1.0		1.0	0.10		V	0.2		0.3	0.30	U	V

ATTACHMENT H1
TABLE 18
95% UCL CONCENTRATION
AOC NO. 1
GROUNDWATER VOCs

			CARBON TETRACHLORIDE (ug/L)					Valid.	CHLOROFORM (ug/L)					Valid.	1,1-DICHLOROETHENE (ug/L)					Valid
Location	Field ID	Sample Date	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual
13491	GW03411IT	8/21/92	18.0		18.0	0.14		V	1.0		1.0	0.20		V	0.1		0.1	0.10	U	V
13491	GW03928IT	10/22/92	17.0	14.3	17.0	0.50		V	1.0	1.0	1.0	0.50		V	0.3	0.2 U	0.5	0.50	U	V
1487	GW01093IT	4/15/91	300.0		300.0	5.00	D	V	27.0		27.0	5.00		JA	1.0		1.0	5.00	J	A
1487	GW01646IT	9/5/91	350.0		350.0	5.00		V	31.0		31.0	5.00		V	6.0		12.0	5.00	U	V
1487	GW02003IT	11/21/91	440.0		440.0	5.00		V	41.0		41.0	5.00		V	7.5		15.0	5.00	U	V
1487	GW02388IT	2/21/92	270.0		270.0	0.02		JA	32.4		32.4	0.01		JA	1.8		1.8	0.04		JA
1487	GW02922IT	5/20/92	330.0		330.0	5.00	D	V	12.5		25.0	5.00	U	JA	2.5		5.0	5.00	U	V
1487	GW03461IT	8/31/92	570.0	376.7	570.0	50.00		JA	40.0	30.7	40.0	5.00		V	3.0	3.0 M	3.0	5.00	J	A
1587	GW01094IT	4/15/91	1100.0		1100.0	5.00		V	15.0		15.0	5.00	J	A	25.0		50.0	5.00	U	V
1587	GW01650IT	9/4/91	1600.0		1600.0	5.00		V	19.0		19.0	5.00	J	A	37.5		75.0	5.00	U	V
1587	GW02005IT	12/18/91	2200.0		2200.0	5.00	D	V	21.0		21.0	5.00		V	5.0		5.0	5.00		V
1587	GW02422IT	2/25/92	4600.0		4600.0	5.00		V	41.0		41.0	5.00	J	A	100.0		200.0	5.00	U	V
1587	GW02914IT	6/23/92	2900.0		2900.0	5.00	D	V	33.0		33.0	5.00	J	A	37.5		75.0	5.00	U	V
1587	GW03442IT	9/1/92	5100.0		5100.0	50.00		A	41.0		41.0	5.00		JA	9.0		9.0	5.00		JA
1587	GW03859IT	11/17/92		2916.7					55.0	32.1	55.0	5.00		V	6.0	9.0 M	6.0	5.00		V
1787	GW01280IT	5/13/91	28.0		28.0	5.00		V	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V
1787	GW01687IT	8/19/91	27.0		27.0	5.00		V	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V
1787	GW02031IT	11/18/91	16.0		16.0	5.00		V	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V
1787	GW02424IT	2/24/92	20.0		20.0	5.00		V	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V
1787	GW02844IT	4/30/92	14.0		14.0	5.00			2.0		2.0	5.00	BJ-ND		2.5		5.0	5.00	U	
1787	GW03281IT	7/29/92	13.0		13.0	5.00		V	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V
1787	GW03823IT	11/10/92	480.0	85.4	480.0	50.00		V	36.0	7.2	36.0	5.00		V	2.0	2.4	2.0	5.00	J	A
1987	GW01665IT	8/15/91	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V
1987	GW02878IT	5/12/92	2.5	2.5 U	5.0	5.00	U	V	2.5	2.5 U	5.0	5.00	U	JA	2.5	2.5 U	5.0	5.00	U	V
2187	GW01187IT	4/25/91							2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V
2187	GW01400IT	6/13/91	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V
2187	GW01613IT	8/6/91	2.5		5.0	5.00	U		2.5		5.0	5.00	U		2.5		5.0	5.00	U	
2187	GW01929IT	10/16/91	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V
2187	GW02520IT	2/27/92	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V
2187	GW02647IT	4/16/92	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V
2187	GW03210IT	7/24/92	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V
2187	GW03566IT	10/13/92	2.5	2.5 U	5.0	5.00	U	V	2.5	2.5 U	5.0	5.00	U	V	2.5	2.5 U	5.0	5.00	U	V
2387	GW01126IT	4/19/91	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V
2387	GW01669IT	8/19/91	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V

ATTACHMENT H1
TABLE 18
95% UCL CONCENTRATION
AOC NO. 1
GROUNDWATER VOCs

			CARBON TETRACHLORIDE (ug/L)					Valid.	CHLOROFORM (ug/L)					Valid.	1,1-DICHLOROETHENE (ug/L)					Valid
Location	Field ID	Sample Date	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual
2387	GW02032IT	11/23/91	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V
2387	GW02405IT	2/28/92	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V
2387	GW02845IT	5/28/92	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	JA	2.5		5.0	5.00	U	V
2387	GW03256IT	7/30/92	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V
2387	GW03816IT	11/6/92	2.5	2.5 U	5.0	5.00	U	V	2.5	2.5 U	5.0	5.00	U	V	2.5	2.5 U	5.0	5.00	U	V
2487	GW01686IT	8/29/91	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V
2487	GW02861IT	6/5/92	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	JA	2.5		5.0	5.00	U	V
2487	GW03347IT	8/14/92	2.5	2.5 U	5.0	5.00	U		2.5	2.5 U	5.0	5.00	U		2.5	2.5 U	5.0	5.00	U	
2587	GW01176IT	4/22/91	130.0		130.0	5.00		JA	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V
2587	GW01685IT	9/10/91	20.5		41.0	5.00	U	V	5.0		10.0	5.00	U	V	5.0		10.0	5.00	U	V
2587	GW02039IT	11/18/91	94.0		94.0	5.00		V	2.0		2.0	5.00	J	A	2.5		5.0	5.00	U	V
2587	GW02406IT	3/3/92	65.0		65.0	5.00		JA	3.0		3.0	5.00	J	A	5.0		10.0	5.00	U	V
2587	GW02865IT	5/15/92	26.0		26.0	5.00		V	2.5		5.0	5.00	U	JA	2.5		5.0	5.00	U	V
2587	GW03348IT	9/22/92	32.0		32.0	5.00			1.0		1.0	5.00	J		2.5		5.0	5.00	U	
2587	GW03912IT	10/27/92	41.0	58.4	41.0	5.00		V	2.0	2.6	2.0	5.00	J	A	1.0	1.0 M	1.0	5.00	J	A
2687	GW02927IT	5/19/92	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	JA	2.5		5.0	5.00	U	V
2687	GW03424IT	8/28/92	2.5	2.5 U	5.0	5.00	U	V	2.5	2.5 U	5.0	5.00	U	V	2.5	2.5 U	5.0	5.00	U	V
2787	GW02933IT	5/20/92	3.0		3.0	5.00	J	A	2.5		5.0	5.00	U	JA	2.5		5.0	5.00	U	V
2787	GW03444IT	9/1/92	2.0	2.5	2.0	5.00	J	A	1.0	1.8	1.0	5.00	J	A	2.5	2.5 U	5.0	5.00	U	V
2987	GW01271IT	5/10/91	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V
2987	GW01703IT	8/21/91	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V
2987	GW02080IT	12/7/91	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V
2987	GW02412IT	2/12/92	0.1		0.2	0.02	U	V	0.1		0.1	0.01	U	V	0.1		0.2	0.04	U	V
2987	GW03058IT	6/9/92	0.1		0.2	0.02	U	JA	0.1		0.1	0.01	U	JA	0.1		0.2	0.04	U	JA
2987	GW03292IT	7/31/92	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V
2987	GW03730IT	10/27/92	31.0	5.9	31.0	50.00	J	A	19.0	4.2	19.0	50.00	J	A	25.0	5.0 U	50.0	50.00	U	JA
3287	GW01157IT	4/16/91	2.0		2.0	5.00	J	A	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V
3287	GW01642IT	9/4/91	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V
3287	GW02012IT	11/22/91	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V
3287	GW02429IT	2/25/92	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V
3287	GW02936IT	5/18/92	2.0		2.0	5.00	J	A	2.5		5.0	5.00	U	JA	2.5		5.0	5.00	U	V
3287	GW03447IT	9/9/92	5.0		5.0	5.00		V	1.0		1.0	5.00	J	A	2.5		5.0	5.00	U	V
3287	GW03880IT	11/30/92	5.0	3.1	5.0	5.00		V	1.0	1.0 M	1.0	5.00	J	A	2.5	2.5 U	5.0	5.00	U	V
3387	GW01641IT	9/6/91	58.0		58.0	5.00		V	5.0		5.0	5.00		V	2.5		5.0	5.00	U	V

ATTACHMENT H1
TABLE 18
95% UCL CONCENTRATION
AOC NO. 1
GROUNDWATER VOCs

			CARBON TETRACHLORIDE (ug/L)					Valid.	CHLOROFORM (ug/L)					Valid.	1,1-DICHLOROETHENE (ug/L)					Valid
Location	Field ID	Sample Date	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual
3387	GW02928IT	5/19/92	51.0		51.0	5.00		V	8.0		8.0	5.00	B	V	2.5		5.0	5.00	U	V
3387	GW03425IT	8/27/92	63.0	57.3	63.0	5.00		V	6.0	6.3	6.0	5.00		V	2.5	2.5 U	5.0	5.00	U	V
34791	GW02157IT	12/17/91	0.1		0.2	0.02	U	JA	0.1		0.1	0.01	U	JA	0.1		0.2	0.04	U	JA
34791	GW02447IT	2/10/92	0.1		0.2	0.02	U	V	0.1		0.1	0.01	U	V	0.1		0.2	0.04	U	V
34791	GW02908IT	5/20/92	0.1		0.2	0.02	U	JA	0.1		0.1	0.01	U	JA	0.1		0.2	0.04	U	JA
34791	GW03459IT	9/2/92	0.1		0.1	0.10	U	V	0.1		0.2	0.20	U	V	0.1		0.1	0.10	U	V
34791	GW03863IT	11/16/92	0.2	0.1 U	0.4	0.40	U	V	0.1	0.1 U	0.1	0.10	U	V	0.2	0.1 U	0.3	0.30	U	V
3586	GW01221IT	4/29/91	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V	5.0		5.0	5.00		V
3586	GW01461IT	7/9/91	2.5		5.0	5.00	U		2.5		5.0	5.00	U		2.0		2.0	5.00	J	
3586	GW01818IT	10/8/91	5.0		10.0	5.00	U	V	5.0		10.0	5.00	U	V	5.0		10.0	5.00	U	V
3586	GW02195IT	1/10/92	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V
3586	GW02631IT	4/7/92	2.5		5.0	5.00	U		2.5		5.0	5.00	U		1.0		1.0	5.00	J	
3586	GW03217IT	8/5/92							2.5		5.0	5.00	U	V	2.0		2.0	5.00	J	A
3586	GW03828IT	12/10/92	2.5	2.9 U	5.0	5.00	U	V	2.5	2.9 U	5.0	5.00	U	V	2.5	2.9	5.0	5.00	U	V
3686	GW01222IT	4/30/91	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V
3686	GW01462IT	7/10/91	2.5		5.0	5.00	U		2.5		5.0	5.00	U		2.5		5.0	5.00	U	
3686	GW01819IT	10/8/91	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V
3686	GW02632IT	4/8/92	2.5		5.0	5.00	U		2.5		5.0	5.00	U		2.5		5.0	5.00	U	
3686	GW03234IT	7/24/92	2.5	2.5 U	5.0	5.00	U	V	2.5	2.5 U	5.0	5.00	U	V	2.5	2.5 U	5.0	5.00	U	V
3687	GW01162IT	4/19/91	800.0		800.0	5.00		JA	350.0		350.0	5.00		V	125.0		250.0	5.00	U	V
3687	GW01674IT	8/23/91	870.0		870.0	5.00		V	840.0		840.0	5.00		V	57.0		57.0	5.00	J	A
3687	GW02036IT	11/25/91	310.0		310.0	5.00		V	420.0		420.0	5.00		V	60.0		120.0	5.00	U	V
3687	GW02414IT	3/5/92	470.0		470.0	5.00		V	340.0		340.0	5.00		V	75.0		150.0	5.00	U	V
3687	GW02852IT	5/15/92	620.0		620.0	5.00	DJ	A	750.0		1500.0	5.00	U	JA	36.0		36.0	5.00		V
3687	GW03384IT	8/17/92	660.0		660.0	500.00		V	2.5		5.0	5.00	U	V	110.0		110.0	5.00		V
3687	GW03924IT	10/27/92	640.0	624.3	640.0	50.00		V	570.0	467.5	570.0	50.00		V	46.0	72.7	46.0	50.00	J	A
4186	GW01088IT	4/15/91	4.0		4.0	5.00	J	A	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V
4186	GW01652IT	9/10/91	2.5		5.0	5.00	U		2.5		5.0	5.00	U		2.5		5.0	5.00	U	
4186	GW02001IT	11/20/91	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V
4186	GW02938IT	5/19/92	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	JA	2.5		5.0	5.00	U	V
4186	GW03449IT	9/9/92	4.0	3.1	4.0	5.00	J	A	1.0	2.2	1.0	5.00	J	A	2.5	2.5 U	5.0	5.00	U	V
4286	GW01295IT	5/17/91	420.0		420.0	5.00	D	V	11.0		11.0	5.00		V	2.5		5.0	5.00	U	V
4286	GW01706IT	9/11/91	660.0		660.0	5.00		V	15.0		15.0	5.00	J	A	12.5		25.0	5.00	U	V
4286	GW02044IT	12/4/91	680.0		680.0	5.00	D	V	12.0		12.0	5.00		V	1.0		1.0	5.00	J	A

ATTACHMENT H1
TABLE 18
95% UCL CONCENTRATION
AOC NO. 1
GROUNDWATER VOCs

			CARBON TETRACHLORIDE (ug/L)					Valid.	CHLOROFORM (ug/L)					Valid.	1,1-DICHLOROETHENE (ug/L)					Valid
Location	Field ID	Sample Date	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual
4286	GW02398IT	2/10/92	840.0		840.0	5.00		V	18.0		18.0	5.00	J	A	12.5		25.0	5.00	U	V
4286	GW02846IT	5/29/92	730.0		730.0	5.00		V	12.5		25.0	5.00	U	JA	12.5		25.0	5.00	U	V
4286	GW03385IT	8/17/92	810.0		810.0	50.00		V	22.0		22.0	5.00		V	3.0		3.0	5.00	J	V
4286	GW03925IT	11/30/92	6.0	592.3	6.0	5.00		V	1.0	13.1	1.0	5.00	J	A	2.5	3.0 M	5.0	5.00	U	V
4386	GW01670IT	8/20/91	3.0		3.0	5.00	J	A	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V
4386	GW02860IT	5/12/92	2.0		2.0	5.00	J	A	2.5		5.0	5.00	U	JA	2.5		5.0	5.00	U	V
4386	GW03258IT	7/26/92	2.5	2.5	5.0	5.00	U	V	2.5	2.5 U	5.0	5.00	U	V	2.5	2.5 U	5.0	5.00	U	V
6286	GW01284IT	5/14/91	4.0		4.0	5.00	J	A	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V
6286	GW01708IT	8/22/91	5.0		5.0	5.00		V	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V
6286	GW02046IT	11/25/91	5.0		5.0	0.02		JA	0.4		0.4	0.01		JA	0.1		0.2	0.04	U	V
6286	GW02378IT	2/11/92	1.7		1.7	0.02		V	3.3		3.3	0.01		V	0.1		0.2	0.04	U	V
6286	GW03056IT	6/11/92	5.3		5.3	0.02		V	0.1		0.3	0.01	U	V	0.1		0.2	0.04	U	V
6286	GW03294IT	7/31/92	6.0		6.0	5.00		V	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V
6286	GW03885IT	11/9/92	6.0	4.7	6.0	5.00		V	2.5	2.0	5.0	5.00	U	V	2.5	1.5 U	5.0	5.00	U	V
6386	GW01709IT	8/22/91	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V
6386	GW03057IT	6/11/92	0.1	1.3 U	0.2	0.02	U	V	0.1	1.3 U	0.1	0.01	U	V	0.1	1.3 U	0.2	0.04	U	V
6486	GW01705IT	8/22/91	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V
6486	GW02048IT	12/7/91	0.1		0.2	0.02	U	V	0.1		0.1	0.01	U	V	0.1		0.2	0.04	U	V
6486	GW02325IT	2/14/92													0.1		0.2	0.04	U	V
6486	GW02839IT	4/30/92	0.1	0.9 U	0.2	0.02	U	V	0.1	0.9 U	0.1	0.01	U	V	0.1	0.7 U	0.2	0.04	U	V
6586	GW01275IT	5/9/91	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V
6586	GW01671IT	8/16/91	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V
6586	GW02050IT	12/6/91							0.1		0.1	0.01	U	V	0.1		0.2	0.04	U	V
6586	GW02326IT	1/23/92	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V
6586	GW02840IT	4/30/92	2.5		5.0	5.00	U		1.0		1.0	5.00	BJ-ND		2.5		5.0	5.00	U	
6586	GW03308IT	8/6/92	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V
6586	GW03947IT	12/14/92	2.5	2.5 U	5.0	5.00	U	V	2.5	1.0 M	5.0	5.00	U	V	2.5	2.2 U	5.0	5.00	U	V
B218789	GW01292IT	5/21/91	1500.0		1500.0	5.00	D	V	18.0		18.0	5.00		V	4.0		4.0	5.00	J	A
B218789	GW01673IT	[illegible]	1600.0		1600.0	5.00	D	V	22.0		22.0	5.00		V	7.0		7.0	5.00		V
B218789	GW02034IT	11/19/91	1400.0		1400.0	5.00	D	V	16.0		16.0	5.00		V	2.0		2.0	5.00	J	A
B218789	GW02419IT	2/18/92	1200.0		1200.0	5.00	D	V	11.0		11.0	5.00		V	2.0		2.0	5.00	J	A
B218789	GW02866IT	5/8/92	890.0		890.0	5.00	D	V	13.0		13.0	5.00	B	V	2.5		5.0	5.00	U	V
B218789	GW03349IT	8/21/92	1200.0		1200.0	50.00		V	41.0		41.0	5.00		JA	8.0		8.0	5.00		JA
B218789	GW03913IT	10/27/92	1000.0	1255.7	1000.0	5.00			17.0	19.7	17.0	5.00		V	2.0	3.9	2.0	5.00	J	A

ATTACHMENT H1
TABLE 18
95% UCL CONCENTRATION
AOC NO. 1
GROUNDWATER VOCs

			CARBON TETRACHLORIDE (ug/L)					Valid.	CHLOROFORM (ug/L)					Valid.	1,1-DICHLOROETHENE (ug/L)					Valid
Location	Field ID	Sample Date	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual
Number of Samples			386						394						394					
Number of Detects			261						241						116					
Minimum Detected			0.1						0.1						0.1					
Maximum Detected			20000						39000.0						750.0					
Average			422.8						289.1						9.0					
Number of wells sampled				100						100						99				
Number of wells with detects				75						78						41				
Minimum well average				0.1						0.1						0.1				
Maximum well average				16000						30666.7						351.3				
Average				436.2						361.2						7.6				
Standard Deviation				1820.6						'3071.5						36.4				
t-value				1.6						1.6						1.6				
95% UCL (1)				735.7						866.5						13.6				
Mean of Ln(x)				2.440						1.376						0.445				
S.D. of ln(x)				2.957						2.224						1.184				
H(0.95,n)				4.520						3.561						2.382				
95% UCL based on Lognormal				3,478						104.0						4.18				

ATTACHMENT H1
TABLE 18
95% UCL CONCENTRATION
AOC NO. 1
GROUNDWATER VOCs

			METHYLENE CHLORIDE (ug/L)					Valid.	TETRACHLOROETHENE (ug/L)					Valid.	TRICHLOROETHENE (ug/L)					Valid.
Location	Field ID	Sample Date	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual
00191	GW02596IT	3/16/92	4.0		4.0	0.01		V	28.0		28.0	0.02		A	60.0		60.0	0.03	E	A
00191	GW02909IT	5/21/92							41.0		41.0	0.02		JA	8.2		8.2	0.03		JA
00191	GW03435IT	9/1/92	0.4		0.8	0.60	U	JA	33.0		33.0	0.70		JA	7.0		7.0	0.30		V
00191	GW03861IT	11/18/92	0.5	1.6	1.0	0.20	U	V	190.0	73.0	190.0	0.20		V	23.0	24.6	23.0	0.20		V
00291	GW02581IT	3/11/92	4.1		4.1	0.01	B-RV		19.0		19.0	0.02			19.0		19.0	0.03		
00291	GW02910IT	5/21/92	3.9		3.9	0.01		JA												
00291	GW03436IT	9/8/92	0.4		0.8	0.60	U	JA	4.0		4.0	0.10		V	3.0		3.0	0.30		V
00291	GW03868IT	11/30/92	2.0	2.6	2.0	0.20		V	2.0	8.3	2.0	0.20		V	2.0	8.0	2.0	0.20		V
00391	GW02158IT	12/17/91	1.0		2.0	0.01	U	JA	100.0		100.0	0.02	E	A	83.0		83.0	0.03	E	A
00391	GW02526IT	2/28/92							180.0		180.0	0.02		JA	130.0		130.0	0.03		JA
00391	GW02915IT	5/21/92	2.9		2.9	0.01		JA	66.0		66.0	0.02		JA	70.0		70.0	0.03		JA
00391	GW03453IT	9/8/92	1.0		2.0	0.60	U	JA	150.0		150.0	0.14	E	JA	150.0		150.0	2.80		JA
00391	GW03888IT	11/11/92	1.5	1.6	3.0	0.20	U	V	160.0	131.2	160.0	0.20		V	130.0	112.6	130.0	0.20		V
00491	GW02159IT	12/18/91	50.1		50.1	0.01		A	24.7		24.7	0.02		A	68.5		68.5	0.03		A
00491	GW02527IT	2/28/92							41.0		41.0	0.02		JA	110.0		110.0	0.03		JA
00491	GW02916IT	5/20/92	33.0		33.0	0.01		JA	45.0		45.0	0.02	E	JA	114.0		114.0	0.03		JA
00491	GW03462IT	9/1/92	1.5		3.0	0.60	U	JA	48.0		48.0	1.40		JA	140.0		140.0	2.80		JA
00491	GW03889IT	11/9/92	1.0	21.4	1.0	0.20		V	36.0	38.9	36.0	0.20		V	93.0	105.1	93.0	0.20	D	V
00691	GW02918IT	5/19/92	1.0	1.0 U	2.0	0.01	U		0.1	0.1 U	0.1	0.02	U		0.1	0.1 U	0.1	0.03	U	
01291	GW02930IT	5/21/92	8.0		16.0	0.01	U	JA							5.6		5.6	0.03		JA
01291	GW03464IT	9/2/92	0.4	4.2 U	0.7	0.60	U	JA	1.0	1.0	1.0	0.10		V	7.0	6.3	7.0	0.30		V
01391	GW02857IT	5/26/92	1.0		2.0	0.01	U		1.7		1.7	0.02			2.7		2.7	0.03		
01391	GW03259IT	7/30/92	0.1		0.2	0.20	U	V	2.0		2.0	0.20		V	3.0		3.0	0.20		V
01391	GW03813IT	11/9/92	0.1	0.4 U	0.2	0.20	U	V	3.0	2.2	3.0	0.20		V	4.0	3.2	4.0	0.20		V
01491	GW02597IT	3/18/92	1.0		2.0	0.01	U	V	0.5		0.5	0.02		V	0.3		0.3	0.03		V
01491	GW02858IT	5/15/92	1.0		2.0	0.01	U		0.5		0.5	0.02			0.1		0.1	0.03	U	
01491	GW03260IT	7/30/92	0.1		0.2	0.20	U	V	0.2		0.2	0.20		V	0.1		0.2	0.20	U	V
01491	GW03814IT	11/19/92	0.1	0.6 U	0.2	0.20	U	V	0.4	0.4	0.4	0.20		V	0.1	0.1	0.2	0.20	U	V
01791	[illegible]2173IT	[illegible]	6.5		6.5	0.01		JA	7.1		7.1	0.02		JA	0.1		0.1	0.03		V
01791	GW02598IT	3/17/92	22.0		22.0	0.01		A	3.2		3.2	0.02		V	0.1		0.1	0.03	JB	A
01791	GW02871IT	5/14/92	14.0		14.0	0.01			16.0		16.0	0.02			0.3		0.3	0.03		
01791	GW03283IT	8/3/92	0.3		0.6	0.60	U	JA	13.0		13.0	0.14		V	0.6		0.6	0.30		V
01791	GW03817IT	11/5/92	0.1	8.6	0.2	0.20	U	V	14.0	10.7	14.0	0.20		V	1.0	0.4	1.0	0.20		V
01891	GW02178IT	12/23/91							0.1		0.3	0.02	U	JA	0.1		0.1	0.03	U	V

ATTACHMENT H1
TABLE 18
95% UCL CONCENTRATION
AOC NO. 1
GROUNDWATER VOCs

			METHYLENE CHLORIDE (ug/L)					Valid.	TETRACHLOROETHENE (ug/L)					Valid.	TRICHLOROETHENE (ug/L)					Valid.
Location	Field ID	Sample Date	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual
01891	GW02509IT	2/27/92	1.1		2.1	0.01	U	JA	0.1		0.1	0.02		JA	0.1		0.1	0.03	U	V
01891	GW02872IT	5/13/92	6.7		6.7	0.01			0.1		0.1	0.02	U		0.1		0.1	0.03	U	
01891	GW03284IT	7/29/92	0.1	2.6	0.2	0.20	U	V	0.1	0.1	0.2	0.20	U	V	0.1	0.1 U	0.2	0.20	U	V
01991	GW02853IT	6/4/92	100.0		200.0	0.01	U	V	31.0		31.0	0.02		V	5.0		10.0	0.03	U	V
01991	GW03350IT	9/14/92	1.5		3.0	0.60	U	JA	24.0		24.0	1.40		JA	11.0		11.0	0.28		V
01991	GW03907IT	10/23/92	0.5	34.0 U	1.0	0.60	U	JA	23.0	26	23.0	0.50		A	13.0	9.7	13.0	0.50	B	V
02091	GW02138IT	12/14/91	1.0		2.0	0.01	U	V	260		260	0.02		A	94.0		94.0	0.03		A
02091	GW02510IT	2/26/92							155		155	0.02	E	A	51.0		51.0	0.03	E	A
02091	GW02873IT	5/15/92	1.0		2.0	0.01	U		11000		11000	0.02			280.0		280.0	0.03		
02091	GW03285IT	7/31/92	0.3		0.6	0.60	U	JA	13000		13000	140.00		V	410.0		410.0	280.00		V
02091	GW03819IT	11/6/92	10.0	3.1 U	20.0	0.20	U	V	3900	5663	3900	0.20		V	160.0	199.0	160.0	0.20		V
02291	GW02113IT	12/16/91	1.0		2.0	0.01	U	V	210		210	0.02		A	100.0		100.0	0.03		A
02291	GW02511IT	2/26/92							2500		2500	0.02		A	170.0		340.0	0.03	U	JA
02291	GW02874IT	5/14/92	11.0		11.0	0.01			1200		1200	0.02	B-RV		270.0		270.0	0.03		
02291	GW03286IT	7/31/92	0.5		1.0	0.60	U	JA	2900		2900	28.00		V	330.0		330.0	56.00		V
02291	GW03820IT	10/29/92	0.3	3.2	0.6	0.60	U	V	1200	1602	1200	50.00		JA	280.0	230.0	280.0	50.00		JA
02391	GW02166IT	12/18/91	1.0	1.0 U	2.0	0.01	U	JA	0.2	0.2 U	0.3	0.02	U	JA	0.1	0.1 U	0.1	0.03	U	V
02491	GW02114IT	12/16/91	1.0		2.0	0.01	U	V												
02491	GW02572IT	3/11/92	6.8		6.8	0.01	B-RV		16.0		16.0	0.02			0.1		0.1	0.03	J	
02491	GW02875IT	5/15/92	1.0		2.0	0.01	U		65.0		65.0	0.02			11.0		11.0	0.03		
02491	GW03287IT	7/31/92	0.3		0.6	0.60	U	JA	32.0		32.0	0.28		V	0.2		0.2	0.30	J	A
02491	GW03821IT	11/9/92	0.1	1.8	0.2	0.20	U	V	20.0	33.3	20.0	0.20		V	0.1	2.8	0.2	0.20	U	V
02591	GW03015IT	6/9/92							1.4		1.4	0.02		V	0.1		0.1	0.03	U	V
02591	GW03314IT	8/11/92	0.3		0.6	0.60	U	JA	2.0		2.0	0.10		V	0.2		0.3	0.30	U	V
02591	GW03904IT	10/20/92	0.5	0.4 U	0.9	0.60	U	JA	2.0	1.8	2.0	0.50		JA	0.3	0.2 U	0.5	0.50	U	V
02891	GW02167IT	12/18/91	1.0	1.0 U	2.0	0.01	U	JA	0.1	0.1 U	0.1	0.02	U	JA	0.1	0.1 U	0.1	0.03	U	V
02991	GW02441IT	3/12/92	180.0		180.0	0.01	B-RV		200.0		200.0	0.02			140.0		140.0	0.03	B-RV	
02991	GW02854IT	5/8/92	1.0		2.0	0.01	U	JA	300.0		300.0	0.02	B	JA	160.0		160.0	0.03		JA
02991	GW03351IT	8/21/92	0.5		0.9	0.60	U	JA	170.0		170.0	7.00		V	88.0		88.0	14.00		V
02991	GW03908IT	10/20/92	0.3	45.4	0.6	0.60	U	V	120.0	197.5	120.0	12.00		JA	65.0	113.3	65.0	12.00		JA
03091	GW02134IT	12/14/91	1.0		2.0	0.01	U	V	16.0		16.0	0.02		A	21.0		21.0	0.03		A
03091	GW02568IT	3/5/92	1.0		2.0	0.01	U	V	13.0		13.0	0.02		JA	23.0		23.0	0.03		JA
03091	GW02881IT	5/12/92	1.0		2.0	0.01	U	A	8.5		8.5	0.02		JA	16.0		16.0	0.03		JA
03091	GW03409IT	8/19/92	0.3		0.6	0.60	U	JA	33.0		33.0	3.50		JA	51.0		51.0	7.00		JA

ATTACHMENT H1
TABLE 18
95% UCL CONCENTRATION
AOC NO. 1
GROUNDWATER VOCs

			METHYLENE CHLORIDE (ug/L)					Valid.	TETRACHLOROETHENE (ug/L)					Valid.	TRICHLOROETHENE (ug/L)					Valid.
Location	Field ID	Sample Date	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual
03091	GW03914IT	10/22/92	0.3	0.7 U	0.6	0.60	U	JA	22.0	18.5	22.0	0.50		A	31.0	28.4	31.0	0.50		A
03191	GW02156IT	12/19/91	1.0		2.0	0.01	U	JA	0.5		0.9	0.02	U	JA	0.1		0.1	0.03	U	JA
03191	GW02165IT	12/18/91	8.8		8.8	0.01		JA												
03191	GW02882IT	5/12/92	2.5		2.5	0.01		JA	0.7		0.7	0.02		V	5.1		5.1	0.03		V
03191	GW03386IT	8/14/92	0.5		1.0	0.60	U	JA	0.2		0.2	0.10		V	1.0		1.0	0.30		V
03191	GW03915IT	10/28/92	0.1	2.6	0.2	0.20	U	V	0.1	0.4	0.2	0.20	U	V	1.0	1.8	1.0	0.20		V
03391	GW02092IT	12/5/91							127.0		127.0	0.02		A	69.8		69.8	0.03		A
03391	GW02547IT	3/13/92	360.0		360.0	0.01			77.0		77.0	0.02			33.0		33.0	0.03	B-RV	
03391	GW03006IT	6/2/92	1.0		2.0	0.01	U	JA	210.0		210.0	0.02		JA	73.0		73.0	0.03		JA
03391	GW03123IT	7/9/92	0.1		0.2	0.20	U	V	240.0		240.0	0.20	D	V	64.0		64.0	0.20	D	V
03391	GW03896IT	10/16/92	0.3	90.4	0.6	0.60	U	JA	490.0	228.8	490.0	0.50	E	A	170.0	82.0	170.0	0.50	E	A
03591	GW02161IT	12/19/91							30.8		30.8	0.02		A	14.1		14.1	0.03		A
03591	GW02567IT	3/5/92	1.0		2.0	0.01	U	V	25.0		25.0	0.02		JA	11.0		11.0	0.03		JA
03591	GW02883IT	6/4/92	100.0		200.0	0.01	U	V	44.0		44.0	0.02		V	5.0		10.0	0.03	U	V
03591	GW03387IT	8/13/92	1.5		3.0	0.60	U	JA	48.0		48.0	1.40		JA	25.0		25.0	2.80		JA
03591	GW03916IT	10/23/92	0.5	25.8 U	1.0	0.60	U	JA	18.0	33.2	18.0	0.50		JA	10.0	13.0	10.0	0.50	B	JA
03691	GW03048IT	6/8/92	100.0		200.0	0.01	U	V	290.0		290.0	0.02		V	59.0		59.0	0.03		V
03691	GW03124IT	7/8/92	0.2		0.2	0.20		V	330.0		330.0	0.20	D	V	56.0		56.0	0.20	D	V
03691	GW03897IT	10/21/92	0.5	0.2 M	1.0	0.60	U	JA	20.0	213.3	20.0	0.50		JA	50.0	55.0	50.0	0.50		A
03791	GW02093IT	12/6/91							129.0		129.0	0.02		A	77.0		77.0	0.03		A
03791	GW02557IT	3/19/92							240.0		240.0	0.02	B	JA	94.0		94.0	0.03	B	V
03791	GW03007IT	6/10/92	100.0		200.0	0.01	U	JA	350.0		350.0	0.02		V	140.0		140.0	0.03		JA
03791	GW03125IT	7/10/92	0.1		0.2	0.20	U	V	260.0		260.0	0.20	D	V	100.0		100.0	0.20	D	V
03791	GW03898IT	10/16/92	0.3	33.5 U	0.6	0.60	U	JA	45.0	204.8	45.0	0.50	E	A	21.0	86.4	21.0	0.50		A
03991	GW03010IT	6/23/92	0.1		0.2	0.20	U	V	5.0		5.0	0.20		V	3.0		3.0	0.20		V
03991	GW03126IT	7/8/92	0.1		0.2	0.20	U	V	3.0		3.0	0.20		V	2.0		2.0	0.20		V
03991	GW03899IT	10/21/92	0.4	0.2 U	0.7	0.60	U	JA	2.0	3.3	2.0	0.50		JA	30.0	11.7	30.0	0.50		A
04091	GW03013IT	6/24/92	0.5		0.9	0.20	U	JA	0.8		0.8	0.20		V	0.4		0.4	0.20		V
04091	[illegible]	[illegible]	[illegible]		0.6	0.60	U	JA	0.9		0.9	0.10		V	0.5		0.5	0.30		V
04091	GW03902IT	10/22/92	0.3	0.4 U	0.6	0.60	U	V	1.0	0.9	1.0	0.50		JA	7.0	2.6	7.0	0.50		V
04191	GW02582IT	3/13/92	3.4		3.4	0.01	B-RV		0.1		0.1	0.02	U		0.1		0.1	0.03	U	
04191	GW02923IT	5/19/92	9.5		19.0	0.01	U	JA	0.1		0.1	0.02	U	JA	0.1		0.1	0.03	U	JA
04191	GW03319IT	8/27/92	0.4		0.7	0.60	U	JA	0.1		0.1	0.10	U	V	0.4		0.8	0.30	U	JA
04191	GW03871IT	12/7/92	0.1	3.3	0.2	0.20	U	V	0.1	0.1 U	0.2	0.20	U	V	0.1	0.2 U	0.2	0.20	U	V

ATTACHMENT H1
TABLE 18
95% UCL CONCENTRATION
AOC NO. 1
GROUNDWATER VOCs

			METHYLENE CHLORIDE (ug/L)					Valid.	TETRACHLOROETHENE (ug/L)					Valid.	TRICHLOROETHENE (ug/L)					Valid.
Location	Field ID	Sample Date	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual
04291	GW02924IT	5/19/92	1.0		2.0	0.01	U		0.1		0.1	0.02	U		0.1		0.1	0.03	U	
04291	GW03320IT	9/2/92	0.4	0.7 U	0.8	0.60	U	JA	0.1	0.1	0.1	0.10		V	0.2	0.1 U	0.3	0.30	U	V
04491	GW03321IT	9/2/92	0.5	0.5 U	1.0	0.60	U	JA	0.1	0.1 U	0.1	0.10	U	V	0.2	0.2 U	0.3	0.30	U	V
04591	GW02175IT	12/20/91																		
04591	GW02525IT	3/3/92	1.0		2.0	0.01	U	V	9.5		9.5	0.02		JA						
04591	GW02931IT	5/22/92	1.0		1.0	0.01	JB-RV		5.1		5.1	0.02			0.6		0.6	0.03		
04591	GW03450IT	8/31/92	0.5		1.0	0.60	U	JA	5.0		5.0	0.10		JA	0.6		0.6	0.30		JA
04591	GW03882IT	12/8/92	0.1	0.7	0.2	0.20	U	V	3.0	5.7	3.0	0.20		V	0.1	0.4	0.1	0.20	J	A
04691	GW02439IT	3/12/92	2.8		2.8	0.01	B-RV		2.6		2.6	0.02			0.3		0.3	0.03		
04691	GW02932IT	5/22/92	3.2		3.2	0.01		JA												
04691	GW03451IT	9/2/92	0.4		0.8	0.60	U	JA	3.0		3.0	0.10		V	0.3		0.3	0.30		V
04691	GW03881IT	12/7/92	0.1	1.6	0.2	0.20	U	V	2.0	2.5	2.0	0.20		V	0.1	0.2	0.2	0.20	U	V
04891	GW03235IT	8/19/92	0.4	0.4 U	0.8	0.60	U	JA	0.5	0.5	0.5	0.10		V	0.2	0.2 U	0.3	0.30	U	V
04991	GW02939IT	5/21/92	8.0		16.0	0.01	U	JA	0.9		0.9	0.02		JA	0.1		0.1	0.03	U	JA
04991	GW03236IT	7/27/92	0.1		0.2	0.20	U	V	0.7		0.7	0.20		V	0.1		0.2	0.20	U	V
04991	GW03725IT	10/28/92	0.1	2.7 U	0.2	0.20	U	V	0.2	0.6	0.2	0.20		V	0.1	0.1 U	0.2	0.20	U	V
05091	GW02177IT	12/23/91																		
05091	GW02570IT	3/6/92	1.0		2.0	0.01	U	V												
05091	GW02619IT	3/26/92	1.0		2.0	0.01	U	V	2.7		2.7	0.02	B	JA	0.3		0.3	0.03	B	JA
05091	GW02940IT	5/20/92	17.0		17.0	0.01	E	A	3.1		3.1	0.02		JA	0.4		0.4	0.03		JA
05091	GW03237IT	7/28/92							2.0		2.0	0.20		V	0.2		0.2	0.20		V
05091	GW03726IT	10/28/92	0.1	4.8	0.2	0.20	U	V	3.0	2.7	3.0	0.20		V	0.1	0.3	0.1	0.20	J	A
05191	GW02160IT	12/17/91	1.0		2.0	0.01	U	JA	5.6		5.6	0.02	B	V	3.8		3.8	0.03	B	V
05191	GW02571IT	3/5/92	1.0		2.0	0.01	U	V	9.8		9.8	0.02		JA	5.7		5.7	0.03		JA
05191	GW02941IT	5/21/92	3.2		3.2	0.01		JA												
05191	GW03238IT	7/24/92	0.1		0.2	0.20	U	V	7.0		7.0	0.20		V	4.0		4.0	0.20		V
05191	GW03727IT	10/28/92	0.1	1.1	0.2	0.20	U	V	7.0	7.4	7.0	0.20		V	5.0	4.6	5.0	0.20		V
05391	GW02084IT	12/5/91							4.0		4.0	0.02		V	2.0		2.0	0.03		JA
05391	GW02566IT	3/5/92	1.0		2.0	0.01	U	V	6.0		6.0	0.02		JA	3.3		3.3	0.03		JA
05391	GW02884IT	6/11/92	1.0		2.0	0.01	U	JA	1.8		1.8	0.02		V	1.0		1.0	0.03		V
05391	GW03388IT	9/10/92	0.3		0.6	0.60	U	JA	2.0		2.0	0.10		V	1.0		1.0	0.30		V
05391	GW03917IT	10/28/92	0.1	0.6 U	0.2	0.20	U	V	2.0	3.2	2.0	0.20		V	1.0	1.7	1.0	0.20		V
05691	GW02061IT	12/4/91	1.0		2.0	0.01	U	V	47.0		47.0	0.02		A						
05691	GW02549IT	3/12/92	36.6		36.6	0.01	J		14.5		14.5	0.02			20.0		20.0	0.03		

ATTACHMENT H1
TABLE 18
95% UCL CONCENTRATION
AOC NO. 1
GROUNDWATER VOCs

			METHYLENE CHLORIDE (ug/L)					Valid.	TETRACHLOROETHENE (ug/L)					Valid.	TRICHLOROETHENE (ug/L)					Valid.
Location	Field ID	Sample Date	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual
05691	GW02885IT	5/28/92	500.0		1000.0	0.01	U		220.0		220.0	0.02			140.0		140.0	0.03		
05691	GW03389IT	8/21/92	0.4		0.7	0.60	U	JA	53.0		53.0	3.50		V	35.0		35.0	0.28		A
05691	GW03918IT	11/9/92	0.1	36.6 M	0.2	0.20	U	V	40.0	74.9	40.0	0.20	D	V	30.0	56.3	30.0	0.20		V
06091	GW02062IT	12/4/91	1.0		2.0	0.01	U	V												
06091	GW02576IT	3/12/92	2.0		2.0	0.01	B-RV		0.5		0.5	0.02			0.2		0.2	0.03		
06091	GW03014IT	6/11/92	1.0		2.0	0.01	U	JA	0.5		0.5	0.02		V	0.2		0.2	0.03		V
06091	GW03318IT	8/6/92	0.3		0.6	0.60	U	JA	0.8		0.8	0.10		V	0.3		0.3	0.30		V
06091	GW03903IT	10/19/92	0.3	0.9	0.6	0.60	U	V	1.0	0.7	1.0	0.50		JA	0.6	0.3	0.6	0.50		JA
06591	GW02895IT	5/19/92	8.0		16.0	0.01	U	JA												
06591	GW03427IT	8/27/92	1.0		2.0	0.60	U	JA	2.0		2.0	0.10		V	2.0		2.0	0.30		V
06591	GW03847IT	11/17/92	1.0	3.3 U	2.0	0.20	U	V	1.0	1.5	2.0	0.20	U	V	1.0	1.5	2.0	0.20	U	V
06691	GW02896IT	5/18/92	2300		2300.0	0.01	EB-RV		4600		4600	0.02	E		110.0		110.0	0.03		
06691	GW03428IT	8/28/92	35000		35000	3100.00	B	JA	69		69	3.50		JA	110.0		110.0	7.00		JA
06691	GW03848IT	11/17/92	24000	20433	24000	0.20	D	V	38	1569.0	38	0.20		V	56.0	92.0	56.0	0.20		V
06791	GW02897IT	5/20/92	6.5		13.0	0.01	U	JA	0.1		0.1	0.02	U	JA	0.1		0.1	0.03	U	JA
06791	GW03454IT	8/27/92	0.4	3.5 U	0.8	0.60	U	JA	0.6	0.3	0.6	0.10		V	0.2	0.1 U	0.3	0.30	U	V
06891	GW02898IT	5/20/92	1.9		3.7	0.01	U	JA	0.1		0.1	0.02	U	JA	0.1		0.1	0.03	U	JA
06891	GW03429IT	8/26/92	0.5		1.0	0.60	U	JA	0.1		0.1	0.10	U	V	0.2		0.3	0.30	U	V
06891	GW03851IT	11/18/92	0.1	0.8 U	0.2	0.20	U	V	2.0	0.7	2.0	0.20		V	0.1	0.1 U	0.2	0.20	U	V
06991	GW02899IT	5/18/92	1.0		2.0	0.01	U		41.0		41.0	0.02	EB-RV		2.0		2.0	0.03		
06991	GW03430IT	8/26/92	0.4		0.7	0.60	U	JA	130.0		130.0	1.40		V	9.0		9.0	0.30		V
06991	GW03850IT	11/18/92	1.0	0.8 U	2.0	0.20	U	V	220.0	130.3	220.0	0.20	D	V	9.0	6.7	9.0	0.20		V
07191	GW02900IT	5/18/92	1.0		2.0	0.01	U		53.0		53.0	0.02	EB-RV		2.8		2.8	0.03		
07191	GW03455IT	8/27/92	0.5		1.0	0.60	U	JA	190.0		190.0	1.40		V	43.0		43.0	2.80		V
07191	GW03864IT	11/16/92	2.5	1.3 U	5.0	0.20	U	JA	540.0	261.0	540.0	0.20		V	86.0	43.9	86.0	0.20		V
07291	GW02901IT	5/20/92	930.0		1860.0	0.01	U	JA	58.0		58.0	0.02		JA	51.0		51.0	0.03		JA
07291	GW03456IT	8/28/92	0.5		0.9	0.60	U	JA	0.3		0.3	0.10		V	8.0		8.0	0.30	B	V
07291	GW03857IT	11/16/92	0.1	310.2 U	0.2	0.20	U	V	0.5	19.6	0.5	0.20		V	0.1	19.7	0.1	0.20	J	V
07391	GW02899IT	[illegible]	[illegible]		1200.0	0.01		A	2700.0		2700.0	0.02		V	44000.0		44000.0	0.03	E	A
07391	GW02902IT	5/21/92	7.7		7.7	0.01		JA	690.0		690.0	0.02		JA	54000.0		54000.0	0.03		A
07391	GW03457IT	8/28/92	39.0		39.0	0.62	E	A	2400.0		2400.0	1400.00		JA	140000.0		140000.0	2800.00		JA
07391	GW03862IT	11/16/92	500.0	436.7	1000.0	0.20	U	V	970.0	1690.0	970.0	0.20	J	A	150000.0	97000.0	150000.0	0.20		V
07891	GW02434IT	3/12/92	990.0		990.0	0.01	B-RV		123.0		123.0	0.02			57.0		57.0	0.03		
07891	GW02855IT	5/7/92	4.0		4.0	0.01		JA	69.0		69.0	0.02		JA	33.0		33.0	0.03	E	V

ATTACHMENT H1
TABLE 18
95% UCL CONCENTRATION
AOC NO. 1
GROUNDWATER VOCs

			METHYLENE CHLORIDE (ug/L)					Valid.	TETRACHLOROETHENE (ug/L)					Valid.	TRICHLOROETHENE (ug/L)					Valid.
Location	Field ID	Sample Date	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual
07891	GW03353IT	8/20/92	1.5		3.0	0.60	U	JA	67.0		67.0	1.40		V	24.0		24.0	2.80		V
07891	GW03909IT	10/23/92	0.5	249.0	1.0	0.60	U	JA	47.0	76.5	47.0	0.50		A	29.0	35.8	29.0	0.50		A
07991	GW02579IT	3/12/92	1.5		1.5	0.01	JB-RV		9.0		9.0	0.02			3.3		3.3	0.03		
07991	GW02925IT	5/20/92	22.0		22.0	0.01	E	A	25.0		25.0	0.02		JA	9.7		9.7	0.03		JA
07991	GW03322IT	8/26/92	0.5		1.0	0.60	U	JA	17.0		17.0	0.14		V	6.0		6.0	0.30		V
07991	GW03874IT	12/4/92	0.9	6.2	0.9	0.20		V	12.0	15.8	12.0	0.20		V	5.0	6.0	5.0	0.20		V
08091	GW02580IT	3/12/92	1.0		2.0	0.01	U		0.1		0.1	0.02	U		0.1		0.1	0.03	U	
08091	GW02926IT	5/19/92	1.0		2.0	0.01	U		0.1		0.1	0.02	U		0.1		0.1	0.03	U	
08091	GW03323IT	8/27/92	1.0	1.0 U	2.0	0.60	U	JA	0.6	0.2	0.6	0.10		V	0.2	0.1 U	0.3	0.30	U	V
08391	GW03478IT	9/3/92	0.5	0.5 U	1.0	0.60	U	JA	290.0	290.0	290.0	14.00		JA	22.0	22.0	22.0	0.28		A
08591	GW02577IT	3/12/92	34.0	34.0	34.0	0.01			44.0	44.0	44.0	0.02			3.1	3.1	3.1	0.03	B-RV	
08891	GW03065IT	6/23/92	50.0		100.0	0.20	U	V	14000.0		14000.0	0.20		V	1900.0		1900.0	0.20		V
08891	GW03431IT	8/31/92	20.0		20.0	0.62	B	V	9100.0		9100.0	350.00		JA	3100.0		3100.0	700.00		JA
08891	GW03849IT	11/17/92	19.5	20.0 M	39.0	0.20	U	JA	10000.0	11033.3	10000.0	0.20	D	V	3800.0	2933.3	3800.0	0.20		V
09091	GW02903IT	5/20/92	11.0		11.0	0.01		JA	0.6		0.6	0.02		JA	4.6		4.6	0.03		JA
09091	GW03432IT	8/31/92	0.4		0.8	0.60	U	JA	7.0		7.0	0.10		V	3.0		3.0	0.30		V
09091	GW03852IT	11/18/92	0.1	3.8	0.2	0.20	U	JA	0.7	2.8	0.7	0.20		JA	5.0	4.2	5.0	0.20		JA
09691	GW02608IT	3/18/92	1.0		2.0	0.01	U	V	91.0		91.0	0.02		V	2400.0		2400.0	0.03		A
09691	GW02904IT	5/22/92	111.0		111.0	0.01	B-RV		36.0		36.0	0.02			1000.0		1000.0	0.03		
09691	GW03458IT	8/31/92	0.5		1.0	0.60	U	JA	110.0		110.0	28.00		JA	2500.0		2500.0	56.00		JA
09691	GW03865IT	11/17/92	10.0	30.6	20.0	0.20	U	V	48.0	71.3	48.0	0.20		V	3400.0	2325.0	3400.0	0.20		V
0987	GW01317IT	5/20/91	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V
0987	GW01667IT	8/16/91	2.5		5.0	5.00	U	JA	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V
0987	GW02088IT	12/16/91	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V
0987	GW02402IT	3/6/92	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V
0987	GW02942IT	5/26/92	2.5		5.0	5.00	U	JA	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V
0987	GW03179IT	7/16/92	2.5		5.0	5.00	U	JA	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V
0987	GW03708IT	12/10/92	2.5	2.5 U	5.0	5.00	U	V	2.5	2.5 U	5.0	5.00	U	V	2.5	2.5 U	5.0	5.00	U	V
1087	GW01668IT	8/28/91	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V
1087	GW02919IT	5/26/92	2.5		5.0	5.00	U	JA	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V
1087	GW03180IT	7/16/92	2.5	2.5 U	5.0	5.00	U	JA	2.5	2.5 U	5.0	5.00	U	V	2.5	2.5 U	5.0	5.00	U	V
10991	GW02436IT	2/6/92																		
10991	GW02943IT	5/22/92	18.0		18.0	0.01			0.1		0.1	0.02	U		0.1		0.1	0.03	U	
10991	GW03289IT	7/28/92	0.1		0.2	0.20	U	V	7.0		7.0	0.20		V	0.2		0.2	0.20		V

ATTACHMENT H1
TABLE 18
95% UCL CONCENTRATION
AOC NO. 1
GROUNDWATER VOCs

			METHYLENE CHLORIDE (ug/L)					Valid.	TETRACHLOROETHENE (ug/L)					Valid.	TRICHLOROETHENE (ug/L)					Valid.
Location	Field ID	Sample Date	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual
10991	GW03728IT	10/23/92	0.3	6.1	0.6	0.60	U	JA	6.0	4.4	6.0	0.50		JA	0.3	0.2	0.5	0.50	U	JA
11491	GW02886IT	5/28/92	500.0	500.0 U	1000.0	0.01	U		120.0	120.0	120.0	0.02			110.0	110.0	110.0	0.03		
11691	GW02174IT	12/23/91							73.2		73.2	0.02	E	A	54.7		54.7	0.03		A
11691	GW02551IT	3/18/92	1.0		2.0	0.01	U	V	590.0		590.0	0.02		V	150.0		150.0	0.03		V
11691	GW03011IT	6/8/92	100.0		200.0	0.01	U	JA	640.0		640.0	0.02		V	96.0		96.0	0.03		JA
11691	GW03127IT	7/10/92	2.0		4.0	0.20	U	V	460.0		460.0	0.20		V	70.0		70.0	0.20		V
11691	GW03900IT	10/20/92	0.3	25.8 U	0.6	0.60	U	V	430.0	438.6	430.0	12.00		JA	110.0	96.1	110.0	12.00		JA
11791	GW02432IT	2/6/92							104.0		104.0	0.02		JA	93.0		93.0	0.03		V
11791	GW02917IT	5/20/92							53.0		53.0	0.02	E	A	43.0		43.0	0.03	E	A
11791	GW03465IT	9/8/92	0.5		1.0	0.60	U	JA	130.0		130.0	0.14		JA	160.0		160.0			JA
11791	GW03890IT	11/11/92	1.0		2.0	0.20	U	V	50.0		50.0	0.20		V	57.0		57.0	0.20		V
11791	GW03891IT	11/12/92	2.5	1.3 U	5.0	5.00	U	V	15.0	70.4	15.0	5.00		V	5.0	71.6	5.0	5.00		V
1187	GW01090IT	4/17/91	2.5		5.0	5.00	U	V	49.0		49.0	5.00		JA	1400.0		1400.0	5.00	D	V
1187	GW01648IT	9/6/91	50.0		100.0	5.00	U	V	45.0		45.0	5.00	J	A	3300.0		3300.0	5.00		V
1187	GW02004IT	11/21/91	2.5		5.0	5.00	U	JA	48.0		48.0	5.00		V	2400.0		2400.0	5.00	D	V
1187	GW02386IT	2/22/92	50.0		100.0	5.00	U	V	59.0		59.0	5.00	J	A	3300.0		3300.0	5.00		V
1187	GW02920IT	5/19/92	2.5		5.0	5.00	U	V	39.0		39.0	5.00		V	2400.0		2400.0	5.00	D	V
1187	GW03460IT	9/1/92	2.5		5.0	5.00	U	V	47.0		47.0	5.00		V	3100.0		3100.0	250.00		JA
1187	GW03887IT	11/19/92	50.0	22.9 U	100.0	5.00	U	V	44.0	47.3	44.0	5.00	J	A	3000.0	2700.0	3000.0	5.00		V
11891	GW02117IT	12/19/91	5.5		5.5	0.01		JA	122.0		122.0	0.02		A	62.5		62.5	0.03		A
11891	GW02552IT	2/28/92	1.4		2.7	0.01	U	JA	230.0		230.0	0.02		JA	88.0		88.0	0.03		JA
11891	GW03012IT	6/2/92	1.0		2.0	0.01	U	JA	180.0		180.0	0.02		JA	71.0		71.0	0.03		JA
11891	GW03128IT	7/9/92	0.1		0.2	0.20	U	V	150.0		150.0	0.20	D	V	51.0		51.0	0.20	D	V
11891	GW03901IT	10/16/92	0.3	1.7 U	0.6	0.60	U	JA	53.0	147.0	53.0	0.50	E	A	20.0	58.5	20.0	0.50		JA
12091	GW02116IT	12/19/91	10.3		10.3	0.01		A	0.3		0.3	0.02		JA	0.1		0.1	0.03	U	V
12091	GW02514IT	2/27/92																		
12091	GW02876IT	5/13/92	16.0		16.0	0.01	B-RV		0.6		0.6	0.02			0.1		0.1	0.03	U	
12091	GW03290IT	7/29/92	0.1		0.2	0.20	U	V	0.1		0.2	0.20	U	V	0.1		0.2	0.20	U	V
12091	GW03822IT	11/10/92	0.1	6.6	0.2	0.20	U	V	0.3	0.3	0.3	0.20		V	0.1	0.1 U	0.2	0.20	U	V
12191	GW02440IT	3/16/92	40.0		40.0	0.01		V	300.0		300.0	0.02		A	53.0		53.0	0.03	B	V
12191	GW02862IT	6/3/92	1.0		2.0	0.01	U	V	280.0		280.0	0.02		JA	52.0		52.0	0.03		JA
12191	GW03410IT	8/19/92	0.4		0.8	0.60	U	JA	460.0		460.0	3.50		JA	68.0		68.0	7.00		JA
12191	GW03910IT	10/21/92	0.3	10.4	0.6	0.60	U	JA	21.0	265.3	21.0	0.50		JA	20.0	48.3	20.0	0.50		JA
12291	GW02607IT		1.5		1.5	0.01		A												

ATTACHMENT H1
TABLE 18
95% UCL CONCENTRATION
AOC NO. 1
GROUNDWATER VOCs

			METHYLENE CHLORIDE (ug/L)					Valid.	TETRACHLOROETHENE (ug/L)					Valid.	TRICHLOROETHENE (ug/L)					Valid.
Location	Field ID	Sample Date	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual
12291	GW02859IT	5/29/92	1.0		2.0	0.01	U		0.1		0.1	0.02	U		0.1		0.1	0.03	U	
12291	GW03261IT	7/31/92	0.1	0.9	0.2	0.20	U	V	0.1	0.1 U	0.2	0.20	U	V	0.1	0.1 U	0.2	0.20	U	V
12391	GW02438IT	2/12/92	1.0		2.0	0.01	U	JA	0.1		0.1	0.02	U	V	0.3		0.3	0.03		V
12391	GW02887IT	5/14/92	6.4		6.4	0.01			1.1		1.1	0.02			1.8		1.8	0.03		
12391	GW03421IT	9/15/92	1.0		2.0	0.60	U	JA	0.2		0.2	0.10		V	0.3		0.3	0.30		V
12391	GW03919IT	12/3/92	0.3	2.2	0.3	0.20		V	0.1	0.4	0.1	0.20	J	A	0.2	0.7	0.2	0.20		V
12491	GW02435IT	2/7/92							4.6		4.6	0.02		JA	3.1		3.1	0.03		V
12491	GW02888IT	5/14/92	13.0		13.0	0.01			2.2		2.2	0.02			0.1		0.1	0.03	U	
12491	GW03422IT	9/14/92	1.5		3.0	0.60	U	JA	0.5		0.5	0.10		V	0.3		0.3	0.30		V
12491	GW03922IT	10/22/92	0.3	4.9	0.6	0.60	U	JA	0.6	2.0	0.6	0.50		JA	0.5	1.0	0.5	0.50		JA
12691	GW02437IT	2/13/92	1.0		2.0	0.01	U	JA	160.0		160.0	0.02		JA	94.4		94.4	0.03		JA
12691	GW02889IT	5/29/92	500.0		1000.0	0.01	U		1000.0		1000.0	0.02			560.0		560.0	0.03		
12691	GW03423IT	9/10/92	0.4		0.8	0.60	U	JA	180.0		180.0	3.50		JA	100.0		100.0	7.00		JA
12691	GW03923IT	10/23/92	0.4	125.4 U	0.7	0.60	U	JA	50.0	347.5	50.0	0.50		A	58.0	203.1	58.0	0.50		A
1287	GW01647IT	9/9/91	8.5		17.0	5.00	U	A	27.0		27.0	5.00		V	560.0		560.0	5.00		V
1287	GW02002IT	11/20/91	2.5		5.0	5.00	U	JA	37.0		37.0	5.00		V	490.0		490.0	5.00	D	V
1287	GW02387IT	2/22/92	2.5		5.0	5.00	U	V	45.0		45.0	5.00		V	1500.0		1500.0	5.00	D	V
1287	GW02921IT	5/18/92	2.5		5.0	5.00	U	JA	43.0		43.0	5.00		V	1500.0		1500.0	5.00	D	V
1287	GW03441IT	9/1/92	2.5	3.7 U	5.0	5.00	U	V	42.0	38.8	42.0	5.00		V	1300.0	1070.0	1300.0	50.00		JA
12991	GW02601IT	3/17/92	3.3		3.3	0.01		V	200.0		200.0	0.02		JA	140.0		140.0	0.03	B	JA
12991	GW02911IT	5/22/92	3.2		3.2	0.01			96.0		96.0	0.02			84.0		84.0	0.03		
12991	GW03437IT	8/28/92	42.0		42.0	16.00	B	JA	230.0		230.0	3.50		JA	190.0		190.0	7.00		JA
12991	GW03867IT	11/30/92	0.3	12.2	0.5	0.20	U	JA	270.0	199.0	270.0	0.20	D	V	240.0	163.5	240.0	0.20	D	V
13091	GW02912IT	5/22/92	1.5		1.5	0.01	J		0.7		0.7	0.02			1.1		1.1	0.03		
13091	GW03440IT	9/9/92	0.5		1.0	0.60	U	JA	0.4		0.4	0.10		V	0.2		0.3	0.30	U	V
13091	GW03860IT	11/16/92	0.1	0.7	0.2	0.20	U	V	0.9	0.7	0.9	0.20		V	0.1	0.5	0.2	0.20	U	V
13191	GW02905IT	5/19/92	8.5		17.0	0.01	U	JA	48.0		48.0	0.02		JA	3.4		3.4	0.03		V
13191	GW03433IT	9/2/92	1.5		3.0	0.60	U	JA	66.0		66.0	7.00		JA	3.0		3.0	0.30		V
13191	GW03855IT	11/17/92	3.0	4.3 U	6.0	0.20	U	V	42.0	52.0	42.0	0.20		V	3.0	3.1	6.0	0.20	U	V
13291	GW02906IT	5/21/92	3.9	3.9	3.9	0.01		JA	4.6	4.6	4.6	0.02		JA	22.0	22.0	22.0	0.03		JA
13391	GW03016IT	6/8/92							0.3		0.6	0.02	U	JA	0.1		0.1	0.03		JA
13391	GW03354IT	8/20/92	1.0		2.0	0.60	U	JA	0.6		0.6	0.10		V	0.2		0.3	0.30	U	V
13391	GW03906IT	10/20/92	0.3	0.7 U	0.6	0.60	U	V	0.9	0.6	0.9	0.50		JA	0.3	0.2	0.5	0.50	U	V
13491	GW03063IT	6/24/92	0.5		1.0	0.20	U	JA	3.0		3.0	0.20		V	1.0		1.0	0.20		V

ATTACHMENT H1
TABLE 18
95% UCL CONCENTRATION
AOC NO. 1
GROUNDWATER VOCs

			METHYLENE CHLORIDE (ug/L)					Valid.	TETRACHLOROETHENE (ug/L)					Valid.	TRICHLOROETHENE (ug/L)					Valid.
Location	Field ID	Sample Date	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual
13491	GW03411IT	8/21/92	0.5		0.9	0.60	U	JA	6.0		6.0	0.10		V	3.0		3.0	0.30		V
13491	GW03928IT	10/22/92	0.3	0.4 U	0.6	0.60	U	JA	6.0	5.0	6.0	0.50		JA	1.5	1.8	3.0	0.50	U	JA
1487	GW01093IT	4/15/91	2.5		5.0	5.00	U	JA	4.0		4.0	5.00	J	A	110.0		110.0	5.00		JA
1487	GW01646IT	9/5/91	6.0		12.0	5.00	U	A	4.0		4.0	5.00	J	A	120.0		120.0	5.00		V
1487	GW02003IT	11/21/91	7.5		15.0	5.00	U	JA	6.0		6.0	5.00	J	A	170.0		170.0	5.00		V
1487	GW02388IT	2/21/92							7.7		7.7	0.02		JA	130.0		130.0	0.03		JA
1487	GW02922IT	5/20/92	2.5		5.0	5.00	U	V	4.0		4.0	5.00	J	A	120.0		120.0	5.00		V
1487	GW03461IT	8/31/92	2.5	4.2 U	5.0	5.00	U	V	9.0	5.8	9.0	5.00		V	200.0	141.7	200.0	5.00		V
1587	GW01094IT	4/15/91	25.0		50.0	5.00	U	V	71.0		71.0	5.00		V	49.0		49.0	5.00	J	A
1587	GW01650IT	9/4/91	37.5		75.0	5.00	U	V	160.0		160.0	5.00		V	81.0		81.0	5.00		V
1587	GW02005IT	12/18/91	2.5		5.0	5.00	U	JA	260.0		260.0	5.00	D	V	110.0		110.0	5.00		V
1587	GW02422IT	2/25/92	100.0		200.0	5.00	U	V	340.0		340.0	5.00		V	150.0		150.0	5.00	J	A
1587	GW02914IT	6/23/92	37.5		75.0	5.00	U	JA	360.0		360.0	5.00		V	140.0		140.0	5.00		V
1587	GW03442IT	9/1/92	2.5		5.0	5.00	U	JA	330.0		330.0	50.00		JA	180.0		180.0	5.00		JA
1587	GW03859IT	11/17/92	2.5	29.6 U	5.0	5.00	U	V	170.0	241.6	170.0	5.00		V		118.3				
1787	GW01280IT	5/13/91	2.5		5.0	5.00	U	V	25.0		25.0	5.00		V	7.0		7.0	5.00		V
1787	GW01687IT	8/19/91	3.0		3.0	5.00	J	A	34.0		34.0	5.00		V	6.0		6.0	5.00		V
1787	GW02031IT	11/18/91	2.5		5.0	5.00	U	V	18.0		18.0	5.00		V	3.0		3.0	5.00	J	A
1787	GW02424IT	2/24/92	2.5		5.0	5.00	U	V	17.0		17.0	5.00		V	4.0		4.0	5.00	J	A
1787	GW02844IT	4/30/92	2.5		5.0	5.00	U		14.0		14.0	5.00			3.0		3.0	5.00	J	
1787	GW03281IT	7/29/92	2.5		5.0	5.00	U	JA	12.0		12.0	5.00		V	21.0		21.0	5.00		V
1787	GW03823IT	11/10/92	2.5	2.6	5.0	5.00	U	V	7.0	18.1	7.0	5.00		V	160.0	29.1	160.0	5.00		V
1987	GW01665IT	8/15/91	2.5		5.0	5.00	U	V	880.0		880.0	5.00	D	JA	110.0		110.0	5.00		V
1987	GW02878IT	5/12/92	2.5	2.5 U	5.0	5.00	U	V	680.0	780.0	680.0	5.00	D	V	46.0	78.0	46.0	5.00		V
2187	GW01187IT	4/25/91	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V
2187	GW01400IT	6/13/91	2.5		5.0	5.00	U	JA	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V
2187	GW01613IT	8/6/91	2.5		5.0	5.00	U		2.5		5.0	5.00	U		2.5		5.0	5.00	U	
2187	GW01929IT	10/16/91	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V
2187	GW02529IT	[illegible]	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V
2187	GW02647IT	4/16/92	1.0		1.0	5.00	J	A	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V
2187	GW03210IT	7/24/92	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V
2187	GW03566IT	10/13/92	0.8	1.0 M	0.8	5.00	J	A	2.5	2.5 U	5.0	5.00	U	V	0.2	0.2 M	0.2	5.00	J	A
2387	GW01126IT	4/19/91	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V	2.0		2.0	5.00	J	A
2387	GW01669IT	8/19/91	3.0		3.0	5.00	J	A	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V

ATTACHMENT H1
TABLE 18
95% UCL CONCENTRATION
AOC NO. 1
GROUNDWATER VOCs

			METHYLENE CHLORIDE (ug/L)					Valid.	TETRACHLOROETHENE (ug/L)					Valid.	TRICHLOROETHENE (ug/L)					Valid.
Location	Field ID	Sample Date	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual
2387	GW02032IT	11/23/91	2.5		5.0	5.00	U	JA	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V
2387	GW02405IT	2/28/92	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V
2387	GW02845IT	5/28/92	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V
2387	GW03256IT	7/30/92	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V
2387	GW03816IT	11/6/92	2.5	2.6	5.0	5.00	U	V	2.5	2.5 U	5.0	5.00	U	V	2.5	2.0 M	5.0	5.00	U	V
2487	GW01686IT	8/29/91	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V
2487	GW02861IT	6/5/92	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V
2487	GW03347IT	8/14/92	2.5	2.5 U	5.0	5.00	U		0.9	2.0	0.9	5.00	J		2.5	2.5	5.0	5.00	U	
2587	GW01176IT	4/22/91	2.5		5.0	5.00	U	V	330.0		330.0	5.00	D	V	61.0		61.0	5.00		V
2587	GW01685IT	9/10/91	5.0		10.0	5.00	U	JA	280.0		280.0	5.00		V	33.0		33.0	5.00		V
2587	GW02039IT	11/18/91	2.5		5.0	5.00	U	V	330.0		330.0	5.00	D	V	53.0		53.0	5.00		V
2587	GW02406IT	3/3/92							270.0		270.0	5.00		V	46.0		46.0	5.00		V
2587	GW02865IT	5/15/92	2.5		5.0	5.00	U	JA	190.0		190.0	5.00	D	V	28.0		28.0	5.00		V
2587	GW03348IT	9/22/92	2.5		5.0	5.00	U		260.0		260.0	50.00			38.0		38.0	50.00	J	
2587	GW03912IT	10/27/92	2.5	2.9 U	5.0	5.00	U	V	290.0	278.6	290.0	50.00		V		43.2				
2687	GW02927IT	5/19/92	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V
2687	GW03424IT	8/28/92	5.0	3.8 U	10.0	5.00	U	JA	2.5	2.5 U	5.0	5.00	U	V	2.5	2.5 U	5.0	5.00	U	V
2787	GW02933IT	5/20/92	1.0		1.0	5.00	J	A	6.0		6.0	5.00		V	2.5		5.0	5.00	U	V
2787	GW03444IT	9/1/92	2.5	1.0 M	5.0	5.00	U	V	5.0	5.5	5.0	5.00		V	0.7	0.7 M	0.7	5.00	J	A
2987	GW01271IT	5/10/91	5.0		5.0	5.00		V	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V
2987	GW01703IT	8/21/91	2.5		5.0	5.00	U	JA	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V
2987	GW02080IT	12/7/91	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V
2987	GW02412IT	2/12/92	1.0		2.0	0.01	U	JA	0.1		0.1	0.02	U	V	0.5		0.5	0.03		V
2987	GW03058IT	6/9/92	1.0		2.0	0.01	U	JA	0.1		0.1	0.02	U	JA	0.2		0.2	0.03		JA
2987	GW03292IT	7/31/92	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V
2987	GW03730IT	10/27/92	25.0	5.0 M	50.0	50.00	U	JA	25.0	5.0 U	50.0	50.00	U	JA	1600.0	230.1	1600.0	50.00		JA
3287	GW01157IT	4/16/91	2.5		5.0	5.00	U	V	7.0		7.0	5.00		V	2.5		5.0	5.00	U	V
3287	GW01642IT	9/4/91	2.5		5.0	5.00	U	V	1.0		1.0	5.00	J	A	7.0		7.0	5.00		V
3287	GW02012IT	11/22/91	2.5		5.0	5.00	U	JA	3.0		3.0	5.00	J	A	2.5		5.0	5.00	U	V
3287	GW02429IT	2/25/92	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V
3287	GW02936IT	5/18/92	2.5		5.0	5.00	U	JA	3.0		3.0	5.00	J	A	1.0		1.0	5.00	J	A
3287	GW03447IT	9/9/92	2.5		5.0	5.00	U	V	11.0		11.0	5.00		V	3.0		3.0	5.00	J	A
3287	GW03880IT	11/30/92	2.5	2.5 U	5.0	5.00	U	V	14.0	5.9	14.0	5.00		V	2.5	3.0	5.0	5.00	U	V
3387	GW01641IT	9/6/91	2.5		5.0	5.00	U	V	21.0		21.0	5.00		V	9.0		9.0	5.00		V

ATTACHMENT H1
TABLE 18
95% UCL CONCENTRATION
AOC NO. 1
GROUNDWATER VOCs

			METHYLENE CHLORIDE (ug/L)					Valid.	TETRACHLOROETHENE (ug/L)					Valid.	TRICHLOROETHENE (ug/L)					Valid.
Location	Field ID	Sample Date	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual
3387	GW02928IT	5/19/92	2.5		5.0	5.00	U	JA	18.0		18.0	5.00		V	10.0		10.0	5.00		V
3387	GW03425IT	8/27/92	2.5	2.5 U	5.0	5.00	U	V	18.0	19.0	18.0	5.00		V	10.0	9.7	10.0	5.00		V
34791	GW02157IT	12/17/91	1.0		2.0	0.01	U	JA	7.6		7.6	0.02	B	JA	0.2		0.2	0.03		JA
34791	GW02447IT	2/10/92	1.6		3.1	0.01	U	JA	0.1		0.1	0.02	U	V	0.1		0.2	0.03	U	V
34791	GW02908IT	5/20/92	9.0		18.0	0.01	U	JA	0.1		0.1	0.02	U	JA	0.1		0.1	0.03	U	JA
34791	GW03459IT	9/2/92	0.4		0.7	0.60	U	JA	0.1		0.1	0.10	U	V	0.2		0.3	0.30	U	V
34791	GW03863IT	11/16/92	0.1	2.4 U	0.2	0.20	U	V	0.1	1.6 U	0.2	0.20	U	V	0.1	0.1	0.2	0.20	U	V
3586	GW01221IT	4/29/91	10.0		10.0	5.00		V	2.5		5.0	5.00	U	V	6.0		6.0	5.00		V
3586	GW01461IT	7/9/91	2.5		5.0	5.00	U		2.5		5.0	5.00	U		3.0		3.0	5.00	J	
3586	GW01818IT	10/8/91	5.0		10.0	5.00	U	V	5.0		10.0	5.00	U	V	5.0		10.0	5.00	U	V
3586	GW02195IT	1/10/92	3.0		3.0	5.00	BJ-ND		2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V
3586	GW02631IT	4/7/92	4.0		4.0	5.00	DJ		2.5		5.0	5.00	U		3.0		3.0	5.00	J	
3586	GW03217IT	8/5/92							2.5		5.0	5.00	U	V	4.0		4.0	5.00	J	A
3586	GW03828IT	12/10/92	2.5	4.5	5.0	5.00	U	V	2.5	2.9 U	5.0	5.00	U	V	2.5	3.7	5.0	5.00	U	V
3686	GW01222IT	4/30/91	12.0		12.0	5.00	B	V	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V
3686	GW01462IT	7/10/91	2.5		5.0	5.00	U		2.5		5.0	5.00	U		2.5		5.0	5.00	U	
3686	GW01819IT	10/8/91	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V
3686	GW02632IT	4/8/92	2.5		5.0	5.00	U		2.5		5.0	5.00	U		2.5		5.0	5.00	U	
3686	GW03234IT	7/24/92	2.5	4.4	5.0	5.00	U	V	2.5	2.5 U	5.0	5.00	U	V	2.5	2.5 U	5.0	5.00	U	V
3687	GW01162IT	4/19/91	125.0		250.0	5.00	U	V	470.0		470.0	5.00		V	38000.0		38000.0	5.00	D	V
3687	GW01674IT	8/23/91	27.0		27.0	5.00	J	A	770.0		770.0	5.00		V	68000.0		68000.0	5.00	D	V
3687	GW02036IT	11/25/91	60.0		120.0	5.00	U	V	490.0		490.0	5.00		V	94000.0		94000.0	5.00	D	V
3687	GW02414IT	3/5/92	38.0		38.0	5.00	J	A	400.0		400.0	5.00		V	39000.0		39000.0	5.00	D	V
3687	GW02852IT	5/15/92	2.5		5.0	5.00	U	JA	520.0		520.0	5.00	DJ	A	40000.0		40000.0	5.00	D	V
3687	GW03384IT	8/17/92	11.0		11.0	5.00		V	770.0		770.0	500.00		V	86000.0		86000.0	5000.00		Z
3687	GW03924IT	10/27/92	9.0	38.0 M	9.0	50.00	J	A	550.0	567.1	550.0	50.00		V		60833.3				
4186	GW01088IT	4/15/91	2.5		5.0	5.00	U	V	8.0		8.0	5.00		V	2.0		2.0	5.00	J	A
4186	GW01652IT	9/10/91	8.0		8.0	5.00	B-ND		5.0		5.0	5.00			2.5		5.0	5.00	U	
4186	GW02001IT	11/20/91	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V
4186	GW02938IT	5/19/92	2.0		2.0	5.00	J	A	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V
4186	GW03449IT	9/9/92	0.8	3.2	0.8	5.00	J	A	6.0	4.8	6.0	5.00		V	2.0	2.0 M	2.0	5.00	J	A
4286	GW01295IT	5/17/91	2.5		5.0	5.00	U	V	99.0		99.0	5.00		V	53.0		53.0	5.00		V
4286	GW01706IT	9/11/91	36.0		72.0	5.00	U	JA	130.0		130.0	5.00		V	62.0		62.0	5.00		V
4286	GW02044IT	12/4/91	2.5		5.0	5.00	U	V	130.0		130.0	5.00		V	59.0		59.0	5.00		V

ATTACHMENT H1
TABLE 18
95% UCL CONCENTRATION
AOC NO. 1
GROUNDWATER VOCs

			METHYLENE CHLORIDE (ug/L)					Valid.	TETRACHLOROETHENE (ug/L)					Valid.	TRICHLOROETHENE (ug/L)					Valid.
Location	Field ID	Sample Date	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual
4286	GW02398IT	2/10/92	7.0		7.0	5.00	J	A	150.0		150.0	5.00		V	75.0		75.0	5.00		V
4286	GW02846IT	5/29/92	12.5		25.0	5.00	U	V	140.0		140.0	5.00		V	63.0		63.0	5.00		V
4286	GW03385IT	8/17/92	2.5		5.0	5.00	U	V	160.0		160.0	5.00		V	150.0		150.0	5.00		V
4286	GW03925IT	11/30/92	2.5	7.0 M	5.0	5.00	U	V	14.0	117.6	14.0	5.00		V	2.5	66.4	5.0	5.00	U	V
4386	GW01670IT	8/20/91	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V
4386	GW02860IT	5/12/92	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V
4386	GW03258IT	7/26/92	2.5	2.5 U	5.0	5.00	U	V	2.5	2.5 U	5.0	5.00	U	V	2.5	2.5 U	5.0	5.00	U	V
6286	GW01284IT	5/14/91	2.5		5.0	5.00	U	JA	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V
6286	GW01708IT	8/22/91	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V
6286	GW02046IT	11/25/91	1.0		2.0	0.01	U	V	0.2		0.2	0.02		JA	0.1		0.2	0.03	U	V
6286	GW02378IT	2/11/92	1.0		2.0	0.01	U	JA	0.2		0.2	0.02		V	0.3		0.3	0.03		V
6286	GW03056IT	6/11/92	1.0		2.0	0.01	U	JA	0.1		0.1	0.02	U	V	0.3		0.3	0.03		V
6286	GW03294IT	7/31/92	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V
6286	GW03885IT	11/9/92	2.5	1.9 U	5.0	5.00	U	V	2.5	0.2 M	5.0	5.00	U	V	2.5	0.3 M	5.0	5.00	U	V
6386	GW01709IT	8/22/91	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V	1.0		1.0	5.00	J	A
6386	GW03057IT	6/11/92	1.0	1.8 U	2.0	0.01	U	JA	0.1	1.3 U	0.1	0.02	U	V	0.1	0.5	0.1	0.03	U	V
6486	GW01705IT	8/22/91	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V
6486	GW02048IT	12/7/91							0.1		0.1	0.02	U	V	0.1		0.1	0.03	U	V
6486	GW02325IT	2/14/92	1.0		2.0	0.01	U	JA												
6486	GW02839IT	4/30/92	6.2	3.2	6.2	0.01		JA	0.1	0.9 U	0.1	0.02	U	V	0.1	0.9 U	0.1	0.03	U	V
6586	GW01275IT	5/9/91	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V
6586	GW01671IT	8/16/91	2.5		5.0	5.00	U	JA	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V
6586	GW02050IT	12/6/91																		
6586	GW02326IT	1/23/92	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V
6586	GW02840IT	4/30/92	2.5		5.0	5.00	U		2.5		5.0	5.00	U		2.5		5.0	5.00	U	
6586	GW03308IT	8/6/92	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V	2.5		5.0	5.00	U	V
6586	GW03947IT	12/14/92	2.5	2.5 U	5.0	5.00	U	V	2.5	2.5 U	5.0	5.00	U	V	2.0	2.0 M	2.0	5.00	J	A
B218789	GW01292IT	5/21/91	2.5		5.0	5.00	U	JA	280.0		280.0	5.00	D	V	110.0		110.0	5.00		V
B218789	GW01673IT	8/20/91	2.5		5.0	5.00	U	V	270.0		270.0	5.00	D	V	160.0		160.0	5.00		V
B218789	GW02034IT	11/19/91	2.5		5.0	5.00	U	V	180.0		180.0	5.00	D	V	97.0		97.0	5.00		V
B218789	GW02419IT	2/18/92	2.5		5.0	5.00	U	V	160.0		160.0	5.00	D	JA	72.0		72.0	5.00		V
B218789	GW02866IT	5/8/92	2.5		5.0	5.00	U	V	170.0		170.0	5.00		JA	62.0		62.0	5.00		V
B218789	GW03349IT	8/21/92	27.0		54.0	5.00	U	JA	180.0		180.0	5.00		JA	85.0		85.0	5.00		JA
B218789	GW03913IT	10/27/92	2.5	6.0 U	5.0	5.00	U	V	170.0	201.4	170.0	5.00		V	89.0	96.4	89.0	5.00		V

ATTACHMENT H1
TABLE 18
95% UCL CONCENTRATION
AOC NO. 1
GROUNDWATER VOCs

			METHYLENE CHLORIDE (ug/L)					Valid.	TETRACHLOROETHENE (ug/L)					Valid.	TRICHLOROETHENE (ug/L)					Valid.
Location	Field ID	Sample Date	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual
Number of Samples			381						392						388					
Number of Detects			75						292						264					
Minimum Detected			0.2						0.1						0.1					
Maximum Detected			35000.0						14000.0						150000					
Average			182.3						276.0						2086					
Number of wells sampled				100						100						100				
Number of wells with detects				47						81						79				
Minimum well average				0.2						0.1						0.1				
Maximum well average				20433.3						11033.3						97000				
Average				227.6						278.2						1699				
Standard Deviation				2042.4						1255.0						11390				
t-value				1.6						1.6						1.6				
95% UCL (1)				563.5						484.7						3573				
Mean of Ln(x)				0.847						2.262						2.047				
S.D. of ln(x)				1.615						2.701						2.751				
H(0.95,n)				2.846						4.185						4.250				
95% UCL based on Lognormal				13.65						1,148						1,103				

ATTACHMENT H1
TABLE 19
95% UCL CONCENTRATION
AOC NO. 1
GROUNDWATER METALS

			ANTIMONY (ug/L)					Valid.	ARSENIC (ug/L)					Valid.
Location	Field ID	Sample Date	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual
00191	GW02596IT	3/16/92												
00191	GW02909IT	5/21/92	9.00		18.00	60.00	U	V	1.00		2.00	10.00	U	V
00191	GW03435IT	9/1/92	35.80		35.80	18.80		JA						
00191	GW03861IT	11/18/92	7.00	17.27	14.00	60.00	U	V	1.55	1.28 U	3.10	10.00	U	JA
00291	GW02581IT	3/11/92	4.00		8.00	60.00	U.0N	JA	2.60		2.60	10.00	BN	JA
00291	GW02910IT	5/21/92	9.00		18.00	60.00	U	V	1.00		2.00	10.00	U	V
00291	GW03436IT	9/8/92	44.80		44.80	18.80		JA	5.60		5.60	1.00		JA
00291	GW03868IT	11/30/92	16.50	18.58	33.00	17.00	U	V	1.00	2.55	2.00	2.00	U	V
00391	GW02158IT	12/17/91	24.15		48.30	60.00	U	JA	2.00		2.00	10.00	BN	JA
00391	GW02526IT	2/28/92	4.00		8.00	60.00	U	JA	1.00		2.00	10.00	U	V
00391	GW02915IT	5/21/92	9.00		18.00	60.00	U	V	1.00		2.00	10.00	U	V
00391	GW03453IT	9/8/92	42.20		42.20	18.80		JA						
00391	GW03888IT	11/11/92	15.00	18.87	30.00	60.00	U	V	0.50	1.13	1.00	10.00	U	V
00491	GW02159IT	12/18/91	23.60		47.20	60.00	U	JA	1.00		2.00	10.00	U	V
00491	GW02527IT	2/28/92	4.00		8.00	60.00	U	JA	1.00		2.00	10.00	U	V
00491	GW02916IT	5/20/92	9.00		18.00	60.00	U	V	1.60		1.60	10.00	B	V
00491	GW03462IT	9/1/92	43.80		43.80	18.80		JA						
00491	GW03889IT	11/9/92	15.00	19.08	30.00	60.00	U	V	0.50	1.03	1.00	10.00	U	V
01391	GW03259IT	7/30/92	10.00	10.00 U	20.00	60.00	U	V	1.00	1.00	1.00	10.00	B	V
01491	GW02597IT	3/18/92							4.30		4.30	10.00	BN	JA
01491	GW02858IT	5/15/92	9.00		18.00	60.00	U	V	0.50		1.00	10.00	U	V
01491	GW03260IT	7/30/92	10.00		20.00	60.00	U	V	7.20		7.20	10.00	B	V
01491	GW03814IT	11/19/92	7.00	8.67 U	14.00	60.00	U	V	1.50	3.38	3.00	10.00	U	JA
01791	GW02173IT	12/19/91	236.00		236.00	60.00		JA	5.50		5.50	10.00	B	V
01791	GW02598IT	3/17/92	9.00		18.00	60.00	U	V	3.80		3.80	10.00	BN	JA
01791	GW02871IT	5/14/92	9.00		18.00	60.00	U	V	1.60		1.60	10.00	BN	JA
01791	GW03283IT	8/3/92	9.40		18.80	18.80	U	V	4.00		4.00	1.00		JA
01791	GW03817IT	11/5/92	15.00	55.68	30.00	60.00	U	V	2.10	3.40	2.10	10.00	B	V
01891	GW02178IT	12/23/91	27.70		55.40	60.00	U	JA	1.00		2.00	10.00	U	V
01891	GW02509IT	2/27/92	4.00		8.00	60.00	U	V	1.00		2.00	10.00	U	JA
01891	GW02872IT	5/13/92	9.00		18.00	60.00	U	V	1.40		1.40	10.00	BN	JA
01891	GW03284IT	7/29/92	22.60	15.83	22.60	60.00	B	V	1.70	1.28	1.70	10.00	B	V
01991	GW02853IT	6/4/92	9.00		18.00	60.00	U.0N	JA	2.40		2.40	10.00	BN	JA
01991	GW03350IT	9/14/92	42.80		42.80	18.80		JA						
01991	GW03907IT	10/23/92	12.20	21.33	24.40	24.40	U	V		2.40				
02091	GW02138IT	12/14/91	71.80		71.80	60.00		V	2.00		2.00	10.00	B	V
02091	GW02510IT	2/26/92	10.10		10.10	60.00	B	V	1.00		2.00	10.00	U	V
02091	GW02873IT	5/15/92	9.00		18.00	60.00	U	V	1.60		1.60	10.00	BN	JA
02091	GW03285IT	7/31/92	8.50		17.00	60.00	U	V						
02091	GW03819IT	11/6/92	15.00	22.88	30.00	60.00	U	V	1.60	1.55	3.20	10.00	U	JA
02291	GW02113IT	12/16/91	63.50		63.50	60.00		V	2.00		2.00	10.00	B	JA
02291	GW02511IT	2/26/92	4.00		8.00	60.00	U	V	1.00		2.00	10.00	U	JA
02291	GW02874IT	5/14/92	9.00		18.00	60.00	U	V	1.70		1.70	10.00	BN	JA
02291	GW03286IT	7/31/92	8.50		17.00	60.00	U	V						
02291	GW03820IT	10/29/92	25.50	21.25	25.50	24.40		JA	3.40	1.57	3.40	1.70		V
02491	GW02114IT	12/16/91	29.40		29.40	60.00	B	V	2.00		2.00	10.00	BW	V
02491	GW02572IT	3/11/92	4.00		8.00	60.00	U.0N	JA	0.50		1.00	10.00	U.0N	JA
02491	GW02875IT	5/15/92	9.00		18.00	60.00	U	V	0.50		1.00	10.00	U.0N	JA
02491	GW03287IT	7/31/92	8.50	12.73	17.00	60.00	U	V		1.00				
02591	GW03015IT	6/9/92	9.00		18.00	60.00	U	V	2.10		2.10	10.00	B	V
02591	GW03314IT	8/11/92	20.40		20.40	18.80		JA	1.00		1.00	1.00		JA
02591	GW03904IT	10/20/92	12.20	13.87	24.40	24.40	U	V		1.55				
02991	GW02441IT	3/12/92	4.00		8.00	60.00	U.0N	JA	4.00		4.00	10.00	BN	JA
02991	GW02854IT	5/8/92	9.00		18.00	60.00	U.0N	JA	3.70		3.70	10.00	BN	JA
02991	GW03351IT	8/21/92	9.40		18.80	18.80	U	V	2.60		2.60	1.00		V
02991	GW03908IT	10/20/92	12.20	8.65 U	24.40	24.40	U	V	1.50	2.95	1.50	0.70		JA

ATTACHMENT H1
TABLE 19
95% UCL CONCENTRATION
AOC NO. 1
GROUNDWATER METALS

			ANTIMONY (ug/L)					Valid.	ARSENIC (ug/L)					Valid.
Location	Field ID	Sample Date	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual
03091	GW02134IT	12/14/91	57.30		57.30	60.00	B	V	2.00		2.00	10.00	B	V
03091	GW02568IT	3/5/92	4.00		8.00	60.00	U.0N	JA	1.40		1.40	10.00	BN	JA
03091	GW02881IT	5/12/92	9.00		18.00	60.00	U.0N	JA	1.20		1.20	10.00	BN	JA
03091	GW03409IT	8/19/92	27.20		27.20	18.80		JA	2.40		2.40	1.00		V
03091	GW03914IT	10/22/92	12.20	21.94	24.40	24.40	U	V		1.75				
03191	GW02156IT	12/19/91	13.50		27.00	60.00	U	JA	1.00		2.00	10.00	U.0N	JA
03191	GW02882IT	5/12/92	9.00	11.25 U	18.00	60.00	U.0N	JA	1.30	1.15	1.30	10.00	BN	JA
03391	GW02092IT	12/5/91	117.00		117.00	60.00		JA	4.00		4.00	10.00	B	V
03391	GW02547IT	3/13/92	9.00		18.00	60.00	U	V	1.50		1.50	10.00	BN	JA
03391	GW03006IT	6/2/92	9.00		18.00	60.00	U	V	2.60		5.20	10.00	U	JA
03391	GW03123IT	7/9/92	10.00		20.00	60.00	U	V	3.50		3.50	10.00	B	V
03391	GW03896IT	10/16/92	12.20	31.44	24.40	24.40	U	V	1.80	2.68	1.80	0.80		JA
03591	GW02161IT	12/19/91	74.60		74.60	60.00		JA	2.50		2.50	10.00	B	V
03591	GW02883IT	6/4/92	9.00		18.00	60.00	U.0N	JA	1.60		1.60	10.00	BN	JA
03591	GW03387IT	8/13/92	38.60	40.73	38.60	18.80		JA	1.80	1.97	1.80	1.00		JA
03691	GW03048IT	6/8/92	9.00		18.00	60.00	U	V	8.30		8.30	10.00	B	V
03691	GW03124IT	7/8/92	10.00		20.00	60.00	U	V	5.30		5.30	10.00	B	V
03691	GW03897IT	10/21/92	46.30	21.77	46.30	24.40		V	11.00	8.20	11.00	0.70		V
03791	GW02093IT	12/6/91	104.00		104.00	60.00		V	8.00		8.00	10.00	B	V
03791	GW02557IT	3/19/92							11.00		11.00	10.00	N	JA
03791	GW03007IT	6/10/92	9.90		19.80	19.80	U	V	4.30		4.30	1.00		JA
03791	GW03125IT	7/10/92	10.00		20.00	60.00	U	V	2.90		2.90	10.00	BW	JA
03791	GW03898IT	10/16/92	12.20	34.03	24.40	24.40	U	V	2.20	5.68	2.20	0.70		JA
03991	GW03010IT	6/23/92	9.00		18.00	60.00	U	V	7.70		7.70	10.00	BW	JA
03991	GW03126IT	7/8/92	10.00		20.00	60.00	U	V	5.30		5.30	10.00	B	V
03991	GW03899IT	10/21/92	132.00	50.33	132.00	122.00		JA	2.70	5.23	2.70	0.70		JA
04191	GW02923IT	5/19/92	9.00	9.00 U	18.00	60.00	U	V	2.40	2.40	2.40	10.00	B	V
04291	GW02924IT	5/19/92	9.00	9.00 U	18.00	60.00	U	V	1.00	1.00	1.00	10.00	B	V
04591	GW02175IT	12/20/91	79.20		79.20	60.00		JA	3.20		3.20	10.00	B	V
04591	GW02525IT	3/3/92	4.00		8.00	60.00	U	V	2.00		2.00	10.00	B	V
04591	GW02931IT	5/22/92	9.00		18.00	60.00	U	V	2.50		2.50	10.00	B	V
04591	GW03450IT	8/31/92	36.00		36.00	18.80		JA	1.40		1.40	1.00		JA
04591	GW03882IT	12/8/92	16.50	28.94	33.00	17.00	U	V	1.00	2.02	2.00	2.00	U	V
04991	GW02939IT	5/21/92	9.00		18.00	60.00	U	V	1.00		2.00	10.00	U	V
04991	GW03236IT	7/27/92	10.00	9.50 U	20.00	60.00	U	V	1.90	1.45	1.90	10.00	BN	JA
05091	GW02177IT	12/23/91	24.30		48.60	60.00	U	JA	1.00		2.00	10.00	U	V
05091	GW02619IT	3/26/92							1.00		2.00	10.00	U.0N	JA
05091	GW02940IT	5/20/92	9.00		18.00	60.00	U	V	1.10		1.10	10.00	B	V
05091	GW03237IT	7/28/92	10.00		20.00	60.00	U	V	1.10		1.10	10.00	B	V
05091	GW03726IT	10/28/92	15.00	14.58 U	30.00	60.00	U	V	1.30	1.10	2.60	10.00	U	JA
05191	GW02160IT	12/17/91	172.00		172.00	60.00		JA	9.00		9.00	10.00	BN	JA
05191	GW02571IT	3/5/92	4.00		8.00	60.00	U.0N	JA	1.60		1.60	10.00	BN	JA
05191	GW02941IT	5/21/92	9.00		18.00	60.00	U	V	2.50		2.50	10.00	B	V
05191	GW03238IT	7/24/92	11.35		22.70	60.00	U	JA	4.70		4.70	10.00	BN	JA
05191	GW03727IT	10/28/92	15.00	42.27	30.00	60.00	U	V	7.50	5.06	7.50	10.00	B	V
05391	GW02084IT	12/5/91	29.80		59.60	60.00	U	JA	1.00		2.00	10.00	U	V
05391	GW02566IT	3/5/92	4.00		8.00	60.00	U.0N	JA	2.40		2.40	10.00	BN	JA
05391	GW02884IT	6/11/92	9.90		19.80	19.80	U	V	2.30		2.30	1.00		JA
05391	GW03388IT	9/10/92	40.00		40.00	18.80		JA						
05391	GW03917IT	10/28/92	15.00	19.74	30.00	60.00	U	V	0.50	1.55	1.00	10.00	U	V
05691	GW02061IT	12/4/91	151.00		151.00	60.00		JA	21.00		21.00	10.00		V
05691	GW02549IT	3/12/92	4.00		8.00	60.00	U.0N	JA	4.60		4.60	10.00	BN	JA
05691	GW02885IT	5/28/92	9.00		18.00	60.00	U	V	4.10		4.10	10.00	B	V
05691	GW03389IT	8/21/92	35.60		35.60	18.80		JA	11.70		11.70	1.00		V
05691	GW03918IT	11/9/92	32.80	46.48	32.80	60.00	B	V	14.00	11.08	14.00	10.00		V
06091	GW02062IT	12/4/91	123.00		123.00	60.00		JA	3.00		3.00	10.00	B	V

ATTACHMENT H1
TABLE 19
95% UCL CONCENTRATION
AOC NO. 1
GROUNDWATER METALS

			ANTIMONY (ug/L)					Valid.	ARSENIC (ug/L)					Valid.
Location	Field ID	Sample Date	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual
06091	GW02576IT	3/12/92	4.00		8.00	60.00	U.0N	JA	3.10		3.10	10.00	BN	JA
06091	GW03014IT	6/11/92	9.90		19.80	19.80	U	V	3.40		3.40	1.00		JA
06091	GW03318IT	8/6/92	9.40		18.80	18.80	U	V	4.80		4.80	1.00		JA
06091	GW03903IT	10/19/92	12.20	31.70	24.40	24.40	U	V	1.30	3.12	1.30	0.70		JA
06591	GW02895IT	5/19/92	9.00		18.00	60.00	U	V	2.70		2.70	10.00	B	V
06591	GW03427IT	8/27/92	76.50		76.50	18.80		JA	3.10		3.10	1.00		V
06591	GW03847IT	11/17/92	16.50	34.00	33.00	60.00	U	V	1.00	2.27	2.00	10.00	U	V
06691	GW02896IT	5/18/92	9.00	9.00 U	18.00	60.00	U	V	7.20	7.20	7.20	10.00	B	V
06791	GW02897IT	5/20/92	9.00	9.00 U	18.00	60.00	U	V	2.30	2.30	2.30	10.00	B	V
06891	GW02898IT	5/20/92	9.00		18.00	60.00	U	V	0.50		1.00	10.00	U	V
06891	GW03429IT	8/26/92	9.40		18.80	18.80	U	V	0.50		1.00	1.00	U	V
06891	GW03851IT	11/18/92	7.00	8.47 U	14.00	60.00	U	V	0.50	0.50 U	1.00	10.00	U	V
06991	GW02899IT	5/18/92							4.40		4.40	10.00	B	V
06991	GW03430IT	8/26/92	37.50		37.50	18.80		JA	2.10		2.10	1.00		V
06991	GW03850IT	11/18/92	7.00	22.25	14.00	60.00	U	V	1.35	2.62	2.70	10.00	U	JA
07191	GW02900IT	5/18/92	9.00		18.00	60.00	U	V	0.50		1.00	10.00	U	V
07191	GW03455IT	8/27/92	32.90	20.95	32.90	18.80		JA	1.40	0.95	1.40	1.00		V
07391	GW02599IT	3/16/92												
07391	GW02902IT	5/21/92							1.00		2.00	10.00	U	V
07391	GW03457IT	8/28/92	44.10		44.10	18.80		JA	0.50		1.00	1.00	U	V
07391	GW03862IT	11/16/92	16.50	30.30	33.00	60.00	U	V	1.00	0.83 U	2.00	10.00	U	V
07891	GW02434IT	3/12/92	9.00		18.00	60.00	U	V	0.50		1.00	10.00	U.0N	JA
07891	GW02855IT	5/7/92	9.00		18.00	60.00	U.0N	JA	2.10		2.10	10.00	BN	JA
07891	GW03353IT	8/20/92	9.40		18.80	18.80	U	V	0.50		1.00	1.00	U	V
07891	GW03909IT	10/23/92	12.20	9.90 U	24.40	24.40	U	V		1.03				
07991	GW02925IT	5/20/92	9.00		18.00	60.00	U	V	2.50		2.50	10.00	B	V
07991	GW03322IT	8/26/92	23.00	16.00	23.00	18.80		JA	0.50	1.50	1.00	1.00	U	V
08891	GW03065IT	6/23/92	9.00		18.00	60.00	U	V	1.00		1.00	10.00	B	V
08891	GW03431IT	8/31/92	38.30		38.30	18.80		JA						
08891	GW03849IT	11/17/92	16.50	21.27	33.00	60.00	U	V	1.00	1.00	2.00	10.00	U	V
09091	GW02903IT	5/20/92	34.60		34.60	60.00	B	JA	2.10		2.10	10.00	B	V
09091	GW03432IT	8/31/92	44.40		44.40	18.80		JA	1.40		1.40	1.00		JA
09091	GW03852IT	11/18/92	7.00	28.67	14.00	60.00	U	V	0.60	1.37	1.20	10.00	U	JA
09691	GW02608IT	3/18/92												
09691	GW02904IT	5/22/92	9.00		18.00	60.00	U	V	1.00		2.00	10.00	U	V
09691	GW03458IT	8/31/92	9.40		18.80	18.80	U	V						
09691	GW03865IT	11/17/92	16.50	11.63 U	33.00	60.00	U	V	1.00	1.00 U	2.00	10.00	U	V
0987	GW01667IT	8/16/91	33.45		66.90	60.00	U	JA	4.00		4.00	10.00	B	JA
0987	GW02088IT	12/16/91	30.40		30.40	60.00	B	V	2.00		2.00	10.00	B	V
0987	GW02402IT	3/6/92	4.00		8.00	60.00	U.0N	JA	2.20		2.20	10.00	BN	JA
0987	GW02942IT	5/26/92	9.00		18.00	60.00	U	V	6.00		6.00	10.00	B	V
0987	GW03179IT	7/16/92	10.00		20.00	60.00	U	V	1.10		1.10	10.00	B	V
0987	GW03708IT	12/10/92	7.00	15.64	14.00	60.00	U	V	2.30	2.93	2.30	10.00	B	V
10991	GW02436IT	2/6/92	17.30		17.30	60.00	B	JA	6.60		6.60	10.00	BN	JA
10991	GW02943IT	5/22/92	9.00		18.00	60.00	U	V	9.40		9.40	10.00	B	V
10991	GW03289IT	7/28/92	10.00		20.00	60.00	U	V	3.20		3.20	10.00	B	V
10991	GW03728IT	10/23/92	12.20	12.13	24.40	24.40	U	V		6.40				
11491	GW02886IT	5/28/92	9.00	9.00 U	18.00	60.00	U	V	1.40	1.40	1.40	10.00	B	V
11691	GW03011IT	6/8/92	9.00		18.00	60.00	U.0N	JA	3.50		3.50	10.00	BN	JA
11691	GW03127IT	7/10/92	10.00	9.50 U	20.00	60.00	U	V	4.80	4.15	4.80	10.00	B	V
11791	GW02432IT	2/6/92	4.00		8.00	60.00	U	V	2.50		2.50	10.00	BN	JA
11791	GW02917IT	5/20/92	9.00		18.00	60.00	U	V	3.70		3.70	10.00	B	V
11791	GW03465IT	9/8/92	42.40		42.40	18.80		JA						
11791	GW03890IT	11/11/92	15.00		30.00	60.00	U	V	1.30		1.30	10.00	B	V
11791	GW03891IT	11/12/92	16.50	17.38	33.00	60.00	U	V	1.00	2.13	2.00	10.00	U	JA
1187	GW01648IT	9/6/91	25.00		50.00	60.00	U	V	1.00		2.00	10.00	U	V

ATTACHMENT H1
TABLE 19
95% UCL CONCENTRATION
AOC NO. 1
GROUNDWATER METALS

			ANTIMONY (ug/L)					Valid.	ARSENIC (ug/L)					Valid.
Location	Field ID	Sample Date	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual
1187	GW02004IT	11/21/91	30.90		61.80	60.00	U	JA	1.00		2.00	10.00	U.0WN	JA
1187	GW03460IT	9/1/92	8.50	21.47 U	17.00	60.00	U	V	1.00	1.00 U	2.00	10.00	U	V
11891	GW02117IT	12/19/91	297.00		297.00	60.00		JA	5.00		5.00	10.00	B	V
11891	GW02552IT	2/28/92	4.00		8.00	60.00	U	V	2.40		2.40	10.00	B	V
11891	GW03012IT	6/2/92	9.00		18.00	60.00	U	V	1.20		2.40	10.00	U	JA
11891	GW03128IT	7/9/92	10.00		20.00	60.00	U	V	2.60		2.60	10.00	B	V
11891	GW03901IT	10/16/92	12.20	66.44	24.40	24.40	U	V	1.70	2.58	1.70	0.80		JA
12091	GW02116IT	12/19/91	25.10		50.20	60.00	U	JA	1.00		2.00	10.00	U	V
12091	GW02514IT	2/27/92	4.00		8.00	60.00	U	V	1.00		2.00	10.00	U	V
12091	GW02876IT	5/13/92	9.00		18.00	60.00	U	JA	2.10		2.10	10.00	BN	JA
12091	GW03290IT	7/29/92	10.00		20.00	60.00	U	V	1.10		1.10	10.00	B	V
12091	GW03822IT	11/10/92	15.00	12.62 U	30.00	60.00	U	V	0.50	1.14	1.00	10.00	U	V
12191	GW02440IT	3/16/92							8.20		8.20	10.00	BN	JA
12191	GW02862IT	6/3/92	9.00		18.00	60.00	U.0N	JA	6.50		6.50	10.00	BN	JA
12191	GW03410IT	8/19/92	18.90		18.90	18.80		JA	11.40		11.40	1.00		V
12191	GW03910IT	10/21/92	224.00	83.97	224.00	122.00		JA	12.40	9.63	12.40	0.70		JA
12291	GW02607IT	3/17/92	9.00		18.00	60.00	U	V	1.10		2.20	10.00	U	JA
12291	GW02859IT	5/29/92	9.00	9.00 U	18.00	60.00	U	V	1.10	1.10	1.10	10.00	B	V
12391	GW02438IT	2/12/92							7.20		7.20	10.00	BN	JA
12391	GW02887IT	5/14/92	9.00		18.00	60.00	U	V	5.00		5.00	10.00	BN	JA
12391	GW03421IT	9/15/92	12.20		24.40	24.40	U	V	5.20		5.20	0.70		JA
12391	GW03919IT	12/3/92	7.00	9.40 U	14.00	60.00	U	V	3.80	5.30	3.80	10.00	B	V
12491	GW02435IT	2/7/92							11.70		11.70	10.00	N	JA
12491	GW02888IT	5/14/92	9.00		18.00	60.00	U	JA	3.40		3.40	10.00	BN	JA
12491	GW03422IT	9/14/92	32.30		32.30	18.80		JA	5.30		5.30	1.00		JA
12491	GW03922IT	10/22/92	46.40	29.23	46.40	24.40		JA	3.50	5.98	3.50	0.70		JA
12691	GW02437IT	2/13/92	8.70		8.70	60.00	BN	JA	3.10		3.10	10.00	BN	JA
12691	GW02889IT	5/29/92	9.00		18.00	60.00	U	V	1.40		1.40	10.00	B	V
12691	GW03423IT	9/10/92	23.90		23.90	18.80		JA						
12691	GW03923IT	10/23/92	12.20	13.45	24.40	24.40	U	V		2.25				
1287	GW01647IT	9/9/91	25.00		50.00	60.00	U	V	1.00		2.00	10.00	U	V
1287	GW02921IT	5/18/92	9.00	17.00 U	18.00	60.00	U	V	0.50	0.75 U	1.00	10.00	U	V
12991	GW02601IT	3/17/92	9.00		18.00	60.00	U	V	2.50		2.50	10.00	BN	JA
12991	GW02911IT	5/22/92	9.00		18.00	60.00	U	V	1.00		2.00	10.00	U	V
12991	GW03437IT	8/28/92	62.60		62.60	37.60		JA	1.90		1.90	1.00		V
12991	GW03867IT	11/30/92	16.50	24.28	33.00	17.00	U	V	1.00	1.60	2.00	2.00	U	V
13091	GW02912IT	5/22/92	9.00		18.00	60.00	U	V	1.00		2.00	10.00	U	V
13091	GW03440IT	9/9/92	9.40	9.20 U	18.80	18.80	U	V		1.00 U				
13191	GW02905IT	5/19/92	9.00		18.00	60.00	U	V	4.70		4.70	10.00	B	V
13191	GW03433IT	9/2/92	9.40		18.80	18.80	U	V	2.20		2.20	1.00		JA
13191	GW03855IT	11/17/92	16.50	11.63 U	33.00	60.00	U	V	1.05	2.65	2.10	10.00	U	V
13391	GW03016IT	6/8/92	9.00		18.00	60.00	U.0N	JA	4.70		4.70	10.00	BN	JA
13391	GW03354IT	8/20/92	9.40		18.80	18.80	U	V	4.70		4.70	1.00		V
13391	GW03906IT	10/20/92	12.20	10.20 U	24.40	24.40	U	V	1.50	3.63	1.50	0.70		JA
13491	GW03063IT	6/24/92	9.00		18.00	60.00	U	V	3.10		3.10	10.00	B	V
13491	GW03411IT	8/21/92	70.80		70.80	18.80		JA	3.00		3.00	1.00		V
13491	GW03928IT	10/22/92	79.10	52.97	79.10	24.40		JA	0.35	2.15	0.70	0.70	U	JA
1487	GW01646IT	9/5/91	25.00		50.00	60.00	U	V	2.20		2.20	10.00	B	V
1487	GW02003IT	11/21/91	19.10		19.10	60.00	B		1.00		2.00	10.00	U	
1487	GW02388IT	2/21/92	4.00		8.00	60.00	U	V	1.30		1.30	10.00	BN	JA
1487	GW02922IT	5/20/92	9.00		18.00	60.00	U	V	1.50		1.50	10.00	B	V
1487	GW03461IT	8/31/92	8.50	13.12	17.00	60.00	U	V	1.00	1.40	2.00	10.00	U	JA
1587	GW01650IT	9/4/91	56.50		56.50	60.00	B	V	2.00		2.00	10.00	B	V
1587	GW02005IT	12/18/91	19.10		38.20	60.00	U	JA	2.00		2.00	10.00	BN	JA
1587	GW02422IT	2/25/92							1.00		2.00	10.00	U	V
1587	GW02914IT	6/23/92	12.25		24.50	60.00	U	JA	2.80		2.80	10.00	B	V

ATTACHMENT H1
TABLE 19
95% UCL CONCENTRATION
AOC NO. 1
GROUNDWATER METALS

			ANTIMONY (ug/L)					Valid.	ARSENIC (ug/L)					Valid.
Location	Field ID	Sample Date	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual
1587	GW03442IT	9/1/92	8.50	24.09	17.00	60.00	U	V	1.00	1.76	2.00	10.00	U	JA
1787	GW01687IT	8/19/91	22.50		45.00	60.00	U	JA	1.00		2.00	10.00	U	V
1787	GW02031IT	11/18/91	29.90		59.80	60.00	U	JA	1.00		2.00	10.00	U.0N	JA
1787	GW02424IT	2/24/92	9.20		9.20	60.00	B	V	1.00		2.00	10.00	U	V
1787	GW02844IT	4/30/92	9.00		18.00	60.00	U.0N	JA	1.00		1.00	10.00	BN	JA
1787	GW03281IT	7/29/92	10.00		20.00	60.00	U	V	0.50		1.00	10.00	U	V
1787	GW03823IT	11/10/92	16.50	16.18	33.00	60.00	U	V	1.00	0.92	2.00	10.00	U	JA
2387	GW01669IT	8/19/91	25.70		51.40	60.00	U	JA	1.00		2.00	10.00	U	JA
2387	GW02032IT	11/23/91	37.55		75.10	60.00	U	JA	2.00		2.00	10.00	BN	JA
2387	GW02405IT	2/28/92	4.00		8.00	60.00	U	V	1.00		2.00	10.00	U	V
2387	GW02845IT	5/28/92	9.00		18.00	60.00	U	V	1.00		1.00	10.00	B	V
2387	GW03256IT	7/30/92	10.00		20.00	60.00	U	V	0.50		1.00	10.00	U	V
2387	GW03816IT	11/6/92	15.00	16.88 U	30.00	60.00	U	V	1.80	1.22	1.80	10.00	B	V
2587	GW01685IT	9/10/91	25.00		50.00	60.00	U	V	5.10		5.10	10.00	B	V
2587	GW02039IT	11/18/91	32.20		64.40	60.00	U	JA	2.00		2.00	10.00	BWN	JA
2587	GW02406IT	3/3/92	4.00		8.00	60.00	U	JA	1.00		2.00	10.00	U	V
2587	GW02865IT	5/15/92	9.00		18.00	60.00	U	V	0.50		1.00	10.00	U	V
2587	GW03348IT	9/22/92	16.50		33.00	60.00	U	V	1.00		2.00	10.00	U	JA
2587	GW03912IT	10/27/92	16.50	17.20 U	33.00	60.00	U	V	1.00	1.77	2.00	10.00	U	V
2987	GW01703IT	8/21/91	56.00		56.00	60.00	B	V	3.00		3.00	10.00	BWN	JA
2987	GW02080IT	12/7/91	33.20		33.20	60.00	B	JA	2.00		2.00	10.00	B	V
2987	GW02412IT	2/12/92	4.15		8.30	60.00	U	JA	1.60		1.60	10.00	BWN	JA
2987	GW03058IT	6/9/92	9.00		18.00	60.00	U	V	3.60		3.60	10.00	B	V
2987	GW03292IT	7/31/92	9.30		18.60	60.00	U	JA						
2987	GW03730IT	10/27/92	16.50	21.36	33.00	60.00	U	V	2.20	2.48	4.40	10.00	U	V
3287	GW01642IT	9/4/91	57.30		57.30	60.00	B	V	5.00		5.00	10.00	B	V
3287	GW02012IT	11/22/91	33.95		67.90	60.00	U	JA	2.00		2.00	10.00	BWN	JA
3287	GW02429IT	2/25/92	10.40		10.40	60.00	B	JA	3.90		3.90	10.00	BW	JA
3287	GW02936IT	5/18/92	9.00		18.00	60.00	U	V	3.90		3.90	10.00	B	V
3287	GW03447IT	9/9/92	8.50		17.00	60.00	U	V	1.00		2.00	10.00	U	JA
3287	GW03880IT	11/30/92	16.50	22.61	33.00	17.00	U	V	1.00	2.80	2.00	2.00	U	V
34791	GW02157IT	12/17/91	25.00		50.00	60.00	U	JA	1.00		2.00	10.00	U.0N	JA
34791	GW02447IT	2/10/92	4.00		8.00	60.00	U	JA	1.00		1.00	10.00	BN	JA
34791	GW02908IT	5/20/92	9.00		18.00	60.00	U	V	1.40		1.40	10.00	B	V
34791	GW03459IT	9/2/92	43.80		43.80	18.80		JA						
34791	GW03863IT	11/16/92	16.50	19.66	33.00	60.00	U	V	1.00	1.10	2.00	10.00	U	V
3586	GW01818IT	10/8/91	16.00		32.00	60.00	U	JA	1.00		2.00	10.00	U.0W	V
3586	GW02195IT	1/10/92	4.00		8.00	60.00	U	JA	3.80		3.80	10.00	B	V
3586	GW02631IT	4/7/92	9.00		18.00	60.00	U	V	2.80		2.80	10.00	B	V
3586	GW03217IT	8/5/92	8.50		17.00	60.00	U	V	1.70		3.40	10.00	U.0BN	JA
3586	GW03828IT	12/10/92	7.00	8.90 U	14.00	60.00	U	V	6.20	3.10	6.20	10.00	B	V
3687	GW01674IT	8/23/91	27.60		27.60	60.00	B	V	1.00		2.00	10.00	U.0N	JA
3687	GW02036IT	11/25/91	29.65		59.30	60.00	U	JA	1.00		2.00	10.00	U	V
3687	GW02414IT	3/5/92	4.00		8.00	60.00	U.0N	JA	1.00		1.00	10.00	BN	JA
3687	GW02852IT	5/15/92	9.00		18.00	60.00	U	V	0.50		1.00	10.00	U	V
3687	GW03384IT	8/17/92	8.50		17.00	60.00	U	V	1.00		2.00	10.00	U	V
3687	GW03924IT	10/27/92	16.50	15.88	33.00	60.00	U	V	1.40	0.98	2.80	10.00	U	JA
4286	GW01706IT	9/11/91	25.00		50.00	60.00	U	V	4.00		4.00	10.00	B	V
4286	GW02044IT	12/4/91	65.80		65.80	60.00		JA	1.00		2.00	10.00	U	V
4286	GW02398IT	2/10/92	4.00		8.00	60.00	U	V	2.60		2.60	10.00	BN	JA
4286	GW02846IT	5/29/92	9.00		18.00	60.00	U	V	1.50		1.50	10.00	B	V
1286	GW03385IT	8/17/92	8.50		17.00	60.00	U	V	1.00		2.00	10.00	U	V
4286	GW03925IT	11/30/92	16.50	21.47	33.00	17.00	U	V	1.00	1.85	2.00	2.00	U	V
6286	GW01708IT	8/22/91	20.80		20.80	60.00	B	V	1.00		2.00	10.00	U.0N	JA
6286	GW02046IT	11/25/91	20.30		40.60	60.00	U	JA	1.00		2.00	10.00	U.0WN	JA
6286	GW02378IT	2/11/92							0.50		1.00	10.00	U.0N	JA

ATTACHMENT H1
TABLE 19
95% UCL CONCENTRATION
AOC NO. 1
GROUNDWATER METALS

			ANTIMONY (ug/L)					Valid.	ARSENIC (ug/L)					Valid.
Location	Field ID	Sample Date	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual
6286	GW03056IT	6/11/92	9.90		19.80	19.80	U	V	0.50		1.00	1.00	U	JA
6286	GW03294IT	7/31/92	10.00		20.00	60.00	U	JA	0.50		1.00	10.00	U	V
6286	GW03885IT	11/9/92	16.50	15.50	33.00	60.00	U	V	1.00	0.75 U	2.00	10.00	U	JA
6586	GW01671IT	8/16/91	25.20		50.40	60.00	U	JA	1.00		2.00	10.00	U	V
6586	GW02050IT	12/6/91	16.00		16.00	60.00	B	JA	1.00		2.00	10.00	U	V
6586	GW02326IT	1/23/92	4.00		8.00	60.00	U		0.50		1.00	10.00	U	
6586	GW02840IT	4/30/92	9.00		18.00	60.00	U.0N	JA	0.50		1.00	10.00	U.0N	JA
6586	GW03308IT	8/6/92	8.50		17.00	60.00	U	V						
6586	GW03947IT	12/14/92	15.50	13.03	31.00	17.00	U	V	1.00	0.80 U	2.00	2.00	U	V
B218789	GW01673IT	20-Aug-91	17.80		35.60	60.00	U	JA	1.00		2.00	10.00	U	V
B218789	GW02034IT	19-Nov-91	41.30		41.30	60.00	B		2.00		2.00	10.00	B	
B218789	GW02419IT	18-Feb-92	4.00		8.00	60.00	U	JA	2.80		2.80	10.00	BN	JA
B218789	GW02866IT	8-May-92	9.00		18.00	60.00	U.0N	JA	0.50		1.00	10.00	U.0N	JA
B218789	GW03349IT	21-Aug-92	9.40		18.80	18.80	U	V	1.50		1.50	1.00		V
B218789	GW03913IT	27-Oct-92	16.50	16.33	33.00	60.00	U	V	1.00	1.47	2.00	10.00	U	V
Number of Samples			282						270					
Number of Detects			63						165					
Minimum Detected			8.70						1.00					
Maximum Detected			297.00						21.00					
Average			22.13						2.53					
Number of wells sampled				75						75				
Number of wells with detects				57						71				
Minimum well average				8.47						0.50				
Maximum well average				83.97						11.08				
Average				21.14						2.46				
Standard Deviation				14.18						2.07				
t-value				1.645						1.645				
95% UCL (1)				23.83						2.85				
Mean of Ln(x)				2.80						0.71123				
S.D. of ln(x)				0.71						0.79299				
H(0.95,n)				1.99						2.05704				
95% UCL based on Lognormal				24.96						3.37				

ATTACHMENT H1
TABLE 19
95% UCL CONCENTRATION
AOC NO. 1
GROUNDWATER METALS

			BERYLLIUM (ug/L)					Valid.	MANGANESE (ug/L)					Valid.
Location	Field ID	Sample Date	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual
00191	GW02596IT	3/16/92	0.50		1.00	5.00	U	V	93		92.9	15.0	E	V
00191	GW02909IT	5/21/92	0.50		1.00	5.00	U	V	81		81.1	15.0		V
00191	GW03435IT	9/1/92	0.60		0.60	0.60		JA	113		113.0	1.4		V
00191	GW03861IT	11/18/92	24.30	6.48	24.30	5.00		V	3750	1009	3750.0	15.0		V
00291	GW02581IT	3/11/92	0.50		1.00	5.00	U	V	762		762.0	15.0		V
00291	GW02910IT	5/21/92	1.70		1.70	5.00	B	V	858		858.0	15.0		V
00291	GW03436IT	9/8/92	8.70		8.70	0.60		V	2690		2690.0	1.4		V
00291	GW03868IT	11/30/92	1.60	3.13	1.60	1.00		V	811	1280	811.0	1.0		V
00391	GW02158IT	12/17/91	1.10		1.10	5.00	B	V	211		211.0	15.0		V
00391	GW02526IT	2/28/92	0.50		1.00	5.00	U	V	53		52.5	15.0	*	JA
00391	GW02915IT	5/21/92	0.50		1.00	5.00	U	V	29		28.9	15.0		V
00391	GW03453IT	9/8/92	0.70		0.70	0.60		JA	107		107.0	1.4		V
00391	GW03888IT	11/11/92	0.50	0.66	1.00	5.00	U	V	49	90	49.1	15.0		V
00491	GW02159IT	12/18/91	0.85		1.70	5.00	U	JA	1430		1430.0	15.0		V
00491	GW02527IT	2/28/92	0.50		1.00	5.00	U	V	612		612.0	15.0	*	JA
00491	GW02916IT	5/20/92	1.10		1.10	5.00	B	V	232		232.0	15.0		V
00491	GW03462IT	9/1/92	0.30		0.60	0.60	U	V	311		311.0	1.4		V
00491	GW03889IT	11/9/92	0.50	0.65	1.00	5.00	U	V	313	580	313.0	15.0		V
01391	GW03259IT	7/30/92	1.50	1.50 U	3.00	5.00	U	V	475	475	475.0	15.0		V
01491	GW02597IT	3/18/92	14.60		14.60	5.00		V	3580		3580.0	15.0	E	V
01491	GW02858IT	5/15/92	1.10		1.10	5.00	B	V	339		339.0	15.0		V
01491	GW03260IT	7/30/92	15.30		15.30	5.00		V	3990		3990.0	15.0		V
01491	GW03814IT	11/19/92	7.30	9.58	7.30	5.00		V	2030	2485	2030.0	15.0		V
01791	GW02173IT	12/19/91	11.90		11.90	5.00		V	4920		4920.0	15.0		V
01791	GW02598IT	3/17/92	6.40		6.40	5.00		V	2010		2010.0	15.0		V
01791	GW02871IT	5/14/92	1.30		1.30	5.00	B	V	185		185.0	15.0		V
01791	GW03283IT	8/3/92	3.80		3.80	0.60		JA	2010		2010.0	1.4		V
01791	GW03817IT	11/5/92	0.65	4.81	1.30	5.00	U	JA	319	1889	319.0	15.0		V
01891	GW02178IT	12/23/91	0.80		1.60	5.00	U	JA	304		304.0	15.0		V
01891	GW02509IT	2/27/92	0.50		1.00	5.00	U	V	237		237.0	15.0		V
01891	GW02872IT	5/13/92	1.30		1.30	5.00	B	V	191		191.0	15.0		V
01891	GW03284IT	7/29/92	3.10	1.43	3.10	5.00	B	V	291	256	291.0	15.0		V
01991	GW02853IT	6/4/92	1.50		1.50	5.00	B	V	1500		1500.0	15.0		V
01991	GW03350IT	9/14/92	2.20		2.20	0.60		JA	1470		1470.0	1.4		V
01991	GW03907IT	10/23/92	0.40	1.37	0.80	0.80	U	V	968	1313	968.0	2.1		V
02091	GW02138IT	12/14/91	3.80		3.80	5.00	B	JA	677		677.0	15.0		V
02091	GW02510IT	2/26/92	0.50		1.00	5.00	U	V	255		255.0	15.0		V
02091	GW02873IT	5/15/92	1.30		1.30	5.00	B	V	191		191.0	15.0		V
02091	GW03285IT	7/31/92	0.95		1.90	5.00	U.0B	V	210		210.0	15.0		V
02091	GW03819IT	11/6/92	4.30	2.17	4.30	5.00	B	V	401	347	401.0	15.0		V
02291	GW02113IT	12/16/91	3.00		3.00	5.00	B	JA	792		792.0	15.0		V
02291	GW02511IT	2/26/92	1.30		1.30	5.00	B	V	473		473.0	15.0		V
02291	GW02874IT	5/14/92	1.30		1.30	5.00	B	V	145		145.0	15.0		V
02291	GW03286IT	7/31/92	0.90		1.80	5.00	U.0B	V	215		215.0	15.0		V
02291	GW03820IT	10/29/92	4.50	1.63	4.50	0.80		JA	492	406	492.0	2.1		V
02491	GW02114IT	12/16/91	1.30		1.30	5.00	B	JA	425		425.0	15.0		V
02491	GW02572IT	3/11/92	0.50		1.00	5.00	U	V	132		132.0	15.0		V
02491	GW02875IT	5/15/92	0.50		1.00	5.00	U	V	108		108.0	15.0		V
02491	GW03287IT	7/31/92	0.50	0.70	1.00	5.00	U	V	224	222	224.0	15.0		V
02591	GW03015IT	6/9/92	1.00		2.00	5.00	U	JA	403		403.0	15.0		V
02591	GW03314IT	8/11/92	0.30		0.60	0.60	U	V	293		293.0	1.4		V
02591	GW03904IT	10/20/92	0.40	0.57 U	0.80	0.80	U	V	119	272	119.0	2.1		V
02991	GW02441IT	3/12/92	0.50		1.00	5.00	U	V	664		664.0	15.0		V
02991	GW02854IT	5/8/92	0.50		1.00	5.00	U	V	617		617.0	15.0		V
02991	GW03351IT	8/21/92	0.30		0.60	0.60	U	V	326		326.0	1.4		V
02991	GW03908IT	10/20/92	0.40	0.43 U	0.80	0.80	U	V	269	469	269.0	2.1		V

ATTACHMENT H1
TABLE 19
95% UCL CONCENTRATION
AOC NO. 1
GROUNDWATER METALS

			BERYLLIUM (ug/L)					Valid.	MANGANESE (ug/L)					Valid.
Location	Field ID	Sample Date	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual
03091	GW02134IT	12/14/91	3.20		3.20	5.00	B	JA	484		484.0	15.0		V
03091	GW02568IT	3/5/92	0.50		1.00	5.00	U	V	206		206.0	15.0		V
03091	GW02881IT	5/12/92	0.50		1.00	5.00	U	V	114		114.0	15.0		V
03091	GW03409IT	8/19/92							211		211.0	1.4		V
03091	GW03914IT	10/22/92	1.90	1.53	1.90	0.80		JA	214	246	214.0	2.1		V
03191	GW02156IT	12/19/91	0.50		1.00	5.00	U	V	320		320.0	15.0		V
03191	GW02882IT	5/12/92	0.50	0.50 U	1.00	5.00	U	V	183	252	183.0	15.0		V
03391	GW02092IT	12/5/91	7.50		7.50	5.00		V	1150		1150.0	15.0		V
03391	GW02547IT	3/13/92	0.50		1.00	5.00	U	V	46		45.5	15.0		V
03391	GW03006IT	6/2/92	6.10		6.10	5.00		V	755		755.0	15.0		V
03391	GW03123IT	7/9/92	1.50		3.00	5.00	U	V	277		277.0	15.0		V
03391	GW03896IT	10/16/92	1.90	3.50	1.90	0.80		JA	306	507	306.0	2.1		V
03591	GW02161IT	12/19/91	1.55		3.10	5.00	U	JA	982		982.0	15.0		V
03591	GW02883IT	6/4/92	1.70		1.70	5.00	B	V	260		260.0	15.0		V
03591	GW03387IT	8/13/92	1.20	1.48	1.20	0.60		JA	554	599	554.0	1.4		V
03691	GW03048IT	6/8/92	8.70		8.70	5.00		JA	1590		1590.0	15.0		V
03691	GW03124IT	7/8/92	1.50		3.00	5.00	U	V	372		372.0	15.0		V
03691	GW03897IT	10/21/92	19.00	9.73	19.00	0.80		V	3550	1837	3550.0	2.1		V
03791	GW02093IT	12/6/91	6.60		6.60	5.00		V	1620		1620.0	15.0		V
03791	GW02557IT	3/19/92	12.50		12.50	5.00		V	2660		2660.0	15.0		V
03791	GW03007IT	6/10/92	1.40		1.40	0.60		JA	354		354.0	1.5		V
03791	GW03125IT	7/10/92	1.50		3.00	5.00	U	V	92		91.8	15.0		V
03791	GW03898IT	10/16/92	1.50	4.70	1.50	0.80		JA	116	968	116.0	2.1		V
03991	GW03010IT	6/23/92	73.00		73.00	5.00		V	11600		11600.0	15.0		V
03991	GW03126IT	7/8/92	19.90		19.90	5.00		V	2790		2790.0	15.0		V
03991	GW03899IT	10/21/92	108.00	66.97	108.00	4.00		V	20200	11530	20200.0	10.5		V
04191	GW02923IT	5/19/92	1.10	1.10	1.10	5.00	B	V	543	543	543.0	15.0		V
04291	GW02924IT	5/19/92	0.50	0.50 U	1.00	5.00	U	V	65	65	65.4	15.0		V
04591	GW02175IT	12/20/91	1.30		2.60	5.00	U	JA	478		478.0	15.0		V
04591	GW02525IT	3/3/92	0.50		1.00	5.00	U	V	266		266.0	15.0	*	JA
04591	GW02931IT	5/22/92	1.80		1.80	5.00	B	V	195		195.0	15.0		V
04591	GW03450IT	8/31/92	0.60		0.60	0.60		JA	113		113.0	1.4		V
04591	GW03882IT	12/8/92	0.50	0.94	1.00	1.00	U	V	117	234	117.0	1.0		V
04991	GW02939IT	5/21/92	1.90		1.90	5.00	B	V	314		314.0	15.0		V
04991	GW03236IT	7/27/92	3.10	2.50	3.10	5.00	B	V	204	259	204.0	15.0		V
05091	GW02177IT	12/23/91	0.65		1.30	5.00	U	JA	300		300.0	15.0		V
05091	GW02619IT	3/26/92	0.50		1.00	5.00	U	V	136		136.0	15.0		V
05091	GW02940IT	5/20/92	1.10		1.10	5.00	B	V	89		88.8	15.0		V
05091	GW03237IT	7/28/92	1.50		3.00	5.00	U	V	191		191.0	15.0		V
05091	GW03726IT	10/28/92	1.70	1.09	1.70	5.00	B	V	257	195	257.0	15.0		V
05191	GW02160IT	12/17/91	11.00		11.00	5.00		V	2230		2230.0	15.0		V
05191	GW02571IT	3/5/92	0.50		1.00	5.00	U	V	86		85.9	15.0		V
05191	GW02941IT	5/21/92	1.80		1.80	5.00	B	V	398		398.0	15.0		V
05191	GW03238IT	7/24/92	1.50		3.00	5.00	U	V	767		767.0	15.0		V
05191	GW03727IT	10/28/92	4.40	3.84	4.40	5.00	B	V	869	870	869.0	15.0		V
05391	GW02084IT	12/5/91	0.50		1.00	5.00	U	V	144		144.0	15.0		V
05391	GW02566IT	3/5/92	0.50		1.00	5.00	U	V	244		244.0	15.0		V
05391	GW02884IT	6/11/92	1.60		1.60	0.60		JA	233		233.0	1.5		V
05391	GW03388IT	9/10/92	0.30		0.60	0.60	U	V	195		195.0	1.4		V
05391	GW03917IT	10/28/92	0.50	0.68	1.00	5.00	U	V	59	175	59.0	15.0		V
05691	GW02061IT	12/4/91	14.40		14.40	5.00		V	3850		3850.0	15.0		V
05691	GW02549IT	3/12/92	2.50		2.50	5.00	B	V	446		446.0	15.0		V
05691	GW02885IT	5/28/92	0.50		1.00	5.00	U	JA	690		690.0	15.0		V
05691	GW03389IT	8/21/92	8.90		8.90	0.60		V	2510		2510.0	1.4		V
05691	GW03918IT	11/9/92	45.70	14.40	45.70	5.00		V	10400	3579	10400.0	15.0		V
06091	GW02062IT	12/4/91	4.90		4.90	5.00	B	V	1290		1290.0	15.0		V

ATTACHMENT H1
TABLE 19
95% UCL CONCENTRATION
AOC NO. 1
GROUNDWATER METALS

			BERYLLIUM (ug/L)					Valid.	MANGANESE (ug/L)					Valid.
Location	Field ID	Sample Date	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual
06091	GW02576IT	3/12/92	2.70		2.70	5.00	B	V	667		667.0	15.0		V
06091	GW03014IT	6/11/92	2.30		2.30	0.60		JA	574		574.0	1.5		V
06091	GW03318IT	8/6/92	3.00		3.00	0.60		JA	1040		1040.0	1.4		V
06091	GW03903IT	10/19/92	0.80	2.74	0.80	0.80		JA	214	757	214.0	2.1		V
06591	GW02895IT	5/19/92	0.50		1.00	5.00	U	V	330		330.0	15.0		V
06591	GW03427IT	8/27/92	3.80		3.80	0.60		JA	888		888.0	1.4		V
06591	GW03847IT	11/17/92	0.90	1.73	1.80	5.00	U	V	352	523	352.0	15.0		V
06691	GW02896IT	5/18/92	1.10	1.10	1.10	5.00	B	V	1260	1260	1260.0	15.0		V
06791	GW02897IT	5/20/92	1.00	1.00	1.00	5.00	B	V	857	857	857.0	15.0		V
06891	GW02898IT	5/20/92	0.50		1.00	5.00	U	V	134		134.0	15.0		V
06891	GW03429IT	8/26/92	0.30		0.60	0.60	U	JA	113		113.0	1.4		V
06891	GW03851IT	11/18/92	0.50	0.43 U	1.00	5.00	U	V	60	102	59.5	15.0		V
06991	GW02899IT	5/18/92	34.00		34.00	5.00		V	4870		4870.0	15.0		V
06991	GW03430IT	8/26/92	2.00		2.00	0.60		JA	502		502.0	1.4		V
06991	GW03850IT	11/18/92	5.20	13.73	5.20	5.00		V	771	2048	771.0	15.0		V
07191	GW02900IT	5/18/92	5.20		5.20	5.00		V	1860		1860.0	15.0		V
07191	GW03455IT	8/27/92	5.50	5.35	5.50	0.60		JA	2660	2260	2660.0	1.4		V
07391	GW02599IT	3/16/92							617		617.0	15.0	E	V
07391	GW02902IT	5/21/92	1.90		1.90	5.00	B	V	477		477.0	15.0		V
07391	GW03457IT	8/28/92	0.30		0.60	0.60	U	V	339		339.0	1.4		V
07391	GW03862IT	11/16/92	0.70	0.97	1.40	5.00	U	JA	325	440	325.0	15.0		V
07891	GW02434IT	3/12/92	0.50		1.00	5.00	U	V	668		668.0	15.0		V
07891	GW02855IT	5/7/92	0.75		1.50	5.00	U	JA	996		996.0	15.0		V
07891	GW03353IT	8/20/92	1.40		1.40	0.60		JA	554		554.0	1.4		V
07891	GW03909IT	10/23/92	1.40	1.01	1.40	0.80		JA	242	615	242.0	2.1		V
07991	GW02925IT	5/20/92	1.00		1.00	5.00	B	V	955		955.0	15.0		V
07991	GW03322IT	8/26/92	0.30	0.65	0.60	0.60	U	JA	486	721	486.0	1.4		V
08891	GW03065IT	6/23/92	2.20		2.20	5.00	B	V	317		317.0	15.0		V
08891	GW03431IT	8/31/92	2.10		2.10	0.60		JA	242		242.0	1.4		V
08891	GW03849IT	11/17/92	0.50	1.60	1.00	5.00	U	V	320	293	320.0	15.0		V
09091	GW02903IT	5/20/92	35.80		35.80	5.00		V	5030		5030.0	15.0		V
09091	GW03432IT	8/31/92	5.60		5.60	0.60		JA	1070		1070.0	1.4		V
09091	GW03852IT	11/18/92	0.50	13.97	1.00	5.00	U	V	87	2062	87.4	15.0		V
09691	GW02608IT	3/18/92	0.50		1.00	5.00	U	V	241		241.0	15.0	E	V
09691	GW02904IT	5/22/92	1.90		1.90	5.00	B	V	195		195.0	15.0		V
09691	GW03458IT	8/31/92	0.30		0.60	0.60	U	V	89		89.3	1.4		V
09691	GW03865IT	11/17/92	0.55	0.81	1.10	5.00	U	V	221	187	221.0	15.0		V
0987	GW01667IT	8/16/91	1.40		1.40	5.00	B	JA	479		479.0	15.0		V
0987	GW02088IT	12/16/91	0.50		1.00	5.00	U	JA	128		128.0	15.0		V
0987	GW02402IT	3/6/92	0.50		1.00	5.00	U	V	76		76.1	15.0		V
0987	GW02942IT	5/26/92	1.70		1.70	5.00	B	V	293		293.0	15.0		V
0987	GW03179IT	7/16/92	1.50		3.00	5.00	U	V	205		205.0	15.0		V
0987	GW03708IT	12/10/92	0.50	1.02	1.00	5.00	U	V	105	214	105.0	15.0		V
10991	GW02436IT	2/6/92	13.80		13.80	5.00		V	1870		1870.0	15.0		V
10991	GW02943IT	5/22/92	11.90		11.90	5.00		V	1670		1670.0	15.0		V
10991	GW03289IT	7/28/92	1.50		3.00	5.00	U	V	207		207.0	15.0		V
10991	GW03728IT	10/23/92	1.40	7.15	1.40	0.80		JA	116	966	116.0	2.1		V
11491	GW02886IT	5/28/92	0.55	0.55	1.10	5.00	U	JA	274	274	274.0	15.0		V
11691	GW03011IT	6/8/92	1.70		1.70	5.00	B	V	106		106.0	15.0		V
11691	GW03127IT	7/10/92	1.50	1.60	3.00	5.00	U	V	132	119	132.0	15.0		V
11791	GW02432IT	2/6/92	3.90		3.90	5.00	B	V	1150		1150.0	15.0		V
11791	GW02917IT	5/20/92	1.00		1.00	5.00	B	V	679		679.0	15.0		V
11791	GW03465IT	9/8/92	2.40		2.40	0.60		JA	285		285.0	1.4		V
11791	GW03890IT	11/11/92	0.50		1.00	5.00	U	V	184		184.0	15.0		V
11791	GW03891IT	11/12/92	0.50	1.66	1.00	5.00	U	V	2	460	4.6	15.0	U	JA
1187	GW01648IT	9/6/91	1.00		2.00	5.00	U	V	66		65.7	15.0		V

ATTACHMENT H1
TABLE 19
95% UCL CONCENTRATION
AOC NO. 1
GROUNDWATER METALS

			BERYLLIUM (ug/L)					Valid.	MANGANESE (ug/L)					Valid.
Location	Field ID	Sample Date	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual
1187	GW02004IT	11/21/91	0.50		1.00	5.00	U	V	29		29.2	15.0		V
1187	GW03460IT	9/1/92	0.50	0.67 U	1.00	5.00	U	V	44	46	44.1	15.0		V
11891	GW02117IT	12/19/91	18.70		18.70	5.00		V	4050		4050.0	15.0		V
11891	GW02552IT	2/28/92	3.80		3.80	5.00	B	V	1040		1040.0	15.0	*	JA
11891	GW03012IT	6/2/92	2.20		2.20	5.00	B	V	706		706.0	15.0		V
11891	GW03128IT	7/9/92	1.50		3.00	5.00	U	V	801		801.0	15.0		V
11891	GW03901IT	10/16/92	2.60	5.76	2.60	0.80		JA	717	1463	717.0	2.1		V
12091	GW02116IT	12/19/91	0.95		1.90	5.00	U	JA	530		530.0	15.0		V
12091	GW02514IT	2/27/92	0.50		1.00	5.00	U	V	244		244.0	15.0		V
12091	GW02876IT	5/13/92	1.20		1.20	5.00	B	V	408		408.0	15.0		V
12091	GW03290IT	7/29/92	3.10		3.10	5.00	B	V	245		245.0	15.0		V
12091	GW03822IT	11/10/92	0.70	1.29	1.40	5.00	U	JA	165	318	165.0	15.0		V
12191	GW02440IT	3/16/92	8.10		8.10	5.00		JA	1500		1500.0	15.0	E	V
12191	GW02862IT	6/3/92	1.40		1.40	5.00	B	V	608		608.0	15.0		V
12191	GW03410IT	8/19/92	1.60		1.60	0.60		JA	664		664.0	1.4		V
12191	GW03910IT	10/21/92	114.00	31.28	114.00	4.00		V	24000	6693	24000.0	10.5		V
12291	GW02607IT	3/17/92	0.50		1.00	5.00	U	V	295		295.0	15.0		V
12291	GW02859IT	5/29/92	0.55	0.53 U	1.10	5.00	U	JA	65	180	65.3	15.0		V
12391	GW02438IT	2/12/92	7.00		7.00	5.00		V	1900		1900.0	15.0		V
12391	GW02887IT	5/14/92	1.20		1.20	5.00	B	V	694		694.0	15.0		V
12391	GW03421IT	9/15/92	0.90		0.90	0.80		JA	556		556.0	2.1		V
12391	GW03919IT	12/3/92	0.50	2.40	1.00	5.00	U	V	388	885	.388.0	15.0		V
12491	GW02435IT	2/7/92	25.90		25.90	5.00		V	6390		6390.0	15.0		V
12491	GW02888IT	5/14/92	1.00		1.00	5.00	B	V	379		379.0	15.0		V
12491	GW03422IT	9/14/92	6.30		6.30	0.60		JA	1070		1070.0	1.4		V
12491	GW03922IT	10/22/92	13.40	11.65	13.40	0.80		V	2350	2547	2350.0	2.1		V
12691	GW02437IT	2/13/92	3.00		3.00	5.00	B	V	601		601.0	15.0	E	JA
12691	GW02889IT	5/29/92	0.55		1.10	5.00	U	JA	110		110.0	15.0		V
12691	GW03423IT	9/10/92	0.30		0.60	0.60	U	V	39		38.6	1.4		V
12691	GW03923IT	10/23/92	0.40	1.06	0.80	0.80	U	V	48	199	48.1	2.1		V
1287	GW01647IT	9/9/91	1.00		2.00	5.00	U	V	33		33.2	15.0		JA
1287	GW02921IT	5/18/92	0.50	0.75 U	1.00	5.00	U	V	35	34	35.0	15.0		V
12991	GW02601IT	3/17/92	0.50		1.00	5.00	U	V	311		311.0	15.0		V
12991	GW02911IT	5/22/92	1.80		1.80	5.00	B	V	349		349.0	15.0		V
12991	GW03437IT	8/28/92							448		448.0	2.8		V
12991	GW03867IT	11/30/92	3.10	1.80	3.10	1.00		V	486	399	486.0	1.0		V
13091	GW02912IT	5/22/92	0.50		1.00	5.00	U	V	1820		1820.0	15.0		V
13091	GW03440IT	9/9/92	0.30	0.40 U	0.60	0.60	U	V	1360	1590	1360.0	1.4		V
13191	GW02905IT	5/19/92	0.50		1.00	5.00	U	V	1010		1010.0	15.0		V
13191	GW03433IT	9/2/92	0.30		0.60	0.60	U	V	397		397.0	1.4		V
13191	GW03855IT	11/17/92	0.50	0.43 U	1.00	5.00	U	V	296	568	296.0	15.0		V
13391	GW03016IT	6/8/92	1.50		1.50	5.00	B	V	811		811.0	15.0		V
13391	GW03354IT	8/20/92	2.80		2.80	0.60		JA	747		747.0	1.4		V
13391	GW03906IT	10/20/92	0.40	1.57	0.80	0.80	U	V	307	622	307.0	2.1		V
13491	GW03063IT	6/24/92	8.40		8.40	5.00		JA	2670		2670.0	15.0		V
13491	GW03411IT	8/21/92	3.10		3.10	0.60		JA	2150		2150.0	1.4		V
13491	GW03928IT	10/22/92	31.00	14.17	31.00	0.80		V	8530	4450	8530.0	2.1		V
1487	GW01646IT	9/5/91	1.00		2.00	5.00	U	V	7		6.6	15.0	B	JA
1487	GW02003IT	11/21/91	0.50		1.00	5.00	U		4		4.4	15.0	B	
1487	GW02388IT	2/21/92	0.50		1.00	5.00	U	V	8		8.4	15.0	B	V
1487	GW02922IT	5/20/92	0.50		1.00	5.00	U	V	5		5.1	15.0	B	V
1487	GW03461IT	8/31/92	0.50	0.60 U	1.00	5.00	U	V	2	5	3.1	15.0	U	JA
1587	GW01650IT	9/4/91	2.10		2.10	5.00	B	V	278		278.0	15.0		V
1587	GW02005IT	12/18/91	0.50		1.00	5.00	U	V	79		78.8	15.0		V
1587	GW02422IT	2/25/92	0.50		1.00	5.00	U	V	201		201.0	15.0		V
1587	GW02914IT	6/23/92	1.90		1.90	5.00	B	V	502		502.0	15.0		V

ATTACHMENT H1
TABLE 19
95% UCL CONCENTRATION
AOC NO. 1
GROUNDWATER METALS

			BERYLLIUM (ug/L)					Valid.	MANGANESE (ug/L)					Valid.
Location	Field ID	Sample Date	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual
1587	GW03442IT	9/1/92	0.95	1.19	1.90	5.00	U	V	201	252	201.0	15.0		V
1787	GW01687IT	8/19/91	0.50		1.00	5.00	U	V	100		99.5	15.0		V
1787	GW02031IT	11/18/91	1.20		1.20	5.00	B	V	353		353.0	15.0		V
1787	GW02424IT	2/24/92	0.50		1.00	5.00	U	V	74		74.4	15.0		V
1787	GW02844IT	4/30/92	0.50		1.00	5.00	U	V	221		221.0	15.0		V
1787	GW03281IT	7/29/92	1.50		3.00	5.00	U	V	71		71.1	15.0		V
1787	GW03823IT	11/10/92	0.50	0.78	1.00	5.00	U	V	104	154	104.0	15.0		V
2387	GW01669IT	8/19/91	0.50		1.00	5.00	U	V	55		55.4	15.0		V
2387	GW02032IT	11/23/91	1.10		1.10	5.00	B	V	290		290.0	15.0		V
2387	GW02405IT	2/28/92	0.50		1.00	5.00	U	V	115		115.0	15.0	*	JA
2387	GW02845IT	5/28/92	0.55		1.10	5.00	U	JA	79		78.6	15.0		V
2387	GW03256IT	7/30/92	1.50		3.00	5.00	U	V	50		49.7	15.0		V
2387	GW03816IT	11/6/92	0.50	0.78	1.00	5.00	U	V	215	134	215.0	15.0		V
2587	GW01685IT	9/10/91	1.00		2.00	5.00	U	V	118		118.0	15.0		V
2587	GW02039IT	11/18/91	0.50		1.00	5.00	U	V	110		110.0	15.0		V
2587	GW02406IT	3/3/92	0.50		1.00	5.00	U	V	38		37.8	15.0	*	JA
2587	GW02865IT	5/15/92	0.50		1.00	5.00	U	V	38		38.4	15.0		V
2587	GW03348IT	9/22/92	0.50		1.00	5.00	U	V	54		54.3	15.0		V
2587	GW03912IT	10/27/92	0.50	0.58 U	1.00	5.00	U	V	4	60	7.8	15.0	U	JA
2987	GW01703IT	8/21/91	0.50		1.00	5.00	U	V	199		199.0	15.0		V
2987	GW02080IT	12/7/91	0.50		1.00	5.00	U	V	112		112.0	15.0		V
2987	GW02412IT	2/12/92	0.50		1.00	5.00	U	V	118		118.0	15.0		V
2987	GW03058IT	6/9/92	1.00		2.00	5.00	U	JA	124		124.0	15.0		V
2987	GW03292IT	7/31/92	0.55		1.10	5.00	U.0B	V	191		191.0	15.0		V
2987	GW03730IT	10/27/92	0.55	0.60 U	1.10	5.00	U	V	221	161	221.0	15.0		V
3287	GW01642IT	9/4/91	3.70		3.70	5.00	B	V	283		283.0	15.0		V
3287	GW02012IT	11/22/91	1.60		1.60	5.00	B	V	155		155.0	15.0		V
3287	GW02429IT	2/25/92	0.50		1.00	5.00	U	V	229		229.0	15.0		V
3287	GW02936IT	5/18/92	0.50		1.00	5.00	U	V	228		228.0	15.0		V
3287	GW03447IT	9/9/92	0.95		1.90	5.00	U	V	197		197.0	15.0		V
3287	GW03880IT	11/30/92	2.10	1.56	2.10	1.00		V	284	229	284.0	1.0		V
34791	GW02157IT	12/17/91	1.10		1.10	5.00	B	V	702		702.0	15.0		V
34791	GW02447IT	2/10/92	0.50		1.00	5.00	U	V	674		674.0	15.0		V
34791	GW02908IT	5/20/92	0.50		1.00	5.00	U	V	390		390.0	15.0		V
34791	GW03459IT	9/2/92	0.30		0.60	0.60	U	V	240		240.0	1.4		V
34791	GW03863IT	11/16/92	0.50	0.58	1.00	5.00	U	V	271	455	271.0	15.0		V
3586	GW01818IT	10/8/91	0.50		1.00	5.00	U	V	913		913.0	15.0		V
3586	GW02195IT	1/10/92	0.50		1.00	5.00	U	V	3540		3540.0	15.0		V
3586	GW02631IT	4/7/92	0.50		1.00	5.00	U	V	3280		3280.0	15.0		V
3586	GW03217IT	8/5/92	0.50		1.00	5.00	U	V	4170		4170.0	15.0		V
3586	GW03828IT	12/10/92	0.50	0.50 U	1.00	5.00	U	V	3740	3129	3740.0	15.0		V
3687	GW01674IT	8/23/91	0.50		1.00	5.00	U	V	46		46.1	15.0		V
3687	GW02036IT	11/25/91	0.50		1.00	5.00	U	V	27		27.2	15.0		V
3687	GW02414IT	3/5/92	0.50		1.00	5.00	U	V	24		23.9	15.0		V
3687	GW02852IT	5/15/92	0.50		1.00	5.00	U	V	9		9.4	15.0	B	V
3687	GW03384IT	8/17/92	0.50		1.00	5.00	U	V	80		80.0	15.0		V
3687	GW03924IT	10/27/92	0.50	0.50 U	1.00	5.00	U	V	106	49	106.0	15.0		V
4286	GW01706IT	9/11/91	3.50		3.50	5.00	B	V	628		628.0	15.0		V
4286	GW02044IT	12/4/91	0.50		1.00	5.00	U	V	156		156.0	15.0		V
4286	GW02398IT	2/10/92	2.60		2.60	5.00	B	V	1090		1090.0	15.0		V
4286	GW02846IT	5/29/92	0.50		1.00	5.00	U	JA	187		187.0	15.0		V
4286	GW03385IT	8/17/92	0.80		1.60	5.00	U	V	330		330.0	15.0		V
4286	GW03925IT	11/30/92	0.50	1.40	1.00	1.00	U	V	147	423	147.0	1.0		V
6286	GW01708IT	8/22/91	0.50		1.00	5.00	U	V	52		52.1	15.0		V
6286	GW02046IT	11/25/91	0.50		1.00	5.00	U	V	25		25.0	15.0		V
6286	GW02378IT	2/11/92	0.50		1.00	5.00	U	V	14		14.2	15.0	B	V

ATTACHMENT H1
TABLE 19
95% UCL CONCENTRATION
AOC NO. 1
GROUNDWATER METALS

			BERYLLIUM (ug/L)						Valid.	MANGANESE (ug/L)						Valid.
Location	Field ID	Sample Date	Result	Well Ave		SQL	CDRL	Qual	Qual	Result	Well Ave		SQL	CDRL	Qual	Qual
6286	GW03056IT	6/11/92	0.30			0.60	0.60	U	V	55			54.6	1.5		V
6286	GW03294IT	7/31/92	1.50			3.00	5.00	U	V	23			22.8	15.0		V
6286	GW03885IT	11/9/92	0.50	0.63	U	1.00	5.00	U	V	4	29		8.2	15.0	U	JA
6586	GW01671IT	8/16/91	0.50			1.00	5.00	U	V	251			251.0	15.0		V
6586	GW02050IT	12/6/91	0.50			1.00	5.00	U	V	138			138.0	15.0		V
6586	GW02326IT	1/23/92	0.50			1.00	5.00	U		122			122.0	15.0		
6586	GW02840IT	4/30/92	0.50			1.00	5.00	U	V	41			40.7	15.0		V
6586	GW03308IT	8/6/92	0.50			1.00	5.00	U	V	58			58.3	15.0		JA
6586	GW03947IT	12/14/92	0.50	0.50	U	1.00	1.00	U	V	22	105		21.9	1.0		V
B218789	GW01673IT	20-Aug-91	0.50			1.00	5.00	U	V	10			10.2	15.0	B	V
B218789	GW02034IT	19-Nov-91	1.20			1.20	5.00	B		346			346.0	15.0		
B218789	GW02419IT	18-Feb-92	0.50			1.00	5.00	U	V	239			239.0	15.0		V
B218789	GW02866IT	8-May-92	0.50			1.00	5.00	U	V	25			24.5	15.0		V
B218789	GW03349IT	21-Aug-92								96			96.0	1.4		V
B218789	GW03913IT	27-Oct-92	0.50	0.64		1.00	5.00	U	V	67	130		67.2	15.0		V
Number of Samples			291							295						
Number of Detects			126							291						
Minimum Detected			0.60							4						
Maximum Detected			114.00							24000						
Average			3.65							890						
Number of wells sampled				75							75					
Number of wells with detects				57							75					
Minimum well average				0.40							5.21					
Maximum well average				66.97							11530					
Average				3.87							965.56					
Standard Deviation				8.83							1663					
t-value				1.645							1.645					
95% UCL (1)				5.55							1281					
Mean of Ln(x)				0.7153							5.98					
S.D. of ln(x)				1.3984							1.57					
H(0.95,n)				2.65808							2.85					
95% UCL based on Lognormal				8.37							2,264.9					

ATTACHMENT H1
TABLE 20
95% UCL CONCENTRATION
AOC NO. 1
GROUNDWATER RADIONUCLIDES

			AMERICIUM-241 (pCi/L)					Valid.	PLUTONIUM-239,240 (pCi/L)					Valid.
Location	Field ID	Sample Date	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual
00191	GW02596IT	3/16/92	0.006		0.006	0.000	J	A	0.025		0.025	0.000		A
00191	GW02909IT	5/21/92							0.051		0.051	0.003		V
00191	GW03435IT	9/1/92	0.009		0.009	0.000	J	A	0.035		0.035	0.000		A
00191	GW03861IT	11/18/92	0.063	0.026	0.063	0.009	F	A	1.300	0.353	1.300	0.020		A
00291	GW02581IT	3/11/92	0.052		0.052	0.000		A	0.248		0.248	0.000		A
00291	GW02910IT	5/21/92	0.046		0.046	0.000		A	0.196		0.196	0.000		A
00291	GW03436IT	9/8/92	-0.002		-0.002	0.008	J	A						
00291	GW03868IT	11/30/92	0.042	0.034	0.042	0.010	F	A	0.420	0.288	0.420	0.018		A
00391	GW02158IT	12/17/91	0.012		0.012	0.000		A	0.098		0.098	0.000		A
00391	GW02526IT	2/28/92	0.008		0.008	0.000	J	A	0.017		0.017	0.006		A
00391	GW02915IT	5/21/92	0.008		0.008	0.000	J	A	0.038		0.038	0.007		A
00391	GW03453IT	9/8/92	0.002		0.002	0.000	J	A						
00391	GW03888IT	11/11/92	0.005	0.007	0.005	0.003		A	0.049	0.050	0.049	0.010		A
00491	GW02159IT	12/18/91	0.010		0.010	0.000	J	V	0.026		0.026	0.006		V
00491	GW02527IT	2/28/92	0.005		0.005	0.000	J	A	0.007		0.007	0.000	J	A
00491	GW02916IT	5/20/92	0.007	0.007	0.007	0.000	J	A	0.041	0.025	0.041	0.008		A
01491	GW02597IT	3/18/92	0.102		0.102	0.010	X	A	0.019		0.019	0.010	X	A
01491	GW02858IT	5/15/92	0.067		0.067	0.010	X	A	0.048		0.048	0.010	X	A
01491	GW03260IT	7/30/92							0.001		0.001	0.007	U	A
01491	GW03814IT	11/19/92	0.230	0.070	0.230	0.006	F	A	0.006	0.021	0.011	0.012	U	A
01791	GW02173IT	12/19/91	0.007		0.007	0.000		A	0.005		0.005	0.005		A
01791	GW02598IT	3/17/92	0.019		0.019	0.000		A	0.003		0.003	0.006	J	A
01791	GW02871IT	5/14/92	0.002		0.002	0.004	J	A	0.001		0.001	0.007	J	A
01791	GW03283IT	8/3/92	0.003		0.005	0.010	U	V	0.014		0.014	0.010		A
01791	GW03817IT	11/5/92	0.015	0.009	0.015	0.005		A	0.016	0.008	0.016	0.015		A
01891	GW02178IT	12/23/91	0.002		0.002	0.000	J	A	0.004		0.004	0.000	J	V
01891	GW02509IT	2/27/92	0.006		0.006	0.000	J	A	0.002		0.002	0.005	J	V
01891	GW02872IT	5/13/92	0.001		0.001	0.000	J	A	0.003		0.003	0.000	J	A
01891	GW03284IT	7/29/92	0.021	0.008	0.021	0.004	B	A	0.057	0.016	0.057	0.051	B	A
01991	GW02853IT	6/4/92	0.012		0.012	0.000		A	0.015		0.015	0.000		A
01991	GW03350IT	9/14/92	0.012		0.012	0.000		A	0.028		0.028	0.000		A
01991	GW03907IT	10/23/92	0.006	0.010	0.006	0.000	J	A		0.022				
02091	GW02138IT	12/14/91	0.041		0.041	0.000		A	0.004		0.004	0.000	J	A
02091	GW02510IT	2/26/92	0.016		0.016	0.000		A	0.006		0.006	0.000	J	A
02091	GW02873IT	5/15/92	0.005		0.005	0.000	J	A	0.003		0.003	0.000	J	A
02091	GW03285IT	7/31/92							0.007		0.014	0.018	U	V
02091	GW03819IT	11/6/92	0.005	0.017	0.005	0.003		A	0.004	0.005	0.004	0.003		A
02291	GW02113IT	12/16/91	0.026		0.026	0.000		A	0.014		0.014	0.000		A
02291	GW02511IT	2/26/92	0.020		0.020	0.009		A	0.002		0.002	0.007	J	V
02291	GW02874IT	5/14/92	0.001		0.001	0.004	J	A	0.002		0.002	0.000	J	A
02291	GW03286IT	7/31/92	0.009		0.009	0.005	BJ	A	0.120		0.120	0.027	B	A
02291	GW03820IT	10/29/92	0.000	0.011	0.000	0.000	J	A	0.005	0.029	0.005	0.000	J	A
02491	GW02114IT	12/16/91	0.002		0.002	0.000	J	A	0.001		0.001	0.000	J	A
02491	GW02572IT	3/11/92	0.004		0.004	0.000	J	A	0.003		0.003	0.000	J	A
02491	GW02875IT	5/15/92	0.002		0.002	0.000	J	A	0.001		0.001	0.000	J	A
02491	GW03287IT	7/31/92	0.004	0.003	0.007	0.008	U	A	0.030	0.009	0.030	0.006	B	A
02591	GW03015IT	6/9/92	0.005		0.005	0.003	BJ	A	0.024		0.024	0.003		V
02591	GW03314IT	8/11/92	0.001		0.002	0.006	U	V	0.001		0.002	0.005	U	V
02591	GW03904IT	10/20/92	0.007	0.004	0.007	0.004		A	0.010	0.012	0.010	0.004		A
02991	GW02441IT	3/12/92	0.038		0.038	0.000		A	0.305		0.305	0.000		A
02991	GW02854IT	5/8/92	0.005		0.005	0.000	J	A	0.022		0.022	0.007		A
02991	GW03351IT	8/21/92	0.120		0.120	0.010		V	0.800		0.800	0.006		V
02991	GW03908IT	10/20/92	0.007	0.042	0.007	0.000	J	A	0.007	0.284	0.007	0.000	J	A

ATTACHMENT H1
TABLE 20
95% UCL CONCENTRATION
AOC NO. 1
GROUNDWATER RADIONUCLIDES

			AMERICIUM-241 (pCi/L)					Valid.	PLUTONIUM-239,240 (pCi/L)					Valid.
Location	Field ID	Sample Date	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual
03091	GW02134IT	12/14/91	0.014		0.014	0.000		A	0.029		0.029	0.007		A
03091	GW02568IT	3/5/92	0.000		0.000	0.000	J	A	0.008		0.008	0.005	J	A
03091	GW02881IT	5/12/92	0.006		0.006	0.008	J	A	0.009		0.009	0.000	J	A
03091	GW03409IT	8/19/92	0.008		0.008	0.007	J	V	0.022		0.022	0.010		V
03091	GW03914IT	10/22/92	0.021	0.010	0.021	0.000		A	0.011	0.016	0.011	0.017		A
03391	GW02092IT	12/5/91	0.011		0.011	0.000		A	0.023		0.023	0.000		A
03391	GW02547IT	3/13/92	0.003		0.003	0.000	J	A	0.002		0.002	0.006	J	A
03391	GW03006IT	6/2/92							0.066		0.066	0.008		V
03391	GW03123IT	7/9/92							0.003		0.003	0.000	J	V
03391	GW03896IT	10/16/92	0.011	0.009	0.011	0.005		A	0.020	0.023	0.020	0.008		A
03591	GW02161IT	12/19/91	0.007		0.007	0.000		A	0.006		0.006	0.000		V
03591	GW02883IT	6/4/92	0.004		0.004	0.000	J	A	0.008		0.008	0.000	J	V
03591	GW03387IT	8/13/92	0.003	0.004	0.005	0.010	U	V	0.011	0.008	0.011	0.006		V
03691	GW03048IT	6/8/92	0.008		0.008	0.000	J	V	0.013		0.013	0.010		V
03691	GW03124IT	7/8/92	0.022		0.022	0.008		A	0.002		0.002	0.000	J	V
03691	GW03897IT	10/21/92	0.015	0.015	0.015	0.000		A	0.002	0.006	0.002	0.000	J	A
03791	GW02093IT	12/6/91	0.016		0.016	0.000		A	0.029		0.029	0.007		A
03791	GW02557IT	3/19/92	0.023		0.023	0.010	X	A	0.164		0.164	0.010	X	A
03791	GW03125IT	7/10/92							0.000		0.000	0.000	J	V
03791	GW03898IT	10/16/92	0.016	0.018	0.016	0.008		A	0.045	0.059	0.045	0.012		A
03991	GW03126IT	7/8/92	0.000		0.000	0.000	J	A	0.009		0.009	0.000	J	V
03991	GW03899IT	10/21/92	0.020	0.010	0.020	0.000		A	0.004	0.006	0.004	0.000	J	A
04191	GW02923IT	5/19/92	0.010	0.010	0.010	0.000		A	0.005	0.005	0.005	0.000	J	A
04591	GW02175IT	12/20/91	0.006		0.006	0.000	J	A	0.030		0.030	0.000		V
04591	GW02525IT	3/3/92	0.003		0.003	0.000	J	A	0.007		0.007	0.005	J	A
04591	GW02931IT	5/22/92							0.012		0.012	0.001	B	V
04591	GW03450IT	8/31/92	0.006		0.006	0.000	J	A	0.073		0.073	0.000		A
04591	GW03882IT	12/8/92	0.004	0.005	0.004	0.003		A	0.002	0.025	0.004	0.006	U	A
04991	GW03236IT	7/27/92	0.009	0.009	0.009	0.000	J	A	0.001	0.001	0.001	0.000	J	A
05091	GW02177IT	12/23/91	0.005		0.005	0.005	J	A	0.038		0.038	0.000		V
05091	GW02619IT	3/26/92	0.005		0.005	0.000	J	A	0.000		0.000	0.002	J	A
05091	GW02940IT	5/20/92	0.001		0.001	0.000	J	A	0.030		0.030	0.005		A
05091	GW03237IT	7/28/92	0.004		0.004	0.006	J	A	0.006		0.006	0.008	J	V
05091	GW03726IT	10/28/92	0.005	0.004	0.005	0.000	J	A	0.008	0.016	0.008	0.000	J	A
05191	GW02160IT	12/17/91	0.033		0.033	0.000		A	0.170		0.170	0.000		V
05191	GW02571IT	3/5/92	0.024		0.024	0.000		A	0.054		0.054	0.005		A
05191	GW02941IT	5/21/92	0.001		0.002	0.003	U	A	0.013		0.013	0.005		A
05191	GW03238IT	7/24/92	0.015		0.015	0.000		A	0.003		0.003	0.000	J	V
05191	GW03727IT	10/28/92	0.014	0.017	0.014	0.010		A	0.009	0.050	0.009	0.005		A
05391	GW02084IT	12/5/91	0.001		0.001	0.000	J	A	0.000		0.000	0.000	J	A
05391	GW02566IT	3/5/92	0.011		0.011	0.000		A	0.004		0.004	0.000	J	A
05391	GW03388IT	9/10/92	0.004		0.004	0.000	J	A	0.006		0.006	0.000	J	A
05391	GW03917IT	10/28/92	0.007	0.006	0.007	0.000	J	A	0.000	0.003	0.000	0.000	J	A
05691	GW02061IT	12/4/91	0.011		0.011	0.000		A	0.003		0.003	0.005	J	A
05691	GW02549IT	3/12/92	0.023		0.023	0.000		A	0.006		0.006	0.000	J	A
05691	GW03389IT	8/21/92	0.002		0.003	0.010	U	V	0.015		0.015	0.007		V
05691	GW03918IT	11/9/92	0.012	0.012	0.012	0.010		A	0.013	0.009	0.026	0.023	U	A
06091	GW02062IT	12/4/91	0.004		0.004	0.000	J	A	0.005		0.005	0.000	J	A
06091	GW02576IT	3/12/92	0.011		0.011	0.000		A	0.001		0.001	0.000	J	A
06091	GW03318IT	8/6/92	0.003		0.005	0.007	U	V	0.017		0.017	0.006		A
06091	GW03903IT	10/19/92	0.250	0.067	0.250	0.030	Y	Z	0.013	0.009	0.013	0.003		A
06591	GW02895IT	5/19/92							2.100		2.100	0.007		V
06591	GW03427IT	8/27/92	0.064		0.064	0.000		A	2.315		2.315	0.000		A

ATTACHMENT H1
TABLE 20
95% UCL CONCENTRATION
AOC NO. 1
GROUNDWATER RADIONUCLIDES

			AMERICIUM-241 (pCi/L)					Valid.	PLUTONIUM-239,240 (pCi/L)					Valid.
Location	Field ID	Sample Date	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual
06591	GW03847IT	11/17/92	0.056	0.060	0.056	0.010	F	A	0.810	1.742	0.810	0.017		A
06691	GW02896IT	5/18/92	0.580	0.580	0.580	0.007		A	3.361	3.361	3.361	0.006		A
06791	GW02897IT	5/20/92	0.011	0.011	0.011	0.000		A	0.039	0.039	0.039	0.006		A
06891	GW02898IT	5/20/92							0.100		0.100	0.004		V
06891	GW03429IT	8/26/92	0.042	0.042	0.042	0.010		A	0.290	0.195	0.290	0.007		A
06991	GW02899IT	5/18/92	9.730		9.730	0.010	X	A	71.700		71.700	0.010	X	A
06991	GW03430IT	8/26/92	0.450		0.450	0.020		A	2.500		2.500	0.010		A
06991	GW03850IT	11/18/92	0.310	3.497	0.310	0.003	F	A	3.000	25.733	3.000	0.006		A
07191	GW02900IT	5/18/92	2.270	2.270	2.270	0.010	X	A	15.400	15.400	15.400	0.010	X	A
07391	GW02599IT	3/16/92	0.006		0.006	0.000	J	A	0.003		0.003	0.000	J	A
07391	GW02902IT	5/21/92	0.010		0.010	0.000	J	A	0.047		0.047	0.005		A
07391	GW03457IT	8/28/92	0.004		0.007	0.020	U	A	0.007		0.007	0.007	J	A
07391	GW03862IT	11/16/92	0.005	0.006	0.005	0.000	J	A		0.019				
07891	GW02434IT	3/12/92	0.020		0.020	0.000		A	0.001		0.001	0.000	J	A
07891	GW02855IT	5/7/92	0.015		0.015	0.000		A	0.004		0.004	0.006	J	A
07891	GW03353IT	8/20/92		0.017					0.002	0.002	0.003	0.005	U	V
07991	GW02925IT	5/20/92	0.021	0.021	0.021	0.010	X	A	0.061	0.061	0.061	0.010	X	A
08891	GW03431IT	8/31/92	0.226		0.226	0.000		A	1.685		1.685	0.000		A
08891	GW03849IT	11/17/92	0.048	0.137	0.048	0.003		A	0.290	0.988	0.290	0.015		A
09091	GW02903IT	5/20/92	46.540		46.540	0.010	X	A	354.600		354.600	0.010	X	A
09091	GW03432IT	8/31/92	30.030		30.030	0.000		A	139.100		139.100	0.373		A
09091	GW03852IT	11/18/92	18.000	31.523	18.000	0.087		A	180.000	224.567	180.000	0.162		A
09691	GW02608IT	3/18/92	0.022		0.022	0.000		A	0.175		0.175	0.004		A
09691	GW02904IT	5/22/92							0.320		0.320	0.005		V
09691	GW03458IT	8/31/92	0.035		0.035	0.000		A	0.265		0.265	0.008		A
09691	GW03865IT	11/17/92	0.018	0.025	0.018	0.000		A	0.209	0.242	0.209	0.000		A
0987	GW01297IT	5/15/91	0.001		0.001	0.006	J	A						
0987	GW01667IT	8/16/91							0.019		0.019	0.000		V
0987	GW02088IT	12/16/91	0.007		0.007	0.000	J	A	0.011		0.011	0.005		A
0987	GW02402IT	3/6/92	0.000		0.000	0.000	J	A	0.005		0.005	0.005	J	A
0987	GW02942IT	5/26/92							0.053		0.053	0.005		A
0987	GW03179IT	7/16/92	0.003		0.003	0.000	J	A	0.029		0.029	0.009		V
0987	GW03708IT	12/10/92	0.005	0.003	0.005	0.003		JA	0.017	0.023	0.017	0.004		JA
10991	GW02436IT	2/6/92	0.037		0.037	0.000		A	0.232		0.232	0.000		A
10991	GW02943IT	5/22/92							0.010		0.010	0.009		V
10991	GW03289IT	7/28/92	0.010		0.010	0.000		A	0.018		0.018	0.000		A
10991	GW03728IT	10/23/92	0.009	0.019	0.009	0.005		A	0.012	0.068	0.012	0.009		A
11491	GW02886IT	5/28/92	0.009	0.009	0.009	0.003	J	A	0.005	0.005	0.005	0.002	J	A
11691	GW03011IT	6/8/92	0.006		0.006	0.000	J	A	0.004		0.004	0.007	J	V
11691	GW03127IT	7/10/92		0.006					0.000	0.002	0.000	0.000	J	V
11791	GW02432IT	2/6/92	0.103		0.103	0.000		A	0.878		0.878	0.000		A
11791	GW02917IT	5/20/92	0.303		0.303	0.000		A	2.966		2.966	0.006		A
11791	GW03465IT	9/8/92	1.321		1.321	0.000		A	13.360		13.360	0.000		A
11791	GW03890IT	11/11/92	0.370		0.370	0.005		A	3.800		3.800	0.011		A
11791	GW03891IT	11/12/92	0.009	0.421	0.009	0.003		A	0.002	4.201	0.003	0.024	U	A
11891	GW02117IT	12/19/91	0.074		0.074	0.000		A	0.208		0.208	0.000		V
11891	GW02552IT	2/28/92	0.022		0.022	0.000		A	0.161		0.161	0.000		A
11891	GW03012IT	6/2/92	0.014		0.014	0.002		A	0.033		0.033	0.010		V
11891	GW03128IT	7/9/92							0.008		0.008	0.000	J	V
11891	GW03901IT	10/16/92	0.500	0.153	0.500	0.036	Y	Z	0.180	0.118	0.180	0.004		A
12091	GW02116IT	12/19/91	0.005		0.005	0.000		A	0.012		0.012	0.000		V
12091	GW02514IT	2/27/92	1.090		1.090	0.000		A	0.130		0.130	0.006		A
12091	GW02876IT	5/13/92	0.000		0.000	0.000	J	A	0.008		0.008	0.005	J	A

ATTACHMENT H1
TABLE 20
95% UCL CONCENTRATION
AOC NO. 1
GROUNDWATER RADIONUCLIDES

			AMERICIUM-241 (pCi/L)					Valid.	PLUTONIUM-239,240 (pCi/L)					Valid.
Location	Field ID	Sample Date	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual
12091	GW03290IT	7/29/92	0.027		0.027	0.008		A	0.000		0.000	0.004	U	A
12091	GW03822IT	11/10/92	0.009	0.226	0.009	0.009		A	0.009	0.032	0.009	0.006		A
12191	GW02440IT	3/16/92	0.010		0.010	0.000		A	0.001		0.001	0.008	J	A
12191	GW03410IT	8/19/92	0.003		0.005	0.010	U	V	0.032		0.032	0.007		V
12191	GW03910IT	10/21/92	0.023	0.012	0.023	0.000		A	0.015	0.016	0.015	0.000		A
12291	GW02607IT	3/17/92	0.006	0.006	0.006	0.000	J	A	-0.001	-0.001	-0.001	0.006	J	A
12391	GW02438IT	2/12/92	0.028		0.028	0.000		A	0.008		0.008	0.000	J	A
12391	GW02887IT	5/14/92	0.000		0.000	0.000	J	A	0.001		0.001	0.010	X	A
12391	GW03421IT	9/15/92	0.006		0.006	0.000	J	A	0.003		0.003	0.000	J	A
12391	GW03919IT	12/3/92	0.005	0.010	0.005	0.003		A	0.006	0.004	0.012	0.014	U	A
12491	GW02435IT	2/7/92	0.014		0.014	0.000		A	0.015		0.015	0.006		A
12491	GW02888IT	5/14/92	0.003		0.003	0.000	J	A	0.006		0.006	0.010	X	A
12491	GW03422IT	9/14/92	0.008		0.008	0.000	J	A	0.046		0.046	0.000		A
12491	GW03922IT	10/22/92	0.030	0.014	0.030	0.000		A	0.004	0.018	0.004	0.000	J	A
12691	GW02437IT	2/13/92	0.011		0.011	0.000		A	0.014		0.014	0.004		A
12691	GW02889IT	5/29/92	-0.001		-0.002	0.015	U	A	0.008		0.008	0.001	J	A
12691	GW03423IT	9/10/92	0.006		0.006	0.000	J	A	0.000		0.000	0.000	J	A
12691	GW03923IT	10/23/92	0.001	0.004	0.001	0.000	J	A		0.007				
1287	GW01647IT	9/9/91	0.074	0.074	0.074	0.000		A	0.003	0.003	0.003	0.000	J	V
12991	GW02601IT	3/17/92	0.008		0.008	0.000	J	A	0.001		0.001	0.000	J	A
12991	GW02911IT	5/22/92							0.009		0.009	0.006	J	V
12991	GW03437IT	8/28/92	0.003		0.003	0.000	J	A	0.025		0.025	0.008		A
12991	GW03867IT	11/30/92	0.001	0.004	0.002	0.003	UF	A	0.001	0.009	0.002	0.006	U	A
13091	GW02912IT	5/22/92							0.012	0.012	0.012	0.004		V
13191	GW02905IT	5/19/92	0.597		0.597	0.000		A	5.024		5.024	0.000		A
13191	GW03433IT	9/2/92	0.036		0.036	0.000		A	0.666		0.666	0.000		A
13191	GW03855IT	11/17/92	0.130	0.254	0.130	0.008		A	2.000	2.563	2.000	0.005		A
13391	GW03016IT	6/8/92	0.007		0.007	0.000	J	A	0.026		0.026	0.000		V
13391	GW03354IT	8/20/92	0.008		0.008	0.008	J	V	0.098		0.098	0.006		V
13391	GW03906IT	10/20/92	0.000	0.005	0.000	0.012	U	A	0.005	0.043	0.005	0.003		A
13491	GW03411IT	8/21/92	0.036		0.036	0.000		A	0.870		0.870	0.000		A
13491	GW03928IT	10/22/92	0.103	0.069	0.103	0.000		A	0.306	0.588	0.306	0.000		A
1487	GW01093IT	4/15/91	-0.043		-0.043	0.010	J		0.002		0.002	0.010	J	
1487	GW01646IT	9/5/91	0.003		0.003	0.000	J	V	0.001		0.001	0.004	J	V
1487	GW02003IT	11/21/91	0.005		0.005	0.000	J	A	0.000		0.000	0.000	J	A
1487	GW02388IT	2/21/92	0.001		0.001	0.000	J	A	0.005		0.005	0.006	J	A
1487	GW02922IT	5/20/92	0.004		0.004	0.000	J	A	0.011		0.011	0.005		A
1487	GW03461IT	8/31/92	0.000	-0.005	0.000	0.000	J	A	0.002	0.003	0.002	0.000	J	A
1587	GW01650IT	9/4/91	0.104		0.104	0.000		A	2.040		2.040	0.004		V
1587	GW02005IT	12/18/91	0.274		0.274	0.000		A	1.119		1.119	0.000		V
1587	GW02422IT	2/25/92	0.053		0.053	0.000		A	0.510		0.510	0.007		V
1587	GW02914IT	6/23/92	0.082		0.082	0.000		A	1.093		1.093	0.000		V
1587	GW03442IT	9/1/92	0.564	0.215	0.564	0.000		A		1.190				
1787	GW01280IT	5/13/91							0.102		0.102	0.005		V
1787	GW01687IT	8/19/91	0.005		0.005	0.000	J	V	0.004		0.004	0.000	J	V
1787	GW02031IT	11/18/91	0.013		0.013	0.000		A	0.040		0.040	0.000		A
1787	GW02424IT	2/24/92	0.000		0.000	0.000	J	A	0.019		0.019	0.005		A
1787	GW02844IT	4/30/92	0.011		0.011	0.000		A						
1787	GW03281IT	7/29/92	0.008		0.008	0.003	BJ	A	0.023		0.023	0.003	B	A
1787	GW03823IT	11/10/92	0.005	0.007	0.011	0.011	U	A	0.023	0.035	0.045	0.033	UY	A
2387	GW01126IT	4/19/91	0.010		0.010	0.010	J		0.002		0.002	0.010	J	
2387	GW01669IT	8/19/91	0.000		0.000	0.000	J	V	0.005		0.005	0.000	J	V
2387	GW02032IT	11/23/91	0.003		0.003	0.000	J	A	0.001		0.001	0.000	J	A

ATTACHMENT H1
TABLE 20
95% UCL CONCENTRATION
AOC NO. 1
GROUNDWATER RADIONUCLIDES

			AMERICIUM-241 (pCi/L)					Valid.	PLUTONIUM-239,240 (pCi/L)					Valid.
Location	Field ID	Sample Date	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual
2387	GW02405IT	2/28/92	0.004		0.004	0.000	J	A	0.011		0.011	0.000		A
2387	GW02845IT	5/28/92							0.001		0.002	0.004	U	A
2387	GW03256IT	7/30/92	0.003		0.005	0.006	U	A	0.018		0.018	0.003	B	A
2387	GW03816IT	11/6/92	0.008	0.004	0.008	0.003		A	0.005	0.006	0.010	0.014	U	A
2587	GW01176IT	4/22/91	0.013		0.013	0.010			0.018		0.018	0.010		
2587	GW01685IT	9/10/91	0.016		0.016	0.000		V	0.011		0.011	0.000		V
2587	GW02039IT	11/18/91	0.002		0.002	0.000	J	A	0.006		0.006	0.000	J	A
2587	GW02406IT	3/3/92	0.010		0.010	0.000		A	0.008		0.008	0.007	J	A
2587	GW02865IT	5/15/92	0.001		0.001	0.000	J	A	0.009		0.009	0.003	J	A
2587	GW03348IT	9/22/92	0.008		0.008	0.000	J	A						
2587	GW03912IT	10/27/92	0.003	0.008	0.006	0.007	U	A	0.023	0.013	0.023	0.005		A
2987	GW01271IT	5/10/91							0.003		0.003	0.000	J	V
2987	GW01703IT	8/21/91							-0.001		-0.001	0.000	J	V
2987	GW02080IT	12/7/91	0.008		0.008	0.000	J	A	0.006		0.006	0.000	J	A
2987	GW02412IT	2/12/92	0.004		0.004	0.000	J	A	0.002		0.002	0.000	J	A
2987	GW03058IT	6/9/92	0.002		0.004	0.005	U	A	0.001		0.002	0.005	U	V
2987	GW03292IT	7/31/92		0.004					0.003	0.003	0.003	0.002	J	V
3287	GW01157IT	4/16/91	0.000		0.000	0.010	J		0.005		0.005	0.010	J	
3287	GW01642IT	9/4/91	0.000		0.000	0.006	J	V	0.000		0.000	0.003	J	V
3287	GW02012IT	11/22/91	0.005		0.005	0.000	J	A	0.004		0.004	0.005	J	A
3287	GW02429IT	2/25/92	0.013		0.013	0.000		A	0.009		0.009	0.000	J	V
3287	GW02936IT	5/18/92	0.018		0.018	0.010	X	A	0.171		0.171	0.010	X	A
3287	GW03447IT	9/9/92	0.003		0.003	0.000	J	A						
3287	GW03880IT	11/30/92	0.038	0.011	0.038	0.003	F	A	0.005	0.032	0.005	0.003		A
34791	GW02157IT	12/17/91	0.005		0.005	0.000		A	0.001		0.001	0.000		A
34791	GW02908IT	5/20/92							0.002		0.003	0.004	U	V
34791	GW03459IT	9/2/92	0.004		0.004	0.000	J	A	0.005		0.005	0.000	J	A
34791	GW03863IT	11/16/92	0.007	0.005	0.007	0.000	J	A	0.008	0.004	0.008	0.000	J	A
3586	GW01221IT	4/29/91	0.001		0.001	0.000	J	A	0.001		0.001	0.005	J	A
3586	GW01461IT	7/9/91	0.008		0.008	0.000	J	A	0.006		0.006	0.000	J	A
3586	GW01818IT	10/8/91	0.005		0.005	0.000	J	A	0.013		0.013	0.000		A
3586	GW02195IT	1/10/92	0.007		0.007	0.000	J	A	0.000		0.000	0.000	J	A
3586	GW02631IT	4/7/92	0.000		0.000	0.000	J	A	-0.001		-0.001	0.008	J	A
3586	GW03217IT	8/5/92	0.023		0.023	0.008		V	0.001		0.001	0.007	U	A
3586	GW03828IT	12/10/92	0.001	0.006	0.001	0.008	U	JA	0.005	0.004	0.005	0.004		JA
3687	GW01162IT	4/19/91	0.018		0.018	0.010			0.025		0.025	0.010		
3687	GW01674IT	8/23/91	0.002		0.002	0.000	J	A	0.009		0.009	0.000	J	V
3687	GW02036IT	11/25/91	0.004		0.004	0.000	J	A	0.005		0.005	0.005	J	A
3687	GW02414IT	3/5/92	0.003		0.003	0.000	J	A	0.018		0.018	0.005		A
3687	GW02852IT	5/15/92	0.001		0.001	0.000	J	A	0.004		0.004	0.003	J	A
3687	GW03384IT	8/17/92	0.011		0.011	0.004		V	0.033		0.033	0.007		V
3687	GW03924IT	10/27/92	0.007	0.007	0.007	0.003		A	0.013	0.015	0.013	0.009		A
4286	GW01295IT	5/17/91	0.019		0.019	0.008		A	0.143		0.143	0.000		V
4286	GW01706IT	9/11/91	0.025		0.025	0.000		A	0.269		0.269	0.000		V
4286	GW02044IT	12/4/91	0.015		0.015	0.000		A	0.083		0.083	0.000		A
4286	GW02398IT	2/10/92							0.191		0.191	0.000		A
4286	GW02846IT	5/29/92							0.140		0.140	0.004		A
4286	GW03385IT	8/17/92	0.028		0.028	0.004		V	0.140		0.140	0.005		V
4286	GW03925IT	11/30/92	0.005	0.018	0.005	0.003		A	0.009	0.139	0.009	0.003		A
6286	GW01284IT	5/14/91	0.001		0.001	0.005	J	A	0.004		0.004	0.000	J	V
6286	GW01708IT	8/22/91	0.009		0.009	0.000	J	A	0.001		0.001	0.000	J	V
6286	GW02046IT	11/25/91	0.002		0.002	0.000	J	A	0.005		0.005	0.000	J	A
6286	GW02378IT	2/11/92	0.000		0.000	0.000	J	A	0.004		0.004	0.000	J	A

ATTACHMENT H1
TABLE 20
95% UCL CONCENTRATION
AOC NO. 1
GROUNDWATER RADIONUCLIDES

			AMERICIUM-241 (pCi/L)					Valid.	PLUTONIUM-239,240 (pCi/L)					Valid.
Location	Field ID	Sample Date	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual
6286	GW03056IT	6/11/92	0.001		0.001	0.000	J	V	0.006		0.006	0.006	J	V
6286	GW03294IT	7/31/92		0.003					0.003	0.004	0.003	0.002	J	V
6586	GW01275IT	5/9/91							0.014		0.014	0.005		V
6586	GW01671IT	8/16/91	0.005		0.005	0.000	J	V	0.006		0.006	0.000	J	V
6586	GW02050IT	12/6/91	0.005		0.005	0.000	J	A	0.010		0.010	0.000	J	A
6586	GW02326IT	1/23/92							0.007		0.007	0.000	J	A
6586	GW02840IT	4/30/92	0.004		0.004	0.000	J	A	0.005		0.005	0.004	J	A
6586	GW03308IT	8/6/92	0.001		0.002	0.020	U	V	0.000		0.000	0.010	U	V
6586	GW03947IT	12/14/92	0.000	0.003	0.000	0.011	U	JA	0.017	0.008	0.017	0.003		JA
B218789	GW01292IT	5/21/91	0.025		0.025	0.005		A	0.011		0.011	0.000		V
B218789	GW01673IT	8/20/91	0.005		0.005	0.005	J	A	0.007		0.007	0.000	J	V
B218789	GW02034IT	11/19/91	0.011		0.011	0.000		A	0.048		0.048	0.000		A
B218789	GW02419IT	2/18/92	0.016		0.016	0.000		A	0.097		0.097	0.005		A
B218789	GW02866IT	5/8/92	0.001		0.001	0.000	J	A	0.005		0.005	0.000	J	A
B218789	GW03349IT	8/21/92	0.011		0.011	0.000		A	0.055		0.055	0.000		A
B218789	GW03913IT	10/27/92	0.001	0.010	0.002	0.011	U	A	0.017	0.034	0.017	0.003		A
Number of Samples			252						271					
Number of Detects			232						253					
Minimum Detected			-0.043						-0.001					
Maximum Detected			46.540						354.600					
Average			0.464						3.032					
Number of wells sampled				70						71				
Number of wells with detects				69						70				
Minimum well average				-0.005						-0.001				
Maximum well average				31.523						224.57				
Average				0.575						3.985				
Standard Deviation				3.785						26.791				
t-value				1.645						1.645				
95% UCL (1)				1.319						9.215				
Mean of Ln(x)				-3.97						-3.36				
S.D. of ln(x)				1.80						2.47				
H(0.95,n)				3.18						4.06				
95% UCL based on Lognormal				0.190						2.419				

ATTACHMENT H1
TABLE 21
95% UCL CONCENTRATION
AOC NO. 2
GROUNDWATER METALS

			ANTIMONY (ug/L)					Valid.	ARSENIC (ug/L)					Valid.
Location	Field ID	Sample Date	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual
0286	GW02611IT	3/18/92												
0286	GW02955IT	6/10/92	9.90	9.90 U	19.80	19.80	U	V	2.30	2.30	2.30	1.00		JA
0386	GW01762IT	9/11/91	25.00		50.00	60.00	U	V	1.00		2.00	10.00	U	V
0386	GW02026IT	11/13/91	40.40		40.40	60.00	B		1.00		2.00	10.00	U	
0386	GW02612IT	4/1/92							1.00		2.00	10.00	U.0N	JA
0386	GW02956IT	6/12/92	9.90		19.80	19.80	U	V	0.50		1.00	1.00	U	JA
0386	GW03392IT	9/16/92	8.50		17.00	60.00	U	V	1.00		2.00	10.00	U	V
0386	GW03810IT	11/17/92	16.50	20.06	33.00	60.00	U	V	1.00	0.92 U	2.00	10.00	U	V
06191	GW03352IT	8/14/92	9.40	9.40 U	18.80	18.80	U	V	2.00	2.00	2.00	1.00		JA
06491	GW02616IT	4/1/92							2.30		2.30	10.00	BN	JA
06491	GW03049IT	6/22/92	9.00		18.00	60.00	U	V	2.80		2.80	10.00	B	V
06491	GW03375IT	9/10/92	43.30	26.15	43.30	18.80		JA		2.55				
3986	GW01592IT	8/16/91	22.55		45.10	60.00	U	JA	1.00		2.00	10.00	U	V
3986	GW02049IT	12/5/91	28.55		57.10	60.00	U	JA	1.00		2.00	10.00	U	V
3986	GW02241IT	1/21/92	4.00		8.00	60.00	U	V	1.40		1.40	10.00	B	V
3986	GW02668IT	4/16/92							1.00		2.00	10.00	U.0N	JA
3986	GW03328IT	9/8/92	8.50		17.00	60.00	U	V	1.00		2.00	10.00	U	JA
3986	GW03893IT	10/19/92	16.50	16.02 U	33.00	60.00	U	V	1.50	1.15	3.00	10.00	U	V
41591	GW02091IT	12/6/91	53.40		53.40	60.00	B	V	10.00		10.00	10.00		V
41591	GW02614IT	3/18/92							6.40		6.40	10.00	BN	JA
41591	GW02952IT	6/10/92	9.90		19.80	19.80	U	V	9.50		9.50	1.00		JA
41591	GW03395IT	9/15/92	12.20		24.40	24.40	U	V	6.50		6.50	0.70		JA
41591	GW03811IT	11/17/92	16.50	23.00	33.00	60.00	U	V	1.10	6.70	2.20	10.00	U	V
41691	GW02090IT	12/7/91	194.00		194.00	60.00		JA	7.00		7.00	10.00	B	V
41691	GW02615IT	4/1/92							5.40		5.40	10.00	BN	JA
41691	GW02953IT	6/11/92	33.80		33.80	19.80		V	4.10		4.10	1.00		JA
41691	GW03396IT	9/16/92	12.20		24.40	24.40	U	V	4.40		4.40	0.70		JA
41691	GW03806IT	11/18/92	7.00	61.75	14.00	60.00	U	V	1.55	4.49	3.10	10.00	U	JA
Number of Samples			22						26					
Number of Detects			5						13					
Minimum Detected			33.80						1.4					
Maximum Detected			194.00						10.00					
Average			26.86						2.99					
Number of wells sampled				7						7				
Number of wells with detects				5						6				
Minimum well average				9.40						0.92				
Maximum well average				61.75						6.70				
Average				23.75						2.87				
Standard Deviation				17.90						2.05				
t-value				1.943						1.943				
95% UCL (1)				36.90						4.38				
Mean of Ln(x)				1.932						0.84555				
S.D. of Ln(x)				1.842						0.70077				
H(0.95,n)				6.212						2.904				
95% UCL based on Lognormal				4,023						6.83				

ATTACHMENT H1
TABLE 21
95% UCL CONCENTRATION
AOC NO. 2
GROUNDWATER METALS

			BERYLLIUM (ug/L)						Valid.	MANGANESE (ug/L)					Valid.
Location	Field ID	Sample Date	Result	Well Ave	SQL	CDRL	Qual	Qual		Result	Well Ave	SQL	CDRL	Qual	Qual
0286	GW02611IT	3/18/92	0.50		1.00	5.00	U	V		43		43	15	E	V
0286	GW02955IT	6/10/92	0.60	0.55	0.60	0.60		JA		281	162	281	2		V
0386	GW01762IT	9/11/91	1.00		2.00	5.00	U	V		92		92	15		V
0386	GW02026IT	11/13/91	0.50		1.00	5.00	U			47		47	15		
0386	GW02612IT	4/1/92	0.50		1.00	5.00	U	V		7		7	15	B	V
0386	GW02956IT	6/12/92	0.30		0.60	0.60	U	V		22		22	2		V
0386	GW03392IT	9/16/92	0.50		1.00	5.00	U	V		23		23	15		JA
0386	GW03810IT	11/17/92	0.50	0.55 U	1.00	5.00	U	V		33	37	33	15		V
06191	GW03352IT	8/14/92	0.70	0.70	0.70	0.60		JA		1360	1360	1360	1		V
06491	GW02616IT	4/1/92	0.50		1.00	5.00	U	V		178		178	15		V
06491	GW03049IT	6/22/92	1.00		1.00	5.00	B	V		118		118	15		V
06491	GW03375IT	9/10/92	0.30	0.60	0.60	0.60	U	V		80	125	80	1		V
3986	GW01592IT	8/16/91	0.50		1.00	5.00	U	V		70		70	15		V
3986	GW02049IT	12/5/91	0.50		1.00	5.00	U	V		39		39	15		V
3986	GW02241IT	1/21/92	0.50		1.00	5.00	U	V		125		125	15	E	V
3986	GW02668IT	4/16/92								46		46	15		V
3986	GW03328IT	9/8/92	0.50		1.00	5.00	U	V		74		74	15		V
3986	GW03893IT	10/19/92	0.60	0.52 U	1.20	5.00	U	V		193	91	193	15		V
41591	GW02091IT	12/6/91	2.80		2.80	5.00	B	V		1460		1460	15		V
41591	GW02614IT	3/18/92	0.50		1.00	5.00	U	V		407		407	15	E	V
41591	GW02952IT	6/10/92	3.40		3.40	0.60		JA		509		509	2		V
41591	GW03395IT	9/15/92	1.00		1.00	0.80		JA		199		199	2		V
41591	GW03811IT	11/17/92	0.50	1.64	1.00	5.00	U	V		104	536	104	15		V
41691	GW02090IT	12/7/91	8.90		8.90	5.00		JA		3010		3010	15		V
41691	GW02615IT	4/1/92	0.50		1.00	5.00	U	V		1590		1590	15		V
41691	GW02953IT	6/11/92	3.40		3.40	0.60		JA		1180		1180	2		V
41691	GW03396IT	9/16/92	1.20		1.20	0.80		JA		754		754	2		V
41691	GW03806IT	11/18/92	1.20	3.04	1.20	5.00	B	V		878	1482	878	15		V
Number of Samples			27							28					
Number of Detects			10							28					
Minimum Detected			0.6							7					
Maximum Detected			8.90							3010					
Average			1.22							461					
Number of wells sampled				7							7				
Number of wells with detects				5							7				
Minimum well average				0.52							37.25				
Maximum well average				3.04							1482				
Average				1.09							542				
Standard Deviation				0.95							623.10				
t-value				1.943							1.943				
95% UCL (1)				1.78							999.59				
Mean of Ln(x)				0.02017							5.550				
S.D. of Ln(x)				0.60878							1.409				
H(0.95,n)				2.693							4.907				
95% UCL based on Lognormal				2.40							11692				

ATTACHMENT H1
TABLE 22
95% UCL CONCENTRATION
AOC NO. 2
GROUNDWATER RADIONUCLIDES

			AMERICIUM-241 (pCi/L)					Valid.	PLUTONIUM-239,240 (pCi/L)					Valid.
Location	Field ID	Sample Date	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual
0286	GW01454IT	6/19/91	0.004		0.004	0.000	J	A	0.001		0.001	0.000	J	V
0286	GW02611IT	3/18/92	0.020		0.020	0.010	X	A	0.077		0.077	0.010	X	A
0286	GW02955IT	6/10/92	0.003	0.009	0.003	0.001	J	A	0.000	0.026	0.000	0.004	U	A
0386	GW01455IT	6/20/91	0.004		0.004	0.000	J	A	0.001		0.001	0.007	J	V
0386	GW01762IT	9/11/91	0.002		0.002	0.000	J	A	0.001		0.001	0.000	J	V
0386	GW02026IT	11/13/91	0.002		0.002	0.000	J	A	0.000		0.000	0.000	J	A
0386	GW02612IT	4/1/92	0.001		0.001	0.000	J	A	0.001		0.001	0.003	J	A
0386	GW02956IT	6/12/92	0.002		0.002	0.000	J	V						
0386	GW03392IT	9/16/92	0.005		0.005	0.000	J	A	0.001		0.001	0.000	J	A
0386	GW03810IT	11/17/92	0.002	0.003	0.004	0.009	U	A	0.005	0.002	0.011	0.018	U	A
3986	GW01285IT	5/14/91	0.002		0.002	0.000	J	A	0.001		0.001	0.000	J	V
3986	GW02668IT	4/16/92	0.000		0.000	0.003	J	A	0.001		0.001	0.000	J	A
3986	GW03328IT	9/8/92	0.004		0.004	0.000	J	A	0.099		0.099	0.007		A
3986	GW03893IT	10/19/92	0.019	0.006	0.019	0.017	Y	A	0.004	0.026	0.004	0.003		A
41591	GW02091IT	12/6/91	0.023		0.023	0.000		A	0.058		0.058	0.000		A
41591	GW02614IT	3/18/92	0.015		0.015	0.010	X	A	0.015		0.015	0.010	X	A
41591	GW02952IT	6/10/92	0.003		0.005	0.006	U	A	0.001		0.002	0.006	U	A
41591	GW03395IT	9/15/92	0.006		0.006	0.000	J	A	0.004		0.004	0.000	J	A
41591	GW03811IT	11/17/92	0.014	0.012	0.014	0.011		A	0.012	0.018	0.012	0.005		A
41691	GW02090IT	12/7/91	0.470		0.470	0.000		A	2.204		2.204	0.000		A
41691	GW02615IT	4/1/92	0.220		0.220	0.000	X	A	1.296		1.296	0.005	X	A
41691	GW03396IT	9/16/92	0.080		0.080	0.000		A	0.677		0.677	0.000		A
41691	GW03806IT	11/18/92	0.100	0.217	0.100	0.003		A	0.340	1.129	0.340	0.005		A
Number of Samples			23						22					
Number of Detects			21						19					
Minimum Detected			0.000						0.000					
Maximum Detected			0.470						2.204					
Average			0.044						0.218					
Number of wells sampled				5						5				
Number of wells with detects				5						5				
Minimum well average				0.003						0.002				
Maximum well average				0.217						1.129				
Average				0.049						0.240				
Standard Deviation				0.094						0.497				
t-value				2.132						2.132				
95% UCL (1)				0.139						0.714				
Mean of Ln(x)				-4.3398						-3.52321				
S.D. of Ln(x)				1.6807						2.34461				
H(0.95,n)				7.9362						10.9153				
95% UCL based on lognormal				42.17						166,279				

ATTACHMENT H1
TABLE 23
95% UCL CONCENTRATION
AOC NO. 1, 10-ACRE AREA
GROUNDWATER VOCs

			CARBON TETRACHLORIDE (ug/L)					Valid.	CHLOROFORM (ug/L)					Valid.	1,1-DICHLOROETHENE (ug/L)					Valid.
Location	Field ID	Sample Date	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual
00191	GW02596IT	3/16/92	19.00		19.0	0.02		Z	1.40		1.4	0.01		V	0.20		0.4	0.04	U	JA
00191	GW02909IT	5/21/92	35.00		35.0	0.02		JA	1.60		1.6	0.01		JA						
00191	GW03435IT	9/1/92	33.00		33.0	0.70		JA	2.00		2.0	0.20		V	0.30		0.3	0.10		V
00191	GW03861IT	11/18/92	110.00	49.3	110.0	0.40		V	8.00	3.3	8.0	0.10		V	1.00	0.3 M	2.0	0.30	U	V
1287	GW01647IT	9/9/91	8.50		17.0	5.00	U	V	10.00		10.0	5.00	J	A	8.50		17.0	5.00	U	V
1287	GW02002IT	11/20/91	9.00		9.0	5.00		V	11.00		11.0	5.00		V	2.50		5.0	5.00	U	V
1287	GW02387IT	2/22/92	20.00		20.0	5.00		V	18.00		18.0	5.00		V	1.00		1.0	5.00	J	A
1287	GW02921IT	5/18/92	17.00		17.0	5.00		V	16.00		16.0	5.00	B	V	2.50		5.0	5.00	U	V
1287	GW03441IT	9/1/92	16.00	14.1	16.0	5.00		V	18.00	14.6	18.0	5.00		V	2.00	2.0 M	2.0	5.00	J	A
1587	GW01094IT	4/15/91	1100.00		1100.0	5.00		V	15.00		15.0	5.00	J	A	25.00		50.0	5.00	U	V
1587	GW01650IT	9/4/91	1600.00		1600.0	5.00		V	19.00		19.0	5.00	J	A	37.50		75.0	5.00	U	V
1587	GW02005IT	12/18/91	2200.00		2200.0	5.00	D	V	21.00		21.0	5.00		V	5.00		5.0	5.00		V
1587	GW02422IT	2/25/92	4600.00		4600.0	5.00		V	41.00		41.0	5.00	J	A	100.00		200.0	5.00	U	V
1587	GW02914IT	6/23/92	2900.00		2900.0	5.00	D	V	33.00		33.0	5.00	J	A	37.50		75.0	5.00	U	V
1587	GW03442IT	9/1/92	5100.00		5100.0	50.00		A	41.00		41.0	5.00		JA	9.00		9.0	5.00		JA
1587	GW03859IT	11/17/92		2916.7					55.00	32.1	55.0	5.00		V	6.00	9.0 M	6.0	5.00		V
06591	GW02895IT	5/19/92	19.00		19.0	0.02	J	A	81.00		81.0	0.01		JA	4.10		4.1	0.04		JA
06591	GW03427IT	8/27/92	43.00		43.0	3.50		JA	400.00		400.0	3.80		JA	3.00		3.0	0.10		V
06591	GW03847IT	11/17/92	370.00	144.0	370.0	0.40		V	78.00	186.3	78.0	0.10		V	1.00	2.7	1.0	0.30	J	A
06691	GW02896IT	5/18/92	20000		20000	0.02	E		25000		25000	0.01	E		14.00		14.0	0.04		
06691	GW03428IT	8/28/92	12000		12000	700.00		JA	39000		39000	750.00		JA	26.00		26.0	0.13		A
06691	GW03848IT	11/17/92	16000	16000	16000	0.40	D	V	28000	30667	28000	0.10	D	V	19.00	19.7	38.0	0.30	U	V
06791	GW02897IT	5/20/92							0.87		0.9	0.01		JA	0.10		0.2	0.04	U	JA
06791	GW03454IT	8/27/92	3.00	3.0	3.0	0.10		V	0.80	0.8	0.8	0.20		V	0.05	0.1 U	0.1	0.10	U	V
06891	GW02898IT	5/20/92	0.10		0.2	0.02	U	JA	0.05		0.1	0.01	U	JA	0.10		0.2	0.04	U	JA
06891	GW03429IT	8/26/92	0.05		0.1	0.10	U	V	0.10		0.2	0.20	U	V	0.05		0.1	0.10	U	V
06891	GW03851IT	11/18/92	0.10	0.1	0.1	0.40	J	A	0.05	0.1 U	0.1	0.10	U	V	0.15	0.1 U	0.3	0.30	U	V
06991	GW02899IT	5/18/92	5.20		5.2	0.02			0.40		0.4	0.01			0.40		0.4	0.04		
06991	GW03430IT	8/26/92	31.00		31.0	1.40		V	1.00		1.0	0.20		V	2.00		2.0	0.10		V
06991	GW03850IT	11/18/92	44.00	26.7	44.0	0.40		V	0.40	0.6	0.8	0.10	U	V	1.00	1.1	2.0	0.30	U	V
07191	GW02900IT	5/18/92	2.50		2.5	0.02			0.05		0.1	0.01	U		1.40		1.4	0.04		
07191	GW03455IT	8/27/92	0.60		0.6	0.10		V	1.00		1.0	0.20		V	21.00		21.0	0.13		V
07191	GW03864IT	11/16/92	3.00	2.0	6.0	0.40	U	V	1.00	0.7	2.0	0.10	U	V	18.00	13.5	18.0	0.30		V
07291	GW02901IT	5/20/92	50.00		100.0	0.02	U	JA	25.00		50.0	0.01	U	JA	50.00		100.0	0.04	U	JA
07291	GW03456IT	8/28/92	0.40		0.4	0.10		V	1.00		1.0	0.20		V	0.05		0.1	0.10	U	V
07291	GW03857IT	11/16/92	0.20	0.4 M	0.4	0.40	U	V	0.10	1.0 M	0.1	0.10		V	0.15	16.7 U	0.3	0.30	U	V
07391	GW02599IT	3/16/92	2300.00		2300.0	0.02		V	1500.00		1500.0	0.01		V	260.00		260.0	0.04		JA
07391	GW02902IT	5/21/92							1700.00		1700.0	0.01		JA	15.00		15.0	0.04		JA
07391	GW03457IT	8/28/92	0.05		0.1	0.10	U	JA	4500.00		4500.0	1500.00		JA	380.00		380.0	0.13		A

ATTACHMENT H1
TABLE 23
95% UCL CONCENTRATION
AOC NO. 1, 10-ACRE AREA
GROUNDWATER VOCs

			CARBON TETRACHLORIDE (ug/L)					Valid.	CHLOROFORM (ug/L)					Valid.	1,1-DICHLOROETHENE (ug/L)					Valid.
Location	Field ID	Sample Date	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual
07391	GW03862IT	11/16/92	1000.00	1100.0	2000.0	0.40	U	V	1500.00	2300.0	1500.0	0.10		V	750.00	351.3	1500.0	0.30	U	V
08891	GW03065IT	6/23/92	2300.00		2300.0	0.40		V	450.00		450.0	0.10		V	75.00		150.0	0.30	U	V
08891	GW03431IT	8/31/92	17000.0		17000.0	350.00		JA	560.00		560.0	3.80		JA	62.00		62.0	3.20		JA
08891	GW03849IT	11/17/92	5300.00	8200.0	5300.0	0.40		V	1400.00	803.3	1400.0	0.10		V	22.50	53.2	45.0	0.30	U	V
09091	GW02903IT	5/20/92	65.00		65.0	0.02		JA	1.10		1.1	0.01		JA	0.10		0.2		U	JA
09091	GW03432IT	8/31/92	25.00		25.0	0.28		JA	0.70		0.7	0.20		V	0.10		0.1	0.10		V
09091	GW03852IT	11/18/92	46.00	45.3	46.0	0.40	E	A	1.00	0.9	1.0	0.10		JA	0.15	0.1	0.3	0.30	U	JA
09691	GW02608IT	3/18/92	61.00		61.0	0.02		V	26.00		26.0	0.01		V	3.40		3.4	0.04		JA
09691	GW02904IT	5/22/92	22.00		22.0	0.02			13.00		13.0	0.01			1.80		1.8	0.04		
09691	GW03458IT	8/31/92	120.00		120.0	28.00		JA	0.10		0.2	0.20	U	JA	6.00		6.0	0.10		JA
09691	GW03865IT	11/17/92	31.00	58.5	31.0	0.40	J	V	22.00	15.3	22.0	0.10		V	15.00	6.6	30.0	0.30	U	V
13091	GW02912IT	5/22/92	0.10		0.2	0.02	U		1.20		1.2	0.01			0.10		0.2	0.04	U	
13091	GW03440IT	9/9/92	0.20		0.2	0.10		V	0.30		0.3	0.20		V	0.05		0.1	0.10	U	V
13091	GW03860IT	11/16/92	5.00	1.8	5.0	0.40		V	0.70	0.7	0.7	0.10		V	0.15	0.1 U	0.3	0.30	U	V
13191	GW02905IT	5/19/92	1800.00		1800.0	0.02		JA	740.00		740.0	0.01		JA	9.50		9.5	0.04		JA
13191	GW03433IT	9/2/92	1900.00		1900.0	7.00		A	460.00		460.0	7.50		JA	13.00		13.0	0.13		V
13191	GW03855IT	11/17/92	1400.00	1700.0	1400.0	0.40	D	V	540.00	580.0	540.0	0.10		V	4.50	9.0	9.0	0.30	U	V
13291	GW02906IT	5/21/92	220.00	220.0	220.0	0.02		JA	160.00	160.0	160.0	0.01		JA						
Number of Samples			54						57						55					
Number of Detects			45						49						26					
Minimum Detected			0.10						0.10						0.10					
Maximum Detected			20000						39000						750.00					
Average			1850.65						1868.03						36.69					
Number of wells sampled				17						17						16				
Number of wells with detects				17						16						12				
Minimum well average				0.1						0.1						0.1				
Maximum well average				16000						30667						351.3				
Average				1793.1						2045.1						30.3				
Standard Deviation				4192.8						7398.0						86.6				
t-value				1.7						1.7						1.7				
95% UCL (1)				3568.6						5177.9						68.1				
Mean of Ln(x)				4.010						2.784						1.259				
S.D. of ln(x)				3.505						3.615						2.019				
H(0.95,n)				7.343						7.563						4.525				
95% UCL based on Lognormal				15,978,803						10,378,090						286.11				

ATTACHMENT H1
TABLE 23
95% UCL CONCENTRATION
AOC NO. 1, 10-ACRE AREA
GROUNDWATER VOCs

			METHYLENE CHLORIDE (ug/L)					Valid.	TETRACHLOROETHENE (ug/L)					Valid.	TRICHLOROETHENE (ug/L)					Valid.
Location	Field ID	Sample Date	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual
00191	GW02596IT	3/16/92	4.00		4.0	0.01		V	28.00		28.0	0.02		A	60.00		60.0	0.03	E	A
00191	GW02909IT	5/21/92							41.00		41.0	0.02		JA	8.20		8.2	0.03		JA
00191	GW03435IT	9/1/92	0.40		0.8	0.60	U	JA	33.00		33.0	0.70		JA	7.00		7.0	0.30		V
00191	GW03861IT	11/18/92	0.50	1.6	1.0	0.20	U	V	190.00	73.0	190.0	0.20		V	23.00	24.6	23.0	0.20		V
1287	GW01647IT	9/9/91	8.50		17.0	5.00	U	A	27.00		27.0	5.00		V	560.00		560.0	5.00		V
1287	GW02002IT	11/20/91	2.50		5.0	5.00	U	JA	37.00		37.0	5.00		V	490.00		490.0	5.00	D	V
1287	GW02387IT	2/22/92	2.50		5.0	5.00	U	V	45.00		45.0	5.00		V	1500.00		1500.0	5.00	D	V
1287	GW02921IT	5/18/92	2.50		5.0	5.00	U	JA	43.00		43.0	5.00		V	1500.00		1500.0	5.00	D	V
1287	GW03441IT	9/1/92	2.50	3.7 U	5.0	5.00	U	V	42.00	38.8	42.0	5.00		V	1300.00	1070.0	1300.0	50.00		JA
1587	GW01094IT	4/15/91	25.00		50.0	5.00	U	V	71.00		71.0	5.00		V	49.00		49.0	5.00	J	A
1587	GW01650IT	9/4/91	37.50		75.0	5.00	U	V	160.00		160.0	5.00		V	81.00		81.0	5.00		V
1587	GW02005IT	12/18/91	2.50		5.0	5.00	U	JA	260.00		260.0	5.00	D	V	110.00		110.0	5.00		V
1587	GW02422IT	2/25/92	100.00		200.0	5.00	U	V	340.00		340.0	5.00		V	150.00		150.0	5.00	J	A
1587	GW02914IT	6/23/92	37.50		75.0	5.00	U	JA	360.00		360.0	5.00		V	140.00		140.0	5.00		V
1587	GW03442IT	9/1/92	2.50		5.0	5.00	U	JA	330.00		330.0	50.00		JA	180.00		180.0	5.00		JA
1587	GW03859IT	11/17/92	2.50	29.6 U	5.0	5.00	U	V	170.00	241.6	170.0	5.00		V		118.3				
06591	GW02895IT	5/19/92	8.00		16.0	0.01	U	JA												
06591	GW03427IT	8/27/92	1.00		2.0	0.60	U	JA	2.00		2.0	0.10		V	2.00		2.0	0.30		V
06591	GW03847IT	11/17/92	1.00	3.3	2.0	0.20	U	V	1.00	1.5	2.0	0.20	U	V	1.00	1.5	2.0	0.20	U	V
06691	GW02896IT	5/18/92	2300.00		2300.0	0.01	EB-RV		4600.00		4600.0	0.02	E		110.00		110.0	0.03		
06691	GW03428IT	8/28/92	35000.0		35000	3100.00	B	JA	69.00		69.0	3.50		JA	110.00		110.0	7.00		JA
06691	GW03848IT	11/17/92	24000.0	20433.3	24000	0.20	D	V	38.00	1569.0	38.0	0.20		V	56.00	92.0	56.0	0.20		V
06791	GW02897IT	5/20/92	6.50		13.0	0.01	U	JA	0.05		0.1	0.02	U	JA	0.05		0.1	0.03	U	JA
06791	GW03454IT	8/27/92	0.40	3.5 U	0.8	0.60	U	JA	0.60	0.3	0.6	0.10		V	0.15	0.1 U	0.3	0.30	U	V
06891	GW02898IT	5/20/92	1.85		3.7	0.01	U	JA	0.05		0.1	0.02	U	JA	0.05		0.1	0.03	U	JA
06891	GW03429IT	8/26/92	0.50		1.0	0.60	U	JA	0.05		0.1	0.10	U	V	0.15		0.3	0.30	U	V
06891	GW03851IT	11/18/92	0.10	0.8 U	0.2	0.20	U	V	2.00	0.7	2.0	0.20		V	0.10	0.1 U	0.2	0.20	U	V
06991	GW02899IT	5/18/92	1.00		2.0	0.01	U		41.00		41.0	0.02	EB-RV		2.00		2.0	0.03		
06991	GW03430IT	8/26/92	0.35		0.7	0.60	U	JA	130.00		130.0	1.40		V	9.00		9.0	0.30		V
06991	GW03850IT	11/18/92	1.00	0.8 U	2.0	0.20	U	V	220.00	130.3	220.0	0.20	D	V	9.00	6.7	9.0	0.20		V
07191	GW02900IT	5/18/92	1.00		2.0	0.01	U		53.00		53.0	0.02	EB-RV		2.80		2.8	0.03		
07191	GW03455IT	8/27/92	0.50		1.0	0.60	U	JA	190.00		190.0	1.40		V	43.00		43.0	2.80		V
07191	GW03864IT	11/16/92	2.50	1.3 U	5.0	0.20	U	JA	540.00	261.0	540.0	0.20		V	86.00	43.9	86.0	0.20		V
07291	GW02901IT	5/20/92	930.00		1860.0	0.01	U	JA	58.00		58.0	0.02		JA	51.00		51.0	0.03		JA
07291	GW03456IT	8/28/92	0.45		0.9	0.60	U	JA	0.30		0.3	0.10		V	8.00		8.0	0.30	B	V
07291	GW03857IT	11/16/92	0.10	310.2 U	0.2	0.20	U	V	0.50	19.6	0.5	0.20		V	0.10	19.7	0.1	0.20	J	V
07391	GW02599IT	3/16/92	1200.00		1200.0	0.01		A	2700.00		2700.0	0.02		V	44000.0		44000.0	0.03	E	A
07391	GW02902IT	5/21/92	7.70		7.7	0.01		JA	690.00		690.0	0.02		JA	54000.0		54000.0	0.03		A
07391	GW03457IT	8/28/92	39.00		39.0	0.62	E	A	2400.00		2400.0	1400.0		JA	140000		140000	2800.0		JA

ATTACHMENT H1
TABLE 23
95% UCL CONCENTRATION
AOC NO. 1, 10-ACRE AREA
GROUNDWATER VOCs

			METHYLENE CHLORIDE (ug/L)					Valid.	TETRACHLOROETHENE (ug/L)					Valid.	TRICHLOROETHENE (ug/L)					Valid.
Location	Field ID	Sample Date	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual
07391	GW03862IT	11/16/92	500.00	436.7	1000.0	0.20	U	V	970.00	1690.0	970.0	0.20	J	A	150000	97000.0	150000	0.20		V
08891	GW03065IT	6/23/92	50.00		100.0	0.20	U	V	14000.0		14000	0.20		V	1900.00		1900.0	0.20		V
08891	GW03431IT	8/31/92	20.00		20.0	0.62	B	V	9100.00		9100.0	350.00		JA	3100.00		3100.0	700.00		JA
08891	GW03849IT	11/17/92	19.50	20.0 M	39.0	0.20	U	JA	10000.0	11033.3	10000	0.20	D	V	3800.00	2933.3	3800.0	0.20		V
09091	GW02903IT	5/20/92	11.00		11.0	0.01		JA	0.61		0.6	0.02		JA	4.60		4.6	0.03		JA
09091	GW03432IT	8/31/92	0.40		0.8	0.60	U	JA	7.00		7.0	0.10		V	3.00		3.0	0.30		V
09091	GW03852IT	11/18/92	0.10	3.8	0.2	0.20	U	JA	0.70	2.8	0.7	0.20		JA	5.00	4.2	5.0	0.20		JA
09691	GW02608IT	3/18/92	1.00		2.0	0.01	U	V	91.00		91.0	0.02		V	2400.00		2400.0	0.03		A
09691	GW02904IT	5/22/92	111.00		111.0	0.01	B-RV		36.00		36.0	0.02			1000.00		1000.0	0.03		
09691	GW03458IT	8/31/92	0.50		1.0	0.60	U	JA	110.00		110.0	28.00		JA	2500.00		2500.0	56.00		JA
09691	GW03865IT	11/17/92	10.00	30.6	20.0	0.20	U	V	48.00	71.3	48.0	0.20		V	3400.00	2325.0	3400.0	0.20		V
13091	GW02912IT	5/22/92	1.50		1.5	0.01	J		0.66		0.7	0.02			1.10		1.1	0.03		
13091	GW03440IT	9/9/92	0.50		1.0	0.60	U	JA	0.40		0.4	0.10		V	0.15		0.3	0.30	U	V
13091	GW03860IT	11/16/92	0.10	0.7	0.2	0.20	U	V	0.90	0.7	0.9	0.20		V	0.10	0.5	0.2	0.20	U	V
13191	GW02905IT	5/19/92	8.50		17.0	0.01	U	JA	48.00		48.0	0.02		JA	3.40		3.4	0.03		V
13191	GW03433IT	9/2/92	1.50		3.0	0.60	U	JA	66.00		66.0	7.00		JA	3.00		3.0	0.30		V
13191	GW03855IT	11/17/92	3.00	4.3 U	6.0	0.20	U	V	42.00	52.0	42.0	0.20		V	3.00	3.1	6.0	0.20	U	V
13291	GW02906IT	5/21/92	3.90	3.9	3.9	0.01		JA	4.60	4.6	4.6	0.02		JA	22.00	22.0	22.0	0.03		JA
Number of Samples			56						56						55					
Number of Detects			12						52						46					
Minimum Detected			1.5						0.30						0.10					
Maximum Detected			35000.0						14000.0						150000					
Average			1151.36						864.97						7505.34					
Number of wells sampled				17						17						17				
Number of wells with detects				~~6~~ 8						17						15				
Minimum well average				0.7						0.3						0.1				
Maximum well average				20433.3						11033.3						97000.0				
Average				1252.3						893.6						6097.9				
Standard Deviation				4944.4						2665.0						23441.5				
t-value				1.7						1.7						1.7				
95% UCL (1)				3346.0						2022.1						16024.6				
Mean of Ln(x)				1.557						3.542						3.295				
S.D. of ln(x)				2.743						3.033						3.744				
H(0.95,n)				5.845						7.563						7.563				
95% UCL based on Lognormal				11,259						1,060,362						35,486,037				

ATTACHMENT H1
TABLE 24
95% UCL CONCENTRATION
AOC NO. 1, 10-ACRE AREA
GROUNDWATER RADIONUCLIDES

			AMERICIUM-241 (pCi/L)					Valid.	PLUTONIUM-239,240 (pCi/L)					Valid.
Location	Field ID	Sample Date	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual
06891	GW02898IT	5/20/92							0.100		0.100	0.004		V
06891	GW03429IT	8/26/92	0.042	0.042	0.042	0.010		A	0.290	0.195	0.290	0.007		A
06691	GW02896IT	5/18/92	0.580	0.580	0.580	0.007		A	3.361	3.361	3.361	0.006		A
08891	GW03431IT	8/31/92	0.226		0.226	0.000		A	1.685		1.685	0.000		A
08891	GW03849IT	11/17/92	0.048	0.137	0.048	0.003		A	0.290	0.988	0.290	0.015		A
06991	GW02899IT	5/18/92	9.730		9.730	0.010	X	A	71.700		71.700	0.010	X	A
06991	GW03430IT	8/26/92	0.450		0.450	0.020		A	2.500		2.500	0.010		A
06991	GW03850IT	11/18/92	0.310	3.497	0.310	0.003	F	A	3.000	25.733	3.000	0.006		A
06791	GW02897IT	5/20/92	0.011	0.011	0.011	0.000		A	0.039	0.039	0.039	0.006		A
13091	GW02912IT	5/22/92							0.012	0.012	0.012	0.004		V
07191	GW02900IT	5/18/92	2.270	2.270	2.270	0.010	X	A	15.400	15.400	15.400	0.010	X	A
1587	GW01650IT	9/4/91	0.104		0.104	0.000		A	2.040		2.040	0.004		V
1587	GW02005IT	12/18/91	0.274		0.274	0.000		A	1.119		1.119	0.000		V
1587	GW02422IT	2/25/92	0.053		0.053	0.000		A	0.510		0.510	0.007		V
1587	GW02914IT	6/23/92	0.082		0.082	0.000		A	1.093		1.093	0.000		V
1587	GW03442IT	9/1/92	0.564	0.215	0.564	0.000		A		1.190				
00191	GW02596IT	3/16/92	0.006		0.006	0.000	J	A	0.025		0.025	0.000		A
00191	GW02909IT	5/21/92							0.051		0.051	0.003		V
00191	GW03435IT	9/1/92	0.009		0.009	0.000	J	A	0.035		0.035	0.000		A
00191	GW03861IT	11/18/92	0.063	0.026	0.063	0.009	F	A	1.300	0.353	1.300	0.020		A
07391	GW02599IT	3/16/92	0.006		0.006	0.000	J	A	0.003		0.003	0.000	J	A
07391	GW02902IT	5/21/92	0.010		0.010	0.000	J	A	0.047		0.047	0.005		A
07391	GW03457IT	8/28/92	0.004		0.007	0.020	U	A	0.007		0.007	0.007	J	A
07391	GW03862IT	11/16/92	0.005	0.006	0.005	0.000	J	A		0.019				
13191	GW02905IT	5/19/92	0.597		0.597	0.000		A	5.024		5.024	0.000		A
13191	GW03433IT	9/2/92	0.036		0.036	0.000		A	0.666		0.666	0.000		A
13191	GW03855IT	11/17/92	0.130	0.254	0.130	0.008		A	2.000	2.563	2.000	0.005		A
06591	GW02895IT	5/19/92							2.100		2.100	0.007		V
06591	GW03427IT	8/27/92	0.064		0.064	0.000		A	2.315		2.315	0.000		A
06591	GW03847IT	11/17/92	0.056	0.060	0.056	0.010	F	A	0.810	1.742	0.810	0.017		A
09691	GW02608IT	3/18/92	0.022		0.022	0.000		A	0.175		0.175	0.004		A
09691	GW02904IT	5/22/92							0.320		0.320	0.005		V
09691	GW03458IT	8/31/92	0.035		0.035	0.000		A	0.265		0.265	0.008		A
09691	GW03865IT	11/17/92	0.018	0.025	0.018	0.000		A	0.209	0.242	0.209	0.000		A
1287	GW01647IT	9/9/91	0.074	0.074	0.074	0.000		A	0.003	0.003	0.003	0.000	J	V
09091	GW02903IT	5/20/92	46.54		46.5	0.010	X	A	354.6		354.6	0.010	X	A
09091	GW03432IT	8/31/92	30.03		30.0	0.000		A	139.1		139.1	0.373		A
09091	GW03852IT	11/18/92	18.00	31.523	18.0	0.087		A	180.0	224.57	180.0	0.162		A
Number of Samples			33						36					
Number of Detects			32						36					
Minimum Detected			0.005						0.003					
Maximum Detected			46.54						354.60					
Average			3.347						22.005					
Number of wells sampled				14						15				
Number of wells with detects				14						15				
Minimum well average				0.006						0.005				
Maximum well average				31.52						224.57				
Average				2.766						18.427				
Standard Deviation				8.341						55.534				
t-value				1.771						1.761				
95% UCL (1)				6.714						43.678				
Mean of Ln(x)				-1.819						-0.479				
S.D. of ln(x)				2.393						3.058				
H(0.95,n)				5.491						6.688				
95% UCL based on Lognormal				108.9						15,706				

ATTACHMENT H1
TABLE 25
95% UCL CONCENTRATION
AOC NO. 1, 30-ACRE AREA
GROUNDWATER VOCs

			CARBON TETRACHLORIDE (ug/L)					Valid.	CHLOROFORM (ug/L)					Valid.	1,1-DICHLOROETHENE (ug/L)					Valid.
Location	Field ID	Sample Date	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual
00191	GW02596IT	3/16/92	19.00		19.0	0.02		Z	1.40		1.4	0.01		V	0.20		0.4	0.04	U	JA
00191	GW02909IT	5/21/92	35.00		35.0	0.02		JA	1.60		1.6	0.01		JA						
00191	GW03435IT	9/1/92	33.00		33.0	0.70		JA	2.00		2.0	0.20		V	0.30		0.3	0.10		V
00191	GW03861IT	11/18/92	110.00	49.25	110.0	0.40		V	8.00	3.3	8.0	0.10		V	1.00	0.5	2.0	0.30	U	V
1287	GW01647IT	9/9/91	8.50		17.0	5.00	U	V	10.00		10.0	5.00	J	A	8.50		17.0	5.00	U	V
1287	GW02002IT	11/20/91	9.00		9.0	5.00		V	11.00		11.0	5.00		V	2.50		5.0	5.00	U	V
1287	GW02387IT	2/22/92	20.00		20.0	5.00		V	18.00		18.0	5.00		V	1.00		1.0	5.00	J	A
1287	GW02921IT	5/18/92	17.00		17.0	5.00		V	16.00		16.0	5.00	B	V	2.50		5.0	5.00	U	V
1287	GW03441IT	9/1/92	16.00	14.10	16.0	5.00		V	18.00	14.6	18.0	5.00		V	2.00	3.3	2.0	5.00	J	A
1587	GW01094IT	4/15/91	1100		1100.0	5.00		V	15.00		15.0	5.00	J	A	25.00		50.0	5.00	U	V
1587	GW01650IT	9/4/91	1600		1600.0	5.00		V	19.00		19.0	5.00	J	A	37.50		75.0	5.00	U	V
1587	GW02005IT	12/18/91	2200		2200.0	5.00	D	V	21.00		21.0	5.00		V	5.00		5.0	5.00		V
1587	GW02422IT	2/25/92	4600		4600.0	5.00		V	41.00		41.0	5.00	J	A	100.00		200.0	5.00	U	V
1587	GW02914IT	6/23/92	2900		2900.0	5.00	D	V	33.00		33.0	5.00	J	A	37.50		75.0	5.00	U	V
1587	GW03442IT	9/1/92	5100		5100.0	50.00		A	41.00		41.0	5.00		JA	9.00		9.0	5.00		JA
1587	GW03859IT	11/17/92		2916.7					55.00	32.1	55.0	5.00		V	6.00	31.4	6.0	5.00		V
06591	GW02895IT	5/19/92	19.00		19.0	0.02	J	A	81.00		81.0	0.01		JA	4.10		4.1	0.04		JA
06591	GW03427IT	8/27/92	43.00		43.0	3.50		JA	400.00		400.0	3.80		JA	3.00		3.0	0.10		V
06591	GW03847IT	11/17/92	370.00	144.00	370.0	0.40		V	78.00	186.3	78.0	0.10		V	1.00	2.7	1.0	0.30	J	A
06691	GW02896IT	5/18/92	20000		20000	0.02	E		25000		25000	0.01	E		14.00		14.0	0.04		
06691	GW03428IT	8/28/92	12000		12000	700		JA	39000		39000	750.0		JA	26.00		26.0	0.13		A
06691	GW03848IT	11/17/92	16000	16000	16000	0.40	D	V	28000	30667	28000	0.10	D	V	19.00	19.7	38.0	0.30	U	V
06791	GW02897IT	5/20/92							0.87		0.9	0.01		JA	0.10		0.2	0.04	U	JA
06791	GW03454IT	8/27/92	3.00	3.00	3.0	0.10		V	0.80	0.8	0.8	0.20		V	0.05	0.1 U	0.1	0.10	U	V
06891	GW02898IT	5/20/92	0.10		0.2	0.02	U	JA	0.05		0.1	0.01	U	JA	0.10		0.2	0.04	U	JA
06891	GW03429IT	8/26/92	0.05		0.1	0.10	U	V	0.10		0.2	0.20	U	V	0.05		0.1	0.10	U	V
06891	GW03851IT	11/18/92	0.10	0.08	0.1	0.40	J	A	0.05	0.1	0.1	0.10	U	V	0.15	0.1 U	0.3	0.30	U	V
06991	GW02899IT	5/18/92	5.20		5.2	0.02			0.40		0.4	0.01			0.40		0.4	0.04		
06991	GW03430IT	8/26/92	31.00		31.0	1.40		V	1.00		1.0	0.20		V	2.00		2.0	0.10		V
06991	GW03850IT	11/18/92	44.00	26.73	44.0	0.40		V	0.40	0.6	0.8	0.10	U	V	1.00	1.1	2.0	0.30	U	V
07191	GW02900IT	5/18/92	2.50		2.5	0.02			0.05		0.1	0.01	U		1.40		1.4	0.04		
07191	GW03455IT	8/27/92	0.60		0.6	0.10		V	1.00		1.0	0.20		V	21.00		21.0	0.13		V
07191	GW03864IT	11/16/92	3.00	2.03	6.0	0.40	U	V	1.00	0.7	2.0	0.10	U	V	18.00	13.5	18.0	0.30		V
07291	GW02901IT	5/20/92	50.00		100.0	0.02	U	JA	25.00		50.0	0.01	U	JA	50.00		100.0	0.04	U	JA
07291	GW03456IT	8/28/92	0.40		0.4	0.10		V	1.00		1.0	0.20		V	0.05		0.1	0.10	U	V
07291	GW03857IT	11/16/92	0.20	0.40 M	0.4	0.40	U	V	0.10	1.0 M	0.1	0.10		V	0.15	16.7	0.3	0.30	U	V
07391	GW02599IT	3/16/92	2300.00		2300.0	0.02		V	1500.00		1500.0	0.01		V	260.00		260.0	0.04		JA
07391	GW02902IT	5/21/92							1700.00		1700.0	0.01		JA	15.00		15.0	0.04		JA

ATTACHMENT H1
TABLE 25
95% UCL CONCENTRATION
AOC NO. 1, 30-ACRE AREA
GROUNDWATER VOCs

			CARBON TETRACHLORIDE (ug/L)					Valid.	CHLOROFORM (ug/L)					Valid.	1,1-DICHLOROETHENE (ug/L)					Valid.
Location	Field ID	Sample Date	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual
07391	GW03457IT	8/28/92	0.05		0.1	0.10	U	JA	4500.00		4500.0	1500		JA	380.00		380.0	0.13		A
07391	GW03862IT	11/16/92	1000.00	1100.02	2000.0	0.40	U	V	1500.00	2300.0	1500.0	0.10		V	750.00	351.3	1500.0	0.30	U	V
08891	GW03065IT	6/23/92	2300.00		2300.0	0.40		V	450.00		450.0	0.10		V	75.00		150.0	0.30	U	V
08891	GW03431IT	8/31/92	17000.00		17000.0	350.00		JA	560.00		560.0	3.80		JA	62.00		62.0	3.20		JA
08891	GW03849IT	11/17/92	5300.00	8200.00	5300.0	0.40		V	1400.00	803.3	1400.0	0.10		V	22.50	53.2	45.0	0.30	U	V
09091	GW02903IT	5/20/92	65.00		65.0	0.02		JA	1.10		1.1	0.01		JA	0.10		0.2		U	JA
09091	GW03432IT	8/31/92	25.00		25.0	0.28		JA	0.70		0.7	0.20		V	0.10		0.1	0.10		V
09091	GW03852IT	11/18/92	46.00	45.33	46.0	0.40	E	A	1.00	0.9	1.0	0.10		JA	0.15	0.1	0.3	0.30	U	JA
09691	GW02608IT	3/18/92	61.00		61.0	0.02		V	26.00		26.0	0.01		V	3.40		3.4	0.04		JA
09691	GW02904IT	5/22/92	22.00		22.0	0.02			13.00		13.0	0.01			1.80		1.8	0.04		
09691	GW03458IT	8/31/92	120.00		120.0	28.00		JA	0.10		0.2	0.20	U	JA	6.00		6.0	0.10		JA
09691	GW03865IT	11/17/92	31.00	58.50	31.0	0.40	J	V	22.00	15.3	22.0	0.10		V	15.00	6.6	30.0	0.30	U	V
13091	GW02912IT	5/22/92	0.10		0.2	0.02	U		1.20		1.2	0.01			0.10		0.2	0.04	U	
13091	GW03440IT	9/9/92	0.20		0.2	0.10		V	0.30		0.3	0.20		V	0.05		0.1	0.10	U	V
13091	GW03860IT	11/16/92	5.00	1.77	5.0	0.40		V	0.70	0.7	0.7	0.10		V	0.15	0.1 U	0.3	0.30	U	V
13191	GW02905IT	5/19/92	1800.00		1800.0	0.02		JA	740.00		740.0	0.01		JA	9.50		9.5	0.04		JA
13191	GW03433IT	9/2/92	1900.00		1900.0	7.00		A	460.00		460.0	7.50		JA	13.00		13.0	0.13		V
13191	GW03855IT	11/17/92	1400.00	1700.00	1400.0	0.40	D	V	540.00	580.0	540.0	0.10		V	4.50	9.0	9.0	0.30	U	V
13291	GW02906IT	5/21/92	220.00	220.00	220.0	0.02		JA	160.00	160.0	160.0	0.01		JA						
00291	GW02581IT	3/11/92	4.00		4.0	0.02			99.00		99.0	0.01			0.90		0.9	0.04	B-RV	
00291	GW02910IT	5/21/92							21.00		21.0	0.01		A						
00291	GW03436IT	9/8/92	1.00		1.0	0.10		V	18.00		18.0	0.15		V	0.05		0.1	0.10	U	V
00291	GW03868IT	11/30/92	0.20	1.73	0.4	0.40	U	V	7.00	36.3	7.0	0.10		V	0.15	0.4	0.3	0.30	U	V
00391	GW02158IT	12/17/91	79.00		79.0	0.02		A	22.00		22.0	0.01		A	2.60		2.6	0.04		JA
00391	GW02526IT	2/28/92	890.00		890.0	0.02		A	36.00		36.0	0.01		JA	3.10		3.1	0.04		V
00391	GW02915IT	5/21/92	620.00		620.0	0.02		A	29.00		29.0	0.01		JA	2.20		2.2	0.04		JA
00391	GW03453IT	9/8/92	1100.00		1100.0	28.00		JA	46.00		46.0	0.15	E	JA	3.00		3.0	0.10		V
00391	GW03888IT	11/11/92	930.00	672.25	930.0	0.40	D	V	37.00	33.3	37.0	0.10		V	2.00	2.7	4.0	0.30	U	V
01491	GW02597IT	3/18/92	0.10		0.2	0.02	U	V	0.05		0.1	0.01	U	V	0.10		0.2	0.04	U	JA
01491	GW02858IT	5/15/92	0.10		0.2	0.02	U		0.05		0.1	0.01	U		0.10		0.2	0.04	U	
01491	GW03[illegible]	[illegible]	0.20		0.4	0.40	U	V	0.05		0.1	0.10	U	V	0.15		0.3	0.30	U	V
01491	GW03814IT	11/19/92	0.20	0.15 U	0.4	0.40	U	V	0.05	0.1 U	0.1	0.10	U	V	0.15	0.1 U	0.3	0.30	U	V
1787	GW01280IT	5/13/91	28.00		28.0	5.00		V	2.50		5.0	5.00	U	V	2.50		5.0	5.00	U	V
1787	GW01687IT	8/19/91	27.00		27.0	5.00		V	2.50		5.0	5.00	U	V	2.50		5.0	5.00	U	V
1787	GW02031IT	11/18/91	16.00		16.0	5.00		V	2.50		5.0	5.00	U	V	2.50		5.0	5.00	U	V
1787	GW02424IT	2/24/92	20.00		20.0	5.00		V	2.50		5.0	5.00	U	V	2.50		5.0	5.00	U	V
1787	GW02844IT	4/30/92	14.00		14.0	5.00			2.00		2.0	5.00	BJ-ND		2.50		5.0	5.00	U	
1787	GW03281IT	7/29/92	13.00		13.0	5.00		V	2.50		5.0	5.00	U	V	2.50		5.0	5.00	U	V

ATTACHMENT H1
TABLE 25
95% UCL CONCENTRATION
AOC NO. 1, 30-ACRE AREA
GROUNDWATER VOCs

			CARBON TETRACHLORIDE (ug/L)					Valid.	CHLOROFORM (ug/L)					Valid.	1,1-DICHLOROETHENE (ug/L)					Valid.
Location	Field ID	Sample Date	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual
1787	GW03823IT	11/10/92	480.00	85.43	480.0	50.00		V	36.00	7.2	36.0	5.00		V	2.00	2.4	2.0	5.00	J	A
01791	GW02173IT	12/19/91	0.10		0.2	0.02	U	V	0.05		0.1	0.01	U	V	0.10		0.2	0.04	U	V
01791	GW02598IT	3/17/92	0.10		0.2	0.02	U	V	0.05		0.1	0.01	U	V	0.10		0.2	0.04	U	JA
01791	GW02871IT	5/14/92	0.10		0.2	0.02	U		0.05		0.1	0.01	U		0.10		0.2	0.04	U	
01791	GW03283IT	8/3/92	0.05		0.1	0.10	U	V	0.10		0.2	0.20	U	V	0.05		0.1	0.10	U	V
01791	GW03817IT	11/5/92	0.20	0.11 U	0.4	0.40	U	V	0.05	0.1 U	0.1	0.10	U	V	0.15	0.1 U	0.3	0.30	U	V
01891	GW02178IT	12/23/91	0.10		0.2	0.02	U	V	0.05		0.1	0.01	U	V	0.10		0.2	0.04	U	V
01891	GW02509IT	2/27/92	0.10		0.2	0.02	U	V	0.05		0.1	0.01	U	V	0.10		0.2	0.04	U	V
01891	GW02872IT	5/13/92	0.10		0.2	0.02	U		0.05		0.1	0.01	U		0.10		0.2	0.04	U	
01891	GW03284IT	7/29/92	0.20	0.13 U	0.4	0.40	U	V	0.05	0.1 U	0.1	0.10	U	V	0.15	0.1 U	0.3	0.30	U	V
1987	GW01665IT	8/15/91	2.50		5.0	5.00	U	V	2.50		5.0	5.00	U	V	2.50		5.0	5.00	U	V
1987	GW02878IT	5/12/92	2.50	2.50 U	5.0	5.00	U	V	2.50	2.5 U	5.0	5.00	U	JA	2.50	2.5 U	5.0	5.00	U	V
01991	GW02853IT	6/4/92	40.00		40.0	0.02		JA	5.00		10.0	0.01	U	V	10.00		20.0	0.04	U	V
01991	GW03350IT	9/14/92	62.00		62.0	1.40		JA	12.00		12.0	0.15		V	0.30		0.3	0.10		V
01991	GW03907IT	10/23/92	51.00	51.00	51.0	0.50		A	18.00	11.7	18.0	0.50		V	0.25	0.3 M	0.5	0.50	U	V
02091	GW02138IT	12/14/91							0.64		0.6	0.01		JA	0.10		0.2	0.04	U	V
02091	GW02510IT	2/26/92	0.60		0.6	0.02		JA	0.20		0.2	0.01		JA	0.10		0.2	0.04	U	V
02091	GW02873IT	5/15/92	0.37		0.4	0.02			0.71		0.7	0.01			0.10		0.2	0.04	U	
02091	GW03285IT	7/31/92	0.60		0.6	0.10		V	0.20		0.2	0.20		V	0.05		0.1	0.10	U	V
02091	GW03819IT	11/6/92	20.00	0.60 M	40.0	0.40	U	V	5.00	0.7 M	10.0	0.10	U	V	15.00	3.1 U	30.0	0.30	U	V
2387	GW01126IT	4/19/91	2.50		5.0	5.00	U	V	2.50		5.0	5.00	U	V	2.50		5.0	5.00	U	V
2387	GW01669IT	8/19/91	2.50		5.0	5.00	U	V	2.50		5.0	5.00	U	V	2.50		5.0	5.00	U	V
2387	GW02032IT	11/23/91	2.50		5.0	5.00	U	V	2.50		5.0	5.00	U	V	2.50		5.0	5.00	U	V
2387	GW02405IT	2/28/92	2.50		5.0	5.00	U	V	2.50		5.0	5.00	U	V	2.50		5.0	5.00	U	V
2387	GW02845IT	5/28/92	2.50		5.0	5.00	U	V	2.50		5.0	5.00	U	JA	2.50		5.0	5.00	U	V
2387	GW03256IT	7/30/92	2.50		5.0	5.00	U	V	2.50		5.0	5.00	U	V	2.50		5.0	5.00	U	V
2387	GW03816IT	11/6/92	2.50	2.50 U	5.0	5.00	U	V	2.50	2.5 U	5.0	5.00	U	V	2.50	2.5 U	5.0	5.00	U	V
4386	GW01670IT	8/20/91	3.00		3.0	5.00	J	A	2.50		5.0	5.00	U	V	2.50		5.0	5.00	U	V
4386	GW02860IT	5/12/92	2.00		2.0	5.00	J	A	2.50		5.0	5.00	U	JA	2.50		5.0	5.00	U	V
4386	GW03258IT	7/26/92	2.50	2.50	5.0	5.00	U	V	2.50	2.5 U	5.0	5.00	U	V	2.50	2.5 U	5.0	5.00	U	V
11791	GW02432IT	2/6/92	470.00		470.0	0.02		V	85.00		85.0	0.01		V	1.40		1.4	0.04		V
11791	GW02917IT	5/20/92							0.78		0.8	0.01		JA						
11791	GW03465IT	9/8/92	820.00		820.0	0.14		JA	130.00		130.0	0.15		JA	2.00		2.0			V
11791	GW03890IT	11/11/92	280.00		280.0	0.40		V	42.00		42.0	0.10		V	1.00		2.0	0.30	U	V
11791	GW03891IT	11/12/92	17.00	396.75	17.0	5.00		V	2.50	52.1	5.0	5.00	U	V	2.50	1.7	5.0	5.00	U	V
12091	GW02116IT	12/19/91	0.10		0.2	0.02	U	V	0.05		0.1	0.01	U	V	0.10		0.2	0.04	U	V
12091	GW02514IT	2/27/92							0.05		0.1	0.01	U	V	0.10		0.2	0.04	U	V
12091	GW02876IT	5/13/92	0.10		0.2	0.02	U		0.05		0.1	0.01	U		0.10		0.2	0.04	U	

ATTACHMENT H1
TABLE 25
95% UCL CONCENTRATION
AOC NO. 1, 30-ACRE AREA
GROUNDWATER VOCs

			CARBON TETRACHLORIDE (ug/L)					Valid.	CHLOROFORM (ug/L)					Valid.	1,1-DICHLOROETHENE (ug/L)					Valid.
Location	Field ID	Sample Date	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual
12091	GW03290IT	7/29/92	0.20		0.4	0.40	U	V	0.05		0.1	0.10	U	V	0.15		0.3	0.30	U	V
12091	GW03822IT	11/10/92	0.20	0.15 U	0.4	0.40	U	V	0.05	0.1 U	0.1	0.10	U	V	0.15	0.1 U	0.3	0.30	U	V
12291	GW02607IT	3/17/92																		
12291	GW02859IT	5/29/92	0.10		0.2	0.02	U		0.05		0.1	0.01	U		0.10		0.2	0.04	U	
12291	GW03261IT	7/31/92	0.20	0.15 U	0.4	0.40	U	V	0.05	0.1 U	0.1	0.10	U	V	0.15	0.1 U	0.3	0.30	U	V
13491	GW03063IT	6/24/92	8.00		8.0	0.40		V	1.00		1.0	0.10		V	0.15		0.3	0.30	U	V
13491	GW03411IT	8/21/92	18.00		18.0	0.14		V	1.00		1.0	0.20		V	0.05		0.1	0.10	U	V
13491	GW03928IT	10/22/92	17.00	14.33	17.0	0.50		V	1.00	1.0	1.0	0.50		V	0.25	0.2 U	0.5	0.50	U	V
B218789	GW01292IT	21-May-91	1500.00		1500.0	5.00	D	V	18.00		18.0	5.00		V	4.00		4.0	5.00	J	A
B218789	GW01673IT	20-Aug-91	1600.00		1600.0	5.00	D	V	22.00		22.0	5.00		V	7.00		7.0	5.00		V
B218789	GW02034IT	19-Nov-91	1400.00		1400.0	5.00	D	V	16.00		16.0	5.00		V	2.00		2.0	5.00	J	A
B218789	GW02419IT	18-Feb-92	1200.00		1200.0	5.00	D	V	11.00		11.0	5.00		V	2.00		2.0	5.00	J	A
B218789	GW02866IT	8-May-92	890.00		890.0	5.00	D	V	13.00		13.0	5.00	B	V	2.50		5.0	5.00	U	V
B218789	GW03349IT	21-Aug-92	1200.00		1200.0	50.00		V												
B218789	GW03349IT	21-Aug-92	920.00		920.0	5.00	E	Z	41.00		41.0	5.00		JA	8.00		8.0	5.00		JA
B218789	GW03913IT	27-Oct-92	1000.00	1244.29	1000.0	5.00			17.00	20.2	17.0	5.00		V	2.00	4.3	2.0	5.00	J	A
Number of Samples			122						128						124					
Number of Detects			82						80						41					
Minimum Detected			0.10						0.10						0.10					
Maximum Detected			20000						39000						380.00					
Average			948.40						838.42						17.27					
Number of wells sampled				33						33.0						32.0				
Number of wells with detects				26						25.0						19.0				
Minimum well average				0.08						0.1						0.1				
Maximum well average				16000						30667						351.3				
Average				998.68						1058.7						16.6				
Standard Deviation				3088.18						5332.1						62.1				
t-value				1.645						1.6						1.6				
95% UCL (1)				1883.00						2585.6						34.7				
Mean of Ln(x)				3.024						1.983						0.841				
S.D. of ln(x)				3.264						2.910						1.661				
H(0.95,n)				5.764						5.197						3.295				
95% UCL based on Lognormal				117,657						7,262						24.60				

ATTACHMENT H1
TABLE 25
95% UCL CONCENTRATION
AOC NO. 1, 30-ACRE AREA
GROUNDWATER VOCs

			METHYLENE CHLORIDE (ug/L)					Valid.	TETRACHLOROETHENE (ug/L)					Valid.	TRICHLOROETHENE (ug/L)					Valid.
Location	Field ID	Sample Date	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual
00191	GW02596IT	3/16/92	4.00		4.0	0.01		V	28.00		28.0	0.02		A	60.00		60.0	0.03	E	A
00191	GW02909IT	5/21/92							41.00		41.0	0.02		JA	8.20		8.2	0.03		JA
00191	GW03435IT	9/1/92	0.40		0.8	0.60	U	JA	33.00		33.0	0.70		JA	7.00		7.0	0.30		V
00191	GW03861IT	11/18/92	0.50	1.6	1.0	0.20	U	V	190.00	73.0	190.0	0.20		V	23.00	24.6	23.0	0.20		V
1287	GW01647IT	9/9/91	8.50		17.0	5.00	U	A	27.00		27.0	5.00		V	560.00		560.0	5.00		V
1287	GW02002IT	11/20/91	2.50		5.0	5.00	U	JA	37.00		37.0	5.00		V	490.00		490.0	5.00	D	V
1287	GW02387IT	2/22/92	2.50		5.0	5.00	U	V	45.00		45.0	5.00		V	1500.00		1500.0	5.00	D	V
1287	GW02921IT	5/18/92	2.50		5.0	5.00	U	JA	43.00		43.0	5.00		V	1500.00		1500.0	5.00	D	V
1287	GW03441IT	9/1/92	2.50	3.7 U	5.0	5.00	U	V	42.00	38.8	42.0	5.00		V	1300.00	1070.0	1300.0	50.00		JA
1587	GW01094IT	4/15/91	25.00		50.0	5.00	U	V	71.00		71.0	5.00		V	49.00		49.0	5.00	J	A
1587	GW01650IT	9/4/91	37.50		75.0	5.00	U	V	160.00		160.0	5.00		V	81.00		81.0	5.00		V
1587	GW02005IT	12/18/91	2.50		5.0	5.00	U	JA	260.00		260.0	5.00	D	V	110.00		110.0	5.00		V
1587	GW02422IT	2/25/92	100.00		200.0	5.00	U	V	340.00		340.0	5.00		V	150.00		150.0	5.00	J	A
1587	GW02914IT	6/23/92	37.50		75.0	5.00	U	JA	360.00		360.0	5.00		V	140.00		140.0	5.00		V
1587	GW03442IT	9/1/92	2.50		5.0	5.00	U	JA	330.00		330.0	50.00		JA	180.00		180.0	5.00		JA
1587	GW03859IT	11/17/92	2.50	29.6 U	5.0	5.00	U	V	170.00	241.6	170.0	5.00		V		118.3				
06591	GW02895IT	5/19/92	8.00		16.0	0.01	U	JA												
06591	GW03427IT	8/27/92	1.00		2.0	0.60	U	JA	2.00		2.0	0.10		V	2.00		2.0	0.30		V
06591	GW03847IT	11/17/92	1.00	3.3 U	2.0	0.20	U	V	1.00	1.5	2.0	0.20	U	V	1.00	1.5	2.0	0.20	U	V
06691	GW02896IT	5/18/92	2300.00		2300.0	0.01	EB-RV		4600.00		4600.0	0.02	E		110.00		110.0	0.03		
06691	GW03428IT	8/28/92	35000.00		35000.0	3100.00	B	JA	69.00		69.0	3.50		JA	110.00		110.0	7.00		JA
06691	GW03848IT	11/17/92	24000.00	20433.3	24000.0	0.20	D	V	38.00	1569.0	38.0	0.20		V	56.00	92.0	56.0	0.20		V
06791	GW02897IT	5/20/92	6.50		13.0	0.01	U	JA	0.05		0.1	0.02	U	JA	0.05		0.1	0.03	U	JA
06791	GW03454IT	8/27/92	0.40	3.5 U	0.8	0.60	U	JA	0.60	0.3	0.6	0.10		V	0.15	0.1 U	0.3	0.30	U	V
06891	GW02898IT	5/20/92	1.85		3.7	0.01	U	JA	0.05		0.1	0.02	U	JA	0.05		0.1	0.03	U	JA
06891	GW03429IT	8/26/92	0.50		1.0	0.60	U	JA	0.05		0.1	0.10	U	V	0.15		0.3	0.30	U	V
06891	GW03851IT	11/18/92	0.10	0.8 U	0.2	0.20	U	V	2.00	0.7	2.0	0.20		V	0.10	0.1 U	0.2	0.20	U	V
06991	GW02899IT	5/18/92	1.00		2.0	0.01	U		41.00		41.0	0.02	EB-RV		2.00		2.0	0.03		
06991	GW03430IT	8/26/92	0.35		0.7	0.60	U	JA	130.00		130.0	1.40		V	9.00		9.0	0.30		V
06991	GW03850IT	11/18/92	1.00	0.8 U	2.0	0.20	U	V	220.00	130.3	220.0	0.20	D	V	9.00	6.7	9.0	0.20		V
07191	GW02900IT	5/18/92	1.00		2.0	0.01	U		53.00		53.0	0.02	EB-RV		2.80		2.8	0.03		
07191	GW03455IT	8/27/92	0.50		1.0	0.60	U	JA	190.00		190.0	1.40		V	43.00		43.0	2.80		V
07191	GW03864IT	11/16/92	2.50	1.3 U	5.0	0.20	U	JA	540.00	261.0	540.0	0.20		V	86.00	43.9	86.0	0.20		V
07291	GW02901IT	5/20/92	930.00		1860.0	0.01	U	JA	58.00		58.0	0.02		JA	51.00		51.0	0.03		JA
07291	GW03456IT	8/28/92	0.45		0.9	0.60	U	JA	0.30		0.3	0.10		V	8.00		8.0	0.30	B	V
07291	GW03857IT	11/16/92	0.10	310.2 U	0.2	0.20	U	V	0.50	19.6	0.5	0.20		V	0.10	19.7	0.1	0.20	J	V
07391	GW02599IT	3/16/92	1200.00		1200.0	0.01		A	2700.00		2700.0	0.02		V	44000		44000	0.03	E	A
07391	GW02902IT	5/21/92	7.70		7.7	0.01		JA	690.00		690.0	0.02		JA	54000		54000	0.03		A

ATTACHMENT H1
TABLE 25
95% UCL CONCENTRATION
AOC NO. 1, 30-ACRE AREA
GROUNDWATER VOCs

			METHYLENE CHLORIDE (ug/L)					Valid.	TETRACHLOROETHENE (ug/L)					Valid.	TRICHLOROETHENE (ug/L)					Valid.
Location	Field ID	Sample Date	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual
07391	GW03457IT	8/28/92	39.00		39.0	0.62	E	A	2400.00		2400.0	1400		JA	140000		140000	2800		JA
07391	GW03862IT	11/16/92	500.00	436.7	1000.0	0.20	U	V	970.00	1690.0	970.0	0.20	J	A	150000	97000	150000	0.20		V
08891	GW03065IT	6/23/92	50.00		100.0	0.20	U	V	14000.00		14000.0	0.20		V	1900		1900	0.20		V
08891	GW03431IT	8/31/92	20.00		20.0	0.62	B	V	9100.00		9100.0	350		JA	3100		3100	700		JA
08891	GW03849IT	11/17/92	19.50	20.0 M	39.0	0.20	U	JA	10000.00	11033.3	10000.0	0.20	D	V	3800	2933	3800	0.20		V
09091	GW02903IT	5/20/92	11.00		11.0	0.01		JA	0.61		0.6	0.02		JA	4.60		4.6	0.03		JA
09091	GW03432IT	8/31/92	0.40		0.8	0.60	U	JA	7.00		7.0	0.10		V	3.00		3.0	0.30		V
09091	GW03852IT	11/18/92	0.10	3.8	0.2	0.20	U	JA	0.70	2.8	0.7	0.20		JA	5.00	4.2	5.0	0.20		JA
09691	GW02608IT	3/18/92	1.00		2.0	0.01	U	V	91.00		91.0	0.02		V	2400		2400.0	0.03		A
09691	GW02904IT	5/22/92	111.00		111.0	0.01	B-RV		36.00		36.0	0.02			1000		1000.0	0.03		
09691	GW03458IT	8/31/92	0.50		1.0	0.60	U	JA	110.00		110.0	28		JA	2500		2500.0	56.00		JA
09691	GW03865IT	11/17/92	10.00	30.6	20.0	0.20	U	V	48.00	71.3	48.0	0.20		V	3400	2325	3400.0	0.20		V
13091	GW02912IT	5/22/92	1.50		1.5	0.01	J		0.66		0.7	0.02			1.10		1.1	0.03		
13091	GW03440IT	9/9/92	0.50		1.0	0.60	U	JA	0.40		0.4	0.10		V	0.15		0.3	0.30	U	V
13091	GW03860IT	11/16/92	0.10	0.7	0.2	0.20	U	V	0.90	0.7	0.9	0.20		V	0.10	0.5	0.2	0.20	U	V
13191	GW02905IT	5/19/92	8.50		17.0	0.01	U	JA	48.00		48.0	0.02		JA	3.40		3.4	0.03		V
13191	GW03433IT	9/2/92	1.50		3.0	0.60	U	JA	66.00		66.0	7.00		JA	3.00		3.0	0.30		V
13191	GW03855IT	11/17/92	3.00	4.3 U	6.0	0.20	U	V	42.00	52.0	42.0	0.20		V	3.00	3.1	6.0	0.20	U	V
13291	GW02906IT	5/21/92	3.90	3.9	3.9	0.01		JA	4.60	4.6	4.6	0.02		JA	22.00	22.0	22.0	0.03		JA
00291	GW02581IT	3/11/92	4.10		4.1	0.01	B-RV		19.00		19.0	0.02			19.00		19.0	0.03		
00291	GW02910IT	5/21/92	3.90		3.9	0.01		JA												
00291	GW03436IT	9/8/92	0.40		0.8	0.60	U	JA	4.00		4.0	0.10		V	3.00		3.0	0.30		V
00291	GW03868IT	11/30/92	2.00	2.6	2.0	0.20		V	2.00	8.3	2.0	0.20		V	2.00	8.0	2.0	0.20		V
00391	GW02158IT	12/17/91	1.00		2.0	0.01	U	JA	100.00		100.0	0.02	E	A	83.00		83.0	0.03	E	A
00391	GW02526IT	2/28/92							180.00		180.0	0.02		JA	130.00		130.0	0.03		JA
00391	GW02915IT	5/21/92	2.90		2.9	0.01		JA	66.00		66.0	0.02		JA	70.00		70.0	0.03		JA
00391	GW03453IT	9/8/92	1.00		2.0	0.60	U	JA	150.00		150.0	0.14	E	JA	150.00		150.0	2.80		JA
00391	GW03888IT	11/11/92	1.50	1.6	3.0	0.20	U	V	160.00	124.0	160.0	0.20		V	130.00	108.3	130.0	0.20		V
01491	GW02597IT	3/18/92	1.00		2.0	0.01	U	V	0.50		0.5	0.02		V	0.32		0.3	0.03		V
01491	GW02858IT	5/15/92	1.00		2.0	0.01	U		0.47		0.5	0.02			0.05		0.1	0.03	U	
01491	GW03260IT	7/30/92	0.10		0.2	0.20	U	V	0.20		0.2	0.20		V	0.10		0.2	0.20	U	V
01491	GW03814IT	11/19/92	0.10	0.6 U	0.2	0.20	U	V	0.40	0.4	0.4	0.20		V	0.10	0.1	0.2	0.20	U	V
1787	GW01280IT	5/13/91	2.50		5.0	5.00	U	V	25.00		25.0	5.00		V	7.00		7.0	5.00		V
1787	GW01687IT	8/19/91	3.00		3.0	5.00	J	A	34.00		34.0	5.00		V	6.00		6.0	5.00		V
1787	GW02031IT	11/18/91	2.50		5.0	5.00	U	V	18.00		18.0	5.00		V	3.00		3.0	5.00	J	A
1787	GW02424IT	2/24/92	2.50		5.0	5.00	U	V	17.00		17.0	5.00		V	4.00		4.0	5.00	J	A
1787	GW02844IT	4/30/92	2.50		5.0	5.00	U		14.00		14.0	5.00			3.00		3.0	5.00	J	
1787	GW03281IT	7/29/92	2.50		5.0	5.00	U	JA	12.00		12.0	5.00		V	21.00		21.0	5.00		V

ATTACHMENT H1
TABLE 25
95% UCL CONCENTRATION
AOC NO. 1, 30-ACRE AREA
GROUNDWATER VOCs

			METHYLENE CHLORIDE (ug/L)					Valid.	TETRACHLOROETHENE (ug/L)					Valid.	TRICHLOROETHENE (ug/L)					Valid.
Location	Field ID	Sample Date	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual
1787	GW03823IT	11/10/92	2.50	2.6	5.0	5.00	U	V	7.00	18.1	7.0	5.00		V	160.00	29.1	160.0	5.00		V
01791	GW02173IT	12/19/91	6.46		6.5	0.01		JA	7.10		7.1	0.02		JA	0.13		0.1	0.03		V
01791	GW02598IT	3/17/92	22.00		22.0	0.01		A	3.20		3.2	0.02		V	0.07		0.1	0.03	JB	A
01791	GW02871IT	5/14/92	14.00		14.0	0.01			16.00		16.0	0.02			0.28		0.3	0.03		
01791	GW03283IT	8/3/92	0.30		0.6	0.60	U	JA	13.00		13.0	0.14		V	0.60		0.6	0.30		V
01791	GW03817IT	11/5/92	0.10	8.6	0.2	0.20	U	V	14.00	10.7	14.0	0.20		V	1.00	0.4	1.0	0.20		V
01891	GW02178IT	12/23/91							0.14		0.3	0.02	U	JA	0.05		0.1	0.03	U	V
01891	GW02509IT	2/27/92	1.05		2.1	0.01	U	JA	0.10		0.1	0.02		JA	0.05		0.1	0.03	U	V
01891	GW02872IT	5/13/92	6.70		6.7	0.01			0.05		0.1	0.02	U		0.05		0.1	0.03	U	
01891	GW03284IT	7/29/92	0.10	2.6	0.2	0.20	U	V	0.10	0.1	0.2	0.20	U	V	0.10	0.1 U	0.2	0.20	U	V
1987	GW01665IT	8/15/91	2.50		5.0	5.00	U	V	880.00		880.0	5.00	D	JA	110.00		110.0	5.00		V
1987	GW02878IT	5/12/92	2.50	2.5 U	5.0	5.00	U	V	680.00	780.0	680.0	5.00	D	V	46.00	78.0	46.0	5.00		V
01991	GW02853IT	6/4/92	100.00		200.0	0.01	U	V	31.00		31.0	0.02		V	5.00		10.0	0.03	U	V
01991	GW03350IT	9/14/92	1.50		3.0	0.60	U	JA	24.00		24.0	1.40		JA	11.00		11.0	0.28		V
01991	GW03907IT	10/23/92	0.50	34.0 U	1.0	0.60	U	JA	23.00	26.0	23.0	0.50		A	13.00	9.7	13.0	0.50	B	V
02091	GW02138IT	12/14/91	1.00		2.0	0.01	U	V	260.00		260.0	0.02		A	94.00		94.0	0.03		A
02091	GW02510IT	2/26/92							155.00		155.0	0.02	E	A	51.00		51.0	0.03	E	A
02091	GW02873IT	5/15/92	1.00		2.0	0.01	U		11000.00		11000.0	0.02			280.00		280.0	0.03		
02091	GW03285IT	7/31/92	0.30		0.6	0.60	U	JA	13000.00		13000.0	140.00		V	410.00		410.0	280.00		V
02091	GW03819IT	11/6/92	10.00	3.1 U	20.0	0.20	U	V	3900.00	5663.0	3900.0	0.20		V	160.00	199.0	160.0	0.20		V
2387	GW01126IT	4/19/91	2.50		5.0	5.00	U	V	2.50		5.0	5.00	U	V	2.00		2.0	5.00	J	A
2387	GW01669IT	8/19/91	3.00		3.0	5.00	J	A	2.50		5.0	5.00	U	V	2.50		5.0	5.00	U	V
2387	GW02032IT	11/23/91	2.50		5.0	5.00	U	JA	2.50		5.0	5.00	U	V	2.50		5.0	5.00	U	V
2387	GW02405IT	2/28/92	2.50		5.0	5.00	U	V	2.50		5.0	5.00	U	V	2.50		5.0	5.00	U	V
2387	GW02845IT	5/28/92	2.50		5.0	5.00	U	V	2.50		5.0	5.00	U	V	2.50		5.0	5.00	U	V
2387	GW03256IT	7/30/92	2.50		5.0	5.00	U	V	2.50		5.0	5.00	U	V	2.50		5.0	5.00	U	V
2387	GW03816IT	11/6/92	2.50	2.6	5.0	5.00	U	V	2.50	2.5 U	5.0	5.00	U	V	2.50	2.4	5.0	5.00	U	V
4386	GW01670IT	8/20/91	2.50		5.0	5.00	U	V	2.50		5.0	5.00	U	V	2.50		5.0	5.00	U	V
4386	GW02860IT	5/12/92	2.50		5.0	5.00	U	V	2.50		5.0	5.00	U	V	2.50		5.0	5.00	U	V
4386	GW03258IT	7/26/92	2.50	2.5 U	5.0	5.00	U	V	2.50	2.5 U	5.0	5.00	U	V	2.50	2.5 U	5.0	5.00	U	V
11791	GW02432IT	2/6/92							104.00		104.0	0.02		JA	93.00		93.0	0.03		V
11791	GW02917IT	5/20/92							53.00		53.0	0.02	E	A	43.00		43.0	0.03	E	A
11791	GW03465IT	9/8/92	0.50		1.0	0.60	U	JA	130.00		130.0	0.14		JA	160.00		160.0			JA
11791	GW03890IT	11/11/92	1.00		2.0	0.20	U	V	50.00		50.0	0.20		V	57.00		57.0	0.20		V
11791	GW03891IT	11/12/92	2.50	1.3 U	5.0	5.00	U	V	15.00	70.4	15.0	5.00		V	5.00	71.6	5.0	5.00		V
12091	GW02116IT	12/19/91	10.30		10.3	0.01		A	0.26		0.3	0.02		JA	0.05		0.1	0.03	U	V
12091	GW02514IT	2/27/92																		
12091	GW02876IT	5/13/92	16.00		16.0	0.01	B-RV		0.59		0.6	0.02			0.05		0.1	0.03	U	

ATTACHMENT H1
TABLE 25
95% UCL CONCENTRATION
AOC NO. 1, 30-ACRE AREA
GROUNDWATER VOCs

			METHYLENE CHLORIDE (ug/L)					Valid.	TETRACHLOROETHENE (ug/L)					Valid.	TRICHLOROETHENE (ug/L)					Valid.
Location	Field ID	Sample Date	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual	Result	Well Ave	SQL	CDRL	Qual	Qual
12091	GW03290IT	7/29/92	0.10		0.2	0.20	U	V	0.10		0.2	0.20	U	V	0.10		0.2	0.20	U	V
12091	GW03822IT	11/10/92	0.10	6.6	0.2	0.20	U	V	0.30	0.3	0.3	0.20		V	0.10	0.1 U	0.2	0.20	U	V
12291	GW02607IT	3/17/92	1.50		1.5	0.01		A												
12291	GW02859IT	5/29/92	1.00		2.0	0.01	U		0.05		0.1	0.02	U		0.05		0.1	0.03	U	
12291	GW03261IT	7/31/92	0.10	0.9	0.2	0.20	U	V	0.10	0.1 U	0.2	0.20	U	V	0.10	0.1 U	0.2	0.20	U	V
13491	GW03063IT	6/24/92	0.50		1.0	0.20	U	JA	3.00		3.0	0.20		V	1.00		1.0	0.20		V
13491	GW03411IT	8/21/92	0.45		0.9	0.60	U	JA	6.00		6.0	0.10		V	3.00		3.0	0.30		V
13491	GW03928IT	10/22/92	0.30	0.4 U	0.6	0.60	U	JA	6.00	5.0	6.0	0.50		JA	1.50	1.8	3.0	0.50	U	JA
B218789	GW01292IT	21-May-91	2.50		5.0	5.00	U	JA	280.00		280.0	5.00	D	V	110.00		110.0	5.00		V
B218789	GW01673IT	20-Aug-91	2.50		5.0	5.00	U	V	270.00		270.0	5.00	D	V	160.00		160.0	5.00		V
B218789	GW02034IT	19-Nov-91	2.50		5.0	5.00	U	V	180.00		180.0	5.00	D	V	97.00		97.0	5.00		V
B218789	GW02419IT	18-Feb-92	2.50		5.0	5.00	U	V	160.00		160.0	5.00	D	JA	72.00		72.0	5.00		V
B218789	GW02866IT	8-May-92	2.50		5.0	5.00	U	V	170.00		170.0	5.00		JA	62.00		62.0	5.00		V
B218789	GW03349IT	21-Aug-92																		
B218789	GW03349IT	21-Aug-92	27.00		54.0	5.00	U	JA	180.00		180.0	5.00		JA	85.00		85.0	5.00		JA
B218789	GW03913IT	27-Oct-92	2.50	6.6 U	5.0	5.00	U	V	170.00	206.7	170.0	5.00		V	89.00	97.7	89.0	5.00		V
Number of Samples			122						125						124					
Number of Detects			25						105						92					
Minimum Detected			1.50						0.10						0.07					
Maximum Detected			35000.00						14000.00						150000.00					
Average			531.03						648.46						3353.48					
Number of wells sampled				33.0						33.0						33.0				
Number of wells with detects				16.0						30.0						27.0				
Minimum well average				0.4						0.1						0.1				
Maximum well average				20433.3						11033.3						97000.0				
Average				647.5						670.0						3159.8				
Standard Deviation				3553.1						2129.7						16858.6				
t-value				1.6						1.6						1.6				
95% UCL (1)				1664.9						1279.8						7987.4				
Mean of Ln(x)				1.014						2.962						2.733				
S.D. of ln(x)				2.079						3.057						2.992				
H(0.95,n)				3.895						5.432						5.328				
95% UCL based on Lognormal				100.2						38,927						22,663				

ATTACHMENT H1
TABLE 26
95% UCL CONCENTRATION
BACKGROUND
GROUNDWATER METALS

			ANTIMONY (ug/l)					
Location	Field ID	Sample Date	Result	Well Ave	SQL	CDRL	Qual	Valid. Qual
B102289	GW01785IT	9/17/91	3.50		7.00	60.0	U	JA
B102289	GW02126IT	12/12/91	18.05		36.10	60.0	U	JA
B102289	GW02482IT	2/28/92	4.00		8.00	60.0	U	V
B102289	GW02944IT	5/26/92	9.00		18.00	60.0	U	V
B102289	GW03218IT	7/28/92	10.00		20.00	60.0	U	V
B102289	GW03795IT	10/27/92	30.00	12.43	60.00	60.0	U	
B102389	GW02129IT	12/13/91	13.30		13.30	60.0	B	V
B102389	GW02485IT	2/13/92	14.40		14.40	60.0	BN	JA
B102389	GW02947IT	5/26/92	9.00		18.00	60.0	U	V
B102389	GW03224IT	8/11/92	30.00		60.00	60.0	U	
B102389	GW03798IT	10/16/92	12.20	15.78	24.40	24.4	U	
B200589	GW01774IT	9/19/91	14.05		28.10	60.0	U	JA
B200589	GW02043IT	12/7/91	86.60		86.60	60.0		JA
B200589	GW02322IT	1/28/92	3.60		7.20	60.0	U	
B200589	GW02322IT	1/28/92	4.00		8.00	60.0	U	JA
B200589	GW03030IT	6/26/92	9.00		18.00	60.0	U	V
B200589	GW03471IT	9/23/92	30.00		60.00	60.0	U	
B200589	GW03790IT	11/5/92	15.00	23.18	30.00	60.0	U	
B200689	GW02042IT	11/18/91	24.60		24.60	60.0	B	
B200689	GW02497IT	2/20/92	4.00		8.00	60.0	U	
B200689	GW02980IT	5/29/92	9.00		18.00	60.0	U	V
B200689	GW03274IT	8/10/92	30.00		60.00	60.0	U	
B200689	GW03783IT	11/10/92	30.00	19.52	60.00	60.0	U	
B200789	GW01773IT	9/13/91	7.10		7.10	60.0	B	V
B200789	GW02554IT	3/3/92	4.00		8.00	60.0	U	JA
B200789	GW02981IT	6/2/92	9.00		18.00	60.0	U	V
B200789	GW03269IT	8/18/92	30.00		60.00	60.0	U	
B200789	GW03785IT	10/26/92	30.00	16.02	60.00	60.0	U	
B200889	GW02096IT	12/7/91	10.80		10.80	60.0	B	JA
B200889	GW02351IT	2/3/92	4.00		8.00	60.0	U	V
B200889	GW03027IT	6/4/92	9.00		18.00	60.0	U	V
B200889	GW03273IT	8/17/92	30.00		60.00	60.0	U	
B200889	GW03933IT	11/12/92	15.00	13.76	30.00	60.0	U	
B201189	GW02103IT	12/11/91	17.30		17.30	60.0	B	V
B201189	GW02522IT	2/27/92	4.00		8.00	60.0	U	V
B201189	GW02972IT	6/5/92	9.00		18.00	60.0	U	V
B201189	GW03275IT	7/30/92	10.00		20.00	60.0	U	V
B201189	GW03774IT	10/20/92	30.00	14.06	60.00	60.0	U	
B201289	GW03271IT	7/27/92	10.00	10.00	20.00	60.0	U	V
B201589	GW02104IT	12/10/91	17.30		17.30	60.0	B	JA
B201589	GW02973IT	6/5/92	9.00	13.15	18.00	60.0	UN	JA
B202489	GW01757IT	9/11/91	25.00		50.00	60.0	U	V
B202489	GW02119IT	12/11/91	17.00		17.00	60.0	B	V
B202489	GW02535IT	2/27/92	4.00		8.00	60.0	U	V
B202489	GW02970IT	6/3/92	9.00		18.00	60.0	U	V
B202489	GW03272IT	7/27/92	10.00		20.00	60.0	U	V
B202489	GW03773IT	10/19/92	30.00	15.83	60.00	60.0	U	
B202589	GW01753IT	9/10/91	25.00		50.00	60.0	U	V
B202589	GW02099IT	12/9/91	8.70		8.70	60.0	B	JA
B202589	GW02544IT	3/26/92	9.00		18.00	60.0	UN	V
B202589	GW02967IT	5/29/92	9.00		18.00	60.0	U	V
B202589	GW03325IT	8/13/92	30.00		60.00	60.0	U	
B202589	GW03766IT	10/21/92	30.00	18.62	60.00	60.0	U	
B203189	GW01781IT	9/18/91	15.95	15.95	31.90	60.0	U	JA
B203289	GW01782IT	9/17/91	3.50		7.00	60.0	U	JA

ATTACHMENT H1
TABLE 26
95% UCL CONCENTRATION
BACKGROUND
GROUNDWATER METALS

			ANTIMONY (ug/l)					
Location	Field ID	Sample Date	Result	Well Ave	SQL	CDRL	Qual	Valid. Qual
B203289	GW02040IT	12/11/91	11.50		23.00	60.0	U	JA
B203289	GW02498IT	2/21/92	8.40		8.40	60.0	B	
B203289	GW03270IT	8/11/92	30.00		60.00	60.0	U	
B203289	GW03784IT	11/4/92	30.00	16.68	60.00	60.0	U	
B203489	GW01772IT	9/13/91	3.50	3.50	7.00	60.0	U	JA
B203789	GW01771IT	9/13/91	3.50	3.50	7.00	60.0	U	V
B203989	GW00341IT	9/14/90	15.00		30.00		U	
B203989	GW01756IT	9/11/91	1610.00		1610.00	60.0		V
B203989	GW02120IT	12/14/91	4.00		8.00	60.0	U	V
B203989	GW02536IT	3/3/92	4.00		8.00	60.0	U	V
B203989	GW02978IT	6/5/92	9.00		18.00	60.0	UN	JA
B203989	GW03279IT	7/30/92	10.00		20.00	60.0	U	V
B203989	GW03782IT	10/23/92	12.20	237.74	24.40	24.4	U	
B204189	GW01770IT	9/13/91	9.60		9.60	60.0	B	V
B204189	GW02122IT	12/12/91	20.65		41.30	60.0	U	JA
B204189	GW02594IT	3/17/92	9.00		18.00	60.0	U	V
B204189	GW02988IT	5/29/92	9.00		18.00	60.0	U	V
B204189	GW03264IT	8/12/92	30.00		60.00	60.0	U	
B204189	GW03789IT	10/23/92	12.20	15.08	24.40	24.4	U	
B205589	GW01746IT	9/10/91	25.00		50.00	60.0	U	V
B205589	GW02107IT	12/11/91	32.80		32.80	60.0	B	V
B205589	GW02523IT	2/27/92	4.00		8.00	60.0	U	V
B205589	GW02974IT	6/5/92	9.00		18.00	60.0	UN	JA
B205589	GW03280IT	7/30/92	10.00		20.00	60.0	U	V
B205589	GW03776IT	10/20/92	30.00	18.47	60.00	60.0	U	
B302789	GW02144IT	12/15/91	13.45		26.90	60.0	U	JA
B302789	GW03052IT	6/9/92	9.00		18.00	60.0	U	V
B302789	GW03759IT	10/22/92	12.20	11.55	24.40	24.4	U	
B302889	GW02068IT	12/16/91	20.40		20.40	60.0	B	V
B302889	GW02503IT	2/22/92	4.00		8.00	60.0	U	
B302889	GW03040IT	6/4/92	9.00		18.00	60.0	UN	JA
B302889	GW03400IT	8/13/92	30.00		60.00	60.0	U	
B302889	GW03749IT	11/6/92	15.00	15.68	30.00	60.0	U	
B302989	GW01672IT	8/29/91	4.00		8.00	60.0	U	
B302989	GW02069IT	12/7/91	21.90		21.90	60.0	B	JA
B302989	GW02492IT	2/21/92	4.00		8.00	60.0	U	V
B302989	GW03051IT	6/4/92	9.00		18.00	60.0	UN	JA
B302989	GW03401IT	8/13/92	30.00		60.00	60.0	U	
B302989	GW03752IT	11/6/92	15.00	13.98	30.00	60.0	U	
B304289	GW01738IT	9/18/91	3.50		7.00	60.0	U	V
B304289	GW02145IT	12/15/91	10.05		20.10	60.0	U	JA
B304289	GW03053IT	6/11/92	9.90		19.80	19.8	U	V
B304289	GW03402IT	9/11/92	9.40		18.80	18.8	U	V
B304289	GW03760IT	10/23/92	12.20	9.01	24.40	24.4	U	
B304989	GW01794IT	9/20/91	10.10		20.20	60.0	U	JA
B304989	GW02150IT	12/19/91	5.70		11.40	60.0	U	JA
B304989	GW02505IT	2/21/92	4.00		8.00	60.0	U	JA
B304989	GW03042IT	6/4/92	9.00		18.00	60.0	U	V
B304989	GW03404IT	8/19/92	30.00		60.00	60.0	U	
B304989	GW03751IT	10/27/92	30.00	14.80	60.00	60.0	U	
B305389	GW02153IT	12/18/91	12.85		25.70	60.0	U	JA
B305389	GW03054IT	6/10/92	9.00		18.00	60.0	U	V
B305389	GW03405IT	8/18/92	30.00		60.00	60.0	U	
B305389	GW03761IT	10/23/92	12.20	16.01	24.40	24.4	U	
B400189	GW02052IT	11/25/91	22.95		45.90	60.0	U	JA

ATTACHMENT H1
TABLE 26
95% UCL CONCENTRATION
BACKGROUND
GROUNDWATER METALS

			ANTIMONY (ug/l)					
Location	Field ID	Sample Date	Result	Well Ave	SQL	CDRL	Qual	Valid. Qual
B400189	GW02456IT	2/13/92	14.80		14.80	60.0	BN	JA
B400189	GW03033IT	6/2/92	9.00		18.00	60.0	U	V
B400189	GW03034IT	6/5/92	9.00		18.00	60.0	U	V
B400189	GW03397IT	8/20/92	20.18		40.35	28.2	U	V
B400189	GW03753IT	11/19/92	7.00	13.82	14.00	60.0	U	
B400289	GW00397IT	9/14/90	15.00		30.00		U	
B400289	GW01790IT	9/19/91	14.85		29.70	60.0	U	JA
B400289	GW02139IT	12/17/91	12.10		24.20	60.0	U	JA
B400289	GW02458IT	2/13/92	9.90		9.90	60.0	BN	JA
B400289	GW02959IT	6/9/92	9.00		18.00	60.0	U	V
B400289	GW03468IT	9/8/92	30.00	15.14	60.00	60.0	U	
B400389	GW01789IT	9/18/91	14.50		29.00	60.0	U	JA
B400389	GW02053IT	11/25/91	35.00		70.00	60.0	U	JA
B400389	GW02444IT	2/7/92	4.00		8.00	60.0	U	V
B400389	GW02960IT	6/8/92	9.00		18.00	60.0	U	V
B400389	GW03479IT	9/23/92	30.00		60.00	60.0	U	
B400389	GW03762IT	11/12/92	15.00	17.92	30.00	60.0	U	
B400489	GW01778IT	9/16/91	3.50		7.00	60.0	U	JA
B400489	GW02054IT	11/26/91	19.40		38.80	60.0	U	JA
B400489	GW02443IT	2/10/92	4.00		8.00	60.0	U	V
B400489	GW02961IT	6/9/92	9.00		18.00	60.0	U	V
B400489	GW03482IT	9/15/92	30.00		60.00	60.0	U	
B400489	GW03763IT	11/11/92	30.00	15.98	60.00	60.0	U	
B401989	GW01745IT	9/6/91	25.00		50.00	60.0	U	V
B401989	GW02070IT	12/14/91	16.50		16.50	60.0	B	V
B401989	GW02583IT	3/13/92	9.00		18.00	60.0	U	V
B401989	GW03066IT	6/24/92	9.00		18.00	60.0	U	V
B401989	GW03339IT	8/6/92	30.00		60.00	60.0	U	
B401989	GW03748IT	10/21/92	30.00	19.92	60.00	60.0	U	
B402189	GW02141IT	12/19/91	19.03		38.05	60.0	U	JA
B402189	GW02540IT	3/23/92	9.00		18.00	60.0	UN	V
B402189	GW03067IT	6/24/92	9.00		18.00	60.0	U	V
B402189	GW03406IT	8/18/92	30.00		60.00	60.0	U	
B402189	GW03734IT	11/12/92	15.00	16.41	30.00	60.0	U	
B402689	GW01716IT	8/27/91	4.00		8.00	60.0	U	
B402689	GW02123IT	12/14/91	22.00		22.00	60.0	B	V
B402689	GW02948IT	5/28/92	9.00		18.00	60.0	U	V
B402689	GW03733IT	12/3/92	16.50	12.88	33.00	17.0	U	
B405489	GW01719IT	8/28/91	4.00		8.00	60.0	U	
B405489	GW02154IT	12/18/91	12.25		24.50	60.0	U	JA
B405489	GW02451IT	2/10/92	12.80		12.80	60.0	BN	JA
B405489	GW02996IT	6/26/92	9.00		18.00	60.0	U	V
B405489	GW03346IT	8/19/92	30.00		60.00	60.0	U	
B405489	GW03742IT	11/11/92	30.00	16.34	60.00	60.0	U	
B405586	GW01775IT	9/13/91	16.80		16.80	60.0	B	V
B405586	GW02168IT	12/18/91	19.03		38.05	60.0	U	JA
B405586	GW02452IT	3/13/92	20.70		20.70	60.0	B	V
B405586	GW02993IT	6/11/92	9.90		19.80	19.8	U	V
B405586	GW03343IT	8/18/92	30.00		60.00	60.0	U	
B405586	GW03745IT	12/8/92	16.50	18.82	33.00	17.0	U	
B405689	GW02056IT	12/18/91	12.95		25.90	60.0	U	JA
B405689	GW02457IT	2/13/92	13.00		13.00	60.0	BN	JA
B405689	GW03036IT	6/29/92	18.70		18.70	60.0	B	JA
B405689	GW03418IT	8/18/92	30.00		60.00	60.0	U	
B405689	GW03764IT	11/9/92	30.00	20.93	60.00	60.0	U	

ATTACHMENT H1
TABLE 26
95% UCL CONCENTRATION
BACKGROUND
GROUNDWATER METALS

			ANTIMONY (ug/l)					
Location	Field ID	Sample Date	Result	Well Ave	SQL	CDRL	Qual	Valid. Qual
B405789	GW01784IT	9/17/91	3.50		7.00	60.0	U	JA
B405789	GW02055IT	11/26/91	18.35		36.70	60.0	U	JA
B405789	GW02442IT	2/10/92	4.00		8.00	60.0	U	V
B405789	GW02963IT	6/8/92	9.00		18.00	60.0	U	V
B405789	GW03419IT	9/22/92	30.00		60.00	60.0	U	
B405789	GW03765IT	11/10/92	30.00	15.81	60.00	60.0	U	
B405889	GW01720IT	8/27/91	4.00		8.00	60.0	U	
B405889	GW02071IT	12/14/91	13.10		13.10	60.0	B	V
B405889	GW02584IT	3/13/92	9.00		18.00	60.0	U	V
B405889	GW03001IT	6/5/92	9.00		18.00	60.0	UN	JA
B405889	GW03309IT	8/17/92	30.00		60.00	60.0	U	
B405889	GW03737IT	11/12/92	15.00	13.35	30.00	60.0	U	

Number of Samples	177
Number of Detects	26
Minimum Detected	7.10
Maximum Detected	1610.00
Average	24.65

Number of wells sampled	36
Number of wells with detects	23
Minimum well average	3.50
Maximum well average	#DIV/0!
Average	21.16
Standard Deviation	36.82
t-value	1.697
95% UCL (1)	31.57

ATTACHMENT H1
TABLE 27
95% UCL CONCENTRATION
BACKGROUND
GROUNDWATER METALS

				ARSENIC (ug/l)				
Location	Field ID	Sample Date	Result	Well Ave	SQL	CDRL	Qual	Valid. Qua
B102289	GW01785IT	9/17/91	1.0		2.0	10.0	U	V
B102289	GW02126IT	12/12/91	2.0		2.0	10.0	B	V
B102289	GW02482IT	2/28/92	1.0		2.0	10.0	U	V
B102289	GW02944IT	5/26/92	2.3		2.3	10.0	B	V
B102289	GW03218IT	7/28/92	0.6		1.3	10.0	U	V
B102289	GW03795IT	10/27/92	5.0	2.0	10.0	10.0	U	
B102389	GW02129IT	12/13/91	2.0		2.0	10.0	B	V
B102389	GW02485IT	2/13/92	1.0		1.0	10.0	BN	JA
B102389	GW02947IT	5/26/92	1.1		1.1	10.0	B	V
B102389	GW03224IT	8/11/92	5.0		10.0	10.0	UN	
B102389	GW03798IT	10/16/92	0.8	2.0	0.8	0.7		
B200589	GW01774IT	9/19/91	1.0		2.0	10.0	U	V
B200589	GW02043IT	12/7/91	3.0		3.0	10.0	B	V
B200589	GW02322IT	1/28/92	0.5		1.0	10.0	U	V
B200589	GW03030IT	6/26/92	0.5		1.0	10.0	U	V
B200589	GW03471IT	9/23/92	5.0		10.0	10.0	UWN	
B200589	GW03790IT	11/5/92	0.5	1.8	1.0	10.0	U	
B200689	GW01780IT	9/17/91	1.0		2.0	10.0	U	V
B200689	GW02497IT	2/20/92	0.5		1.0	10.0	UN	
B200689	GW02980IT	5/29/92	0.5		1.0	10.0	U	V
B200689	GW03274IT	8/10/92	5.0		10.0	10.0	UN	
B200689	GW03783IT	11/10/92	5.0	2.4	10.0	10.0	UN	
B200789	GW01773IT	9/13/91	1.0		2.0	10.0	U	V
B200789	GW02095IT	12/7/91	1.0		2.0	10.0	U	V
B200789	GW02554IT	3/3/92	1.0		2.0	10.0	U	V
B200789	GW02981IT	6/2/92	1.0		2.0	10.0	UN	JA
B200789	GW03269IT	8/18/92	5.0		10.0	10.0	U	
B200789	GW03785IT	10/26/92	10.0	3.2	10.0	10.0	UW	
B200889	GW01766IT	9/13/91	1.0		2.0	10.0	U	V
B200889	GW02096IT	12/7/91	1.0		2.0	10.0	U	V
B200889	GW02351IT	2/3/92	0.5		1.0	10.0	UN	JA
B200889	GW03027IT	6/4/92	0.5		1.0	10.0	U	V
B200889	GW03273IT	8/17/92	5.0		10.0	10.0	U	
B200889	GW03933IT	11/12/92	0.5	1.4	1.0	10.0	U	
B201189	GW02103IT	12/11/91	1.0		2.0	10.0	U	V
B201189	GW02522IT	2/27/92	1.0		2.0	10.0	U	V
B201189	GW02972IT	6/5/92	2.9		2.9	10.0	BN	JA
B201189	GW03275IT	7/30/92	0.5		1.0	10.0	UN	JA
B201189	GW03774IT	10/20/92	5.0	2.1	10.0	10.0	U	
B201289	GW03271IT	7/27/92	0.5	0.5	1.0	10.0	UWN	JA
B201589	GW02104IT	12/10/91	1.0		2.0	10.0	U	V
B201589	GW02973IT	6/5/92	0.5	0.8	1.0	10.0	UN	JA
B202489	GW01757IT	9/11/91	1.0		2.0	10.0	U	V
B202489	GW02119IT	12/11/91	1.0		2.0	10.0	U	V
B202489	GW02535IT	2/27/92	1.0		2.0	10.0	U	V
B202489	GW02970IT	6/3/92	1.0		2.0	10.0	UN	JA
B202489	GW03272IT	7/27/92	0.5		1.0	10.0	UN	JA
B202489	GW03773IT	10/19/92	5.0	1.6	10.0	10.0	UW	
B202589	GW01753IT	9/10/91	1.0		2.1	10.0	U	V
B202589	GW02099IT	12/9/91	1.0		2.0	10.0	U	V
B202589	GW02544IT	3/26/92	1.0		2.0	10.0	UN	V
B202589	GW02967IT	5/29/92	1.1		1.1	10.0	B	V
B202589	GW03325IT	8/13/92	5.0		10.0	10.0	UN	

ATTACHMENT H1
TABLE 27
95% UCL CONCENTRATION
BACKGROUND
GROUNDWATER METALS

				ARSENIC (ug/l)				
Location	Field ID	Sample Date	Result	Well Ave	SQL	CDRL	Qual	Valid. Qua
B202589	GW03766IT	10/21/92	5.0	2.3	10.0	10.0	UW	
B203189	GW01781IT	9/18/91	1.0	1.0	2.0	10.0	U	V
B203289	GW01782IT	9/17/91	1.0		2.0	10.0	U	V
B203289	GW02040IT	12/11/91	1.0		2.0	10.0	U	V
B203289	GW02498IT	2/21/92	0.5		1.0	10.0	UN	
B203289	GW03270IT	8/11/92	5.0		10.0	10.0	UWN	
B203289	GW03784IT	11/4/92	5.0	2.5	10.0	10.0	UN	
B203489	GW01772IT	9/13/91	1.0	1.0	2.0	10.0	U	V
B203789	GW01771IT	9/13/91	1.0	1.0	2.0	10.0	U	V
B203989	GW00341IT	9/14/90	6.2		6.2		B	
B203989	GW01756IT	9/11/91	4.4		4.4	10.0	B	V
B203989	GW02120IT	12/14/91	5.0		5.0	10.0	B	V
B203989	GW02536IT	3/3/92	2.4		2.4	10.0	B	V
B203989	GW02978IT	6/5/92	3.1		3.1	10.0	BN	JA
B203989	GW03279IT	7/30/92	2.9		2.9	10.0	BN	JA
B203989	GW03782IT	10/23/92	0.4	3.5	0.7	0.7	U	
B204189	GW01770IT	9/13/91	4.0		4.0	10.0	B	V
B204189	GW02122IT	12/12/91	7.0		7.0	10.0	B	V
B204189	GW02594IT	3/17/92	4.3		4.3	10.0	BN	JA
B204189	GW02988IT	5/29/92	6.9		6.9	10.0	B	V
B204189	GW03264IT	8/12/92	5.0		10.0	10.0	UN	
B204189	GW03789IT	10/23/92	2.5	5.0	2.5	0.7		
B205589	GW01746IT	9/10/91	1.0		2.0	10.0	U	V
B205589	GW02107IT	12/11/91	1.0		2.0	10.0	U	V
B205589	GW02523IT	2/27/92	1.0		2.0	10.0	U	JA
B205589	GW02974IT	6/5/92	1.0		1.0	10.0	BN	JA
B205589	GW03280IT	7/30/92	1.3		1.3	10.0	BN	JA
B205589	GW03776IT	10/20/92	5.0	1.7	10.0	10.0	U	
B302789	GW03052IT	6/9/92	0.5		1.0	10.0	U	V
B302789	GW03759IT	10/22/92	0.4	0.4	0.7	0.7	U	
B302889	GW02068IT	12/16/91	1.0		2.0	10.0	U	V
B302889	GW02503IT	2/22/92	0.5		1.0	10.0	UN	
B302889	GW03040IT	6/4/92	0.5		1.0	10.0	UN	JA
B302889	GW03400IT	8/13/92	5.0		10.0	10.0	UN	
B302889	GW03749IT	11/6/92	0.5	1.5	1.0	10.0	U	
B302989	GW01672IT	8/29/91	1.0		2.0	10.0	U	
B302989	GW02069IT	12/7/91	1.0		2.0	10.0	U	V
B302989	GW02492IT	2/21/92	0.5		1.0	10.0	UN	JA
B302989	GW03051IT	6/4/92	0.5		1.0	10.0	UN	JA
B302989	GW03401IT	8/13/92	5.0		10.0	10.0	UN	
B302989	GW03752IT	11/6/92	0.5	1.4	1.0	10.0	U	
B304289	GW01738IT	9/18/91	1.0		2.0	10.0	U	V
B304289	GW02145IT	12/15/91	3.0		3.0	10.0	BN	JA
B304289	GW02588IT	3/16/92	2.5		2.5	10.0	BN	JA
B304289	GW03053IT	6/11/92	0.5		1.0	1.0	U	JA
B304289	GW03760IT	10/23/92	0.4	1.5	0.7	0.7	U	
B304989	GW01794IT	9/20/91	1.0		2.0	10.0	U	V
B304989	GW02505IT	2/21/92	1.0		2.0	10.0	UWN	JA
B304989	GW03042IT	6/4/92	2.3		2.3	10.0	BWN	JA
B304989	GW03404IT	8/19/92	5.0		10.0	10.0	U	
B304989	GW03751IT	10/27/92	5.0	2.9	10.0	10.0	UW	
B305389	GW01739IT	9/19/91	1.0		2.0	10.0	U	V
B305389	GW03054IT	6/10/92	0.5		1.0	10.0	U	V

ATTACHMENT H1
TABLE 27
95% UCL CONCENTRATION
BACKGROUND
GROUNDWATER METALS

				ARSENIC (ug/l)				
Location	Field ID	Sample Date	Result	Well Ave	SQL	CDRL	Qual	Valid. Qua
B305389	GW03405IT	8/18/92	5.0		10.0	10.0	U	
B305389	GW03761IT	10/23/92	0.4	1.7	0.7	0.7	U	
B400189	GW01750IT	9/17/91	1.0		2.0	10.0	U	V
B400189	GW02052IT	11/25/91	1.0		2.0	10.0	U	V
B400189	GW02456IT	2/13/92	1.0		2.0	10.0	UN	JA
B400189	GW03033IT	6/2/92	1.0		2.0	10.0	UN	JA
B400189	GW03034IT	6/5/92	1.0		2.0	10.0	UN	JA
B400189	GW03397IT	8/20/92	0.5		1.0	1.0	U	V
B400189	GW03753IT	11/19/92	0.5	0.9	1.0	10.0	U	
B400289	GW00397IT	9/14/90	1.0		2.0		UW	
B400289	GW01790IT	9/19/91	1.0		2.0	10.0	U	V
B400289	GW02458IT	2/13/92	1.0		2.0	10.0	UN	JA
B400289	GW02959IT	6/9/92	1.3		1.3	10.0	B	V
B400289	GW03468IT	9/8/92	5.0	1.9	10.0	10.0	UN	
B400389	GW01789IT	9/18/91	1.0		2.0	10.0	U	V
B400389	GW02053IT	11/25/91	2.0		2.0	10.0	B	V
B400389	GW02444IT	2/7/92	0.5		1.0	10.0	UN	JA
B400389	GW02960IT	6/8/92	1.3		1.3	10.0	B	V
B400389	GW03479IT	9/23/92	5.0		10.0	10.0	UN	
B400389	GW03762IT	11/12/92	0.5	1.7	1.0	10.0	U	
B400489	GW01778IT	9/16/91	1.0		2.0	10.0	U	V
B400489	GW02443IT	2/10/92	0.5		1.0	10.0	UN	JA
B400489	GW02961IT	6/9/92	0.5		1.0	10.0	U	V
B400489	GW03482IT	9/15/92	5.0		10.0	10.0	UW	
B400489	GW03763IT	11/11/92	5.0	2.4	10.0	10.0	UN	
B401989	GW01745IT	9/6/91	1.0		2.0	10.0	U	V
B401989	GW02070IT	12/14/91	1.0		2.0	10.0	U	V
B401989	GW02583IT	3/13/92	0.5		1.0	10.0	UN	JA
B401989	GW03066IT	6/24/92	0.5		1.0	10.0	U	V
B401989	GW03339IT	8/6/92	5.0		10.0	10.0	UN	
B401989	GW03748IT	10/21/92	5.0	2.2	10.0	10.0	UW	
B402189	GW02141IT	12/19/91	1.0		2.0	10.0	U	V
B402189	GW02540IT	3/23/92	1.0		2.0	10.0	UN	V
B402189	GW03067IT	6/24/92	0.5		1.0	10.0	U	V
B402189	GW03406IT	8/18/92	5.0		10.0	10.0	U	
B402189	GW03734IT	11/12/92	1.5	1.8	1.5	10.0	B	
B402689	GW01716IT	8/27/91	1.0		2.0	10.0	U	
B402689	GW02123IT	12/14/91	1.0		2.0	10.0	U	V
B402689	GW02475IT	2/13/92	0.5		1.0	10.0	UN	JA
B402689	GW02948IT	5/28/92	0.5		1.0	10.0	U	V
B402689	GW03733IT	12/3/92	1.0	0.8	2.0	2.0	U	
B405489	GW01719IT	8/28/91	1.0		2.0	10.0	U	
B405489	GW02451IT	2/10/92	0.5		1.0	10.0	UN	JA
B405489	GW02996IT	6/26/92	0.5		1.0	10.0	U	V
B405489	GW03346IT	8/19/92	5.0		10.0	10.0	U	
B405489	GW03742IT	11/11/92	5.0	2.4	10.0	10.0	UN	
B405586	GW01775IT	9/13/91	1.0		2.0	10.0	U	V
B405586	GW02452IT	3/13/92	1.6		1.6	10.0	BN	JA
B405586	GW02993IT	6/11/92	1.9		1.9	1.0		JA
B405586	GW03343IT	8/18/92	5.0		10.0	10.0	U	
B405586	GW03745IT	12/8/92	1.0	2.1	2.0	2.0	U	
B405689	GW01783IT	9/17/91	1.0		2.0	10.0	U	V
B405689	GW02457IT	2/13/92	1.0		2.0	10.0	UN	JA

ATTACHMENT H1
TABLE 27
95% UCL CONCENTRATION
BACKGROUND
GROUNDWATER METALS

				ARSENIC (ug/l)				
Location	Field ID	Sample Date	Result	Well Ave	SQL	CDRL	Qual	Valid. Qua
B405689	GW03036IT	6/29/92	0.5		1.0	10.0	U	V
B405689	GW03418IT	8/18/92	5.0		10.0	10.0	UW	
B405689	GW03764IT	11/9/92	5.0	2.5	10.0	10.0	UN	
B405789	GW01784IT	9/17/91	1.0		2.0	10.0	U	V
B405789	GW02442IT	2/10/92	0.5		1.0	10.0	UN	JA
B405789	GW02963IT	6/8/92	0.5		1.0	10.0	U	V
B405789	GW03419IT	9/22/92	5.0		10.0	10.0	UN	
B405789	GW03765IT	11/10/92	5.0		10.0	10.0	UN	
B405889	GW01720IT	8/27/91	1.0		2.0	10.0	U	
B405889	GW02071IT	12/14/91	1.0		2.0	10.0	U	V
B405889	GW02584IT	3/13/92	0.5		1.0	10.0	UN	JA
B405889	GW03001IT	6/5/92	0.5		1.0	10.0	UN	JA
B405889	GW03309IT	8/17/92	5.0		10.0	10.0	UW	
B405889	GW03737IT	11/12/92	0.5	1.9	1.0	10.0	U	
Number of Samples			173					
Number of Detects			13					
Minimum Detected			0.4					
Maximum Detected			10.0					
Average			2.0					
Number of wells sampled				35				
Number of wells with detects				8				
Minimum well average				0.43				
Maximum well average				4.95				
Average				1.87				
Standard Deviation				0.88				
t-value				1.697				
95% UCL (1)				2.12				

ATTACHMENT H1
TABLE 28
95% UCL CONCENTRATION
BACKGROUND
GROUNDWATER METALS

			BERYLLIUM (ug/l)				
Location	Field ID	Sample Date	Result	Well Ave	SQL	CDRL	Qual
B102289	GW01785IT	9/17/91	0.5		1.0	5.0	U
B102289	GW02126IT	12/12/91	0.5		1.0	5.0	U
B102289	GW02482IT	2/28/92	0.5		1.0	5.0	U
B102289	GW02944IT	5/26/92	1.8		1.8	5.0	B
B102289	GW03218IT	7/28/92	1.5		3.0	5.0	U
B102289	GW03795IT	10/27/92	2.5	1.2	5.0	5.0	U
B102389	GW02129IT	12/13/91	0.5		1.0	5.0	U
B102389	GW02485IT	2/13/92	0.5		1.0	5.0	U
B102389	GW02947IT	5/26/92	0.5		1.0	5.0	U
B102389	GW03224IT	8/11/92	2.5		5.0	5.0	U
B102389	GW03798IT	10/16/92	0.4	0.9	0.8	0.8	U
B200589	GW01774IT	9/19/91	0.5		1.0	5.0	U
B200589	GW02043IT	12/7/91	4.8		4.8	5.0	B
B200589	GW02322IT	1/28/92	0.5		1.0	5.0	U
B200589	GW03030IT	6/26/92	0.5		1.0	5.0	U
B200589	GW03471IT	9/23/92	2.5		5.0	5.0	U
B200589	GW03790IT	11/5/92	1.1	1.6	1.1	5.0	B
B200689	GW01780IT	9/17/91	0.5		1.0	5.0	U
B200689	GW02497IT	2/20/92	0.5		1.0	5.0	U
B200689	GW02980IT	5/29/92	1.1		1.1	5.0	B
B200689	GW03274IT	8/10/92	2.5		5.0	5.0	U
B200689	GW03783IT	11/10/92	2.5	1.4	5.0	5.0	U
B200789	GW01773IT	9/13/91	0.5		1.0	5.0	U
B200789	GW02095IT	12/7/91	0.5		1.0	5.0	U
B200789	GW02554IT	3/3/92	0.5		1.0	5.0	U
B200789	GW02981IT	6/2/92	0.5		1.0	5.0	U
B200789	GW03269IT	8/18/92	2.5		5.0	5.0	U
B200789	GW03785IT	10/26/92	2.5	1.2	5.0	5.0	U
B200889	GW01766IT	9/13/91	0.5		1.0	5.0	U
B200889	GW02096IT	12/7/91	0.5		1.0	5.0	U
B200889	GW02351IT	2/3/92	0.5		1.0	5.0	U
B200889	GW03027IT	6/4/92	1.1		1.1	5.0	B
B200889	GW03273IT	8/17/92	2.5		5.0	5.0	U
B200889	GW03933IT	11/12/92	0.5	0.9	1.0	5.0	U
B201189	GW02103IT	12/11/91	0.5		1.0	5.0	U
B201189	GW02522IT	2/27/92	0.5		1.0	5.0	U
B201189	GW02972IT	6/5/92	0.5		1.0	5.0	U
B201189	GW03275IT	7/30/92	1.5		3.0	5.0	U
B201189	GW03774IT	10/20/92	2.5	1.1	5.0	5.0	U
B201289	GW03271IT	7/27/92	1.5	1.5	3.0	5.0	U
B201589	GW02104IT	12/10/91	0.5		1.0	5.0	U
B201589	GW02973IT	6/5/92	0.5	0.5	1.0	5.0	U
B202489	GW01757IT	9/11/91	2.0		2.0	5.0	B
B202489	GW02119IT	12/11/91	0.5		1.0	5.0	U
B202489	GW02535IT	2/27/92	0.5		1.0	5.0	U
B202489	GW02970IT	6/3/92	0.5		1.0	5.0	U
B202489	GW03272IT	7/27/92	1.5		3.0	5.0	U
B202489	GW03773IT	10/19/92	2.5	1.3	5.0	5.0	U
B202589	GW01753IT	9/10/91	1.0		2.0	5.0	U
B202589	GW02099IT	12/9/91	0.5		1.0	5.0	U
B202589	GW02544IT	3/26/92	0.5		1.0	5.0	U
B202589	GW02967IT	5/29/92	0.5		1.0	5.0	U
B202589	GW03325IT	8/13/92	2.5		5.0	5.0	U

ATTACHMENT H1
TABLE 28
95% UCL CONCENTRATION
BACKGROUND
GROUNDWATER METALS

			BERYLLIUM (ug/l)				
Location	Field ID	Sample Date	Result	Well Ave	SQL	CDRL	Qual
B202589	GW03766IT	10/21/92	2.5	1.0	5.0	5.0	U
B203189	GW01781IT	9/18/91	0.5	0.5	1.0	5.0	U
B203289	GW01782IT	9/17/91	0.5		1.0	5.0	U
B203289	GW02040IT	12/11/91	0.5		1.0	5.0	U
B203289	GW02498IT	2/21/92	0.5		1.0	5.0	U
B203289	GW03270IT	8/11/92	2.5		5.0	5.0	U
B203289	GW03784IT	11/4/92	2.5	1.3	5.0	5.0	U
B203489	GW01772IT	9/13/91	0.5	0.5	1.0	5.0	U
B203789	GW01771IT	9/13/91	0.5	0.5	1.0	5.0	U
B203989	GW00341IT	9/14/90	1.0		2.0		U
B203989	GW01756IT	9/11/91	160.0		160.0	5.0	
B203989	GW02120IT	12/14/91	0.5		1.0	5.0	U
B203989	GW02536IT	3/3/92	0.5		1.0	5.0	U
B203989	GW02978IT	6/5/92	0.5		1.0	5.0	U
B203989	GW03279IT	7/30/92	1.5		3.0	5.0	U
B203989	GW03782IT	10/23/92	0.4	23.5	0.8	0.8	U
B204189	GW01770IT	9/13/91	0.5		1.0	5.0	U
B204189	GW02122IT	12/12/91	0.5		1.0	5.0	U
B204189	GW02594IT	3/17/92	0.5		1.0	5.0	U
B204189	GW02988IT	5/29/92	0.5		1.0	5.0	U
B204189	GW03264IT	8/12/92	2.5		5.0	5.0	U
B204189	GW03789IT	10/23/92	0.4	0.8	0.8	0.8	U
B205589	GW01746IT	9/10/91	1.0		2.0	5.0	U
B205589	GW02107IT	12/11/91	0.5		1.0	5.0	U
B205589	GW02523IT	2/27/92	0.5		1.0	5.0	U
B205589	GW02974IT	6/5/92	0.5		1.0	5.0	U
B205589	GW03280IT	7/30/92	1.5		3.0	5.0	U
B205589	GW03776IT	10/20/92	2.5	1.1	5.0	5.0	U
B302789	GW02144IT	12/15/91	0.5		1.0	5.0	U
B302789	GW02587IT	3/16/92	0.5		1.0	5.0	U
B302789	GW03052IT	6/9/92	0.5		1.0	5.0	U
B302789	GW03759IT	10/22/92	0.4	0.5	0.8	0.8	U
B302889	GW02068IT	12/16/91	0.5		1.0	5.0	U
B302889	GW02503IT	2/22/92	0.5		1.0	5.0	U
B302889	GW03040IT	6/4/92	0.5		1.0	5.0	U
B302889	GW03400IT	8/13/92	2.5		5.0	5.0	U
B302889	GW03749IT	11/6/92	0.5	0.9	1.0	5.0	U
B302989	GW01672IT	8/29/91	0.5		1.0	5.0	U
B302989	GW02069IT	12/7/91	0.5		1.0	5.0	U
B302989	GW02492IT	2/21/92	0.5		1.0	5.0	U
B302989	GW03051IT	6/4/92	0.5		1.0	5.0	U
B302989	GW03401IT	8/13/92	2.5		5.0	5.0	U
B302989	GW03752IT	11/6/92	0.5	0.8	1.0	5.0	U
B304289	GW01738IT	9/18/91	0.5		1.0	5.0	U
B304289	GW02145IT	12/15/91	0.5		1.0	5.0	U
B304289	GW02588IT	3/16/92	0.5		1.0	5.0	U
B304289	GW03053IT	6/11/92	0.3		0.6	0.6	U
B304289	GW03402IT	9/11/92	0.3		0.6	0.6	U
B304289	GW03760IT	10/23/92	0.4	0.4	0.8	0.8	U
B304989	GW01794IT	9/20/91	0.5		1.0	5.0	U
B304989	GW02150IT	12/19/91	0.5		1.0	5.0	U
B304989	GW02505IT	2/21/92	0.5		1.0	5.0	U
B304989	GW03042IT	6/4/92	0.5		1.0	5.0	U

ATTACHMENT H1
TABLE 28
95% UCL CONCENTRATION
BACKGROUND
GROUNDWATER METALS

			BERYLLIUM (ug/l)				
Location	Field ID	Sample Date	Result	Well Ave	SQL	CDRL	Qual
B304989	GW03404IT	8/19/92	2.5		5.0	5.0	U
B304989	GW03751IT	10/27/92	2.5	1.2	5.0	5.0	U
B305389	GW01739IT	9/19/91	0.5		1.0	5.0	U
B305389	GW02153IT	12/18/91	0.5		1.0	5.0	U
B305389	GW02595IT	3/16/92	0.5		1.0	5.0	U
B305389	GW03054IT	6/10/92	0.5		1.0	5.0	U
B305389	GW03405IT	8/18/92	2.5		5.0	5.0	U
B305389	GW03761IT	10/23/92	0.4	0.8	0.8	0.8	U
B400189	GW01750IT	9/17/91	0.5		1.0	5.0	U
B400189	GW02052IT	11/25/91	0.5		1.0	5.0	U
B400189	GW02456IT	2/13/92	0.5		1.0	5.0	U
B400189	GW03033IT	6/2/92	0.5		1.0	5.0	U
B400189	GW03034IT	6/5/92	0.5		1.0	5.0	U
B400189	GW03397IT	8/20/92	0.5		0.9	0.9	U
B400189	GW03753IT	11/19/92	0.5	0.5	1.0	5.0	U
B400289	GW00397IT	9/14/90	1.0		2.0		U
B400289	GW01790IT	9/19/91	0.5		1.0	5.0	U
B400289	GW02139IT	12/17/91	0.5		1.0	5.0	U
B400289	GW02458IT	2/13/92	0.5		1.0	5.0	U
B400289	GW02959IT	6/9/92	0.5		1.0	5.0	U
B400289	GW03468IT	9/8/92	2.5	0.9	5.0	5.0	U
B400389	GW01789IT	9/18/91	0.5		1.0	5.0	U
B400389	GW02053IT	11/25/91	1.0		1.0	5.0	B
B400389	GW02444IT	2/7/92	0.5		1.0	5.0	U
B400389	GW02960IT	6/8/92	1.7		1.7	5.0	B
B400389	GW03479IT	9/23/92	2.5		5.0	5.0	U
B400389	GW03762IT	11/12/92	0.5	1.1	1.0	5.0	U
B400489	GW01778IT	9/16/91	0.5		1.0	5.0	U
B400489	GW02054IT	11/26/91	0.5		1.0	5.0	U
B400489	GW02443IT	2/10/92	0.5		1.0	5.0	U
B400489	GW02961IT	6/9/92	0.5		1.0	5.0	U
B400489	GW03482IT	9/15/92	2.5		5.0	5.0	U
B400489	GW03763IT	11/11/92	2.5	1.2	5.0	5.0	U
B401989	GW01745IT	9/6/91	1.0		2.0	5.0	U
B401989	GW02070IT	12/14/91	0.5		1.0	5.0	U
B401989	GW02583IT	3/13/92	0.5		1.0	5.0	U
B401989	GW03066IT	6/24/92	0.5		1.0	5.0	U
B401989	GW03339IT	8/6/92	2.5		5.0	5.0	U
B401989	GW03748IT	10/21/92	2.5	1.3	5.0	5.0	U
B402189	GW02141IT	12/19/91	0.5		1.0	5.0	U
B402189	GW02540IT	3/23/92	0.5		1.0	5.0	U
B402189	GW03067IT	6/24/92	0.5		1.0	5.0	U
B402189	GW03406IT	8/18/92	2.5		5.0	5.0	U
B402189	GW03734IT	11/12/92	0.5	0.9	1.0	5.0	U
B402689	GW01716IT	8/27/91	0.5		1.0	5.0	U
B402689	GW02123IT	12/14/91	0.5		1.0	5.0	U
B402689	GW02475IT	2/13/92	0.5		1.0	5.0	U
B402689	GW02948IT	5/28/92	1.1		1.1	5.0	B
B402689	GW03733IT	12/3/92	0.5	0.6	1.0	1.0	U
B405489	GW01719IT	8/28/91	0.5		1.0	5.0	U
B405489	GW02154IT	12/18/91	0.5		1.0	5.0	U
B405489	GW02451IT	2/10/92	0.5		1.0	5.0	U
B405489	GW02996IT	6/26/92	0.5		1.0	5.0	U

ATTACHMENT H1
TABLE 28
95% UCL CONCENTRATION
BACKGROUND
GROUNDWATER METALS

			BERYLLIUM (ug/l)				
Location	Field ID	Sample Date	Result	Well Ave	SQL	CDRL	Qual
B405489	GW03346IT	8/19/92	2.5		5.0	5.0	U
B405489	GW03742IT	11/11/92	2.5	1.2	5.0	5.0	U
B405586	GW01775IT	9/13/91	0.5		1.0	5.0	U
B405586	GW02168IT	12/18/91	1.0		1.0	5.0	B
B405586	GW02452IT	3/13/92	0.5		1.1	5.0	U
B405586	GW02993IT	6/11/92	0.7		0.7	0.6	
B405586	GW03343IT	8/18/92	2.5		5.0	5.0	U
B405586	GW03745IT	12/8/92	0.8	1.0	1.6	1.0	U
B405689	GW01783IT	9/17/91	0.5		1.0	5.0	U
B405689	GW02056IT	12/18/91	0.5		1.0	5.0	U
B405689	GW02457IT	2/13/92	0.5		1.0	5.0	U
B405689	GW03036IT	6/29/92	0.5		1.0	5.0	U
B405689	GW03418IT	8/18/92	2.5		5.0	5.0	U
B405689	GW03764IT	11/9/92	2.5	1.2	5.0	5.0	U
B405789	GW01784IT	9/17/91	0.5		1.0	5.0	U
B405789	GW02055IT	11/26/91	0.5		1.0	5.0	U
B405789	GW02442IT	2/10/92	0.5		1.0	5.0	U
B405789	GW02963IT	6/8/92	0.5		1.0	5.0	U
B405789	GW03419IT	9/22/92	2.5		5.0	5.0	U
B405789	GW03765IT	11/10/92	2.5	1.2	5.0	5.0	U
B405889	GW01720IT	8/27/91	0.5		1.0	5.0	U
B405889	GW02071IT	12/14/91	0.5		1.0	5.0	U
B405889	GW02584IT	3/13/92	0.5		1.0	5.0	U
B405889	GW03001IT	6/5/92	0.5		1.0	5.0	U
B405889	GW03309IT	8/17/92	2.5		5.0	5.0	U
B405889	GW03737IT	11/12/92	0.5	0.8	1.0	5.0	U
Number of Samples			185				
Number of Detects			12				
Minimum Detected			0.7				
Maximum Detected			160.0				
Average			1.9				
Number of wells sampled				36			
Number of wells with detects				8			
Minimum well average				0.50			
Maximum well average				23.50			
Average				1.59			
Standard Deviation				3.77			
t-value				1.697			
95% UCL (1)				2.65			

ATTACHMENT H1
TABLE 29
95% UCL CONCENTRATION
BACKGROUND
GROUNDWATER METALS

			MANGANESE (ug/l)					
Location	Field ID	Sample Date	Result	Well Ave	SQL	CDRL	Qual	Valid. Qu
B102289	GW01785IT	9/17/91	44.9		44.9	15.0		V
B102289	GW02126IT	12/12/91	322.5		322.5	15.0		V
B102289	GW02482IT	2/28/92	112.3		112.3	15.0	•	JA
B102289	GW02944IT	5/26/92	365.0		365.0	15.0		V
B102289	GW03218IT	7/28/92	118.5		118.5	15.0		V
B102289	GW03795IT	10/27/92	298.0	210.2	298.0	15.0		
B102389	GW02129IT	12/13/91	136.0		136.0	15.0		V
B102389	GW02485IT	2/13/92	134.0		134.0	15.0		V
B102389	GW02947IT	5/26/92	166.0		166.0	15.0		V
B102389	GW03224IT	8/11/92	185.0		185.0	15.0	E	
B102389	GW03798IT	10/16/92	218.0	167.8	218.0	2.1		
B200589	GW01774IT	9/19/91	7.0		7.0	15.0	B	V
B200589	GW02043IT	12/7/91	1950.0		1950.0	15.0		V
B200589	GW02322IT	1/28/92	69.2		69.2	15.0		V
B200589	GW03030IT	6/26/92	37.0		37.0	15.0		V
B200589	GW03471IT	9/23/92	547.5		547.5	15.0		
B200589	GW03790IT	11/5/92	59.2	445.0	59.2	15.0		
B200689	GW01780IT	9/17/91	47.5		47.5	15.0		V
B200689	GW02042IT	11/18/91	25.0		25.0	15.0		
B200689	GW02497IT	2/20/92	50.5		50.5	15.0		
B200689	GW02980IT	5/29/92	156.0		156.0	15.0		V
B200689	GW03274IT	8/10/92	193.0		193.0	15.0	E	
B200689	GW03783IT	11/10/92	33.4	84.2	33.4	15.0		
B200789	GW01773IT	9/13/91	29.2		29.2	15.0		V
B200789	GW02095IT	12/7/91	54.8		54.8	15.0		V
B200789	GW02554IT	3/3/92	189.0		189.0	15.0	*	JA
B200789	GW02981IT	6/2/92	106.0		106.0	15.0		V
B200789	GW03269IT	8/18/92	36.5		36.5	15.0		
B200789	GW03785IT	10/26/92	92.0	84.6	92.0	15.0		
B200889	GW01766IT	9/13/91	28.5		28.5	15.0		V
B200889	GW02096IT	12/7/91	25.2		25.2	15.0		V
B200889	GW02351IT	2/3/92	77.6		77.6	15.0		V
B200889	GW03027IT	6/4/92	43.6		43.6	15.0		V
B200889	GW03273IT	8/17/92	22.2		22.2	15.0		
B200889	GW03933IT	11/12/92	31.1	38.0	31.1	15.0		
B201189	GW02103IT	12/11/91	73.5		73.5	15.0		V
B201189	GW02522IT	2/27/92	57.8		57.8	15.0		V
B201189	GW02972IT	6/5/92	58.1		58.1	15.0		V
B201189	GW03275IT	7/30/92	59.7		59.7	15.0		V
B201189	GW03774IT	10/20/92	584.0	166.6	584.0	15.0		
B201289	GW03271IT	7/27/92	7.3	7.3	7.3	15.0	B	V
B201589	GW02104IT	12/10/91	5.6		5.6	15.0	B	V
B201589	GW02973IT	6/5/92	3.9	4.8	3.9	15.0	B	V
B202489	GW01757IT	9/11/91	148.0		148.0	15.0		V
B202489	GW02119IT	12/11/91	11.8		11.8	15.0	B	V
B202489	GW02535IT	2/27/92	10.4		10.4	15.0	B	V
B202489	GW02970IT	6/3/92	6.5		6.5	15.0	B	V
B202489	GW03272IT	7/27/92	10.9		10.9	15.0	B	V
B202489	GW03773IT	10/19/92	30.2	36.3	30.2	15.0		
B202589	GW01753IT	9/10/91	78.5		78.5	15.0		V
B202589	GW02099IT	12/9/91	9.6		9.6	15.0		V
B202589	GW02544IT	3/26/92	3.9		3.9	15.0	B	V
B202589	GW02967IT	5/29/92	3.8		3.8	15.0	B	V

ATTACHMENT H1
TABLE 29
95% UCL CONCENTRATION
BACKGROUND
GROUNDWATER METALS

			MANGANESE (ug/l)					
Location	Field ID	Sample Date	Result	Well Ave	SQL	CDRL	Qual	Valid. Qu
B202589	GW03325IT	8/13/92	72.5		72.5	15.0	E	
B202589	GW03766IT	10/21/92	47.0	35.9	47.0	15.0		
B203189	GW01781IT	9/18/91	74.7	74.7	74.7	15.0		V
B203289	GW01782IT	9/17/91	98.3		98.3	15.0		V
B203289	GW02040IT	12/11/91	100.0		100.0	15.0		V
B203289	GW02498IT	2/21/92	37.8		37.8	15.0		
B203289	GW03270IT	8/11/92	192.0		192.0	15.0	E	
B203289	GW03784IT	11/4/92	145.0	114.6	145.0	15.0		
B203489	GW01772IT	9/13/91	16.6	16.6	16.6	15.0		V
B203789	GW01771IT	9/13/91	24.7	24.7	24.7	15.0		V
B203989	GW00341IT	9/14/90	5.9		5.9		B	
B203989	GW01756IT	9/11/91	710.0		710.0	15.0		V
B203989	GW02120IT	12/14/91	22.8		22.8	15.0		V
B203989	GW02536IT	3/3/92	33.7		33.7	15.0	*	JA
B203989	GW02978IT	6/5/92	28.1		28.1	15.0		V
B203989	GW03279IT	7/30/92	10.2		10.2	15.0	B	V
B203989	GW03782IT	10/23/92	8.9	117.1	8.9	2.1		
B204189	GW01770IT	9/13/91	73.0		73.0	15.0		V
B204189	GW02122IT	12/12/91	239.0		239.0	15.0		V
B204189	GW02594IT	3/17/92	110.0		110.0	15.0		V
B204189	GW02988IT	5/29/92	247.0		247.0	15.0		V
B204189	GW03264IT	8/12/92	128.0		128.0	15.0	E	
B204189	GW03789IT	10/23/92	130.0	154.5	130.0	2.1		
B205589	GW01746IT	9/10/91	70.7		70.7	15.0		V
B205589	GW02107IT	12/11/91	55.2		55.2	15.0		V
B205589	GW02523IT	2/27/92	42.0		42.0	15.0		V
B205589	GW02974IT	6/5/92	31.4		31.4	15.0		V
B205589	GW03280IT	7/30/92	30.8		30.8	15.0		V
B205589	GW03776IT	10/20/92	18.6	46.0	18.6	15.0		
B302789	GW02144IT	12/15/91	5.6		5.6	15.0	B	V
B302789	GW02587IT	3/16/92	7.1		7.1	15.0	BE	V
B302789	GW03052IT	6/9/92	33.6		33.6	15.0		V
B302789	GW03759IT	10/22/92	3.9	12.6	3.9	2.1		
B302889	GW02068IT	12/16/91	15.9		15.9	15.0		V
B302889	GW02503IT	2/22/92	3.8		3.8	15.0	B	
B302889	GW03040IT	6/4/92	6.2		6.2	15.0	B	V
B302889	GW03400IT	8/13/92	7.5		15.0	15.0	U	
B302889	GW03749IT	11/6/92	4.6	7.6	4.6	15.0	B	
B302989	GW01672IT	8/29/91	33.7		33.7	15.0		
B302989	GW02069IT	12/7/91	34.4		34.4	15.0		V
B302989	GW02492IT	2/21/92	21.3		21.3	15.0		V
B302989	GW03051IT	6/4/92	30.4		30.4	15.0		V
B302989	GW03401IT	8/13/92	31.5		31.5	15.0	E	
B302989	GW03752IT	11/6/92	37.5	31.5	37.5	15.0		
B304289	GW01738IT	9/18/91	21.5		21.5	15.0		V
B304289	GW02145IT	12/15/91	126.0		126.0	15.0		V
B304289	GW02588IT	3/16/92	78.7		78.7	15.0	E	V
B304289	GW03053IT	6/11/92	22.5		22.5	1.5		V
B304289	GW03402IT	9/11/92	20.8		20.8	1.4		V
B304289	GW03760IT	10/23/92	28.3	49.6	28.3	2.1		
B304989	GW01794IT	9/20/91	15.7		15.7	15.0		V
B304989	GW02150IT	12/19/91	15.2		15.2	15.0		V
B304989	GW02505IT	2/21/92	12.2		12.2	15.0	B	V

ATTACHMENT H1
TABLE 29
95% UCL CONCENTRATION
BACKGROUND
GROUNDWATER METALS

			MANGANESE (ug/l)					
Location	Field ID	Sample Date	Result	Well Ave	SQL	CDRL	Qual	Valid. Qu
B304989	GW03042IT	6/4/92	12.1		12.1	15.0	B	V
B304989	GW03404IT	8/19/92	7.5		15.0	15.0	U	
B304989	GW03751IT	10/27/92	17.3	13.3	17.3	15.0		
B305389	GW01739IT	9/19/91	0.5		1.0	15.0	U	V
B305389	GW02153IT	12/18/91	2.3		2.3	15.0	B	V
B305389	GW02595IT	3/16/92	3.4		3.4	15.0	BE	V
B305389	GW03054IT	6/10/92	2.7		2.7	15.0	B	JA
B305389	GW03405IT	8/18/92	7.5		15.0	15.0	U	
B305389	GW03761IT	10/23/92	1.1	2.9	2.1	2.1	U	
B400189	GW01750IT	9/17/91	124.0		124.0	15.0		V
B400189	GW02052IT	11/25/91	42.1		42.1	15.0		V
B400189	GW02456IT	2/13/92	7.5		7.5	15.0	BE	JA
B400189	GW03033IT	6/2/92	151.0		151.0	15.0		V
B400189	GW03034IT	6/5/92	141.0		141.0	15.0		V
B400189	GW03397IT	8/20/92	91.1		91.1	2.1		V
B400189	GW03753IT	11/19/92	74.4	90.1	74.4	15.0		
B400289	GW00397IT	9/14/90	3.1		3.1		B	
B400289	GW01790IT	9/19/91	19.2		19.2	15.0		V
B400289	GW02139IT	12/17/91	45.2		45.2	15.0		V
B400289	GW02458IT	2/13/92	5.2		5.2	15.0	BE	JA
B400289	GW02959IT	6/9/92	5.1		5.1	15.0	B	JA
B400289	GW03468IT	9/8/92	211.0	48.1	211.0	15.0		
B400389	GW01789IT	9/18/91	0.5		1.0	15.0	U	V
B400389	GW02053IT	11/25/91	244.0		244.0	15.0		V
B400389	GW02444IT	2/7/92	12.7		12.7	15.0	B	V
B400389	GW02960IT	6/8/92	60.3		60.3	15.0		V
B400389	GW03479IT	9/23/92	7.5		15.0	15.0	U	
B400389	GW03762IT	11/12/92	135.0	76.7	135.0	15.0		
B400489	GW01778IT	9/16/91	1.8		1.8	15.0	B	V
B400489	GW02054IT	11/26/91	52.6		52.6	15.0		V
B400489	GW02443IT	2/10/92	20.9		20.9	15.0		V
B400489	GW02961IT	6/9/92	19.7		19.7	15.0		V
B400489	GW03482IT	9/15/92	7.5		15.0	15.0	U	
B400489	GW03763IT	11/11/92	132.0	39.1	132.0	15.0		
B401989	GW01745IT	9/6/91	5.2		5.2	15.0	B	JA
B401989	GW02070IT	12/14/91	2.0		2.0	15.0	B	V
B401989	GW02583IT	3/13/92	5.2		5.2	15.0	B	V
B401989	GW03066IT	6/24/92	11.5		11.5	15.0	B	V
B401989	GW03339IT	8/6/92	19.2		19.2	15.0		
B401989	GW03748IT	10/21/92	7.5	8.4	15.0	15.0	U	
B402189	GW02141IT	12/19/91	9.3		9.3	15.0	B	V
B402189	GW02540IT	3/23/92	1.0		2.0	15.0	U	V
B402189	GW03067IT	6/24/92	21.1		21.1	15.0		V
B402189	GW03406IT	8/18/92	45.8		45.8	15.0		
B402189	GW03734IT	11/12/92	40.7	23.6	40.7	15.0		
B402689	GW01716IT	8/27/91	278.0		278.0	15.0		
B402689	GW02123IT	12/14/91	242.0		242.0	15.0		V
B402689	GW02475IT	2/13/92	209.0		209.0	15.0		V
B402689	GW02948IT	5/28/92	185.0		185.0	15.0		V
B402689	GW03733IT	12/3/92	253.0	233.4	253.0	1.0		
B405489	GW01719IT	8/28/91	3.3		3.3	15.0	B	
B405489	GW02154IT	12/18/91	7.1		7.1	15.0	B	V
B405489	GW02451IT	2/10/92	3.2		3.2	15.0	B	V

ATTACHMENT H1
TABLE 29
95% UCL CONCENTRATION
BACKGROUND
GROUNDWATER METALS

			MANGANESE (ug/l)					
Location	Field ID	Sample Date	Result	Well Ave	SQL	CDRL	Qual	Valid. Qu
B405489	GW02996IT	6/26/92	1.0		2.0	15.0	U	V
B405489	GW03346IT	8/19/92	7.5		15.0	15.0	U	
B405489	GW03742IT	11/11/92	7.5	4.9	15.0	15.0	U	
B405586	GW01775IT	9/13/91	125.0		125.0	15.0		V
B405586	GW02168IT	12/18/91	278.0		278.0	15.0		V
B405586	GW02452IT	3/13/92	299.0		299.0	15.0		V
B405586	GW02993IT	6/11/92	407.0		407.0	1.5		V
B405586	GW03343IT	8/18/92	303.0		303.0	15.0		
B405586	GW03745IT	12/8/92	456.0	311.3	456.0	1.0		
B405689	GW01783IT	9/17/91	0.5		1.0	15.0	U	V
B405689	GW02056IT	12/18/91	14.9		14.9	15.0	B	V
B405689	GW02457IT	2/13/92	5.2		5.2	15.0	BE	JA
B405689	GW03036IT	6/29/92	11.5		11.5	15.0	B	V
B405689	GW03418IT	8/18/92	7.5		15.0	15.0	U	
B405689	GW03764IT	11/9/92	21.2	10.1	21.2	15.0		
B405789	GW01784IT	9/17/91	3.7		3.7	15.0	B	V
B405789	GW02055IT	11/26/91	181.0		181.0	15.0		V
B405789	GW02442IT	2/10/92	134.0		134.0	15.0		V
B405789	GW02963IT	6/8/92	28.1		28.1	15.0		V
B405789	GW03419IT	9/22/92	87.4		87.4	15.0		
B405789	GW03765IT	11/10/92	7.5	73.6	15.0	15.0	U	
B405889	GW01720IT	8/27/91	7.6		7.6	15.0	B	
B405889	GW02071IT	12/14/91	1.2		1.2	15.0	B	V
B405889	GW02584IT	3/13/92	3.6		3.6	15.0	B	V
B405889	GW03001IT	6/5/92	1.0		2.0	15.0	U	V
B405889	GW03309IT	8/17/92	7.5		15.0	15.0	U	
B405889	GW03737IT	11/12/92	1.5	3.7	3.0	15.0	U	

Number of Samples	186
Number of Detects	167
Minimum Detected	1.2
Maximum Detected	1950.0
Average	86.1

Number of wells sampled	36
Number of wells with detects	36
Minimum well average	2.91
Maximum well average	444.98
Average	79.71
Standard Deviation	95.21
t-value	1.697
95% UCL (1)	106.64

ATTCHMENT H1
TABLE 30
95% UCL CONCENTRATION
AOC NO. 1
SURFACE SOIL POLYAROMATIC HYDROCARBONS

			BENZO(a)ANTHRACENE (ug/kg)					BENZO(a)PYRENE (ug/kg)					BENZO(b)FLUORANTHENE (ug/kg)				
Location	Field ID	Sample Date	Result	SQL	CDRL	Qual	Valid. Qual	Result	SQL	CDRL	Qual	Valid. Qual	Result	SQL	CDRL	Qual	Valid. Qual
SS200493	SS20004WC	3/22/93	175.00	350.00	330.00	U	V	175.00	350.00	330.00	U	V	110.00	110.00	330.00	J	A
SS200193	SS20001WC	3/22/93	160.00	160.00	330.00	J	A	160.00	160.00	330.00	J	A	240.00	240.00	330.00	J	A
SS200893	SS20008WC	3/23/93	185.00	370.00	330.00	U	V	175.00	350.00	330.00	U	V	175.00	350.00	330.00	U	V
SS200693	SS20006WC	3/23/93	175.00	350.00	330.00	U	V	185.00	370.00	330.00	U	V	185.00	370.00	330.00	U	V
SS200093	SS20000WC	3/9/93	77.00	77.00	330.00	J	A	180.00	360.00	330.00	U	V	150.00	150.00	330.00	J	A
SS200293	SS20002WC	3/9/93	86.00	86.00	330.00	J	A	96.00	96.00	330.00	J	A	120.00	120.00	330.00	J	A
SS200393	SS20003WC	3/9/93	51.00	51.00	330.00	J	A	68.00	68.00	330.00	J	A	38.00	38.00	330.00	J	A
SS200593	SS20005WC	3/9/93	205.00	410.00	330.00	U	V	63.00	63.00	330.00	J	A	205.00	410.00	330.00	U	V
SS200793	SS20007WC	3/10/93	190.00	380.00	330.00	U	V	120.00	120.00	330.00	J	A	160.00	160.00	330.00	J	A
SS200993	SS20009WC	3/10/93	195.00	390.00	330.00	U	V	195.00	390.00	330.00	U	V	195.00	390.00	330.00	U	V
SS201093	SS20010WC	3/15/93	205.00	410.00	330.00	U	V	205.00	410.00	330.00	U	V	205.00	410.00	330.00	U	V
SS201193	SS20011WC	3/18/93	200.00	400.00	330.00	U	V	200.00	400.00	330.00	U	V	200.00	400.00	330.00	U	V
SS201293	SS20012WC	3/19/93	62.00	62.00	330.00	J	A	72.00	72.00	330.00	J	A	94.00	94.00	330.00	J	A
SS201393	SS20013WC	3/22/93	61.00	61.00	330.00	J	A	190.00	380.00	330.00	U	V	90.00	90.00	330.00	J	A
SS201493	SS20014WC	3/22/93	195.00	390.00	330.00	U	V	195.00	390.00	330.00	U	JA	195.00	390.00	330.00	U	JA
Number of Samples			15					15					15				
Number of Detects			6					6					8				
Minimum Detected			51.00					63.00					38.00				
Maximum Detected			160.00					160.00					240.00				
Average			148.13					151.93					157.47				
Standard Deviation			58.66					50.85					53.91				
t-value			1.761					1.761					1.761				
95% UCL			174.81					175.05					181.98				

ATTCHMENT H1
TABLE 30
95% UCL CONCENTRATION
AOC NO. 1
SURFACE SOIL POLYAROMATIC HYDROCARBONS

			BENZO(k)FLUORANTHENE (ug/kg)					CHRYSENE (ug/kg)					FLUORANTHENE (ug/kg)				
Location	Field ID	Sample Date	Result	SQL	CDRL	Qual	Valid. Qual	Result	SQL	CDRL	Qual	Valid. Qual	Result	SQL	CDRL	Qual	Valid. Qual
SS200493	SS20004WC	3/22/93		350.00	330.00	U	V	93.00	93.00	330.00	J	A	200.00	200.00	330.00	J	A
SS200193	SS20001WC	3/22/93	69.00	69.00	330.00	J	A	200.00	200.00	330.00	J	A	390.00	390.00	330.00	J	A
SS200893	SS20008WC	3/23/93		350.00	330.00	U	V	175.00	350.00	330.00	U	V	94.00	94.00	330.00	J	A
SS200693	SS20006WC	3/23/93		370.00	330.00	U	V	185.00	370.00	330.00	U	V	185.00	370.00	330.00	U	V
SS200093	SS20000WC	3/9/93		360.00	330.00	U	V	110.00	110.00	330.00	J	A	210.00	210.00	330.00	J	A
SS200293	SS20002WC	3/9/93		370.00	330.00	U	V	100.00	100.00	330.00	J	A	200.00	200.00	330.00	J	A
SS200393	SS20003WC	3/9/93		370.00	330.00	U	V	100.00	100.00	330.00	J	A	170.00	170.00	330.00	J	A
SS200593	SS20005WC	3/9/93		410.00	330.00	U	V	205.00	410.00	330.00	U	V	130.00	130.00	330.00	J	A
SS200793	SS20007WC	3/10/93		380.00	330.00	U	V	110.00	110.00	330.00	J	A	250.00	250.00	330.00	J	A
SS200993	SS20009WC	3/10/93		390.00	330.00	U	V	195.00	390.00	330.00	U	V	195.00	390.00	330.00	U	V
SS201093	SS20010WC	3/15/93		410.00	330.00	U	V	205.00	410.00	330.00	U	V	205.00	410.00	330.00	U	V
SS201193	SS20011WC	3/18/93		400.00	330.00	U	V	200.00	400.00	330.00	U	V	200.00	400.00	330.00	U	V
SS201293	SS20012WC	3/19/93		420.00	330.00	U	V	71.00	71.00	330.00	J	A	170.00	170.00	330.00	J	A
SS201393	SS20013WC	3/22/93		380.00	330.00	U	V	76.00	76.00	330.00	J	A	150.00	150.00	330.00	J	A
SS201493	SS20014WC	3/22/93		390.00	330.00	U	JA	195.00	390.00	330.00	U	V	78.00	78.00	330.00	J	A
Number of Samples			1					15					15				
Number of Detects			1					8					11				
Minimum Detected			69.00					71.00					78.00				
Maximum Detected			69.00					200.00					390.00				
Average			69.00					148.00					188.47				
Standard Deviation			0.00					51.68					69.43				
t-value			-					1.761					1.761				
95% UCL			-					171.50					220.03				

ATTCHMENT H1
TABLE 30
95% UCL CONCENTRATION
AOC NO. 1
SURFACE SOIL POLYAROMATIC HYDROCARBONS

			INDENO(1,2,3-cd)PYRENE (ug/kg)					PYRENE (ug/kg)				
Location	Field ID	Sample Date	Result	SQL	CDRL	Qual	Valid. Qual	Result	SQL	CDRL	Qual	Valid. Qual
SS200493	SS20004WC	3/22/93		350.00	330.00	U	V	160.00	160.00	330.00	J	A
SS200193	SS20001WC	3/22/93		400.00	330.00	U	V	350.00	350.00	330.00	J	A
SS200893	SS20008WC	3/23/93		350.00	330.00	U	V	94.00	94.00	330.00	J	A
SS200693	SS20006WC	3/23/93		370.00	330.00	U	V	185.00	370.00	330.00	U	V
SS200093	SS20000WC	3/9/93		360.00	330.00	U	V	200.00	200.00	330.00	J	A
SS200293	SS20002WC	3/9/93	45.00	45.00	330.00	J	A	180.00	180.00	330.00	J	A
SS200393	SS20003WC	3/9/93		370.00	330.00	U	V	170.00	170.00	330.00	J	A
SS200593	SS20005WC	3/9/93		410.00	330.00	U	V	130.00	130.00	330.00	J	A
SS200793	SS20007WC	3/10/93		380.00	330.00	U	V	260.00	260.00	330.00	J	A
SS200993	SS20009WC	3/10/93		390.00	330.00	U	V	98.00	98.00	330.00	J	A
SS201093	SS20010WC	3/15/93		410.00	330.00	U	V	205.00	410.00	330.00	U	V
SS201193	SS20011WC	3/18/93		400.00	330.00	U	V	51.00	51.00	330.00	J	A
SS201293	SS20012WC	3/19/93		420.00	330.00	U	V	150.00	150.00	330.00	J	A
SS201393	SS20013WC	3/22/93		380.00	330.00	U	V	160.00	160.00	330.00	J	A
SS201493	SS20014WC	3/22/93		390.00	330.00	U	JA	94.00	94.00	330.00	J	A
Number of Samples			1					15				
Number of Detects			1					13				
Minimum Detected			45.00					51.00				
Maximum Detected			45.00					350.00				
Average			45.00					165.80				
Standard Deviation			0.00					71.08				
t-value			-					1.761				
95% UCL			-					198.12				

ATTACHMENT H1
TABLE 31
95% UCL CONCENTRATION
AOC NO. 2
SURFACE SOIL POLYAROMATIC HYDROCARBONS

			BENZO(a)ANTHRACENE (ug/kg)					BENZO(a)PYRENE (ug/kg)				
Location	Field ID	Sample Date	Result	SQL	CDRL	Qual	Valid. Qual	Result	SQL	CDRL	Qual	Valid. Qual
SS202693	SS20026WC	3/16/93		400.00	330.00	U	V		400.00	330.00	U	V
SS202593	SS20025WC	3/16/93		450.00	330.00	U	V		450.00	330.00	U	V
SS203293	SS20032WC	3/16/93		410.00	330.00	U	V		410.00	330.00	U	V
SS203393	SS20033WC	3/16/93		430.00	330.00	U	V		430.00	330.00	U	V
SS201693	SS20016WC	3/17/93		390.00	330.00	U	V		390.00	330.00	U	V
SS202293	SS20022WC	3/17/93		380.00	330.00	U	V		380.00	330.00	U	V
SS202793	SS20027WC	3/17/93		420.00	330.00	U	V		420.00	330.00	U	V
SS203493	SS20034WC	3/17/93		410.00	330.00	U	V		410.00	330.00	U	V
SS203593	SS20035WC	3/17/93		410.00	330.00	U	V		410.00	330.00	U	V
SS202993	SS20029WC	3/18/93		420.00	330.00	U	V		420.00	330.00	U	V
SS203093	SS20030WC	3/18/93		410.00	330.00	U	V		410.00	330.00	U	V
SS203693	SS20036WC	3/18/93		420.00	330.00	U	V		420.00	330.00	U	V
SS203793	SS20037WC	3/18/93		400.00	330.00	U	V		400.00	330.00	U	V
SS202493	SS20024WC	3/18/93		400.00	330.00	U	V		400.00	330.00	U	V
SS203193	SS20031WC	3/18/93		400.00	330.00	U	V		400.00	330.00	U	V
SS202893	SS20028WC	3/19/93	130.00	130.00	330.00	J	A	140.00	140.00	330.00	J	A
SS202393	SS20023WC	3/19/93		410.00	330.00	U	V		410.00	330.00	U	V
SS203893	SS20038WC	3/19/93		420.00	330.00	U	V		420.00	330.00	U	V
SS203993	SS20039WC	3/19/93		400.00	330.00	U	V		400.00	330.00	U	V
SS201893	SS20018WC	3/22/93		400.00	330.00	U	V		400.00	330.00	U	V
SS201793	SS20017WC	3/22/93		380.00	330.00	U	V		380.00	330.00	U	V
SS201593	SS20015WC	3/15/93		430.00	330.00	U	V		430.00	330.00	U	V
SS201993	SS20019WC	3/15/93		430.00	330.00	U	V		430.00	330.00	U	V
SS202093	SS20020WC	3/15/93		430.00	330.00	U	V		430.00	330.00	U	V
SS202193	SS20021WC	3/15/93		420.00	330.00	U	V		420.00	330.00	U	JA
Number of Samples			1					1				
Number of Detects			1					1				
Minimum Detected			130.00					140.00				
Maximum Detected			130.00					140.00				
Average			130.00					140.00				
Standard Deviation			0.00					0.00				
t-value			-					-				
95% UCL			-					-				

ATTACHMENT H1
TABLE 31
95% UCL CONCENTRATION
AOC NO. 2
SURFACE SOIL POLYAROMATIC HYDROCARBONS

			BENZO(b)FLUORANTHENE (ug/kg)					BENZO(k)FLUORANTHENE (ug/kg)				
Location	Field ID	Sample Date	Result	SQL	CDRL	Qual	Valid. Qual	Result	SQL	CDRL	Qual	Valid. Qual
SS202693	SS20026WC	3/16/93	200.00	400.00	330.00	U	V		400.00	330.00	U	V
SS202593	SS20025WC	3/16/93		450.00	330.00	U	V		450.00	330.00	U	V
SS203293	SS20032WC	3/16/93	205.00	410.00	330.00	U	V		410.00	330.00	U	V
SS203393	SS20033WC	3/16/93		430.00	330.00	U	V		430.00	330.00	U	V
SS201693	SS20016WC	3/17/93	195.00	390.00	330.00	U	V		390.00	330.00	U	V
SS202293	SS20022WC	3/17/93	190.00	380.00	330.00	U	V		380.00	330.00	U	V
SS202793	SS20027WC	3/17/93		420.00	330.00	U	V		420.00	330.00	U	V
SS203493	SS20034WC	3/17/93	205.00	410.00	330.00	U	V		410.00	330.00	U	V
SS203593	SS20035WC	3/17/93	205.00	410.00	330.00	U	V		410.00	330.00	U	V
SS202993	SS20029WC	3/18/93		420.00	330.00	U	V		420.00	330.00	U	V
SS203093	SS20030WC	3/18/93	205.00	410.00	330.00	U	V		410.00	330.00	U	V
SS203693	SS20036WC	3/18/93		420.00	330.00	U	V		420.00	330.00	U	V
SS203793	SS20037WC	3/18/93	200.00	400.00	330.00	U	V		400.00	330.00	U	V
SS202493	SS20024WC	3/18/93	200.00	400.00	330.00	U	V		400.00	330.00	U	V
SS203193	SS20031WC	3/18/93	200.00	400.00	330.00	U	V		400.00	330.00	U	V
SS202893	SS20028WC	3/19/93	200.00	200.00	330.00	J	A	76.00	76.00	330.00	J	A
SS202393	SS20023WC	3/19/93	205.00	410.00	330.00	U	V		410.00	330.00	U	V
SS203893	SS20038WC	3/19/93		420.00	330.00	U	V		420.00	330.00	U	V
SS203993	SS20039WC	3/19/93	200.00	400.00	330.00	U	V		400.00	330.00	U	V
SS201893	SS20018WC	3/22/93	200.00	400.00	330.00	U	V		400.00	330.00	U	V
SS201793	SS20017WC	3/22/93	190.00	380.00	330.00	U	V		380.00	330.00	U	V
SS201593	SS20015WC	3/15/93		430.00	330.00	U	V		430.00	330.00	U	V
SS201993	SS20019WC	3/15/93		430.00	330.00	U	V		430.00	330.00	U	V
SS202093	SS20020WC	3/15/93		430.00	330.00	U	V		430.00	330.00	U	V
SS202193	SS20021WC	3/15/93		420.00	330.00	U	JA		420.00	330.00	U	JA
Number of Samples			15					1				
Number of Detects			1					1				
Minimum Detected			200.00					76.00				
Maximum Detected			200.00					76.00				
Average			200.00					76.00				
Standard Deviation			4.83					0.00				
t-value			1.761					-				
95% UCL			202.20					-				

ATTACHMENT H1
TABLE 31
95% UCL CONCENTRATION
AOC NO. 2
SURFACE SOIL POLYAROMATIC HYDROCARBONS

			CHRYSENE (ug/kg)					FLUORANTHENE (ug/kg)				
Location	Field ID	Sample Date	Result	SQL	CDRL	Qual	Valid. Qual	Result	SQL	CDRL	Qual	Valid. Qual
SS202693	SS20026WC	3/16/93		400.00	330.00	U	V	200.00	400.00	330.00	U	V
SS202593	SS20025WC	3/16/93		450.00	330.00	U	V	225.00	450.00	330.00	U	V
SS203293	SS20032WC	3/16/93		410.00	330.00	U	V	205.00	410.00	330.00	U	V
SS203393	SS20033WC	3/16/93		430.00	330.00	U	V	215.00	430.00	330.00	U	V
SS201693	SS20016WC	3/17/93	43.00	43.00	330.00	J	A	91.00	91.00	330.00	J	A
SS202293	SS20022WC	3/17/93	190.00	380.00	330.00	U	V	190.00	380.00	330.00	U	V
SS202793	SS20027WC	3/17/93		420.00	330.00	U	V	210.00	420.00	330.00	U	V
SS203493	SS20034WC	3/17/93		410.00	330.00	U	V	205.00	410.00	330.00	U	V
SS203593	SS20035WC	3/17/93		410.00	330.00	U	V	82.00	82.00	330.00	J	A
SS202993	SS20029WC	3/18/93		420.00	330.00	U	V	79.00	79.00	330.00	J	A
SS203093	SS20030WC	3/18/93		410.00	330.00	U	V	205.00	410.00	330.00	U	V
SS203693	SS20036WC	3/18/93		420.00	330.00	U	V	210.00	420.00	330.00	U	V
SS203793	SS20037WC	3/18/93		400.00	330.00	U	V	200.00	400.00	330.00	U	V
SS202493	SS20024WC	3/18/93		400.00	330.00	U	V	52.00	52.00	330.00	J	A
SS203193	SS20031WC	3/18/93		400.00	330.00	U	V	200.00	400.00	330.00	U	V
SS202893	SS20028WC	3/19/93	140.00	140.00	330.00	J	A	230.00	230.00	330.00	J	A
SS202393	SS20023WC	3/19/93		410.00	330.00	U	V	100.00	100.00	330.00	J	A
SS203893	SS20038WC	3/19/93		420.00	330.00	U	V	210.00	420.00	330.00	U	V
SS203993	SS20039WC	3/19/93	200.00	400.00	330.00	U	V	200.00	400.00	330.00	U	V
SS201893	SS20018WC	3/22/93	42.00	42.00	330.00	J	A	79.00	79.00	330.00	J	A
SS201793	SS20017WC	3/22/93	190.00	380.00	330.00	U	V	100.00	100.00	330.00	J	A
SS201593	SS20015WC	3/15/93		430.00	330.00	U	V	215.00	430.00	330.00	U	V
SS201993	SS20019WC	3/15/93		430.00	330.00	U	V	215.00	430.00	330.00	U	V
SS202093	SS20020WC	3/15/93		430.00	330.00	U	V	215.00	430.00	330.00	U	V
SS202193	SS20021WC	3/15/93		420.00	330.00	U	V	210.00	420.00	330.00	U	V
Number of Samples			6					25				
Number of Detects			3					8				
Minimum Detected			42.00					52.00				
Maximum Detected			140.00					230.00				
Average			134.17					173.72				
Standard Deviation			67.59					57.52				
t-value			2.015					1.711				
95% UCL			189.77					193.40				

ATTACHMENT H1
TABLE 31
95% UCL CONCENTRATION
AOC NO. 2
SURFACE SOIL POLYAROMATIC HYDROCARBONS

			INDENO(1,2,3-cd)PYRENE (ug/kg)					PYRENE (ug/kg)				
Location	Field ID	Sample Date	Result	SQL	CDRL	Qual	Valid. Qual	Result	SQL	CDRL	Qual	Valid. Qual
SS202693	SS20026WC	3/16/93		400.00	330.00	U	V	200.00	400.00	330.00	U	V
SS202593	SS20025WC	3/16/93		450.00	330.00	U	V	225.00	450.00	330.00	U	V
SS203293	SS20032WC	3/16/93		410.00	330.00	U	V	205.00	410.00	330.00	U	V
SS203393	SS20033WC	3/16/93		430.00	330.00	U	V	215.00	430.00	330.00	U	V
SS201693	SS20016WC	3/17/93		390.00	330.00	U	V	85.00	85.00	330.00	J	A
SS202293	SS20022WC	3/17/93		380.00	330.00	U	V	190.00	380.00	330.00	U	V
SS202793	SS20027WC	3/17/93		420.00	330.00	U	V	210.00	420.00	330.00	U	V
SS203493	SS20034WC	3/17/93		410.00	330.00	U	V	205.00	410.00	330.00	U	V
SS203593	SS20035WC	3/17/93		410.00	330.00	U	V	77.00	77.00	330.00	J	A
SS202993	SS20029WC	3/18/93		420.00	330.00	U	V	62.00	62.00	330.00	J	A
SS203093	SS20030WC	3/18/93		410.00	330.00	U	V	54.00	54.00	330.00	J	A
SS203693	SS20036WC	3/18/93		420.00	330.00	U	V	210.00	420.00	330.00	U	V
SS203793	SS20037WC	3/18/93		400.00	330.00	U	V	200.00	400.00	330.00	U	V
SS202493	SS20024WC	3/18/93		400.00	330.00	U	V	47.00	47.00	330.00	J	A
SS203193	SS20031WC	3/18/93		400.00	330.00	U	V	200.00	400.00	330.00	U	V
SS202893	SS20028WC	3/19/93	83.00	83.00	330.00	J	A	190.00	190.00	330.00	J	A
SS202393	SS20023WC	3/19/93		410.00	330.00	U	V	100.00	100.00	330.00	J	A
SS203893	SS20038WC	3/19/93		420.00	330.00	U	V	210.00	420.00	330.00	U	V
SS203993	SS20039WC	3/19/93		400.00	330.00	U	V	200.00	400.00	330.00	U	V
SS201893	SS20018WC	3/22/93		400.00	330.00	U	V	70.00	70.00	330.00	J	A
SS201793	SS20017WC	3/22/93		380.00	330.00	U	V	87.00	87.00	330.00	J	A
SS201593	SS20015WC	3/15/93		430.00	330.00	U	V	215.00	430.00	330.00	U	V
SS201993	SS20019WC	3/15/93		430.00	330.00	U	V	215.00	430.00	330.00	U	V
SS202093	SS20020WC	3/15/93		430.00	330.00	U	V	215.00	430.00	330.00	U	V
SS202193	SS20021WC	3/15/93		420.00	330.00	U	JA	210.00	420.00	330.00	U	V
Number of Samples			1					25				
Number of Detects			1					9				
Minimum Detected			83.00					47.00				
Maximum Detected			83.00					190.00				
Average			83.00					163.88				
Standard Deviation			0.00					63.67				
t-value			-					1.711				
95% UCL			-					185.67				

ATTACHMENT H2
EXPOSURE FACTORS TABLES

PATHWAY-SPECIFIC INTAKE EQUATIONS

The following equations were used to estimate intake of chemicals and radionuclides for the exposure scenarios evaluated in the risk assessment. Numerical values for the exposure factors for each receptor are shown on the Exposure Factors Tables following the equations.

Soil Ingestion

Chemical intake from soil ingestion is estimated using the following equation:

$$\text{Intake} = \frac{\text{Conc.} \times \text{IR} \times \text{FC} \times \text{ME} \times \text{EF} \times \text{ED} \times \text{CF}}{\text{BW} \times \text{AT}}$$

where:

Intake	=	Chemical intake, mg/kg-day
Conc.	=	Chemical concentration in soil, mg/kg
IR	=	Soil ingestion rate, mg/day
FC	=	Fraction contaminated, unitless
ME	=	Soil matrix effect, unitless (see Section H6.2.1)
EF	=	Exposure frequency, days/year
ED	=	Exposure duration, years
CF	=	Conversion factor, 10^{-6} kg/mg
BW	=	Body weight, kg
AT	=	Averaging time, days

Inhalation of Airborne Particulate Matter and of Indoor VOCs

Chemical intake through inhalation exposure routes is estimated using the following equation:

$$\text{Intake} = \frac{\text{Conc.} \times \text{IR} \times \text{DF} \times \text{ET} \times \text{EF} \times \text{ED}}{\text{BW} \times \text{AT}}$$

where:

Intake	=	Chemical intake, mg/kg-day
Conc.	=	Chemical concentration in air, mg/m^3
IR	=	Inhalation rate, m^3/hour
DF	=	Particulate deposition factor in lung, unitless
ET	=	Exposure time, hr/day
EF	=	Exposure frequency, days/year
ED	=	Exposure duration, years
BW	=	Body weight, kg
AT	=	Averaging time, days

Soil Dermal Contact

Chemical intake through absorption of organic chemicals through skin is estimated using the following equation:

$$\text{Intake} = \frac{\text{Conc.} \times \text{SA} \times \text{AB} \times \text{AD} \times \text{FC} \times \text{EF} \times \text{ED} \times \text{CF}}{\text{BW} \times \text{AT}}$$

where:

Intake	=	Chemical intake, mg/kg-day
Conc.	=	Chemical concentration in soil, mg/kg
SA	=	Surface area, cm^2/day
AB	=	Absorption factor, unitless (chemical-specific; see Section H6.2.3)
AD	=	Soil adherence factor, mg/cm^2
FC	=	Fraction contacted that is contaminated, unitless
EF	=	Exposure frequency, days/year
ED	=	Exposure duration, years
BW	=	Body weight, kg
AT	=	Averaging time, days
CF	=	Conversion factor, kg soil/mg soil

Groundwater Ingestion

Chemical intake from groundwater ingestion is estimated using the following equation:

$$\text{Intake} = \frac{\text{Conc.} \times \text{IR} \times \text{FC} \times \text{EF} \times \text{ED}}{\text{BW} \times \text{AT}}$$

where:

Intake	=	Chemical intake, mg/kg-day
Conc.	=	Chemical concentration in groundwater, mg/L
IR	=	Ingestion rate, L/day
FC	=	Fraction ingested from contaminated source, unitless
EF	=	Exposure frequency, days/year
ED	=	Exposure duration, years
BW	=	Body weight, kg
AT	=	Averaging time, days

Surface Water/Sediment Ingestion

Chemical intake via ingestion of surface water and suspended sediment transported to creeks from OU-2 surface soil is estimated using the following equation:

$$\text{Intake} = \frac{\text{Conc.} \times \text{IR} \times \text{ET} \times \text{EF} \times \text{ED}}{\text{BW} \times \text{AT}}$$

where:

Intake	=	Chemical intake, mg/kg-day
Conc.	=	Chemical concentration in water, mg/L
IR	=	Ingestion rate, L/hour
ET	=	Exposure time, hr/day
EF	=	Exposure frequency, days/year
ED	=	Exposure duration, years
BW	=	Body weight, kg
AT	=	Averaging time, days

Surface Water Dermal Contact

Chemical intake through absorption of VOCs in water through skin is estimated using the following equation:

$$\text{Intake} = \frac{\text{Conc.} \times \text{SA} \times \text{PC} \times \text{ET} \times \text{EF} \times \text{ED} \times \text{CF}}{\text{BW} \times \text{AT}}$$

where:

Intake	=	Chemical intake, mg/kg-day
Conc.	=	Chemical concentration in water, mg/L
SA	=	Surface area, cm^2/day
PC	=	Permeability constant, cm/hr (chemical-specific; see Section H6.2.6)
ET	=	Exposure time, hr/day
EF	=	Exposure frequency, days/year
ED	=	Exposure duration, years
CF	=	Conversion factor, L/cm^3
BW	=	Body weight, kg
AT	=	Averaging time, days

Ingestion of Homegrown Produce

Chemical intake through ingestion of homegrown produce is estimated using the following equation:

$$\text{Intake} = \frac{\text{Conc.} \times \text{IR} \times \text{WO} \times \text{ME} \times \text{EF} \times \text{ED} \times \text{CF}}{\text{BW} \times \text{AT}}$$

where:

Intake	=	Chemical intake, mg/kg-day
Conc.	=	Chemical concentration in produce, mg/kg
IR	=	Ingestion rate, mg/day
WO	=	Wash-off factor, unitless
ME	=	Matrix effect, unitless (chemical-specific; see Section H6.2.1)

EF	=	Exposure frequency, days/year
ED	=	Exposure duration, years
CF	=	Conversion factor, 10^{-6} kg/mg
BW	=	Body weight, kg
AT	=	Averaging time, days

Intake of Radionuclides from Ingestion and Inhalation

$$\text{Intake} = C \times IR \times EF \times ED$$

where:

Intake	=	Lifetime internal radionuclide intake via inhalation or ingestion, pCi
C	=	Activity concentration of a radionuclide at the exposure point, pCi/m^3, pCi/L, or pCi/kg
IR	=	Intake rate, m^3/day, L/day, or kg/day
EF	=	Exposure frequency, days/year
ED	=	Exposure duration, yr

External Irradiation

For estimating lifetime excess cancer risk, external irradiation exposure is estimated using the following equation:

$$ER = C \times (1\text{-}Se) \times Te \times EF \times ED$$

where:

ER	=	External irradiation exposure, pCi/g soil per year (pCi-yr/g)
C	=	Mass activity concentration of a radionuclide at the exposure point, pCi/g soil
Se	=	Gamma shielding factor, unitless
Te	=	Gamma exposure time factor, fraction of day (unitless)
EF	=	Exposure frequency, fraction of year (unitless)
ED	=	Exposure duration, years

AREA WEIGHTING FACTOR FOR CURRENT ONSITE WORKER

An OU-2 weighting factor of 0.17 was used to estimate the fraction of time that a current RFETS worker (security personnel) would spend in OU-2 compared to the rest of RFETS. This factor is used to account for the fact that the worker spends only a fraction of the work day in contact with contaminated media in OU-2. The factor is derived by dividing the area of OU-2 by the total area of the RFETS property: 1,100 acres/6,550 acres = 0.17 (equivalent to about 1-1/2 hours based on an 8-hour work day). The weighting factor was applied in both the CT and RME scenarios.

TABLE 1. Rocky Flats Site-Specific Exposure Factors for Quantitative Human Health Risk Assessment

FACTORS FOR POTENTIALLY COMPLETE ROUTES OF EXPOSURE		POTENTIALLY EXPOSED RECEPTORS						
		Current Off-Site Resident	Current On-Site Industrial Worker	Future On-Site Office Worker	Future On-Site Construction Worker	Future On-Site Ecological Worker	Future On-Site Resident	Future Off-Site Resident
SOIL/DUST INGESTION								
Ingestion Rate-Child (mg/day)	RME☛	**200** (1, 3)	NA	NA	NA	NA	**200** (3)	**200** (3)
	CT☛	100 (2, 4)	NA	NA	NA	NA	100 (4)	100 (4)
Ingestion Rate-Adult (mg/day)		**100** (1, 3)	**50** (5)	**50** (5)	**480** (8)	**106** (10)	**100** (3)	**100** (3)
		50 (2, 4)	10 (6)	5 (7)	95 (9)	33 (10)	50 (4)	50 (4)
Fraction Ingested from Contaminated Source-Child		1.0 (11)	NA	NA	NA	NA	1.0 (11)	1.0 (11)
		0.82 (11)	NA	NA	NA	NA	0.82 (11)	0.82 (11)
Fraction Ingested from Contaminated Source-Adult		1.0 (11)	1.0 (12)	1.0 (12)	1.0 (12)	1.0 (12)	1.0 (11)	1.0 (11)
		0.64 (11)	0.9 (12)	0.9 (12)	0.9 (12)	0.9 (12)	0.64 (11)	0.64 (11)
Matrix Effect in GI Tract (Absorption Factor)		CS (13)	CS	CS	CS	CS	CS	CS
		CS (13)	CS	CS	CS	CS	CS	CS
Exposure Frequency (days/yr)		**350** (5)	**250** (5)	**250** (5)	30 (15)	65 (15)	**350** (5)	**350** (5)
		234 (14)	219 (14)	219 (14)	30 (15)	65 (15)	234 (14)	234 (14)
Exposure Duration-Child/Adult (years)		**6/24** (5)	**25** (5)	**25** (5)	1 (15)	2.5 (15)	**6/24** (5)	**6/24** (5)
		2/7 (16)	4 (17)	4 (17)	1 (15)	2.5 (15)	2/7 (16)	2/7 (16)

POTENTIALLY EXPOSED RECEPTORS

FACTORS FOR POTENTIALLY COMPLETE ROUTES OF EXPOSURE	Current Off-Site Resident	Current On-Site Industrial Worker	Future On-Site Office Worker	Future On-Site Construction Worker	Future On-Site Ecological Worker	Future On-Site Resident	Future Off-Site Resident
Body Weight- Child/Adult (kg)(5)	**15/70** 15/70	**70** 70	**70** 70	**70** 70	**70** 70	**15/70** 15/70	**15/70** 15/70
Averaging Time- Child/Adult: Noncarcinogenic (days) (18)	2190/8760 730/2555	9125 1460	9125 1460	365 365	915 915	2190/8760 730/2555	2190/8760 730/2555
Averaging Time: Carcinogen (days)(19)	25550 25550	25550 25550	25550 25550	25550 25550	25550 25550	25550 25550	25550 25550

NOTES:

(BOLD) Standard Default Exposure Factor (EPA, 1991a) used to calculate conservative risks based on Reasonable Maximum Exposure (RME) by combining high-end (>90th %ile) and central tendency (X or Md) exposure factors to represent exposure "that is both protective and reasonable, not the worst possible case."

(NA) Not applicable because the exposure pathway is incomplete.

(CS) Chemical-specific exposure parameter determined from quantitative analysis and toxicology literature.

(1) Top entry is based on high-end (HE) exposure used to characterize the RME risks in a baseline or remediation risk assessment. RME risks are derived using professional judgment to set one or more sensitive exposure parameters at HE (90-98th %ile) values in combination with others set at central tendency (CT) values in order to characterize the high-end risks to a very small proportion of an exposed population.

(2) Bottom entry is based on CT used to characterize the typical case in a baseline or remediation risk assessment (or a "reasonable maximum exposure" when used in combination with selected high-end values). Average risks are derived using professional judgement to set *all* exposure parameters at 50th %ile (median) or mean values in order to characterize the mid-range risk to the largest proportion of an exposed population.

(3) EPA RAGS, HHEM, Standard Default Exposure Factors (1991) A defensible alternative HE value for the child is 110 mg/day, the approximate 95th %ile using Zr tracer study of Calabrese and others, 1989 (Md =16 mg/day, 95% CI = 8-24 mg/day, n = 128, American Industrial Health Council, 1994). An alternative HE assumption for the adult is 55 mg/day (0.5 x child rate).

(4) Preliminary CT default values (EPA, 1993). A defensible alternative CT value of the child is 16 mg/day based on Calabrese and Stanek (1992); also estimated by AIHC (1994) using the dataset of Calabrese and others (1989). An alternative CT assumption for the adult is 8 mg/day based on EPA (1991) assumption of 0.5 x child rate (16 mg/day) and on Calabrese and others (1990) estimated at 0.1-10 mg/day by American Industrial Health Council (1994).

(5) EPA RAGS, HHEM, Standard Default Exposure Factors, 1991a.

(6) Average of CT soil ingestion rates of 15 mg/day (outdoor industrial worker) and 5 mg/day (indoor industrial worker) based on inferences drawn from Finley and Paustenbach, 1994.

(7) One-half of industrial workers based on inferences drawn from Finley and Paustenbach, 1994; soil ingestion rates for workers indoors (e.g., office workers) are one-half the average of workers both indoors and outdoors (e.g., industrial workers).

(8) Hawley, 1985, and EPA Exposure Factors Handbook, 1989a. A more defensible HE default is 205 mg/day based on adjusting Hawley's soil adherence value from 3.5 mg/cm^2 to the correct upper bound of 1.5 mg/cm^2 (EPA, 1992a) (480 x 1.5/3.5).

(9) Estimated using HE ingestion rate ratio of construction worker to industrial worker (480/50 = 9.6; CT = 9.6 x 10 mg/day), but a more defensible CT default is 40 (see Note 8).

(10) Based on RME and CT exposure assessment work at Rocky Mountain Arsenal. (Integrated Endangerment Assessment/Risk Characterization) Rocky Mountain Arsenal, August 1993.

(11) The RME is set to 1.0. The CT is based on average time spent at home (0.64 adult; 0.82 child) (American Industrial Health Council, 1994); EPA RAGS, HHEM Pt. A (1989b), recognizes the need for a soil "fraction ingested" (FI) from a contaminated source to reflect "population activity patterns."

(12) As in Note 11 based on average weekly time spent at work (0.9) using a base of 40 hours per week.

(13) In the absence of a CS value, consult methods to estimate maximum oral bioavailability (absorption in the gastrointestinal tract) such as reported by EPA (1994) for lead in soil and by Finley and Paustenbach (1994) for TCDD in soil. Assuming chemical toxicity values are based on absorption from drinking water, absorption adjustments are indicated because toxic chemicals only partially desorb from soil particles (EPA RAGS, HHEM Pt. A, 1989b - Appendix A).

(14) Preliminary CT default value (EPA, 1993).

(15) Final Rocky Flats Programmatic Risk-Based Preliminary Remediation Goals, 1995.

(16) Preliminary CT default values, adding to 9 years total exposure duration (EPA, 1993). A current alternative value for total CT exposure duration is EPA's Residential Occupancy Period (ROP) of 8.1 years for total population (EPA, 1992b; American Industrial Health Council, 1994).

(17) American Industrial Health Council, 1994; Gephart, Tell and Triemer, 1994.

(18) Exposure duration (years) x 365 days (EPA RAGS, HHEM Pt. A, 1989b).

(19) Lifetime exposure (70 years) x 365 days (EPA RAGS, HHEM Pt. A, 1989b).

TABLE 2. Rocky Flats Site-Specific Exposure Factors for Quantitative Human Health Risk Assessment

FACTORS FOR POTENTIALLY COMPLETE ROUTES OF EXPOSURE		POTENTIALLY EXPOSED RECEPTORS						
		Current Off-Site Resident	Current On-Site Industrial Worker	Future On-Site Office Worker	Future On-Site Construction Worker	Future On-Site Ecological Worker	Future On-Site Resident	Future Off-Site Resident
SOIL/DUST INHALATION								
Inhalation Rate (m^3/hr)	RME	**0.83** (1,3)	**0.83** (3)	**0.83** (3)	**1.4** (6)	**1.4** (6)	**0.83** (3)	**0.83** (3)
	CT	0.63 (2,4)	0.83 (3)	0.63 (5)	1.25 (6)	0.83 (3)	0.63 (4)	0.63 (4)
Respirable Fraction (PM_{10})(7)		0.36 0.36	0.36 0.36	0.36 0.36	0.36 0.36	0.36 0.36	0.36 0.36	0.36 0.36
Respiratory Deposition Factor (unitless)(8)		0.85 0.85	0.85 0.85	0.85 0.85	0.85 0.85	0.85 0.85	0.85 0.85	0.85 0.85
Exposure Time (hr/day)		**24** (3) 15 (9)	**8** (3) 7.2 (10)	**8** (3) 7.2 (10)	**8** (3) 7.2 (10)	**8** (3) 7.2 (10)	**24** (3) 15 (9)	**24** (3) 15 (9)
Exposure Frequency (days/yr)		**350** (3) 234 (11)	**250** (3) 219 (11)	**250** (3) 219 (11)	30 (6) 30 (6)	65 (6) 65 (6)	**350** (3) 234 (11)	**350** (3) 234 (11)
Exposure Duration (years)		**30** (3) 9 (12)	**25** (3) 4 (13)	**25** (3) 4 (13)	1 (6) 1 (6)	2.5 (6) 2.5 (6)	**30** (3) 9 (12)	**30** (3) 9 (12)
Body Weight (kg) (3)		**70** 70	**70** 70	**70** 70	**70** 70	**70** 70	**70** 70	**70** 70

POTENTIALLY EXPOSED RECEPTORS

FACTORS FOR POTENTIALLY COMPLETE ROUTES OF EXPOSURE	Current Off-Site Resident	Current On-Site Industrial Worker	Future On-Site Office Worker	Future On-Site Construction Worker	Future On-Site Ecological Worker	Future On-Site Resident	Future Off-Site Resident
Averaging Time:	10950	9125	9125	365	915	10950	10950
Noncarcinogen (days) (14)	3285	1460	1460	365	915	3285	3285
Averaging Time:	25550	25550	25550	25550	25550	25550	25550
Carcinogen (days)(15)	25550	25550	25550	25550	25550	25550	25550

NOTES:

(BOLD) Standard Default Exposure Factor (EPA, 1991a) used to calculate conservative risks based on Reasonable Maximum Exposure (RME) by combining high-end (>90th %ile) and central tendency (X or Md) exposure factors to represent exposure "that is both protective and reasonable, not the worst possible case."

(NA) Not applicable because the exposure pathway is incomplete.

(1) Top entry is based on High-End (HE) exposure used to characterize the RME risks in a baseline or remediation risk assessment. RME risks are derived using professional judgment to set one or more sensitive exposure parameters at HE (90-98th %ile) values in combination with others set at central tendency (CT) values in order to characterize the HE risks to a very small proportion of an exposed population.

(2) Bottom entry is based on CT used to characterize the typical case in a baseline or remediation risk assessment (or a "reasonable maximum exposure" when used in combination with selected high-end values). Average risks are derived using professional judgment to set all exposure parameters at 50th %ile (median) or mean values in order t characterize the mid-range risk to the largest proportion of an exposed population.

(3) E{A RAGS, HHEM, Standard Default Exposure Factors 1991a.

(4) CT residential inhalation rate (adult) based on EPA RAGS, HHEM Part B, 1991b. Note that the CT rate for the child-81% of adult rate based on 6-year-old and adult males at moderate activity (EPA Exposure Factors Handbook, 1989a)-cannot result in a greater inhalation intake for the child, assuming EPA standard default values for exposure duration and body weight (adult=0.63 m3/hr x 24 yr/70 kg = 0.22 m^3/hr-kg/yr; child = 0.63 m3/hr x 0.81 x 6 yr/15 kg = 0.20 m^3/hr-kg/yr.

(5) CT worker inhalation rate of 0.63 m^3/hr (adult indoors) based on EPA Exposure Factors Handbook (1989a).

(6) Outdoor inhalation rate from EPA Exposure Factors Handbook (1989a) and the CT from Final Rocky Flats Programmatic Risk-Based Preliminary Remediation Goals, 1995.

(7) Five-year (1988-1992) mean annual ratio of PM_{10} soil or dust particles to total suspended particulates (TSP) as reported in 1992 RFP Site Environmental Report; EPA Exposure Factors Handbook (1989a) recognizes the need for a "respirable fraction of particulates" (RF) to indicate the total respirable fraction assumed deposited in the lung (100% of PM_{10}).

(8) Based on Exposure Assessment work done at Rocky Mountain Arsenal (Integrated Endangerment Assessment/Risk Characterization, August 1993).

(9) Based on average time spent at home (0.64 adult) (American Industrial Health Council, 1994; Gephart, Tell and Triemer, 1994).

(10) Based on average time spent at work (36 hr/wk) (American Industrial Health Council, 1994; Gephart, Tell and Triemer, 1994).

(11) Preliminary CT default value (EPA, 1993).

(12) Preliminary CT default value (EPA, 1993). A current alternative value is EPA's CT Residential Occupancy Period (ROP) of 8.1 years for total population (EPA, 1992b; American Industrial Health Council, 1994).

(13) American Industrial Health Council, 1994, Gephart, Tell and Triemer, 1994.

(14) Exposure duration (years) x 365 days (EPA RAGS, HHEM Pt. A, 1989b).

(15) Lifetime exposure (70 years) x 365 days (EPA RAGS, HHEM Pt. A, 1989b).

TABLE 3. Rocky Flats Site-Specific Exposure Factors for Quantitative Human Health Risk Assessment

FACTORS FOR POTENTIALLY COMPLETE ROUTES OF EXPOSURE		POTENTIALLY EXPOSED RECEPTORS						
		Current Off-Site Resident	Current On-Site Industrial Worker	Future On-Site Office Worker	Future On-Site Construction Worker	Future On-Site Ecological Worker	Future On-Site Resident	Future Off-Site Resident
SOIL/DUST DERMAL CONTACT								
Exposed Skin Surface (cm^2)	RME☛	**5300** (1, 3)	3400 (5)	2100 (5)	4700 (5)	4700 (5)	**5300** (3)	**5300** (3)
	CT☛	2000 (2, 4)	3400 (5)	2100 (5)	4700 (5)	4700 (5)	2000 (4)	2000 (4)
Fraction Contacted from Contaminated Source		1.0 (6) 0.64 6)	1.0 (6) 0.9 (7)	1.0 (6) 0.9 (7)	1.0 (6) 0.9 (7)	1.0 (6) 0.9 (7)	1.0 (6) 0.64 (6)	1.0 (6) 0.64 (6)
Soil Adherence (mg/cm^2)		**1.0** (3) 0.2 (3)	**1.0** (3) 0.2 (3)	**1.0** (3) 0.2 (3)	**1.0** (3) 0.2 (3)	**1.0** (3) 0.2 (3)	**1.0** (3) 0.2 (3)	**1.0** (3) 0.2 (3)
Skin Absorption Factor		CS (8) CS (8)	CS CS	CS CS	CS CS	CS CS	CS CS	CS CS
Exposure Frequency (days/yr)		**350** (9) 234 (10)	**250** (9) 219 (10)	**250** (9) 211 (10)	30 (11) 30 (11)	65 (11) 65 (11)	**350** (9) 234 (10)	**350** (9) 234 (10)
Exposure Duration- (years)		**30** (10) 9 (12)	**25** (9) 4 (13)	**25** (9) 4 (13)	1 (11) 1 (11)	2.5 (11) 2.5 (11)	**30** (9) 9 (12)	**30** (9) 9 12)
Body Weight (kg) (9)		**70** 70	**70** 70	**70** 70	**70** 70	**70** 70	**70** 70	**70** 70

POTENTIALLY EXPOSED RECEPTORS

FACTORS FOR POTENTIALLY COMPLETE ROUTES OF EXPOSURE	Current Off-Site Resident	Current On-Site Industrial Worker	Future On-Site Office Worker	Future On-Site Construction Worker	Future On-Site Ecological Worker	Future On-Site Resident	Future Off-Site Resident
Averaging Time: Noncarcinogen (days) (14)	10950 3285	9125 1460	9125 1460	365 365	915 915	10950 3285	10950 3285
Averaging Time: Carcinogen (days)(15)	25550 25550	25550 25550	25550 25550	25550 25550	25550 25550	25550 25550	25550 25550

NOTES:

(BOLD) Standard Default Exposure Factor (EPA, 1992a; EPA 1991a) used to calculate conservative risks based on Reasonable Maximum Exposure (RME) by combining high-end (>90th %ile) and central tendency (X or Md) exposure factors to represent exposure "that is both protective and reasonable, not the worst possible case."

(NA) Not applicable because the exposure pathway is incomplete.

(CS) Chemical-specific exposure parameter determined from quantitative analysis and toxicology literature.

(1) Top entry is based on High-End (HE) exposure used to characterize the RME risks in a baseline or remediation risk assessment. RME risks are derived using professional judgment to set one or more sensitive exposure parameters at HE (90-98th %ile) values in combination with others set at central tendency (CT) values in order to characterize the high-end risks to a very small proportion of an exposed population.

(2) Bottom entry is based on CT used to characterize the typical case in a baseline or remediation risk assessment (or a "reasonable maximum exposure" when used in combination with selected high-end values). Average risks are derived using professional judgment to set *all* exposure parameters at 50th %ile (median) or mean values in order to characterize the mid-range risk to the largest proportion of an exposed population.

(3) EPA Dermal Exposure Assessment: Principles and Applications, 1992a.

(4) CT adult skin surface exposed is 11% of *mean* surface area (18150 cm^2) (EPA Dermal Exposure Assessment: Principles and Applications, 1992a). Note that the CT skin surface of the child-41% of adult surface area based on 6-year-old and adult males (EPA Exposure Factors Handbook, 1989a)-cannot result in a greater dermal intake for the child, assuming EPA standard default values for exposure duration and body weight and twice the fraction exposed (adult = 18150 cm^2 x 0.11 x 24 yr/70kg = 685 cm^2/kg-yr; child = 18150 cm^2 x 0.41 x 0.22 x 0.22 x 6 yr/15 kg = 655 cm^2/kg-yr).

(5) Industrial worker HE value is an average between exposed skin surfaces of 4,700 cm^2 (outdoor construction or ecological worker) and 2,100 cm^2 (indoor office worker) based on EPA Exposure Factors Handbook, 1989a; indoor worker exposure assumes median surface area of adult head and hands (1,200 cm^2 + 900 cm^2), whereas outdoor worker assumes median surface area of adult head, hands, and arms (1,200 cm^2 + 900 cm^2 + 2,600 cm^2).

(6) RME based on EPA guidance. The CT is based on average time spent at home (0.64 adult; 0.82 child) (American Industrial Health Council, 1994; Gephart, Tell and Triemer, 1994).

(7) As in Note 6, based on average weekly time spent at work (0.9) using a base of 40 hours per week.

(8) In the absence of a CS value, consult EPA Region IV Interim Guidance dated 11 February 1992 (default values: 0.01 organics; 0.001 inorganics) (EPA, 1992c). However, alternative values of 0.06 (organic compounds) and 0.01 (metals) are based on maximum dermal bioavailability as reported in "Dermal Absorption Factors for Multiple Chemicals" (15 December 1992; EPA, 1992d).

(9) EPA RAGS, HHEM, Standard Default Exposure Factors, 1991a (for consistency with soil/dust ingestion and inhalation).

(10) Preliminary CT default value (EPA, 1993).

(11) Final Rocky Flats Programmatic Risk-Based Preliminary Remediation Goals, 1995.

(12) Preliminary CT default value (EPA, 1993). A current alternative value is EPA's CT Residential Occupancy Period (ROP) of 8.1 years for total population (EPA, 1992b; American Industrial Health Councill, 1994).

(13) American Industrial Health Council, 1994; Gephart, Tell and Triemer, 1994.

(14) Exposure duration (years) x 365 days (EPA RAGS, HHEM Pt. A, 1989b).

(15) Lifetime exposure (70 years) x 365 days (EPA RAGS, HHEM Pt. A, 1989b).

TABLE 4. Rocky Flats Site-Specific Exposure Factors for Quantitative Human Health Risk Assessment

FACTORS FOR POTENTIALLY COMPLETE ROUTES OF EXPOSURE		POTENTIALLY EXPOSED RECEPTORS						
		Current Off-Site Resident	Current On-Site Industrial Worker	Future On-Site Office Worker	Future On-Site Construction Worker	Future On-Site Ecological Worker	Future On-Site Resident	Future Off-Site Resident
SURFACE WATER/SUSPENDED SEDIMENT INGESTION*								
Ingestion Rate	RME☛	NA	NA	NA	NA	0.05 (1, 3)	**0.05** (5)	**0.05** (5)
(L/hr)	CT☛	NA	NA	NA	NA	0.01 (2, 4)	0.01 (4)	0.01 (4)
Exposure Rate		NA	NA	NA	NA	1 (6)	**2.6** (7)	**2.6** (7)
(hr/day)		NA	NA	NA	NA	1 (6)	1.0 (8)	1.0 (8)
Exposure Frequency		NA	NA	NA	NA	12 (3)	**7** (9)	**7** (9)
(days/yr)		NA	NA	NA	NA	7 (3)	5 (10)	5 (10)
Exposure Duration		NA	NA	NA	NA	2.5 (3)	**30** (11)	**30** (11)
(years)		NA	NA	NA	NA	2.5 (3)	9 (12)	9 (12)
Body Weight		NA	NA	NA	NA	70 (3)	**70** (11)	**70** (11)
(kg)		NA	NA	NA	NA	70 (3)	70 (11)	70 (11)
Averaging Time:		NA	NA	NA	NA	915	10950	10950
Noncarcinogen (days) (13)		NA	NA	NA	NA	915	3285	3285
Averaging Time:		NA	NA	NA	NA	25550	25550	25550
Carcinogen (days) (14)		NA	NA	NA	NA	25550	25550	25550

* Direct ingestion of exposed *in situ* shoreline sediments will utilize *OU-specific* exposure factors.

NOTES:

(BOLD) Standard Default Exposure Factor (EPA, 1991b; EPA 1989b) used to calculate conservative risks based on Reasonable Maximum Exposure (RME) by combining high-end (>90th %ile) and central tendency (X or Md) exposure factors to represent exposure "that is both protective and reasonable, not the worst possible case."

(NA) Not applicable because the exposure pathway is incomplete.

(1) Top entry is based on High-End (HE) exposure used to characterize the RME risks in a baseline or remediation risk assessment. RME risks are derived using professional judgment to set one or more sensitive exposure parameters at HE (90-98th %ile) values in combination with others set at central tendency (CT) values in order to characterize the high-end risks to a very small proportion of an exposed population.

(2) Bottom entry is based on CT used to characterize the typical case in a baseline or remediation risk assessment (or a "reasonable worst case", when used in combination with selected high-end values). Average risks are derived using professional judgment to set *all* exposure parameters at 50th %ile (median) or mean values in order to characterize the mid-range risk to the largest proportion of an exposed population.

(3) The RME is based on EPA guidance. The CT is from the Final Rocky Flats Programmatic Risk-Based Preliminary Remediation Goals, 1995.

(4) On the premise that actual swimming rather that wading is unlikely, the CT ingestion rate while wading is assumed to be one-fifth as much as while swimming.

(5) Default value for ingestion of surface water and suspended sediment while *swimming* (EPA RAGS, HHEM Pt. A, 1989b); *wading* ingestion rate is indeterminate from available sources

(6) An exposure "event" for the ecological worker (see Final Rocky Flats Programmatic Risk-Based Preliminary Remediation Goals, 1995) is assumed to last 1 hour per day.

(7) Default value for swimming exposure time (EPA RAGS, HHEM Pt. A, 1989b); *wading* exposure time is indeterminate from available sources.

(8) On the premise that actual swimming rather than wading is unlikely, the CT exposure time while wading is assumed to be 1 hour.

(9) Default value for *swimming* exposure frequency (EPA RAGS, HHEM Pt. A, 1989b); *wading* exposure frequency is indeterminate from available sources.

(10) On the premise that actual swimming rather than wading is unlikely, the CT exposure frequency while wading is assumed to be 5 events per year.

(11) Appendix B.1, EPA RAGS, HHEM Pt. B, 1991b.

(12) Preliminary CT default value (EPA, 1993). A current alternative value is EPA's CT Residential Occupancy Period (ROP) of 8.1 years for total population (EPA, 1992b; American Industrial Health Council, 1994).

(13) Exposure duration (years) x 365 days (EPA RAGS, HHEM Pt. A, 1989b).

(14) Lifetime exposure (70 years) x 365 days (EPA RAGS, HHEM Pt. A, 1989b).

TABLE 5. Rocky Flats Site-Specific Exposure Factors for Quantitative Human Health Risk Assessment

FACTORS FOR POTENTIALLY COMPLETE ROUTES OF EXPOSURE		POTENTIALLY EXPOSED RECEPTORS						
		Current Off-Site Resident	Current On-Site Industrial Worker	Future On-Site Office Worker	Future On-Site Construction Worker	Future On-Site Ecological Worker	Future On-Site Resident	Future Off-Site Resident
SURFACE WATER DERMAL CONTACT*								
Exposed Skin	RME☛	NA	NA	NA	NA	9275 (1,3)	**18150** (4)	**18150** (4)
Surface (cm^2)	CT☛	NA	NA	NA	NA	9275 (2,3)	9275 (5)	9275 (5)
Dermal Permeability		NA	NA	NA	NA	CS (6)	CS (6)	CS (6)
(cm/hr)		NA	NA	NA	NA	CS (6)	CS (6)	CS (6),
Exposure Time		NA	NA	NA	NA	1 (7)	**2.6** (8)	**2.6** (8)
(hr/day)		NA	NA	NA	NA	1 (7)	1.0 (9)	1.0 (9)
Exposure Frequency		NA	NA	NA	NA	12 (10)	**7** (11)	**7** (11)
(days/yr)		NA	NA	NA	NA	7 (10)	5 (12)	5 (12)
Exposure Duration		NA	NA	NA	NA	2.5 (10)	**30** (13)	**30** (13)
(years)		NA	NA	NA	NA	2.5 (10)	9 (14)	9 (14)
Body Weight		NA	NA	NA	NA	70 (10)	**70** (13)	**70** (13)
(kg)		NA	NA	NA	NA	70 (10)	70 (13)	70 (13)

* Direct dermal contact with exposed *in situ* shoreline sediment will utilize *OU-specific* exposure factors.

POTENTIALLY EXPOSED RECEPTORS

FACTORS FOR POTENTIALLY COMPLETE ROUTES OF EXPOSURE	Current Off-Site Resident	Current On-Site Industrial Worker	Future On-Site Office Worker	Future On-Site Construction Worker	Future On-Site Ecological Worker	Future On-Site Resident	Future Off-Site Resident
Averaging Time:	NA	NA	NA	NA	915	10950	10950
Non-Carcinogen (days) (15)	NA	NA	NA	NA	915	3285	3285
Averaging Time:	NA	NA	NA	NA	25550	25550	25550
Carcinogen (days)(16)	NA	NA	NA	NA	25550	25550	25550

NOTES:

(BOLD) Standard Default Exposure Factor (EPA, 1989a; EPA 1989b) used to calculate conservative risks based on Reasonable Maximum Exposure (RME) by combining high-end (>90th %ile) and central tendency (Xor Md) exposure factors to represent exposure "that is both protective and reasonable, not the worst possible case."

(NA) Not applicable because the exposure pathway is incomplete.

(CS) Chemical-specific exposure parameter determined from quantitative analysis and toxicology literature.

(1) Top entry is based on High-End (HE) exposure used to characterize the Reasonable Maximum Exposure (RME) risks in a baseline or remediation risk assessment. RME risks are derived using professional judgment to set one or more sensitive exposure parameters at HE (90-98th %ile) values in combination with others set a Central Tendency (CT) values in order to characterize the high-end risks to a very small proportion of an exposed population.

(2) Bottom entry is based on Central Tendency (CT) used to characterize the typical case in a baseline or remediation risk assessment (or a "reasonable maximum exposure", when used in combination with selected high-end values). Average risks are derived using professional judgment to set *all* exposure parameters at 50th %ile (median) or mean values in order to characterize the mid-range risk to the largest proportion of an exposed population.

(3) On the premise that actual swimming by the ecologist, rather than wading, is highly unlikely, the exposed adult skin surface while wading and reaching underwater is assumed to include the legs (5950 cm^2), feet (1250 cm^2), forearms (1175 cm^2), and hands (900 cm^2) (EPA Exposure Factors

Handbook, 1989a).

(4) Typical value for total adult skin surface area exposed while swimming (EPA Exposure Factors Handbook, 1989a).

(5) On the premise that actual swimming by the resident, rather than wading is unlikely, the exposed adult skin surface while wading is assumed to include the legs (5950 cm^2), feet (1250 cm^2), forearms (1175 cm^2), and hands (900 cm^2) (EPA Exposure Factors Handbook, 1989a).

(6) In the absence of a CS value, consult methods to estimate maximum dermal bioavailability. Possible maxima are: HE value of 1.0 cm/hr determined experimentally for ethylbenzene and toluene among *organic* compounds; HE value of 0.001 cm/hr determined experimentally for cadmium chloride and mercuric chloride among *inorganic* compounds (EPA Dermal Exposure Assessment: Principles and Applications, 1992a).

(7) An exposure "event" for the ecological worker (see Final Rocky Flats Programmatic Risk-Based Preliminary Remediation Goals, 1994) is assumed to last 1 hour per day.

(8) Default value for *swimming* exposure time (EPA RAGS, HHEM Pt. A, 1989b); *wading* exposure time is indeterminate from available sources.

(9) On the premise that actual swimming, rather than wading, is unlikely, the CT exposure time while wading is assumed to be 1 hour.

(10) RME is from EPA guidance. The CT is from the Final Rocky Flats Programmatic Risk-Based Preliminary Remediation Goals, 1995 (for consistency with surface water ingestion).

(11) Default value for *swimming* exposure frequency (EPA RAGS, HHEM Pt. A, 1989b); *wading* exposure frequency is indeterminate from available sources.

(12) On the premise that actual swimming rather than wading is unlikely, the CT exposure frequency is assumed to be 5 events per year.

(13) EPA RAGS, HHEM Pt. A, 1989b.

(14) Preliminary CT default value (EPA, 1993). A current alternative value is EPA's CT Residential Occupancy Period (ROP) of 8.1 years for total population (EPA, 1992b; American Industrial Health Council, 1994).

(15) Exposure duration (years) x 365 days (EPA RAGS, HHEM Pt. A, 1989b).

(16) Lifetime exposure (70 years) x 365 days (EPA RAGS, HHEM Pt. A, 1989b).

TABLE 6. Rocky Flats Site-Specific Exposure Factors for Quantitative Human Health Risk Assessment

FACTORS FOR POTENTIALLY COMPLETE ROUTES OF EXPOSURE		POTENTIALLY EXPOSED RECEPTORS						
		Current Off-Site Resident	Current On-Site Industrial Worker	Future On-Site Office Worker	Future On-Site Construction Worker	Future On-Site Ecological Worker	Future On-Site Resident	Future Off-Site Resident
HOMEGROWN PRODUCE INGESTION								
Ingestion Rate (g/day)	RME☛	**200/140** (1,3)	NA	NA	NA	NA	**200/140** (1,3)	**200/140** (1,3)
	CT☛	200/140 (2,3)	NA	NA	NA	NA	200/140 (1,3)	200/140 1,3)
Fraction Ingested from Contaminated Source		**0.4/0.3** (4)	NA	NA	NA	NA	**0.4/0.3** (4)	**0.4/0.3** (4)
		0.25/0.2 (4)	NA	NA	NA	NA	0.25/0.2 (4)	0.25/0.2 (4)
Washoff Factor		1.0 (5)	NA	NA	NA	NA	1.0 (5)	1.0 (5)
		0.5 (5)	NA	NA	NA	NA	0.5 (5)	0.5 (5)
Exposure Frequency (days/yr)		**350** (6)	NA	NA	NA	NA	**350** (6)	**350** (6)
		150 (7)	NA	NA	NA	NA	150 (7)	150 (7)
Exposure Duration (years)		**30** (8)	NA	NA	NA	NA	**30** (8)	**30** (8)
		9 (9)	NA	NA	NA	NA	9 (9)	9 (9)
Body Weight (kg)		**70** (8)	NA	NA	NA	NA	**70** (8)	**70** (8)
		70 (8)	NA	NA	NA	NA	70 (8)	70 (8)

POTENTIALLY EXPOSED RECEPTORS

FACTORS FOR POTENTIALLY COMPLETE ROUTES OF EXPOSURE	Current Off-Site Resident	Current On-Site Industrial Worker	Future On-Site Office Worker	Future On-Site Construction Worker	Future On-Site Ecological Worker	Future On-Site Resident	Future Off-Site Resident
Averaging Time:	10950	NA	NA	NA	NA	10950	10950
Noncarcinogen (days) (10)	3285	NA	NA	NA	NA	3285	3285
Averaging Time:	25550	NA	NA	NA	NA	25550	25550
Carcinogen (days)(11)	25550	NA	NA	NA	NA	25550	25550

NOTES:

(BOLD) Standard Default Exposure Factor (EPA, 1991a; EPA 1989a) used to calculate conservative risks based on Reasonable Maximum Exposure (RME) by combining high-end (>90th %ile) and central tendency (X or Md) exposure factors to represent exposure "that is both protective and reasonable, not the worst possible case."

(NA) Not applicable because the exposure pathway is incomplete.

(1) Top entry is based on High-End (HE) exposure used to characterize the Reasonable Maximum Exposure (RME) risks in a baseline or remediation risk assessment. RME risks are derived using professional judgment to set one or more sensitive exposure parameters at HE (90-98th %ile) values in combination with others set a Central Tendency (CT) values in order to characterize the high-end risks to a very small proportion of an exposed population.

(2) Bottom entry is based on Central Tendency (CT) used to characterize the typical case in a baseline or remediation risk assessment (or a "reasonable maximum exposure", when used in combination with selected high-end values). Average risks are derived using professional judgment to set *all* exposure parameters at 50th %ile (median) or mean values in order to characterize the mid-range risk to the largest proportion of an exposed population.

(3) Average adult vegetable intake/average adult fruit intake (EPA Exposure Factors Handbook, 1989a).

(4) The HE and CT fraction ingested (FI) is based on the fraction of fruits or vegetables consumed daily that is *home-grown* (EPA Exposure Factors Handbook, 1989a).

(5) RME is the EPA default value. For the CT, it is assumed that

residents consuming their own home-grown fruits or vegetables also wash off *at least* one-half of all contaminated soil or dust particles adhering to root and leaf vegetables and to fruits.

(6) EPA RAGS, HHEM, Standard Default Exposure Factors, 1991a. A conservative exposure frequency would be 215 days (first harvest May 1; last harvest December 1) (Jefferson County Horticulturalist Robert Cox, 21 October 1994). The default exposure frequency of 350 days per year would assume an additional 135 days consuming only *preserved* home-grown produce.

(7) Based on typical site-specific fraction of the year home-grown produce is harvested on Colorado's Eastern Plains (first harvest May 15; last harvest October 15) (Jefferson County Horticulturalist Robert Cox, 21 October 1994).

(8) EPA RAGS, HHEM, Standard Default Exposure factors, 1991a.

(9) Preliminary CT default value (EPA, 1993). A current alternative value is EPA's CT Residential Occupancy Period (ROP) of 8.1 years for total population (EPA, 1992b; American Industrial Health Council, 1994).

(10) Exposure duration (years) x 365 days (EPA RAGS, HHEM Pt. A, 1989b).

(11) Lifetime exposure (70 years) x 365 days (EPA RAGS, HHEM Pt. A, 1989b).

TABLE 7. Rocky Flats Site-Specific Exposure Factors for Quantitative Human Health Risk Assessment

FACTORS FOR POTENTIALLY COMPLETE ROUTES OF EXPOSURE		POTENTIALLY EXPOSED RECEPTORS						
		Current Off-Site Resident	Current On-Site Industrial Worker	Future On-Site Office Worker	Future On-Site Construction Worker	Future On-Site Ecological Worker	Future On-Site Resident	Future Off-Site Resident
GROUND WATER INGESTION								
Ingestion Rate	RME☛	NA	NA	1.0	NA	NA	**2.0** (1,3)	NA
(L/day)	CT☛	NA	NA	1.0	NA	NA	1.4 (2,3)	NA
Fraction Ingested from		NA	NA	1.0	NA	NA	**1.0** (4)	NA
Contaminated Source		NA	NA	0.3	NA	NA	0.3 (4)	NA
Exposure Frequency		NA	NA	250	NA	NA	**350** (5)	NA
(days/yr)		NA	NA	219	NA	NA	234	NA
Exposure Duration		NA	NA	25	NA	NA	**30** (5)	NA
(years)		NA	NA	4	NA	NA	9 (7)	NA
Body Weight		NA	NA	70	NA	NA	**70** (5)	NA
(kg)		NA	NA	70	NA	NA	70 (5)	NA
Averaging Time:		NA	NA	9125	NA	NA	10950	NA
Noncarcinogen (days) (8)		NA	NA	1460	NA	NA	3285	NA
Averaging Time:		NA	NA	25550	NA	NA	25550	NA
Carcinogen (days)(9)		NA	NA	25550	NA	NA	25550	NA

NOTES:

(BOLD) Standard Default Exposure Factor (EPA, 1991a; EPA 1989a) used to calculate conservative risks based on Reasonable Maximum Exposure (RME) by combining high-end (>90th %ile) and central tendency (X or Md) exposure factors to represent exposure "that is both protective and reasonable, not the worst possible case."

(NA) Not applicable because the exposure pathway is incomplete.

(1) Top entry is based on High-End (HE) exposure used to characterize the Reasonable Maximum Exposure (RME) risks in a baseline or remediation risk assessment. RME risks are derived using professional judgment to set one or more sensitive exposure parameters at HE (90-98th %ile) values in combination with others set a Central Tendency (CT) values in order to characterize the high-end risks to a very small proportion of an exposed population.

(2) Bottom entry is based on Central Tendency (CT) used to characterize the typical case in a baseline or remediation risk assessment (or a "reasonable maximum exposure", when used in combination with selected high-end values). Average risks are derived using professional judgment to set *all* exposure parameters at 50th %ile (median) or mean values in order to characterize the mid-range risk to the largest proportion of an exposed population.

(3) HE and CT adult total water-based beverage intakes, including tap water (EPA Exposure Factors Handbook, 1989a).

(4) The CT fraction ingested (FI) is based on 64% of adult time spent at home (American Industrial Health Council, 1994; Gephart, Tell and Triemer, 1994) and on 46% tap water ingestion out of adult total water-based beverage intake (EPA Exposure Factors Handbook, 1989a) (0.64 x 0.46 = 0.3).

(5) EPA RAGS, HHEM, Standard Default Exposure Factors, 1991a.

(6) Preliminary CT default value (EPA, 1993).

(7) Preliminary CT default value (EPA, 1993). A current alternative value is EPA's CT Residential Occupancy Period (ROP) of 8.1 years for total population (EPA, 1992b; American Industrial Health Council, 1994).

(8) Exposure duration (years) x 365 days (EPA RAGS, HHEM Pt. A, 1989b).

(9) Lifetime exposure (70 years) x 365 days (EPA RAGS, HHEM Pt. A, 1989b).

TABLE 8. Rocky Flats Site-Specific Exposure Factors for Quantitative Human Health Risk Assessment

FACTORS FOR POTENTIALLY COMPLETE ROUTES OF EXPOSURE		POTENTIALLY EXPOSED RECEPTORS						
		Current Off-Site Resident	Current On-Site Industrial Worker	Future On-Site Office Worker	Future On-Site Construction Worker	Future On-Site Ecological Worker	Future On-Site Resident	Future Off-Site Resident
GROUNDWATER/SUBSOIL VOC INHALATION*								
Inhalation Rate (m^3/hr)	RME☛	NA	NA	**0.83** (1, 3)	1.4 (5)	NA	**0.63** (3)	NA
	CT☛	NA	NA	0.63 (2, 4)	1.25 (5)	NA	0.63 (3)	NA
Exposure Time (hr/day)		NA NA	NA NA	**8** (3) 7.2 (7)	**8** (3) 7.2 (7)	NA NA	**24** (3) 15 (8)	NA NA
Exposure Frequency (days/yr)		NA NA	NA NA	**250** (3) 219 (9)	30 (5) 30 (5)	NA NA	**350** (3) 234 (9)	NA NA
Exposure Duration (years)		NA NA	NA NA	**25** (3) 4 (10)	1 (5) 1 (5)	NA NA	**30** (3) 9 (11)	NA NA
Body Weight (kg) (3)		NA NA	NA NA	**70** 70	**70** 70	NA NA	**70** 70	NA NA

* Includes *indoor* VOC vapor from household use of a groundwater supply and VOC vapor infiltration from subsoil into homes and offices; also *outdoor* VOC vapor from subsoil excavation at construction sites.

FACTORS FOR POTENTIALLY COMPLETE ROUTES OF EXPOSURE	POTENTIALLY EXPOSED RECEPTORS						
	Current Off-Site Resident	Current On-Site Industrial Worker	Future On-Site Office Worker	Future On-Site Construction Worker	Future On-Site Ecological Worker	Future On-Site Resident	Future Off-Site Resident
Averaging Time:	NA	NA	9125	365	NA	10950	10950
Noncarcinogen (days) (12)	NA	NA	1460	365	NA	3285	NA
Averaging Time:	NA	NA	25550	25550	NA	25550	NA
Carcinogen (days)(13)	NA	NA	25550	25550	NA	25550	NA

NOTES:

(BOLD) Standard Default Exposure Factor (EPA, 1991a; EPA 1989a) used to calculate conservative risks based on Reasonable Maximum Exposure (RME) by combining high-end (>90th %ile) and central tendency (X or Md) exposure factors to represent exposure "that is both protective and reasonable, not the worst possible case."

(NA) Not applicable because the exposure pathway is incomplete.

(1) Top entry is based on High-End (HE) exposure used to characterize the Reasonable Maximum Exposure (RME) risks in a baseline or remediation risk assessment. RME risks are derived using professional judgment to set one or more sensitive exposure parameters at HE (90-98th %ile) values in combination with others set a Central Tendency (CT) values in order to characterize the high-end risks to a very small proportion of an exposed population.

(2) Bottom entry is based on Central Tendency (CT) used to characterize the typical case in a baseline or remediation risk assessment (or a "reasonable maximum exposure", when used in combination with selected high-end values). Average risks are derived using professional judgment to set *all* exposure parameters at 50th %ile (median) or mean values in order to characterize the mid-range risk to the largest proportion of an exposed population.

(3) EPA RAGS, HHEM, Standard Default Exposure Factors, 1991a.

(4) CT worker inhalation rate of 0.63 m^3/hr (adult indoors) based on EPA Exposure Factors Handbook, 1989a.

(5) RME is based on EPA guidance. The CT is from the Final Rocky Flats Programmatic Risk-Based preliminary Remediation Goals, 1995.

(6) CT residential inhalation rate (adult indoors) based on EPA RAGS, HHEM Standard Default Exposure Factors, 1991a. Note that the CT rate for the child - 81% of adult rate based on 6-year-old and adult males at moderate activity (EPA Exposure Factors Handbook, 1989a) - cannot result in a greater inhalation intake for the child, assuming EPA standard default values for exposure duration and body weight (adult = 0.63 m^3/hr x 24 yr/70 kg = 0.22 m^3/hr-kg/yr; child = 0.63 m^3/hr x 0.81 x 6 yr/15 kg = 0.20 m^3/hr-kg/yr.

(7) Based on average time spent at work (36 hr/wk) (American Industrial Health Council, 1994; Gephart, Tell and Triemer, 1994).

(8) Based on average time spent at home (0.64 adult; 0.82 child) (American Industrial Health Council, 1994; Gephart, Tell and Triemer, 1994).

(9) Preliminary CT default value (EPA, 1993).

(10) American Industrial Health Council, 1994; Gephart, Tell and Triemer, 1994.

(11) Preliminary CT default value (EPA, 1993). A current alternative value is EPA's CT Residential Occupancy Period (ROP) of 8.1 years for total population (EPA, 1992b; American Industrial Health Council, 1994).

(12) Exposure duration (years) x 365 days (EPA RAGS, HHEM Pt. A, 1989b).

(13) Lifetime exposure (70 years) x 365 days (EPA RAGS, HHEM Pt. A, 1989b).

TABLE 9. Rocky Flats Site-Specific Exposure Factors for Quantitative Human Health Risk Assessment

FACTORS FOR POTENTIALLY COMPLETE ROUTES OF EXPOSURE		POTENTIALLY EXPOSED RECEPTORS						
		Current Off-Site Resident	Current On-Site Industrial Worker	Future On-Site Office Worker	Future On-Site Construction Worker	Future On-Site Ecological Worker	Future On-Site Resident	Future Off-Site Resident
EXTERNAL IRRADIATION								
Gamma Exposure Time Factor (T_e)	RME	NA	**0.3** (1, 3)	**0.3** (3)	**0.3** (3)	**0.3** (3)	**1.0** (4)	NA
	CT	NA	0.3 (2, 3)	0.3 (3)	0.3 (3)	0.3 (3)	0.75 (5)	NA
Gamma Shielding Factor ($1-S_e$)		NA	**0.8** (6)	**0.8** (6)	**1.0** (8)	**1.0** (8)	**0.8** (6)	NA
		NA	0.5 (7)	0.5 (7)	0.8 (9)	0.8 (9)	0.5 (7)	NA
Exposure Frequency (days/yr)		NA	**250** (4)	**250** (4)	30 (11)	65 (11)	**350** (4)	NA
		NA	219 (10)	219 (10)	30 (11)	65 (11)	234 (10)	NA
Exposure Duration (years)		NA	**25** (4)	**25** 4)	1 (11)	2.5 (11)	**30** (4)	NA
		NA	4 (12)	4 (12)	1 (11)	2.5 (11)	9 (13)	NA

NOTES:

(BOLD) Standard Default Exposure Factor (EPA, 1991a; EPA 1989a) used to calculate conservative risks based on Reasonable Maximum Exposure (RME) by combining high-end (>90th %ile) and central tendency (X or Md) exposure factors to represent exposure "that is both protective and reasonable, not the worst possible case."

(NA) Not applicable because the exposure pathway is incomplete.

(1) Top entry is based on High-End (HE) exposure used to characterize the Reasonable Maximum Exposure (RME) risks in a baseline or remediation risk assessment. RME risks are derived using professional judgment to set one or more sensitive exposure parameters at HE (90-98th %ile) values in combination with others set a Central Tendency (CT) values in order to characterize the high-end risks to a very small proportion of an exposed population.

(2) Bottom entry is based on Central Tendency (CT) used to characterize the typical case in a baseline or remediation risk assessment (or a "reasonable maximum exposure", when used in combination with selected high-end values). Average risks are derived using professional judgment to set *all* exposure parameters at 50th %ile (median) or mean values in order to characterize the mid-range risk to the largest proportion of an exposed population.

(3) Assuming the HE fraction of time exposed (8 out of 24 hours or 0.33) according to EPA RAGS, HHEM Pt. B- Revised (Dinan, 1992).

(4) EPA RAGS, HHEM, Standard Default Exposure Factors, 1991b.

(5) Assuming the CT fraction of time spent at home (average of adult - 0.64 and child - 0.82) (American Industrial Health Council 1994; Gephart, Tell and Triemer, 1994).

(6) Standard default screening value specified in EPA RAGS, HHEM Pt. B, 1991b (1 - 0.2 = 0.8), assuming substantial time shielded by structures.

(7) Estimated typical value for residents and indoor workers shielded by buildings (DOE documents for RFP, such as "Mining Exposure Scenario for Baseline Risk Assessments at the Rocky Flats Environmental Technology Site" (9 August 1994).

(8) Standard default screening value specified in EPA RAGS, HHEM Pt. B, 1991b,assuming limited time shielded by structures.

(9) Assumed typical value for outdoor workers with only limited shielding indoors.

(10) Preliminary CT default value (EPA, 1993).

(11) Final Rocky Flats Programmatic Risk-Based Preliminary Remediation Goals, 1995.

(12) American Industrial Health Council, 1994; Gephart, Tell and Triemer, 1994.

(13) Preliminary CT default value (EPA, 1993). A current alternative value is EPA's CT Residential Occupancy Period (ROP) of 8.1 years for total population (EPA, 1992b; American Industrial Health Council, 1994).

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TABLE 10-A
OPEN-SPACE EXPOSURE PARAMETERS
INCIDENTAL INGESTION

DUST, SURFACE SOIL, OR SEDIMENT

	Typical Exposure (CT)	High-End Exposure (RME)
Ingestion Rate - Child (mg/visit)	15 (1)	100 (1)
Ingestion Rate - Adult (mg/visit)	8 (1)	50 (1)
Matrix Effect in GI Tract (Absorption Factor)	CS	CS
Exposure Frequency (visits/yr)	10 (2)	25 (2)
Exposure Duration - Child (yr)	2	6
Exposure Duration - Adult (yr)	7	24
Body Weight - Child (kg)	15	15
Body Weight - Adult (kg)	70	70
Averaging Time - Child, Non-carcinogen (days)	730	2,190
Averaging Time - Adult, Non-carcinogen (days)	2,555	8,760
Averaging Time - Carcinogen (days)	25,550	25,550

(1) Assumes standard default residential rates as specified for open-space recreational users at DOE's Fernald Site and Hanford Site (RME=200 mg/day for children and 100 mg/day for adults) and at Denver's Lowry Landfill Superfund Site (CT=100 mg/day for children and 50 mg/day for adults). Assumes that Exposure Time is 1.5 hours per day (CT); 5.0 hours per day (RME) (see Note 2, Table 10-B) and that total soil ingestion occurs over 10 daylight hours (1.5/10 = 0.15; 5.0/10 = 0.5). Using the default daily ingestion rates, soil ingestion per visit for children is calculated as RME=0.5 x 200=100 mg/visit; CT= 0.15 x 100= 15 mg/visit. For adults the ingestion rates are RME=5.0 and CT=8. Actual open-space recreational intakes would vary, depending on the activity, possibly with dirt biking at one extreme and photographing wildlife at the other.

(2) Exposure Frequency based upon Boulder County's Park and Open Space Visitor Interviews of 1985 (est. 7 days/yr, CT; 25 days/yr, RME), DOE's Hanford Site recreational user (7 days/yr, CT), and Department of Interior's (DOI) National Survey of Fishing, Hunting, and Nonconsumptive Wildlife Recreation of 1985 for Colorado (9.4 days/yr for nonconsumptive use, CT; 15.4 days/yr for fishing and hunting, CT).

TABLE 10-B
OPEN-SPACE EXPOSURE PARAMETERS
PARTICULATE INHALATION

DUST, SURFACE SOIL, OR DRY SEDIMENT

	Typical Exposure (CT)	High-End Exposure (RME)
Inhalation Rate (m^3/hr)	0.83 (1)	1.4 (1)
Respirable Fraction (PM_{10})	0.36	0.46
Respiratory Deposition Factor	0.85	0.85
Exposure Time (hr/visit)	1.5 (2)	5.0 (2)
Exposure Frequency (visits/yr)	10 (3)	25 (3)
Exposure Duration (yr)	9	30
Body Weight (kg)	70	70
Averaging Time - Noncarcinogen (days)	3,285	10,950
Averaging Time - Carcinogen (days)	25,550	25,550

(1) Inhalation Rate based upon DOE's Fernald Site and Hanford Site recreational users (0.83 m^3/hr, CT) and on EPA's *Exposure Factors Handbook* (1.4 m^3/hr, RME), which assumes 7% heavy activity, 37% moderate activity, 28% light activity, and 28% resting for an adult.

(2) Exposure Time based upon Boulder County's Park and Open Space Visitor Interviews of 1992 (est. 1.6 hr/day, CT; 5.0 hr/day, RME), DOD's Rocky Mountain Arsenal Site recreational user (1.6 hr/day, CT; 5.0 hr/day, RME), and City of Boulder's Open Space Visitation Study of 1993 (1.0 hr/day, CT; 2.0 hr/day, RME).

(3) Exposure frequency based on Boulder County's Park and Open Space Visitor Interviews of 1985 (estimated 7 days/year, CT; 25 days/year, RME), DOE's Hanford Site recreational user (7 days/year, CT), and DOI's National Survey of Fishing, Hunting, and Nonconsumptive Wildlife Recreation of 1985 for Colorado (9.4 days/year for nonconsumptive use, CT; 15.4 days/year for fishing and hunting, CT).

TABLE 10-C
OPEN-SPACE RECREATIONAL EXPOSURE PARAMETERS
DERMAL CONTACT

DUST, SURFACE SOIL, OR SEDIMENT

	Typical Exposure (CT)	High-End Exposure (RME)
Exposed Skin Surface (cm^2)	2,000 (1)	5,300 (1)
Fraction Contacted from Contaminated Source	0.15 (2)	0.5 (2)
Soil Adherence to Skin (mg/cm^2)	0.2	1
Skin Absorption Factor	CS	CS
Exposure Frequency (days/yr)	10 (3)	25 (3)
Exposure Duration (yr)	9	30
Body Weight (kg)	70	70
Averaging Time - Noncarcinogen (days)	3,285	10,950
Averaging Time - Carcinogen (days)	25,550	25,550

(1) Exposed Skin Surface based upon EPA's *Dermal Exposure Assessment: Principles and Applications*, which specifies typical and high-end default values for the adult outdoors (2,000 cm^2 and 5,300 cm^2). The CT exposed skin surface is limited to head and hands, while the RME value assumes head, hands, forearms, and lower legs are exposed. DOE's Fernald Site recreational user adopts a comparable RME value (5,000 cm^2). It is conservatively assumed that a persons head will contact sediments.

(2) See Table A and B, Note 2.

(3) See Table B, Note 3.

TABLE 10-D
OPEN-SPACE EXPOSURE PARAMETERS
INGESTION WHILE WADING

SHALLOW SURFACE WATER

	Typical Exposure (CT)	High-End Exposure (RME)
Ingestion Rate (mL/hr)	25 (1)	50 (1)
Exposure Time (hr/visit)	0.5 (2)	1 (2)
Exposure Frequency (visits/yr)	5 (3)	15 (3)
Exposure Duration (yr)	9	30
Body Weight (kg)	70	70
Averaging Time - Noncarcinogen (days)	3,285	10,950
Averaging Time - Carcinogen (days)	25,550	25,550

(1) Ingestion Rate based upon open-space recreational user wading at Denver's Lowry Landfill Superfund Site (50 mL/day, RME; 25 mL/day, CT). For comparison, a single value of 35 mL/day is specified for DOE's Fernald Site (wading in shallow Paddy's Run).

(2) Exposure Time based upon DOE's Fernald Site recreational user (0.5 hr/day, CT) and on the Clear Creek/ Central City Superfund Site recreational user (1.0 hr/day, RME, assuming that wading time would be the same as swimming time).

(3) Assumes that CT Exposure Frequency for *wading* is one-half the EF of 10 days/yr for all visitors (0.5 x 10 = 5 days/yr) and RME is 60% of the EF of 25 (0.6 x 25 = 15 days/yr). See Table A, Note 3. On the average, users are very unlikely to wade on a year-round basis during each visit to the site.

TABLE 10-E
OPEN-SPACE EXPOSURE PARAMETERS
DERMAL CONTACT WHILE WADING

SHALLOW SURFACE WATER	Typical Exposure (CT)	High-End Exposure (RME)
Exposed Skin Surface (cm^2)	4,550 (1)	9,275 (1)
Dermal Permeability (cm/hr)	CS	CS
Exposure Time (hr/visit)	0.5 (2)	1 (2)
Exposure Frequency (visits/yr)	5 (3)	15 (3)
Exposure Duration (yr)	9	30
Body Weight (kg)	70	70
Averaging Time - Noncarcinogen (days)	3,285	10,950
Averaging Time - Carcinogen (days)	25,550	25,550

(1) Typical exposed adult skin surface while wading and reaching underwater (4,550 cm^2) assumes the lower legs, feet, and hands are exposed; high-end exposed surface (9,275 cm^2) assumes the thighs, lower legs, feet, forearms, and hands are exposed (*EPA's Exposure Factors Handbook*).

(2) See Table D, Note 2.

(3) See Table D, Note 3.

TABLE 10-F
OPEN-SPACE EXPOSURE PARAMETERS

EXTERNAL IRRADIATION	Typical Exposure (CT)	High-End Exposure (RME)
Gamma Exposure Time Factor (T_e)	0.1 (1)	0.2 (1)
Gamma Shielding Factor ($1-S_e$)	0.8	1
Exposure Frequency (visits/yr)	10 (2)	25 (2)
Exposure Duration (yr)	9	30

(1) Assumes the high-end fraction of time exposed (1.5 out of 24 hours, CT; 5.0 out of 24 hours, RME) (1.5/24 = 0.1; 5.0/24 = 0.2) (see Table B, Note 2)

(2) See Table 10-A, Note 2.

ATTACHMENT H3
HEALTH RISK CALCULATIONS

SUMMARY OF RISKS
CURRENT ONSITE WORKER
AREA OF CONCERN NO. 1

	Central Tendency		Reasonable Maximum	
Pathway	Hazard Index	Cancer Risk	Hazard Index	Cancer Risk
Ingestion of surface soil	1.75E-04	2.62E-07	1.11E-03	1.04E-05
Inhalation of particulates from surface soil	-	3.94E-07	-	3.12E-06
Dermal contact with surface soil*	1.43E-03	1.26E-08	9.04E-03	4.97E-07
External Radiation	-	9.78E-09	-	1.11E-07
Total	1.60E-03	6.78E-07	1.02E-02	1.41E-05

* Dermal contact with metals (except mercury) and radionuclides is considered insignificant.

CURRENT ONSITE WORKER
AREA OF CONCERN NO. 1

CT - Surface soil ingestion

Noncarcinogens

IF = (IR x ED x FC x EF x ME x CF x WF)/(BW x AT)
HQ = (C x IF)/RfD

Chemical	C Soil Concentration (mg/kg)	IR Ingestion Rate (mg/day)	ED Exposure Duration (years)	FC Fraction Contaminated	EF Exposure Frequency (days/yr)	ME Matrix Effect	CF Conversion Factor (kg/mg)	WF Weighting Factor	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (kg/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
Aroclor-1254	2.99E-01	10	4	0.9	219	0.5	0.000001	0.17	70	1460	6.56E-09	2.00E-05	9.80E-05
Aroclor-1260	2.34E-01	10	4	0.9	219	0.5	0.000001	0.17	70	1460	6.56E-09	2.00E-05	7.67E-05
Bis(2-ethylhexyl)phthalate	2.44E-01	10	4	0.9	219	1	0.000001	0.17	70	1460	1.31E-08	2.00E-02	1.60E-07
Chromium	1.36E+01	10	4	0.9	219	1	0.000001	0.17	70	1460	1.31E-08	1.00E+00	1.78E-07
												Total Hazard Index	1.75E-04

Nonradionuclide Carcinogens

IF =(IR x ED x FC x EF x ME x CF x WF)/(BW x AT)
CR = C x IF x SF

Chemical	C Soil Concentration (mg/kg)	IR Ingestion Rate (mg/day)	ED Exposure Duration (years)	FC Fraction Contaminated	EF Exposure Frequency (days/yr)	ME Matrix Effect	CF Conversion Factor (kg/mg)	WF Weighting Factor	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (kg/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
Aroclor-1254	2.99E-01	10	4	0.9	219	0.5	0.000001	0.17	70	25550	3.75E-10	7.70E+00	8.63E-10
Aroclor-1260	2.34E-01	10	4	0.9	219	0.5	0.000001	0.17	70	25550	3.75E-10	7.70E+00	6.75E-10
Bis(2-ethylhexyl)phthalate	2.44E-01	10	4	0.9	219	1	0.000001	0.17	70	25550	7.49E-10	1.40E-02	2.56E-12
												Total Chemical Cancer Risk	1.54E-09

Radionuclides

IF =IR x ED x FC x EF x ME x CF x WF
CR = C x IF x SF

Radionuclides	C Soil Concentration (pCi/g)	IR Ingestion Rate (mg/day)	ED Exposure Duration (years)	FC Fraction Contaminated	EF Exposure Frequency (days/yr)	ME Matrix Effect	CF Conversion Factor (g/mg)	WF Weighting Factor	IF Intake Factor (g)	SF Slope Factor (Risk/pCi)	CR Cancer Risk
Americium-241	2.95E+01	10	4	0.9	219	1	0.001	0.17	1.34E+00	2.40E-10	9.49E-09
Plutonium-239/240	8.13E+02	10	4	0.9	219	1	0.001	0.17	1.34E+00	2.30E-10	2.51E-07
										Total Radionuclide Cancer Risk	2.60E-07

Total Cancer Risk 2.62E-07

CURRENT OI E WORKER
AREA OF CONCERN NO. 1

RME - Surface soil ingestion

Noncarcinogens

IF = (IR x ED x FC x EF x ME x CF x WF)/(BW x AT)
HQ = (C x IF)/RfD

Chemical	C Soil Concentration (mg/kg)	IR Ingestion Rate (mg/day)	ED Exposure Duration (years)	FC Fraction Contaminated	EF Exposure Frequency (days/yr)	ME Matrix Effect	CF Conversion Factor (kg/mg)	WF Weighting Factor	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (kg/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
Aroclor-1254	2.99E-01	50	25	1	250	0.5	0.000001	0.17	70	9125	4.16E-08	2.00E-05	6.22E-04
Aroclor-1260	2.34E-01	50	25	1	250	0.5	0.000001	0.17	70	9125	4.16E-08	2.00E-05	4.87E-04
Bis(2-ethylhexyl)phthalate	2.44E-01	50	25	1	250	1	0.000001	0.17	70	9125	8.32E-08	2.00E-02	1.01E-06
Chromium	1.36E+01	50	25	1	250	1	0.000001	0.17	70	9125	8.32E-08	1.00E+00	1.13E-06
												Total Hazard Index	1.11E-03

Nonradionuclide Carcinogens

IF =(IR x ED x FC x EF x ME x CF x WF)/(BW x AT)
CR = C x IF x SF

Chemical	C Soil Concentration (mg/kg)	IR Ingestion Rate (mg/day)	ED Exposure Duration (years)	FC Fraction Contaminated	EF Exposure Frequency (days/yr)	ME Matrix Effect	CF Conversion Factor (kg/mg)	WF Weighting Factor	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (kg/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
Aroclor-1254	2.99E-01	50	25	1	250	0.5	0.000001	0.17	70	25550	1.49E-08	7.70E+00	3.42E-08
Aroclor-1260	2.34E-01	50	25	1	250	0.5	0.000001	0.17	70	25550	1.49E-08	7.70E+00	2.68E-08
Bis(2-ethylhexyl)phthalate	2.44E-01	50	25	1	250	1	0.000001	0.17	70	25550	2.97E-08	1.40E-02	1.01E-10
												Total Chemical Cancer Risk	6.11E-08

Radionuclides

IF =IR x ED x FC x EF x ME x CF x WF
CR = C x IF x SF

Radionuclide	C Soil Concentration (pCi/g)	IR Ingestion Rate (mg/day)	ED Exposure Duration (years)	FC Fraction Contaminated	EF Exposure Frequency (days/yr)	ME Matrix Effect	CF Conversion Factor (g/mg)	WF Weighting Factor	IF Intake Factor (g)	SF Slope Factor (Risk/pCi)	CR Cancer Risk
Americium-241	2.95E+01	50	25	1	250	1	0.001	0.17	5.31E+01	2.40E-10	3.76E-07
Plutonium-239/240	8.13E+02	50	25	1	250	1	0.001	0.17	5.31E+01	2.30E-10	9.93E-06
										Total Radionuclide Cancer Risk	1.03E-05

Total Cancer Risk 1.04E-05

CURRENT ONSITE WORKER
AREA OF CONCERN NO. 1

CT Inhalation of Particulates - Radionuclides

IF = IR x ET x EF x ED x DF x WF
CR = IF x C x SF

Radionuclides	C Air Concentration (pCi/m^3)	IR Inhalation Rate (m^3/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	DF Deposition Factor	WF Weighting Factor	IF Intake Factor (m^3)	SF Slope Factor (Risk/pCi)	CR Cancer Risk
Americium-241	4.09E-04	0.83	7.2	219	4	1.00	0.17	8.90E+02	3.20E-08	1.1648E-08
Plutonium-239\240	1.13E-02	0.83	7.2	219	4	1.00	0.17	8.90E+02	3.80E-08	3.8214E-07
							Total Radionuclide Risk			3.94E-07

RME Inhalation of Particulates - Radionuclides

IF = IR x ET x EF x ED x DF x WF
CR = IF x C x SF

Radionuclides	C Air Concentration (pCi/m^3)	IR Inhalation Rate (m^3/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	DF Deposition Factor	WF Weighting Factor	IF Intake Factor (m^3)	SF Slope Factor (Risk/pCi)	CR Cancer Risk
Americium-241	4.09E-04	0.83	8	250	25	1.00	0.17	7.06E+03	3.20E-08	9.2336E-08
Plutonium-239/240	1.13E-02	0.83	8	250	25	1.00	0.17	7.06E+03	3.80E-08	3.0294E-06
							Total Radionuclide Risk			3.12E-06

Total Cancer Risk 3.12E-06

CURRENT ON-SITE WORKER
AREA OF CONCERN NO. 1

CT- Dermal contact with surface soil

Noncarcinogens

IF = (SA x FC x EF x ED x AF x AB x CF x WF)/(BW x AT)

HQ = (C x IF)/RfD

Chemical	C Soil Concentration (mg/kg)	SA Skin Surface Area (cm2)	FC Fraction Contaminated	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	AF Soil Adherence (mg/cm2)	AB Skin Absorption	CF Conversion Factor (kg/mg)	WF Weighting Factor	BW Body Weight (kg)	AT Averaging Time (days)
Aroclor-1254	2.99E-01	3400	0.9	219	4	0.2	0.06	0.000001	0.17	70	1460
Aroclor-1260	2.34E-01	3400	0.9	219	4	0.2	0.06	0.000001	0.17	70	1460
Bis(2-ethylhexyl)phthalate	2.44E-01	3400	0.9	219	4	0.2	0.01	0.000001	0.17	70	1460

Chemical	IF Intake Factor (kg/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
Aroclor-1254	5.35E-08	2.00E-05	8.00E-04
Aroclor-1260	5.35E-08	2.00E-05	6.26E-04
Bis(2-ethylhexyl)phthalate	8.92E-09	2.00E-02	1.09E-07
		Total Hazard Index	1.43E-03

CURRENT ONSITE WORKER
AREA OF CONCERN NO. 1

CT- Dermal contact with surface soil

Nonradionuclide Carcinogens

$$IF = (SA \times FC \times EF \times ED \times AF \times AB \times CF \times WF)/(BW \times AT)$$
$$CR = C \times IF \times SF$$

Chemical	C Soil Concentration (mg/kg)	SA Skin Surface Area (cm2)	FC Fraction Contaminated	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	AF Soil Adherence (mg/cm2)	AB Skin Absorption	CF Conversion Factor (kg/mg)	WF Weighting Factor	BW Body Weight (kg)	AT Averaging Time (days)
Aroclor-1254	2.99E-01	3400	0.9	219	4	0.2	0.06	0.000001	0.17	70	25550
Aroclor-1260	2.34E-01	3400	0.9	219	4	0.2	0.06	0.000001	0.17	70	25550
Bis(2-ethylhexyl)phthalate	2.44E-01	3400	0.9	219	4	0.2	0.01	0.000001	0.17	70	25550

Chemical	IF Intake Factor (kg/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
Aroclor-1254	3.06E-09	7.70E+00	7.04E-09
Aroclor-1260	3.06E-09	7.70E+00	5.51E-09
Bis(2-ethylhexyl)phthalate	5.10E-10	1.40E-02	1.74E-12
		Total Cancer Risk	1.26E-08

CURRENT OI..E WORKER
AREA OF CONCERN NO. 1

RME- Dermal contact with surface soil

Noncarcinogens

IF = (SA x FC x EF x ED x AF x AB x CF x WF)/(BW x AT)
HQ = (C x IF)/RfD

	C	SA	FC	EF	ED	AF	AB	CF	WF	BW	AT
Chemical	Soil Concentration (mg/kg)	Skin Surface Area (cm2)	Fraction Contaminted	Exposure Frequency (days/yr)	Exposure Duration (years)	Soil Adherence (mg/cm2)	Skin Absorption	Conversion Factor (kg/mg)	Weighting Factor	Body Weight (kg)	Averaging Time (days)
Aroclor-1254	2.99E-01	3400	1	250	25	1	0.06	0.000001	0.17	70	9125
Aroclor-1260	2.34E-01	3400	1	250	25	1	0.06	0.000001	0.17	70	9125
Bis(2-ethylhexyl)phthalate	2.44E-01	3400	1	250	25	1	0.01	0.000001	0.17	70	9125

	IF	RfD	HQ
Chemical	Intake Factor (kg/kg-day)	Reference Dose (mg/kg-day)	Hazard Quotient
Aroclor-1254	3.39E-07	2.00E-05	5.07E-03
Aroclor-1260	3.39E-07	2.00E-05	3.97E-03
Bis(2-ethylhexyl)phthalate	5.66E-08	2.00E-02	6.90E-07
		Total Hazard Index	9.04E-03

CURRENT ONSITE WORKER
AREA OF CONCERN NO. 1

RME- Dermal contact with surface soil

Nonradionuclide Carcinogens

$$IF = (SA \times FC \times EF \times ED \times AF \times AB \times CF \times WF)/(BW \times AT)$$
$$CR = C \times IF \times SF$$

Chemical	C Soil Concentration (mg/kg)	SA Skin Surface Area (cm2)	FC Fraction Contaminated	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	AF Soil Adherence (mg/cm2)	AB Skin Absorption	CF Conversion Factor (kg/mg)	WF Weighting Factor	BW Body Weight (kg)	AT Averaging Time (days)
Aroclor-1254	2.99E-01	3400	1	250	25	1	0.06	0.000001	0.17	70	25550
Aroclor-1260	2.34E-01	3400	1	250	25	1	0.06	0.000001	0.17	70	25550
Bis(2-ethylhexyl)phthalate	2.44E-01	3400	1	250	25	1	0.01	0.000001	0.17	70	25550

Chemical	IF Intake Factor (kg/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
Aroclor-1254	1.21E-07	7.70E+00	2.79E-07
Aroclor-1260	1.21E-07	7.70E+00	2.18E-07
Bis(2-ethylhexyl)phthalate	2.02E-08	1.40E-02	6.90E-11
		Total Cancer Risk	4.97E-07

CURRENT C TE WORKER
AREA OF CONCERN NO. 1

CT - External Radiation

IF = TF x GSF x EF x ED xWF
CR = C x IF x SF

Radionuclide	C Soil Concentration (pCi/g)	TF Gamma Time Factor (Te)	GSF Gamma Shielding Factor (1-Se)	EF Percent of year Exposed	ED Exposure Duration (years)	WF Weighting Factor	IF Intake Factor (years)	SF Slope Factor (1/pCi-yr/g)	CR Cancer Risk
Americium-241	29.5	0.3	0.5	0.6	4	0.17	6.12E-02	4.90E-09	8.85E-09
Plutonium-239/240	813	0.3	0.5	0.6	4	0.17	6.12E-02	1.88E-11	9.35E-10
								Total Cancer Risk	9.78E-09

RME - External Radiation

IF = TF x GSF x EF x ED
CR = C x IF x SF

Radionuclide	C Soil Concentration (pCi/g)	TF Gamma Time Factor (Te)	GSF Gamma Shielding Factor (1-Se)	EF Percent of year Exposed	ED Exposure Duration (years)	WF Weighting Factor	IF Intake Factor (years)	SF Slope Factor (1/pCi-yr/g)	CR Cancer Risk
Americium-241	29.5	0.3	0.8	0.68	25	0.17	6.94E-01	4.90E-09	1.00E-07
Plutonium-239/240	813	0.3	0.8	0.68	25	0.17	6.94E-01	1.88E-11	1.06E-08
								Total Cancer Risk	1.11E-07

SUMMARY OF RISKS
FUTURE INDUSTRIAL/OFFICE WORKER
AREA OF CONCERN NO. 1

	Central Tendency		Reasonable Maximum	
Pathway	Hazard Index	Cancer Risk	Hazard Index	Cancer Risk
Ingestion of surface soil	5.15E-04	7.70E-07	6.53E-03	6.10E-05
Inhalation of particulates from surface soil	-	1.76E-06	-	1.84E-05
Dermal contact with surface soil*	5.18E-03	4.56E-08	3.29E-02	1.81E-06
Inhalation of Indoor VOCs	3.86E-12	1.61E-08	6.45E-12	1.68E-07
External Radiation	-	5.75E-08	-	6.52E-07
Total	5.70E-03	2.65E-06	3.94E-02	8.20E-05

* Dermal contact with metals (except mercury) and radionuclides is considered insignificant.

FUTURE INDUSTRI[illegible] OFFICE WORKER
AREA OF CONCERN NO. 1

CT - Soil ingestion

Noncarcinogens

IF =(IR x ED x FC x EF x ME x CF)/(BW x AT)
HQ = (C x IF)/RfD

	C	IR	ED	FC	EF	ME	CF	BW	AT	IF	RfD	HQ
Chemical	Soil Concentration (mg/kg)	Ingestion Rate (mg/day)	Exposure Duration (years)	Fraction Contaminated	Exposure Frequency (days/yr)	Matrix Effect	Conversion Factor (kg/mg)	Body Weight (kg)	Averaging Time (days)	Intake Factor (kg/kg-day)	Reference Dose (mg/kg-day)	Hazard Quotient
Aroclor-1254	2.99E-01	5	4	0.9	219	0.5	0.000001	70	1460	1.93E-08	2.00E-05	2.88E-04
Aroclor-1260	2.34E-01	5	4	0.9	219	0.5	0.000001	70	1460	1.93E-08	2.00E-05	2.26E-04
Bis(2-ethylhexyl)phthalate	2.44E-01	5	4	0.9	219	1	0.000001	70	1460	3.86E-08	2.00E-02	4.71E-07
Chromium	1.36E+01	5	4	0.9	219	1	0.000001	70	1460	3.86E-08	1.00E+00	5.25E-07
											Total Hazard Index	5.15E-04

Nonradionuclide Carcinogens

IF =(IR x ED x FC x EF x ME x CF)/(BW x AT)
CR = C x IF x SF

	C	IR	ED	FC	EF	ME	CF	BW	AT	IF	SF	CR
Chemical	Soil Concentration (mg/kg)	Ingestion Rate (mg/day)	Exposure Duration (years)	Fraction Contaminated	Exposure Frequency (days/yr)	Matrix Effect	Conversion Factor (kg/mg)	Body Weight (kg)	Averaging Time (days)	Intake Factor (kg/kg-day)	Slope Factor 1/(mg/kg-day)	Cancer Risk
Aroclor-1254	2.99E-01	5	4	0.9	219	0.5	0.000001	70	25550	1.10E-09	7.70E+00	2.54E-09
Aroclor-1260	2.34E-01	5	4	0.9	219	0.5	0.000001	70	25550	1.10E-09	7.70E+00	1.99E-09
Bis(2-ethylhexyl)phthalate	2.44E-01	5	4	0.9	219	1	0.000001	70	25550	2.20E-09	1.40E-02	7.53E-12
											Total Chemical Cancer Risk	4.53E-09

Radionuclides

IF =IR x ED x FC x EF x ME x CF
CR = C x IF x SF

	C	IR	ED	FC	EF	ME	CF	IF	SF	CR
Radionuclide	Soil Concentration (pCi/g)	Ingestion Rate (mg/day)	Exposure Duration (years)	Fraction Contaminated	Exposure Frequency (days/yr)	Matrix Effect	Conversion Factor (g/mg)	Intake Factor (g)	Slope Factor (Risk/pCi)	Cancer Risk
Americium-241	2.95E+01	5	4	0.9	219	1	0.001	3.94E+00	2.40E-10	2.79E-08
Plutonium-239/240	8.13E+02	5	4	0.9	219	1	0.001	3.94E+00	2.30E-10	7.37E-07
									Total Radionuclide Cancer Risk	7.65E-07

Total Cancer Risk 7.70E-07

FUTURE INDUSTRIAL/OFFICE WORKER
AREA OF CONCERN NO. 1

RME - soil ingestion

Noncarcinogens

IF =(IR x ED x FC x EF x ME x CF)/(BW x AT)
HQ = (C x IF)/RfD

Chemical	C Soil Concentration (mg/kg)	IR Ingestion Rate (mg/day)	ED Exposure Duration (years)	FC Fraction Contaminated	EF Exposure Frequency (days/yr)	ME Matrix Effect	CF Conversion Factor (kg/mg)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (kg/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
Aroclor-1254	2.99E-01	50	25	1	250	0.5	0.000001	70	9125	2.45E-07	2.00E-05	3.66E-03
Aroclor-1260	2.34E-01	50	25	1	250	0.5	0.000001	70	9125	2.45E-07	2.00E-05	2.86E-03
Bis(2-ethylhexyl)phthalate	2.44E-01	50	25	1	250	1	0.000001	70	9125	4.89E-07	2.00E-02	5.97E-06
Chromium	1.36E+01	50	25	1	250	1	0.000001	70	9125	4.89E-07	1.00E+00	6.65E-06
											Total Hazard Index	6.53E-03

Nonradionuclide Carcinogens

IF =(IR x ED x FC x EF x ME x CF)/(BW x AT)
CR = C x IF x SF

Chemical	C Soil Concentration (mg/kg)	IR Ingestion Rate (mg/day)	ED Exposure Duration (years)	FC Fraction Contaminated	EF Exposure Frequency (days/yr)	ME Matrix Effect	CF Conversion Factor (kg/mg)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (kg/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
Aroclor-1254	0.299	50	25	1	250	0.5	0.000001	70	25550	8.74E-08	7.70E+00	2.01E-07
Aroclor-1260	0.234	50	25	1	250	0.5	0.000001	70	25550	8.74E-08	7.70E+00	1.57E-07
Bis(2-ethylhexyl)phthalate	0.244	50	25	1	250	1	0.000001	70	25550	1.75E-07	1.40E-02	5.97E-10
											Total Chemical Cancer Risk	3.59E-07

Radionuclides

IF =IR x ED x FC x EF x ME x CF
CR = C x IF x SF

Radionuclide	C Soil Concentration (pCi/g)	IR Ingestion Rate (mg/day)	ED Exposure Duration (years)	FC Fraction Contaminated	EF Exposure Frequency (days/yr)	ME Matrix Effect	CF Conversion Factor (g/mg)	IF Intake Factor (g)	SF Slope Factor (Risk/pCi)	CR Cancer Risk
Americium-241	29.5	50	25	1	250	1	0.001	3.13E+02	2.40E-10	2.21E-06
Plutonium-239/240	813	50	25	1	250	1	0.001	3.13E+02	2.30E-10	5.84E-05
									Total Radionuclide Cancer Risk	6.06E-05

Total Cancer Risk 6.10E-05

FUTURE INDUSTRIAL/OFFICE WORKER
AREA OF CONCERN NO. 1

CT Inhalation of Particulates - Radionuclides

IF = IR x ET x EF x ED x DF
CR = IF x C x SF

Radionuclides	C Air Concentration (pCi/m^3)	IR Inhalation Rate (m^3/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	DF Deposition Factor	IF Intake Factor (m^3)	SF Slope Factor (Risk/pCi)	CR Cancer Risk
Americium-241	4.09E-04	0.63	7.2	219	4	1	3.97E+03	3.20E-08	5.20E-08
Plutonium-239/240	1.13E-02	0.63	7.2	219	4	1	3.97E+03	3.80E-08	1.71E-06
							Total Radionuclide Cancer Risk		1.76E-06
								Total Cancer Risk	1.76E-06

RME Inhalation of Particulates - Radionuclides

IF = IR x ET x EF x ED x DF
CR = IF x C x SF

Radionuclides	C Air Concentration (pCi/m^3)	IR Inhalation Rate (m^3/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	DF Deposition Factor	IF Intake Factor (m^3)	SF Slope Factor (Risk/pCi)	CR Cancer Risk
Americium-241	4.09E-04	0.83	8	250	25	1	4.15E+04	3.20E-08	5.43E-07
Plutonium-239/240	1.13E-02	0.83	8	250	25	1	4.15E+04	3.80E-08	1.78E-05
							Total Radionuclide Cancer Risk		1.84E-05
								Total Cancer Risk	1.84E-05

FUTURE INDUSTRIAL/OFFICE WORKER
AREA OF CONCERN NO. 1

CT- Dermal contact with soil

Noncarcinogens

$$IF = (SA \times FC \times EF \times ED \times AF \times AB \times CF)/(BW \times AT)$$

$$HQ = (C \times IF)/RfD$$

Chemical	C Soil Concentration (mg/kg)	SA Skin Surface Area (cm^2)	FC Fraction Contaminated	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	AF Soil Adherence (mg/cm^2)	AB Skin Absorption	CF Conversion Factor (kg/mg)	BW Body Weight (kg)	AT Averaging Time (days)
Aroclor-1254	2.99E-01	2100	0.9	219	4	0.2	0.06	0.000001	70	1460
Aroclor-1260	2.34E-01	2100	0.9	219	4	0.2	0.06	0.000001	70	1460
Bis(2-ethylhexyl)phthalate	2.44E-01	2100	0.9	219	4	0.2	0.01	0.000001	70	1460

Chemical	IF Intake Factor (kg/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
Aroclor-1254	1.94E-07	2.00E-05	2.91E-03
Aroclor-1260	1.94E-07	2.00E-05	2.27E-03
Bis(2-ethylhexyl)phthalate	3.24E-08	2.00E-02	3.95E-07
	Total Hazard Index		5.18E-03

FUTURE INDUSTR... OFFICE WORKER
AREA OF CONCERN NO. 1

CT- Dermal contact with soil

Nonradionuclide Carcinogens

$$IF = (SA \times FC \times EF \times ED \times AF \times AB \times CF)/(BW \times AT)$$
$$CR = C \times IF \times SF$$

Chemical	C Soil Concentration (mg/kg)	SA Skin Surface Area (cm^2)	FC Fraction Contaminated	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	AF Soil Adherence (mg/cm^2)	AB Skin Absorption	CF Conversion Factor (kg/mg)	BW Body Weight (kg)	AT Averaging Time (days)
Aroclor-1254	2.99E-01	2100	0.9	219	4	0.2	0.06	0.000001	70	25550
Aroclor-1260	2.34E-01	2100	0.9	219	4	0.2	0.06	0.000001	70	25550
Bis(2-ethylhexyl)phthalate	2.44E-01	2100	0.9	219	4	0.2	0.01	0.000001	70	25550

Chemical	IF Intake Factor (kg/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
Aroclor-1254	1.11E-08	7.70E+00	2.56E-08
Aroclor-1260	1.11E-08	7.70E+00	2.00E-08
Bis(2-ethylhexyl)phthalate	1.85E-09	1.40E-02	6.32E-12
Total Cancer Risk			4.56E-08

FUTURE INDUSTRIAL/OFFICE WORKER
AREA OF CONCERN NO. 1

RME- Dermal contact with soil

Noncarcinogens

$$IF = (SA \times FC \times EF \times ED \times AF \times AB \times CF)/(BW \times AT)$$

$$HQ = (C \times IF)/RfD$$

Chemical	C Soil Concentration (mg/kg)	SA Skin Surface Area (cm^2)	FC Fraction Contaminated	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	AF Soil Adherence (mg/cm^2)	AB Skin Absorption	CF Conversion Factor (kg/mg)	BW Body Weight (kg)	AT Averaging Time (days)
Aroclor-1254	2.99E-01	2100	1	250	25	1	0.06	0.000001	70	9125
Aroclor-1260	2.34E-01	2100	1	250	25	1	0.06	0.000001	70	9125
Bis(2-ethylhexyl)phthalate	2.44E-01	2100	1	250	25	1	0.01	0.000001	70	9125

Chemical	IF Intake Factor (kg/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
Aroclor-1254	1.23E-06	2.00E-05	1.84E-02
Aroclor-1260	1.23E-06	2.00E-05	1.44E-02
Bis(2-ethylhexyl)phthalate	2.05E-07	2.00E-02	2.51E-06
	Total Hazard Index		3.29E-02

FUTURE INDUSTR[illegible] OFFICE WORKER
AREA OF CONCERN NO. 1

RME- Dermal contact with soil

Nonradionuclide Carcinogens

$$IF = (SA \times FC \times EF \times ED \times AF \times AB \times CF)/(BW \times AT)$$

$$CR = C \times IF \times SF$$

Chemical	C Soil Concentration (mg/kg)	SA Skin Surface Area (cm^2)	FC Fraction Contaminated	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	AF Soil Adherence (mg/cm^2)	AB Skin Absorption	CF Conversion Factor (kg/mg)	BW Body Weight (kg)	AT Averaging Time (days)
Aroclor-1254	2.99E-01	2100	1	250	25	1	0.06	0.000001	70	25550
Aroclor-1260	2.34E-01	2100	1	250	25	1	0.06	0.000001	70	25550
Bis(2-ethylhexyl)phthalate	2.44E-01	2100	1	250	25	1	0.01	0.000001	70	25550

Chemical	IF Intake Factor (kg/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
Aroclor-1254	4.40E-07	7.70E+00	1.01E-06
Aroclor-1260	4.40E-07	7.70E+00	7.93E-07
Bis(2-ethylhexyl)phthalate	7.34E-08	1.40E-02	2.51E-10
	Total Cancer Risk		1.81E-06

FUTURE INDUSTRIAL/OFFICE WORKER
AREA OF CONCERN NO. 1

CT - Inhalation of VOCs from infiltration

Noncarcinogens

$$IF = (IR \times ET \times EF \times ED)/(BW \times AT)$$
$$HQ = (C \times IF)/RfD$$

Chemical	C VOC Concentration in building air (mg/m^3)	IR Inhalation Rate (m^3/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	BW Body Weight (kg)	AT Averaging Time (years)	IF Intake Factor ($m^3/kg\text{-}day$)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
Methylene chloride	8.94E-11	0.63	7.2	219	4	70	1460	3.89E-02	9.00E-01	3.86E-12
									Total Hazard Index	3.86E-12

Carcinogens

$$IF = (IR \times ET \times EF \times ED)/(BW \times AT)$$
$$CR = C \times IF \times SF$$

Chemical	C VOC Concentration in building air (mg/m^3)	IR Inhalation Rate (m^3/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	BW Body Weight (kg)	AT Averaging Time (years)	IF Intake Factor ($m^3/kg\text{-}day$)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
1,1-Dichloroethene	1.94E-10	0.63	7.2	219	4	70	25550	2.22E-03	1.20E+00	5.17E-13
Carbon Tetrachloride	2.73E-07	0.63	7.2	219	4	70	25550	2.22E-03	5.20E-02	3.15E-11
Chloroform	1.10E-09	0.63	7.2	219	4	70	25550	2.22E-03	8.00E-02	1.96E-13
Methylene chloride	8.94E-11	0.63	7.2	219	4	70	25550	2.22E-03	1.60E-03	3.18E-16
Tetrachloroethene	3.62E-03	0.63	7.2	219	4	70	25550	2.22E-03	2.00E-03	1.61E-08
Trichloroethene	3.34E-08	0.63	7.2	219	4	70	25550	2.22E-03	6.00E-03	4.45E-13
									Total Cancer Risk	1.61E-08

FUTURE INDUSTRI. OFFICE WORKER
AREA OF CONCERN NO. 1

RME - Inhalation of VOCs from infiltration

Noncarcinogens

IF = (IR x ET x EF x ED)/(BW x AT)
HQ = (C x IF)/RfD

	C	IR	ET	EF	ED	BW	AT	IF	RfD	HQ
Chemical	VOC Concentration in building air (mg/m^3)	Inhalation Rate (m^3/hr)	Exposure Time (hr/day)	Exposure Frequency (days/yr)	Exposure Duration (years)	Body Weight (kg)	Averaging Time (years)	Intake Factor (m^3/kg-day)	Reference Dose (mg/kg-day)	Hazard Quotient
Methylene chloride	8.94E-11	0.83	8	250	25	70	9125	6.50E-02	9.00E-01	6.45E-12
									Total Hazard Index	6.45E-12

Carcinogens

IF = (IR x ET x EF x ED)/(BW x AT)
CR = C x IF x SF

	C	IR	ET	EF	ED	BW	AT	IF	SF	CR
Chemical	VOC Concentration in building air (mg/m^3)	Inhalation Rate (m^3/hr)	Exposure Time (hr/day)	Exposure Frequency (days/yr)	Exposure Duration (years)	Body Weight (kg)	Averaging Time (years)	Intake Factor (m^3/kg-day)	Slope Factor 1/(mg/kg-day)	Cancer Risk
1,1-Dichloroethene	1.94E-10	0.83	8	250	25	70	25550	2.32E-02	1.20E+00	5.40E-12
Carbon Tetrachloride	2.73E-07	0.83	8	250	25	70	25550	2.32E-02	5.20E-02	3.29E-10
Chloroform	1.10E-09	0.83	8	250	25	70	25550	2.32E-02	8.00E-02	2.04E-12
Methylene chloride	8.94E-11	0.83	8	250	25	70	25550	2.32E-02	1.60E-03	3.32E-15
Tetrachloroethene	3.62E-03	0.83	8	250	25	70	25550	2.32E-02	2.00E-03	1.68E-07
Trichloroethene	3.34E-08	0.83	8	250	25	70	25550	2.32E-02	6.00E-03	4.65E-12
									Total Cancer Risk	1.68E-07

FUTURE INDUSTRIAL/OFFICE WORKER
AREA OF CONCERN NO. 1

CT - External Radiation

IF = TF x GSF x EF x ED
CR = C x IF x SF

Radionuclide	C Soil Concentration (pCi/g)	TF Gamma Time Factor (T_e)	GSF Gamma Shielding Factor ($1-S_e$)	EF Percent of year Exposed	ED Exposure Duration (years)	IF Intake Factor (years)	SF Slope Factor (1/pCi-yr/g)	CR Cancer Risk
Americium-241	2.95E+01	0.3	0.5	0.6	4	3.60E-01	4.90E-09	5.20E-08
Plutonium-239/240	8.13E+02	0.3	0.5	0.6	4	3.60E-01	1.88E-11	5.50E-09
							Total Cancer Risk	5.75E-08

RME - External Radiation

IF = TF x GSF x EF x ED
CR = C x IF x SF

Radionuclide	C Soil Concentration (pCi/g)	TF Gamma Time Factor (T_e)	GSF Gamma Shielding Factor ($1-S_e$)	EF Percent of year Exposed	ED Exposure Duration (years)	IF Intake Factor (years)	SF Slope Factor (1/pCi-yr/g)	CR Cancer Risk
Americium-241	2.95E+01	0.3	0.8	0.68	25	4.08E+00	4.90E-09	5.90E-07
Plutonium-239/240	8.13E+02	0.3	0.8	0.68	25	4.08E+00	1.88E-11	6.24E-08
							Total Cancer Risk	6.52E-07

SUMMARY OF RISK
FUTURE ONSITE ECOLOGICAL RESEARCHER
AREA OF CONCERN NO. 1

	Central Tendency		Reasonable Maximum	
Pathway	Hazard Index	Cancer Risk	Hazard Index	Cancer Risk
Ingestion of surface soil	1.01E-03	9.42E-07	3.59E-03	3.36E-06
Inhalation of particulates from surface soil	-	4.30E-07	-	8.05E-07
Dermal contact with surface soil*	3.43E-03	1.89E-08	1.91E-02	1.05E-07
Ingestion of surface water - Walnut Creek	2.13E-06	1.86E-11	1.82E-05	1.59E-10
Ingestion of surface water - Woman Creek	1.12E-06	1.03E-10	9.59E-06	8.85E-10
Dermal contact with surface water - Walnut Creek	1.17E-04	2.97E-09	2.00E-04	5.09E-09
Dermal contact with surface water - Woman Creek	3.89E-05	5.00E-10	6.66E-05	8.58E-10
External Radiation	-	1.73E-08	-	2.16E-08
Total	4.60E-03	1.41E-06	2.30E-02	4.30E-06

* Dermal contact with metals (except mercury) and radionuclides is considered insignificant.

FUTURE ONSITE ECOLOGICAL RESEARCHER
AREA OF CONCERN NO. 1

CT - Soil ingestion

Noncarcinogens

IF =(IR x ED x FC x EF x ME x CF)/(BW x AT)
HQ = (C x IF)/RfD

Chemical	C Soil Concentration (mg/kg)	IR Ingestion Rate (mg/day)	ED Exposure Duration (years)	FC Fraction Contaminated	EF Exposure Frequency (days/yr)	ME Matrix Effect	CF Conversion Factor (kg/mg)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (kg/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
Aroclor-1254	2.99E-01	33	2.5	0.9	65	0.5	0.000001	70	915	3.77E-08	2.00E-05	5.63E-04
Aroclor-1260	2.34E-01	33	2.5	0.9	65	0.5	0.000001	70	915	3.77E-08	2.00E-05	4.41E-04
Bis(2-ethylhexyl)phthalate	2.44E-01	33	2.5	0.9	65	1	0.000001	70	915	7.54E-08	2.00E-02	9.19E-07
Chromium	1.36E+01	33	2.5	0.9	65	1	0.000001	70	915	7.54E-08	1.00E+00	1.02E-06
											Total Hazard Index	1.01E-03

Nonradionuclide Carcinogens

IF =(IR x ED x FC x EF x ME x CF)/(BW x AT)
CR = C x IF x SF

Chemical	C Soil Concentration (mg/kg)	IR Ingestion Rate (mg/day)	ED Exposure Duration (years)	FC Fraction Contaminated	EF Exposure Frequency (days/yr)	ME Matrix Effect	CF Conversion Factor (kg/mg)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (kg/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
Aroclor-1254	2.99E-01	33	2.5	0.9	65	0.5	0.000001	70	25550	1.35E-09	7.70E+00	3.11E-09
Aroclor-1260	2.34E-01	33	2.5	0.9	65	0.5	0.000001	70	25550	1.35E-09	7.70E+00	2.43E-09
Bis(2-ethylhexyl)phthalate	2.44E-01	33	2.5	0.9	65	1	0.000001	70	25550	2.70E-09	1.40E-02	9.22E-12
											Total Chemical Cancer Risk	5.55E-09

Radionuclides

IF =IR x ED x FC x EF x ME x CF
CR = C x IF x SF

Radionuclide	C Soil Concentration (pCi/g)	IR Ingestion Rate (mg/day)	ED Exposure Duration (years)	FC Fraction Contaminated	EF Exposure Frequency (days/yr)	ME Matrix Effect	CF Conversion Factor (g/mg)	IF Intake Factor (g)	SF Slope Factor (Risk/pCi)	CR Cancer Risk
Americium-241	2.95E+01	33	2.5	0.9	65	1	0.001	4.83E+00	2.40E-10	3.42E-08
Plutonium-239/240	8.13E+02	33	2.5	0.9	65	1	0.001	4.83E+00	2.30E-10	9.02E-07
									Total Radionuclide Cancer Risk	9.37E-07

Total Cancer Risk 9.42E-07

FUTURE ONSITE ECOLOGICAL RESEARCHER
AREA OF CONCERN NO. 1

RME - soil ingestion

Noncarcinogens

IF =(IR x ED x FC x EF x ME x CF)/(BW x AT)
HQ = (C x IF)/RfD

Chemical	C Soil Concentration (mg/kg)	IR Ingestion Rate (mg/day)	ED Exposure Duration (years)	FC Fraction Contaminated	EF Exposure Frequency (days/yr)	ME Matrix Effect	CF Conversion Factor (kg/mg)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (kg/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
Aroclor-1254	0.299	106	2.5	1	65	0.5	0.000001	70	915	1.34E-07	2.00E-05	2.01E-03
Aroclor-1260	0.234	106	2.5	1	65	0.5	0.000001	70	915	1.34E-07	2.00E-05	1.57E-03
Bis(2-ethylhexyl)phthalate	0.244	106	2.5	1	65	1	0.000001	70	915	2.69E-07	2.00E-02	3.28E-06
Chromium	13.6	106	2.5	1	65	1	0.000001	70	915	2.69E-07	1.00E+00	3.66E-06
											Total Hazard Index	3.59E-03

Nonradionuclide Carcinogens

IF =(IR x ED x FC x EF x ME x CF)/(BW x AT)
CR = C x IF x SF

Chemical	C Soil Concentration (mg/kg)	IR Ingestion Rate (mg/day)	ED Exposure Duration (years)	FC Fraction Contaminated	EF Exposure Frequency (days/yr)	ME Matrix Effect	CF Conversion Factor (kg/mg)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (kg/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
Aroclor-1254	0.299	106	2.5	1	65	0.5	0.000001	70	25550	4.82E-09	7.70E+00	1.11E-08
Aroclor-1260	0.234	106	2.5	1	65	0.5	0.000001	70	25550	4.82E-09	7.70E+00	8.68E-09
Bis(2-ethylhexyl)phthalate	0.244	106	2.5	1	65	1	0.000001	70	25550	9.63E-09	1.40E-02	3.29E-11
											Total Chemical Cancer Risk	1.98E-08

Radionuclides

IF =IR x ED x FC x EF x ME x CF
CR = C x IF x SF

Radionuclide	C Soil Concentration (pCi/g)	IR Ingestion Rate (mg/day)	ED Exposure Duration (years)	FC Fraction Contaminted	EF Exposure Frequency (days/yr)	ME Matrix Effect	CF Conversion Factor (g/mg)	IF Intake Factor (g)	SF Slope Factor (Risk/pCi)	CR Cancer Risk
Americium-241	29.5	106	2.5	1	65	1	0.001	1.72E+01	2.40E-10	1.22E-07
Plutonium-239/240	813	106	2.5	1	65	1	0.001	1.72E+01	2.30E-10	3.22E-06
									Total Radionuclide Cancer Risk	3.34E-06

Total Cancer Risk 3.36E-06

FUTURE ONSITE ECOLOGICAL RESEARCHER
AREA OF CONCERN NO. 1

CT Inhalation of Particulates - Radionuclides

IF = IR x ET x EF x ED x DF
CR = IF x C x SF

Radionuclides	C Air Concentration (pCi/m^3)	IR Inhalation Rate (m^3/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	DF Deposition Factor	IF Intake Factor (m^3)	SF Slope Factor (Risk/pCi)	CR Cancer Risk
Americium-241	4.09E-04	0.83	7.2	65	2.5	1	9.71E+02	3.20E-08	1.27E-08
Plutonium-239/240	1.13E-02	0.83	7.2	65	2.5	1	9.71E+02	3.80E-08	4.17E-07
								Total Radionuclide Cancer Risk	4.30E-07
								Total Cancer Risk	4.30E-07

RME - Inhalation of particulates - Radionuclides

IF = IR x ET x EF x ED x DF
CR = IF x C x SF

Radionuclides	C Air Concentration (pCi/m^3)	IR Inhalation Rate (m^3/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	DF Deposition Factor	IF Intake Factor (m^3)	SF Slope Factor (Risk/pCi)	CR Cancer Risk
Americium-241	4.09E-04	1.4	8	65	2.5	1	1.82E+03	3.20E-08	2.38E-08
Plutonium-239/240	1.13E-02	1.4	8	65	2.5	1	1.82E+03	3.80E-08	7.82E-07
								Total Radionuclide Cancer Risk	8.05E-07
								Total Cancer Risk	8.05E-07

FUTURE ONSITE ECOLOGICAL RESEARCHER
AREA OF CONCERN NO. 1

CT- Dermal contact with soil

Noncarcinogens

$$IF = (SA \times FC \times EF \times ED \times AF \times AB \times CF)/(BW \times AT)$$
$$HQ = (C \times IF)/RfD$$

	C	SA	FC	EF	ED	AF	AB	CF	BW	AT
Chemical	Soil Concentration (mg/kg)	Skin Surface Area (cm^2)	Fraction Contaminated	Exposure Frequency (days/yr)	Exposure Duration (years)	Soil Adherence (mg/cm^2)	Skin Absorption	Conversion Factor (kg/mg)	Body Weight (kg)	Averaging Time (days)
Aroclor-1254	2.99E-01	4700	0.9	65	2.5	0.2	0.06	0.000001	70	915
Aroclor-1260	2.34E-01	4700	0.9	65	2.5	0.2	0.06	0.000001	70	915
Bis(2-ethylhexyl)phthalate	2.44E-01	4700	0.9	65	2.5	0.2	0.01	0.000001	70	915

	IF	RfD	HQ
Chemical	Intake Factor (kg/kg-day)	Reference Dose (mg/kg-day)	Hazard Quotient
Aroclor-1254	1.29E-07	2.00E-05	1.93E-03
Aroclor-1260	1.29E-07	2.00E-05	1.51E-03
Bis(2-ethylhexyl)phthalate	2.15E-08	2.00E-02	2.62E-07
	Total Hazard Index		3.43E-03

FUTURE ONSITE ECOLOGICAL RESEARCHER
AREA OF CONCERN NO. 1

CT- Dermal contact with soil

Nonradionuclide Carcinogens

$$IF = (SA \times FC \times EF \times ED \times AF \times AB \times CF)/(BW \times AT)$$

$$CR = C \times IF \times SF$$

Chemical	C Soil Concentration (mg/kg)	SA Skin Surface Area (cm^2)	FC Fraction Contaminated	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	AF Soil Adherence (mg/cm^2)	AB Skin Absorption	CF Conversion Factor (kg/mg)	BW Body Weight (kg)	AT Averaging Time (days)
Aroclor-1254	2.99E-01	4700	0.9	65	2.5	0.2	0.06	0.000001	70	25550
Aroclor-1260	2.34E-01	4700	0.9	65	2.5	0.2	0.06	0.000001	70	25550
Bis(2-ethylhexyl)phthalate	2.44E-01	4700	0.9	65	2.5	0.2	0.01	0.000001	70	25550

Chemical	IF Intake Factor (kg/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
Aroclor-1254	4.61E-09	7.70E+00	1.06E-08
Aroclor-1260	4.61E-09	7.70E+00	8.31E-09
Bis(2-ethylhexyl)phthalate	7.69E-10	1.40E-02	2.63E-12
	Total Cancer Risk		1.89E-08

FUTURE ONSITE ECOLOGICAL RESEARCHER
AREA OF CONCERN NO. 1

RME- Dermal contact with soil

Noncarcinogens

$$IF = (SA \times FC \times EF \times ED \times AF \times AB \times CF)/(BW \times AT)$$
$$HQ = (C \times IF)/RfD$$

Chemical	C Soil Concentration (mg/kg)	SA Skin Surface Area (cm^2)	FC Fraction Contaminated	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	AF Soil Adherence (mg/cm^2)	AB Skin Absorption	CF Conversion Factor (kg/mg)	BW Body Weight (kg)	AT Averaging Time (days)
Aroclor-1254	2.99E-01	4700	1	65	2.5	1	0.06	0.000001	70	915
Aroclor-1260	2.34E-01	4700	1	65	2.5	1	0.06	0.000001	70	915
Bis(2-ethylhexyl)phthalate	2.44E-01	4700	1	65	2.5	1	0.01	0.000001	70	915

Chemical	IF Intake Factor (kg/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
Aroclor-1254	7.15E-07	2.00E-05	1.07E-02
Aroclor-1260	7.15E-07	2.00E-05	8.37E-03
Bis(2-ethylhexyl)phthalate	1.19E-07	2.00E-02	1.45E-06
Total Hazard Index			1.91E-02

FUTURE ONSITE ECOLOGICAL RESEARCHER
AREA OF CONCERN NO. 1

RME- Dermal contact with soil

Nonradionuclide Carcinogens

$$IF = (SA \times FC \times EF \times ED \times AF \times AB \times CF)/(BW \times AT)$$

$$CR = C \times IF \times SF$$

Chemical	C Soil Concentration (mg/kg)	SA Skin Surface Area (cm^2)	FC Fraction Contaminated	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	AF Soil Adherence (mg/cm^2)	AB Skin Absorption	CF Conversion Factor (kg/mg)	BW Body Weight (kg)	AT Averaging Time (days)
Aroclor-1254	2.99E-01	4700	1	65	2.5	1	0.06	0.000001	70	25550
Aroclor-1260	2.34E-01	4700	1	65	2.5	1	0.06	0.000001	70	25550
Bis(2-ethylhexyl)phthalate	2.44E-01	4700	1	65	2.5	1	0.01	0.000001	70	25550

Chemical	IF Intake Factor (kg/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
Aroclor-1254	2.56E-08	7.70E+00	5.90E-08
Aroclor-1260	2.56E-08	7.70E+00	4.62E-08
Bis(2-ethylhexyl)phthalate	4.27E-09	1.40E-02	1.46E-11
	Total Cancer Risk		1.05E-07

FUTURE ONSITE ECOLOGICAL RESEARCHER
AREA OF CONCERN NO. 1

CT - Ingestion of surface water - Walnut Creek

Nonradionuclide carcinogens

IF = (IR x ET x EF x ED)/(BW x AT)
CR = C x IF x SF

	C	IR	ET	EF	ED	BW	AT	IF	SF	CR
Chemical	Surface Water Concentration (mg/l)	Ingestion Rate (l/hr)	Exposure Time (hr/day)	Exposure Frequency (days/yr)	Exposure Duration (years)	Body Weight (kg)	Averaging Time (days)	Intake Factor (l/kg-day)	Slope Factor 1/(mg/kg-day)	Cancer Risk
1,1-Dichloroethene	5.00E-06	0.01	1	7	2.5	70	25550	9.78E-08	6.00E-01	2.94E-13
Carbon Tetrachloride	4.81E-04	0.01	1	7	2.5	70	25550	9.78E-08	1.30E-01	6.12E-12
Chloroform	9.30E-05	0.01	1	7	2.5	70	25550	9.78E-08	6.10E-03	5.55E-14
Methylene Chloride	3.80E-05	0.01	1	7	2.5	70	25550	9.78E-08	7.50E-03	2.79E-14
Tetrachloroethene	8.03E-04	0.01	1	7	2.5	70	25550	9.78E-08	5.20E-02	4.09E-12
Trichloroethene	6.24E-03	0.01	1	7	2.5	70	25550	9.78E-08	1.10E-02	6.72E-12
									Total Chemical Cancer Risk	1.73E-11

Radionuclides

IF = IR x ET x EF x ED
CR = C x IF x SF

	C	IR	ET	EF	ED	IF	SF	CR
Radionuclide	Surface Water Concentration (pCi/l)	Ingestion Rate (l/hr)	Exposure Time (hr/day)	Exposure Frequency (days/yr)	Exposure Duration (years)	Intake Factor (l)	Slope Factor (Risk/pCi)	Cancer Risk
Americium-241	5.00E-03	0.01	1	7	2.5	1.75E-01	2.40E-10	2.10E-13
Plutonium-239/240	2.60E-02	0.01	1	7	2.5	1.75E-01	2.30E-10	1.05E-12
							Total Radionuclide Cancer Risk	1.26E-12

Total Cancer Risk 1.86E-11

FUTURE ONSITE ECOLOGICAL RESEARCHER
AREA OF CONCERN NO. 1

CT - Ingestion of surface water - Walnut Creek

Noncarcinogens

$$IF = (IR \times ET \times EF \times ED)/(BW \times AT)$$
$$HQ = (C \times IF)/RfD$$

Chemical	C Surface Water Concentration (mg/l)	IR Ingestion Rate (l/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
1,1-Dichloroethene	5.00E-06	0.01	1	7	2.5	70	915	2.73E-06	9.00E-03	1.52E-09
Carbon Tetrachloride	4.81E-04	0.01	1	7	2.5	70	915	2.73E-06	7.00E-04	1.88E-06
Chloroform	9.30E-05	0.01	1	7	2.5	70	915	2.73E-06	1.00E-02	2.54E-08
Methylene Chloride	3.80E-05	0.01	1	7	2.5	70	915	2.73E-06	6.00E-02	1.73E-09
Tetrachloroethene	8.03E-04	0.01	1	7	2.5	70	915	2.73E-06	1.00E-02	2.19E-07
									Total Hazard Index	2.13E-06

FUTURE ONSITE ECOLOGICAL RESEARCHER
AREA OF CONCERN NO. 1

RME - Ingestion of surface water - Walnut Creek

Noncarcinogens

$$IF = (IR \times ET \times EF \times ED)/(BW \times AT)$$
$$HQ = (C \times IF)/RfD$$

	C	IR	ET	EF	ED	BW	AT	IF	RfD	HQ
Chemical	Surface Water Concentration (mg/l)	Ingestion Rate (l/hr)	Exposure Time (hr/day)	Exposure Frequency (days/yr)	Exposure Duration (years)	Body Weight (kg)	Averaging Time (days)	Intake Factor (l/kg-day)	Reference Dose (mg/kg-day)	Hazard Quotient
1,1-Dichloroethene	5.00E-06	0.05	1	12	2.5	70	915	2.34E-05	9.00E-03	1.30E-08
Carbon Tetrachloride	4.81E-04	0.05	1	12	2.5	70	915	2.34E-05	7.00E-04	1.61E-05
Chloroform	9.30E-05	0.05	1	12	2.5	70	915	2.34E-05	1.00E-02	2.18E-07
Methylene Chloride	3.80E-05	0.05	1	12	2.5	70	915	2.34E-05	6.00E-02	1.48E-08
Tetrachloroethene	8.03E-04	0.05	1	12	2.5	70	915	2.34E-05	1.00E-02	1.88E-06
									Total Hazard Index	1.82E-05

FUTURE ONSITE ECOLOGICAL RESEARCHER
AREA OF CONCERN NO. 1

RME - Ingestion of surface water - Walnut Creek

Nonradionuclide carcinogens

IF = (IR x ET x EF x ED)/(BW x AT)
CR = C x IF x SF

Chemical	C Surface Water Concentration (mg/l)	IR Ingestion Rate (l/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
1,1-Dichloroethene	5.00E-06	0.05	1	12	2.5	70	25550	8.39E-07	6.00E-01	2.52E-12
Carbon Tetrachloride	4.81E-04	0.05	1	12	2.5	70	25550	8.39E-07	1.30E-01	5.24E-11
Chloroform	9.30E-05	0.05	1	12	2.5	70	25550	8.39E-07	6.10E-03	4.76E-13
Methylene Chloride	3.80E-05	0.05	1	12	2.5	70	25550	8.39E-07	7.50E-03	2.39E-13
Tetrachloroethene	8.03E-04	0.05	1	12	2.5	70	25550	8.39E-07	5.20E-02	3.50E-11
Trichloroethene	6.24E-03	0.05	1	12	2.5	70	25550	8.39E-07	1.10E-02	5.76E-11
								Total Chemical Cancer Risk		1.48E-10

Radionuclides

IF = IR x ET x EF x ED
CR = C x IF x SF

Radionuclide	C Surface Water Concentration (pCi/l)	IR Ingestion Rate (l/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	IF Intake Factor (l)	SF Slope Factor (Risk/pCi)	CR Cancer Risk
Americium-241	5.00E-03	0.05	1	12	2.5	1.50E+00	2.40E-10	1.80E-12
Plutonium-239/240	2.60E-02	0.05	1	12	2.5	1.50E+00	2.30E-10	8.97E-12
						Total Radionuclide Cancer Risk		1.08E-11

Total Cancer Risk 1.59E-10

FUTURE ONSITE ECOLOGICAL RESEARCHER
AREA OF CONCERN NO. 1

CT - Ingestion of surface water - Woman Creek

Noncarcinogens

$$IF = (IR \times ET \times EF \times ED)/(BW \times AT)$$
$$HQ = (C \times IF)/RfD$$

	C	IR	ET	EF	ED	BW	AT	IF	RfD	HQ
Chemical	Surface Water Concentration (mg/l)	Ingestion Rate (l/hr)	Exposure Time (hr/day)	Exposure Frequency (days/yr)	Exposure Duration (years)	Body Weight (kg)	Averaging Time (days)	Intake Factor (l/kg-day)	Reference Dose (mg/kg-day)	Hazard Quotient
1,1-Dichloroethene	2.00E-06	0.01	1	7	2.5	70	915	2.73E-06	9.00E-03	6.07E-10
Carbon Tetrachloride	2.62E-04	0.01	1	7	2.5	70	915	2.73E-06	7.00E-04	1.02E-06
Chloroform	2.15E-04	0.01	1	7	2.5	70	915	2.73E-06	1.00E-02	5.87E-08
Methylene Chloride	1.06E-04	0.01	1	7	2.5	70	915	2.73E-06	6.00E-02	4.83E-09
Tetrachloroethene	1.16E-04	0.01	1	7	2.5	70	915	2.73E-06	1.00E-02	3.17E-08
									Total Hazard Index	1.12E-06

FUTURE ONSITE ECOLOGICAL RESEARCHER
AREA OF CONCERN NO. 1

CT - Ingestion of surface water - Woman Creek

Nonradionuclide carcinogens

$$IF = (IR \times ET \times EF \times ED)/(BW \times AT)$$
$$CR = C \times IF \times SF$$

Chemical	C Surface Water Concentration (mg/l)	IR Ingestion Rate (l/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
1,1-Dichloroethene	2.00E-06	0.01	1	7	2.5	70	25550	9.78E-08	6.00E-01	1.17E-13
Carbon Tetrachloride	2.62E-04	0.01	1	7	2.5	70	25550	9.78E-08	1.30E-01	3.33E-12
Chloroform	2.15E-04	0.01	1	7	2.5	70	25550	9.78E-08	6.10E-03	1.28E-13
Methylene Chloride	1.06E-04	0.01	1	7	2.5	70	25550	9.78E-08	7.50E-03	7.78E-14
Tetrachloroethene	1.16E-04	0.01	1	7	2.5	70	25550	9.78E-08	5.20E-02	5.90E-13
Trichloroethene	9.25E-04	0.01	1	7	2.5	70	25550	9.78E-08	1.10E-02	9.96E-13
								Total Chemical Cancer Risk		5.24E-12

Radionuclides

$$IF = IR \times ET \times EF \times ED$$
$$CR = C \times IF \times SF$$

Radionuclide	C Surface Water Concentration (pCi/l)	IR Ingestion Rate (l/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	IF Intake Factor (l)	SF Slope Factor (Risk/pCi)	CR Cancer Risk
Americium-241	6.30E-02	0.01	1	7	2.5	1.75E-01	2.40E-10	2.65E-12
Plutonium-239/240	2.37E+00	0.01	1	7	2.5	1.75E-01	2.30E-10	9.54E-11
						Total Radionuclide Cancer Risk		9.80E-11
							Total Cancer Risk	1.03E-10

SUMMARY OF RISK
FUTURE OFFSITE RESIDENT
WALNUT CREEK
AREA OF CONCERN NO. 1

	Central Tendency		Reasonable Maximum	
Pathway	Hazard Index	Cancer Risk	Hazard Index	Cancer Risk
Ingestion of surface soil by an adult*	0.00E+00	-	0.00E+00	-
Ingestion of surface soil by a child*	0.00E+00	-	0.00E+00	-
Carcinogenic effects of soil ingestion*	-	0.00E+00	-	0.00E+00
Inhalation of particulates from surface soil**	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Dermal contact with surface soil*	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Ingestion of vegetables with soil deposition*	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Ingestion of fruit with soil deposition*	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Ingestion of surface water	1.52E-06	4.77E-11	2.77E-05	2.89E-09
Dermal contact with surface water	8.36E-05	7.64E-09	5.95E-04	1.81E-07
Total	8.51E-05	7.69E-09	6.23E-04	1.84E-07

* Windborne contaminants from AOC No. 1 are not deposited in significant concentrations at this location.

** Windborne contaminants from AOC No.1 are not found in the air in significant concentrations at this location.

FUTURE OFF[illegible]E RESIDENT
WALNUT CREEK
AREA OF CONCERN NO. 1

CT - Ingestion of surface water - Walnut Creek

Noncarcinogens

$$IF = (IR \times ET \times EF \times ED)/(BW \times AT)$$
$$HQ = (C \times IF)/RfD$$

	C	IR	ET	EF	ED	BW	AT	IF	RfD	HQ
Chemical	Surface Water Concentration (mg/l)	Ingestion Rate (l/hr)	Exposure Time (hr/day)	Exposure Frequency (days/yr)	Exposure Duration (years)	Body Weight (kg)	Averaging Time (days)	Intake Factor (l/kg-day)	Reference Dose (mg/kg-day)	Hazard Quotient
1,1-Dichloroethene	5.00E-06	0.01	1	5	9	70	3285	1.96E-06	9.00E-03	1.09E-09
Carbon Tetrachloride	4.81E-04	0.01	1	5	9	70	3285	1.96E-06	7.00E-04	1.34E-06
Chloroform	9.30E-05	0.01	1	5	9	70	3285	1.96E-06	1.00E-02	1.82E-08
Methylene Chloride	3.80E-05	0.01	1	5	9	70	3285	1.96E-06	6.00E-02	1.24E-09
Tetrachloroethene	8.03E-04	0.01	1	5	9	70	3285	1.96E-06	1.00E-02	1.57E-07
									Total Hazard Index	1.52E-06

FUTURE OFFSITE RESIDENT
WALNUT CREEK
AREA OF CONCERN NO. 1

CT - Ingestion of surface water - Walnut Creek

Nonradionuclide carcinogens

IF = (IR x ET x EF x ED)/(BW x AT)
CR = C x IF x SF

Chemical	C Surface Water Concentration (mg/l)	IR Ingestion Rate (l/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
1,1-Dichloroethene	5.00E-06	0.01	1	5	9	70	25550	2.52E-07	6.00E-01	7.55E-13
Carbon Tetrachloride	4.81E-04	0.01	1	5	9	70	25550	2.52E-07	1.30E-01	1.57E-11
Chloroform	9.30E-05	0.01	1	5	9	70	25550	2.52E-07	6.10E-03	1.43E-13
Methylene Chloride	3.80E-05	0.01	1	5	9	70	25550	2.52E-07	7.50E-03	7.17E-14
Tetrachloroethene	8.03E-04	0.01	1	5	9	70	25550	2.52E-07	5.20E-02	1.05E-11
Trichloroethene	6.24E-03	0.01	1	5	9	70	25550	2.52E-07	1.10E-02	1.73E-11
								Total Chemical Cancer Risk		4.45E-11

Radionuclides

IF = IR x ET x EF x ED
CR = C x IF x SF

Radionuclide	C Surface Water Concentration (pCi/l)	IR Ingestion Rate (l/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	IF Intake Factor (l)	SF Slope Factor (Risk/pCi)	CR Cancer Risk
Americium-241	5.00E-03	0.01	1	5	9	4.50E-01	2.40E-10	5.40E-13
Plutonium-239/240	2.60E-02	0.01	1	5	9	4.50E-01	2.30E-10	2.69E-12
						Total Radionuclide Cancer Risk		3.23E-12
							Total Cancer Risk	4.77E-11

FUTURE OFF[illegible]E RESIDENT
WALNUT CREEK
AREA OF CONCERN NO. 1

RME - Ingestion of surface water - Walnut Creek

Noncarcinogens

$$IF = (IR \times ET \times EF \times ED)/(BW \times AT)$$
$$HQ = (C \times IF)/RfD$$

Chemical	C Surface Water Concentration (mg/l)	IR Ingestion Rate (l/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
1,1-Dichloroethene	5.00E-06	0.05	2.6	7	30	70	10950	3.56E-05	9.00E-03	1.98E-08
Carbon Tetrachloride	4.81E-04	0.05	2.6	7	30	70	10950	3.56E-05	7.00E-04	2.45E-05
Chloroform	9.30E-05	0.05	2.6	7	30	70	10950	3.56E-05	1.00E-02	3.31E-07
Methylene Chloride	3.80E-05	0.05	2.6	7	30	70	10950	3.56E-05	6.00E-02	2.26E-08
Tetrachloroethene	8.03E-04	0.05	2.6	7	30	70	10950	3.56E-05	1.00E-02	2.86E-06
									Total Hazard Index	2.77E-05

FUTURE OFFSITE RESIDENT
WALNUT CREEK
AREA OF CONCERN NO. 1

RME - Ingestion of surface water - Walnut Creek

Nonradionuclide carcinogens

IF = (IR x ET x EF x ED)/(BW x AT)
CR = C x IF x SF

	C	IR	ET	EF	ED	BW	AT	IF	SF	CR
Chemical	Surface Water Concentration (mg/l)	Ingestion Rate (l/hr)	Exposure Time (hr/day)	Exposure Frequency (days/yr)	Exposure Duration (years)	Body Weight (kg)	Averaging Time (days)	Intake Factor (l/kg-day)	Slope Factor 1/(mg/kg-day)	Cancer Risk
1,1-Dichloroethene	5.00E-06	0.05	2.6	7	30	70	25550	1.53E-05	6.00E-01	4.58E-11
Carbon Tetrachloride	4.81E-04	0.05	2.6	7	30	70	25550	1.53E-05	1.30E-01	9.54E-10
Chloroform	9.30E-05	0.05	2.6	7	30	70	25550	1.53E-05	6.10E-03	8.66E-12
Methylene Chloride	3.80E-05	0.05	2.6	7	30	70	25550	1.53E-05	7.50E-03	4.35E-12
Tetrachloroethene	8.03E-04	0.05	2.6	7	30	70	25550	1.53E-05	5.20E-02	6.37E-10
Trichloroethene	6.24E-03	0.05	2.6	7	30	70	25550	1.53E-05	1.10E-02	1.05E-09
								Total Chemical Cancer Risk		2.70E-09

Radionuclides

IF = IR x ET x EF x ED
CR = C x IF x SF

	C	IR	ET	EF	ED	IF	SF	CR
Radionuclide	Surface Water Concentration (pCi/l)	Ingestion Rate (l/hr)	Exposure Time (hr/day)	Exposure Frequency (days/yr)	Exposure Duration (years)	Intake Factor (l)	Slope Factor (Risk/pCi)	Cancer Risk
Americium-241	5.00E-03	0.05	2.6	7	30	2.73E+01	2.40E-10	3.28E-11
Plutonium-239/240	2.60E-02	0.05	2.6	7	30	2.73E+01	2.30E-10	1.63E-10
						Total Radionuclide Cancer Risk		1.96E-10
							Total Cancer Risk	2.89E-09

FUTURE OFF[illegible]E RESIDENT
WALNUT CREEK
AREA OF CONCERN NO. 1

CT - Dermal contact with surface water - Walnut Creek

Noncarcinogens

IF = (SA x DP x ET x EF x ED x CF)/(BW x AT)
HQ = (C x IF)/RfD

Chemical	C Surface Water Concentration (mg/l)	SA Skin Surface Area (cm^2)	DP Dermal Permeability (cm/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (day/yr)	ED Exposure Duration (years)	CF Conversion Factor (l/cm^3)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
1,1-Dichloroethene	5.00E-06	9275	0.016	1	5	9	0.001	70	3285	2.90E-05	9.00E-03	1.61E-08
Carbon Tetrachloride	4.81E-04	9275	0.022	1	5	9	0.001	70	3285	3.99E-05	7.00E-04	2.74E-05
Chloroform	9.30E-05	9275	0.13	1	5	9	0.001	70	3285	2.36E-04	1.00E-02	2.19E-06
Methylene Chloride	3.80E-05	9275	0.0045	1	5	9	0.001	70	3285	8.17E-06	6.00E-02	5.17E-09
Tetrachloroethene	8.03E-04	9275	0.37	1	5	9	0.001	70	3285	6.72E-04	1.00E-02	5.39E-05
											Total Hazard Index	8.36E-05

Nonradionuclide carcinogens

IF = (SA x DP x ET x EF x ED x CF)/(BW x AT)
CR = C x IF x SF

Chemical	C Surface Water Concentration (mg/l)	SA Skin Surface Area (cm^2)	DP Dermal Permeability (cm/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (day/yr)	ED Exposure Duration (years)	CF Conversion Factor (l/cm^3)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
1,1-Dichloroethene	5.00E-06	9275	0.016	1	5	9	0.001	70	25550	3.73E-06	6.00E-01	1.12E-11
Carbon Tetrachloride	4.81E-04	9275	0.022	1	5	9	0.001	70	25550	5.13E-06	1.30E-01	3.21E-10
Chloroform	9.30E-05	9275	0.13	1	5	9	0.001	70	25550	3.03E-05	6.10E-03	1.72E-11
Methylene Chloride	3.80E-05	9275	0.0045	1	5	9	0.001	70	25550	1.05E-06	7.50E-03	2.99E-13
Tetrachloroethene	8.03E-04	9275	0.37	1	5	9	0.001	70	25550	8.63E-05	5.20E-02	3.61E-09
Trichloroethene	6.24E-03	9275	0.23	1	5	9	0.001	70	25550	5.37E-05	1.10E-02	3.68E-09
											Total Cancer Risk	7.64E-09

FUTURE OFFSITE RESIDENT
WALNUT CREEK
AREA OF CONCERN NO. 1

RME - Dermal contact with surface water - Walnut Creek

Noncarcinogens

IF = (SA x DP x ET x EF x ED x CF)/(BW x AT)
HQ = (C x IF)/RfD

Chemical	C Surface Water Concentration (mg/l)	SA Skin Surface Area (cm^2)	DP Dermal Permeability (cm/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (day/yr)	ED Exposure Duration (years)	CF Conversion Factor (l/cm^3)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
1,1-Dichloroethene	5.00E-06	18150	0.016	2.6	7	30	0.001	70	10950	2.07E-04	9.00E-03	1.15E-07
Carbon Tetrachloride	4.81E-04	18150	0.022	2.6	7	30	0.001	70	10950	2.84E-04	7.00E-04	1.95E-04
Chloroform	9.30E-05	18150	0.13	2.6	7	30	0.001	70	10950	1.68E-03	1.00E-02	1.56E-05
Methylene Chloride	3.80E-05	18150	0.0045	2.6	7	30	0.001	70	10950	5.82E-05	6.00E-02	3.68E-08
Tetrachloroethene	8.03E-04	18150	0.37	2.6	7	30	0.001	70	10950	4.78E-03	1.00E-02	3.84E-04
											Total Hazard Index	5.95E-04

Nonradionuclide carcinogens

IF = (SA x DP x ET x EF x ED x CF)/(BW x AT)
CR = C x IF x SF

Chemical	C Surface Water Concentration (mg/l)	SA Skin Surface Area (cm^2)	DP Dermal Permeability (cm/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (day/yr)	ED Exposure Duration (years)	CF Conversion Factor (l/cm^3)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
1,1-Dichloroethene	5.00E-06	18150	0.016	2.6	7	30	0.001	70	25550	8.87E-05	6.00E-01	2.66E-10
Carbon Tetrachloride	4.81E-04	18150	0.022	2.6	7	30	0.001	70	25550	1.22E-04	1.30E-01	7.62E-09
Chloroform	9.30E-05	18150	0.13	2.6	7	30	0.001	70	25550	7.20E-04	6.10E-03	4.09E-10
Methylene Chloride	3.80E-05	18150	0.0045	2.6	7	30	0.001	70	25550	2.49E-05	7.50E-03	7.11E-12
Tetrachloroethene	8.03E-04	18150	0.37	2.6	7	30	0.001	70	25550	2.05E-03	5.20E-02	8.56E-08
Trichloroethene	6.24E-03	18150	0.23	2.6	7	30	0.001	70	25550	1.27E-03	1.10E-02	8.75E-08
											Total Cancer Risk	1.81E-07

SUMMARY OF RISK
FUTURE OFFSITE RESIDENT
WOMAN CREEK
AREA OF CONCERN NO. 1

	Central Tendency		Reasonable Maximum	
Pathway	Hazard Index	Cancer Risk	Hazard Index	Cancer Risk
Ingestion of surface soil by an adult*	0.00E+00	-	0.00E+00	-
Ingestion of surface soil by a child*	0.00E+00	-	0.00E+00	-
Carcinogenic effects of soil ingestion*	-	0.00E+00	-	0.00E+00
Inhalation of particulates from surface soil	0.00E+00	8.26E-10	0.00E+00	8.68E-09
Dermal contact with surface soil*	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Ingestion of vegetables with soil deposition*	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Ingestion of fruit with soil deposition*	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Ingestion of surface water	8.01E-07	2.66E-10	1.46E-05	1.61E-08
Dermal contact with surface water	2.78E-05	1.29E-09	1.98E-04	3.06E-08
Total	2.86E-05	2.38E-09	2.13E-04	5.54E-08

* Windborne COCs from AOC No. 1 surface soil are not deposited in significant quantities at this receptor location.

FUTURE OFFSITE RESIDENT
WOMAN CREEK
AREA OF CONCERN NO. 1

CT Inhalation of Particulates - Radionuclides

IF = IR x ET x EF x ED x DF
CR = IF x C x SF

Radionuclides	C Air Concentration (pCi/m^3)	IR Inhalation Rate (m^3/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	DF Deposition Factor	IF Intake Factor (m^3)	SF Slope Factor (Risk/pCi)	CR Cancer Risk
Americium-241	3.85E-08	0.63	15	234	9	1	1.99E+04	3.20E-08	2.45E-11
Plutonium-239/240	1.06E-06	0.63	15	234	9	1	1.99E+04	3.80E-08	8.02E-10
								Total Radionuclide Cancer Risk	8.26E-10
								Total Cancer Risk	8.26E-10

RME Inhalation of Particulates - Radionuclides

IF = IR x ET x EF x ED x DF
CR = IF x C x SF

Radionuclides	C Air Concentration (pCi/m^3)	IR Inhalation Rate (m^3/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	DF Deposition Factor	IF Intake Factor (m^3)	SF Slope Factor (Risk/pCi)	CR Cancer Risk
Americium-241	3.85E-08	0.83	24	350	30	1	2.09E+05	3.20E-08	2.58E-10
Plutonium-239/240	1.06E-06	0.83	24	350	30	1	2.09E+05	3.80E-08	8.42E-09
								Total Radionuclide Cancer Risk	8.68E-09
								Total Cancer Risk	8.68E-09

FUTURE OF[illegible]E RESIDENT
WOMAN CREEK
AREA OF CONCERN NO. 1

CT - Ingestion of surface water - Woman Creek

Noncarcinogens

$$IF = (IR \times ET \times EF \times ED)/(BW \times AT)$$
$$HQ = (C \times IF)/RfD$$

	C	IR	ET	EF	ED	BW	AT	IF	RfD	HQ
Chemical	Surface Water Concentration (mg/l)	Ingestion Rate (l/hr)	Exposure Time (hr/day)	Exposure Frequency (days/yr)	Exposure Duration (years)	Body Weight (kg)	Averaging Time (days)	Intake Factor (l/kg-day)	Reference Dose (mg/kg-day)	Hazard Quotient
1,1-Dichloroethene	2.00E-06	0.01	1	5	9	70	3285	1.96E-06	9.00E-03	4.35E-10
Carbon Tetrachloride	2.62E-04	0.01	1	5	9	70	3285	1.96E-06	7.00E-04	7.32E-07
Chloroform	2.15E-04	0.01	1	5	9	70	3285	1.96E-06	1.00E-02	4.21E-08
Methylene Chloride	1.06E-04	0.01	1	5	9	70	3285	1.96E-06	6.00E-02	3.46E-09
Tetrachloroethene	1.16E-04	0.01	1	5	9	70	3285	1.96E-06	1.00E-02	2.27E-08
									Total Hazard Index	8.01E-07

FUTURE OFFSITE RESIDENT
WOMAN CREEK
AREA OF CONCERN NO. 1

CT - Ingestion of surface water - Woman Creek

Nonradionuclide carcinogens

$$IF = (IR \times ET \times EF \times ED)/(BW \times AT)$$
$$CR = C \times IF \times SF$$

	C	IR	ET	EF	ED	BW	AT	IF	SF	CR
Chemical	Surface Water Concentration (mg/l)	Ingestion Rate (l/hr)	Exposure Time (hr/day)	Exposure Frequency (days/yr)	Exposure Duration (years)	Body Weight (kg)	Averaging Time (days)	Intake Factor (l/kg-day)	Slope Factor 1/(mg/kg-day)	Cancer Risk
1,1-Dichloroethene	2.00E-06	0.01	1	5	9	70	25550	2.52E-07	6.00E-01	3.02E-13
Carbon Tetrachloride	2.62E-04	0.01	1	5	9	70	25550	2.52E-07	1.30E-01	8.57E-12
Chloroform	2.15E-04	0.01	1	5	9	70	25550	2.52E-07	6.10E-03	3.30E-13
Methylene Chloride	1.06E-04	0.01	1	5	9	70	25550	2.52E-07	7.50E-03	2.00E-13
Tetrachloroethene	1.16E-04	0.01	1	5	9	70	25550	2.52E-07	5.20E-02	1.52E-12
Trichloroethene	9.25E-04	0.01	1	5	9	70	25550	2.52E-07	1.10E-02	2.56E-12
									Total Chemical Cancer Risk	1.35E-11

Radionuclides

$$IF = IR \times ET \times EF \times ED$$
$$CR = C \times IF \times SF$$

	C	IR	ET	EF	ED	IF	SF	CR
Radionuclide	Surface Water Concentration (pCi/l)	Ingestion Rate (l/hr)	Exposure Time (hr/day)	Exposure Frequency (days/yr)	Exposure Duration (years)	Intake Factor (l)	Slope Factor (Risk/pCi)	Cancer Risk
Americium-241	6.30E-02	0.01	1	5	9	4.50E-01	2.40E-10	6.80E-12
Plutonium-239/240	2.37E+00	0.01	1	5	9	4.50E-01	2.30E-10	2.45E-10
							Total Radionuclide Cancer Risk	2.52E-10
							Total Cancer Risk	2.66E-10

FUTURE OF E RESIDENT
WOMAN CREEK
AREA OF CONCERN NO. 1

RME - Ingestion of surface water Woman Creek

Noncarcinogens

$$IF = (IR \times ET \times EF \times ED)/(BW \times AT)$$
$$HQ = (C \times IF)/RfD$$

Chemical	C Surface Water Concentration (mg/l)	IR Ingestion Rate (l/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
1,1-Dichloroethene	2.00E-06	0.05	2.6	7	30	70	10950	3.56E-05	9.00E-03	7.91E-09
Carbon Tetrachloride	2.62E-04	0.05	2.6	7	30	70	10950	3.56E-05	7.00E-04	1.33E-05
Chloroform	2.15E-04	0.05	2.6	7	30	70	10950	3.56E-05	1.00E-02	7.66E-07
Methylene Chloride	1.06E-04	0.05	2.6	7	30	70	10950	3.56E-05	6.00E-02	6.29E-08
Tetrachloroethene	1.16E-04	0.05	2.6	7	30	70	10950	3.56E-05	1.00E-02	4.13E-07
									Total Hazard Index	1.46E-05

FUTURE OFFSITE RESIDENT
WOMAN CREEK
AREA OF CONCERN NO. 1

RME - Ingestion of surface water Woman Creek

Nonradionuclide carcinogens

IF = (IR x ET x EF x ED)/(BW x AT)
CR = C x IF x SF

Chemical	C Surface Water Concentration (mg/l)	IR Ingestion Rate (l/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
1,1-Dichloroethene	2.00E-06	0.05	2.6	7	30	70	25550	1.53E-05	6.00E-01	1.83E-11
Carbon Tetrachloride	2.62E-04	0.05	2.6	7	30	70	25550	1.53E-05	1.30E-01	5.20E-10
Chloroform	2.15E-04	0.05	2.6	7	30	70	25550	1.53E-05	6.10E-03	2.00E-11
Methylene Chloride	1.06E-04	0.05	2.6	7	30	70	25550	1.53E-05	7.50E-03	1.21E-11
Tetrachloroethene	1.16E-04	0.05	2.6	7	30	70	25550	1.53E-05	5.20E-02	9.21E-11
Trichloroethene	9.25E-04	0.05	2.6	7	30	70	25550	1.53E-05	1.10E-02	1.55E-10
								Total Chemical Cancer Risk		8.18E-10

Radionuclides

IF = IR x ET x EF x ED
CR = C x IF x SF

Radionuclide	C Surface Water Concentration (pCi/l)	IR Ingestion Rate (l/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	IF Intake Factor (l)	SF Slope Factor (Risk/pCi)	CR Cancer Risk
Americium-241	6.30E-02	0.05	2.6	7	30	2.73E+01	2.40E-10	4.13E-10
Plutonium-239/240	2.37E+00	0.05	2.6	7	30	2.73E+01	2.30E-10	1.49E-08
						Total Radionuclide Cancer Risk		1.53E-08
							Total Cancer Risk	1.61E-08

FUTURE OFF E RESIDENT
WOMAN CREEK
AREA OF CONCERN NO. 1

CT - Dermal contact with surface water - Woman Creek

Noncarcinogens

IF = (SA x DP x ET x EF x ED x CF)/(BW x AT)
HQ = (C x IF)/RfD

Chemical	C Surface Water Concentration (mg/l)	SA Skin Surface Area (cm^2)	DP Dermal Permeability (cm/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (day/yr)	ED Exposure Duration (years)	CF Conversion Factor (l/cm^3)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
1,1-Dichloroethene	2.00E-06	9275	0.016	1	5	9	0.001	70	3285	2.90E-05	9.00E-03	6.45E-09
Carbon Tetrachloride	2.62E-04	9275	0.022	1	5	9	0.001	70	3285	3.99E-05	7.00E-04	1.49E-05
Chloroform	2.15E-04	9275	0.13	1	5	9	0.001	70	3285	2.36E-04	1.00E-02	5.07E-06
Methylene Chloride	1.06E-04	9275	0.0045	1	5	9	0.001	70	3285	8.17E-06	6.00E-02	1.44E-08
Tetrachloroethene	1.16E-04	9275	0.37	1	5	9	0.001	70	3285	6.72E-04	1.00E-02	7.79E-06
											Total Hazard Index	2.78E-05

Nonradionuclide carcinogens

IF = (SA x DP x ET x EF x ED x CF)/(BW x AT)
CR = C x IF x SF

Chemical	C Surface Water Concentration (mg/l)	SA Skin Surface Area (cm^2)	DP Dermal Permeability (cm/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (day/yr)	ED Exposure Duration (years)	CF Conversion Factor (l/cm^3)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	SF Slope Factor 1/(mg/kg-day	CR Cancer Risk
1,1-Dichloroethene	2.00E-06	9275	0.016	1	5	9	0.001	70	25550	3.73E-06	6.00E-01	4.48E-12
Carbon Tetrachloride	2.62E-04	9275	0.022	1	5	9	0.001	70	25550	5.13E-06	1.30E-01	1.75E-10
Chloroform	2.15E-04	9275	0.13	1	5	9	0.001	70	25550	3.03E-05	6.10E-03	3.98E-11
Methylene Chloride	1.06E-04	9275	0.0045	1	5	9	0.001	70	25550	1.05E-06	7.50E-03	8.35E-13
Tetrachloroethene	1.16E-04	9275	0.37	1	5	9	0.001	70	25550	8.63E-05	5.20E-02	5.21E-10
Trichloroethene	9.25E-04	9275	0.23	1	5	9	0.001	70	25550	5.37E-05	1.10E-02	5.46E-10
											Total Cancer Risk	1.29E-09

FUTURE OFFSITE RESIDENT
WOMAN CREEK
AREA OF CONCERN NO. 1

RME - Dermal contact with surface water - Woman Creek

Noncarcinogens

IF = (SA x DP x ET x EF x ED x CF)/(BW x AT)
HQ = (C x IF)/RfD

Chemical	C Surface Water Concentration (mg/l)	SA Skin Surface Area (cm^2)	DP Dermal Permeability (cm/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (day/yr)	ED Exposure Duration (years)	CF Conversion Factor (l/cm^3)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
1,1-Dichloroethene	2.00E-06	18150	0.016	2.6	7	30	0.001	70	10950	2.07E-04	9.00E-03	4.60E-08
Carbon Tetrachloride	2.62E-04	18150	0.022	2.6	7	30	0.001	70	10950	2.84E-04	7.00E-04	1.06E-04
Chloroform	2.15E-04	18150	0.13	2.6	7	30	0.001	70	10950	1.68E-03	1.00E-02	3.61E-05
Methylene Chloride	1.06E-04	18150	0.0045	2.6	7	30	0.001	70	10950	5.82E-05	6.00E-02	1.03E-07
Tetrachloroethene	1.16E-04	18150	0.37	2.6	7	30	0.001	70	10950	4.78E-03	1.00E-02	5.55E-05
											Total Hazard Index	1.98E-04

Nonradionuclide carcinogens

IF = (SA x DP x ET x EF x ED x CF)/(BW x AT)
CR = C x IF x SF

Chemical	C Surface Water Concentration (mg/l)	SA Skin Surface Area (cm^2)	DP Dermal Permeability (cm/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (day/yr)	ED Exposure Duration (years)	CF Conversion Factor (l/cm^3)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	SF Slope Factor 1/(mg/kg-day	CR Cancer Risk
1,1-Dichloroethene	2.00E-06	18150	0.016	2.6	7	30	0.001	70	25550	8.87E-05	6.00E-01	1.06E-10
Carbon Tetrachloride	2.62E-04	18150	0.022	2.6	7	30	0.001	70	25550	1.22E-04	1.30E-01	4.15E-09
Chloroform	2.15E-04	18150	0.13	2.6	7	30	0.001	70	25550	7.20E-04	6.10E-03	9.45E-10
Methylene Chloride	1.06E-04	18150	0.0045	2.6	7	30	0.001	70	25550	2.49E-05	7.50E-03	1.98E-11
Tetrachloroethene	1.16E-04	18150	0.37	2.6	7	30	0.001	70	25550	2.05E-03	5.20E-02	1.24E-08
Trichloroethene	9.25E-04	18150	0.23	2.6	7	30	0.001	70	25550	1.27E-03	1.10E-02	1.30E-08
											Total Cancer Risk	3.06E-08

SUMMARY OF RISK
CURRENT OFFSITE RESIDENT
INDIANA SOUTH
AREA OF CONCERN NO. 2

	Central Tendency		Reasonable Maximum	
Pathway	Hazard Index	Cancer Risk	Hazard Index	Cancer Risk
Ingestion of surface soil by an adult*	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Ingestion of surface soil by a child*	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Carcinogenic effects of soil ingestion*	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Inhalation of particulates from surface soil	0.00E+00	8.63E-13	0.00E+00	9.07E-12
Dermal contact with surface soil*	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Ingestion of vegetables with soil deposition*	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Ingestion of fruit with soil deposition*	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total	0.00E+00	8.63E-13	0.00E+00	9.07E-12

* Windborne contaminants from AOC No. 2 are not deposited in significant concentrations at this location.

CURRENT OFF-SITE RESIDENT
INDIANA SOUTH
AREA OF CONCERN NO. 2

CT Inhalation of Particulates - Radionuclides

IF = IR x ET x EF x ED x DF
CR = IF x C x SF

Radionuclides	C Air Concentration[1] (pCi/m^3)	IR Inhalation Rate (m^3/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	DF Deposition Factor	IF Intake Factor (m^3)	SF Slope Factor (Risk/pCi)	CR Cancer Risk
Americium-241	1.44E-10	0.63	15	234	9	1	1.99E+04	3.20E-08	9.17E-14
Plutonium-239/240	1.02E-09	0.63	15	234	9	1	1.99E+04	3.80E-08	7.71E-13
								Total Radionuclide Cancer Risk	8.63E-13
								Total Cancer Risk	8.63E-13

RME Inhalation of Particulates - Radionuclides

IF = IR x ET x EF x ED x DF
CR = IF x C x SF

Radionuclides	C Air Concentration[1] (pCi/m^3)	IR Inhalation Rate (m^3/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	DF Deposition Factor	IF Intake Factor (m^3)	SF Slope Factor (Risk/pCi)	CR Cancer Risk
Americium-241	1.44E-10	0.83	24	350	30	1	2.09E+05	3.20E-08	9.64E-13
Plutonium-239/240	1.02E-09	0.83	24	350	30	1	2.09E+05	3.80E-08	8.11E-12
								Total Radionuclide Cancer Risk	9.07E-12
								Total Cancer Risk	9.07E-12

SUMMARY OF RISK
CURRENT OFFSITE RESIDENT
SOUTHEAST
AREA OF CONCERN NO. 2

	Central Tendency		Reasonable Maximum	
Pathway	Hazard Index	Cancer Risk	Hazard Index	Cancer Risk
Ingestion of surface soil by an adult	2.76E-12	-	1.29E-11	-
Ingestion of surface soil by a child	3.30E-11	-	1.20E-10	-
Carcinogenic effects of soil ingestion	-	1.24E-13	-	1.73E-12
Inhalation of particulates from surface soil	0.00E+00	5.72E-11	0.00E+00	6.01E-10
Dermal contact with surface soil*	6.53E-14	2.35E-18	2.02E-12	2.43E-16
Ingestion of vegetables with soil deposition	3.41E-11	1.14E-12	2.55E-10	2.84E-11
Ingestion of fruit with soil deposition	4.46E-11	1.49E-12	3.12E-10	3.48E-11
Total	1.15E-10	5.99E-11	7.03E-10	6.66E-10

* Dermal contact with metals (except mercury) and radionuclides is considered insignificant.

CURRENT OFFSITE RESIDENT
SOUTHEAST
AREA OF CONCERN NO. 2

CT - Adult soil ingestion

Noncarcinogens

IF =(IR-A x ED-A x FC-A xEF x ME x CF)/(BW-A x AT)
HQ = (C x IF)/RfD

	C	IR-A	ED-A	FC-A	CF	ME	EF	BW-A	AT
Chemical	Soil Concentration (mg/kg)	Ingestion Rate (mg/day)	Exposure Duration (years)	Fraction Contaminated	Conversion Factor (kg/mg)	Matrix Effect	Exposure Frequency (days/yr)	Body Weight (kg)	Averaging Time (days)
Bis(2-ethylhexyl)phthalate	5.57E-08	50	7	0.64	0.000001	1	234	70	2555
Chromium	6.63E-06	50	7	0.64	0.000001	1	234	70	2555

	IF	RfD	HQ
Chemical	Intake Factor (kg/kg-day)	Reference Dose (mg/kg-day)	Hazard Quotient
Bis(2-ethylhexyl)phthalate	2.93E-07	2.00E-02	8.16E-13
Chromium	2.93E-07	1.00E+00	1.94E-12
		Total Hazard Index	2.76E-12

CURRENT OF[illegible]E RESIDENT
SOUTHEAST
AREA OF CONCERN NO. 2

RME - Adult soil ingestion

Noncarcinogens

IF = (IR-A x ED-A x FC-A x EF x ME x CF)/(BW-A x AT-A)
HQ = (C x IF)/RfD

	C	IR-A	ED-A	FC-A	ME	EF	CF	BW-A	AT
Chemical	Soil Concentration (mg/kg)	Ingestion Rate (mg/day)	Exposure Duration (years)	Fraction Contaminated	Matrix Effect	Exposure Frequency (days/yr)	Conversion Factor (kg/mg)	Body Weight (kg)	Averaging Time (days)
Bis(2-ethylhexyl)phthalate	5.57E-08	100	24	1	1	350	0.000001	70	8760
Chromium	6.63E-06	100	24	1	1	350	0.000001	70	8760

	IF	RfD	HQ
Chemical	Intake Factor (kg/kg-day)	Reference Dose (mg/kg-day)	Hazard Quotient
Bis(2-ethylhexyl)phthalate	1.37E-06	2.00E-02	3.82E-12
Chromium	1.37E-06	1.00E+00	9.08E-12
		Total Hazard Index	1.29E-11

CURRENT OFFSITE RESIDENT
SOUTHEAST
AREA OF CONCERN NO. 2

CT - Child soil ingestion

Noncarcinogens

IF = (IR-C x ED-C x FC-C x EF x ME x CF)/(BW-C x AT-C)
HQ = (C x IF)/RfD

	C	IR-C	ED-C	FC-C	CF	ME	EF	BW-C	AT-C
Chemical	Soil Concentration (mg/kg)	Ingestion Rate (mg/day)	Exposure Duration (years)	Fraction Contaminated	Conversion Factor (kg/mg)	Matrix Effect	Exposure Frequency (days/yr)	Body Weight (kg)	Averaging Time (days)
Bis(2-ethylhexyl)phthalate	5.57E-08	100	2	0.82	0.000001	1	234	15	730
Chromium	6.63E-06	100	2	0.82	0.000001	1	234	15	730

	IF	RfD	HQ
Chemical	Intake Factor (kg/kg-day)	Reference Dose (mg/kg-day)	Hazard Quotient
Bis(2-ethylhexyl)phthalate	3.50E-06	2.00E-02	9.76E-12
Chromium	3.50E-06	1.00E+00	2.32E-11
		Total Hazard Index	3.30E-11

CURRENT OF[illegible]E RESIDENT
SOUTHEAST
AREA OF CONCERN NO. 2

RME -Child soil ingestion

Noncarcinogens

IF =(IR-C x ED-C x FC-C x EF x ME x CF)/BW-C x AT-C
HQ = (C x IF)/RfD

Chemical	C Soil Concentration (mg/kg)	IR-C Ingestion Rate (mg/day)	ED-C Exposure Duration (years)	FC-C Fraction Contaminated	CF Conversion Factor (kg/mg)	ME Matrix Effect	EF Exposure Frequency (days/yr)	BW-C Body Weight (kg)	AT Averaging Time (days)
Bis(2-ethylhexyl)phthalate	5.57E-08	200	6	1	0.000001	1	350	15	2190
Chromium	6.63E-06	200	6	1	0.000001	1	350	15	2190

Chemical	IF Intake Factor (kg/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
Bis(2-ethylhexyl)phthalate	1.28E-05	2.00E-02	3.56E-11
Chromium	1.28E-05	1.00E+00	8.48E-11
		Total Hazard Index	1.20E-10

CURRENT OFFSITE RESIDENT
SOUTHEAST
AREA OF CONCERN NO. 2

CT - Time-weighted average soil ingestion

Nonradionuclide Carcinogens

$$IF = ([(IR\text{-}C \times ED\text{-}C \times FC\text{-}C)/(BW\text{-}C) + (IR\text{-}A \times ED\text{-}A \times FC\text{-}A)/(BW\text{-}A)] \times EF \times ME \times CF)/AT$$

$$CR = C \times IF \times SF$$

	C	IR-C	ED-C	FC-C	BW-C	IR-A	ED-A	FC-A	BW-A
		Child				Adult			
Chemical	Soil Concentration (mg/kg)	Ingestion Rate (mg/day)	Exposure Duration (years)	Fraction Contaminated	Body Weight (kg)	Ingestion Rate (mg/day)	Exposure Duration (years)	Fraction Contaminated	Body Weight (kg)
Bis(2-ethylhexyl)phthalate	5.57E-08	100	2	0.82	15	50	7	0.64	70

	CF	ME	EF	AT	IF	SF	CR
Chemical	Conversion Factor (kg/mg)	Matrix Effect	Exposure Frequency (days/yr)	Averaging Time (days)	Intake Factor (kg/kg-day)	Slope Factor (mg/kg-day)	Cancer Risk
Bis(2-ethylhexyl)phthalate	0.000001	1	234	25550	1.29E-07	1.40E-02	1.01E-16
					Total Chemical Cancer Risk		1.01E-16

CURRENT OF[illegible]E RESIDENT
SOUTHEAST
AREA OF CONCERN NO. 2

CT - Time-weighted average soil ingestion

Radionuclides

$$IF = [(IR\text{-}C \times ED\text{-}C \times FC\text{-}C) + (IR\text{-}A \times ED\text{-}A \times FC\text{-}A)] \times EF \times ME \times CF$$

$$CR = C \times IF \times SF$$

	C	IR-C	ED-C	FC-C	IR-A	ED-A	FC-A	ME	CF
		Child			Adult				
Chemical	Soil Concentration (pCi/g)	Ingestion Rate (mg/day)	Exposure Duration (years)	Fraction Contaminated	Ingestion Rate (mg/day)	Exposure Duration (years)	Fraction Contaminated	Matrix Effect	Conversion Factor (g/mg)
Americium-241	7.30E-07	100	2	0.82	50	7	0.64	1	0.001
Plutonium-239/240	5.19E-06	100	2	0.82	50	7	0.64	1	0.001

	EF	IF	SF	CR
Chemical	Exposure Frequency (days/yr)	Intake Factor (g)	Slope Factor (Risk/pCi)	Cancer Risk
Americium-241	234	90.792	2.40E-10	1.59E-14
Plutonium-239/240	234	90.792	2.30E-10	1.08E-13
		Total Radionuclide Cancer Risk		1.24E-13
			Total Cancer Risk	1.24E-13

CURRENT OFFSITE RESIDENT
SOUTHEAST
AREA OF CONCERN NO. 2

RME - Time-weighted average soil ingestion

Nonradionuclide Carcinogens

$$IF = ([(IR\text{-}C \times ED\text{-}C \times FC\text{-}C)/(BW\text{-}C) + (IR\text{-}A \times ED\text{-}A \times FC\text{-}A)/(BW\text{-}A)] \times EF \times ME \times CF)/AT$$

$$CR = C \times IF \times SF$$

	C	IR-C	ED-C	FC-C	BW-C	IR-A	ED-A	FC-A	BW-A
		Child				Adult			
Chemical	Soil Concentration (mg/kg)	Ingestion Rate (mg/day)	Exposure Duration (years)	Fraction Contaminated	Body Weight (kg)	Ingestion Rate (mg/day)	Exposure Duration (years)	Fraction Contaminated	Body Weight (kg)
Bis(2-ethylhexyl)phthalate	5.57E-08	200	6	1	15	100	24	1	70

	CF	ME	EF	AT	IF	SF	CR
Chemical	Conversion Factor (kg/mg)	Matrix Effect	Exposure Frequency (days/yr)	Averaging Time (days)	Intake Factor (kg/kg-day)	Slope Factor (mg/kg-day)	Cancer Risk
Bis(2-ethylhexyl)phthalate	0.000001	1	350	25550	1.57E-06	1.40E-02	1.22E-15
					Total Chemical Cancer Risk		1.22E-15

CURRENT OF[illegible]E RESIDENT
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RME - Time-weighted average soil ingestion

Radionuclides

$$IF = [(IR\text{-}C \times ED\text{-}C \times FC\text{-}C) + (IR\text{-}A \times ED\text{-}A \times FC\text{-}A)] \times EF \times ME \times CF$$
$$CR = C \times IF \times SF$$

	C	IR-C	ED-C	FC-C	IR-A	ED-A	FC-A	ME	CF
		Child			Adult				
Radionuclide	Soil Concentration (pCi/g)	Ingestion Rate (mg/day)	Exposure Duration (years)	Fraction Contaminated	Ingestion Rate (mg/day)	Exposure Duration (years)	Fraction Contaminated	Matrix Effect	Conversion Factor (g/mg)
Americium-241	7.30E-07	200	6	1	100	24	1	1	0.001
Plutonium-239/240	5.19E-06	200	6	1	100	24	1	1	0.001

	EF	IF	SF	CR
Radionuclide	Exposure Frequency (days/yr)	Intake Factor (g)	Slope Factor (Risk/pCi)	Cancer Risk
Americium-241	350	1.26E+03	2.40E-10	2.21E-13
Plutonium-239/240	350	1.26E+03	2.30E-10	1.50E-12
		Total Radionuclide Cancer Risk		1.72E-12
			Total Cancer Risk	1.73E-12

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CT Inhalation of Particulates - Radionuclides

IF = IR x ET x EF x ED x DF
CR = IF x C x SF

	C	IR	ET	EF	ED	DF	IF	SF	CR
Radionuclides	Air Concentration (pCi/m^3)	Inhalation Rate (m^3/hr)	Exposure Time (hr/day)	Exposure Frequency (days/yr)	Exposure Duration (years)	Deposition Factor	Intake Factor (m^3)	Slope Factor (Risk/pCi)	Cancer Risk
Americium-241	9.51E-09	0.63	15	234	9	1	1.99E+04	3.20E-08	6.06E-12
Plutonium-239/240	6.76E-08	0.63	15	234	9	1	1.99E+04	3.80E-08	5.11E-11
								Total Radionuclide Cancer Risk	5.72E-11
								Total Cancer Risk	5.72E-11

RME Inhalation of Particulates - Radionuclides

IF = IR x ET x EF x ED x DF
CR = IF x C x SF

	C	IR	ET	EF	ED	DF	IF	SF	CR
Radionuclides	Air Concentration (pCi/m^3)	Inhalation Rate (m^3/hr)	Exposure Time (hr/day)	Exposure Frequency (days/yr)	Exposure Duration (years)	Deposition Factor	Intake Factor (m^3)	Slope Factor (Risk/pCi)	Cancer Risk
Americium-241	9.51E-09	0.83	24	350	30	1	2.09E+05	3.20E-08	6.37E-11
Plutonium-239/240	6.76E-08	0.83	24	350	30	1	2.09E+05	3.80E-08	5.37E-10
								Total Radionuclide Cancer Risk	6.01E-10
								Total Cancer Risk	6.01E-10

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CT- Dermal contact with surface soil

Noncarcinogens

IF = (SA x FC x EF x ED x AF x AB x CF)/(BW x AT)
HQ = (C x IF)/RfD

Chemical	C Soil Concentration (mg/kg)	SA Skin Surface Area (cm^2)	FC Fraction Contaminated	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	AF Soil Adherence (mg/cm^2)	AB Skin Absorption	CF Conversion Factor (kg/mg)	BW Body Weight (kg)	AT Averaging Time (days)
Bis(2-ethylhexyl)phthalate	5.57E-08	2000	0.64	234	9	0.2	0.01	0.000001	70	3285

Chemical	IF Intake Factor (kg/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
Bis(2-ethylhexyl)phthalate	2.34E-08	2.00E-02	6.53E-14
	Total Hazard Index		6.53E-14

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CT- Dermal contact with surface soil

Nonradionuclide Carcinogens

$$IF = (SA \times FC \times EF \times ED \times AF \times AB \times CF)/(BW \times AT)$$
$$CR = C \times IF \times SF$$

	C	SA	FC	EF	ED	AF	AB	CF	BW	AT
Chemical	Soil Concentration (mg/kg)	Skin Surface Area (cm^2)	Fraction Contaminated	Exposure Frequency (days/yr)	Exposure Duration (years)	Soil Adherence (mg/cm^2)	Skin Absorption	Conversion Factor (kg/mg)	Body Weight (kg)	Averaging Time (days)
Bis(2-ethylhexyl)phthalate	5.57E-08	2000	0.64	234	9	0.2	0.01	0.000001	70	25550

	IF	SF	CR
Chemical	Intake Factor (kg/kg-day)	Slope Factor 1/(mg/kg-day)	Cancer Risk
Bis(2-ethylhexyl)phthalate	3.01E-09	1.40E-02	2.35E-18
	Total Cancer Risk		2.35E-18

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RME- Dermal contact with surface soil

Noncarcinogens

IF = (SA x FC x EF x ED x AF x AB x CF)/(BW x AT)

HQ = (C x IF)/RfD

	C	SA	FC	EF	ED	AF	AB	CF	BW	AT
Chemical	Soil Concentration (mg/kg)	Skin Surface Area (cm^2)	Fraction Contaminated	Exposure Frequency (days/yr)	Exposure Duration (years)	Soil Adherence (mg/cm^2)	Skin Absorption	Conversion Factor (kg/mg)	Body Weight (kg)	Averaging Time (days)
Bis(2-ethylhexyl)phthalate	5.57E-08	5300	1	350	30	1	0.01	0.000001	70	10950

	IF	RfD	HQ
Chemical	Intake Factor (kg/kg-day)	Reference Dose (mg/kg-day)	Hazard Quotient
Bis(2-ethylhexyl)phthalate	7.26E-07	2.00E-02	2.02E-12
	Total Hazard Index		2.02E-12

CURRENT OFFSITE RESIDENT
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RME- Dermal contact with surface soil

Nonradionuclide Carcinogens

$$IF = (SA \times FC \times EF \times ED \times AF \times AB \times CF)/(BW \times AT)$$

$$CR = C \times IF \times SF$$

Chemical	C Soil Concentration (mg/kg)	SA Skin Surface Area (cm^2)	FC Fraction Contaminated	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	AF Soil Adherence (mg/cm^2)	AB Skin Absorption	CF Conversion Factor (kg/mg)	BW Body Weight (kg)	AT Averaging Time (days)
Bis(2-ethylhexyl)phthalate	5.57E-08	5300	1	350	30	1	0.01	0.000001	70	25550

Chemical	IF Intake Factor (kg/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
Bis(2-ethylhexyl)phthalate	3.11E-07	1.40E-02	2.43E-16
	Total Cancer Risk		2.43E-16

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CT - Ingestion of vegetables with soil deposition

Noncarcinogens

IF = (IR x FH x FE x WO x ME x EF x ED x CF)/(BW x AT)
HQ = (C x IF)/RfD

	C	IR	FH	FE	WO	ME	EF	ED	CF	BW	AT	IF	RfD	HQ
Chemical	Concentration on Produce (mg/kg)	Ingestion Rate (mg/day)	Fraction Homegrown	Fraction Exposed	Washoff Factor	Matrix Effect	Exposure Frequency (days/yr)	Exposure Duration (years)	Conversion Factor (kg/mg)	Body Weight (kg)	Averaging Time (days)	Intake Factor (kg/kg-day)	Reference Dose (mg/kg-day)	Hazard Quotient
Bis(2-ethylhexyl)phthalate	4.59E-09	200000	0.25	0.3	0.5	1	150	9	0.000001	70	3285	4.40E-05	2.00E-02	1.01E-11
Chromium	5.46E-07	200000	0.25	0.3	0.5	1	150	9	0.000001	70	3285	4.40E-05	1.00E+00	2.40E-11
													Total Hazard Index	3.41E-11

Nonradionuclide Carcinogen

IF = (IR x FH x FE x WO x ME x EF x ED x CF)/(BW x AT)
CR = C x IF x SF

	C	IR	FH	FE	WO	ME	EF	ED	CF	BW	AT	IF	SF	CR
Chemical	Concentration on Produce (mg/kg)	Ingestion Rate (mg/day)	Fraction Homegrown	Fraction Exposed	Washoff Factor	Matrix Effect	Exposure Frequency (days/yr)	Exposure Duration (years)	Conversion Factor (kg/mg)	Body Weight (kg)	Averaging Time (days)	Intake Factor (kg/kg-day)	Slope Factor 1/(mg/kg-day)	Cancer Risk
Bis(2-ethylhexyl)phthalate	4.59E-09	200000	0.25	0.3	0.5	1	150	9	0.000001	70	25550	5.66E-06	1.40E-02	3.64E-16
													Total Chemical Cancer Risk	3.64E-16

Radionuclides

IF = IR x PC x WO x ME x EF x ED x CF
CR = C x IF x SF

	C	IR	FH	FE	WO	ME	EF	ED	CF	IF	SF	CR
Radionuclide	Concentration on Produce (pCi/g)	Ingestion Rate (mg/day)	Fraction Homegrown	Fraction Exposed	Washoff Factor	Matrix Effect	Exposure Frequency (days/yr)	Exposure Duration (years)	Conversion Factor (g/mg)	Intake Factor (g)	Slope Factor (Risk/pCi)	Cancer Risk
Americium-241	6.01E-08	200000	0.25	0.3	0.5	1	150	9	0.001	1.01E+04	2.40E-10	1.46E-13
Plutonium-239/240	4.27E-07	200000	0.25	0.3	0.5	1	150	9	0.001	1.01E+04	2.30E-10	9.94E-13
											Total Radionuclide Cancer Risk	1.14E-12

Total Cancer Risk 1.14E-12

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RME - Ingestion of vegetables with soil deposition

Noncarcinogens

IF = (IR x FC x WO x ME x EF x ED x CF)/(BW x AT)
HQ = (C x IF)/RfD

	C	IR	FH	FE	WO	ME	EF	ED	CF	BW	AT	IF	RfD	HQ
Chemical	Concentration on Produce (mg/kg)	Ingestion Rate (mg/day)	Fraction Homegrown	Fraction Exposed	Washoff Factor	Matrix Effect	Exposure Frequency (days/yr)	Exposure Duration (years)	Conversion Factor (kg/mg)	Body Weight (kg)	Averaging Time (days)	Intake Factor (kg/kg-day)	Reference Dose (mg/kg-day)	Hazard Quotient
Bis(2-ethylhexyl)phthalate	4.59E-09	200000	0.4	0.3	1	1	350	30	0.000001	70	10950	3.29E-04	2.00E-02	7.55E-11
Chromium	5.46E-07	200000	0.4	0.3	1	1	350	30	0.000001	70	10950	3.29E-04	1.00E+00	1.80E-10
													Total Hazard Index	2.55E-10

Nonradionuclide Carcinogen

IF = (IR x FC x WO x ME x EF x ED x CF)/(BW x AT)
CR = C x IF x SF

	C	IR	FH	FE	WO	ME	EF	ED	CF	BW	AT	IF	SF	CR
Chemical	Concentration on Produce (mg/kg)	Ingestion Rate (mg/day)	Fraction Homegrown	Fraction Exposed	Washoff Factor	Matrix Effect	Exposure Frequency (days/yr)	Exposure Duration (years)	Conversion Factor (kg/mg)	Body Weight (kg)	Averaging Time (days)	Intake Factor (kg/kg-day)	Slope Factor 1/(mg/kg-day)	Cancer Risk
Bis(2-ethylhexyl)phthalate	4.59E-09	200000	0.4	0.3	1	1	350	30	0.000001	70	25550	1.41E-04	1.40E-02	9.05E-15
													Total Chemical Cancer Risk	9.05E-15

Radionuclides

IF = IR x FC x WO x ME x EF x ED x CF
CR = C x IF x SF

	C	IR	FH	FE	WO	ME	EF	ED	CF	IF	SF	CR
Radionuclide	Concentration on Produce (pCi/g)	Ingestion Rate (mg/day)	Fraction Homegrown	Fraction Exposed	Washoff Factor	Matrix Effect	Exposure Frequency (days/yr)	Exposure Duration (years)	Conversion Factor (g/mg)	Intake Factor (g)	Slope Factor (Risk/pCi)	Cancer Risk
Americium-241	6.01E-08	200000	0.4	0.3	1	1	350	30	0.001	2.52E+05	2.40E-10	3.63E-12
Plutonium-239/240	4.27E-07	200000	0.4	0.3	1	1	350	30	0.001	2.52E+05	2.30E-10	2.47E-11
											Total Radionuclide Cancer Risk	2.84E-11

Total Cancer Risk 2.84E-11

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CT - Ingestion of fruit with soil deposition

Noncarcinogens

IF = (IR x FH x FE x WO x ME x EF x ED x CF)/(BW x AT)
HQ = (C x IF)/RfD

	C	IR	FH	FE	WO	ME	EF	ED	CF	BW	AT	IF	RfD	HQ
Chemical	Concentration on Produce (mg/kg)	Ingestion Rate (mg/day)	Fraction Homegrown	Fraction Exposed	Washoff Factor	Matrix Effect	Exposure Frequency (days/yr)	Exposure Duration (years)	Conversion Factor (kg/mg)	Body Weight (kg)	Averaging Time (days)	Intake Factor (kg/kg-day)	Reference Dose (mg/kg-day)	Hazard Quotient
Bis(2-ethylhexyl)phthalate	4.59E-09	140000	0.2	0.7	0.5	1	150	9	0.000001	70	3285	5.75E-05	2.00E-02	1.32E-11
Chromium	5.46E-07	140000	0.2	0.7	0.5	1	150	9	0.000001	70	3285	5.75E-05	1.00E+00	3.14E-11
													Total Hazard Index	4.46E-11

Nonradionuclide Carcinogen

IF = (IR x FH x FE x WO x ME x EF x ED x CF)/(BW x AT)
CR = C x IF x SF

	C	IR	FH	FE	WO	ME	EF	ED	CF	BW	AT	IF	SF	CR
Chemical	Concentration on Produce (mg/kg)	Ingestion Rate (mg/day)	Fraction Homegrown	Fraction Exposed	Washoff Factor	Matrix Effect	Exposure Frequency (days/yr)	Exposure Duration (years)	Conversion Factor (kg/mg)	Body Weight (kg)	Averaging Time (days)	Intake Factor (kg/kg-day)	Slope Factor 1/(mg/kg-day)	Cancer Risk
Bis(2-ethylhexyl)phthalate	4.59E-09	140000	0.2	0.7	0.5	1	150	9	0.000001	70	25550	7.40E-06	1.40E-02	4.75E-16
													Total Chemical Cancer Risk	4.75E-16

Radionuclides

IF = IR x FC x WO x ME x EF x ED x CF
CR = C x IF x SF

	C	IR	FH	FE	WO	ME	EF	ED	CF	IF	SF	CR
Radionuclide	Concentration on Produce (pCi/g)	Ingestion Rate (mg/day)	Fraction Homegrown	Fraction Exposed	Washoff Factor	Matrix Effect	Exposure Frequency (days/yr)	Exposure Duration (years)	Conversion Factor (g/mg)	Intake Factor (g)	Slope Factor (Risk/pCi)	Cancer Risk
Americium-241	6.01E-08	140000	0.2	0.7	0.5	1	150	9	0.001	1.32E+04	2.40E-10	1.91E-13
Plutonium-239/240	4.27E-07	140000	0.2	0.7	0.5	1	150	9	0.001	1.32E+04	2.30E-10	1.30E-12
											Total Radionuclide Cancer Risk	1.49E-12

Total Cancer Risk 1.49E-12

CURRENT OFFSITE RESIDENT
SOUTHEAST
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RME - Ingestion of fruit with soil deposition

Noncarcinogens

IF = (IR x FC x WO x ME x EF x ED x CF)/(BW x AT)
HQ = (C x IF)/RfD

Chemical	C Concentration on Produce (mg/kg)	IR Ingestion Rate (mg/day)	FH Fraction Homegrown	FE Fraction Exposed	WO Washoff Factor	ME Matrix Effect	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	CF Conversion Factor (kg/mg)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (kg/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
Bis(2-ethylhexyl)phthalate	4.59E-09	140000	0.3	0.7	1	1	350	30	0.000001	70	10950	4.03E-04	2.00E-02	9.24E-11
Chromium	5.46E-07	140000	0.3	0.7	1	1	350	30	0.000001	70	10950	4.03E-04	1.00E+00	2.20E-10
													Total Hazard Index	3.12E-10

Nonradionuclide Carcinogen

IF = (IR x FC x WO x ME x EF x ED x CF)/(BW x AT)
CR = C x IF x SF

Chemical	C Concentration on Produce (mg/kg)	IR Ingestion Rate (mg/day)	FH Fraction Homegrown	FE Fraction Exposed	WO Washoff Factor	ME Matrix Effect	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	CF Conversion Factor (kg/mg)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (kg/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
Bis(2-ethylhexyl)phthalate	4.59E-09	140000	0.3	0.7	1	1	350	30	0.000001	70	25550	1.73E-04	1.40E-02	1.11E-14
													Total Chemical Cancer Risk	1.11E-14

Radionuclides

IF = IR x FC x WO x ME x EF x ED x CF
CR = C x IF x SF

Radionuclide	C Concentration on Produce (pCi/g)	IR Ingestion Rate (mg/day)	FH Fraction Homegrown	FE Fraction Exposed	WO Washoff Factor	ME Matrix Effect	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	CF Conversion Factor (g/mg)	IF Intake Factor (g)	SF Slope Factor (Risk/pCi)	CR Cancer Risk
Americium-241	6.01E-08	140000	0.3	0.7	1	1	350	30	0.001	3.09E+05	2.40E-10	4.45E-12
Plutonium-239/240	4.27E-07	140000	0.3	0.7	1	1	350	30	0.001	3.09E+05	2.30E-10	3.03E-11
											Total Radionuclide Cancer Risk	3.48E-11

Total Cancer Risk 3.48E-11

SUMMARY OF RISK
FUTURE OFFSITE RESIDENT
WALNUT CREEK
AREA OF CONCERN NO. 2

	Central Tendency		Reasonable Maximum	
Pathway	Hazard Index	Cancer Risk	Hazard Index	Cancer Risk
Ingestion of surface soil by an adult*	0.00E+00	-	0.00E+00	-
Ingestion of surface soil by a child*	0.00E+00	-	0.00E+00	-
Carcinogenic effects of soil ingestion*	-	0.00E+00	-	0.00E+00
Inhalation of particulates from surface soil	0.00E+00	2.60E-12	0.00E+00	2.73E-11
Dermal contact with surface soil*	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Ingestion of vegetables with soil deposition*	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Ingestion of fruit with soil deposition*	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Ingestion of surface water	1.52E-06	4.77E-11	2.77E-05	2.89E-09
Dermal contact with surface water	8.36E-05	7.64E-09	5.95E-04	1.81E-07
Total	8.51E-05	7.69E-09	6.23E-04	1.84E-07

* Windborne contaminants from AOC No. 2 are not deposited in significant concentrations at this location.

FUTURE OFFSITE RESIDENT
WALNUT CREEK
AREA OF CONCERN NO. 2

CT Inhalation of Particulates - Radionuclides

IF = IR x ET x EF x ED x DF
CR = IF x C x SF

	C	IR	ET	EF	ED	DF	IF	SF	CR
Radionuclides	Air Concentration (pCi/m^3)	Inhalation Rate (m^3/hr)	Exposure Time (hr/day)	Exposure Frequency (days/yr)	Exposure Duration (years)	Deposition Factor	Intake Factor (m^3)	Slope Factor (Risk/pCi)	Cancer Risk
Americium-241	4.33E-10	0.63	15	234	9	1	1.99E+04	3.20E-08	2.76E-13
Plutonium-239/240	3.07E-09	0.63	15	234	9	1	1.99E+04	3.80E-08	2.32E-12
								Total Radionuclide Cancer Risk	2.60E-12
								Total Cancer Risk	2.60E-12

RME Inhalation of Particulates - Radionuclides

IF = IR x ET x EF x ED x DF
CR = IF x C x SF

	C	IR	ET	EF	ED	DF	IF	SF	CR
Radionuclides	Air Concentration (pCi/m^3)	Inhalation Rate (m^3/hr)	Exposure Time (hr/day)	Exposure Frequency (days/yr)	Exposure Duration (years)	Deposition Factor	Intake Factor (m^3)	Slope Factor (Risk/pCi)	Cancer Risk
Americium-241	4.33E-10	0.83	24	350	30	1	2.09E+05	3.20E-08	2.90E-12
Plutonium-239/240	3.07E-09	0.83	24	350	30	1	2.09E+05	3.80E-08	2.44E-11
								Total Radionuclide Cancer Risk	2.73E-11
								Total Cancer Risk	2.73E-11

FUTURE OFI E RESIDENT
WALNU Y CREEK
AREA OF CONCERN NO. 2

CT - Ingestion of surface water - Walnut Creek

Noncarcinogens

$$IF = (IR \times ET \times EF \times ED)/(BW \times AT)$$
$$HQ = (C \times IF)/RfD$$

	C	IR	ET	EF	ED	BW	AT	IF	RfD	HQ
Chemical	Surface Water Concentration (mg/l)	Ingestion Rate (l/hr)	Exposure Time (hr/day)	Exposure Frequency (days/yr)	Exposure Duration (years)	Body Weight (kg)	Averaging Time (days)	Intake Factor (l/kg-day)	Reference Dose (mg/kg-day)	Hazard Quotient
1,1-Dichloroethene	5.00E-06	0.01	1	5	9	70	3285	1.96E-06	9.00E-03	1.09E-09
Carbon Tetrachloride	4.81E-04	0.01	1	5	9	70	3285	1.96E-06	7.00E-04	1.34E-06
Chloroform	9.30E-05	0.01	1	5	9	70	3285	1.96E-06	1.00E-02	1.82E-08
Methylene Chloride	3.80E-05	0.01	1	5	9	70	3285	1.96E-06	6.00E-02	1.24E-09
Tetrachloroethene	8.03E-04	0.01	1	5	9	70	3285	1.96E-06	1.00E-02	1.57E-07
									Total Hazard Index	1.52E-06

FUTURE OFFSITE RESIDENT
WALNUT CREEK
AREA OF CONCERN NO. 2

CT - Ingestion of surface water - Walnut Creek

Nonradionuclide carcinogens

IF = (IR x ET x EF x ED)/(BW x AT)
CR = C x IF x SF

	C	IR	ET	EF	ED	BW	AT	IF	SF	CR
Chemical	Surface Water Concentration (mg/l)	Ingestion Rate (l/hr)	Exposure Time (hr/day)	Exposure Frequency (days/yr)	Exposure Duration (years)	Body Weight (kg)	Averaging Time (days)	Intake Factor (l/kg-day)	Slope Factor 1/(mg/kg-day)	Cancer Risk
1,1-Dichloroethene	5.00E-06	0.01	1	5	9	70	25550	2.52E-07	6.00E-01	7.55E-13
Carbon Tetrachloride	4.81E-04	0.01	1	5	9	70	25550	2.52E-07	1.30E-01	1.57E-11
Chloroform	9.30E-05	0.01	1	5	9	70	25550	2.52E-07	6.10E-03	1.43E-13
Methylene Chloride	3.80E-05	0.01	1	5	9	70	25550	2.52E-07	7.50E-03	7.17E-14
Tetrachloroethene	8.03E-04	0.01	1	5	9	70	25550	2.52E-07	5.20E-02	1.05E-11
Trichloroethene	6.24E-03	0.01	1	5	9	70	25550	2.52E-07	1.10E-02	1.73E-11
								Total Chemical Cancer Risk		4.45E-11

Radionuclides

IF = IR x ET x EF x ED
CR = C x IF x SF

	C	IR	ET	EF	ED	IF	SF	CR
Radionuclide	Surface Water Concentration (pCi/l)	Ingestion Rate (l/hr)	Exposure Time (hr/day)	Exposure Frequency (days/yr)	Exposure Duration (years)	Intake Factor (l)	Slope Factor (Risk/pCi)	Cancer Risk
Americium-241	5.00E-03	0.01	1	5	9	4.50E-01	2.40E-10	5.40E-13
Plutonium-239/240	2.60E-02	0.01	1	5	9	4.50E-01	2.30E-10	2.69E-12
						Total Radionuclide Cancer Risk		3.23E-12
							Total Cancer Risk	4.77E-11

FUTURE OFF[illegible]E RESIDENT
WALNUT CREEK
AREA OF CONCERN NO. 2

RME - Ingestion of surface water - Walnut Creek

Noncarcinogens

$$IF = (IR \times ET \times EF \times ED)/(BW \times AT)$$
$$HQ = (C \times IF)/RfD$$

Chemical	C Surface Water Concentration (mg/l)	IR Ingestion Rate (l/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
1,1-Dichloroethene	5.00E-06	0.05	2.6	7	30	70	10950	3.56E-05	9.00E-03	1.98E-08
Carbon Tetrachloride	4.81E-04	0.05	2.6	7	30	70	10950	3.56E-05	7.00E-04	2.45E-05
Chloroform	9.30E-05	0.05	2.6	7	30	70	10950	3.56E-05	1.00E-02	3.31E-07
Methylene Chloride	3.80E-05	0.05	2.6	7	30	70	10950	3.56E-05	6.00E-02	2.26E-08
Tetrachloroethene	8.03E-04	0.05	2.6	7	30	70	10950	3.56E-05	1.00E-02	2.86E-06
									Total Hazard Index	2.77E-05

FUTURE OFFSITE RESIDENT
WALNUT CREEK
AREA OF CONCERN NO. 2

RME - Ingestion of surface water - Walnut Creek

Nonradionuclide carcinogens

IF = (IR x ET x EF x ED)/(BW x AT)
CR = C x IF x SF

Chemical	C Surface Water Concentration (mg/l)	IR Ingestion Rate (l/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
1,1-Dichloroethene	5.00E-06	0.05	2.6	7	30	70	25550	1.53E-05	6.00E-01	4.58E-11
Carbon Tetrachloride	4.81E-04	0.05	2.6	7	30	70	25550	1.53E-05	1.30E-01	9.54E-10
Chloroform	9.30E-05	0.05	2.6	7	30	70	25550	1.53E-05	6.10E-03	8.66E-12
Methylene Chloride	3.80E-05	0.05	2.6	7	30	70	25550	1.53E-05	7.50E-03	4.35E-12
Tetrachloroethene	8.03E-04	0.05	2.6	7	30	70	25550	1.53E-05	5.20E-02	6.37E-10
Trichloroethene	6.24E-03	0.05	2.6	7	30	70	25550	1.53E-05	1.10E-02	1.05E-09
								Total Chemical Cancer Risk		2.70E-09

Radionuclides

IF = IR x ET x EF x ED
CR = C x IF x SF

Radionuclide	C Surface Water Concentration (pCi/l)	IR Ingestion Rate (l/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	IF Intake Factor (l)	SF Slope Factor (Risk/pCi)	CR Cancer Risk
Americium-241	5.00E-03	0.05	2.6	7	30	2.73E+01	2.40E-10	3.28E-11
Plutonium-239/240	2.60E-02	0.05	2.6	7	30	2.73E+01	2.30E-10	1.63E-10
						Total Radionuclide Cancer Risk		1.96E-10

Total Cancer Risk 2.89E-09

FUTURE OFI E RESIDENT
WALNUT CREEK
AREA OF CONCERN NO. 2

CT - Dermal contact with surface water - Walnut Creek

Noncarcinogens

IF = (SA x DP x ET x EF x ED x CF)/(BW x AT)
HQ = (C x IF)/RfD

Chemical	C Surface Water Concentration (mg/l)	SA Skin Surface Area (cm^2)	DP Dermal Permeability (cm/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (day/yr)	ED Exposure Duration (years)	CF Conversion Factor (l/cm^3)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
1,1-Dichloroethene	5.00E-06	9275	0.016	1	5	9	0.001	70	3285	2.90E-05	9.00E-03	1.61E-08
Carbon Tetrachloride	4.81E-04	9275	0.022	1	5	9	0.001	70	3285	3.99E-05	7.00E-04	2.74E-05
Chloroform	9.30E-05	9275	0.13	1	5	9	0.001	70	3285	2.36E-04	1.00E-02	2.19E-06
Methylene Chloride	3.80E-05	9275	0.0045	1	5	9	0.001	70	3285	8.17E-06	6.00E-02	5.17E-09
Tetrachloroethene	8.03E-04	9275	0.37	1	5	9	0.001	70	3285	6.72E-04	1.00E-02	5.39E-05
											Total Hazard Index	8.36E-05

Nonradionuclide carcinogens

IF = (SA x DP x ET x EF x ED x CF)/(BW x AT)
CR = C x IF x SF

Chemical	C Surface Water Concentration (mg/l)	SA Skin Surface Area (cm^2)	DP Dermal Permeability (cm/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (day/yr)	ED Exposure Duration (years)	CF Conversion Factor (l/cm^3)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
1,1-Dichloroethene	5.00E-06	9275	0.016	1	5	9	0.001	70	25550	3.73E-06	6.00E-01	1.12E-11
Carbon Tetrachloride	4.81E-04	9275	0.022	1	5	9	0.001	70	25550	5.13E-06	1.30E-01	3.21E-10
Chloroform	9.30E-05	9275	0.13	1	5	9	0.001	70	25550	3.03E-05	6.10E-03	1.72E-11
Methylene Chloride	3.80E-05	9275	0.0045	1	5	9	0.001	70	25550	1.05E-06	7.50E-03	2.99E-13
Tetrachloroethene	8.03E-04	9275	0.37	1	5	9	0.001	70	25550	8.63E-05	5.20E-02	3.61E-09
Trichloroethene	6.24E-03	9275	0.23	1	5	9	0.001	70	25550	5.37E-05	1.10E-02	3.68E-09
											Total Cancer Risk	7.64E-09

FUTURE OFFSITE RESIDENT
WALNUT CREEK
AREA OF CONCERN NO. 2

RME - Dermal contact with surface water - Walnut Creek

Noncarcinogens

IF = (SA x DP x ET x EF x ED x CF)/(BW x AT)
HQ = (C x IF)/RfD

Chemical	C Surface Water Concentration (mg/l)	SA Skin Surface Area (cm^2)	DP Dermal Permeability (cm/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (day/yr)	ED Exposure Duration (years)	CF Conversion Factor (l/cm^3)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
1,1-Dichloroethene	5.00E-06	18150	0.016	2.6	7	30	0.001	70	10950	2.07E-04	9.00E-03	1.15E-07
Carbon Tetrachloride	4.81E-04	18150	0.022	2.6	7	30	0.001	70	10950	2.84E-04	7.00E-04	1.95E-04
Chloroform	9.30E-05	18150	0.13	2.6	7	30	0.001	70	10950	1.68E-03	1.00E-02	1.56E-05
Methylene Chloride	3.80E-05	18150	0.0045	2.6	7	30	0.001	70	10950	5.82E-05	6.00E-02	3.68E-08
Tetrachloroethene	8.03E-04	18150	0.37	2.6	7	30	0.001	70	10950	4.78E-03	1.00E-02	3.84E-04
											Total Hazard Index	5.95E-04

Nonradionuclide carcinogens

IF = (SA x DP x ET x EF x ED x CF)/(BW x AT)
CR = C x IF x SF

Chemical	C Surface Water Concentration (mg/l)	SA Skin Surface Area (cm^2)	DP Dermal Permeability (cm/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (day/yr)	ED Exposure Duration (years)	CF Conversion Factor (l/cm^3)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
1,1-Dichloroethene	5.00E-06	18150	0.016	2.6	7	30	0.001	70	25550	8.87E-05	6.00E-01	2.66E-10
Carbon Tetrachloride	4.81E-04	18150	0.022	2.6	7	30	0.001	70	25550	1.22E-04	1.30E-01	7.62E-09
Chloroform	9.30E-05	18150	0.13	2.6	7	30	0.001	70	25550	7.20E-04	6.10E-03	4.09E-10
Methylene Chloride	3.80E-05	18150	0.0045	2.6	7	30	0.001	70	25550	2.49E-05	7.50E-03	7.11E-12
Tetrachloroethene	8.03E-04	18150	0.37	2.6	7	30	0.001	70	25550	2.05E-03	5.20E-02	8.56E-08
Trichloroethene	6.24E-03	18150	0.23	2.6	7	30	0.001	70	25550	1.27E-03	1.10E-02	8.75E-08
											Total Cancer Risk	1.81E-07

SUMMARY OF RISK
FUTURE OFFSITE RESIDENT
WOMAN CREEK
AREA OF CONCERN NO. 2

	Central Tendency		Reasonable Maximum	
Pathway	Hazard Index	Cancer Risk	Hazard Index	Cancer Risk
Ingestion of surface soil by an adult	2.76E-12	-	1.29E-11	-
Ingestion of surface soil by a child	3.30E-11	-	1.20E-10	-
Carcinogenic effects of soil ingestion	-	1.24E-13	-	1.73E-12
Inhalation of particulates from surface soil	-	3.21E-11	-	3.37E-10
Dermal contact with surface soil*	6.53E-14	2.35E-18	2.02E-12	2.43E-16
Ingestion of vegetables with soil deposition	3.41E-11	1.14E-12	2.55E-10	2.84E-11
Ingestion of fruit with soil deposition	4.46E-11	1.49E-12	3.12E-10	3.48E-11
Ingestion of surface water	8.01E-07	2.66E-10	1.46E-05	1.61E-08
Dermal contact with surface water	2.78E-05	1.29E-09	1.98E-04	3.06E-08
Total	2.86E-05	1.59E-09	2.13E-04	4.71E-08

* Dermal contact with metals (except mercury) and radionuclides is considered insignificant.

FUTURE OFFSITE RESIDENT
WOMAN CREEK
AREA OF CONCERN NO. 2

CT - Adult soil ingestion

Noncarcinogens

IF =(IR-A x ED-A x FC-A x EF x ME x CF)/(BW-A x AT)
HQ = (C x IF)/RfD

	C	IR-A	ED-A	FC-A	CF	ME	EF	BW-A	AT	IF	RfD	HQ
Chemical	Soil Concentration (mg/kg)	Ingestion Rate (mg/day)	Exposure Duration (years)	Fraction Contaminated	Conversion Factor (kg/mg)	Matrix Effect	Exposure Frequency (days/yr)	Body Weight (kg)	Averaging Time (days)	Intake Factor (kg/kg-day)	Reference Dose (mg/kg-day)	Hazard Quotient
Bis(2-ethylhexyl)phthalate	5.57E-08	50	7	0.64	0.000001	1	234	70	2555	2.93E-07	2.00E-02	8.16E-13
Chromium	6.63E-06	50	7	0.64	0.000001	1	234	70	2555	2.93E-07	1.00E+00	1.94E-12
											Total Hazard Index	2.76E-12

RME - Adult soil ingestion

Noncarcinogens

IF = (IR-A x ED-A x FC-A x EF x ME x CF)/(BW-A x AT-A)
HQ = (C x IF)/RfD

	C	IR-A	ED-A	FC-A	ME	EF	CF	BW-A	AT	IF	RfD	HQ
Chemical	Soil Concentration (mg/kg)	Ingestion Rate (mg/day)	Exposure Duration (years)	Fraction Contaminated	Matrix Effect	Exposure requenc (days/yr)	Conversion Factor (kg/mg)	Body Weight (kg)	Averaging Time (days)	Intake Factor (kg/kg-day)	Reference Dose (mg/kg-day)	Hazard Quotient
Bis(2-ethylhexyl)phthalate	5.57E-08	100	24	1	1	350	0.000001	70	8760	1.37E-06	2.00E-02	3.82E-12
Chromium	6.63E-06	100	24	1	1	350	0.000001	70	8760	1.37E-06	1.00E+00	9.08E-12
											Total Hazard Index	1.29E-11

FUTURE OF. E RESIDENT
WOMAN CREEK
AREA OF CONCERN NO. 2

CT - Child soil ingestion

Noncarcinogens

IF = (IR-C x ED-C x FC-C x EF x ME x CF)/(BW-C x AT-C)
HQ = (C x IF)/RfD

Chemical	C Soil Concentration (mg/kg)	IR-C Ingestion Rate (mg/day)	ED-C Exposure Duration (years)	FC-C Fraction Contaminated	CF Conversion Factor (kg/mg)	ME Matrix Effect	EF Exposure Frequency (days/yr)	BW-C Body Weight (kg)	AT-C Averaging Time (days)	IF Intake Factor (kg/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
Bis(2-ethylhexyl)phthalate	5.57E-08	100	2	0.82	0.000001	1	234	15	730	3.50E-06	2.00E-02	9.76E-12
Chromium	6.63E-06	100	2	0.82	0.000001	1	234	15	730	3.50E-06	1.00E+00	2.32E-11
											Total Hazard Index	3.30E-11

RME - Child soil ingestion

Noncarcinogens

IF =(IR-C x ED-C x FC-C x EF x ME x CF)/BW-C x AT-C
HQ = (C x IF)/RfD

Chemical	C Soil Concentration (mg/kg)	IR-C Ingestion Rate (mg/day)	ED-C Exposure Duration (years)	FC-C Fraction Contaminated	CF Conversion Factor (kg/mg)	ME Matrix Effect	EF Exposure Frequency (days/yr)	BW-C Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (kg/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
Bis(2-ethylhexyl)phthalate	5.57E-08	200	6	1	0.000001	1	350	15	2190	1.28E-05	2.00E-02	3.56E-11
Chromium	6.63E-06	200	6	1	0.000001	1	350	15	2190	1.28E-05	1.00E+00	8.48E-11
											Total Hazard Index	1.20E-10

FUTURE OFFSITE RESIDENT
WOMAN CREEK
AREA OF CONCERN NO. 2

CT - Time-weighted average soil ingestion

Nonradionuclide Carcinogens

$$IF = ([(IR\text{-}C \times ED\text{-}C \times FC\text{-}C)/(BW\text{-}C) + (IR\text{-}A \times ED\text{-}A \times FC\text{-}A)/(BW\text{-}A)] \times EF \times ME \times CF)/AT$$

$$CR = C \times IF \times SF$$

	C	IR-C	ED-C	FC-C	BW-C	IR-A	ED-A	FC-A	BW-A
		Child				Adult			
Chemical	Soil Concentration (mg/kg)	Ingestion Rate (mg/day)	Exposure Duration (years)	Fraction Contaminated	Body Weight (kg)	Ingestion Rate (mg/day)	Exposure Duration (years)	Fraction Contaminated	Body Weight (kg)
Bis(2-ethylhexyl)phthalate	5.57E-08	100	2	0.82	15	50	7	0.64	70

	CF	ME	EF	AT	IF	SF	CR
Chemical	Conversion Factor (kg/mg)	Matrix Effect	Exposure Frequency (days/yr)	Averaging Time (days)	Intake Factor (kg/kg-day)	Slope Factor (mg/kg-day)	Cancer Risk
Bis(2-ethylhexyl)phthalate	0.000001	1	234	25550	1.29E-07	1.40E-02	1.01E-16
					Total Chemical Cancer Risk		1.01E-16

FUTURE OF. . /E RESIDENT
WOMAN CREEK
AREA OF CONCERN NO. 2

CT - Time-weighted average soil ingestion

Radionuclides

$$IF = [(IR\text{-}C \times ED\text{-}C \times FC\text{-}C) + (IR\text{-}A \times ED\text{-}A \times FC\text{-}A)] \times EF \times ME \times CF$$
$$CR = C \times IF \times SF$$

	C	IR-C	ED-C	FC-C	IR-A	ED-A	FC-A	ME	CF
		Child			Adult				
Chemical	Soil Concentration (pCi/g)	Ingestion Rate (mg/day)	Exposure Duration (years)	Fraction Contaminated	Ingestion Rate (mg/day)	Exposure Duration (years)	Fraction Contaminated	Matrix Effect	Conversion Factor (g/mg)
Americium-241	7.30E-07	100	2	0.82	50	7	0.64	1	0.001
Plutonium-239/240	5.19E-06	100	2	0.82	50	7	0.64	1	0.001

	EF	IF	SF	CR
Chemical	Exposure Frequency (days/yr)	Intake Factor (g)	Slope Factor (Risk/pCi)	Cancer Risk
Americium-241	234	9.08E+01	2.40E-10	1.59E-14
Plutonium-239/240	234	9.08E+01	2.30E-10	1.08E-13
		Total Radionuclide Cancer Risk		1.24E-13

Total Cancer Risk 1.24E-13

FUTURE OFFSITE RESIDENT
WOMAN CREEK
AREA OF CONCERN NO. 2

RME - Time-weighted average soil ingestion

Nonradionuclide Carcinogens

$$IF = ([(IR\text{-}C \times ED\text{-}C \times FC\text{-}C)/(BW\text{-}C) + (IR\text{-}A \times ED\text{-}A \times FC\text{-}A)/(BW\text{-}A)] \times EF \times ME \times CF)/AT$$

$$CR = C \times IF \times SF$$

	C	IR-C	ED-C	FC-C	BW-C	IR-A	ED-A	FC-A	BW-A
		Child				Adult			
Chemical	Soil Concentration (mg/kg)	Ingestion Rate (mg/day)	Exposure Duration (years)	Fraction Contaminated	Body Weight (kg)	Ingestion Rate (mg/day)	Exposure Duration (years)	Fraction Contaminated	Body Weight (kg)
Bis(2-ethylhexyl)phthalate	5.57E-08	200	6	1	15	100	24	1	70

	CF	ME	EF	AT	IF	SF	CR
Chemical	Conversion Factor (kg/mg)	Matrix Effect	Exposure Frequency (days/yr)	Averaging Time (days)	Intake Factor (kg/kg-day)	Slope Factor (mg/kg-day)	Cancer Risk
Bis(2-ethylhexyl)phthalate	0.000001	1	350	25550	1.57E-06	1.40E-02	1.22E-15
					Total Chemical Cancer Risk		1.22E-15

FUTURE OF E RESIDENT
WOMAN CREEK
AREA OF CONCERN NO. 2

RME - Time-weighted average soil ingestion

Radionuclides

$$IF = [(IR\text{-}C \times ED\text{-}C \times FC\text{-}C) + (IR\text{-}A \times ED\text{-}A \times FC\text{-}A)] \times EF \times ME \times CF$$

$$CR = C \times IF \times SF$$

	C	IR-C	ED-C	FC-C	IR-A	ED-A	FC-A	ME	CF
		Child			Adult				
Radionuclide	Soil Concentration (pCi/g)	Ingestion Rate (mg/day)	Exposure Duration (years)	Fraction Contaminated	Ingestion Rate (mg/day)	Exposure Duration (years)	Fraction Contaminated	Matrix Effect	Conversion Factor (g/mg)
Americium-241	7.30E-07	200	6	1	100	24	1	1	0.001
Plutonium-239/240	5.19E-06	200	6	1	100	24	1	1	0.001

	EF	IF	SF	CR
Radionuclide	Exposure Frequency (days/yr)	Intake Factor (g)	Slope Factor (Risk/pCi)	Cancer Risk
Americium-241	350	1.26E+03	2.40E-10	2.21E-13
Plutonium-239/240	350	1.26E+03	2.30E-10	1.50E-12
		Total Radionuclide Cancer Risk		1.72E-12
		Total Cancer Risk		1.73E-12

FUTURE OFFSITE RESIDENT
WOMAN CREEK
AREA OF CONCERN NO. 2

CT Inhalation of Particulates - Radionuclides

IF = IR x ET x EF x ED x DF
CR = IF x C x SF

	C	IR	ET	EF	ED	DF	IF	SF	CR
Radionuclides	Air Concentration (pCi/m^3)	Inhalation Rate (m^3/hr)	Exposure Time (hr/day)	Exposure Frequency (days/yr)	Exposure Duration (years)	Deposition Factor	Intake Factor (m^3)	Slope Factor (Risk/pCi)	Cancer Risk
Americium-241	5.32E-09	0.63	15	234	9	1	1.99E+04	3.20E-08	3.39E-12
Plutonium-239/240	3.79E-08	0.63	15	234	9	1	1.99E+04	3.80E-08	2.87E-11
								Total Radionuclide Cancer Risk	3.21E-11
								Total Cancer Risk	3.21E-11

RME Inhalation of Particulates - Radionuclides

IF = IR x ET x EF x ED x DF
CR = IF x C x SF

	C	IR	ET	EF	ED	DF	IF	SF	CR
Radionuclides	Air Concentration (pCi/m^3)	Inhalation Rate (m^3/hr)	Exposure Time (hr/day)	Exposure Frequency (days/yr)	Exposure Duration (years)	Deposition Factor	Intake Factor (m^3)	Slope Factor (Risk/pCi)	Cancer Risk
Americium-241	5.32E-09	0.83	24	350	30	1	2.09E+05	3.20E-08	3.56E-11
Plutonium-239/240	3.79E-08	0.83	24	350	30	1	2.09E+05	3.80E-08	3.01E-10
								Total Radionuclide Cancer Risk	3.37E-10
								Total Cancer Risk	3.37E-10

FUTURE OF E RESIDENT
WOMAN CREEK
AREA OF CONCERN NO. 2

CT- Dermal contact with surface soil

Noncarcinogens

IF = (SA x FC x EF x ED x AF x AB x CF)/(BW x AT)
HQ = (C x IF)/RfD

Chemical	C Soil Concentration (mg/kg)	SA Skin Surface Area (cm^2)	FC Fraction Contaminated	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	AF Soil Adherence (mg/cm^2)	AB Skin Absorption	CF Conversion Factor (kg/mg)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (kg/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
Bis(2-ethylhexyl)phthalate	5.57E-08	2000	0.64	234	9	0.2	0.01	0.000001	70	3285	2.34E-08	2.00E-02	6.53E-14
											Total Hazard Index		6.53E-14

Nonradionuclide Carcinogens

IF = (SA x FC x EF x ED x AF x AB x CF)/(BW x AT)
CR = C x IF x SF

Chemical	C Soil Concentration (mg/kg)	SA Skin Surface Area (cm^2)	FC Fraction Contaminated	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	AF Soil Adherence (mg/cm^2)	AB Skin Absorption	CF Conversion Factor (kg/mg)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (kg/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
Bis(2-ethylhexyl)phthalate	5.57E-08	2000	0.64	234	9	0.2	0.01	0.000001	70	25550	3.01E-09	1.40E-02	2.35E-18
											Total Cancer Risk		2.35E-18

FUTURE OFFSITE RESIDENT
WOMAN CREEK
AREA OF CONCERN NO. 2

RME- Dermal contact with surface soil

Noncarcinogens

IF = (SA x FC x EF x ED x AF x AB x CF)/(BW x AT)

HQ = (C x IF)/RfD

Chemical	C Soil Concentration (mg/kg)	SA Skin Surface Area (cm^2)	FC Fraction Contaminated	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	AF Soil Adherence (mg/cm^2)	AB Skin Absorption	CF Conversion Factor (kg/mg)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (kg/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
Bis(2-ethylhexyl)phthalate	*5.57E-08*	*5300*	*1*	*350*	*30*	*1*	*0.01*	*0.000001*	*70*	*10950*	*7.26E-07*	*2.00E-02*	2.02E-12
											Total Hazard Index		2.02E-12

Nonradionuclide Carcinogens

IF = (SA x FC x EF x ED x AF x AB x CF)/(BW x AT)

CR = C x IF x SF

Chemical	C Soil Concentration (mg/kg)	SA Skin Surface Area (cm^2)	FC Fraction Contaminated	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	AF Soil Adherence (mg/cm^2)	AB Skin Absorption	CF Conversion Factor (kg/mg)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (kg/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
Bis(2-ethylhexyl)phthalate	5.57E-08	5300	1	350	30	1	0.01	0.000001	70	25550	3.11E-07	1.40E-02	2.43E-16
											Total Cancer Risk		2.43E-16

FUTURE OFF. : RESIDENT
WOMAN CREEK
AREA OF CONCERN NO. 2

CT - Ingestion of vegetables with soil deposition

Noncarcinogens

IF = (IR x FH x FE x WO x ME x EF x ED x CF)/(BW x AT)
HQ = (C x IF)/RfD

	C	IR	FH	FE	WO	ME	EF	ED	CF	BW	AT	IF	RfD	HQ
Chemical	Concentration on Produce (mg/kg)	Ingestion Rate (mg/day)	Fraction Homegrown	Fraction Exposed	Washoff Factor	Matrix Effect	Exposure Frequency (days/yr)	Exposure Duration (years)	Conversion Factor (kg/mg)	Body Weight (kg)	Averaging Time (days)	Intake Factor (kg/kg-day)	Reference Dose (mg/kg-day)	Hazard Quotient
Bis(2-ethylhexyl)phthalate	4.59E-09	200000	0.25	0.3	0.5	1	150	9	0.000001	70	3285	4.40E-05	2.00E-02	1.01E-11
Chromium	5.46E-07	200000	0.25	0.3	0.5	1	150	9	0.000001	70	3285	4.40E-05	1.00E+00	2.40E-11
													Total Hazard Index	3.41E-11

Nonradionuclide Carcinogen

IF = (IR x FH x FE x WO x ME x EF x ED x CF)/(BW x AT)
CR = C x IF x SF

	C	IR	FH	FE	WO	ME	EF	ED	CF	BW	AT	IF	SF	CR
Chemical	Concentration on Produce (mg/kg)	Ingestion Rate (mg/day)	Fraction Homegrown	Fraction Exposed	Washoff Factor	Matrix Effect	Exposure Frequency (days/yr)	Exposure Duration (years)	Conversion Factor (kg/mg)	Body Weight (kg)	Averaging Time (days)	Intake Factor (kg/kg-day)	Slope Factor 1/(mg/kg-day)	Cancer Risk
Bis(2-ethylhexyl)phthalate	4.59E-09	200000	0.25	0.3	0.5	1	150	9	0.000001	70	25550	5.66E-06	1.40E-02	3.64E-16
													Total Chemical Cancer Risk	3.64E-16

Radionuclides

IF = IR x FC x WO x ME x EF x ED x CF
CR = C x IF x SF

	C	IR	FH	FE	WO	ME	EF	ED	CF	IF	SF	CR
Radionuclide	Concentration on Produce (pCi/g)	Ingestion Rate (mg/day)	Fraction Homegrown	Fraction Exposed	Washoff Factor	Matrix Effect	Exposure Frequency (days/yr)	Exposure Duration (years)	Conversion Factor (g/mg)	Intake Factor (g)	Slope Factor (Risk/pCi)	Cancer Risk
Americium-241	6.01E-08	200000	0.25	0.3	0.5	1	150	9	0.001	1.01E+04	2.40E-10	1.46E-13
Plutonium-239/240	4.27E-07	200000	0.25	0.3	0.5	1	150	9	0.001	1.01E+04	2.30E-10	9.94E-13
											Total Radionuclide Cancer Risk	1.14E-12

Total Cancer Risk 1.14E-12

FUTURE OFFSITE RESIDENT
WOMAN CREEK
AREA OF CONCERN NO. 2

RME - Ingestion of vegetables with soil deposition

Noncarcinogens

IF = (IR x FC x WO x ME x EF x ED x CF)/(BW x AT)
HQ = (C x IF)/RfD

	C	IR	FH	FE	WO	ME	EF	ED	CF	BW	AT	IF	RfD	HQ
Chemical	Concentration on Produce (mg/kg)	Ingestion Rate (mg/day)	Fraction Homegrown	Fraction Exposed	Washoff Factor	Matrix Effect	Exposure Frequency (days/yr)	Exposure Duration (years)	Conversion Factor (kg/mg)	Body Weight (kg)	Averaging Time (days)	Intake Factor (kg/kg-day)	Reference Dose (mg/kg-day)	Hazard Quotient
Bis(2-ethylhexyl)phthalate	4.59E-09	200000	0.4	0.3	1	1	350	30	0.000001	70	10950	3.29E-04	2.00E-02	7.55E-11
Chromium	5.46E-07	200000	0.4	0.3	1	1	350	30	0.000001	70	10950	3.29E-04	1.00E+00	1.80E-10
													Total Hazard Index	2.55E-10

Nonradionuclide Carcinogen

IF = (IR x FC x WO x ME x EF x ED x CF)/(BW x AT)
CR = C x IF x SF

	C	IR	FH	FE	WO	ME	EF	ED	CF	BW	AT	IF	SF	CR
Chemical	Concentration on Produce (mg/kg)	Ingestion Rate (mg/day)	Fraction Homegrown	Fraction Exposed	Washoff Factor	Matrix Effect	Exposure Frequency (days/yr)	Exposure Duration (years)	Conversion Factor (kg/mg)	Body Weight (kg)	Averaging Time (days)	Intake Factor (kg/kg-day)	Slope Factor 1/(mg/kg-day)	Cancer Risk
Bis(2-ethylhexyl)phthalate	4.59E-09	200000	0.4	0.3	1	1	350	30	0.000001	70	25550	1.41E-04	1.40E-02	9.05E-15
													Total Chemical Cancer Risk	9.05E-15

Radionuclides

IF = IR x FC x WO x ME x EF x ED x CF
CR = C x IF x SF

	C	IR	FH	FE	WO	ME	EF	ED	CF	IF	SF	CR
Radionuclide	Concentration on Produce (pCi/g)	Ingestion Rate (mg/day)	Fraction Homegrown	Fraction Exposed	Washoff Factor	Matrix Effect	Exposure Frequency (days/yr)	Exposure Duration (years)	Conversion Factor (g/mg)	Intake Factor (g)	Slope Factor (Risk/pCi)	Cancer Risk
Americium-241	6.01E-08	200000	0.4	0.3	1	1	350	30	0.001	2.52E+05	2.40E-10	3.63E-12
Plutonium-239/240	4.27E-07	200000	0.4	0.3	1	1	350	30	0.001	2.52E+05	2.30E-10	2.47E-11
											Total Radionuclide Cancer Risk	2.84E-11

Total Cancer Risk 2.84E-11

FUTURE OFF[illegible]E RESIDENT
WOMAN CREEK
AREA OF CONCERN NO. 2

CT - Ingestion of fruit with soil deposition

Noncarcinogens

IF = (IR x FH x FE x WO x ME x EF x ED x CF)/(BW x AT)
HQ = (C x IF)/RfD

Chemical	C Concentration on Produce (mg/kg)	IR Ingestion Rate (mg/day)	FH Fraction Homegrown	FE Fraction Exposed	WO Washoff Factor	ME Matrix Effect	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	CF Conversion Factor (kg/mg)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (kg/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
Bis(2-ethylhexyl)phthalate	4.59E-09	140000	0.2	0.7	0.5	1	150	9	0.000001	70	3285	5.75E-05	2.00E-02	1.32E-11
Chromium	5.46E-07	140000	0.2	0.7	0.5	1	150	9	0.000001	70	3285	5.75E-05	1.00E+00	3.14E-11
													Total Hazard Index	4.46E-11

Nonradionuclide Carcinogen

IF = (IR x FH x FE x WO x ME x EF x ED x CF)/(BW x AT)
CR = C x IF x SF

Chemical	C Concentration on Produce (mg/kg)	IR Ingestion Rate (mg/day)	FH Fraction Homegrown	FE Fraction Exposed	WO Washoff Factor	ME Matrix Effect	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	CF Conversion Factor (kg/mg)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (kg/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
Bis(2-ethylhexyl)phthalate	4.59E-09	140000	0.2	0.7	0.5	1	150	9	0.000001	70	25550	7.40E-06	1.40E-02	4.75E-16
													Total Chemical Cancer Risk	4.75E-16

Radionuclides

IF = IR x FC x WO x ME x EF x ED x CF
CR = C x IF x SF

Radionuclide	C Concentration on Produce (pCi/g)	IR Ingestion Rate (mg/day)	FH Fraction Homegrown	FE Fraction Exposed	WO Washoff Factor	ME Matrix Effect	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	CF Conversion Factor (g/mg)	IF Intake Factor (g)	SF Slope Factor (Risk/pCi)	CR Cancer Risk
Americium-241	6.01E-08	140000	0.2	0.7	0.5	1	150	9	0.001	1.32E+04	2.40E-10	1.91E-13
Plutonium-239/240	4.27E-07	140000	0.2	0.7	0.5	1	150	9	0.001	1.32E+04	2.30E-10	1.30E-12
											Total Radionuclide Cancer Risk	1.49E-12

Total Cancer Risk 1.49E-12

FUTURE OFFSITE RESIDENT
WOMAN CREEK
AREA OF CONCERN NO. 2

RME - Ingestion of fruit with soil deposition

Noncarcinogens

IF = (IR x FC x WO x ME x EF x ED x CF)/(BW x AT)
HQ = (C x IF)/RfD

Chemical	C Concentration on Produce (mg/kg)	IR Ingestion Rate (mg/day)	FH Fraction Homegrown	FE Fraction Exposed	WO Washoff Factor	ME Matrix Effect	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	CF Conversion Factor (kg/mg)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (kg/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
Bis(2-ethylhexyl)phthalate	4.59E-09	140000	0.3	0.7	1	1	350	30	0.000001	70	10950	4.03E-04	2.00E-02	9.24E-11
Chromium	5.46E-07	140000	0.3	0.7	1	1	350	30	0.000001	70	10950	4.03E-04	1.00E+00	2.20E-10
													Total Hazard Index	3.12E-10

Nonradionuclide Carcinogen

IF = (IR x FC x WO x ME x EF x ED x CF)/(BW x AT)
CR = C x IF x SF

Chemical	C Concentration on Produce (mg/kg)	IR Ingestion Rate (mg/day)	FH Fraction Homegrown	FE Fraction Exposed	WO Washoff Factor	ME Matrix Effect	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	CF Conversion Factor (kg/mg)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (kg/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
Bis(2-ethylhexyl)phthalate	4.59E-09	140000	0.3	0.7	1	1	350	30	0.000001	70	25550	1.73E-04	1.40E-02	1.11E-14
													Total Chemical Cancer Risk	1.11E-14

Radionuclides

IF = IR x FC x WO x ME x EF x ED x CF
CR = C x IF x SF

Radionuclide	C Concentration on Produce (pCi/g)	IR Ingestion Rate (mg/day)	FH Fraction Homegrown	FE Fraction Exposed	WO Washoff Factor	ME Matrix Effect	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	CF Conversion Factor (g/mg)	IF Intake Factor (g)	SF Slope Factor (Risk/pCi)	CR Cancer Risk
Americium-241	6.01E-08	140000	0.3	0.7	1	1	350	30	0.001	3.09E+05	2.40E-10	4.45E-12
Plutonium-239/240	4.27E-07	140000	0.3	0.7	1	1	350	30	0.001	3.09E+05	2.30E-10	3.03E-11
											Total Radionuclide Cancer Risk	3.48E-11

Total Cancer Risk 3.48E-11

FUTURE OFF E RESIDENT
WOMAN CREEK
AREA OF CONCERN NO. 2

CT - Ingestion of surface water - Woman Creek

Noncarcinogens

$$IF = (IR \times ET \times EF \times ED)/(BW \times AT)$$
$$HQ = (C \times IF)/RfD$$

Chemical	C Surface Water Concentration (mg/l)	IR Ingestion Rate (l/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
1,1-Dichloroethene	2.00E-06	0.01	1	5	9	70	3285	1.96E-06	9.00E-03	4.35E-10
Carbon Tetrachloride	2.62E-04	0.01	1	5	9	70	3285	1.96E-06	7.00E-04	7.32E-07
Chloroform	2.15E-04	0.01	1	5	9	70	3285	1.96E-06	1.00E-02	4.21E-08
Methylene Chloride	1.06E-04	0.01	1	5	9	70	3285	1.96E-06	6.00E-02	3.46E-09
Tetrachloroethene	1.16E-04	0.01	1	5	9	70	3285	1.96E-06	1.00E-02	2.27E-08
									Total Hazard Index	8.01E-07

FUTURE OFFSITE RESIDENT
WOMAN CREEK
AREA OF CONCERN NO. 2

CT - Ingestion of surface water - Woman Creek

Nonradionuclide carcinogens

IF = (IR x ET x EF x ED)/(BW x AT)
CR = C x IF x SF

	C	IR	ET	EF	ED	BW	AT	IF	SF	CR
Chemical	Surface Water Concentration (mg/l)	Ingestion Rate (l/hr)	Exposure Time (hr/day)	Exposure Frequency (days/yr)	Exposure Duration (years)	Body Weight (kg)	Averaging Time (days)	Intake Factor (l/kg-day)	Slope Factor 1/(mg/kg-day)	Cancer Risk
1,1-Dichloroethene	2.00E-06	0.01	1	5	9	70	25550	2.52E-07	6.00E-01	3.02E-13
Carbon Tetrachloride	2.62E-04	0.01	1	5	9	70	25550	2.52E-07	1.30E-01	8.57E-12
Chloroform	2.15E-04	0.01	1	5	9	70	25550	2.52E-07	6.10E-03	3.30E-13
Methylene Chloride	1.06E-04	0.01	1	5	9	70	25550	2.52E-07	7.50E-03	2.00E-13
Tetrachloroethene	1.16E-04	0.01	1	5	9	70	25550	2.52E-07	5.20E-02	1.52E-12
Trichloroethene	9.25E-04	0.01	1	5	9	70	25550	2.52E-07	1.10E-02	2.56E-12
								Total Chemical Cancer Risk		1.35E-11

Radionuclides

IF = IR x ET x EF x ED
CR = C x IF x SF

	C	IR	ET	EF	ED	IF	SF	CR
Radionuclide	Surface Water Concentration (pCi/l)	Ingestion Rate (l/hr)	Exposure Time (hr/day)	Exposure Frequency (days/yr)	Exposure Duration (years)	Intake Factor (l)	Slope Factor (Risk/pCi)	Cancer Risk
Americium-241	6.30E-02	0.01	1	5	9	4.50E-01	2.40E-10	6.80E-12
Plutonium-239/240	2.37E+00	0.01	1	5	9	4.50E-01	2.30E-10	2.45E-10
							Total Radionuclide Cancer Risk	2.52E-10

Total Cancer Risk 2.66E-10

FUTURE OFF E RESIDENT
WOMAN CREEK
AREA OF CONCERN NO. 2

RME - Ingestion of surface water Woman Creek

Noncarcinogens

$$IF = (IR \times ET \times EF \times ED)/(BW \times AT)$$
$$HQ = (C \times IF)/RfD$$

Chemical	C Surface Water Concentration (mg/l)	IR Ingestion Rate (l/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
1,1-Dichloroethene	2.00E-06	0.05	2.6	7	30	70	10950	3.56E-05	9.00E-03	7.91E-09
Carbon Tetrachloride	2.62E-04	0.05	2.6	7	30	70	10950	3.56E-05	7.00E-04	1.33E-05
Chloroform	2.15E-04	0.05	2.6	7	30	70	10950	3.56E-05	1.00E-02	7.66E-07
Methylene Chloride	1.06E-04	0.05	2.6	7	30	70	10950	3.56E-05	6.00E-02	6.29E-08
Tetrachloroethene	1.16E-04	0.05	2.6	7	30	70	10950	3.56E-05	1.00E-02	4.13E-07
									Total Hazard Index	1.46E-05

FUTURE OFFSITE RESIDENT
WOMAN CREEK
AREA OF CONCERN NO. 2

RME - Ingestion of surface water - Woman Creek

Nonradionuclide carcinogens

IF = (IR x ET x EF x ED)/(BW x AT)
CR = C x IF x SF

	C	IR	ET	EF	ED	BW	AT	IF	SF	CR
Chemical	Surface Water Concentration (mg/l)	Ingestion Rate (l/hr)	Exposure Time (hr/day)	Exposure Frequency (days/yr)	Exposure Duration (years)	Body Weight (kg)	Averaging Time (days)	Intake Factor (l/kg-day)	Slope Factor 1/(mg/kg-day)	Cancer Risk
1,1-Dichloroethene	2.00E-06	0.05	2.6	7	30	70	25550	1.53E-05	6.00E-01	1.83E-11
Carbon Tetrachloride	2.62E-04	0.05	2.6	7	30	70	25550	1.53E-05	1.30E-01	5.20E-10
Chloroform	2.15E-04	0.05	2.6	7	30	70	25550	1.53E-05	6.10E-03	2.00E-11
Methylene Chloride	1.06E-04	0.05	2.6	7	30	70	25550	1.53E-05	7.50E-03	1.21E-11
Tetrachloroethene	1.16E-04	0.05	2.6	7	30	70	25550	1.53E-05	5.20E-02	9.21E-11
Trichloroethene	9.25E-04	0.05	2.6	7	30	70	25550	1.53E-05	1.10E-02	1.55E-10
								Total Chemical Cancer Risk		8.18E-10

Radionuclides

IF = IR x ET x EF x ED
CR = C x IF x SF

	C	IR	ET	EF	ED	IF	SF	CR
Radionuclide	Surface Water Concentration (pCi/l)	Ingestion Rate (l/hr)	Exposure Time (hr/day)	Exposure Frequency (days/yr)	Exposure Duration (years)	Intake Factor (l)	Slope Factor (Risk/pCi)	Cancer Risk
Americium-241	6.30E-02	0.05	2.6	7	30	2.73E+01	2.40E-10	4.13E-10
Plutonium-239/240	2.37E+00	0.05	2.6	7	30	2.73E+01	2.30E-10	1.49E-08
						Total Radionuclide Cancer Risk		1.53E-08
							Total Cancer Risk	1.61E-08

FUTURE OFF[illegible] RESIDENT
WOMAN CREEK
AREA OF CONCERN NO. 2

CT - Dermal contact with surface water - Woman Creek

Noncarcinogens

IF = (SA x DP x ET x EF x ED x CF)/(BW x AT)
HQ = (C x IF)/RfD

Chemical	C Surface Water Concentration (mg/l)	SA Skin Surface Area (cm^2)	DP Dermal Permeability (cm/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (day/yr)	ED Exposure Duration (years)	CF Conversion Factor (l/cm^3)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
1,1-Dichloroethene	2.00E-06	9275	0.016	1	5	9	0.001	70	3285	2.90E-05	9.00E-03	6.45E-09
Carbon Tetrachloride	2.62E-04	9275	0.022	1	5	9	0.001	70	3285	3.99E-05	7.00E-04	1.49E-05
Chloroform	2.15E-04	9275	0.13	1	5	9	0.001	70	3285	2.36E-04	1.00E-02	5.07E-06
Methylene Chloride	1.06E-04	9275	0.0045	1	5	9	0.001	70	3285	8.17E-06	6.00E-02	1.44E-08
Tetrachloroethene	1.16E-04	9275	0.37	1	5	9	0.001	70	3285	6.72E-04	1.00E-02	7.79E-06
											Total Hazard Index	2.78E-05

Nonradionuclide carcinogens

IF = (SA x DP x ET x EF x ED x CF)/(BW x AT)
CR = C x IF x SF

Chemical	C Surface Water Concentration (mg/l)	SA Skin Surface Area (cm^2)	DP Dermal Permeability (cm/hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (day/yr)	ED Exposure Duration (years)	CF Conversion Factor (l/cm^3)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
1,1-Dichloroethene	2.00E-06	9275	0.016	1	5	9	0.001	70	25550	3.73E-06	6.00E-01	4.48E-12
Carbon Tetrachloride	2.62E-04	9275	0.022	1	5	9	0.001	70	25550	5.13E-06	1.30E-01	1.75E-10
Chloroform	2.15E-04	9275	0.13	1	5	9	0.001	70	25550	3.03E-05	6.10E-03	3.98E-11
Methylene Chloride	1.06E-04	9275	0.0045	1	5	9	0.001	70	25550	1.05E-06	7.50E-03	8.35E-13
Tetrachloroethene	1.16E-04	9275	0.37	1	5	9	0.001	70	25550	8.63E-05	5.20E-02	5.21E-10
Trichloroethene	9.25E-04	9275	0.23	1	5	9	0.001	70	25550	5.37E-05	1.10E-02	5.46E-10
											Total Cancer Risk	1.29E-09

FUTURE OFFSITE RESIDENT
WOMAN CREEK
AREA OF CONCERN NO. 2

RME - Dermal contact with surface water - Woman Creek

Noncarcinogens

IF = (SA x DP x ET x EF x ED x CF)/(BW x AT)
HQ = (C x IF)/RfD

	C	SA	DP	ET	EF	ED	CF	BW	AT	IF	RfD	HQ
Chemical	Surface Water Concentration (mg/l)	Skin Surface Area (cm^2)	Dermal Permeability (cm/hr)	Exposure Time (hr/day)	Exposure Frequency (day/yr)	Exposure Duration (years)	Conversion Factor (l/cm^3)	Body Weight (kg)	Averaging Time (days)	Intake Factor (l/kg-day)	Reference Dose (mg/kg-day)	Hazard Quotient
1,1-Dichloroethene	2.00E-06	18150	0.016	2.6	7	30	0.001	70	10950	2.07E-04	9.00E-03	4.60E-08
Carbon Tetrachloride	2.62E-04	18150	0.022	2.6	7	30	0.001	70	10950	2.84E-04	7.00E-04	1.06E-04
Chloroform	2.15E-04	18150	0.13	2.6	7	30	0.001	70	10950	1.68E-03	1.00E-02	3.61E-05
Methylene Chloride	1.06E-04	18150	0.0045	2.6	7	30	0.001	70	10950	5.82E-05	6.00E-02	1.03E-07
Tetrachloroethene	1.16E-04	18150	0.37	2.6	7	30	0.001	70	10950	4.78E-03	1.00E-02	5.55E-05
											Total Hazard Index	1.98E-04

Nonradionuclide carcinogens

IF = (SA x DP x ET x EF x ED x CF)/(BW x AT)
CR = C x IF x SF

	C	SA	DP	ET	EF	ED	CF	BW	AT	IF	SF	CR
Chemical	Surface Water Concentration (mg/l)	Skin Surface Area (cm^2)	Dermal Permeability (cm/hr)	Exposure Time (hr/day)	Exposure Frequency (day/yr)	Exposure Duration (years)	Conversion Factor (l/cm^3)	Body Weight (kg)	Averaging Time (days)	Intake Factor (l/kg-day)	Slope Factor 1/(mg/kg-day)	Cancer Risk
1,1-Dichloroethene	2.00E-06	18150	0.016	2.6	7	30	0.001	70	25550	8.87E-05	6.00E-01	1.06E-10
Carbon Tetrachloride	2.62E-04	18150	0.022	2.6	7	30	0.001	70	25550	1.22E-04	1.30E-01	4.15E-09
Chloroform	2.15E-04	18150	0.13	2.6	7	30	0.001	70	25550	7.20E-04	6.10E-03	9.45E-10
Methylene Chloride	1.06E-04	18150	0.0045	2.6	7	30	0.001	70	25550	2.49E-05	7.50E-03	1.98E-11
Tetrachloroethene	1.16E-04	18150	0.37	2.6	7	30	0.001	70	25550	2.05E-03	5.20E-02	1.24E-08
Trichloroethene	9.25E-04	18150	0.23	2.6	7	30	0.001	70	25550	1.27E-03	1.10E-02	1.30E-08
											Total Cancer Risk	3.06E-08

SUMMARY OF RISKS
HYPOTHETICAL RESIDENT
SPECIAL CASE METALS
AREA OF CONCERN NO. 1

	Central Tendency		Reasonable Maximum	
Pathway	Hazard Index	Cancer Risk	Hazard Index	Cancer Risk
Ingestion of groundwater	2.04E+00	2.07E-05	1.45E+01	4.92E-04
Total	2.04E+00	2.07E-05	1.45E+01	4.92E-04

HYPOTHETICAL RESIDENT
SPECIAL CASE METALS
AREA OF CONCERN NO. 1

CT - Groundwater Ingestion

Noncarcinogen

IF = (IR x FC x EF x ED)/(BW x AT)

HQ = (C x IF)/RfD

Chemical	C Groundwater Concentration (mg/l)	IR Ingestion Rate (l/day)	FC Fraction Ingested from Source	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
Antimony	2.50E-02	1.4	0.3	234	9	70	3285	3.85E-03	4.00E-04	2.40E-01
Arsenic	3.40E-03	1.4	0.3	234	9	70	3285	3.85E-03	3.00E-04	4.36E-02
Beryllium	8.40E-03	1.4	0.3	234	9	70	3285	3.85E-03	5.00E-03	6.46E-03
Manganese (water)	2.27E+00	1.4	0.3	234	9	70	3285	3.85E-03	5.00E-03	1.75E+00
									Total Hazard Index	2.04E+00

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CT - Groundwater Ingestion

Carcinogens

IF = (IR x FC x EF x ED)/(BW x AT)

CR = C x IF x SF

Chemical	C Groundwater Concentration (mg/l)	IR Ingestion Rate (l/day)	FC Fraction Ingested from Source	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
Arsenic	3.40E-03	1.4	0.3	234	9	70	25550	4.95E-04	1.70E+00	2.86E-06
Beryllium	8.40E-03	1.4	0.3	234	9	70	25550	4.95E-04	4.30E+00	1.79E-05
									Total Cancer Risk	2.07E-05

HYPOTHETI RESIDENT
SPECIAL CASE METALS
AREA OF CONCERN NO. 1

RME - Groundwater Ingestion

Noncarcinogen

IF = (IR x FC x EF x ED)/(BW x AT)

HQ = (C x IF)/RfD

	C	IR	FC	EF	ED	BW	AT	IF	RfD	HQ
Chemical	Groundwater Concentration (mg/l)	Ingestion Rate (l/day)	Fraction Ingested from Source	Exposure Frequency (days/yr)	Exposure Duration (years)	Body Weight (kg)	Averaging Time (days)	Intake Factor (l/kg-day)	Reference Dose (mg/kg-day)	Hazard Quotient
Antimony	2.50E-02	2	1	350	30	70	10950	2.74E-02	4.00E-04	1.71E+00
Arsenic	3.40E-03	2	1	350	30	70	10950	2.74E-02	3.00E-04	3.11E-01
Beryllium	8.40E-03	2	1	350	30	70	10950	2.74E-02	5.00E-03	4.60E-02
Manganese (water)	2.27E+00	2	1	350	30	70	10950	2.74E-02	5.00E-03	1.24E+01
									Total Hazard Index	1.45E+01

RME - Groundwater Ingestion

Carcinogens

IF = (IR x FC x EF x ED)/(BW x AT)

CR = C x IF x SF

	C	IR	FC	EF	ED	BW	AT	IF	SF	CR
Chemical	Groundwater Concentration (mg/l)	Ingestion Rate (l/day)	Fraction Ingested from Source	Exposure Frequency (days/yr)	Exposure Duration (years)	Body Weight (kg)	Averaging Time (days)	Intake Factor (l/kg-day)	Slope Factor 1/(mg/kg-day)	Cancer Risk
Arsenic	3.40E-03	2	1	350	30	70	25550	1.17E-02	1.70E+00	6.79E-05
Beryllium	8.40E-03	2	1	350	30	70	25550	1.17E-02	4.30E+00	4.24E-04
									Total Cancer Risk	4.92E-04

SUMMARY OF RISKS
HYPOTHETICAL RESIDENT
SPECIAL CASE METALS
AREA OF CONCERN NO. 2

	Central Tendency		Reasonable Maximum	
Pathway	Hazard Index	Cancer Risk	Hazard Index	Cancer Risk
Ingestion of groundwater	1.18E+00	8.80E-06	8.43E+00	2.09E-04
Total	1.18E+00	8.80E-06	8.43E+00	2.09E-04

HYPOTHETI[illegible] RESIDENT
SPECIAL CASE METALS
AREA OF CONCERN NO. 2

CT - Groundwater Ingestion

Noncarcinogen

IF = (IR x FC x EF x ED)/(BW x AT)

HQ = (C x IF)/RfD

Chemical	C Groundwater Concentration (mg/l)	IR Ingestion Rate (l/day)	FC Fraction Ingested from Source	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
Antimony	3.70E-02	1.4	0.3	234	9	70	3285	3.85E-03	4.00E-04	3.56E-01
Arsenic	4.40E-03	1.4	0.3	234	9	70	3285	3.85E-03	3.00E-04	5.64E-02
Beryllium	2.40E-03	1.4	0.3	234	9	70	3285	3.85E-03	5.00E-03	1.85E-03
Manganese (water)	1.00E+00	1.4	0.3	234	9	70	3285	3.85E-03	5.00E-03	7.69E-01
									Total Hazard Index	1.18E+00

CT - Groundwater Ingestion

Carcinogens

IF = (IR x FC x EF x ED)/(BW x AT)

CR = C x IF x SF

Chemical	C Groundwater Concentration (mg/l)	IR Ingestion Rate (l/day)	FC Fraction Ingested from Source	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
Arsenic	4.40E-03	1.4	0.3	234	9	70	25550	4.95E-04	1.70E+00	3.70E-06
Beryllium	2.40E-03	1.4	0.3	234	9	70	25550	4.95E-04	4.30E+00	5.10E-06
									Total Cancer Risk	8.80E-06

HYPOTHETICAL RESIDENT
SPECIAL CASE METALS
AREA OF CONCERN NO. 2

RME - Groundwater Ingestion

Noncarcinogen

IF = (IR x FC x EF x ED)/(BW x AT)

HQ = (C x IF)/RfD

Chemical	C Groundwater Concentration (mg/l)	IR Ingestion Rate (l/day)	FC Fraction Ingested from Source	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
Antimony	3.70E-02	2	1	350	30	70	10950	2.74E-02	4.00E-04	2.53E+00
Arsenic	4.40E-03	2	1	350	30	70	10950	2.74E-02	3.00E-04	4.02E-01
Beryllium	2.40E-03	2	1	350	30	70	10950	2.74E-02	5.00E-03	1.32E-02
Manganese (water)	1.00E+00	2	1	350	30	70	10950	2.74E-02	5.00E-03	5.48E+00
									Total Hazard Index	8.43E+00

RME - Groundwater Ingestion

Carcinogens

IF = (IR x FC x EF x ED)/(BW x AT)

CR = C x IF x SF

Chemical	C Groundwater Concentration (mg/l)	IR Ingestion Rate (l/day)	FC Fraction Ingested from Source	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
Arsenic	4.40E-03	2	1	350	30	70	25550	1.17E-02	1.70E+00	8.78E-05
Beryllium	2.40E-03	2	1	350	30	70	25550	1.17E-02	4.30E+00	1.21E-04
									Total Cancer Risk	2.09E-04

SUMMARY OF RISKS
HYPOTHETICAL RESIDENT
SPECIAL CASE METALS
BACKGROUND

	Central Tendency		Reasonable Maximum	
Pathway	Hazard Index	Cancer Risk	Hazard Index	Cancer Risk
Ingestion of groundwater	4.18E-01	8.06E-06	2.98E+00	1.91E-04
Total	4.18E-01	8.06E-06	2.98E+00	1.91E-04

HYPOTHETICAL RESIDENT
SPECIAL CASE METALS
BACKGROUND

CT - Groundwater Ingestion

Noncarcinogen

IF = (IR x FC x EF x ED)/(BW x AT)

HQ = (C x IF)/RfD

Chemical	C Groundwater Concentration (mg/l)	IR Ingestion Rate (l/day)	FC Fraction Ingested from Source	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
Antimony	3.20E-02	1.4	0.3	234	9	70	3285	3.85E-03	4.00E-04	3.08E-01
Arsenic	2.00E-03	1.4	0.3	234	9	70	3285	3.85E-03	3.00E-04	2.56E-02
Beryllium	3.00E-03	1.4	0.3	234	9	70	3285	3.85E-03	5.00E-03	2.31E-03
Manganese (water)	1.07E-01	1.4	0.3	234	9	70	3285	3.85E-03	5.00E-03	8.23E-02
									Total Hazard Index	4.18E-01

CT - Groundwater Ingestion

Carcinogens

IF = (IR x FC x EF x ED)/(BW x AT)

CR = C x IF x SF

Chemical	C Groundwater Concentration (mg/l)	IR Ingestion Rate (l/day)	FC Fraction Ingested from Source	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
Arsenic	2.00E-03	1.4	0.3	234	9	70	25550	4.95E-04	1.70E+00	1.68E-06
Beryllium	3.00E-03	1.4	0.3	234	9	70	25550	4.95E-04	4.30E+00	6.38E-06
									Total Cancer Risk	8.06E-06

HYPOTHETI RESIDENT
SPECIAL CASE METALS
BACKGROUND

RME - Groundwater Ingestion

Noncarcinogen

IF = (IR x FC x EF x ED)/(BW x AT)

HQ = (C x IF)/RfD

	C	IR	FC	EF	ED	BW	AT	IF	RfD	HQ
Chemical	Groundwater Concentration (mg/l)	Ingestion Rate (l/day)	Fraction Ingested from Source	Exposure Frequency (days/yr)	Exposure Duration (years)	Body Weight (kg)	Averaging Time (days)	Intake Factor (l/kg-day)	Reference Dose (mg/kg-day)	Hazard Quotient
Antimony	3.20E-02	2	1	350	30	70	10950	2.74E-02	4.00E-04	2.19E+00
Arsenic	2.00E-03	2	1	350	30	70	10950	2.74E-02	3.00E-04	1.83E-01
Beryllium	3.00E-03	2	1	350	30	70	10950	2.74E-02	5.00E-03	1.64E-02
Manganese (water)	1.07E-01	2	1	350	30	70	10950	2.74E-02	5.00E-03	5.86E-01
									Total Hazard Index	2.98E+00

RME - Groundwater Ingestion

Carcinogens

IF = (IR x FC x EF x ED)/(BW x AT)

CR = C x IF x SF

	C	IR	FC	EF	ED	BW	AT	IF	SF	CR
Chemical	Groundwater Concentration (mg/l)	Ingestion Rate (l/day)	Fraction Ingested from Source	Exposure Frequency (days/yr)	Exposure Duration (years)	Body Weight (kg)	Averaging Time (days)	Intake Factor (l/kg-day)	Slope Factor 1/(mg/kg-day)	Cancer Risk
Arsenic	2.00E-03	2	1	350	30	70	25550	1.17E-02	1.70E+00	3.99E-05
Beryllium	3.00E-03	2	1	350	30	70	25550	1.17E-02	4.30E+00	1.51E-04
									Total Cancer Risk	1.91E-04

SUMMARY OF RISKS
HYPOTHETICAL RESIDENT
SPECIAL CASE PAHS
AREA OF CONCERN NO. 1

	Central Tendency		Reasonable Maximum	
Pathway	Hazard Index	Cancer Risk	Hazard Index	Cancer Risk
Ingestion of surface soil by an adult	1.77E-06	-	8.29E-06	-
Ingestion of surface soil by a child	2.12E-05	-	7.74E-05	
Carcinogenic effects of soil ingestion	-	1.90E-07	-	2.30E-06
Total	2.30E-05	1.90E-07	8.56E-05	2.30E-06

HYPOTHETI RESIDENT
SPECIAL CASE PAHS
AREA OF CONCERN NO. 1

CT - Adult soil ingestion

Noncarcinogens

IF =(IR-A x ED-A x FC-A x EF x ME x CF)/(BW-A x AT)
HQ = (C x IF)/RfD

Chemical	C Soil Concentration (mg/kg)	IR-A Ingestion Rate (mg/day)	ED-A Exposure Duration (years)	FC-A Fraction Contaminated	CF Conversion Factor (kg/mg)	ME Matrix Effect	EF Exposure Frequency (days/yr)	BW-A Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (kg/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
Fluoranthene	2.20E-01	50	7	0.64	0.000001	0.5	234	70	2555	1.47E-07	4.00E-02	8.06E-07
Pyrene	1.98E-01	50	7	0.64	0.000001	0.5	234	70	2555	1.47E-07	3.00E-02	9.67E-07
											Total Hazard Index	1.77E-06

RME - Adult soil ingestion

Noncarcinogens

IF = (IR-A x ED-A x FC-A x EF x ME x CF)/(BW-A x AT-A)
HQ = (C x IF)/RfD

Chemical	C Soil Concentration (mg/kg)	IR-A Ingestion Rate (mg/day)	ED-A Exposure Duration (years)	FC-A Fraction Contaminated	ME Matrix Effect	EF Exposure Frequency (days/yr)	CF Conversion Factor (kg/mg)	BW-A Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (kg/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
Fluoranthene	2.20E-01	100	24	1	0.5	350	0.000001	70	8760	6.85E-07	4.00E-02	3.77E-06
Pyrene	1.98E-01	100	24	1	0.5	350	0.000001	70	8760	6.85E-07	3.00E-02	4.52E-06
											Total Hazard Index	8.29E-06

HYPOTHETICAL RESIDENT
SPECIAL CASE PAHS
AREA OF CONCERN NO. 1

CT - Child soil ingestion

Noncarcinogens

IF = (IR-C x ED-C x FC-C x EF x ME x CF)/(BW-C x AT-C)
HQ = (C x IF)/RfD

	C	IR-C	ED-C	FC-C	CF	ME	EF	BW-C	AT-C	IF	RfD	HQ
Chemical	Soil Concentration (mg/kg)	Ingestion Rate (mg/day)	Exposure Duration (years)	Fraction Contaminated	Conversion Factor (kg/mg)	Matrix Effect	Exposure Frequency (days/yr)	Body Weight (kg)	Averaging Time (days)	Intake Factor (kg/kg-day)	Reference Dose (mg/kg-day)	Hazard Quotient
Fluoranthene	2.20E-01	100	2	0.82	0.000001	0.5	234	15	730	1.75E-06	4.00E-02	9.64E-06
Pyrene	1.98E-01	100	2	0.82	0.000001	0.5	234	15	730	1.75E-06	3.00E-02	1.16E-05
											Total Hazard Index	2.12E-05

RME -Child soil ingestion

Noncarcinogens

IF =(IR-C x ED-C x FC-C x EF x ME x CF)/BW-C x AT-C
HQ = (C x IF)/RfD

	C	IR-C	ED-C	FC-C	CF	ME	EF	BW-C	AT	IF	RfD	HQ
Chemical	Soil Concentration (mg/kg)	Ingestion Rate (mg/day)	Exposure Duration (years)	Fraction Contaminated	Conversion Factor (kg/mg)	Matrix Effect	Exposure Frequency (days/yr)	Body Weight (kg)	Averaging Time (days)	Intake Factor (kg/kg-day)	Reference Dose (mg/kg-day)	Hazard Quotient
Fluoranthene	2.20E-01	200	6	1	0.000001	0.5	350	15	2190	6.39E-06	4.00E-02	3.52E-05
Pyrene	1.98E-01	200	6	1	0.000001	0.5	350	15	2190	6.39E-06	3.00E-02	4.22E-05
											Total Hazard Index	7.74E-05

HYPOTHETI[illegible] RESIDENT
SPECIAL CASE PAHS
AREA OF CONCERN NO. 1

CT - Time-weighted average soil ingestion

Nonradionuclide Carcinogens

$$IF = ([(IR\text{-}C \times ED\text{-}C \times FC\text{-}C)/(BW\text{-}C) + (IR\text{-}A \times ED\text{-}A \times FC\text{-}A)/(BW\text{-}A)] \times EF \times ME \times CF)/AT$$

$$CR = C \times IF \times SF$$

	C	IR-C	ED-C	FC-C	BW-C	IR-A	ED-A	FC-A	BW-A
		Child				Adult			
Chemical	Soil Concentration (mg/kg)	Ingestion Rate (mg/day)	Exposure Duration (years)	Fraction Contaminated	Body Weight (kg)	Ingestion Rate (mg/day)	Exposure Duration (years)	Fraction Contaminated	Body Weight (kg)
Benzo(a)anthracene	1.60E-01	100	2	0.82	15	50	7	0.64	70
Benzo(a)pyrene	1.60E-01	100	2	0.82	15	50	7	0.64	70
Benzo(b)fluoranthene	1.82E-01	100	2	0.82	15	50	7	0.64	70
Benzo(k)fluoranthene	6.90E-02	100	2	0.82	15	50	7	0.64	70
Chrysene	1.72E-01	100	2	0.82	15	50	7	0.64	70
Indeno(1,2,3-cd)pyrene	4.50E-02	100	2	0.82	15	50	7	0.64	70

	CF	ME	EF	AT	IF	SF	CR
Chemical	Conversion Factor (kg/mg)	Matrix Effect	Exposure Frequency (days/yr)	Averaging Time (days)	Intake Factor (kg/kg-day)	Slope Factor (mg/kg-day)	Cancer Risk
Benzo(a)anthracene	0.000001	1	234	25550	1.29E-07	7.30E-01	1.51E-08
Benzo(a)pyrene	0.000001	1	234	25550	1.29E-07	7.30E+00	1.51E-07
Benzo(b)fluoranthene	0.000001	1	234	25550	1.29E-07	7.30E-01	1.72E-08
Benzo(k)fluoranthene	0.000001	1	234	25550	1.29E-07	7.30E-02	6.52E-10
Chrysene	0.000001	1	234	25550	1.29E-07	7.30E-02	1.63E-09
Indeno(1,2,3-cd)pyrene	0.000001	1	234	25550	1.29E-07	7.30E-01	4.25E-09
						Total Cancer Risk	1.90E-07

HYPOTHETICAL RESIDENT
SPECIAL CASE PAHS
AREA OF CONCERN NO. 1

RME - Time-weighted average soil ingestion

Nonradionuclide Carcinogens

$$IF = ([(IR\text{-}C \times ED\text{-}C \times FC\text{-}C)/(BW\text{-}C) + (IR\text{-}A \times ED\text{-}A \times FC\text{-}A)/(BW\text{-}A)] \times EF \times ME \times CF)/AT$$

$$CR = C \times IF \times SF$$

	C	IR-C	ED-C	FC-C	BW-C	IR-A	ED-A	FC-A	BW-A
		Child				Adult			
Chemical	Soil Concentration (mg/kg)	Ingestion Rate (mg/day)	Exposure Duration (years)	Fraction Contaminated	Body Weight (kg)	Ingestion Rate (mg/day)	Exposure Duration (years)	Fraction Contaminated	Body Weight (kg)
Benzo(a)anthracene	1.60E-01	200	6	1	15	100	24	1	70
Benzo(a)pyrene	1.60E-01	200	6	1	15	100	24	1	70
Benzo(b)fluoranthene	1.82E-01	200	6	1	15	100	24	1	70
Benzo(k)fluoranthene	6.90E-02	200	6	1	15	100	24	1	70
Chrysene	1.72E-01	200	6	1	15	100	24	1	70
Indeno(1,2,3-cd)pyrene	4.50E-02	200	6	1	15	100	24	1	70

	CF	ME	EF	AT	IF	SF	CR
Chemical	Conversion Factor (kg/mg)	Matrix Effect	Exposure Frequency (days/yr)	Averaging Time (days)	Intake Factor (kg/kg-day)	Slope Factor (mg/kg-day)	Cancer Risk
Benzo(a)anthracene	0.000001	1	350	25550	1.57E-06	7.30E-01	1.83E-07
Benzo(a)pyrene	0.000001	1	350	25550	1.57E-06	7.30E+00	1.83E-06
Benzo(b)fluoranthene	0.000001	1	350	25550	1.57E-06	7.30E-01	2.08E-07
Benzo(k)fluoranthene	0.000001	1	350	25550	1.57E-06	7.30E-02	7.89E-09
Chrysene	0.000001	1	350	25550	1.57E-06	7.30E-02	1.97E-08
Indeno(1,2,3-cd)pyrene	0.000001	1	350	25550	1.57E-06	7.30E-01	5.14E-08
						Total Cancer Risk	2.30E-06

SUMMARY OF RISKS
HYPOTHETICAL RESIDENT
SPECIAL CASE PAHS
AREA OF CONCERN NO. 2

	Central Tendency		Reasonable Maximum	
Pathway	Hazard Index	Cancer Risk	Hazard Index	Cancer Risk
Ingestion of surface soil by an adult	1.62E-06	-	7.55E-06	-
Ingestion of surface soil by a child	1.93E-05	-	7.05E-05	
Carcinogenic effects of soil ingestion	-	1.73E-07	-	2.10E-06
Total	2.09E-05	1.73E-07	7.80E-05	2.10E-06

HYPOTHETICAL RESIDENT
SPECIAL CASE PAHS
AREA OF CONCERN NO. 2

CT - Adult soil ingestion

Noncarcinogens

IF =(IR-A x ED-A x FC-A x EF x ME x CF)/(BW-A x AT)
HQ = (C x IF)/RfD

Chemical	C Soil Concentration (mg/kg)	IR-A Ingestion Rate (mg/day)	ED-A Exposure Duration (years)	FC-A Fraction Contaminated	CF Conversion Factor (kg/mg)	ME Matrix Effect	EF Exposure Frequency (days/yr)	BW-A Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (kg/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
Fluoranthene	1.93E-01	50	7	0.64	0.000001	0.5	234	70	2555	1.47E-07	4.00E-02	7.07E-07
Pyrene	1.86E-01	50	7	0.64	0.000001	0.5	234	70	2555	1.47E-07	3.00E-02	9.09E-07
											Total Hazard Index	1.62E-06

RME - Adult soil ingestion

Noncarcinogens

IF = (IR-A x ED-A x FC-A x EF x ME x CF)/(BW-A x AT-A)
HQ = (C x IF)/RfD

Chemical	C Soil Concentration (mg/kg)	IR-A Ingestion Rate (mg/day)	ED-A Exposure Duration (years)	FC-A Fraction Contaminated	ME Matrix Effect	EF Exposure Frequency (days/yr)	CF Conversion Factor (kg/mg)	BW-A Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (kg/kg-day)	RfD Reference Dose (mg/kg-day)	HQ Hazard Quotient
Fluoranthene	1.93E-01	100	24	1	0.5	350	0.000001	70	8760	6.85E-07	4.00E-02	3.30E-06
Pyrene	1.86E-01	100	24	1	0.5	350	0.000001	70	8760	6.85E-07	3.00E-02	4.25E-06
											Total Hazard Index	7.55E-06

HYPOTHETICAL RESIDENT
SPECIAL CASE PAHS
AREA OF CONCERN NO. 2

CT - Child soil ingestion

Noncarcinogens

IF = (IR-C x ED-C x FC-C x EF x ME x CF)/(BW-C x AT-C)
HQ = (C x IF)/RfD

	C	IR-C	ED-C	FC-C	CF	ME	EF	BW-C	AT-C	IF	RfD	HQ
Chemical	Soil Concentration (mg/kg)	Ingestion Rate (mg/day)	Exposure Duration (years)	Fraction Contaminated	Conversion Factor (kg/mg)	Matrix Effect	Exposure Frequency (days/yr)	Body Weight (kg)	Averaging Time (days)	Intake Factor (kg/kg-day)	Reference Dose (mg/kg-day)	Hazard Quotient
Fluoranthene	1.93E-01	100	2	0.82	0.000001	0.5	234	15	730	1.75E-06	4.00E-02	8.45E-06
Pyrene	1.86E-01	100	2	0.82	0.000001	0.5	234	15	730	1.75E-06	3.00E-02	1.09E-05
											Total Hazard Index	1.93E-05

RME -Child soil ingestion

Noncarcinogens

IF =(IR-C x ED-C x FC-C x EF x ME x CF)/BW-C x AT-C
HQ = (C x IF)/RfD

	C	IR-C	ED-C	FC-C	CF	ME	EF	BW-C	AT	IF	RfD	HQ
Chemical	Soil Concentration (mg/kg)	Ingestion Rate (mg/day)	Exposure Duration (years)	Fraction Contaminated	Conversion Factor (kg/mg)	Matrix Effect	Exposure Frequency (days/yr)	Body Weight (kg)	Averaging Time (days)	Intake Factor (kg/kg-day)	Reference Dose (mg/kg-day)	Hazard Quotient
Fluoranthene	1.93E-01	200	6	1	0.000001	0.5	350	15	2190	6.39E-06	4.00E-02	3.08E-05
Pyrene	1.86E-01	200	6	1	0.000001	0.5	350	15	2190	6.39E-06	3.00E-02	3.96E-05
											Total Hazard Index	7.05E-05

HYPOTHETICAL RESIDENT
SPECIAL CASE PAHS
AREA OF CONCERN NO. 2

CT - Time-weighted average soil ingestion

Nonradionuclide Carcinogens

$$IF = ([(IR\text{-}C \times ED\text{-}C \times FC\text{-}C)/(BW\text{-}C) + (IR\text{-}A \times ED\text{-}A \times FC\text{-}A)/(BW\text{-}A)] \times EF \times ME \times CF)/AT$$

$$CR = C \times IF \times SF$$

	C	IR-C	ED-C	FC-C	BW-C	IR-A	ED-A	FC-A	BW-A
		Child				Adult			
Chemical	Soil Concentration (mg/kg)	Ingestion Rate (mg/day)	Exposure Duration (years)	Fraction Contaminated	Body Weight (kg)	Ingestion Rate (mg/day)	Exposure Duration (years)	Fraction Contaminated	Body Weight (kg)
Benzo(a)anthracene	1.30E-01	100	2	0.82	15	50	7	0.64	70
Benzo(a)pyrene	1.40E-01	100	2	0.82	15	50	7	0.64	70
Benzo(b)fluoranthene	2.00E-01	100	2	0.82	15	50	7	0.64	70
Benzo(k)fluoranthene	7.60E-02	100	2	0.82	15	50	7	0.64	70
Chrysene	1.40E-01	100	2	0.82	15	50	7	0.64	70
Indeno(1,2,3-cd)pyrene	8.30E-02	100	2	0.82	15	50	7	0.64	70

	CF	ME	EF	AT	IF	SF	CR
Chemical	Conversion Factor (kg/mg)	Matrix Effect	Exposure Frequency (days/yr)	Averaging Time (days)	Intake Factor (kg/kg-day)	Slope Factor (mg/kg-day)	Cancer Risk
Benzo(a)anthracene	0.000001	1	234	25550	1.29E-07	7.30E-01	1.23E-08
Benzo(a)pyrene	0.000001	1	234	25550	1.29E-07	7.30E+00	1.32E-07
Benzo(b)fluoranthene	0.000001	1	234	25550	1.29E-07	7.30E-01	1.89E-08
Benzo(k)fluoranthene	0.000001	1	234	25550	1.29E-07	7.30E-02	7.18E-10
Chrysene	0.000001	1	234	25550	1.29E-07	7.30E-02	1.32E-09
Indeno(1,2,3-cd)pyrene	0.000001	1	234	25550	1.29E-07	7.30E-01	7.84E-09
						Total Cancer Risk	1.73E-07

HYPOTHETI... RESIDENT
SPECIAL CASE PAHS
AREA OF CONCERN NO. 2

RME - Time-weighted average soil ingestion

Nonradionuclide Carcinogens

$$IF = ([(IR\text{-}C \times ED\text{-}C \times FC\text{-}C)/(BW\text{-}C) + (IR\text{-}A \times ED\text{-}A \times FC\text{-}A)/(BW\text{-}A)] \times EF \times ME \times CF)/AT$$

$$CR = C \times IF \times SF$$

	C	IR-C	ED-C	FC-C	BW-C	IR-A	ED-A	FC-A	BW-A
		Child				Adult			
Chemical	Soil Concentration (mg/kg)	Ingestion Rate (mg/day)	Exposure Duration (years)	Fraction Contaminated	Body Weight (kg)	Ingestion Rate (mg/day)	Exposure Duration (years)	Fraction Contaminated	Body Weight (kg)
Benzo(a)anthracene	1.30E-01	200	6	1	15	100	24	1	70
Benzo(a)pyrene	1.40E-01	200	6	1	15	100	24	1	70
Benzo(b)fluoranthene	2.00E-01	200	6	1	15	100	24	1	70
Benzo(k)fluoranthene	7.60E-02	200	6	1	15	100	24	1	70
Chrysene	1.40E-01	200	6	1	15	100	24	1	70
Indeno(1,2,3-cd)pyrene	8.30E-02	200	6	1	15	100	24	1	70

	CF	ME	EF	AT	IF	SF	CR
Chemical	Conversion Factor (kg/mg)	Matrix Effect	Exposure Frequency (days/yr)	Averaging Time (days)	Intake Factor (kg/kg-day)	Slope Factor (mg/kg-day)	Cancer Risk
Benzo(a)anthracene	0.000001	1	350	25550	1.57E-06	7.30E-01	1.49E-07
Benzo(a)pyrene	0.000001	1	350	25550	1.57E-06	7.30E+00	1.60E-06
Benzo(b)fluoranthene	0.000001	1	350	25550	1.57E-06	7.30E-01	2.29E-07
Benzo(k)fluoranthene	0.000001	1	350	25550	1.57E-06	7.30E-02	8.69E-09
Chrysene	0.000001	1	350	25550	1.57E-06	7.30E-02	1.60E-08
Indeno(1,2,3-cd)pyrene	0.000001	1	350	25550	1.57E-06	7.30E-01	9.49E-08
						Total Cancer Risk	2.10E-06

SUMMARY OF RISKS
HYPOTHETICAL RESIDENT
SPECIAL CASE CHEMICAL
MINIMUM

	Central Tendency		Reasonable Maximum	
Pathway	Hazard Index	Cancer Risk	Hazard Index	Cancer Risk
Ingestion of groundwater	0.00E+00	9.40E-08	0.00E+00	2.23E-06
Total	0.00E+00	9.40E-08	0.00E+00	2.23E-06

HYPOTHET[illegible] RESIDENT
SPECIAL CASE CHEMICAL
MINIMUM

CT - Groundwater Ingestion

Carcinogens

IF = (IR x FC x EF x ED)/(BW x AT)

CR = C x IF x SF

Chemical	C Groundwater Concentration (mg/l)	IR Ingestion Rate (l/day)	FC Fraction Ingested from Source	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
Vinyl Chloride	1.00E-04	1.4	0.3	234	9	70	25550	4.95E-04	1.90E+00	9.40E-08
									Total Cancer Risk	9.40E-08

RME - Groundwater Ingestion

Carcinogens

IF = (IR x FC x EF x ED)/(BW x AT)

CR = C x IF x SF

Chemical	C Groundwater Concentration (mg/l)	IR Ingestion Rate (l/day)	FC Fraction Ingested from Source	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
Vinyl Chloride	1.00E-04	2	1	350	30	70	25550	1.17E-02	1.90E+00	2.23E-06
									Total Cancer Risk	2.23E-06

SUMMARY OF RISKS
HYPOTHETICAL RESIDENT
SPECIAL CASE CHEMICAL
MAXIMUM

	Central Tendency		Reasonable Maximum	
Pathway	Hazard Index	Cancer Risk	Hazard Index	Cancer Risk
Ingestion of groundwater	0.00E+00	4.74E-04	0.00E+00	1.12E-02
Total	0.00E+00	4.74E-04	0.00E+00	1.12E-02

HYPOTHET . RESIDENT
SPECIAL CASE CHEMICAL
MAXIMUM

CT - Groundwater Ingestion

Carcinogens

IF = (IR x FC x EF x ED)/(BW x AT)

CR = C x IF x SF

Chemical	C Groundwater Concentration (mg/l)	IR Ingestion Rate (l/day)	FC Fraction Ingested from Source	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
Vinyl Chloride	5.04E-01	1.4	0.3	234	9	70	25550	4.95E-04	1.90E+00	4.74E-04
									Total Cancer Risk	4.74E-04

RME - Groundwater Ingestion

Carcinogens

IF = (IR x FC x EF x ED)/(BW x AT)

CR = C x IF x SF

Chemical	C Groundwater Concentration (mg/l)	IR Ingestion Rate (l/day)	FC Fraction Ingested from Source	EF Exposure Frequency (days/yr)	ED Exposure Duration (years)	BW Body Weight (kg)	AT Averaging Time (days)	IF Intake Factor (l/kg-day)	SF Slope Factor 1/(mg/kg-day)	CR Cancer Risk
Vinyl Chloride	5.04E-01	2	1	350	30	70	25550	1.17E-02	1.90E+00	1.12E-02
									Total Cancer Risk	1.12E-02

ATTACHMENT H4
RADIATION DOSE CALCULATIONS

ATTACHMENT H4-1
ANNUAL RADIATION DOSE FROM INGESTION OF SURFACE SOIL
CURRENT ONSITE INDUSTRIAL WORKER

Exposure Assumptions	Americium-241		Plutonium-239/240		Total Dose[a]	
	CT	RME	CT	RME	CT	RME
AOC No. 1						
CC = Contaminant Concentration (pCi/kg)	2.95E+04	2.95E+04	8.13E+05	8.13E+05		
IR = Ingestion Rate (mg/day)	10	50	10	50		
EF = Dose Frequency (days/year)	219	250	219	250		
WF = Weighting Factor	0.17	0.17	0.17	0.17		
FC = Fraction Contaminated (unitless)	0.9	1.0	0.9	1.0		
CF = Conversion Factor (kg/mg)	1E-06	1E-06	1E-06	1E-06		
Annual Radionuclide Intake (pCi/year)[b]	9.89E+00	6.28E+01	2.72E+02	1.73E+03		
Effective Dose Coefficient (mrem/pCi)	3.64E-03	3.64E-03	5.18E-05	5.18E-05		
Committed Effective Dose Equivalent (mrem/year)[c]	3.60E-02	2.28E-01	1.41E-02	8.95E-02	5.01E-02	3.18E-01
AOC No. 2						
CC = Contaminant Concentration (pCi/kg)	1.45E+03	1.45E+03	1.03E+04	1.03E+04		
IR = Ingestion Rate (mg/day)	10	50	10	50		
EF = Dose Frequency (days/year)	219	250	219	250		
WF = Weighting Factor	0.17	0.17	0.17	0.17		
FC = Fraction Contaminated (unitless)	0.9	1.0	0.9	0.9		
CF = Conversion Factor (kg/mg)	1E-06	1E-06	1E-06	1E-06		
Annual Radionuclide Intake (pCi/year)[b]	4.86E-01	3.08E+00	3.46E+00	1.98E+01		
Effective Dose Coefficient (mrem/pCi)	3.64E-03	3.64E-03	5.18E-05	5.18E-05		
Committed Effective Dose Equivalent (mrem/year)[c]	1.77E-03	1.12E-02	1.79E-04	1.02E-03	1.95E-03	1.22E-02

CT - Central Tendency

RME - Reasonable Maximum Dose

[a] Total Dose is the sum of the Committed Effective Dose Equivalents for Am-241 and Pu-239/240

[b] Annual Radionuclide Intake = CC x IR x EF x FC x WF x CF

[c] Committed Effective Dose Equivalent = Annual Radionuclide Intake x Effective Dose Coefficient

ATTACHMENT H4-2
ANNUAL RADIATION DOSE FROM INHALATION OF SURFACE SOIL PARTICULATES CURRENT ONSITE INDUSTRIAL WORKERS

Exposure Assumptions	Americium-241		Plutonium-239/240		Total Dose[a]	
	CT	RME	CT	RME	CT	RME
AOC No. 1						
CC = Contaminant Concentration (pCi/m^3)	4.09E-04	4.09E-04	1.13E-02	1.13E-02		
IR = Inhalation Rate (m^3/hr)	0.83	0.83	0.83	0.83		
EF = Exposure Frequency (days/year)	219	250	219	250		
W = Weighting Factor	0.17	0.17	0.17	0.17		
RD = Respiratory Deposition Factor	1	1	1	1		
ET = Exposure Time (hrs/day)	7.2	8.0	7.2	8.0		
Annual Radionuclide Intake (pCi/year)[b]	9.10E-02	1.15E-01	2.51E+00	3.19E+00		
Effective Dose Coefficient (mrem/pCi)	4.44E-01	4.44E-01	3.08E-01	3.08E-01		
Committed Effective Dose Equivalent (mrem/year)[c]	4.04E-02	5.12E-02	7.74E-01	9.82E-01	8.15E-01	1.03E+00
AOC No. 2						
CC = Contaminant Concentration (pCi/m^3)	2.13E-05	2.13E-05	1.53E-04	1.53E-04		
IR = Inhalation Rate (m^3/hr)	0.83	0.83	0.83	0.83		
EF = Exposure Frequency (days/year)	219	250	219	250		
W = Weighting Factor	0.17	0.17	0.17	0.17		
RD = Respiratory Deposition Factor	1	1	1	1		
ET = Exposure Time (hrs/day)	7.2	8.0	7.2	8.0		
Annual Radionuclide Intake (pCi/year)[b]	4.74E-03	6.01E-03	3.40E-02	4.32E-02		
Effective Dose Coefficient (mrem/pCi)	4.44E-01	4.44E-01	3.08E-01	3.08E-01		
Committed Effective Dose Equivalent (mrem/year)[c]	2.10E-03	2.67E-03	1.05E-02	1.33E-02	1.26E-02	1.60E-

Note:
CT - Central Tendency
RME - Reasonable Maximum Exposure
[a] Total Dose is the sum of the Committed Effective Dose Equivalents for Am-241 and Pu-239/240
[b] Annual Radionuclide Intake = CC x IR x EF x WF x RD x ET
[c] Committed Effective Dose Equivalent = Annual Radionuclide Intake x Effective Dose Coefficient

ATTACHMENT H4-3
ANNUAL RADIATION DOSE FROM EXTERNAL IRRADIATION
CURRENT ONSITE INDUSTRIAL WORKERS

	Americium-241		Plutonium-239/240		Total Dose[a]	
Exposure Assumptions	**CT**	**RME**	**CT**	**RME**	**CT**	**RME**
AOC No. 1						
CC = Soil Concentration (pCi/kg)	2.95E+04	2.95E+04	8.13E+05	8.13E+05		
SD = Soil Density (kg/m^3)	1,840	1,840	1,840	1,840		
D = Soil Depth (m)	0.051	0.051	0.051	0.051		
(1 - Se) = Gamma Shielding Factor (unitless)	0.50	0.80	0.50	0.80		
Areal External Irradiation (pCi/m^2)[b]	1.39E+06	2.22E+06	3.81E+07	6.10E+07		
External Dose Conversion Factor (mrem/hr per pCi/m^2)	3.41E-10	3.41E-10	4.31E-12	4.31E-12		
WF = Weighting Factor	0.17	0.17	0.17	0.17		
EF = Exposure Frequency (hours/year)	1.58E+03	1.80E+03	1.58E+03	1.80E+03		
Annual Radiation Effective Dose Equivalent (mrem/year)[c]	1.27E-01	2.31E-01	4.41E-02	8.05E-02	1.71E-01	3.12E-01
AOC No. 2						
CC = Soil Concentration (pCi/kg)	1.45E+03	1.45E+03	1.03E+04	1.03E+04		
SD = Soil Density (kg/m^3)	1,840	1,840	1,840	1,840		
D = Soil Depth (m)	0.051	0.051	0.051	0.051		
(1 - Se) = Gamma Shielding Factor (unitless)	0.50	0.80	0.50	0.80		
Areal External Irradiation (pCi/m^2)[b]	6.80E+04	1.09E+05	4.85E+05	7.75E+05		
External Dose Conversion Factor (mrem/hr per pCi/m^2)	3.41E-10	3.41E-10	4.31E-12	4.31E-12		
WF = Weighting Factor	0.17	0.17	0.17	0.17		
EF = Exposure Frequency (hours/year)	1.58E+03	1.80E+03	1.58E+03	1.80E+03		
Annual Radiation Effective Dose Equivalent (mrem/year)[c]	6.22E-03	1.14E-02	5.60E-04	1.02E-03	6.78E-03	1.24E-02

CT - Central Tendency

RME - Reasonable Maximum Exposure

[a] Total Exposure is the sum of the Effective Dose Equivalents for Am-241 and Pu-239/240.

[b] Areal External Irradiation = CC x SD x D x (1 - Se)

[c] Annual Radiation Effective Dose Equivalent = External Irradiation x External Dose Conversion Factor x WF x EF

ATTACHMENT H4-4
ANNUAL RADIATION DOSE FROM INGESTION OF SURFACE SOIL
FUTURE ONSITE INDUSTRIAL/OFFICE WORKER

Exposure Assumptions	Americium-241 CT	Americium-241 RME	Plutonium-239/240 CT	Plutonium-239/240 RME	Total Dose[a] CT	Total Dose[a] RME
AOC No. 1						
CC = Contaminant Concentration (pCi/kg)	2.95E+04	2.95E+04	8.13E+05	8.13E+05		
IR = Ingestion Rate (mg/day)	5	50	5	50		
EF = Exposure Frequency (days/year)	219	250	219	250		
FC = Fraction Contaminated (unitless)	0.9	1	0.9	1		
CF = Conversion Factor (kg/mg)	1E-06	1E-06	1E-06	1E-06		
Annual Radionuclide Intake (pCi/year)[b]	2.91E+01	3.69E+02	8.01E+02	1.02E+04		
Effective Dose Coefficient (mrem/pCi)	3.64E-03	3.64E-03	5.18E-05	5.18E-05		
Committed Effective Dose Equivalent (mrem/year)[c]	1.06E-01	1.34E+00	4.15E-02	5.26E-01	1.47E-01	1.87E+00
AOC No. 2						
CC = Contaminant Concentration (pCi/kg)	1.45E+03	1.45E+03	1.03E+04	1.03E+04		
IR = Ingestion Rate (mg/day)	5	50	5	50		
EF = Exposure Frequency (days/year)	219	250	219	250		
FC = Fraction Contaminated (unitless)	0.9	1	0.9	1		
CF = Conversion Factor (kg/mg)	1E-06	1E-06	1E-06	1E-06		
Annual Radionuclide Intake (pCi/year)[b]	1.43E+00	1.81E+01	1.02E+01	1.29E+02		
Effective Dose Coefficient (mrem/pCi)	3.64E-03	3.64E-03	5.18E-05	5.18E-05		
Committed Effective Dose Equivalent (mrem/year)[c]	5.20E-03	6.60E-02	5.27E-04	6.69E-03	5.73E-03	7.27E-02
30-Acre Maximum Exposure Area						
CC = Contaminant Concentration (pCi/kg)	6.94E+04	6.94E+04	1.83E+06	1.83E+06		
IR = Ingestion Rate (mg/day)	5	50	5	50		
EF = Exposure Frequency (days/year)	219	250	219	250		
FC = Fraction Contaminated (unitless)	0.9	1	0.9	1		
CF = Conversion Factor (kg/mg)	1E-06	1E-06	1E-06	1E-06		
Annual Radionuclide Intake (pCi/year)[b]	6.84E+01	8.68E+02	1.80E+03	2.28E+04		
Effective Dose Coefficient (mrem/pCi)	3.64E-03	3.64E-03	5.18E-05	5.18E-05		
Committed Effective Dose Equivalent (mrem/year)[c]	2.49E-01	3.16E+00	9.32E-02	1.18E+00	3.42E-01	4.34E+00

CT - Central Tendency

RME - Reasonable Maximum Exposure

[a] Total Dose is the sum of the Committed Effective Dose Equivalents for Am-241 and Pu-239/240

[b] Annual Radionuclide Intake = CC x IR x EF x FC x CF

[c] Committed Effective Dose Equivalent = Annual Radionuclide Intake x Effective Dose Coefficient

ATTACHMENT H4-5
ANNUAL RADIATION DOSE FROM INHALATION OF SURFACE SOIL PARTICULATES FUTURE ONSITE INDUSTRIAL/OFFICE WORKER

	Americium-241		Plutonium-239/240		Total Dose[a]	
Exposure Assumptions	**CT**	**RME**	**CT**	**RME**	**CT**	**RME**
AOC No. 1						
CC = Contaminant Concentration (pCi/m^3)	4.09E-04	4.09E-04	1.13E-02	1.13E-02		
IR = Inhalation Rate (m^3/hr)	0.63	0.83	0.63	0.83		
EF = Exposure Frequency (days/year)	219	250	219	250		
RD = Respiration Deposition Factor	1	1	1	1		
ET = Exposure Time (hrs/day)	7.2	8	7.2	8		
Annual Radionuclide Intake (pCi/year)[b]	4.06E-01	6.79E-01	1.12E+01	1.88E+01		
Effective Dose Coefficient (mrem/pCi)	4.44E-01	4.44E-01	3.08E-01	3.08E-01		
Committed Effective Dose Equivalent (mrem/year)[c]	1.80E-01	3.01E-01	3.46E+00	5.78E+00	3.64E+00	6.08E+00
AOC No. 2						
CC = Contaminant Concentration (pCi/m^3)	2.13E-05	2.13E-05	1.54E-04	1.54E-04		
IR = Inhalation Rate (m^3/hr)	0.63	0.83	0.63	0.83		
EF = Exposure Frequency (days/year)	219	250	219	250		
RD = Respiration Deposition Factor	1	1	1	1		
ET = Exposure Time (hrs/day)	7.2	8	7.2	8		
Annual Radionuclide Intake (pCi/year)[b]	2.12E-02	3.54E-02	1.53E-01	2.56E-01		
Effective Dose Coefficient (mrem/pCi)	4.44E-01	4.44E-01	3.08E-01	3.08E-01		
Committed Effective Dose Equivalent (mrem/year)[c]	9.39E-03	1.57E-02	4.71E-02	7.87E-02	5.65E-02	9.44E-02
30-Acre Maximum Exposure Area						
CC = Contaminant Concentration (pCi/m^3)	8.11E-04	8.11E-04	2.15E-02	2.15E-02		
IR = Inhalation Rate (m^3/hr)	0.63	0.83	0.63	0.83		
EF = Exposure Frequency (days/year)	219	250	219	250		
RD = Respiration Deposition Factor	1	1	1	1		
ET = Exposure Time (hrs/day)	7.2	8	7.2	8		
Annual Radionuclide Intake (pCi/year)[b]	8.06E-01	1.35E+00	2.14E+01	3.57E+01		
Effective Dose Coefficient (mrem/pCi)	4.44E-01	4.44E-01	3.08E-01	3.08E-01		
Committed Effective Dose Equivalent (mrem/year)[c]	3.58E-01	5.98E-01	6.58E+00	1.10E+01	6.94E+00	1.16E+01

Note:

CT - Central Tendency

RME - Reasonable Maximum Exposure

[a] Total Dose is the sum of the Committed Effective Dose Equivalents for Am-241 and Pu-239/240

[b] Annual Radionuclide Intake = CC x IR x EF x RD x ET

[c] Committed Effective Dose Equivalent = Annual Radionuclide Intake x Effective Dose Coefficient

ATTACHMENT H4-6
ANNUAL RADIATION DOSE FROM EXTERNAL IRRADIATION
FUTURE ONSITE INDUSTRIAL/OFFICE WORKER

	Americium-241		Plutonium-239/240		Total Dose[a]	
Exposure Assumptions	**CT**	**RME**	**CT**	**RME**	**CT**	**RME**
AOC No. 1						
CC = Soil Concentration (pCi/kg)	2.95E+04	2.95E+04	8.13E+05	8.13E+05		
SD = Soil Density (kg/m^3)	1,840	1,840	1,840	1,840		
D = Soil Depth (m)	0.051	0.051	0.051	0.051		
(1 - Se) = Gamma Shielding Factor (unitless)	0.5	0.8	0.5	0.8		
Areal External Irradiation (pCi/m^2)[b]	1.39E+06	2.22E+06	3.81E+07	6.10E+07		
External Dose Conversion Factor (mrem/hr per pCi/m^2)	3.41E-10	3.41E-10	4.31E-12	4.31E-12		
EF = Exposure Frequency (hours/year)	1.58E+03	1.80E+03	1.58E+03	1.80E+03		
Annual Radiation Effective Dose Equivalent (mrem/year)[c]	7.45E-01	1.36E+00	2.59E-01	4.73E-01	1E+00	1.83E+00
AOC No. 2						
CC = Soil Concentration (pCi/kg)	1.45E+03	1.45E+03	1.03E+04	1.03E+04		
SD = Soil Density (kg/m^3)	1,840	1,840	1,840	1,840		
D = Soil Depth (m)	0.051	0.051	0.051	0.051		
(1 - Se) = Gamma Shielding Factor (unitless)	0.5	0.8	0.5	0.8		
Areal External Irradiation (pCi/m^2)[b]	6.80E+04	1.09E+05	4.85E+05	7.75E+05		
External Dose Conversion Factor (mrem/hr per pCi/m^2)	3.41E-10	3.41E-10	4.31E-12	4.31E-12		
EF = Exposure Frequency (hours/year)	1.58E+03	1.80E+03	1.58E+03	1.80E+03		
Annual Radiation Effective Dose Equivalent (mrem/year)[c]	3.66E-02	6.68E-02	3.29E-03	6.02E-03	3.99E-02	7.28E-02
30-Acre Maximum Exposure Area						
CC = Soil Concentration (pCi/kg)	6.94E+04	6.94E+04	1.83E+06	1.83E+06		
SD = Soil Density (kg/m^3)	1,840	1,840	1,840	1,840		
D = Soil Depth (m)	0.051	0.051	0.051	0.051		
(1 - Se) = Gamma Shielding Factor (unitless)	0.5	0.8	0.5	0.8		
Areal External Irradiation (pCi/m^2)[b]	3.26E+06	5.21E+06	8.57E+07	1.37E+08		
External Dose Conversion Factor (mrem/hr per pCi/m^2)	3.41E-10	3.41E-10	4.31E-12	4.31E-12		
EF = Exposure Frequency (hours/year)	1.58E+03	1.80E+03	1.58E+03	1.80E+03		
Annual Radiation Effective Dose Equivalent (mrem/year)[c]	1.75E+00	3.20E+00	5.82E-01	1.06E+00	2.33E+00	4.26E+00

CT - Central Tendency

RME - Reasonable Maximum Exposure

[a] Total Dose is the sum of the Effective Dose Equivalents for Am-241 and Pu-239/240

[b] Areal External Irradiation = CC x SD x D x (1 - Se)

[c] Annual Effective Dose Equivalent = Areal External Irradiation x External Dose Conversion Factor x EF

ATTACHMENT H4-7
ANNUAL RADIATION DOSE FROM INGESTION OF SURFACE SOIL
FUTURE ONSITE ECOLOGICAL WORKER

Exposure Assumptions	Americium-241		Plutonium-239/240		Total Dose[a]	
	CT	RME	CT	RME	CT	RME
AOC No. 1						
CC = Contaminant Concentration (pCi/kg)	2.95E+04	2.95E+04	8.13E+05	8.13E+05		
IR = Ingestion Rate (mg/day)	33	106	33	106		
EF = Exposure Frequency (days/year)	65	65	65	65		
FC = Fraction Contaminated (unitless)	0.9	1	0.9	1		
CF = Conversion Factor (kg/mg)	1E-06	1E-06	1E-06	1E-06		
Annual Radionuclide Intake (pCi/year)[b]	5.70E+01	2.03E+02	1.57E+03	5.60E+03		
Effective Dose Coefficient (mrem/pCi)	3.64E-03	3.64E-03	5.18E-05	5.18E-05		
Committed Effective Dose Equivalent (mrem/year)[c]	2.08E-01	7.41E-01	8.13E-02	2.90E-01	2.89E-01	1.03E+00
AOC No. 2						
CC = Contaminant Concentration (pCi/kg)	1.45E+03	1.45E+03	1.03E+04	1.03E+04		
IR = Ingestion Rate (mg/day)	33	106	33	106		
EF = Exposure Frequency (days/year)	65	65	65	65		
FC = Fraction Contaminated (unitless)	0.9	1	0.9	1		
CF = Conversion Factor (kg/mg)	1E-06	1E-06	1E-06	1E-06		
Annual Radionuclide Intake (pCi/year)[b]	2.80E+00	9.99E+00	1.99E+01	7.12E+01		
Effective Dose Coefficient (mrem/pCi)	3.64E-03	3.64E-03	5.18E-05	5.18E-05		
Committed Effective Dose Equivalent (mrem/year)[c]	1.02E-02	3.64E-02	1.03E-03	3.69E-03	1.12E-02	4.01E-02
50-Acre Maximum Exposure Area						
CC = Contaminant Concentration (pCi/kg)	5.88E+04	5.88E+04	1.24E+06	1.24E+06		
IR = Ingestion Rate (mg/day)	33	106	33	106		
EF = Exposure Frequency (days/year)	65	65	65	65		
FC = Fraction Contaminated (unitless)	0.9	1	0.9	1		
CF = Conversion Factor (kg/mg)	1E-06	1E-06	1E-06	1E-06		
Annual Radionuclide Intake (pCi/year)[b]	1.14E+02	4.05E+02	2.40E+03	8.57E+03		
Effective Dose Coefficient (mrem/pCi)	3.64E-03	3.64E-03	5.18E-05	5.18E-05		
Committed Effective Dose Equivalent (mrem/year)[c]	4.13E-01	1.48E+00	1.24E-01	4.44E-01	5.38E-01	1.92E+00

CT - Central Tendency

RME - Reasonable Maximum Exposure

[a] Total Dose is the sum of the Committed Effective Dose Equivalents for Am-241 and Pu-239/240

[b] Annual Radionuclide Intake = CC x IR x EF x FC x CF

[c] Committed Effective Dose Equivalent = Annual Radionuclide Intake x Effective Dose Coefficient

ATTACHMENT H4-8
ANNUAL RADIATION DOSE FROM INHALATION OF SURFACE SOIL PARTICULATES
FUTURE ONSITE ECOLOGICAL WORKER

Exposure Assumptions	Americium-241		Plutonium-239/240		Total Dose[a]	
	CT	RME	CT	RME	CT	RME
AOC No. 1						
CC = Contaminant Concentration (pCi/m^3)	4.09E-04	4.09E-04	1.13E-02	1.13E-02		
IR = Inhalation Rate (m^3/hr)	0.83	1.40	0.83	1.40		
EF = Exposure Frequency (days/year)	65	65	65	65		
RD = Repiratory Deposition Factor	1	1	1	1		
ET = Exposure Time (hrs/day)	7.2	8	7.2	8		
Annual Radionuclide Intake (pCi/year)[b]	1.59E-01	2.98E-01	4.39E+00	8.23E+00		
Effective Dose Coefficient (mrem/pCi)	4.44E-01	4.44E-01	3.08E-01	3.08E-01		
Committed Effective Dose Equivalent (mrem/year)[c]	7E-02	1.32E-01	1.35E+00	2.53E+00	1.42E+00	2.67E+00
AOC No. 2						
CC = Contaminant Concentration (pCi/m^3)	2.13E-05	2.13E-05	1.53E-04	1.53E-04		
IR = Inhalation Rate (m^3/hr)	0.83	1.40	0.83	1.40		
EF = Exposure Frequency (days/year)	65	65	65	65		
RD = Repiratory Deposition Factor	1	1	1	1		
ET = Exposure Time (hrs/day)	7.2	8	7.2	8		
Annual Radionuclide Intake (pCi/year)[b]	8.27E-03	1.55E-02	5.94E-02	1.11E-01		
Effective Dose Coefficient (mrem/pCi)	4.44E-01	4.44E-01	3.08E-01	3.08E-01		
Committed Effective Dose Equivalent (mrem/year)[c]	3.67E-03	6.88E-03	1.83E-02	3.43E-02	2.20E-02	4.12E-02
50-Acre Maximum Exposure Area						
CC = Contaminant Concentration (pCi/m^3)	7.28E-04	7.28E-04	1.55E-02	1.55E-02		
IR = Inhalation Rate (m^3/hr)	0.83	1.40	0.83	1.40		
EF = Exposure Frequency (days/year)	65	65	65	65		
RD = Repiratory Deposition Factor	1	1	1	1		
ET = Exposure Time (hrs/day)	7.2	8	7.2	8		
Annual Radionuclide Intake (pCi/year)[b]	2.83E-01	5.30E-01	6.02E+00	1.13E+01		
Effective Dose Coefficient (mrem/pCi)	4.44E-01	4.44E-01	3.08E-01	3.08E-01		
Committed Effective Dose Equivalent (mrem/year)[c]	1.26E-01	2.35E-01	1.85E+00	3.48E+00	1.98E+00	3.71E+00

Note:
CT - Central Tendency
RME - Reasonable Maximum Exposure
[a] Total Dose is the sum of the Committed Effective Dose Equivalents for Am-241 and Pu-239/240
[b] Annual Radionuclide Intake = CC x IR x RD x EF x ET
[c] Committed Effective Dose Equivalent = Annual Radionuclide Intake x Effective Dose Coefficient

ATTACHMENT H4-9
ANNUAL RADIATION DOSE FROM INCIDENTAL INGESTION OF SURFACE WATER (WALNUT AND WOMAN CREEKS) FUTURE ONSITE ECOLOGICAL WORKER

	Americium-241		Plutonium-239/240		Total Dose[a]	
Exposure Assumptions	CT	RME	CT	RME	CT	RME
Walnut Creek						
CC = Contaminant Concentration (pCi/L)	5E-03	5E-03	2.60E-02	2.60E-02		
IR = Ingestion Rate (L/hours)	0.01	0.05	0.01	0.05		
ER = Exposure Rate (hours/day)	1	1	1	1		
EF = Exposure Frequency (days/year)	7	12	7	12		
Annual Radionuclide Intake (pCi/year)[b]	3.50E-04	3E-03	1.82E-03	1.56E-02		
Effective Dose Coefficient (mrem/pCi)	3.64E-03	3.64E-03	5.18E-05	5.18E-05		
Committed Effective Dose Equivalent (mrem/year)[c]	1.27E-06	1.09E-05	9.43E-08	8.08E-07	1.37E-06	1.17E-05
Woman Creek						
CC = Contaminant Concentration (pCi/L)	6.30E-02	6.30E-02	2.37E+00	2.37E+00		
IR = Ingestion Rate (L/day)	0.01	0.05	0.01	0.05		
ER = Exposure Rate (hours/day)	1	1	1	1		
EF = Exposure Frequency (days/year)	7	12	7	12		
Annual Radionuclide Intake (pCi/year)[b]	4.41E-03	3.78E-02	1.66E-01	1.42E+00		
Effective Dose Coefficient (mrem/pCi)	3.64E-03	3.64E-03	5.18E-05	5.18E-05		
Committed Effective Dose Equivalent (mrem/year)[c]	1.61E-05	1.38E-04	8.59E-06	7.37E-05	2.46E-05	2.11E-04

CT - Central Tendency

RME - Reasonable Maximum Exposure

[a] Total Dose is the sum of the Committed Effective Dose Equivalents for Am-241 and Pu-239/240

[b] Annual Radionuclide Intake = CC x IR x ER x EF

[c] Committed Effective Dose Equivalent = Annual Radionuclide Intake x Effective Dose Coefficient

ATTACHMENT H4-10
ANNUAL RADIATION DOSE FROM EXTERNAL IRRADIATION
FUTURE ONSITE ECOLOGICAL WORKER

	Americium-241		Plutonium-239/240		Total Dose[a]	
Exposure Assumptions	**CT**	**RME**	**CT**	**RME**	**CT**	**RME**
AOC No. 1						
CC = Soil Concentration (pCi/kg)	2.95E+04	2.95E+04	8.13E+05	8.13E+05		
SD = Soil Density (kg/m^3)	1,840	1,840	1,840	1,840		
D = Soil Depth (m)	0.051	0.051	0.051	0.051		
(1 - Se) = Gamma Shielding Factor (unitless)	0.8	1	0.8	1		
Areal External Irradiation (pCi/m^2)[b]	2.22E+06	2.77E+06	6.10E+07	7.63E+07		
External Dose Conversion Factor (mrem/hr per pCi/m^2)	3.41E-10	3.41E-10	4.31E-12	4.31E-12		
EF = Exposure Frequency (hours/year)	4.68E+02	4.68E+02	4.68E+02	4.68E+02		
Annual Radiation Effective Dose Equivalent (mrem/year)[c]	3.54E-01	4.42E-01	1.23E-01	1.54E-01	4.77E-01	5.96E-01
AOC No. 2						
CC = Soil Concentration (pCi/kg)	1.45E+03	1.45E+03	1.03E+04	1.03E+04		
SD = Soil Density (kg/m^3)	1,840	1,840	1,840	1,840		
D = Soil Depth (m)	0.051	0.051	0.051	0.051		
(1 - Se) = Gamma Shielding Factor (unitless)	0.8	1	0.8	1		
Areal External Irradiation (pCi/m^2)[b]	1.09E+05	1.36E+05	7.75E+05	9.69E+05		
External Dose Conversion Factor (mrem/hr per pCi/m^2)	3.41E-10	3.41E-10	4.31E-12	4.31E-12		
EF = Exposure Frequency (hours/year)	4.68E+02	4.68E+02	4.68E+02	4.68E+02		
Annual Radiation Effective Dose Equivalent (mrem/year)[c]	1.74E-02	2.17E-02	1.56E-03	1.96E-03	1.89E-02	2.37E-02
50-Acre Maximum Exposure Area						
CC = Soil Concentration (pCi/kg)	5.88E+04	5.88E+04	1.24E+06	1.24E+06		
SD = Soil Density (kg/m^3)	1,840	1,840	1,840	1,840		
D = Soil Depth (m)	0.051	0.051	0.051	0.051		
(1 - Se) = Gamma Shielding Factor (unitless)	0.8	1	0.8	1		
Areal External Irradiation (pCi/m^2)[b]	4.42E+06	5.52E+06	9.34E+07	1.17E+08		
External Dose Conversion Factor (mrem/hr per pCi/m^2)	3.41E-10	3.41E-10	4.31E-12	4.31E-12		
EF = Exposure Frequency (hours/year)	4.68E+02	4.68E+02	4.68E+02	4.68E+02		
Annual Radiation Effective Dose Equivalent (mrem/year)[c]	7.05E-01	8.81E-01	1.88E-01	2.35E-01	8.93E-01	1.12E+00

CT - Central Tendency

RME - Reasonable Maximum Exposure

[a] Total Dose is the sum of the Effective Dose Equivalents for Am-241 and Pu-239/240

[b] Areal External Irradiation = CC x SD x D x (1 - Se)

[c] Annual Radiation Effective Dose Equivalent = External Irradiation x External Dose Conversion Factor x EF

ATTACHMENT H4-11
ANNUAL RADIATION DOSE FROM INGESTION OF SURFACE SOIL
FUTURE ONSITE OPEN SPACE USE

Exposure Assumptions	Americium-241		Plutonium-239/240		Total Dose[a]	
	CT	RME	CT	RME	CT	RME
AOC No. 1						
CC = Contaminant Concentration (pCi/kg)	2.95E+04	2.95E+04	8.13E+05	8.13E+05		
IR = Ingestion Rate (mg/visit)[b]	9.6	60.0	9.6	60.0		
EF = Exposure Frequency (visits/year)	10	25	10	25		
CF = Conversion Factor (kg/mg)	1E-06	1E-06	1E-06	1E-06		
Annual Radionuclide Intake (pCi/year)[c]	2.83E+00	4.43E+01	7.80E+01	1.22E+03		
Effective Dose Coefficient (mrem/pCi)	3.64E-03	3.64E-03	5.18E-05	5.18E-05		
Committed Effective Dose Equivalent (mrem/year)[d]	1.03E-02	1.61E-01	4.04E-03	6.32E-02	1.44E-02	2.24E-01
AOC No. 2						
CC = Contaminant Concentration (pCi/kg)	1.45E+03	1.45E+03	1.03E+04	1.03E+04		
IR = Ingestion Rate (mg/visit)[b]	9.6	60.0	9.6	60.0		
EF = Exposure Frequency (visits/year)	10	25	10	25		
CF = Conversion Factor (kg/mg)	1E-06	1E-06	1E-06	1E-06		
Annual Radionuclide Intake (pCi/year)[c]	1.39E-01	2.18E+00	9.92E-01	1.55E+01		
Effective Dose Coefficient (mrem/pCi)	3.64E-03	3.64E-03	5.18E-05	5.18E-05		
Committed Effective Dose Equivalent (mrem/year)[d]	5.07E-04	7.92E-03	5.14E-05	8.03E-04	5.58E-04	8.72E-03

Note:

CT - Central Tendency

RME - Reasonable Maximum Exposure

[a] Total Dose is the sum of the Committed Effective Dose Equivalents for Am-241 and Pu-239/240

[b] Child/Adult Weighted

[c] Annual Radionuclide Intake = CC x IR x EF x CF

[d] Committed Effective Dose Equivalent = Annual Radionuclide Intake x Effective Dose Coefficient

ATTACHMENT H4-12
ANNUAL RADIATION DOSE FROM INHALATION OF SURFACE SOIL PARTICULATES
FUTURE ONSITE OPEN SPACE USE

Exposure Assumptions	Americium-241		Plutonium-239/240		Total Dose[a]	
	CT	RME	CT	RME	CT	RME
AOC No. 1						
CC = Contaminant Concentration (pCi/m^3)	4.09E-04	4.09E-04	1.13E-02	1.13E-02		
IR = Inhalation Rate (m^3/hr)	0.83	1.40	0.83	1.40		
EF = Exposure Frequency (visits/year)	10	25	10	25		
RD = Respiratory Deposition Factor	1	1	1	1		
ET = Exposure Time (hrs/visit)	1.5	5.0	1.5	5.0		
Annual Radionuclide Intake (pCi/year)[b]	5.09E-03	7.16E-02	1.41E-01	1.98E+00		
Effective Dose Coefficient (mrem/pCi)	4.44E-01	4.44E-01	3.08E-01	3.08E-01		
Committed Effective Dose Equivalent (mrem/year)[c]	2.26E-03	3.18E-02	4.33E-02	6.09E-01	4.56E-02	6.41E-01
AOC No. 2						
CC = Contaminant Concentration (pCi/m^3)	2.13E-05	2.13E-05	1.53E-04	1.53E-04		
IR = Inhalation Rate (m^3/hr)	0.83	1.40	0.83	1.40		
EF = Exposure Frequency (visits/year)	10	25	10	25		
RD = Respiratory Deposition Factor	1	1	1	1		
ET = Exposure Time (hrs/visit)	1.5	5.0	1.5	5.0		
Annual Radionuclide Intake (pCi/year)[b]	2.65E-04	3.73E-03	1.90E-03	2.68E-02		
Effective Dose Coefficient (mrem/pCi)	4.44E-01	4.44E-01	3.08E-01	3.08E-01		
Committed Effective Dose Equivalent (mrem/year)[c]	1E-04	1.66E-03	5.87E-04	8.25E-03	7.04E-04	9.90E-03

Note:

CT - Central Tendency

RME - Reasonable Maximum Exposure

[a] Total Dose is the sum of the Committed Effective Dose Equivalents for Am-241 and Pu-239/240

[b] Annual Radionuclide Intake = CC x IR x EF x RD x ET

[c] Committed Effective Dose Equivalent = Annual Radionuclide Intake x Effective Dose Coefficient

ATTACHMENT H4-13
ANNUAL RADIATION DOSE FROM INCIDENTAL INGESTION OF SURFACE WATER (WALNUT AND WOMAN CREEKS)
FUTURE ONSITE OPEN SPACE USE

	Americium-241		Plutonium-239/240		Total Dose[a]	
Exposure Assumptions	**CT**	**RME**	**CT**	**RME**	**CT**	**RME**
Walnut Creek						
CC = Contaminant Concentration (pCi/L)	5E-03	5E-03	2.60E-02	2.60E-02		
IR = Ingestion Rate (L/hour)	0.025	0.050	0.025	0.050		
ET = Exposure Time (hours/visit)	0.5	1.0	0.5	1.0		
EF = Exposure Frequency (visits/year)	5	15	5	15		
Annual Radionuclide Intake (pCi/year)[b]	3.13E-04	3.75E-03	1.63E-03	1.95E-02		
Effective Dose Coefficient (mrem/pCi)	3.64E-03	3.64E-03	5.18E-05	5.18E-05		
Committed Effective Dose Equivalent (mrem/year)[c]	1.14E-06	1.37E-05	8.42E-08	1.01E-06	1.22E-06	1.47E-05
Woman Creek						
CC = Contaminant Concentration (pCi/L)	6.30E-02	6.30E-02	2.37E+00	2.37E+00		
IR = Ingestion Rate (L/hour)	0.025	0.050	0.025	0.050		
ET = Exposure Time (hours/visit)	0.5	1.0	0.5	1.0		
EF = Exposure Frequency (visits/year)	5	15	5	15		
Annual Radionuclide Intake (pCi/year)[b]	3.94E-03	4.73E-02	1.48E-01	1.78E+00		
Effective Dose Coefficient (mrem/pCi)	3.64E-03	3.64E-03	5.18E-05	5.18E-05		
Committed Effective Dose Equivalent (mrem/year)[c]	1.43E-05	1.72E-04	7.67E-06	9.21E-05	2.20E-05	2.64E-04

CT - Central Tendency
RME - Reasonable Maximum Exposure
[a] Total Dose is the sum of the Committed Effective Dose Equivalents for Am-241 and Pu-239/240
[b] Annual Radionuclide Intake = CC x IR x ET x EF
[c] Committed Effective Dose Equivalent = Annual Radionuclide Intake x Effective Dose Coefficient

ATTACHMENT H4-14
ANNUAL RADIATION DOSE FROM EXTERNAL IRRADIATION
FUTURE ONSITE OPEN SPACE USE

	Americium-241		Plutonium-239/240		Total Dose[a]	
Exposure Assumptions	**CT**	**RME**	**CT**	**RME**	**CT**	**RME**
AOC No. 1						
CC = Soil Concentration (pCi/kg)	2.95E+04	2.95E+04	8.13E+05	8.13E+05		
SD = Soil Density (kg/m^3)	1,840	1,840	1,840	1,840		
D = Soil Depth (m)	0.051	0.051	0.051	0.051		
(1 - Se) = Gamma Shielding Factor (unitless)	0.80	1	0.80	1		
Areal External Irradiation (pCi/m^2)[b]	2.22E+06	2.77E+06	6.10E+07	7.63E+07		
External Dose Conversion Factor (mrem/hr per pCi/m^2)	3.41E-10	3.41E-10	4.31E-12	4.31E-12		
EF = Exposure Frequency (hours/year)	24	120	24	120		
Annual Radiation Effective Dose Equivalent (mrem/year)[c]	1.81E-02	1.13E-01	6.31E-03	3.95E-02	2.45E-02	1.53E-01
AOC No. 2						
CC = Soil Concentration (pCi/kg)	1.45E+03	1.45E+03	1.03E+04	1.03E+04		
SD = Soil Density (kg/m^3)	1,840	1,840	1,840	1,840		
D = Soil Depth (m)	0.051	0.051	0.051	0.051		
(1 - Se) = Gamma Shielding Factor (unitless)	0.80	1.00	0.80	1.00		
Areal External Irradiation (pCi/m^2)[b]	1.09E+05	1.36E+05	7.75E+05	9.69E+05		
External Dose Conversion Factor (mrem/hr per pCi/m^2)	3.41E-10	3.41E-10	4.31E-12	4.31E-12		
EF = Exposure Frequency (hours/year)	24	120	24	120		
Annual Radiation Effective Dose Equivalent (mrem/year)[c]	8.91E-04	5.57E-03	8.02E-05	5.01E-04	9.71E-04	6.07E-03

CT - Central Tendency

RME - Reasonable Maximum Exposure

[a] Total Dose is the sum of the Effective Dose Equivalents for Am-241 and Pu-239/240

[b] Areal External Irradiation = CC x SD x D x (1 - Se)

[c] Annual Radiation Effective Dose Equivalent = External Irradiation x External Dose Conversion Factor x EF

ATTACHMENT H4-15
ANNUAL RADIATION DOSE FROM INGESTION OF SUBSURFACE SOIL
FUTURE ONSITE CONSTRUCTION WORKER

Exposure Assumptions	Americium-241		Plutonium-239/240		Uranium-233,234		Uranium-235		Uranium-238		Total Dose[a]	
	CT	RME	CT	RME	CT	RME	CT	RME	CT	RME	CT	RME
AOC No. 1												
CC = Contaminant Concentration (pCi/kg)	3.20E+02	3.20E+02	4.15E+03	4.15E+03	8.20E+02	8.20E+02	7.00E+01	7.00E+01	8.70E+02	8.70E+02		
IR = Ingestion Rate (mg/day)	95	480	95	480	95	480	95	480	95	480		
EF = Exposure Frequency (days/year)	30	30	30	30	30	30	30	30	30	30		
FC = Fraction Contaminated (unitless)	0.9	1.0	0.9	1.0	0.9	1.0	0.9	1.0	0.9	1.0		
CF = Conversion Factor (kg/mg)	1E-06	1E-06	1E-06	1E-06	1E-06	1E-06	1E-06	1E-06	1E-06	1E-06		
Annual Radionuclide Intake (pCi/year)[b]	8.21E-01	4.61E+00	1.06E+01	5.98E+01	2.10E+00	1.18E+01	1.80E-01	1.01E+00	2.23E+00	1.25E+01		
Effective Dose Coefficient (mrem/pCi)	3.64E-03	3.64E-03	5.18E-05	5.18E-05	2.61E-05	2.61E-05	2.67E-05	2.67E-05	2.38E-05	2.38E-05		
Committed Effective Dose Equivalent (mrem/year)[c]	2.99E-03	1.68E-02	5.51E-04	3.10E-03	5.49E-05	3.08E-04	4.79E-06	2.69E-05	5.31E-05	2.98E-04	3.65E-03	2.05E-02
AOC No. 2												
CC = Contaminant Concentration (pCi/kg)	8.50E+02	8.50E+02	2.30E+03	2.30E+03	1.20E+03	1.20E+03	7.00E+01	7.00E+01	1.11E+03	1.11E+03		
IR = Ingestion Rate (mg/day)	95	480	95	480	95	480	95	480	95	480		
EF = Exposure Frequency (days/year)	30	30	30	30	30	30	30	30	30	30		
FC = Fraction Contaminated (unitless)	0.9	1	0.9	1	0.9	1	0.9	1	0.9	1		
CF = Conversion Factor (kg/mg)	1E-06	1E-06	1E-06	1E-06	1E-06	1E-06	1E-06	1E-06	1E-06	1E-06		
Annual Radionuclide Intake (pCi/year)[b]	2.18E+00	1.22E+01	5.90E+00	3.31E+01	3.08E+00	1.73E+01	1.80E-01	1.01E+00	2.85E+00	1.60E+01		
Effective Dose Coefficient (mrem/pCi)	3.64E-03	3.64E-03	5.18E-05	5.18E-05	2.61E-05	2.61E-05	2.67E-05	2.67E-05	2.38E-05	2.38E-05		
Committed Effective Dose Equivalent (mrem/year)[c]	7.94E-03	4.46E-02	3.06E-04	1.72E-03	8.03E-05	4.51E-04	4.79E-06	2.69E-05	6.78E-05	3.80E-04	8.39E-03	4.71E-02

CT - Central Tendency

RME - Reasonable Maximum Exposure

[a] Total Dose is the sum of the Committed Effective Dose Equivalents for Am-241, Pu-239/240, U-233,234, U-235, and U-238

[b] Annual Radionuclide Intake = CC x IR x EF x FC x CF

[c] Committed Effective Dose Equivalent = Annual Radionuclide Intake x Effective Dose Coefficient

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ATTACHMENT H4-16
ANNUAL EXPOSURE FROM INHALATION OF SUBSURFACE SOIL PARTICULATES
FUTURE ONSITE CONSTRUCTION WORKER

	Americium-241		Plutonium-239/240		Uranium-233,234		Uranium-235		Uranium-238		Total Exposure[a]	
Exposure Assumptions	CT	RME	CT	RME	CT	RME	CT	RME	CT	RME	CT	RME
AOC No. 1												
CC = Contaminant Concentration (pCi/m^3)	4.09E-04	4.09E-04	1.13E-02	1.13E-02	9.29E-09	9.29E-09	7.92E-10	7.92E-10	9.82E-09	9.82E-09		
IR = Inhalation Rate (m^3/hr)	1.25	1.40	1.25	1.40	1.25	1.40	1.25	1.40	1.25	1.40		
EF = Exposure Frequency (days/year)	30	30	30	30	30	30	30	30	30	30		
RD = Respiratory Deposition Factor	1	1	1	1	1	1	1	1	1	1		
ET = Exposure Time (hrs/day)	7.2	8	7.2	8	7.2	8	7.2	8	7.2	8		
Annual Radionuclide Intake (pCi/year)[b]	1.10E-01	1.37E-01	3.05E+00	3.80E+00	2.51E-06	3.12E-06	2.14E-07	2.66E-07	2.65E-06	3.30E-06		
Effective Dose Coefficient (mrem/pCi)	4.44E-01	4.44E-01	3.08E-01	3.08E-01	1.32E-01	1.32E-01	1.23E-01	1.23E-01	1.18E-01	1.18E-01		
Committed Effective Dose Equivalent (mrem/year)[c]	4.90E-02	6.10E-02	9.40E-01	1.17E+00	3.31E-07	4.12E-07	2.63E-08	3.27E-08	3.13E-07	3.89E-07	9.89E-01	1.23E+00
AOC No. 2												
CC = Contaminant Concentration (pCi/m^3)	2.13E-05	2.13E-05	1.53E-04	1.53E-04	1.36E-08	1.36E-08	7.92E-10	7.92E-10	1.25E-08	1.25E-08		
IR = Inhalation Rate (m^3/hr)	1.25	1.40	1.25	1.40	1.25	1.40	1.25	1.40	1.25	1.40		
EF = Exposure Frequency (days/year)	30	30	30	30	30	30	30	30	30	30		
RD = Respiratory Deposition Factor	1	1	1	1	1	1	1	1	1	1		
ET = Exposure Time (hrs/day)	7.2	8	7.2	8	7.2	8	7.2	8	7.2	8		
Annual Radionuclide Intake (pCi/year)[b]	5.75E-03	7.16E-03	4.13E-02	5.14E-02	3.67E-06	4.57E-06	2.14E-07	2.66E-07	3.38E-06	4.20E-06		
Effective Dose Coefficient (mrem/pCi)	4.44E-01	4.44E-01	3.08E-01	3.08E-01	1.32E-01	1.32E-01	1.23E-01	1.23E-01	1.18E-01	1.18E-01		
Committed Effective Dose Equivalent (mrem/year)[c]	2.55E-03	3.18E-03	1.27E-02	1.58E-02	4.85E-07	6.03E-07	2.63E-08	3.27E-08	3.98E-07	4.96E-07	1.53E-02	1.90E-02

Note:
CT - Central Tendency
RME - Reasonable Maximum Exposure
[a] Total Dose is the sum of the Committed Effective Dose Equivalents for Am-241, Pu-239/240, U-233,234, U-235, and U-238
[b] Annual Radionuclide Intake = CC x IR x EF x RD x ET
[c] Committed Effective Dose Equivalent = Annual Radionuclide Intake x Effective Dose Coefficient

ATTACHMENT H4-17
ANNUAL RADIATION DOSE FROM EXTERNAL IRRADIATION
FUTURE ONSITE CONSTRUCTION WORKER

	Americium-241		Plutonium-239/240		Uranium-233,234		Uranium-238		Uranium-235		Total Dose[a]	
Exposure Assumptions	CT	RME	CT	RME	CT	RME	CT	RME	CT	RME	CT	RME
AOC No. 1												
CC = Soil Concentration (pCi/kg)	3.20E+02	3.20E+02	4.15E+03	4.15E+03	8.20E+02	8.20E+02	8.70E+02	8.70E+02	7E+01	7E+01		
SD = Soil Density (kg/m^3)	1,840	1,840	1,840	1,840	1,840	1,840	1,840	1,840	1,840	1,840		
D = Soil Depth (m)	0.051	0.051	0.051	0.051	0.051	0.051	0.051	0.051	0.051	0.051		
(1 - Se) = Gamma Shielding Factor (unitless)	0.8	1	0.8	1	0.8	1	0.8	1	0.8	1		
Areal External Irradiation (pCi/m^2)[b]	2.40E+04	3.00E+04	3.12E+05	3.89E+05	6.16E+04	7.69E+04	6.53E+04	8.16E+04	5.26E+03	6.57E+03		
External Dose Conversion Factor (mrem/hr per pCi/m^2)	3.41E-10	3.41E-10	4.31E-12	4.31E-12	9.20E-12	9.20E-12	7.36E-12	7.36E-12	1.95E-09	1.95E-09		
EF = Exposure Frequency (hours/year)	2.16E+02	2.16E+02	2.16E+02	2.16E+02	2.16E+02	2.16E+02	2.16E+02	2.16E+02	2.16E+02	2.16E+02		
Annual Radiation Effective Dose Equivalent (mrem/year)[c]	1.77E-03	2.21E-03	2.90E-04	3.63E-04	1.22E-04	1.53E-04	1.04E-04	1.30E-04	2.21E-03	2.77E-03	4.86E-03	5.62E-03
AOC No. 2												
CC = Soil Concentration (pCi/kg)	8.50E+02	8.50E+02	2.30E+03	2.30E+03	1.20E+03	1.20E+03	1.11E+03	1.11E+03	7E+01	7E+01		
SD = Soil Density (kg/m^3)	1,840	1,840	1,840	1,840	1,840	1,840	1,840	1,840	1,840	1,840		
D = Soil Depth (m)	0.051	0.051	0.051	0.051	0.051	0.051	0.051	0.051	0.051	0.051		
(1 - Se) = Gamma Shielding Factor (unitless)	0.8	1	0.8	1	0.8	1	0.8	1	0.8	1		
Areal External Irradiation (pCi/m^2)[b]	6.38E+04	7.98E+04	1.73E+05	2.16E+05	9.01E+04	1.13E+05	8.33E+04	1.04E+05	5.26E+03	6.57E+03		
External Dose Conversion Factor (mrem/hr per pCi/m^2)	3.41E-10	3.41E-10	4.31E-12	4.31E-12	9.20E-12	9.20E-12	7.36E-12	7.36E-12	1.95E-09	1.95E-09		
EF = Exposure Frequency (hours/year)	2.16E+02	2.16E+02	2.16E+02	2.16E+02	2.16E+02	2.16E+02	2.16E+02	2.16E+02	2.16E+02	2.16E+02		
Annual Radiation Effective Dose Equivalent (mrem/year)[c]	4.70E-03	5.88E-03	1.61E-04	2.01E-04	1.79E-04	2.24E-04	1.32E-04	1.66E-04	2.21E-03	2.77E-03	7.59E-03	9.23E-03

CT - Central Tendency

RME - Reasonable Maximum Exposure

[a] Total Dose is the sum of the Effective Dose Equivalents for Am-241 and Pu-239/240

[b] Annual Radionuclide Intake = CC x SD x D x (1 - Se)

[c] Annual Radiation Effective Dose Equivalent = Areal External Irradiation x External Dose Conversion Factor x EF

ATTACHMENT H4-18
ANNUAL RADIATION DOSE FROM INGESTION OF SURFACE SOIL
HYPOTHETICAL FUTURE ONSITE RESIDENTS

	Americium-241		Plutonium-239/240		Total Dose[a]	
Exposure Assumptions	**CT**	**RME**	**CT**	**RME**	**CT**	**RME**
AOC No. 1						
CC = Contaminant Concentration (pCi/kg)	2.95E+04	2.95E+04	8.13E+05	8.13E+05		
IR = Ingestion Rate (mg/day)[b]	42	120	42	120		
EF = Exposure Frequency (days/year)	234	350	234	350		
CF = Conversion Factor (kg/mg)	1E-06	1E-06	1E-06	1E-06		
Annual Radionuclide Intake (pCi/year)[c]	2.90E+02	1.24E+03	7.99E+03	3.41E+04		
Effective Dose Coefficient (mrem/pCi)	3.64E-03	3.64E-03	5.18E-05	5.18E-05		
Committed Effective Dose Equivalent (mrem/year)[d]	1.06E+00	4.51E+00	4.14E-01	1.77E+00	1.47E+00	6.28E+00
AOC No. 2						
CC = Contaminant Concentration (pCi/kg)	1.45E+03	1.45E+03	1.03E+04	1.03E+04		
IR = Ingestion Rate (mg/day)[b]	42	120	42	120		
EF = Exposure Frequency (days/year)	234	350	234	350		
CF = Conversion Factor (kg/mg)	1E-06	1E-06	1E-06	1E-06		
Annual Radionuclide Intake (pCi/year)[c]	1.43E+01	6.09E+01	1.02E+02	4.34E+02		
Effective Dose Coefficient (mrem/pCi)	3.64E-03	3.64E-03	5.18E-05	5.18E-05		
Committed Effective Dose Equivalent (mrem/year)[d]	5.19E-02	2.22E-01	5.26E-03	2.25E-02	5.71E-02	2.44E-01
10-Acre Maximum Exposure Area						
CC = Contaminant Concentration (pCi/kg)	8.77E+04	8.77E+04	4.03E+05	4.03E+05		
IR = Ingestion Rate (mg/day)[b]	42	120	42	120		
EF = Exposure Frequency (days/year)	234	350	234	350		
CF = Conversion Factor (kg/mg)	1E-06	1E-06	1E-06	1E-06		
Annual Radionuclide Intake (pCi/year)[c]	8.62E+02	3.68E+03	3.96E+03	1.69E+04		
Effective Dose Coefficient (mrem/pCi)	3.64E-03	3.64E-03	5.18E-05	5.18E-05		
Committed Effective Dose Equivalent (mrem/year)[d]	3.14E+00	1.34E+01	2.05E-01	8.77E-01	3.34E+00	1.43E+01

CT - Central Tendency

RME - Reasonable Maximum Exposure

[a] Total Dose is the sum of the Committed Effective Dose Equivalents for Am-241 and Pu-239/240

[b] Child/Adult Weighted

[c] Annual Radionuclide Intake = CC x IR x EF x CF

[d] Committed Effective Dose Equivalent = Annual Radionuclide Intake x Effective Dose Coefficient

ATTACHMENT H4-19
ANNUAL RADIATION DOSE FROM INHALATION OF SURFACE SOIL PARTICULATES HYPOTHETICAL FUTURE ONSITE RESIDENTS

Exposure Assumptions	Americium-241		Plutonium-239/240		Total Dose[a]	
	CT	RME	CT	RME	CT	RME
AOC No. 1						
CC = Contaminant Concentration (pCi/m^3)	4.09E-04	4.09E-04	1.13E-02	1.13E-02		
IR = Inhalation Rate (m^3/hr)	0.63	0.83	0.63	0.83		
EF = Exposure Frequency (days/year)	234	350	234	350		
RD = Respiratory Deposition Factor	1	1	1	1		
ET = Exposure Time (hrs/day)	15	24	15	24		
Annual Radionuclide Intake (pCi/year)[b]	9.04E-01	2.85E+00	2.50E+01	7.88E+01		
Effective Dose Coefficient (mrem/pCi)	4.44E-01	4.44E-01	3.08E-01	3.08E-01		
Committed Effective Dose Equivalent (mrem/year)[c]	4.02E-01	1.27E+00	7.70E+00	2.43E+01	8.10E+00	2.55E+01
AOC No. 2						
CC = Contaminant Concentration (pCi/m^3)	2.13E-05	2.13E-05	1.53E-04	1.53E-04		
IR = Inhalation Rate (m^3/hr)	0.63	0.83	0.63	0.83		
EF = Exposure Frequency (days/year)	234	350	234	350		
RD = Respiratory Deposition Factor	1	1	1	1		
ET = Exposure Time (hrs/day)	15	24	15	24		
Annual Radionuclide Intake (pCi/year)[b]	5E-02	1.49E-01	3.38E-01	1.07E+00		
Effective Dose Coefficient (mrem/pCi)	4.44E-01	4.44E-01	3.08E-01	3.08E-01		
Committed Effective Dose Equivalent (mrem/year)[c]	2.09E-02	6.59E-02	1.04E-01	3.29E-01	1.25E-01	3.94E-01
10-Acre Maximum Exposure Area						
CC = Contaminant Concentration (pCi/m^3)	8.45E-04	8.45E-04	3.90E-03	3.90E-03		
IR = Inhalation Rate (m^3/hr)	0.63	0.83	0.63	0.83		
EF = Exposure Frequency (days/year)	234	350	234	350		
RD = Respiratory Deposition Factor	1	1	1	1		
ET = Exposure Time (hrs/day)	15	24	15	24		
Annual Radionuclide Intake (pCi/year)[b]	1.87E+00	5.89E+00	8.62E+00	2.72E+01		
Effective Dose Coefficient (mrem/pCi)	4.44E-01	4.44E-01	3.08E-01	3.08E-01		
Committed Effective Dose Equivalent (mrem/year)[c]	8.30E-01	2.62E+00	2.66E+00	8.37E+00	3.49E+00	1.10E+01

Note:
CT - Central Tendency
RME - Reasonable Maximum Exposure
[a] Total Dose is the sum of the Committed Effective Dose Equivalents for Am-241 and Pu-239/240
[b] Annual Radionuclide Intake = CC x IR x EF x RD x ET
[c] Committed Effective Dose Equivalent = Annual Radionuclide Intake x Effective Dose Coefficient

ATTACHMENT H4-20
ANNUAL RADIATION DOSE FROM INGESTION OF GROUNDWATER
HYPOTHETICAL FUTURE ONSITE RESIDENTS

Exposure Assumptions	Americium-241		Plutonium-239/240		Total Dose[a]	
	CT	RME	CT	RME	CT	RME
AOC No. 1						
CC = Contaminant Concentration (pCi/L)	1.90E-01	1.90E-01	2.40E+00	2.40E+00		
IR = Ingestion Rate (L/day)	1.4	2	1.4	2		
EF = Exposure Frequency (days/year)	234	350	234	350		
FC = Fraction Contaminated (unitless)	0.3	1	0.3	1		
Annual Radionuclide Intake (pCi/year)[b]	1.87E+01	1.33E+02	2.36E+02	1.68E+03		
Effective Dose Coefficient (mrem/pCi)	3.64E-03	3.64E-03	5.18E-05	5.18E-05		
Committed Effective Dose Equivalent (mrem/year)[c]	6.80E-02	4.84E-01	1.22E-02	8.70E-02	8.02E-02	5.71E-01
AOC No. 2						
CC = Contaminant Concentration (pCi/L)	2.20E-01	2.20E-01	1.13E+00	1.13E+00		
IR = Ingestion Rate (L/day)	1.4	2	1.4	2		
EF = Exposure Frequency (days/year)	234	350	234	350		
FC = Fraction Contaminated (unitless)	0.3	1	0.3	1		
Annual Radionuclide Intake (pCi/year)[b]	2.16E+01	1.54E+02	1.11E+02	7.91E+02		
Effective Dose Coefficient (mrem/pCi)	3.64E-03	3.64E-03	5.18E-05	5.18E-05		
Committed Effective Dose Equivalent (mrem/year)[c]	7.87E-02	5.61E-01	5.75E-03	4.10E-02	8.45E-02	6.02E-01
10-Acre Maximum Exposure Area						
CC = Contaminant Concentration (pCi/L)	6.70E+00	6.70E+00	4.37E+01	4.37E+01		
IR = Ingestion Rate (L/day)	1.4	2	1.4	2		
EF = Exposure Frequency (days/year)	234	350	234	350		
FC = Fraction Contaminated (unitless)	0.3	1	0.3	1		
Annual Radionuclide Intake (pCi/year)[b]	6.58E+02	4.69E+03	4.29E+03	3.06E+04		
Effective Dose Coefficient (mrem/pCi)	3.64E-03	3.64E-03	5.18E-05	5.18E-05		
Committed Effective Dose Equivalent (mrem/year)[c]	2.40E+00	1.71E+01	2.22E-01	1.58E+00	2.62E+00	1.87E+01

CT - Central Tendency

RME - Reasonable Maximum Exposure

[a] Total Dose is the sum of the Committed Effective Dose Equivalents for Am-241 and Pu-239/240

[b] Annual Radionuclide Intake = CC x IR x EF x FC

[c] Committed Effective Dose Equivalent = Annual Radionuclide Intake x Effective Dose Coefficient

ATTACHMENT H4-21
ANNUAL RADIATION DOSE FROM INCIDENTAL INGESTION OF SURFACE WATER (WALNUT AND WOMAN CREEKS) HYPOTHETICAL FUTURE ONSITE RESIDENTS

	Americium-241		Plutonium-239/240		Total Dose[a]	
Exposure Assumptions	**CT**	**RME**	**CT**	**RME**	**CT**	**RME**
Walnut Creek						
CC = Contaminant Concentration (pCi/L)	5E-03	5E-03	2.60E-02	2.60E-02		
IR = Ingestion Rate (L/hour)	0.01	0.05	0.01	0.05		
ER = Exposure Rate (hours/day)	1	2.6	1	2.6		
EF = Exposure Frequency (days/year)	5	7	5	7		
Annual Radionuclide Intake (pCi/year)[b]	2.50E-04	4.55E-03	1.30E-03	2.37E-02		
Effective Dose Coefficient (mrem/pCi)	3.64E-03	3.64E-03	5.18E-05	5.18E-05		
Committed Effective Dose Equivalent (mrem/year)[c]	9.10E-07	1.66E-05	6.73E-08	1.23E-06	9.77E-07	1.78E-05
Woman Creek						
CC = Contaminant Concentration (pCi/L)	6.30E-02	6.30E-02	2.37E+00	2.37E+00		
IR = Ingestion Rate (L/hour)	0.01	0.05	0.01	0.05		
ER = Exposure Rate (hours/day)	1	2.6	1	2.6		
EF = Exposure Frequency (days/year)	5	7	5	7		
Annual Radionuclide Intake (pCi/year)[b]	3.15E-03	5.73E-02	1.19E-01	2.16E+00		
Effective Dose Coefficient (mrem/pCi)	3.64E-03	3.64E-03	5.18E-05	5.18E-05		
Committed Effective Dose Equivalent (mrem/year)[c]	1.15E-05	2.09E-04	6.14E-06	1.12E-04	1.76E-05	3.20E-04

CT - Central Tendency
RME - Reasonable Maximum Exposure
[a] Total Dose is the sum of the Committed Effective Dose Equivalents for Am-241 and Pu-239/240
[b] Annual Radionuclide Intake = CC x IR x ER x EF
[c] Committed Effective Dose Equivalent = Annual Radionuclide Intake x Effective Dose Coefficient

ATTACHMENT H4-22
ANNUAL RADIATION DOSE FROM INGESTION OF HOMEGROWN PRODUCE (LEAFY VEGETABLES)
HYPOTHETICAL FUTURE ONSITE RESIDENTS

Exposure Assumptions	Americium-241 CT	Americium-241 RME	Plutonium-239/240 CT	Plutonium-239/240 RME	Total Dose[a] CT	Total Dose[a] RME
AOC No. 1						
CC = Contaminant Concentration (pCi/kg soil)	2.95E+04	2.95E+04	8.13E+05	8.13E+05		
IR = Ingestion Rate (g produce/day)	20.4	20.4	20.4	20.4		
EF = Exposure Frequency (days/year)	150	350	150	350		
FC = Fraction Contaminated (unitless)	0.25	0.40	0.25	0.40		
BV = Bv (pCi/kg leafy vegetables per pCi/kg soil)	5.50E-03	5.50E-03	4.50E-04	4.50E-04		
DW = Dry to Wet Conversion Factor	4.28E-01	4.28E-01	4.28E-01	4.28E-01		
CF = Conversion Factor (kg/g)	1E-03	1E-03	1E-03	1E-03		
Annual Radionuclide Intake (pCi/year)[b]	5.32E+01	1.99E+02	1.20E+02	4.47E+02		
Effective Dose Coefficient (mrem/pCi)	3.64E-03	3.64E-03	5.18E-05	5.18E-05		
Committed Effective Dose Equivalent (mrem/year)[c]	1.94E-01	7.23E-01	6.20E-03	2.32E-02	2E-01	7.46E-01
AOC No. 2						
CC = Contaminant Concentration (pCi/kg soil)	1.45E+03	1.45E+03	1.03E+04	1.03E+04		
IR = Ingestion Rate (g produce/day)	20.4	20.4	20.4	20.4		
EF = Exposure Frequency (days/year)	150	350	150	350		
FC = Fraction Contaminated (unitless)	0.25	0.40	0.25	0.40		
MF = Matrix Factor (unitless)	1	1	1	1		
BV = Bv (pCi/kg leafy vegetables per pCi/kg soil)	5.50E-03	5.50E-03	4.50E-04	4.50E-04		
DW = Dry to Wet Conversion Factor	4.28E-01	4.28E-01	4.28E-01	4.28E-01		
CF = Conversion Factor (kg/g)	1E-03	1E-03	1E-03	1E-03		
Annual Radionuclide Intake (pCi/year)[b]	2.61E+00	9.75E+00	1.52E+00	5.68E+00		
Effective Dose Coefficient (mrem/pCi)	3.64E-03	3.64E-03	5.18E-05	5.18E-05		
Committed Effective Dose Equivalent (mrem/year)[c]	9.50E-03	3.55E-02	7.88E-05	2.94E-04	9.58E-03	3.58E-02
10-Acre Maximum Exposure Area						
CC = Contaminant Concentration (pCi/kg soil)	8.77E+04	8.77E+04	4.03E+05	4.03E+05		
IR = Ingestion Rate (g produce/day)	20.4	20.4	20.4	20.4		
EF = Exposure Frequency (days/year)	150	350	150	350		
FC = Fraction Contaminated (unitless)	0.25	0.40	0.25	0.40		
BV = Bv (pCi/kg leafy vegetables per pCi/kg soil)	5.50E-03	5.50E-03	4.50E-04	4.50E-04		
DW = Dry to Wet Conversion Factor	4.28E-01	4.28E-01	4.28E-01	4.28E-01		
CF = Conversion Factor (kg/g)	1E-03	1E-03	1E-03	1E-03		
Annual Radionuclide Intake (pCi/year)[b]	1.58E+02	5.90E+02	5.94E+01	2.22E+02		
Effective Dose Coefficient (mrem/pCi)	3.64E-03	3.64E-03	5.18E-05	5.18E-05		
Committed Effective Dose Equivalent (mrem/year)[c]	5.75E-01	2.15E+00	3.08E-03	1.15E-02	5.78E-01	2.16E+00

CT - Central Tendency

RME - Reasonable Maximum Exposure

[a] Total Dose is the sum of the Committed Effective Dose Equivalents for Am-241 and Pu-239/240

[b] Annual Radionuclide Intake = CC x IR x EF x FC x BV x DW x CF

[c] Committed Effective Dose Equivalent = Annual Radionuclide Intake x Effective Dose Coefficient

ATTACHMENT H4-23
ANNUAL RADIATION DOSE FROM INGESTION OF HOMEGROWN PRODUCE
(NON-LEAFY VEGETABLES AND FRUIT)
HYPOTHETICAL FUTURE ONSITE RESIDENTS

	Americium-241		Plutonium-239/240		Total Dose[a]	
Exposure Assumptions	**CT**	**RME**	**CT**	**RME**	**CT**	**RME**
AOC No. 1						
CC = Contaminant Concentration (pCi/kg soil)	2.95E+04	2.95E+04	8.13E+05	8.13E+05		
IR = Ingestion Rate (g produce/day)	319.6	319.6	319.6	319.6		
EF = Exposure Frequency (days/year)	150	350	150	350		
FC = Fraction Contaminated (unitless)	0.2	0.3	0.2	0.3		
BR = Br (pCi/kg non-leafy produce per pCi/kg soil)	2.50E-04	2.50E-04	4.50E-05	4.50E-05		
DW = Dry to Wet Conversion Factor	4.28E-01	4.28E-01	4.28E-01	4.28E-01		
CF = Conversion Factor (kg/g)	1E-03	1E-03	1E-03	1E-03		
Annual Radionuclide Intake (pCi/year)[b]	3.03E+01	1.06E+02	1.50E+02	5.25E+02		
Effective Dose Coefficient (mrem/pCi)	3.64E-03	3.64E-03	5.18E-05	5.18E-05		
Committed Effective Dose Equivalent (mrem/year)[c]	1.10E-01	3.86E-01	7.78E-03	2.72E-02	1.18E-01	4.13E-01
AOC No. 2						
CC = Contaminant Concentration (pCi/kg soil)	1.45E+03	1.45E+03	1.03E+04	1.03E+04		
IR = Ingestion Rate (g produce/day)	319.6	319.6	319.6	319.6		
EF = Exposure Frequency (days/year)	150	350	150	350		
FC = Fraction Contaminated (unitless)	0.2	0.3	0.2	0.3		
BR = Br (pCi/kg non-leafy produce per pCi/kg soil)	2.50E-04	2.50E-04	4.50E-05	4.50E-05		
DW = Dry to Wet Conversion Factor	4.28E-01	4.28E-01	4.28E-01	4.28E-01		
CF = Conversion Factor (kg/g)	1E-03	1E-03	1E-03	1E-03		
Annual Radionuclide Intake (pCi/year)[b]	1.49E+00	5.21E+00	1.91E+00	6.68E+00		
Effective Dose Coefficient (mrem/pCi)	3.64E-03	3.64E-03	5.18E-05	5.18E-05		
Committed Effective Dose Equivalent (mrem/year)[c]	5.41E-03	1.90E-02	9.88E-05	3.46E-04	5.51E-03	1.93E-02
10-Acre Maximum Exposure Area						
CC = Contaminant Concentration (pCi/kg soil)	8.77E+04	8.77E+04	4.03E+05	4.03E+05		
IR = Ingestion Rate (g produce/day)	319.6	319.6	319.6	319.6		
EF = Exposure Frequency (days/year)	150	350	150	350		
FC = Fraction Contaminated (unitless)	0.2	0.3	0.2	0.3		
BR = Br (pCi/kg non-leafy produce per pCi/kg soil)	2.50E-04	2.50E-04	4.50E-05	4.50E-05		
DW = Dry to Wet Conversion Factor	4.28E-01	4.28E-01	4.28E-01	4.28E-01		
CF = Conversion Factor (kg/g)	1E-03	1E-03	1E-03	1E-03		
Annual Radionuclide Intake (pCi/year)[b]	9.00E+01	3.15E+02	7.44E+01	2.60E+02		
Effective Dose Coefficient (mrem/pCi)	3.64E-03	3.64E-03	5.18E-05	5.18E-05		
Committed Effective Dose Equivalent (mrem/year)[c]	3.28E-01	1.15E+00	3.85E-03	1.35E-02	3.31E-01	1.16E+00

CT - Central Tendency

RME - Reasonable Maximum Exposure

[a] Total Dose is the sum of the Committed Effective Dose Equivalents for Am-241 and Pu-239/240

[b] Annual Radionuclide Intake = CC x IR x EF x FC x BR x DW x CF

[c] Committed Effective Dose Equivalent = Annual Radionuclide Intake x Effective Dose Coefficient

ATTACHMENT H4-24
ANNUAL RADIATION EXPOSURE FROM INGESTION OF SURFACE SOIL DEPOSITED ON HOMEGROWN PRODUCE (VEGETABLES) HYPOTHETICAL FUTURE ONSITE RESIDENTS

	Americium-241		Plutonium-239/240		Total Dose[a]	
Exposure Assumptions	**CT**	**RME**	**CT**	**RME**	**CT**	**RME**
AOC No. 1						
CC = Contaminant Concentration (pCi/kg)	8.52E-01	8.52E-01	2.43E+01	2.43E+01		
IR = Ingestion Rate (g/day)	200	200	200	200		
EF = Exposure Frequency (days/year)	150	350	150	350		
FH = Fraction Homegrown (unitless)	0.25	0.4	0.25	0.4		
FC = Fraction of Homegrown which is Contaminated (unitless)	0.3	0.3	0.3	0.3		
WF = Washoff Factor (unitless)	0.5	1	0.5	1		
CF = Conversion Factor (kg/g)	1E-03	1E-03	1E-03	1E-03		
Annual Radionuclide Intake (pCi/year)[b]	9.59E-01	7.16E+00	2.74E+01	2.04E+02		
Effective Dose Coefficient (mrem/pCi)	3.64E-03	3.64E-03	5.18E-05	5.18E-05		
Committed Effective Dose Equivalent (mrem/year)[c]	3.49E-03	2.61E-02	1.42E-03	1.06E-02	4.91E-03	3.66E-02
AOC No. 2						
CC = Contaminant Concentration (pCi/kg)	4.57E-02	4.57E-02	3.28E-01	3.28E-01		
IR = Ingestion Rate (g/day)	200	200	200	200		
EF = Exposure Frequency (days/year)	150	350	150	350		
FH = Fraction Homegrown (unitless)	0.25	0.4	0.25	0.4		
FC = Fraction of Homegrown which is Contaminated (unitless)	0.3	0.3	0.3	0.3		
WF = Washoff Factor (unitless)	0.5	1	0.5	1		
CF = Conversion Factor (kg/g)	1E-03	1E-03	1E-03	1E-03		
Annual Radionuclide Intake (pCi/year)[b]	5.14E-02	3.84E-01	3.69E-01	2.76E+00		
Effective Dose Coefficient (mrem/pCi)	3.64E-03	3.64E-03	5.18E-05	5.18E-05		
Committed Effective Dose Equivalent (mrem/year)[c]	1.87E-04	1.40E-03	1.91E-05	1.43E-04	2.06E-04	1.54E-03
10-Acre Maximum Exposure Area						
CC = Contaminant Concentration (pCi/kg)	1.81E+00	1.81E+00	8.37E+00	8.37E+00		
IR = Ingestion Rate (g/day)	200	200	200	200		
EF = Exposure Frequency (days/year)	150	350	150	350		
FH = Fraction Homegrown (unitless)	0.25	0.4	0.25	0.4		
FC = Fraction of Homegrown which is Contaminated (unitless)	0.3	0.3	0.3	0.3		
WF = Washoff Factor (unitless)	0.5	1	0.5	1		
CF = Conversion Factor (kg/g)	1E-03	1E-03	1E-03	1E-03		
Annual Radionuclide Intake (pCi/year)[b]	2.04E+00	1.52E+01	9.42E+00	7.03E+01		
Effective Dose Coefficient (mrem/pCi)	3.64E-03	3.64E-03	5.18E-05	5.18E-05		
Committed Effective Dose Equivalent (mrem/year)[c]	7.41E-03	5.53E-02	4.88E-04	3.64E-03	7.90E-03	5.90E-02

CT - Central Tendency

RME - Reasonable Maximum Exposure

[a] Total Dose is the sum of the Committed Effective Dose Equivalents for Am-241 and Pu-239/240

[b] Annual Radionuclide Intake = CC x IR x EF x FH x FC x WF x CF

[c] Committed Effective Dose Equivalent = Annual Radionuclide Intake x Effective Dose Coefficient

ATTACHMENT H4-25
ANNUAL RADIATION EXPOSURE FROM INGESTION OF SURFACE SOIL DEPOSITED ON HOMEGROWN PRODUCE (FRUIT) HYPOTHETICAL FUTURE ONSITE RESIDENTS

	Americium-241		Plutonium-239/240		Total Dose[a]	
Exposure Assumptions	**CT**	**RME**	**CT**	**RME**	**CT**	**RME**
AOC No. 1						
CC = Contaminant Concentration (pCi/kg)	8.52E-01	8.52E-01	2.43E+01	2.43E+01		
IR = Ingestion Rate (g/day)	140	140	140	140		
EF = Exposure Frequency (days/year)	150	350	150	350		
FH = Fraction Homegrown (unitless)	0.2	0.3	0.2	0.3		
FC Fraction of Homegrown which is Contaminated (unitless)	0.7	0.7	0.7	0.7		
WF = Washoff Factor (unitless)	0.5	1	0.5	1		
CF = Conversion Factor (kg/g)	1E-03	1E-03	1E-03	1E-03		
Annual Radionuclide Intake (pCi/year)[b]	1.25E+00	8.77E+00	3.58E+01	2.50E+02		
Effective Dose Coefficient (mrem/pCi)	3.64E-03	3.64E-03	5.18E-05	5.18E-05		
Committed Effective Dose Equivalent (mrem/year)[c]	4.56E-03	3.19E-02	1.85E-03	1.30E-02	6.41E-03	4.49E-02
AOC No. 2						
CC = Contaminant Concentration (pCi/kg)	4.57E-02	4.57E-02	3.28E-01	3.28E-01		
IR = Ingestion Rate (g/day)	140	140	140	140		
EF = Exposure Frequency (days/year)	150	350	150	350		
FH = Fraction Homegrown (unitless)	0.2	0.3	0.2	0.3		
FC = Fraction of Homegrown which is Contaminated (unitless)	0.7	0.7	0.7	0.7		
WF = Washoff Factor (Unitless)	0.5	1	0.5	1		
CF = Conversion Factor (kg/g)	1E-03	1E-03	1E-03	1E-03		
Annual Radionuclide Intake (pCi/year)[b]	6.72E-02	4.70E-01	4.82E-01	3.38E+00		
Effective Dose Coefficient (mrem/pCi)	3.64E-03	3.64E-03	5.18E-05	5.18E-05		
Committed Effective Dose Equivalent (mrem/year)[c]	2.45E-04	1.71E-03	2.50E-05	1.75E-04	2.70E-04	1.89E-03
10-Acre Maximum Exposure Area						
CC = Contaminant Concentration (pCi/kg)	1.81E+00	1.81E+00	8.37E+00	8.37E+00		
IR = Ingestion Rate (g/day)	140	140	140	140		
EF = Exposure Frequency (days/year)	150	350	150	350		
FH = Fraction Homegrown (unitless)	0.2	0.3	0.2	0.3		
FC = Fraction of Homegrown which is Contamintated (unitless)	0.7	0.7	0.7	0.7		
WF = Washoff Factor (unitless)	0.5	1	0.5	1		
CF = Conversion Factor (kg/g)	1E-03	1E-03	1E-03	1E-03		
Annual Radionuclide Intake (pCi/year)[b]	2.66E+00	1.86E+01	1.23E+01	8.61E+01		
Effective Dose Coefficient (mrem/pCi)	3.64E-03	3.64E-03	5.18E-05	5.18E-05		
Committed Effective Dose Equivalent (mrem/year)[c]	9.68E-03	6.78E-02	6.37E-04	4.46E-03	1.03E-02	7.23E-02

CT - Central Tendency

RME - Reasonable Maximum Exposure

[a] Total Dose is the sum of the Committed Effective Dose Equivalents for Am-241 and Pu-239/240

[b] Annual Radionuclide Intake = CC x IR x EF x FH x FC x WF x CF

[c] Committed Effective Dose Equivalent = Annual Radionuclide Intake x Effective Dose Coefficient

ATTACHMENT H4-26
ANNUAL EXTERNAL IRRADIATION
HYPOTHETICAL FUTURE ONSITE RESIDENTS

Exposure Assumptions	Americium-241		Plutonium-239/240		Total Dose[a]	
	CT	RME	CT	RME	CT	RME
AOC No. 1						
CC = Soil Concentration (pCi/kg)	2.95E+04	2.95E+04	8.13E+05	8.13E+05		
SD = Soil Density (kg/m^3)	1,840	1,840	1,840	1,840		
D = Soil Depth (m)	0.051	0.051	0.051	0.051		
(1 - Se) = Gamma Shielding Factor (unitless)	0.5	0.8	0.5	0.8		
Areal External Irradiation (pCi/m^2)[b]	1.39E+06	2.22E+06	3.81E+07	6.10E+07		
External Dose Conversion Factor (mrem/hr per pCi/m^2)	3.41E-10	3.41E-10	4.31E-12	4.31E-12		
EF = Exposure Frequency (hours/year)	4.21E+03	8.40E+03	4.21E+03	8.40E+03		
Annual Radiation Effective Dose Equivalent (mrem/year)[c]	1.99E+00	6.35E+00	6.92E-01	2.21E+00	2.68E+00	8.56E+00
AOC No. 2						
CC = Soil Concentration (pCi/kg)	1.45E+03	1.45E+03	1.03E+04	1.03E+04		
SD = Soil Density (kg/m^3)	1,840	1,840	1,840	1,840		
D = Soil Depth (m)	0.051	0.051	0.051	0.051		
(1 - Se) = Gamma Shielding Factor (unitless)	0.5	0.8	0.5	0.8		
Areal External Irradiation (pCi/m^2)[b]	6.80E+04	1.09E+05	4.85E+05	7.75E+05		
External Dose Conversion Factor (mrem/hr per pCi/m^2)	3.41E-10	3.41E-10	4.31E-12	4.31E-12		
EF = Exposure Frequency (hours/year)	4.21E+03	8.40E+03	4.21E+03	8.40E+03		
Annual Radiation Effective Dose Equivalent (mrem/year)[c]	9.77E-02	3.12E-01	8.80E-03	2.81E-02	1.07E-01	3.40E-01
10-Acre Maximum Exposure Area						
CC = Soil Concentration (pCi/kg)	8.77E+04	8.77E+04	4.03E+05	4.03E+05		
SD = Soil Density (kg/m^3)	1,840	1,840	1,840	1,840		
D = Soil Depth (m)	0.051	0.051	0.051	0.051		
(1 - Se) = Gamma Shielding Factor (unitless)	0.5	0.8	0.5	0.8		
Areal External Irradiation (pCi/m^2)[b]	4.12E+06	6.59E+06	1.89E+07	3.03E+07		
External Dose Conversion Factor (mrem/hr per pCi/m^2)	3.41E-10	3.41E-10	4.31E-12	4.31E-12		
EF = Exposure Frequency (hours/year)	4.21E+03	8.40E+03	4.21E+03	8.40E+03		
Annual Radiation Effective Dose Equivalent (mrem/year)[c]	5.91E+00	1.89E+01	3.43E-01	1.10E+00	6.25E+00	2.00E+01

CT - Central Tendency
RME - Reasonable Maximum Exposure
[a] Total Dose is the sum of the Effective Dose Equivalents for Am-241 and Pu-239/240
[b] Areal External Irradiation = CC x SD x D x (1 - Se)
[c] Annual Radiation Effective Dose Equivalent = External Irradiation x External Dose Conversion Factor x EF

ATTACHMENT H4-27
ANNUAL RADIATION DOSE FROM INGESTION OF SURFACE SOIL[a]
CURRENT AND FUTURE OFFSITE RESIDENTS

Exposure Assumptions	Americium-241 CT	Americium-241 RME	Plutonium-239/240 CT	Plutonium-239/240 RME	Total Dose[b] CT	Total Dose[b] RME
Current Offsite Resident, Southeast						
AOC No. 2						
CC = Contaminant Concentration (pCi/kg)	7.30E-04	7.30E-04	5.19E-03	5.19E-03		
IR = Ingestion Rate (mg/day)[c]	42	120	42	120		
EF = Exposure Frequency (days/year)	234	350	234	350		
FC = Fraction Contaminated (unitless)	1	1	1	1		
CF = Conversion Factor (kg/mg)	1E-06	1E-06	1E-06	1E-06		
Annual Radionuclide Intake (pCi/year)[d]	7.17E-06	3.07E-05	5.10E-05	2.18E-04		
Effective Dose Coefficient (mrem/pCi)	3.64E-03	3.64E-03	5.18E-05	5.18E-05		
Committed Effective Dose Equivalent (mrem/year)[e]	2.61E-08	1.12E-07	2.64E-09	1.13E-08	2.88E-08	1.23E-07
Future Offsite Resident, Woman Creek/Indiana						
AOC No. 2						
CC = Contaminant Concentration (pCi/kg)	7.30E-04	7.30E-04	5.19E-03	5.19E-03		
IR = Ingestion Rate (mg/day)[c]	42	120	42	120		
EF = Exposure Frequency (days/year)	234	350	234	350		
FC = Fraction Contaminated (unitless)	1	1	1	1		
CF = Conversion Factor (kg/mg)	1E-06	1E-06	1E-06	1E-06		
Annual Radionuclide Intake (pCi/year)[d]	7.17E-06	3.07E-05	5.10E-05	2.18E-04		
Effective Dose Coefficient (mrem/pCi)	3.64E-03	3.64E-03	5.18E-05	5.18E-05		
Committed Effective Dose Equivalent (mrem/year)[e]	2.61E-08	1.12E-07	2.64E-09	1.13E-08	2.88E-08	1.23E-07

CT - Central Tendency

RME - Reasonable Maximum Exposure

[a] Modeling of Am-241 and Pu-239, 240 concentrations indicated none were current or future contaminants of concern in the following areas: AOC No. 1 - Southeast, Indiana South, Walnut/Indiana, or Woman/Indiana, and AOC No. 2 - Indiana South and Walnut/Indiana

[b] Total Dose is the sum of the Committed Effective Dose Equivalents for Am-241 and Pu-239/240

[c] Child/Adult Weighted

[d] Annual Radionuclide Intake = CC x IR x EF x FC x CF

[e] Committed Effective Dose Equivalent = Annual Radionuclide Intake x Effective Dose Coefficient

ATTACHMENT H4-28
ANNUAL RADIATION DOSE FROM INHALATION
OF SURFACE SOIL PARTICULATES[a]
CURRENT AND FUTURE OFFSITE RESIDENTS

Exposure Assumptions	Americium-241 CT	Americium-241 RME	Plutonium-239/240 CT	Plutonium-239/240 RME	Total Dose[b] CT	Total Dose[b] RME
Current Offsite Resident, Southeast						
AOC No. 1						
CC = Contaminant Concentration (pCi/m^3)	6.49E-08	6.49E-08	1.79E-06	1.79E-06		
IR = Inhalation Rate (m^3/hr)	0.63	0.83	0.63	0.83		
EF = Exposure Frequency (days/year)	234	350	234	350		
RD = Respiratory Deposition Factor	1	1	1	1		
ET = Exposure Time (hrs/day)	15	24	15	24		
Annual Radionuclide Intake (pCi/year)[c]	1.44E-04	4.52E-04	3.96E-03	1.25E-02		
Effective Dose Coefficient (mrem/pCi)	4.44E-01	4.44E-01	3.08E-01	3.08E-01		
Committed Effective Dose Equivalent (mrem/year)[d]	6.37E-05	2.01E-04	1.22E-03	3.84E-03	1.28E-03	4.04E-03
AOC No. 2						
CC = Contaminant Concentration (pCi/m^3)	9.51E-09	9.51E-09	6.76E-08	6.76E-08		
IR = Inhalation Rate (m^3/hr)	0.63	0.83	0.63	0.83		
EF = Exposure Frequency (days/year)	234	350	234	350		
RD = Respiratory Deposition Factor	1	1	1	1		
ET = Exposure Time (hrs/day)	15	24	15	24		
Annual Radionuclide Intake (pCi/year)[c]	2.10E-05	6.63E-05	1.49E-04	4.71E-04		
Effective Dose Coefficient (mrem/pCi)	4.44E-01	4.44E-01	3.08E-01	3.08E-01		
Committed Effective Dose Equivalent (mrem/year)[d]	9.34E-06	2.94E-05	4.60E-05	1.45E-04	5.54E-05	1.75E-04
Current Offsite Resident, Indiana South						
AOC No. 2						
CC = Contaminant Concentration (pCi/m^3)	1.44E-10	1.44E-10	1.02E-09	1.02E-09		
IR = Inhalation Rate (m^3/hr)	0.63	0.83	0.63	0.83		
EF = Exposure Frequency (days/year)	234	350	234	350		
RD = Respiratory Deposition Factor	1	1	1	1		
ET = Exposure Time (hrs/day)	15	24	15	24		
Annual Radionuclide Intake (pCi/year)[c]	3.18E-07	1.00E-06	2.26E-06	7.11E-06		
Effective Dose Coefficient (mrem/pCi)	4.44E-01	4.44E-01	3.08E-01	3.08E-01		
Committed Effective Dose Equivalent (mrem/year)[d]	1.41E-07	4.46E-07	6.95E-07	2.19E-06	8.36E-07	2.64E-06
Future Offsite Resident, Walnut Creek/Indiana						
AOC No. 2						
CC = Contaminant Concentration (pCi/m^3)	4.33E-10	4.33E-10	3.07E-09	3.07E-09		
IR = Inhalation Rate (m^3/hr)	0.63	0.83	0.63	0.83		
EF = Exposure Frequency (days/year)	234	350	234	350		
RD = Respiratory Deposition Factor	1	1	1	1		
ET = Exposure Time (hrs/day)	15	24	15	24		
Annual Radionuclide Intake (pCi/year)[c]	9.57E-07	3.02E-06	6.79E-06	2.14E-05		
Effective Dose Coefficient (mrem/pCi)	4.44E-01	4.44E-01	3.08E-01	3.08E-01		
Committed Effective Dose Equivalent (mrem/year)[d]	4.25E-07	1.34E-06	2.09E-06	6.59E-06	2.52E-06	7.93E-06

ATTACHMENT H4-28
ANNUAL RADIATION DOSE FROM INHALATION OF SURFACE SOIL PARTICULATES[a]
CURRENT AND FUTURE OFFSITE RESIDENTS

Exposure Assumptions	Americium-241		Plutonium-239/240		Total Dose[b]	
	CT	RME	CT	RME	CT	RME
Future Offsite Resident, Woman Creek/Indiana						
AOC No. 1						
CC = Contaminant Concentration (pCi/m^3)	3.85E-08	3.85E-08	1.06E-06	1.06E-06		
IR = Inhalation Rate (m^3/hr)	0.63	0.83	0.63	0.83		
EF = Exposure Frequency (days/year)	234	350	234	350		
RD = Respiratory Deposition Factor	1	1	1	1		
ET = Exposure Time (hrs/day)	15	24	15	24		
Annual Radionuclide Intake (pCi/year)[c]	8.51E-05	2.68E-04	2.34E-03	7.39E-03		
Effective Dose Coefficient (mrem/pCi)	4.44E-01	4.44E-01	3.08E-01	3.08E-01		
Committed Effective Dose Equivalent (mrem/year)[d]	3.78E-05	1.19E-04	7.22E-04	2.28E-03	7.60E-04	2.40E-03
AOC No. 2						
CC = Contaminant Concentration (pCi/m^3)	5.32E-09	5.32E-09	3.79E-08	3.79E-08		
IR = Inhalation Rate (m^3/hr)	0.63	0.83	0.63	0.83		
EF = Exposure Frequency (days/year)	234	350	234	350		
RD = Respiratory Deposition Factor	1	1	1	1		
ET = Exposure Time (hrs/day)	15	24	15	24		
Annual Radionuclide Intake (pCi/year)[c]	1E-05	3.71E-05	8.38E-05	2.64E-04		
Effective Dose Coefficient (mrem/pCi)	4.44E-01	4.44E-01	3.08E-01	3.08E-01		
Committed Effective Dose Equivalent (mrem/year)[d]	5.22E-06	1.65E-05	2.58E-05	8.14E-05	3.10E-05	9.79E-05

Note:
CT - Central Tendency
RME - Reasonable Maximum Exposure
[a] Modeling of Am-241 and Pu-239/240 concentrations indicated none were current or future contaminants of concern in the following areas: AOC No. 1 - Indiana South and Walnut/Indiana
[b] Total Dose is the sum of the Committed Effective Dose Equivalents for Am-241 and Pu-239/240
[c] Annual Radionuclide Intake = CC x IR x EF x RD x ET
[d] Committed Effective Dose Equivalent = Annual Radionuclide Intake x Effective Dose Coefficient

ATTACHMENT H4-29
ANNUAL RADIATION DOSE FROM INGESTION OF SURFACE SOIL DEPOSITED ON HOMEGROWN PRODUCE (VEGETABLES)[a]
CURRENT AND FUTURE OFFSITE RESIDENTS

Exposure Assumptions	Americium-241 CT	Americium-241 RME	Plutonium-239/240 CT	Plutonium-239/240 RME	Total Dose[b] CT	Total Dose[b] RME
Current Offsite Resident, Southeast						
AOC No. 2						
CC = Contaminant Concentration (pCi/kg)	6.01E-05	6.01E-05	4.27E-04	4.27E-04		
IR = Ingestion Rate (g/day)	200	200	200	200		
EF = Exposure Frequency (days/year)	150	350	150	350		
FH = Fraction Homegrown (unitless)	0.25	0.40	0.25	0.40		
FC = Fraction of Homegrown which is Contaminated (unitless)	0.30	0.30	0.30	0.30		
WF = Washoff Factor (unitless)	0.5	1	0.5	1		
CF = Conversion Factor (kg/g)	1E-03	1E-03	1E-03	1E-03		
Annual Radionuclide Intake (pCi/year)[c]	6.76E-05	5.05E-04	4.80E-04	3.59E-03		
Effective Dose Coefficient (mrem/pCi)	3.64E-03	3.64E-03	5.18E-05	5.18E-05		
Committed Effective Dose Equivalent (mrem/year)[d]	2.46E-07	1.84E-06	2.49E-08	1.86E-07	2.71E-07	2.02E-06
Future Offsite Resident, Woman Creek/Indiana						
AOC No. 2						
CC = Contaminant Concentration (pCi/kg)	6.01E-05	6.01E-05	4.27E-04	4.27E-04		
IR = Ingestion Rate (g/day)	200	200	200	200		
EF = Exposure Frequency (days/year)	150	350	150	350		
FH = Fraction Homegrown (unitless)	0.25	0.40	0.25	0.40		
FC = Fraction of Homegrown which is Contaminated (unitless)	0.30	0.30	0.30	0.30		
WF = Washoff Factor (unitless)	0.5	1	0.5	1		
CF = Conversion Factor (kg/g)	1E-03	1E-03	1E-03	1E-03		
Annual Radionuclide Intake (pCi/year)[c]	6.76E-05	5.05E-04	4.80E-04	3.59E-03		
Effective Dose Coefficient (mrem/pCi)	3.64E-03	3.64E-03	5.18E-05	5.18E-05		
Committed Effective Dose Equivalent (mrem/year)[d]	2.46E-07	1.84E-06	2.49E-08	1.86E-07	2.71E-07	2.02E-06

CT - Central Tendency

RME - Reasonable Maximum Exposure

[a] Modeling of Am-241 and Pu-239/240 concentrations indicated none were current or future contaminants of concern in the following areas: AOC No. 1- Southeast, Indiana South, Walnut/Indiana, and Woman/Indiana; and AOC No. 2- Indiana South and Walnut/Indiana.

[b] Total Dose is the sum of the Committed Effective Dose Equivalents for Am-241 and Pu-239/240

[c] Annual Radionuclide Intake = CC x IR x EF x FH x FC x WF x CF

[d] Committed Effective Dose Equivalent = Annual Radionuclide Intake x Effective Dose Coefficient

ATTACHMENT H4-30
ANNUAL RADIATION DOSE FROM INGESTION OF SURFACE SOIL DEPOSITED ON HOMEGROWN PRODUCE (FRUIT)[a]
CURRENT AND FUTURE OFFSITE RESIDENTS

Exposure Assumptions	Americium-241 CT	Americium-241 RME	Plutonium-239/240 CT	Plutonium-239/240 RME	Total Dose[b] CT	Total Dose[b] RME
Future Offsite Resident, Southeast						
AOC No. 2						
CC = Contaminant Concentration (pCi/kg)	6.01E-05	6.01E-05	4.27E-04	4.27E-04		
IR = Ingestion Rate (g/day)	140	140	140	140		
EF = Exposure Frequency (days/year)	150	350	150	350		
FH = Fraction Homegrown (unitless)	0.20	0.30	0.20	0.30		
FC = Fraction of Homegrown which is Contaminated (unitless)	0.7	0.7	0.7	0.7		
WF = Washoff Factor (unitless)	0.5	1	0.5	1		
CF = Conversion Factor (kg/g)	1E-03	1E-03	1E-03	1E-03		
Annual Radionuclide Intake (pCi/year)[c]	8.83E-05	6.18E-04	6.28E-04	4.39E-03		
Effective Dose Coefficient (mrem/pCi)	3.64E-03	3.64E-03	5.18E-05	5.18E-05		
Committed Effective Dose Equivalent (mrem/year)[d]	3.22E-07	2.25E-06	3.25E-08	2.28E-07	3.54E-07	2.48E-06
Future Offsite Resident, Woman Creek/Indiana						
AOC No. 2						
CC = Contaminant Concentration (pCi/kg)	6.01E-05	6.01E-05	4.27E-04	4.27E-04		
IR = Ingestion Rate (g/day)	140	140	140	140		
EF = Exposure Frequency (days/year)	150	350	150	350		
FH = Fraction Homegrown (unitless)	0.20	0.30	0.20	0.30		
FC = Fraction of Homegrown which is Contaminated (unitless)	0.7	0.7	0.7	0.7		
WF = Washoff Factor (unitless)	0.5	1	0.5	1		
CF = Conversion Factor (kg/g)	1E-03	1E-03	1E-03	1E-03		
Annual Radionuclide Intake (pCi/year)[c]	8.83E-05	6.18E-04	6.28E-04	4.39E-03		
Effective Dose Coefficient (mrem/pCi)	3.64E-03	3.64E-03	5.18E-05	5.18E-05		
Committed Effective Dose Equivalent (mrem/year)[d]	3.22E-07	2.25E-06	3.25E-08	2.28E-07	3.54E-07	2.48E-06

CT = Central Tendency

RME = Reasonable Maximum Exposure

[a] Modeling of radionuclide concentrations indicated none were or would not be contaminants of concern in the following areas: AOC No. 1- Southeast, Indiana South, Walnut/Indiana, and Woman/Indiana; and AOC No. 2- Indiana South and Walnut/Indiana

[b] Total Dose is the sum of the Committed Effective Dose Equivalents for Am-241 and Pu-239/240

[c] Annual Radionuclide Intake = CC x IR x EF x FH x FC xWF x CF

[d] Committed Effective Dose Equivalent = Annual Radionuclide Intake x Effective Dose Coefficient

ATTACHMENT H4-31
ANNUAL RADIATION DOSE FROM INGESTION OF SURFACE WATER
(WALNUT AND WOMAN CREEKS)
CURRENT AND FUTURE OFFSITE RESIDENTS

Exposure Assumptions	Americium-241 CT	Americium-241 RME	Plutonium-239/240 CT	Plutonium-239/240 RME	Total Dose[a] CT	Total Dose[a] RME
Future Offsite Resident, Walnut Creek/Indiana						
AOC No. 1 and No. 2						
CC = Contaminant Concentration (pCi/L)	5E-03	5E-03	2.60E-02	2.60E-02		
IR = Ingestion Rate (L/hour)	0.01	0.05	0.01	0.05		
ER = Exposure Rate (hours/day)	1.0	2.6	1.0	2.6		
EF = Exposure Frequency (days/year)	5	7	5	7		
Annual Radionuclide Intake (pCi/year)[b]	2.50E-04	4.55E-03	1.30E-03	2.37E-02		
Effective Dose Coefficient (mrem/pCi)	3.64E-03	3.64E-03	5.18E-05	5.18E-05		
Committed Effective Dose Equivalent (mrem/year)[c]	9.10E-07	1.66E-05	6.73E-08	1.23E-06	9.77E-07	1.78E-05
Future Offsite Resident, Woman Creek/Indiana						
AOC No. 1 and No. 2						
CC = Contaminant Concentration (pCi/L)	6.30E-02	6.30E-02	2.37E+00	2.37E+00		
IR = Ingestion Rate (L/hour)	0.01	0.05	0.01	0.05		
ER = Exposure Rate (hours/day)	1.0	2.6	1.0	2.6		
EF = Exposure Frequency (days/year)	5	7	5	7		
Annual Radionuclide Intake (pCi/year)[b]	3.15E-03	5.73E-02	1.19E-01	2.16E+00		
Effective Dose Coefficient (mrem/pCi)	3.64E-03	3.64E-03	5.18E-05	5.18E-05		
Committed Effective Dose Equivalent (mrem/year)[c]	1.15E-05	2.09E-04	6.14E-06	1.12E-04	1.76E-05	3.20E-04

CT - Central Tendency

RME - Reasonable Maximum Exposure

[a] Total Exposure is the sum of the Committed Effective Dose Equivalents for Am-241 and Pu-239/240

[b] Annual Radionuclide Intake = CC x IR x ER x EF

[c] Committed Effective Dose Equivalent = Annual Radionuclide Intake x Effective Dose Coefficient

ATTACHMENT H5
TOXICITY PROFILES

ATTACHMENT H5
TOXICITY PROFILES

Toxicity profiles are provided for the OU-2 contaminants that are chief contributors to overall health risk:

Surface Soil

Americium
Plutonium

Groundwater

Carbon tetrachloride
Chloroform
1,1-Dichloroethene
Methylene chloride
Tetrachloroethene
Trichloroethene
Vinyl chloride
Americium
Plutonium

Chemicals of concern in subsurface soil did not contribute significantly to overall risk.

The toxicity profiles are organized alphabetically.

AMERICIUM

Americium, (Am), an radioactive element with the atomic number of number 95, is a member of the group of transuranic elements, but does not occur in nature. Americium contains isotopes ranging from mass 237 to 246. The two most important isotopes are americium-241 and americium-243. Americium-241 is a daughter product of plutonium-241 and therefore it is associated frequently with plutonium processing or handling. Americium-243 is produced from uranium-238 or plutonium-239 by multiple neutron capture. Americium exhibits all oxidation states from II to VII, but the trivalent state is the most common. The metal oxidizes slowly in air and dissolves readily in dilute HCI.

The principal usage of americium-241 is a radiation source for static eliminators, smoke detectors, thickness gauges, and calibration sources. Combined with beryllium, americium is also used as a neutron source. It is also used as target material for producing curium-242 in accelerators.

Americium-241 has a physical half-life of 458 years and an effective biological half-life in bone of about 140 years. The assumed effective half-life in the whole body is 100 years and in liver 40 years (ICRP, 1972). Americium-241 decays by emitting alpha particles of 2 distinct energies [5.49 Me V (85 percent) and 5.44 MeV (13 percent)] to form neptunium-237. The principal photons emitted by Am-241 are gamma rays of 60 (36 percent) and 26 keV, and conversion L x rays of neptunium with energies centered at about 18 keV.

Americium-243 has a physical half-life of 7950 years and assumed effective half-life in bone of 195 years, in whole body of 100 years, and in liver of 40 years. Americium-243 decays by emitting alpha particles of 2 energies [5.28 MeV (87 percent) and 5.23 MeV (11 percent)], and two soft gamma rays (44 and 75 keV).

Depositions of americium in the body occur primarily by inhalation of particulates or through skin wounds. Absorption through the gastrointestinal tract is only about 0.03 percent in adult animals, although it is probably higher in newborns and the very young (Durbin, 1973). Once absorbed, americium is deposited primarily in liver and skeleton with lesser amounts initially present in kidney and spleen. The skeleton is the probable critical organ for

long-term effects due to the longer effective half-life in bone compared to other organs. The liver is also an organ of concern.

The pathology of Am-241 exposure by intraperitoneal injection in mice has been described (Nilsson and Broome-Karlsson, 1976). Very high doses of 16 and 18 μCi/kg seriously damaged the hematopoietic tissues, bone tissue, and testes. The highest frequency of induced tumors, 27 percent in the skeleton and 10 percent in hematopoietic tissue, was in the 8 μCi/kg dose range. Liver tumors were not increased significantly in any group. Degenerative lesions of the liver, adrenal glands, kidney, and heart were found mainly in the higher dose groups.

Metabolism and dosimetry studies of inhaled Am-241 oxide in beagles (4.4 to 4.9 μCi/kg) showed that the greatest long-term doses are received by the tracheobronchial lymph nodes, liver, lung, bone, and thyroid in descending order (Thomas et al., 1972). The total white cells, platelets, lymphocytes, and neutrophils of the blood were reduced, in number. Pathologic findings centered around fibrotic changes in lung and lymph nodes, fatty deposits, and cellular degeneration in liver, bone marrow depletion, glomerulosclerosis, and severely damaged thyroid. These dose levels, about 8,000 times the maximum permissible body burdens for workers, for time periods of 127 to 1022 days, do not necessarily indicate where long-term pathology, such as carcinogenesis, may develop.

In man, the mode of exposure determines the distribution in the body. In six persons chronically exposed to an unknown chemical form of americium by inhalation over a period of six years, most of the activity was in the skeleton with little activity in the soft tissues, except for the liver (Wrenn et al., 1972). In another instance, two men were studied for a period of nearly 4 years after accidental inhalation of americium oxide (Fry, 1976). At day 324, an estimated 41 percent was in lung, 47 percent in liver, and 12 percent in bone; at day 1392 the percentages were 18 in lung, 47 in liver, and 35 in bone. The long-term transfer from lung to blood, considered to be relatively small by the Task Group of Lung Dynamics (ICRP, 1966; 1972), appears to be a more important factor in lung clearance than ciliary mechanisms. It has been proposed (ICRP, 1972) that, for all americium compounds, the distribution be considered 45 percent in bone, 45 percent in liver, and 10 percent in other tissues or excreta.

No published studies were located regarding reproductive, developmental and cancer causing effects in humans following exposure to americium. Nevertheless, the potential exists for developing cancer from swallowing or breathing very large amounts of americium. There is enough evidence to demonstrate that sufficient radiation to almost any part of the body increases the probability of cancer formation. Common sites include the skin, lungs, bone, and bone marrow. Irradiation may either increase the absolute incidence of cancer or accelerate the time or onset of cancer appearance, or both (Bomberger and Dannenfelser, 1984).

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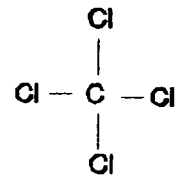
CARBON TETRACHLORIDE

Carbon tetrachloride is a colorless, nonflammable, heavy liquid. Typically carbon tetrachloride has been used as a solvent, an intermediate in the synthesis of numerous organic compounds, and in the manufacture of pesticides In addition, carbon tetrachloride has been used in fire distinguisher, for cleaning clothing, rendering benzin nonflammable; as azeotropic drying agent for wet spark plugs in automobiles (Merck, 1989).



Carbon Tetrachloride

The main health effects of carbon tetrachloride after either ingestion or inhalation are due to actions on the brain, liver and kidneys. There are many reports of accidental poisonings and deaths in humans due to inhalation of carbon tetrachloride fumes, with the lethal exposure level dependent on the amount of compound present and the duration of exposure. The principal clinical signs of exposure are a swollen and tender liver, elevated serum levels of hepatic enzymes, elevated serum bilirubin, and decreased serum levels of liver proteins (EPA 1984). Clinical signs of kidney dysfunction are also common and include anuria, albuminuria, edema, and hypertension (ATSDR 1988). The levels of the compound which can produce hepatotoxic and nephrotoxic effects in humans are not well-defined.

As in humans, the hepatotoxic and nephrotoxic effects of carbon tetrachloride are the most prominent systemic effects in animals, with the liver being the most sensitive organ. Unlike humans, renal injury does not often occur in animals following inhalation exposure, however, the kidney is a target organ after oral administration of the compound (ATSDR 1988). The critical animal study with carbon tetrachloride was a subchronic study in rats that reported dose-dependent changes in the liver (Bruckner et al. 1986). Doses of 20 mg/kg/day for 11 weeks by oral gavage in rats produced mild signs of liver toxicity, such as mild centrilobular vacuolization, while 80 mg/kg/day produced severe hepatic injury. Doses lower than 20 mg/kg/day were also tested for 12 weeks and it was found that 1 mg/kg/day of carbon tetrachloride produced no hepatic effects (the NOEL), 10 mg/kg/day resulted in mild centrilobular vacuolization, and 33 mg/kg/day produced extensive hepatic damage.

Although the combined mutagenicity data for carbon tetrachloride indicate that it is at best a weak mutagen, the results support its classification as an animal carcinogen. This compound produced hepatocellular carcinomas in all animal species evaluated. For example, hematomas were observed in virtually all mice treated with 1,250 and 2,500 mg/kg carbon tetrachloride by gavage five times/week for 78 weeks (NCI 1976). Hepatocarcinomas were also reported in rats following seven months of chronic inhalation exposure and following subcutaneous injections of 2,000 mg/kg twice weekly for 68 or more weeks (IARC 1979). There are a few reports in humans which have noted the occurrence of liver cancer in people exposed to carbon tetrachloride fumes both acutely and longer term (ATSDR 1988). Therefore, although carbon tetrachloride has not been proven to be a human carcinogen, it is suggested based on the strong animal data.

Carbon tetrachloride has a classification of B2 (probable human carcinogen) based on sufficient subchronic and chronic carcinogenicity data in rats, mice and hamsters (oral administration of carbon tetrachloride produce hepatocellular carcinomas).

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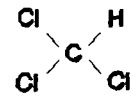
CHLOROFORM



Chloroform

Chloroform is a clear, colorless, volatile organic compound with numerous industrial applications. Typically chloroform has been used as a solvent, an intermediate in the synthesis of numerous organic compounds, and in the manufacture of pesticides. In addition, chloroform was used in the past as a surgical anesthetic prior to the recognition of its toxic effects. Chloroform can be readily absorbed via ingestion or inhalation and, to a lesser extent, via direct dermal contact. Because of its volatility, inhalation represents the most common exposure route. Once absorbed, chloroform is rapidly eliminated, with the majority being cleared through the lungs within 24 hours of exposure.

Chloroform is a potent, fast-acting central nervous system (CNS) depressant at high atmospheric concentrations. Symptoms typically include nausea, light headedness, malaise, stupor, and coma. Most CNS effects are transient, and do not persist once chloroform has been eliminated from the body. In a few instances, more persistent CNS effects have been reported, including gait abnormalities and tremor. These effects may take as long as 2 weeks to disappear (Storms, 1973). Onset of CNS effects have been reported to occur with exposure to concentrations as low as 920 ppm for 3 minutes (Lehman and Schmidt-Kehl, 1936), while anesthetic effects typically require exposure to 20,000 to 40,000 ppm (NIOSH, 1974). Other target organs of acute chloroform exposure include the liver, kidneys, and lungs. Liver effects include elevation in liver function tests and blood enzyme levels; kidney effects include proteinuria, hematuria, and the production of cellular casts; and respiratory effects include the induction of a chemical pneumonitis.

Chronic exposure to chloroform has been associated with liver and kidney damage. In one study, rats exposed to 25 ppm (7 hours per day, 5 days per week for 6 months) developed cloudy swelling of the kidney and lobular granular degeneration and necrosis of the liver (Torkelson et al., 1976). Epidemiological studies among occupationally exposed individuals have demonstrated an increased incidence of toxic hepatitis and liver enlargement among some populations (Bomski et al., 1967), but not others (Challen et al., 1958).

Animal studies indicate that chloroform may be a developmental toxicant. Pregnant rats exposed to 100 ppm produce pups with increased incidence of missing ribs, imperforate anus, subcutaneous edema, and delayed ossification. At 300 ppm, additional effects are produced, including abnormalities of the skull and sternum, decreased numbers of live fetuses, and an increase in the number of resorptions (Schwetz et al., 1974).

The role of chloroform as a reproductive toxicant has not been well characterized. In one study, mice exposed to 400 to 800 ppm for 4 hours per day for 5 days were found to have an increased incidence of abnormal sperm, although their reproductive fitness was not evaluated (Land et al., 1981).

Chloroform is not mutagenic in most assays (see ATSDR, 1989 for review), although it has tested positive for sister chromatic exchange (SCE) induction in cultured human lymphocytes (Morimoto and Koizumi, 1983). Animal studies indicate that chloroform can induce hepatocellular carcinomas (NCI, 1976) and kidney tumors in mice and rats (Roe et al., 1979; Jorgenson et al., 1985). Epidemiological studies among individuals occupationally exposed to chloroform have not demonstrated any carcinogenic effects in man. The U.S. Environmental Protection Agency (EPA) classifies chloroform as a Class B2 probable human carcinogen, based on animal studies.

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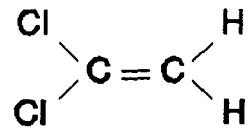
1,1-DICHLOROETHYLENE

The compound 1,1 Dichloroethylene (1,1-DCE), or vinylidene chloride, is a common intermediate in the manufacture of polymers. 1,1-DCE polymers are widely used as coatings on the interiors of railroad cars, fuel storage tanks, and ship tanks, and on steel pipes and structures.



1,1-Dichloroethene

The chemical is highly volatile. 1,1-DCE is expected to be short-lived in water because of its poor solubility and rapid volatilization. Its half-life in surface water is estimated at 1 to 6 days, depending on aeration rates. Its volatility and poor solubility probably prevents absorption of significant quantities through skin.

Data on acute oral toxicity in animal studies, as measured by the LD_{50} (Lethal Dose) of 50 mg/kg to 1800 mg/kg in rats and 5750 mg/kg in dogs have been reported. Acute oral doses were found to produce numerous changes in liver and plasma enzymes as well as cell damage in liver and the bronchial epithelium.

Chronic (2-year) oral exposures via drinking water at 1,1-DCE concentrations of 50, 100, or 200 mg/l produced signs of liver pathology in rats. Chronic renal inflammation was observed in rats given 5 mg/kg/day by gavage for 2 years, and liver necrosis has been produced in mice exposed to 10 mg/kg/day by gavage, 5 days/week for 2 years. No adverse effects were observed at lower doses.

Acute inhalation toxicity in rats, measured as LC_{50} (Lethal Concentration) following 4 hours of exposure, also varied with whether the animal was fed (15,000 ppm) or fasted (600 ppm). Results from other studies are variable. For example, rabbits, monkeys, rats, and guinea pigs exposed to 395 mg/m^3 (100 ppm) for 8 hours/day, 5 days/week for 6 weeks exhibited no mortality, signs of toxicity, or histopathological (tissue) changes. Several studies have demonstrated that species, strain, and sex greatly influence the acute toxic effects of 1,1-DCE.

Longer term inhalation exposures, either continuous (47 ppm, 90 days) or intermittent (50 to 100 ppm, 8 hours/day, 5 days/week for 6 months), have been shown to produce liver, kidney, and lung damage in some animals.

If microsomal activation is provided, 1,1-DCE is weakly mutagenic in some bacterial systems, but not in Chinese hamster cells or in mice and rats. The International Agency for Research on Cancer has concluded that the evidence is sufficient to classify 1,1-DCE as a mutagen.

Studies of carcinogenic effects have variable results. Several long-term studies in rats failed to produce any evidence of carcinogenicity, but increased incidence of kidney and mammary tumors have been reported in Swiss mice. However, the tumors may be the result of tissue injury and repair rather than the result of mechanisms involving DNA.

Based on the lack of evidence of carcinogenicity in humans, limited animal data, and the mutagenicity observed in bacterial systems, EPA has classified 1,1-DCE as a possible human carcinogen (Class C).

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METHYLENE CHLORIDE

Methylene chloride is widely used in paint removers, degreasing agents, and aerosol propellants; as a blowing agent in flexible urethane foams; as a process solvent in the manufacture of pharmaceuticals and food products, including the decaffeination of coffee; and as a fumigant for grains and fruits. An estimated one million workers are potentially exposed to methylene chloride or to products that contain this chemical (NIOSH 1986).

In humans, direct contact with methylene chloride produces eye, respiratory tract, and skin irritation (EPA 1985b). Mild poisonings due to inhalation exposure produce solemnness, lassitude, numbness and tingling of the limbs, anorexia, and light-headedness, followed by rapid and complete recovery. More severe poisonings generally involve correspondingly greater disturbances of the central and peripheral nervous system. Methylene chloride also has acute toxic effects on the heart, including the induction of arrhythmia. Fatalities reportedly due to methylene chloride exposure have been attributed to cardiac injury and heart failure. Methylene chloride is metabolized to carbon monoxide in vivo, and levels of carboxyhemoglobin in the blood are elevated following acute exposures. In experimental animals, methylene chloride is reported to cause kidney and liver damage, convulsions, and distal paresis. An oral median lethal dose (LD_{50}) of 2,136 mg/kg and an inhalation median lethal concentration (LC_{50}) of 80,000 mg/m^3/30 min is reported for the rat.

Methylene chloride is reported to be mutagenic in bacterial test systems. It has also produced positive results in the Fischer rat embryo cell-transformation test. However, it has been suggested that the observed cell-transforming capability may have been due to impurities in the test material. There is no conclusive evidence that methylene chloride exposure produces teratogenic effects.

Methylene chloride has been classified in EPA's Group B2 (probable human carcinogen), based upon positive results in animal studies and inadequate evidence in humans (EPA 1985b). Animal study results indicated methylene chloride exposure will increased the incidences of lung and liver tumors in mice and mammary tumors in female and male rats (NTP 1984; EPA 1985a). In a chronic inhalation study, male rats exhibited an increased incidence of sarcomas in the ventral neck region (Burek et al. 1984), however, the authors

suggested that the relevance and toxicological significance of this finding is uncertain in light of available toxicity data.

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PLUTONIUM

Plutonium, a radioactive element, is a silver-colored metal. Plutonium is produced when uranium absorbs an atomic particle. Plutonium exists in trace quantities in naturally occurring uranium ores (Weast, 1980), but large amounts have been produced by man in nuclear reactors. There are 15 known isotopes of plutonium with atomic weights ranging from 232 to 246. The majority of the plutonium, in the form of plutonium-239, is used as an ingredient in nuclear weapons. Plutonium-238 is used as heat source in thermo-electric power devices (Bair and Thompson, 1974).

When plutonium decays, it emits primarily alpha particles (ionized helium atoms), except for plutonium-241 which decays by beta emission. Although alpha particles are highly ionizing and, therefore, damaging, their penetration into tissue is slight. Biological damage is limited to cells in the immediate vicinity of the alpha-emitting radioactive material The biological half life and the retention time of the two most studied isotopes, plutonium-238 and plutonium-239, were very long, resulting in prolonged exposure of body organs to alpha radiation (USEPA, 1977)

The acute toxicity of plutonium compounds has been investigated. No deaths in humans specifically associated with plutonium have been reported after acute plutonium exposure. Animals studies have demonstrated that exposure to high radiation doses of plutonium isotopes can result in decreases in life span, and increases in respiratory diseases, and cancer. The target tissues appear to be the lungs and associated lymph nodes, the liver, and the bones.

A potential health hazard results when plutonium is inhaled and deposited in lung tissue or is ingested or enters the body through wounds. In most cases, in acute inhalation exposure studies, death was caused by radiation pneumonitis accompanied by edema, fibrosis, and other signs of respiratory damage within 1-3 years after exposure. For inhalation exposure, animals studies indicated plutonium -239 was more toxic than plutonium-238 (Park et al, 1988, Sanders, 1977). In an acute oral study, a single oral dose of 3.3×10^8 pCi plutonium-238 citrate/kg body weight was administered to neonatal rats by gavage (Fritsch et al, 1987). This single exposure to plutonium resulted in the death of 45% of the treated animals within two-

weeks of exposure. Damages in the gastrointestinal tract were the major effects been observed in the treated rats.

Chromosomal aberrations were observed in tissue cells among plutonium workers (Schofield 1980; Schofield et al, 1974) and laboratory animals (Benjamin et al. 1976; Brooks et al, 1976, 1979). Other genetic effects attributed to plutonium are chromosomal aberration dominant lethality and chromosome translocation in spermatocytes. In laboratory animals, a reproductive effect attributed to plutonium exposure is dominant lethality Exposure of male mice to "high" doses (of plutonium-239 resulted in sterility 12 weeks post-exposure (Luning et al, 1976a, 1976b). Exposure of female mice to plutonium also resulted in dominant lethal mutations (Searle et al., 1982).

The cancer causing effects associated with plutonium exposure have been intensively studied in animals and humans. Most of the data on humans come from epidemiologic studies associated with occupational exposure to plutonium at plutonium processing plants. No direct causal link between plutonium exposure and cancer causing effects has been established in human studies. Numerous animal studies using much higher doses of plutonium than those observed in epidemiologic studies have shown conclusively that plutonium is a carcinogen. In animal studies, plutonium is an effective lung, skeletal, and liver carcinogen, depending on its chemical form, route of exposure, and species (Sikov et al., 1978a, Taylor et al., 1983; Mays et al., 1987; ATSDR, 1991).

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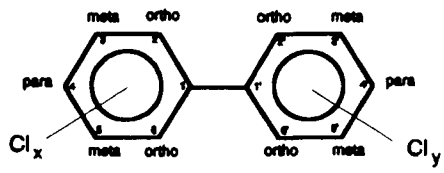
POLYCHLORINATED BIPHENYLS (PCBS)

Polychlorinated biphenyls (PCBs) are semi-synthetic oils. They are made from biphenyl, a naturally occurring compound extracted from petroleum. Chlorination of biphenyl results in a mixture of PCBs that consists of heavy, nonflammable, stable with high boiling points. PCBs have been used commercially as coolants, hydraulic fluids, stone-cutting oils, and heat transfer fluids. PCBs have also been used in plasticizer processes and as dye carriers.



PCBs

Polychlorinated biphenyls are exceptionally persistent in the environment and are fairly ubiquitous in soils and waterways. In general persistence relates to the degree of chlorination, with the more highly chlorinated forms being more resistant to biodegradation and more persistent in the environment. The primary routes of potential human exposure to polychlorinated biphenyls are ingestion, inhalation, and dermal contact. PCBs are highly lipophilic compounds which are readily absorbed and tend to accumulate in the body.

A large body of knowledge about the human toxicity of PCBs comes from two large-scale incidents (the Yusho incident in Japan in 1968 (Kuratsune M et al. 1972) and the Yu-Cheng incident in Taiwan in 1979 (Chen et al., 1985a)). These two incidents are unique in that exposure to PCBs were unusually high. Other human health effects due to PCBs have been investigated in industrial exposure incidences and follow-up epidemiological studies. It is generally agreed that for certain toxicity endpoints, PCB congeners with co-plainer structure are of greatest toxicological significance, and that this toxicity is mediated through a 2,3,7,8-tetrachlorodibenzo-p-dioxin like interaction with the aryl hydrocarbon receptor. A toxic equivalency factor approach to the TCDD-like endpoint has been proposed for coplanar PCBs (Safe, 1990).

The primary systemic toxic responses associated with PCB exposure include chloracne, hyperpigmentation of the skin, nails, and conjunctual and raucous membranes, liver disease, hyperactive meibomian glands; conjunctivitis; edema of eyelids; subcutaneous edema; keratin cysts in hair follicles; hyperplasia of hair follicle epithelium; hepatic hypertrophy; decreased number of red blood cells; decreased hemoglobin; serum hyperlipidemia; leucocytosis (IARC,

1978; Braverman, 1992). Some neurotoxic effects have been observed among PCB exposure populations, including headache, numbness, altered peripheral nerve conduction velocity (Chen et al., 1985b) and decreased neurobehavioral function as measured by visual memory, problem solving and mean choice reaction time (Kilburn et al., 1989). PCB exposure is also associated with involution of the thymus and with impaired humoral and cellular immunity (Tryphonas et al., 1991).

The reproductive and developmental toxic effects of PCBs have been extensively studied in rodents, monkeys, and humans. In women exposed to PCBs in Yusho and Yu-cheng incidents, irregular menstrual cycles, increased incidence of miscarriage and the birth of small, hyperpigmented and hyperkeratotic infants have been observed. In animal studies, increased menses duration, decreased estrogen and progesterone peaks, and increased incidence of miscarriage were observed in animals after PCB exposure (Allen et al., 1979; Truelove et al. 1990). The primary developmental toxic effects consisted of lower birth weight and persistent motor and cognitive deficits in children who were prenatally exposed to PCBs (Rogan et al., 1988). Mother's milk contaminated with PCB's appears to be a source of exposure for infants. Developmental abnormalities have been observed in PCB-intoxicated infants. Premature eruption of teeth, larger frontal and occipital fontanelles, exophthalmos and the maintenance of an abnormally wide sagittal suture were observed (IARC, 1978; Gladen et al. 1988).

Most genotoxic studies demonstrated PCB congeners are not genotoxic. However, genotoxic results were demonstrated in human lymphocyte cultures (Sargent et al., 1989) and increased chromosomal damage was reported in an occupationally exposed population (Kalina et al., 1991).

The carcinogenicity of PCBs has been reviewed in detail by Silberhorn et al. (1990). Current epidemiological evidence does not provide sufficient evidence of PCB carcinogenicity in humans to establish a causal relationship, although several studies suggest a possible association between PCB exposure and certain types of cancer (Brown, 1987; NIOSH, 1991). Aroclor 1260 induced hepatocellular carcinoma in Sprague-Dawley rats (Norback and Weltman, 1985). Some coplanar and some noncoplanar congeners have demonstrated promoting ability, although with marked differences in potency (Silberhorn et al., 1990).

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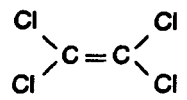
Tetrachloroethene, also known as perchloroethylene (PCE), is used as a grain fumigant in agriculture, and industrially as a dry cleaning solvent and a degreasing agent for metals. Although exposure to tetrachloroethene may occur via inhalation, ingestion, or dermal contact, inhalation represents the primary uptake route in most situations, primarily because of its high volatility and poor dermal absorption. Tetrachloroethene is highly fat soluble, and once absorbed, it tends to partition to the body fat. Elimination from the body is relatively slow, with a biological half-life of approximately 65 hours.



Tetrachloroethene

Systemic effects of overexposure to tetrachloroethene in humans and animals include pulmonary edema, central nervous system (CNS) depression (Rowe et al., 1952), fatty infiltration of the liver and kidney (Ogata et al., 1968), and increases in serum enzyme levels (Fujii, 1975; Cornish et al., 1973). The CNS effects are similar to those produced by ethanol intoxication and are produced at atmospheric concentrations of 200 to 500 ppm (McMullan, 1976). CNS effects result in headache, blurred vision, light-headedness, nausea, vomiting, confusion, slurred speech, loss of coordination, and memory impairment. In a few cases, coma and death have been reported as a result of inhalation of tetrachloroethene at, or near, saturation levels. Ingestion of tetrachloroethene as a medicinal agent (e.g. treatment of hookworm) has been associated with acute side effects, including irritation of the gastrointestinal mucosa, cramps, nausea, and vomiting.

Chronic inhalation exposure of laboratory animals to tetrachloroethene at concentrations ranging from 1.5 to 470 ppm for 5 to 11 months produces congestion and swelling of the kidney and liver, changes in serum enzyme levels, and CNS effects (Carpenter, 1937; Rowe et al., 1952). Because of its defatting action, repeated dermal contact may result in a dry, scaly, fissured dermatitis, predisposing the skin in infection.

Tetrachloroethene has proven negative as a mutagen in most assays. Carcinogenicity assays indicate that it is a potential carcinogen in rodents. In a major bioassay study (NCI, 1977), exposure of rodents to tetrachloroethene at 386 to 1,072 mg/kg/day for 78 weeks was reported

to cause an increase in the incidence of hepatocellular carcinomas in mice, but not rats. In an inhalation study by the National Toxicology Program (NTP, 1986), exposure of mice and rats to tetrachloroethene for 6 hours per day, 5 days per week for 103 weeks caused an increase in several tumor types including mononuclear cell leukemia, hepatocellular adenomas and carcinomas, and renal tubular cell neoplasms. In analyzing the results of these studies, it should be noted that hepatic carcinomas are very rare in human populations, but quite common in rodents, and thus may not be an appropriate indicator of potential human carcinogenicity.

Epidemiological studies among workers in the dry-cleaning industry have not shown any long-term effects of tetrachloroethene on the CNS, liver, or kidneys (Lauwerys et al., 1983). A slight increased incidence of lung and cervical cancers was noted in a second study which focussed on the cause of death among occupationally-exposed individuals (CDC, 1983). The U.S. Environmental Protection Agency (EPA) classifies tetrachloroethene as a Class B2 probable human carcinogen based on animal studies.

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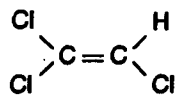
TRICHLOROETHENE

Trichloroethene (TCE) is an industrial solvent which is potentially toxic at relatively high concentrations. Because of its volatility, inhalation is the primary uptake route for TCE under most circumstances, although oral uptake may also occur when groundwater supplies are contaminated. Dermal absorption of TCE is generally poor, although the defatting action of TCE can enhance its uptake.



Trichloroethene

The acute toxicity of TCE has been investigated in a number of studies. The LC_{50} for a single 4-hour inhalation exposure to TCE is reported to be approximately 12,500 ppm for rats and 8,450 ppm for mice. Human data are more limited, having been collected from reported accidental deaths in industrial settings. In one incident, five workers were reported to have died after acute exposure to TCE at concentrations estimated to be in the range of 200 to 8,000 ppm. Death was thought to be due to ventricular fibrillation or related cardiac effects. In another incident, a worker was reported to have died after exposure to 2,900 ppm. The acute oral lethality of TCE has also been investigated. Oral LD_{50} values have been reported for dogs (5,680 mg/kg), cats (5,864 mg/kg), rats (4,920 mg/kg), and mice (2,400 mg/kg). One incident has been reported where a human death was attributed to an oral dose of 1,043 mg/kg.

A large body of literature exists on the sublethal effects of TCE. The primary target organs include the central nervous system (CNS), liver, and kidney. In addition, heme synthesis may be affected . The most sensitive target organ appears to be the CNS. In the human, inhalation exposures to concentrations as low as 27 ppm are reported to cause headaches. Concentrations of 100 ppm for 8 hours may affect perception, memory, and dexterity, although higher concentrations (956 to 2,000 ppm) for shorter time periods (2 to 2.5 hours) have no apparent CNS effects.

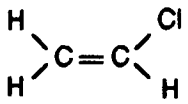
Some evidence exists that TCE may be a weak mutagen. However, this work was based on commercial grade TCE, and co-contaminants present may be responsible for the observed effects. The evidence EPA uses to classify TCE as a class B2 (probable human carcinogen)

is based on animal studies. Various researchers have reported that inhalation of TCE causes increased incidences of testicular carcinomas in rats and lung adenomas and hepatomas in mice. Oral exposure has been related to hepatocellular carcinomas in mice, and renal adenocarcinomas and leukemia in rats.

Despite numerous epidemiological studies, no increases in cancer have been observed in connection with either occupational inhalation exposure or residential well water exposures. The lack of evidence in humans for carcinogenicity is significant given the extensive history of TCE usage in industry.

VINYL CHLORIDE

Vinyl chloride is an industrial feedstock frequently used in the production of plastics. It may also occur at industrial sites as a degradation product of dichloroethylene. While the toxicity of this compound is well recognized, the major health risks associated with vinyl chloride exposure are related to its carcinogenicity.



Vinyl Chloride

Exposure to vinyl chloride can lead to significant absorption. Inhalation studies suggest that approximately 40 percent of inhaled vinyl chloride is absorbed, while ingestion studies suggest that vinyl chloride absorption in the gastrointestinal tract is virtually complete. In contrast, dermal absorption does not appear to be a significant uptake route (ATSDR, 1989).

Lethal concentrations of vinyl chloride are reported to be very high for short-term inhalation exposure. The LC_{50} values for 2-hour exposure to vinyl chloride is reported to range from 117,500 to 230,800 ppm in rabbits (USEPA, 1985). Oral exposure also requires rather high doses for lethality with LD_{50} values reported in the range of 500 mg/kg for rats (Sax, 1984). Increasing the duration of exposure has been reported to significantly increase toxicity. Lee et al. (1977, 1978) have reported that inhalation exposure to 1,000 ppm for 5 to 9 days is lethal to mice.

The major target organ for acute sublethal vinyl chloride exposure is the CNS. Several human studies (Lester et al., 1963; Nicholson et al., 1975) have shown that concentrations in the range of 8,000 ppm can induce dizziness, giddiness, euphoria, ataxia, headache, and narcosis. Investigations on the effects of higher concentrations have shown that 50,000 ppm can cause intoxication in rats (Lester et al., 1963), while 70,000 to 500,000 ppm has anesthetic properties in dogs (Oster et al., 1947). These acute effects are reversible and disappear shortly after exposure is terminated.

Chronic low level vinyl chloride exposure may affect the central nervous system (CNS). Perticoni et al. (1986) have reported on a neuropathy in the legs of workers exposed via inhalation to vinyl chloride for extended time periods. Dinceva et al. (1985) have also shown that occupational exposure can cause changes in electroencephalogram (EEG) patterns.

However, most long-term studies do not identify the CNS as a primary target organ for chronic vinyl chloride exposure.

Studies on chronic exposure to sublethal doses of vinyl chloride in humans and animals indicate that a number of organ systems can be significantly affected. Prolonged occupational exposure has been associated with a syndrome known as "vinyl chloride disease" (Halama et al., 1985; Sakabe, 1975; Lilis et al., 1975). This disease is characterized by circulatory disturbances in the extremities, Raynaud syndrome, scleroderma, various hematologic effects, pathologic damage to the liver and lungs, and acro-osteolysis, which is a destruction of the distal phalanges of the hand. Similar effects can be induced in animals, along with minor effects on the kidney (Feron et al., 1979a, 1979b). Among these various target organs, the liver appears to be the primary target. Chronic studies indicate that doses as low as 1.3 mg/kg/day can induce hepatocellular alterations and hepatic cysts in rats (Til et al., 1983). Inhalation concentrations of 50 ppm have been associated with increased mitotic activity (Lee et al., 1977), while higher doses have been associated with increased liver weight (100 ppm) and histopathological lesions (200 and 500 ppm) (Torkelson et al., 1961). Numerous epidemiologic studies have demonstrated impaired liver function and histological damage in occupationally-exposed humans (Berk, 1976; Buchanova et al., 1985; Gedigk et al., 1975; Marsteller et al., 1975; Popper and Thomas, 1975).

Developmental effects from vinyl chloride exposure have been reported in two epidemiologic studies. Infante et al. (1976) and Waxweiler et al. (1977) have reported increases in the number of spontaneous abortions among occupationally-exposed women. However, a study by John et al. (1977) was unable to demonstrate fetal toxicity in rats at doses which were not also toxic to the mother. Sexual function may be impaired in humans exposed chronically (Makarov, 1984) and studies by Bi et al. (1985) have shown decreased testicular weight among rats exposed to 100 ppm on a chronic basis.

Vinyl chloride appears to be a rather strong mutagen. One study by Hansteen et al. (1978) demonstrated that occupational exposure to 25 ppm was sufficient to cause significant increases in the number of chromosomal abnormalities in peripheral lymphocytes. Numerous in vitro and in vivo mutagenicity assays have been published which identify vinyl chloride as a mutagen (See USEPA, 1985 for review).

Vinyl chloride has been identified as a potential carcinogen in numerous epidemiological studies. In particular, the incidence of a rare form of liver cancer (angiosarcoma) has been linked to occupational vinyl chloride exposure (Monson et al., 1975; Waxweiler et al., 1977; Bryen et al., 1976; Wong et al., 1991). In addition, Bryen et al. (1976) has shown that the longer the term of exposure, the greater the risk of developing cancer. In general, the results of animal studies parallel the epidemiological studies in workers. While numerous animal studies have been performed, two studies by Maltoni et al. (1979, 1981) have been the most critical for the development of regulatory goals by USEPA. These two studies demonstrated increases in cancer rates among mice, rats, and hamsters exposed to vinyl chloride concentrations in excess of 50 ppm. The forms of cancer found included liver angiosarcomas, hepatomas, neuroblastomas, and zymbal gland carcinomas. These findings have been repeated in numerous other animal studies. USEPA has classified vinyl chloride as a Class A carcinogen based on the weight of evidence of numerous human epidemiological studies.

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