APPENDIX G

LABORATORY ANALYTICAL REPORTS FOR THE RI GROUNDWATER SAMPLING EVENTS

APPENDIX H

FATE AND TRANSPORT MODEL INPUT SUMMARY AND OUTPUT FILE PRINTOUTS

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*******************************************************
*                                                     *
*          S O L U T E  version 4.04          *
*                                                     *
*     ANALYTICAL MODELS FOR SOLUTE TRANSPORT       *
*                                                     *
*******************************************************
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Model: ONEd-1

Project..... = MC tce 23 ppb
User name..... = clb
Date..... = 07-01-1998
Data file..... = c:\jpl\t_mc23.dat

INPUT DATA:

Groundwater (seepage) velocity... = .15 [ft/d]
Longitudinal dispersivity..... = 500 [ft]
Retardation factor..... = 1
Initial aquifer concentration.... = 0.00000D+00[mg/l]
Constant source concentration.... = 2.30000D-02[mg/l]
Duration of solute pulse..... = 7300 [d]
Half-life in aquifer (no decay=0) = 0 [d]
Decay coefficient for aquifer.... = 0.0000D+00 [1/d]
Length of time step..... = 365 [d]
Number of time steps..... = 50
Number of observation points..... = 2

1 Distance (from source)..... = 1500 [ft]
2 Distance (from source)..... = 3000 [ft]

Concentration [mg/l]

Time [d]	Distance 1500.00[ft]	Distance 3000.00[ft]
365.00	1.4554E-11	5.6083E-38
730.00	5.7020E-07	5.4082E-20
1095.00	2.0570E-05	5.7101E-14
1460.00	1.2656E-04	6.0301E-11
1825.00	3.8097E-04	3.9849E-09
2190.00	7.9935E-04	6.5611E-08
2555.00	1.3621E-03	4.8738E-07
2920.00	2.0358E-03	2.1969E-06
3285.00	2.7860E-03	7.0946E-06
3650.00	3.5832E-03	1.8131E-05

4015.00	1.2637E-03	1.1211E-05
4380.00	1.5007E-03	2.1250E-05
4745.00	1.7355E-03	3.6486E-05
5110.00	1.9654E-03	5.7958E-05
5475.00	2.1887E-03	8.6519E-05
5840.00	2.4041E-03	1.2273E-04
6205.00	2.6109E-03	1.6695E-04
6570.00	2.8087E-03	2.1930E-04
6935.00	2.9974E-03	2.7970E-04
7300.00	3.1769E-03	3.4790E-04
7665.00	3.3476E-03	4.2351E-04
8030.00	3.5094E-03	5.0605E-04
8395.00	3.6573E-03	5.9496E-04
8760.00	3.7725E-03	6.8963E-04
9125.00	3.8374E-03	7.8944E-04
9490.00	3.8479E-03	8.9375E-04
9855.00	3.8101E-03	1.0018E-03
10220.00	3.7338E-03	1.1128E-03
10585.00	3.6294E-03	1.2256E-03
10950.00	3.5055E-03	1.3388E-03
11315.00	3.3695E-03	1.4508E-03
11680.00	3.2266E-03	1.5599E-03
12045.00	3.0809E-03	1.6645E-03
12410.00	2.9354E-03	1.7632E-03
12775.00	2.7922E-03	1.8548E-03
13140.00	2.6527E-03	1.9383E-03
13505.00	2.5178E-03	2.0132E-03
13870.00	2.3882E-03	2.0790E-03
14235.00	2.2643E-03	2.1356E-03
14600.00	2.1461E-03	2.1830E-03
14965.00	2.0338E-03	2.2215E-03
15330.00	1.9272E-03	2.2513E-03
15695.00	1.8262E-03	2.2730E-03
16060.00	1.7306E-03	2.2869E-03
16425.00	1.6402E-03	2.2936E-03
16790.00	1.5547E-03	2.2937E-03
17155.00	1.4740E-03	2.2877E-03
17520.00	1.3978E-03	2.2763E-03
17885.00	1.3259E-03	2.2598E-03
18250.00	1.2579E-03	2.2389E-03

```
*******************************************************
*                                                     *
*          S O L U T E  version 4.04          *
*                                                     *
*     ANALYTICAL MODELS FOR SOLUTE TRANSPORT      *
*                                                     *
*******************************************************

Model:  ONEd-1

Project..... = MC per 55 ppb
User name..... = clb
Date..... = 07-01-1998
Data file..... = c:\jpl\p_mc55.dat


              INPUT DATA:


Groundwater (seepage) velocity... =  .15 [ft/d]
Longitudinal dispersivity..... =  500 [ft]
Retardation factor..... =  1
Initial aquifer concentration.... =  0.00000D+00[mg/l]
Constant source concentration.... =  5.50000D-02[mg/l]
Duration of solute pulse..... =  7300 [d]
Half-life in aquifer (no decay=0) =  0 [d]
Decay coefficient for aquifer.... =  0.0000D+00 [1/d]
Length of time step..... =  365 [d]
Number of time steps..... =  50
Number of observation points..... =  2

  1  Distance (from source)..... =  1500 [ft]
  2  Distance (from source)..... =  3000 [ft]


              Concentration [mg/l]

   Time      Distance      Distance
    [d]    1500.00[ft]   3000.00[ft]

 365.00   3.4804E-11    1.3411E-37
 730.00   1.3635E-06    1.2933E-19
1095.00   4.9189E-05    1.3655E-13
1460.00   3.0264E-04    1.4420E-10
1825.00   9.1101E-04    9.5291E-09
2190.00   1.9115E-03    1.5690E-07
2555.00   3.2572E-03    1.1655E-06
2920.00   4.8681E-03    5.2535E-06
3285.00   6.6622E-03    1.6965E-05
3650.00   8.5685E-03    4.3357E-05
```

4015.00	4.4037E-03	3.9068E-05
4380.00	5.2296E-03	7.4052E-05
4745.00	6.0479E-03	1.2715E-04
5110.00	6.8492E-03	2.0197E-04
5475.00	7.6272E-03	3.0150E-04
5840.00	8.3778E-03	4.2768E-04
6205.00	9.0985E-03	5.8178E-04
6570.00	9.7878E-03	7.6422E-04
6935.00	1.0445E-02	9.7471E-04
7300.00	1.1071E-02	1.2124E-03
7665.00	1.1666E-02	1.4759E-03
8030.00	1.2230E-02	1.7635E-03
8395.00	1.2745E-02	2.0733E-03
8760.00	1.3147E-02	2.4033E-03
9125.00	1.3373E-02	2.7511E-03
9490.00	1.3409E-02	3.1146E-03
9855.00	1.3278E-02	3.4912E-03
10220.00	1.3012E-02	3.8781E-03
10585.00	1.2648E-02	4.2711E-03
10950.00	1.2216E-02	4.6655E-03
11315.00	1.1742E-02	5.0557E-03
11680.00	1.1244E-02	5.4359E-03
12045.00	1.0736E-02	5.8005E-03
12410.00	1.0229E-02	6.1445E-03
12775.00	9.7303E-03	6.4636E-03
13140.00	9.2441E-03	6.7548E-03
13505.00	8.7742E-03	7.0157E-03
13870.00	8.3226E-03	7.2451E-03
14235.00	7.8907E-03	7.4423E-03
14600.00	7.4789E-03	7.6076E-03
14965.00	7.0874E-03	7.7416E-03
15330.00	6.7159E-03	7.8456E-03
15695.00	6.3639E-03	7.9210E-03
16060.00	6.0307E-03	7.9694E-03
16425.00	5.7157E-03	7.9929E-03
16790.00	5.4180E-03	7.9932E-03
17155.00	5.1367E-03	7.9724E-03
17520.00	4.8712E-03	7.9324E-03
17885.00	4.6204E-03	7.8751E-03
18250.00	4.3837E-03	7.8022E-03

APPENDIX I

RISK ASSESSMENT GUIDANCE FOR SUPERFUND
PART D, TABLES

Introduction to Appendix I tables

The tables in this appendix were developed in accordance with *Risk Assessment Guidance for Superfund: Volume I, Human Health Evaluation Manual (Part D)* (RAGS D) (EPA, 1998). The RAGS D guidance was developed by the EPA to assist in standardizing risk assessment planning, reporting, and review at Comprehensive Environmental Response Compensation and Liability Act (CERCLA) sites. The standard tables contained in this appendix were developed by the EPA to clearly and consistently document the parameters, data, and calculations used in the human health risk assessment. The results tables were standardized by EPA in order to facilitate easy entry of all risk assessment results into the EPA CERCLIS database.

The Appendix tables are numbered with the following convention: appendix letter, table number, and in parentheses, the table number corresponding to the RAGS D guidance (EPA, 1998) and the individual table number within the series. For example, Table I-85 (RAGS D, Table 7.1) is the 85th table in Appendix I and is the first in a series of tables that follow the RAGS D format for Table 7 series. The ten standard table formats used in this risk assessment are described below. Please note that multiple versions of specific tables are used to address different exposure pathways or different exposure points.

- **Table 1 (series)–Selection of Exposure Pathways** includes the exposure pathways that were selected for analysis and the exposure pathways that will be evaluated quantitatively in the risk assessment.
- **Table 2 (series)–Occurrence, Distribution, and Selection of COPCs** includes statistical information about each detected chemical (minimum and maximum value, location of maximum value, and detection frequency), the detection limits, and the toxicity screening values use for the COPC selection. Table I-2 presents the groundwater data for JPL collected from 1994 to 1998. Table I-3 presents the chemicals selected as COPCs from the first step of the screening process using the 1994-1998 data. The statistical information presented in Table I-3 is for 1997-1998 data for the selected COPCs. Both Table I-2 and I-3 compare the maximum detection of each chemical across the site to the screening toxicity value and include a column indicating if the chemical was selected as a preliminary COPC. The remaining Tables I-3 through I-40 present the well by well data for the COPCs for each JPL monitoring well and the off-site production wells.
  Table I-41 presents the statistical information for the lead detections in the JPL monitoring wells. The groundwater lead concentrations were used to calculate blood lead concentrations in several receptors for comparison to the level of concern toxicity value. Appendix K presents the lead methodology and the State of California model used to calculate blood lead concentrations.
- **Table 3 series–Medium-specific Exposure Point Concentration Summary** includes statistical information which was used to calculate the exposure point concentrations (EPCs)and reasonable maximum exposure (RME) and central

tendency (CT) values. For the purposes of this risk assessment, only RME exposure was considered.

- **Table 4 series–Values Used for Daily Intake Calculations** presents the input parameters, parameter definitions, units, RME value and references used in the calculation of the intake for each exposure pathway.
- **Table 5 series–Non-cancer Toxicity Data** presents the reference dose (RfD) for the oral, dermal, and inhalation pathways and includes the modifying factors , adjustment factors, the organ effects of each COPC, and references.
- **Table 6 series–Cancer Toxicity Data** includes the oral, dermal, and inhalation toxicity value for chemicals of potential concern, EPA weight of evidence descriptions, and references.
- **Tables 7 and 8 series–Calculation of Non-cancer Hazards and Cancer Risks** includes the information used in the calculation of the intake values for both noncarcinogenic and carcinogenic risks. The information includes the EPC value, the calculated intake value, the cancer slope factors, reference doses, and the calculated non-cancer hazard quotient/index and cancer risk values for each COPC.
- **Table 9 series–Risks and Hazards** presents the cancer risks and non-cancer hazard indices calculated for each potential receptor for each COPC. The cancer and noncancer risk values are presented for each exposure route and chemical. The total risk values represent the sum of the risks for all pathways combined. The noncancer hazard index also includes the HI calculated for the primary organ effected (target organ).
- **Table 10 series–Risks and Hazards** is similar to Table 9 but includes information only for those chemicals that non-cancer hazards or risks above acceptable levels.

LIST OF TABLES

Table I-1 (RAGS Part D, TABLE 1)

SELECTION OF EXPOSURE PATHWAYS

Jet Propulsion Laboratory—Operable Units 1 and 3

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	On-Site/ Off-Site	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Current/Future	Groundwater	Groundwater	Tap Water	Resident	Adult	Ingestion	On-site/Off-Site	Quant	Production drinking water wells are located downgradient of the site.
						Dermal	On-site/Off-Site	Quant	Production drinking water wells are located downgradient of the site.
					Child	Ingestion	On-site/Off-Site	Quant	Production drinking water wells are located downgradient of the site.
						Dermal	On-site/Off-Site	Quant	Production drinking water wells are located downgradient of the site.
		Air	Water Vapors at showerhead and other household sources	Resident	Adult	Inhalation	On-site/Off-Site	Quant	Production drinking water wells are located downgradient of the site.
					Child	Inhalation	On-site/Off-Site	Quant	Production drinking water wells are located downgradient of the site.

Notes:

Quant = Quantitative

RAGS = Risk Assessment Guidance for Superfund

Table I-2 (RAGS Part D, TABLE 2.1)
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Jet Propulsion Laboratory—Summary of Data for Monitoring Wells (1994-1998)*

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Wells (1994-1998)—Tap Water

CAS Number	Chemical	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	Background Value (2)	Screening Toxicity Value (3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection (4)
71-55-6	1,1,1-Trichloroethane	1.2		1.2		ug/L	MW-10	1/533	0.5	1.2	N/A	480	N/A	N/A	No	BSL
79-34-5	1,1,2,2-Tetrachloroethane	0.6		0.6		ug/L	MW-21-2	1/533	0.5	0.6	N/A	0.055	N/A	N/A	Yes	ASL
75-34-3	1,1-Dichloroethane	0.6		3.9		ug/L	MW-14-1	30/533	0.5	3.9	N/A	5.8	N/A	N/A	No	BSL
75-35-4	1,1-Dichloroethene	0.5		4.7		ug/L	MW-16	39/533	0.5	4.7	N/A	0.046	N/A	N/A	Yes	ASL
87-61-6	1,2,3-Trichlorobenzene (5)	0.5		0.8		ug/L	MW-14-2	4/533	0.5	0.8	N/A	120	N/A	N/A	No	BSL
107-06-2	1,2-Dichloroethane	0.6		8.9		ug/L	MW-13	35/533	0.5	8.9	N/A	0.12	N/A	N/A	Yes	ASL
7429-90-5	Aluminum	0.05		1.1		mg/L	MW-12-1	42/151	0.05	1.1	N/A	16	N/A	N/A	No	BSL
7440-38-2	Arsenic	0.005		0.014		mg/L	MW-03-5	12/529	0.005	0.014	N/A	0.000040	N/A	N/A	Yes	ASL
7440-39-3	Barium	0.021		0.15		mg/L	MW-21-3	125/129	0.02	0.15	N/A	1.1	N/A	N/A	No	BSL
56-55-3	Benzo(a)anthracene	12		12		ug/L	MW-12-2	1/135	0.05	12	N/A	0.020	N/A	N/A	Yes	ASL
50-32-8	Benzo(a)pyrene	16		16		ug/L	MW-12-2	1/135	0.02	16	N/A	0.0015	N/A	N/A	Yes	ASL
205-99-2	Benzo(b)fluoranthene	28		28		ug/L	MW-12-2	1/135	0.02	28	N/A	0.016	N/A	N/A	Yes	ASL
191-24-2	Benzo(g,h,i)perylene	10		10		ug/L	MW-12-2	1/131	0.05	10	N/A	N/A	N/A	N/A	Yes	NTX
207-08-9	Benzo(k)fluoranthene	11		11		ug/L	MW-12-2	1/131	0.02	11	N/A	0.016	N/A	N/A	Yes	ASL
75-27-4	Bromodichloromethane	0.5		1.9		ug/L	MW-18-2	27/533	0.5	1.9	N/A	0.18	N/A	N/A	Yes	ASL
7440-70-2	Calcium	3.8		180		mg/L	MW-23-1	508/508	1	180	N/A	N/A	N/A	N/A	No	NUT
56-23-5	Carbon Tetrachloride	0.5		310		ug/L	MW-07	130/533	0.5	310	N/A	0.17	N/A	N/A	Yes	ASL
67-66-3	Chloroform	0.5		58		ug/L	MW-16	257/533	0.5	58	N/A	0.16	N/A	N/A	Yes	ASL
74-87-3	Chloromethane	0.8		0.8		ug/L	MW-12-4	1/533	0.5	0.8	N/A	1.5	N/A	N/A	No	BSL
n/a	Chromium	0.01		0.24		mg/L	MW-06	58/506	0.01	0.24	N/A	N/A	N/A	N/A	No	NTX
218-01-9	Chrysene	21		21		ug/L	MW-12-2	1/131	0.02	21	N/A	0.20	N/A	N/A	Yes	ASL
7440-50-8	Copper	0.012		0.044		mg/L	MW-18-4	5/129	0.01	0.044	N/A	0.58	N/A	N/A	No	BSL
57-12-5	Cyanide	0.006		0.006		mg/L	MW-11-1	2/129	0.005	0.006	N/A	0.31	N/A	N/A	No	BSL
84-74-2	Di-n-butylphthalate	10		16		ug/L	MW-11-1	9/131	10	16	N/A	1500	N/A	N/A	No	BSL
75-09-2	Dichloromethane	0.7		2.1		ug/L	MW-03-5	4/533	0.5	2.1	N/A	3.8	N/A	N/A	No	BSL
100-41-4	Ethylbenzene	0.5		0.5		ug/L	MW-03-5	1/533	0.5	0.5	N/A	1300	N/A	N/A	No	BSL
206-44-0	Fluoranthene	39		39		ug/L	MW-12-2	1/130	5	39	N/A	460	N/A	N/A	No	BSL
16984-48-8	Fluoride	0.15		3.67		mg/L	MW-03-5	129/129	0.1	3.67	N/A	0.94	N/A	N/A	Yes	ASL
75-69-4	Fluorotrichloromethane	0.8		1.8		ug/L	MW-13	5/533	0.5	1.8	N/A	1300	N/A	N/A	No	BSL
7440-47-3	Hexavalent Chromium	0.006		0.047		mg/L	MW-13	30/507	0.005	0.047	N/A	0.00016	N/A	N/A	Yes	ASL
193-39-5	Indeno(1,2,3-c,d)pyrene	10		10		ug/L	MW-12-2	1/130	0.05	10	N/A	0.011	N/A	N/A	Yes	ASL
7439-89-6	Iron	0.055		7.2		mg/L	MW-19-2	429/508	0.1	7.2	N/A	4.7	N/A	N/A	Yes	ASL
7439-92-1	Lead	0.0012		0.028		mg/L	MW-14-5	35/527	0.002	0.028	N/A	0.0040	N/A	N/A	Yes	ASL
7439-95-4	Magnesium	1.0		58		mg/L	MW-14-2	503/508	0.1	58	N/A	N/A	N/A	N/A	No	NUT
7439-97-6	Mercury	0.0002		0.0002		mg/L	MW-21-2	3/130	0.0002	0.0002	N/A	0.0047	N/A	N/A	No	BSL
1634-04-4	Methyl tert-butyl ether	0.7		7.1		ug/L	MW-11-1	2/243	0.5	7.1	N/A	20	N/A	N/A	No	BSL
7439-89-7	Molybdenum	0.025		0.025		mg/L	MW-20-4	1/129	0.02	0.025	N/A	0.078	N/A	N/A	No	BSL
91-20-3	Naphthalene	0.7		1.9		ug/L	MW-03-2	2/526	0.5	1.9	N/A	0.017	N/A	N/A	Yes	ASL
7440-02-0	Nickel	0.01		0.044		mg/L	MW-18-4	14/129	0.01	0.044	N/A	0.31	N/A	N/A	No	BSL
14797-55-8	Nitrate	0.1		20		mg/L	MW-14-1	445/508	0.1	20	N/A	10	N/A	N/A	Yes	ASL
7601-90-3	Perchlorate	4.1		1230		ug/L	MW-16	76/214	4	1230	N/A	7.8	N/A	N/A	Yes	ASL

Table I-2 (RAGS Part D, TABLE 2.1)
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Jet Propulsion Laboratory—Summary of Data for Monitoring Wells (1994-1998)*

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Wells (1994-1998)—Tap Water

CAS Number	Chemical	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	Background Value (2)	Screening Toxicity Value (3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection (4)
85-01-8	Phenanthrene	29		29		ug/L	MW-12-2	1/129	5	29	N/A	N/A	N/A	N/A	Yes	NTX
7440-09-7	Potassium	1.0		9.7		mg/L	MW-01	507/508	1	9.7	N/A	N/A	N/A	N/A	No	NUT
129-00-0	Pyrene	33		33		ug/L	MW-12-2	1/129	5	33	N/A	180	N/A	N/A	No	BSL
7440-23-5	Sodium	2.5		120		mg/L	MW-20-4	508/508	1	120	N/A	N/A	N/A	N/A	No	NUT
7440-24-6	Strontium	0.076		1.3		mg/L	MW-21-2	129/129	0.01	1.3	N/A	9.4	N/A	N/A	No	BSL
127-18-4	Tetrachloroethene	0.5		4.5		ug/L	MW-21-5	142/533	0.5	4.5	N/A	0.87	N/A	N/A	Yes	ASL
108-88-3	Toluene	0.6		1.2		ug/L	MW-01	6/533	0.5	1.2	N/A	720	N/A	N/A	No	BSL
688-73-3	Tributyltin	2		5		ng/l	MW-12-1	3/19	2	5.0	N/A	4700	N/A	N/A	No	BSL
79-01-6	Trichloroethene	0.5		73		ug/L	MW-13	143/533	0.5	73	N/A	1.6	N/A	N/A	Yes	ASL
76-13-1	Trichlorotrifluoroethane	0.5		8.8		ug/L	MW-07	37/533	0.5	8.8	N/A	59000	N/A	N/A	No	BSL
7440-66-6	Zinc	0.02		0.065		mg/L	MW-18-5	57/129	0.02	0.065	N/A	4.7	N/A	N/A	No	BSL
156-59-2	cis-1,2-Dichloroethene	0.6		0.6		ug/L	MW-21-5	1/533	0.5	0.6	N/A	61	N/A	N/A	No	BSL
n/a	m,p-Xylenes	1.3		1.3		ug/L	MW-01	1/533	0.5	1.3	N/A	1400	N/A	N/A	No	BSL

(1) Minimum/maximum detected concentration

(2) Applicable background information was not available.

(3) Screening toxicity value derived in accordance with State of California Department of Toxic Substances Control *Preliminary Endangerment Assessment Guidance Manual* (DTSC 1994) and EPA *Region IX PRG Table* (EPA 1999)

(4) Rationale Codes Selection Reason: Above Screening Levels (ASL)

Deletion Reason: Below Screening Level (BSL)
No Toxicity Information (NTX)
Essential Nutrient (NUT)

(5) Toxicity information not available for 1,2,3-trichlorobenzene. Toxicity information from 1,2,4-trichlorobenzene used as a surrogate.

Definitions:
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
CAS = Chemical Abstract Service
COPC = chemical of potential concern
DTSC = Department of Toxic Substances Control
EPA = U.S. Environmental Protection Agency
mg/L = milligrams per liter
MW = monitoring well
N/A = Not applicable
PRG = Preliminary Remedial Goal
RAGS = Risk Assessment Guidance for Superfund
ug/L = micrograms per liter

Table I-3 (RAGS Part D, TABLE 2.2)
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Jet Propulsion Laboratory—Second Screening Process Using (1997-1998) Data—All Monitoring Wells*

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: All Wells (1997-1998)—Tap Water

CAS Number	Chemical	(1) Minimum Concentration	Minimum Qualifier	(1) Maximum Concentration	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	(2) Background Value	(3) Screening Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	(4) Rationale for Contaminant Deletion or Selection
79-34-5	1,1,2,2-Tetrachloroethane	N/D		N/D		ug/L	N/D	0/278	0.5	N/D	N/A	0.055	N/A	N/A	No	ND
75-35-4	1,1-Dichloroethene	0.50		2.6		ug/L	MW-16	18/278	0.5	2.6	N/A	0.046	N/A	N/A	Yes	ASL
107-06-2	1,2-Dichloroethane	0.8		2.1		ug/L	MW-16	15/278	0.5	2.1	N/A	0.12	N/A	N/A	Yes	ASL
7440-38-2	Arsenic	0.005		0.01		mg/L	MW-03-5	6/278	0.005	0.01	N/A	0.00004	N/A	N/A	Yes	ASL
56-55-3	Benzo(a)anthracene	N/A		N/A		N/A	N/A	N/A	0.05	N/A	N/A	0.020	N/A	N/A	No	NA
50-32-8	Benzo(a)pyrene	N/A		N/A		N/A	N/A	N/A	0.02	N/A	N/A	0.0015	N/A	N/A	No	NA
205-99-2	Benzo(b)fluoranthene	N/A		N/A		N/A	N/A	N/A	0.02	N/A	N/A	0.0155	N/A	N/A	No	NA
191-24-2	Benzo(g,h,i)perylene	N/A		N/A		N/A	N/A	N/A	0.05	N/A	N/A	N/A	N/A	N/A	No	NA
207-08-9	Benzo(k)fluoranthene	N/A		N/A		N/A	N/A	N/A	0.02	N/A	N/A	0.0155	N/A	N/A	No	NA
75-27-4	Bromodichloromethane	0.5		0.9		ug/L	MW-17-3	12/278	0.5	0.9	N/A	0.18	N/A	N/A	Yes	ASL
56-23-5	Carbon Tetrachloride	0.6		150		ug/L	MW-07	67/278	0.5	150	N/A	0.17	N/A	N/A	Yes	ASL
67-66-3	Chloroform	0.5		43		ug/L	MW-13	126/278	0.5	43	N/A	0.16	N/A	N/A	Yes	ASL
218-01-9	Chrysene	N/A		N/A		N/A	N/A	N/A	0.02	N/A	N/A	0.20	N/A	N/A	No	NA
16984-48-8	Fluoride	N/A		N/A		N/A	N/A	N/A	0.1	N/A	N/A	0.94	N/A	N/A	No	NA
7440-47-3	Hexavalent Chromium	0.006		0.045		mg/L	MW-13	13/279	0.005	0.045	N/A	0.00016	N/A	N/A	Yes	ASL
193-39-5	Indeno(1,2,3-c,d)pyrene	N/A		N/A		N/A	N/A	N/A	0.05	N/A	N/A	0.011	N/A	N/A	No	NA
7439-89-6	Iron	0.055		4.4		mg/L	MW-23-3	214/263	0.1	4.4	N/A	4.69	N/A	N/A	No	BSL
7439-92-1	Lead	0.0012		0.028		mg/L	MW-14-5	18/278	0.002	0.028	N/A	0.004	N/A	N/A	Yes	ASL
91-20-3	Naphthalene	N/D		N/D		ug/L	N/D	0/278	0.5	N/D	N/A	0.0173	N/A	N/A	No	ND
14797-55-8	Nitrate	0.1		19		mg/L	MW-14-1	233/263	0.1	19	N/A	10	N/A	N/A	Yes	ASL
7601-90-3	Perchlorate	4.1		1230		ug/L	MW-16	76/214	4.0	1230	N/A	7.82	N/A	N/A	Yes	ASL
85-01-8	Phenanthrene	N/A		N/A		N/A	N/A	N/A	5.0	N/A	N/A	N/A	N/A	N/A	No	NA
127-18-4	Tetrachloroethene	0.5		4.4		ug/L	MW-21-4	70/278	0.5	4.4	N/A	0.87	N/A	N/A	Yes	ASL
79-01-6	Trichloroethene	0.5		29		ug/L	MW-21-1	74/278	0.5	29	N/A	1.6	N/A	N/A	Yes	ASL

(1) Minimum/maximum detected concentration

(2) Applicable background information was not available.

(3) Screening toxicity value derived in accordance with State of California Department of Toxic Substances Control *Preliminary Endangerment Assessment Guidance Manual* (DTSC 1994) and EPA *Region IX PRG Table* (EPA 1999)

(4) Rationale Codes Selection Reason: Above Screening Levels (ASL)

Deletion Reason: Below Screening Level (BSL)
Not Detected (ND)
Not Analyzed (NA) in 1997-1998 sampling—See discussion in text

Definitions:
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
CAS = Chemical Abstract Service
COPC = chemical of potential concern
DTSC = Department of Toxic Substances Control
EPA = U.S. Environmental Protection Agency
mg/L = milligrams per liter
MW = monitoring well
N/A = Not applicable
N/D = Not detected
PRG = Preliminary Remedial Goal
RAGS = Risk Assessment Guidance for Superfund
ug/L = micrograms per liter

Table I-4 (RAGS Part D, TABLE 2.3)
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Jet Propulsion Laboratory—Monitoring Well 01

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 01—Tap Water

CAS Number	Chemical	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (4)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection
75-35-4	1,1-Dichloroethene	N/D		N/D		N/A	N/D	N/D	0.5	N/A	N/A	0.046	N/A	N/A		--
107-06-2	1,2-Dichloroethane	N/D		N/D		N/A	N/D	N/D	0.5	N/A	N/A	0.12	N/A	N/A		--
7440-38-2	Arsenic	N/D		N/D		N/A	N/D	N/D	0.005	N/A	N/A	0.00004	N/A	N/A		--
75-27-4	Bromodichloromethane	N/D		N/D		N/A	N/D	N/D	0.5	N/A	N/A	0.18	N/A	N/A		--
56-23-5	Carbon Tetrachloride	N/D		N/D		N/A	N/D	N/D	0.5	N/A	N/A	0.17	N/A	N/A		--
67-66-3	Chloroform	N/D		N/D		N/A	N/D	N/D	0.5	N/A	N/A	0.16	N/A	N/A		--
7440-47-3	Hexavalent Chromium	N/D		N/D		N/A	N/D	N/D	0.005	N/A	N/A	0.00016	N/A	N/A		--
7439-92-1	Lead	N/D		N/D		N/A	N/D	N/D	0.002	N/A	N/A	0.004	N/A	N/A		--
14797-55-8	Nitrate	1.3		1.5		mg/L	MW-01	4/4	0.1	N/A	N/A	10	N/A	N/A		--
7601-90-3	Perchlorate	N/D		N/D		N/A	N/D	N/D	4	N/A	N/A	7.82	N/A	N/A		--
79-01-6	Trichloroethene	N/D		N/D		N/A	N/D	N/D	0.5	N/A	N/A	0.063	N/A	N/A		--

(1) Minimum/maximum detected concentration

(2) Screening was not performed on a well-by-well basis.

(3) Background information was not available.

(4) Screening toxicity value derived in accordance with State of California Department of Toxic Substances Control *Preliminary Endangerment Assessment Guidance Manual (DTSC 1994) and EPA Region IX PRG Table (EPA 1999)*

Definitions:

ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
CAS = Chemical Abstract Service
COPC = chemical of potential concern
DTSC = Department of Toxic Substances Control
EPA = U.S. Environmental Protection Agency
mg/L = milligrams per liter
MW = monitoring well
N/A = Not applicable
N/D = Not detected
PRG = Preliminary Remedial Goal
RAGS = Risk Assessment Guidance for Superfund

Table I-5 (RAGS Part D, TABLE 2.4)
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Jet Propulsion Laboratory—Monitoring Well 03

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 03—Tap Water

CAS Number	Chemical	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (4)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection
75-35-4	1,1-Dichloroethene	N/D		N/D		N/A	N/D	N/D	0.5	N/A	N/A	0.046	N/A	N/A		--
107-06-2	1,2-Dichloroethane	N/D		N/D		N/A	N/D	N/D	0.5	N/A	N/A	0.12	N/A	N/A		--
7440-38-2	Arsenic	0.007		0.01		mg/L	MW-03	3/20	0.005	N/A	N/A	0.00004	N/A	N/A		--
75-27-4	Bromodichloromethane	0.7		0.7		ug/L	MW-03	1/20	0.5	N/A	N/A	0.18	N/A	N/A		--
56-23-5	Carbon Tetrachloride	1.2		1.2		ug/L	MW-03	3/20	0.5	N/A	N/A	0.17	N/A	N/A		--
67-66-3	Chloroform	0.8		3.7		ug/L	MW-03	7/20	0.5	N/A	N/A	0.16	N/A	N/A		--
7440-47-3	Hexavalent Chromium	N/D		N/D		N/A	N/D	N/D	0.005	N/A	N/A	0.00016	N/A	N/A		--
7439-92-1	Lead	0.0076		0.0076		mg/L	MW-03	1/20	0.002	N/A	N/A	0.004	N/A	N/A		--
14797-55-8	Nitrate	0.1		1.5		mg/L	MW-03-1	16/20	0.1	N/A	N/A	10	N/A	N/A		--
7601-90-3	Perchlorate	6.5		21		ug/L	MW-03	3/15	4	N/A	N/A	7.8	N/A	N/A		--
127-18-4	Tetrachloroethene	0.6		0.6		ug/L	MW-03	1/20	0.5	N/A	N/A	0.87	N/A	N/A		--
79-01-6	Trichloroethene	0.5		0.8		ug/L	MW-03	2/20	0.5	N/A	N/A	0.063	N/A	N/A		--

(1) Minimum/maximum detected concentration

(2) Screening was not performed on a well-by-well basis.

(3) Background information was not available.

(4) Screening toxicity value derived in accordance with State of California Department of Toxic Substances Control *Preliminary Endangerment Assessment Guidance Manual (DTSC 1994) and EPA Region IX PRG Table (EPA 1999)*

Definitions:

ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
CAS = Chemical Abstract Service
COPC = chemical of potential concern
DTSC = Department of Toxic Substances Control
EPA = U.S. Environmental Protection Agency
mg/L = milligrams per liter
MW = monitoring well
N/A = Not applicable
N/D = Not detected
PRG = Preliminary Remedial Goal
RAGS = Risk Assessment Guidance for Superfund
ug/L = micrograms per liter

Table I-6 (RAGS Part D, TABLE 2.5)
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Jet Propulsion Laboratory—Monitoring Well 04

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 04—Tap Water

CAS Number	Chemical	(1) Minimum Concentration	Minimum Qualifier	(1) Maximum Concentration	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	(2) Concentration Used for Screening	(3) Background Value	(4) Screening Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection
75-35-4	1,1-Dichloroethene	0.50		0.8		ug/L	MW-04-2	5/24	0.5	N/A	N/A	0.046	N/A	N/A		--
107-06-2	1,2-Dichloroethane	0.8		0.8		ug/L	MW-04-2	2/24	0.5	N/A	N/A	0.12	N/A	N/A		--
7440-38-2	Arsenic	N/D		N/D		N/A	N/D	N/D	0.005	N/A	N/A	0.00004	N/A	N/A		--
75-27-4	Bromodichloromethane	N/D		N/D		N/A	N/D	N/D	0.5	N/A	N/A	0.18	N/A	N/A		--
56-23-5	Carbon Tetrachloride	1.7		7.9		ug/L	MW-04-2	8/24	0.5	N/A	N/A	0.17	N/A	N/A		--
67-66-3	Chloroform	1.7		7.8		ug/L	MW-04-2	8/24	0.5	N/A	N/A	0.16	N/A	N/A		--
7440-47-3	Hexavalent Chromium	N/D		N/D		N/A	N/D	N/D	0.005	N/A	N/A	0.00016	N/A	N/A		--
7439-92-1	Lead	N/D		N/D		N/A	N/D	N/D	0.002	N/A	N/A	0.004	N/A	N/A		--
14797-55-8	Nitrate	0.9		9.1		mg/L	MW-04-2	20/20	0.1	N/A	N/A	10	N/A	N/A		--
7601-90-3	Perchlorate	7.4		51		ug/L	MW-04-2	7/17	4	N/A	N/A	7.8	N/A	N/A		--
127-18-4	Tetrachloroethene	0.5		0.6		ug/L	MW-04-2	2/24	0.5	N/A	N/A	0.87	N/A	N/A		--
79-01-6	Trichloroethene	2.4		22		ug/L	MW-04-2	8/24	0.5	N/A	N/A	0.063	N/A	N/A		--

(1) Minimum/maximum detected concentration
(2) Screening was not performed on a well-by-well basis.
(3) Background information was not available.
(4) Screening toxicity value derived in accordance with State of California Department of Toxic Substances Control *Preliminary Endangerment Assessment Guidance Manual (DTSC 1994) and EPA Region IX PRG Table (EPA 1999)*

Definitions:
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
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COPC = chemical of potential concern
DTSC = Department of Toxic Substances Control
EPA = U.S. Environmental Protection Agency
mg/L = milligrams per liter
MW = monitoring well
N/A = Not applicable
N/D = Not detected
PRG = Preliminary Remedial Goal
RAGS = Risk Assessment Guidance for Superfund
ug/L = micrograms per liter

Table I-7 (RAGS Part D, TABLE 2.6)
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Jet Propulsion Laboratory—Monitoring Well 05

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 05—Tap Water

CAS Number	Chemical	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (4)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection
75-35-4	1,1-Dichloroethene	N/D		N/D		N/D	N/D	N/D	0.5	N/A	N/A	0.046	N/A	N/A		--
107-06-2	1,2-Dichloroethane	N/D		N/D		N/D	N/D	N/D	0.5	N/A	N/A	0.12	N/A	N/A		--
7440-38-2	Arsenic	N/D		N/D		N/D	N/D	N/D	0.005	N/A	N/A	0.00004	N/A	N/A		--
75-27-4	Bromodichloromethane	N/D		N/D		N/D	N/D	N/D	0.5	N/A	N/A	0.18	N/A	N/A		--
56-23-5	Carbon Tetrachloride	N/D		N/D		N/D	N/D	N/D	0.5	N/A	N/A	0.17	N/A	N/A		--
67-66-3	Chloroform	N/D		N/D		N/D	N/D	N/D	0.5	N/A	N/A	0.16	N/A	N/A		--
7440-47-3	Hexavalent Chromium	N/D		N/D		N/D	N/D	N/D	0.005	N/A	N/A	0.00016	N/A	N/A		--
7439-92-1	Lead	N/D		N/D		N/D	N/D	N/D	0.002	N/A	N/A	0.004	N/A	N/A		--
14797-55-8	Nitrate	1.6		2.4		mg/L	MW-05	4/4	0.1	N/A	N/A	10	N/A	N/A		--
7601-90-3	Perchlorate	4.2		4.2		ug/L	MW-05	1/3	4.0	N/A	N/A	7.8	N/A	N/A		--
127-18-4	Tetrachloroethene	N/D		N/D		N/D	N/D	N/D	0.5	N/A	N/A	0.87	N/A	N/A		--
79-01-6	Trichloroethene	N/D		N/D		N/D	N/D	N/D	0.5	N/A	N/A	0.063	N/A	N/A		--

(1) Minimum/maximum detected concentration

(2) Screening was not performed on a well-by-well basis.

(3) Background information was not available.

(4) Screening toxicity value derived in accordance with State of California Department of Toxic Substances Control *Preliminary Endangerment Assessment Guidance Manual (DTSC 1994) and EPA Region IX PRG Table (EPA 1999)*

Definitions:

ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
CAS = Chemical Abstract Service
COPC = chemical of potential concern
DTSC = Department of Toxic Substances Control
EPA = U.S. Environmental Protection Agency
mg/L = milligrams per liter
MW = monitoring well
N/A = Not applicable
N/D = Not detected
PRG = Preliminary Remedial Goal
RAGS = Risk Assessment Guidance for Superfund
ug/L = micrograms per liter

Table I-8 (RAGS Part D, TABLE 2.7)
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Jet Propulsion Laboratory—Monitoring Well 06

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 06—Tap Water

CAS Number	Chemical	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (4)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection
75-35-4	1,1-Dichloroethene	N/D		N/D		N/A	N/D	N/D	0.5	N/A	N/A	0.046	N/A	N/A		--
107-06-2	1,2-Dichloroethane	N/D		N/D		N/A	N/D	N/D	0.5	N/A	N/A	0.12	N/A	N/A		--
7440-38-2	Arsenic	N/D		N/D		N/A	N/D	N/D	0.005	N/A	N/A	0.00004	N/A	N/A		--
75-27-4	Bromodichloromethane	N/D		N/D		N/A	N/D	N/D	0.5	N/A	N/A	0.18	N/A	N/A		--
56-23-5	Carbon Tetrachloride	N/D		N/D		N/A	N/D	N/D	0.5	N/A	N/A	0.17	N/A	N/A		--
67-66-3	Chloroform	N/D		N/D		N/A	N/D	N/D	0.5	N/A	N/A	0.16	N/A	N/A		--
7440-47-3	Hexavalent Chromium	N/D		N/D		N/A	N/D	N/D	0.005	N/A	N/A	0.00016	N/A	N/A		--
7439-92-1	Lead	N/D		N/D		N/A	N/D	N/D	0.002	N/A	N/A	0.004	N/A	N/A		--
14797-55-8	Nitrate	5.4		11		mg/L	MW-06	4/4	0.1	N/A	N/A	10	N/A	N/A		--
7601-90-3	Perchlorate	5.5		5.5		ug/L	MW-06	1/3	4	N/A	N/A	7.8	N/A	N/A		--
127-18-4	Tetrachloroethene	2.0		2.0		ug/L	MW-06	1/4	0.5	N/A	N/A	0.87	N/A	N/A		--
79-01-6	Trichloroethene	N/D		N/D		N/A	N/D	N/D	0.5	N/A	N/A	0.063	N/A	N/A		--

(1) Minimum/maximum detected concentration
(2) Screening was not performed on a well-by-well basis.
(3) Background information was not available.
(4) Screening toxicity value derived in accordance with State of California Department of Toxic Substances Control *Preliminary Endangerment Assessment Guidance Manual (DTSC 1994) and EPA Region IX PRG Table (EPA 1999)*

Definitions:
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
CAS = Chemical Abstract Service
COPC = chemical of potential concern
DTSC = Department of Toxic Substances Control
EPA = U.S. Environmental Protection Agency
mg/L = milligrams per liter
MW = monitoring well
N/A = Not applicable
N/D = Not detected
PRG = Preliminary Remedial Goal
RAGS = Risk Assessment Guidance for Superfund
ug/L = micrograms per liter

Table I-9 (RAGS Part D, TABLE 2.8)
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Jet Propulsion Laboratory—Monitoring Well 07

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 07—Tap Water

CAS Number	Chemical	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (4)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection
75-35-4	1,1-Dichloroethene	0.90		2.1		ug/L	MW-07	4/4	0.5	N/A	N/A	0.046	N/A	N/A		--
107-06-2	1,2-Dichloroethane	0.8		0.9		ug/L	MW-07	4/4	0.5	N/A	N/A	0.12	N/A	N/A		--
7440-38-2	Arsenic	N/D		N/D		N/A	N/D	N/D	0.005	N/A	N/A	0.00004	N/A	N/A		--
75-27-4	Bromodichloromethane	N/D		N/D		N/A	N/D	N/D	0.5	N/A	N/A	0.18	N/A	N/A		--
56-23-5	Carbon Tetrachloride	39		150		ug/L	MW-07	4/4	0.5	N/A	N/A	0.17	N/A	N/A		--
67-66-3	Chloroform	9.9		13		ug/L	MW-07	4/4	0.5	N/A	N/A	0.16	N/A	N/A		--
7440-47-3	Hexavalent Chromium	0.01		0.01		mg/L	MW-07	1/4	0.005	N/A	N/A	0.00016	N/A	N/A		--
7439-92-1	Lead	N/D		N/D		N/A	N/D	N/D	0.002	N/A	N/A	0.004	N/A	N/A		--
14797-55-8	Nitrate	5.7		6.5		mg/L	MW-07	4/4	0.1	N/A	N/A	10	N/A	N/A		--
7601-90-3	Perchlorate	285		720		ug/L	MW-07	3/3	4	N/A	N/A	7.8	N/A	N/A		--
127-18-4	Tetrachloroethene	0.6		3.7		ug/L	MW-07	4/4	0.5	N/A	N/A	0.87	N/A	N/A		--
79-01-6	Trichloroethene	22		27		ug/L	MW-07	4/4	0.5	N/A	N/A	0.063	N/A	N/A		--

(1) Minimum/maximum detected concentration
(2) Screening was not performed on a well-by-well basis.
(3) Background information was not available.
(4) Screening toxicity value derived in accordance with State of California Department of Toxic Substances Control *Preliminary Endangerment Assessment Guidance Manual (DTSC 1994) and EPA Region IX PRG Table (EPA 1999)*

Definitions:
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
CAS = Chemical Abstract Service
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DTSC = Department of Toxic Substances Control
EPA = U.S. Environmental Protection Agency
mg/L = milligrams per liter
MW = monitoring well
N/A = Not applicable
N/D = Not detected
PRG = Preliminary Remedial Goal
RAGS = Risk Assessment Guidance for Superfund
ug/L = micrograms per liter

Table I-10 (RAGS Part D, TABLE 2.9)
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Jet Propulsion Laboratory—Monitoring Well 08

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 08—Tap Water

CAS Number	Chemical	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (4)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection
75-35-4	1,1-Dichloroethene	N/D		N/D		N/A	N/D	N/D	0.5	N/A	N/A	0.046	N/A	N/A		--
107-06-2	1,2-Dichloroethane	N/D		N/D		N/A	N/D	N/D	0.5	N/A	N/A	0.12	N/A	N/A		--
7440-38-2	Arsenic	N/D		N/D		N/A	N/D	N/D	0.005	N/A	N/A	0.00004	N/A	N/A		--
75-27-4	Bromodichloromethane	N/D		N/D		N/A	N/D	N/D	0.5	N/A	N/A	0.18	N/A	N/A		--
56-23-5	Carbon Tetrachloride	1.5		3.2		ug/L	MW-08	3/4	0.5	N/A	N/A	0.17	N/A	N/A		--
67-66-3	Chloroform	0.8		1.3		ug/L	MW-08	3/4	0.5	N/A	N/A	0.16	N/A	N/A		--
7440-47-3	Hexavalent Chromium	N/D		N/D		N/A	N/D	N/D	0.005	N/A	N/A	0.00016	N/A	N/A		--
7439-92-1	Lead	0.0023		0.0023		mg/L	MW-08	1/4	0.002	N/A	N/A	0.004	N/A	N/A		--
14797-55-8	Nitrate	1.7		3.7		mg/L	MW-08	4/4	0.1	N/A	N/A	10	N/A	N/A		--
7601-90-3	Perchlorate	6.4		29		ug/L	MW-08	3/3	4	N/A	N/A	7.8	N/A	N/A		--
127-18-4	Tetrachloroethene	N/D		N/D		N/A	N/D	N/D	0.5	N/A	N/A	0.87	N/A	N/A		--
79-01-6	Trichloroethene	1.3		4.5		ug/L	MW-08	3/4	0.5	N/A	N/A	0.063	N/A	N/A		--

(1) Minimum/maximum detected concentration

(2) Screening was not performed on a well-by-well basis.

(3) Background information was not available.

(4) Screening toxicity value derived in accordance with State of California Department of Toxic Substances Control *Preliminary Endangerment Assessment Guidance Manual (DTSC 1994) and EPA Region IX PRG Table (EPA 1999)*

Definitions:

ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
CAS = Chemical Abstract Service
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DTSC = Department of Toxic Substances Control
EPA = U.S. Environmental Protection Agency
mg/L = milligrams per liter
MW = monitoring well
N/A = Not applicable
N/D = Not detected
PRG = Preliminary Remedial Goal
RAGS = Risk Assessment Guidance for Superfund
ug/L = micrograms per liter

Table I-11 (RAGS Part D, TABLE 2.10)
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Jet Propulsion Laboratory—Monitoring Well 09

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 09—Tap Water

CAS Number	Chemical	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (4)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection
75-35-4	1,1-Dichloroethene	N/D		N/D		ug/L	N/D	N/D	0.5	N/A	N/A	0.046	N/A	N/A		--
107-06-2	1,2-Dichloroethane	N/D		N/D		ug/L	N/D	N/D	0.5	N/A	N/A	0.12	N/A	N/A		--
7440-38-2	Arsenic	N/D		N/D		mg/L	N/D	N/D	0.005	N/A	N/A	0.00004	N/A	N/A		--
75-27-4	Bromodichloromethane	N/D		N/D		ug/L	N/D	N/D	0.5	N/A	N/A	0.18	N/A	N/A		--
56-23-5	Carbon Tetrachloride	N/D		N/D		ug/L	N/D	N/D	0.5	N/A	N/A	0.17	N/A	N/A		--
67-66-3	Chloroform	N/D		N/D		ug/L	N/D	N/D	0.5	N/A	N/A	0.16	N/A	N/A		--
7440-47-3	Hexavalent Chromium	N/D		N/D		mg/L	N/D	N/D	0.005	N/A	N/A	0.00016	N/A	N/A		--
7439-92-1	Lead	N/D		N/D		mg/L	N/D	N/D	0.002	N/A	N/A	0.004	N/A	N/A		--
14797-55-8	Nitrate	1.3		5.5		mg/L	MW-09	2/4	0.1	N/A	N/A	10	N/A	N/A		--
7601-90-3	Perchlorate	N/D		N/D		ug/L	N/D	N/D	4	N/A	N/A	7.8	N/A	N/A		--
127-18-4	Tetrachloroethene	N/D		N/D		ug/L	N/D	N/D	0.5	N/A	N/A	0.87	N/A	N/A		--
79-01-6	Trichloroethene	N/D		N/D		ug/L	N/D	N/D	0.5	N/A	N/A	0.063	N/A	N/A		--

(1) Minimum/maximum detected concentration
(2) Screening was not performed on a well-by-well basis.
(3) Background information was not available.
(4) Screening toxicity value derived in accordance with State of California Department of Toxic Substances Control *Preliminary Endangerment Assessment Guidance Manual (DTSC 1994) and EPA Region IX PRG Table (EPA 1999)*

Definitions:
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
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EPA = U.S. Environmental Protection Agency
mg/L = milligrams per liter
MW = monitoring well
N/A = Not applicable
N/D = Not detected
PRG = Preliminary Remedial Goal
RAGS = Risk Assessment Guidance for Superfund
ug/L = micrograms per liter

Table I-12 (RAGS Part D, TABLE 2.11)
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Jet Propulsion Laboratory—Monitoring Well 10

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 10—Tap Water

CAS Number	Chemical	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (4)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection
75-35-4	1,1-Dichloroethene	N/D		N/D		N/A	N/D	N/D	0.5	N/A	N/A	0.046	N/A	N/A		--
107-06-2	1,2-Dichloroethane	N/D		N/D		N/A	N/D	N/D	0.5	N/A	N/A	0.12	N/A	N/A		--
7440-38-2	Arsenic	N/D		N/D		N/A	N/D	N/D	0.005	N/A	N/A	0.00004	N/A	N/A		--
75-27-4	Bromodichloromethane	N/D		N/D		N/A	N/D	N/D	0.5	N/A	N/A	0.18	N/A	N/A		--
56-23-5	Carbon Tetrachloride	N/D		N/D		N/A	N/D	N/D	0.5	N/A	N/A	0.17	N/A	N/A		--
67-66-3	Chloroform	0.6		1.4		ug/L	MW-10	6/8	0.5	N/A	N/A	0.16	N/A	N/A		--
7440-47-3	Hexavalent Chromium	N/D		N/D		N/A	N/D	N/D	0.005	N/A	N/A	0.00016	N/A	N/A		--
7439-92-1	Lead	N/D		N/D		N/A	N/D	N/D	0.002	N/A	N/A	0.004	N/A	N/A		--
14797-55-8	Nitrate	5.6		18		mg/L	MW-10	4/4	0.1	N/A	N/A	10	N/A	N/A		--
7601-90-3	Perchlorate	4.7		16		ug/L	MW-10	6/6	4	N/A	N/A	7.8	N/A	N/A		--
127-18-4	Tetrachloroethene	1.3		2.2		ug/L	MW-10	4/8	0.5	N/A	N/A	0.87	N/A	N/A		--
79-01-6	Trichloroethene	0.9		5.2		ug/L	MW-10	8/8	0.5	N/A	N/A	0.063	N/A	N/A		--

(1) Minimum/maximum detected concentration
(2) Screening was not performed on a well-by-well basis.
(3) Background information was not available.
(4) Screening toxicity value derived in accordance with State of California Department of Toxic Substances Control *Preliminary Endangerment Assessment Guidance Manual (DTSC 1994) and EPA Region IX PRG Table (EPA 1999)*

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ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
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DTSC = Department of Toxic Substances Control
EPA = U.S. Environmental Protection Agency
mg/L = milligrams per liter
MW = monitoring well
N/A = Not applicable
N/D = Not detected
PRG = Preliminary Remedial Goal
RAGS = Risk Assessment Guidance for Superfund
ug/L = micrograms per liter

Table I-13 (RAGS Part D, TABLE 2.12)
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Jet Propulsion Laboratory—Monitoring Well 11

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 11—Tap Water

CAS Number	Chemical	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (4)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection
75-35-4	1,1-Dichloroethene	N/D		N/D		N/A	N/D	N/D	0.5	N/A	N/A	0.046	N/A	N/A		--
107-06-2	1,2-Dichloroethane	N/D		N/D		N/A	N/D	N/D	0.5	N/A	N/A	0.12	N/A	N/A		--
7440-38-2	Arsenic	N/D		N/D		N/A	N/D	N/D	0.005	N/A	N/A	0.00004	N/A	N/A		--
75-27-4	Bromodichloromethane	N/D		N/D		N/A	N/D	N/D	0.5	N/A	N/A	0.18	N/A	N/A		--
56-23-5	Carbon Tetrachloride	0.6		1.7		ug/L	MW-11-2	7/20	0.5	N/A	N/A	0.17	N/A	N/A		--
67-66-3	Chloroform	0.5		1.4		ug/L	MW-11-3	9/20	0.5	N/A	N/A	0.16	N/A	N/A		--
7440-47-3	Hexavalent Chromium	N/D		N/D		N/A	N/D	N/D	0.005	N/A	N/A	0.00016	N/A	N/A		--
7439-92-1	Lead	0.0024		0.0093		mg/L	MW-11-4	2/20	0.002	N/A	N/A	0.004	N/A	N/A		--
14797-55-8	Nitrate	0.2		0.85		mg/L	MW-11-1	11/20	0.1	N/A	N/A	10	N/A	N/A		--
7601-90-3	Perchlorate	N/D		N/D		N/A	N/D	N/D	4	N/A	N/A	7.8	N/A	N/A		--
127-18-4	Tetrachloroethene	N/D		N/D		N/A	N/D	N/D	0.5	N/A	N/A	0.87	N/A	N/A		--
79-01-6	Trichloroethene	N/D		N/D		N/A	N/D	N/D	0.5	N/A	N/A	0.063	N/A	N/A		--

(1) Minimum/maximum detected concentration
(2) Screening was not performed on a well-by-well basis.
(3) Background information was not available.
(4) Screening toxicity value derived in accordance with State of California Department of Toxic Substances Control *Preliminary Endangerment Assessment Guidance Manual* (DTSC 1994) and EPA *Region IX PRG Table* (EPA 1999)

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EPA = U.S. Environmental Protection Agency
mg/L = milligrams per liter
MW = monitoring well
N/A = Not applicable
N/D = Not detected
PRG = Preliminary Remedial Goal
RAGS = Risk Assessment Guidance for Superfund
ug/L = micrograms per liter

Table I-14 (RAGS Part D, TABLE 2.13)
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Jet Propulsion Laboratory—Monitoring Well 12

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 12—Tap Water

CAS Number	Chemical	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (4)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection
75-35-4	1,1-Dichloroethene	N/D		N/D		N/A	N/D	N/D	0.5	N/A	N/A	0.046	N/A	N/A		--
107-06-2	1,2-Dichloroethane	N/D		N/D		N/A	N/D	N/D	0.5	N/A	N/A	0.12	N/A	N/A		--
7440-38-2	Arsenic	N/D		N/D		N/A	N/D	N/D	0.005	N/A	N/A	0.00004	N/A	N/A		--
75-27-4	Bromodichloromethane	N/D		N/D		N/A	N/D	N/D	0.5	N/A	N/A	0.18	N/A	N/A		--
56-23-5	Carbon Tetrachloride	0.8		23		ug/L	MW-12-3	17/22	0.5	N/A	N/A	0.17	N/A	N/A		--
67-66-3	Chloroform	0.5		5.8		ug/L	MW-12-1	19/22	0.5	N/A	N/A	0.16	N/A	N/A		--
7440-47-3	Hexavalent Chromium	N/D		N/D		N/A	N/D	N/D	0.005	N/A	N/A	0.00016	N/A	N/A		--
7439-92-1	Lead	0.0032		0.0032		mg/L	MW-12-1	1/22	0.002	N/A	N/A	0.004	N/A	N/A		--
14797-55-8	Nitrate	0.6		2.3		mg/L	MW-12-1	19/19	0.1	N/A	N/A	10	N/A	N/A		--
7601-90-3	Perchlorate	4.1		8		N/A	MW-12-4	11/16	4	N/A	N/A	7.8	N/A	N/A		--
127-18-4	Tetrachloroethene	N/D		N/D		N/A	N/D	N/D	0.5	N/A	N/A	0.87	N/A	N/A		--
79-01-6	Trichloroethene	0.5		0.5		N/A	MW-12-2	1/22	0.5	N/A	N/A	0.063	N/A	N/A		--

(1) Minimum/maximum detected concentration
(2) Screening was not performed on a well-by-well basis.
(3) Background information was not available.
(4) Screening toxicity value derived in accordance with State of California Department of Toxic Substances Control *Preliminary Endangerment Assessment Guidance Manual* (DTSC 1994) and EPA *Region IX PRG Table* (EPA 1999)

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EPA = U.S. Environmental Protection Agency
mg/L = milligrams per liter
MW = monitoring well
N/A = Not applicable
N/D = Not detected
PRG = Preliminary Remedial Goal
RAGS = Risk Assessment Guidance for Superfund
ug/L = micrograms per liter

Table I-15 (RAGS Part D, TABLE 2.14)
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Jet Propulsion Laboratory—Monitoring Well 13

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 13—Tap Water

CAS Number	Chemical	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (4)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection
75-35-4	1,1-Dichloroethene	0.5		1.1		ug/L	MW-13	6/8	0.5	N/A	N/A	0.046	N/A	N/A		--
107-06-2	1,2-Dichloroethane	0.9		1.1		N/A	MW-13	6/8	0.5	N/A	N/A	0.12	N/A	N/A		--
7440-38-2	Arsenic	N/D		N/D		N/A	N/D	N/D	0.005	N/A	N/A	0.00004	N/A	N/A		--
75-27-4	Bromodichloromethane	N/D		N/D		N/A	N/D	N/D	0.5	N/A	N/A	0.18	N/A	N/A		--
56-23-5	Carbon Tetrachloride	6.4		18		ug/L	MW-13	8/8	0.5	N/A	N/A	0.17	N/A	N/A		--
67-66-3	Chloroform	2.8		11		ug/L	MW-13	8/8	0.5	N/A	N/A	0.16	N/A	N/A		--
7440-47-3	Hexavalent Chromium	0.035		0.045		mg/L	MW-13	8/8	0.005	N/A	N/A	0.00016	N/A	N/A		--
7439-92-1	Lead	0.0028		0.0028		mg/L	MW-13	1/8	0.002	N/A	N/A	0.004	N/A	N/A		--
14797-55-8	Nitrate	2.9		9.6		mg/L	MW-13	4/4	0.1	N/A	N/A	10	N/A	N/A		--
7601-90-3	Perchlorate	97		280		N/A	MW-13	6/6	4	N/A	N/A	7.8	N/A	N/A		--
127-18-4	Tetrachloroethene	0.5		0.5		ug/L	MW-13	2/8	0.5	N/A	N/A	0.87	N/A	N/A		--
79-01-6	Trichloroethene	4.7		29		ug/L	MW-13	8/8	0.5	N/A	N/A	0.063	N/A	N/A		--

(1) Minimum/maximum detected concentration
(2) Screening was not performed on a well-by-well basis.
(3) Background information was not available.
(4) Screening toxicity value derived in accordance with State of California Department of Toxic Substances Control *Preliminary Endangerment Assessment Guidance Manual* (DTSC 1994) and EPA *Region IX PRG Table* (EPA 1999)

Definitions:
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
CAS = Chemical Abstract Service
COPC = Chemical of Potential Concern
DTSC = Department of Toxic Substances Control
EPA = U.S. Environmental Protection Agency
mg/L = milligrams per liter
MW = monitoring well
N/A = Not applicable
N/D = Not detected
PRG = Preliminary Remedial Goal
RAGS = Risk Assessment Guidance for Superfund
ug/L = micrograms per liter

Table I-16 (RAGS Part D, TABLE 2.15)
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Jet Propulsion Laboratory—Monitoring Well 14

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 14—Tap Water

CAS Number	Chemical	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (4)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection
75-35-4	1,1-Dichloroethene	N/D		N/D		N/A	N/D	N/D	0.5	N/A	N/A	0.046	N/A	N/A		--
107-06-2	1,2-Dichloroethane	N/D		N/D		N/A	N/D	N/D	0.5	N/A	N/A	0.12	N/A	N/A		--
7440-38-2	Arsenic	N/D		N/D		N/A	N/D	N/D	0.005	N/A	N/A	0.00004	N/A	N/A		--
75-27-4	Bromodichloromethane	N/D		N/D		N/A	N/D	N/D	0.5	N/A	N/A	0.18	N/A	N/A		--
56-23-5	Carbon Tetrachloride	N/D		N/D		N/A	N/D	N/D	0.5	N/A	N/A	0.17	N/A	N/A		--
67-66-3	Chloroform	0.5		0.9		ug/L	MW-14-2	5/20	0.5	N/A	N/A	0.16	N/A	N/A		--
7440-47-3	Hexavalent Chromium	N/D		N/D		N/A	N/D	N/D	0.005	N/A	N/A	0.00016	N/A	N/A		--
7439-92-1	Lead	0.0024		0.028		mg/L	MW-14-5	5/20	0.002	N/A	N/A	0.004	N/A	N/A		--
14797-55-8	Nitrate	0.2		19		mg/L	MW-14-1	20/20	0.1	N/A	N/A	10	N/A	N/A		--
7601-90-3	Perchlorate	4.3		9		ug/L	MW-14-2	3/15	4	N/A	N/A	7.8	N/A	N/A		--
127-18-4	Tetrachloroethene	0.7		1.9		ug/L	MW-14-2	5/20	0.5	N/A	N/A	0.87	N/A	N/A		--
79-01-6	Trichloroethene	0.9		1.2		ug/L	MW-14-2	3/20	0.5	N/A	N/A	0.063	N/A	N/A		--

(1) Minimum/maximum detected concentration
(2) Screening was not performed on a well-by-well basis.
(3) Background information was not available.
(4) Screening toxicity value derived in accordance with State of California Department of Toxic Substances Control *Preliminary Endangerment Assessment Guidance Manual* (DTSC 1994) and EPA *Region IX PRG Table* (EPA 1999)

Definitions:
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
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EPA = U.S. Environmental Protection Agency
mg/L = milligrams per liter
MW = monitoring well
N/A = Not applicable
N/D = Not detected
PRG = Preliminary Remedial Goal
RAGS = Risk Assessment Guidance for Superfund
ug/L = micrograms per liter

Table I-17 (RAGS Part D, TABLE 2.16)
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Jet Propulsion Laboratory—Monitoring Well 15

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 15—Tap Water

CAS Number	Chemical	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (4)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection
75-35-4	1,1-Dichloroethene	N/D		N/D		N/D	N/D	N/D	0.5	N/A	N/A	0.046	N/A	N/A		--
107-06-2	1,2-Dichloroethane	N/D		N/D		N/D	N/D	N/D	0.5	N/A	N/A	0.12	N/A	N/A		--
7440-38-2	Arsenic	N/D		N/D		N/D	N/D	N/D	0.005	N/A	N/A	0.00004	N/A	N/A		--
75-27-4	Bromodichloromethane	N/D		N/D		N/D	N/D	N/D	0.5	N/A	N/A	0.18	N/A	N/A		--
56-23-5	Carbon Tetrachloride	N/D		N/D		N/D	N/D	N/D	0.5	N/A	N/A	0.17	N/A	N/A		--
67-66-3	Chloroform	N/D		N/D		N/D	N/D	N/D	0.5	N/A	N/A	0.16	N/A	N/A		--
7440-47-3	Hexavalent Chromium	N/D		N/D		N/D	N/D	N/D	0.005	N/A	N/A	0.00016	N/A	N/A		--
7439-92-1	Lead	N/D		N/D		N/D	N/D	N/D	0.002	N/A	N/A	0.004	N/A	N/A		--
14797-55-8	Nitrate	0.4		4.4		mg/L	MW-15	4/4	0.1	N/A	N/A	10	N/A	N/A		--
7601-90-3	Perchlorate	N/D		N/D		N/D	N/D	N/D	4	N/A	N/A	7.8	N/A	N/A		--
127-18-4	Tetrachloroethene	N/D		N/D		N/D	N/D	N/D	0.5	N/A	N/A	0.87	N/A	N/A		--
79-01-6	Trichloroethene	N/D		N/D		N/D	N/D	N/D	0.5	N/A	N/A	0.063	N/A	N/A		--

(1) Minimum/maximum detected concentration
(2) Screening was not performed on a well-by-well basis.
(3) Background information was not available.
(4) Screening toxicity value derived in accordance with State of California Department of Toxic Substances Control *Preliminary Endangerment Assessment Guidance Manual* (DTSC 1994) and EPA *Region IX PRG Table* (EPA 1999)

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DTSC = Department of Toxic Substances Control
EPA = U.S. Environmental Protection Agency
mg/L = milligrams per liter
MW = monitoring well
N/A = Not applicable
N/D = Not detected
PRG = Preliminary Remedial Goal
RAGS = Risk Assessment Guidance for Superfund
ug/L = micrograms per liter

Table I-18 (RAGS Part D, TABLE 2.17)
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Jet Propulsion Laboratory—Monitoring Well 16

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 16—Tap Water

CAS Number	Chemical	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (4)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection
75-35-4	1,1-Dichloroethene	1.3		2.6		ug/L	MW-16	3/3	0.5	N/A	N/A	0.046	N/A	N/A		--
107-06-2	1,2-Dichloroethane	1.7		2.1		ug/L	MW-16	2/3	0.5	N/A	N/A	0.12	N/A	N/A		--
7440-38-2	Arsenic	N/D		N/D		N/A	N/D	N/D	0.005	N/A	N/A	0.00004	N/A	N/A		--
75-27-4	Bromodichloromethane	N/D		N/D		N/A	N/D	N/D	0.5	N/A	N/A	0.18	N/A	N/A		--
56-23-5	Carbon Tetrachloride	30		91		ug/L	MW-16	3/3	0.5	N/A	N/A	0.17	N/A	N/A		--
67-66-3	Chloroform	14		43		ug/L	MW-16	3/3	0.5	N/A	N/A	0.16	N/A	N/A		--
7440-47-3	Hexavalent Chromium	0.007		0.007		mg/L	MW-16	1/3	0.005	N/A	N/A	0.00016	N/A	N/A		--
7439-92-1	Lead	N/D		N/D		N/A	N/D	N/D	0.002	N/A	N/A	0.004	N/A	N/A		--
14797-55-8	Nitrate	4.8		18		mg/L	MW-16	3/3	0.1	N/A	N/A	10	N/A	N/A		--
7601-90-3	Perchlorate	615		1230		ug/L	MW-16	2/2	4	N/A	N/A	7.8	N/A	N/A		--
127-18-4	Tetrachloroethene	1.0		1.3		ug/L	MW-16	3/3	0.5	N/A	N/A	0.87	N/A	N/A		--
79-01-6	Trichloroethene	3.5		25		ug/L	MW-16	3/3	0.5	N/A	N/A	0.063	N/A	N/A		--

(1) Minimum/maximum detected concentration
(2) Screening was not performed on a well-by-well basis.
(3) Background information was not available.
(4) Screening toxicity value derived in accordance with State of California Department of Toxic Substances Control *Preliminary Endangerment Assessment Guidance Manual* (DTSC 1994) and EPA *Region IX PRG Table* (EPA 1999)

Definitions:
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
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DTSC = Department of Toxic Substances Control
EPA = U.S. Environmental Protection Agency
mg/L = milligrams per liter
MW = monitoring well
N/A = Not applicable
N/D = Not detected
PRG = Preliminary Remedial Goal
RAGS = Risk Assessment Guidance for Superfund
ug/L = micrograms per liter

Table I-19 (RAGS Part D, TABLE 2.18)
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Jet Propulsion Laboratory—Monitoring Well 17

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 17—Tap Water

CAS Number	Chemical	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (4)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection
75-35-4	1,1-Dichloroethene	N/D		N/D		N/A	N/D	N/D	0.5	N/A	N/A	0.046	N/A	N/A		--
107-06-2	1,2-Dichloroethane	N/D		N/D		N/A	N/D	N/D	0.5	N/A	N/A	0.12	N/A	N/A		--
7440-38-2	Arsenic	N/D		N/D		N/A	N/D	N/D	0.005	N/A	N/A	0.00004	N/A	N/A		--
75-27-4	Bromodichloromethane	0.5		0.9		ug/L	MW-17-3	5/20	0.5	N/A	N/A	0.18	N/A	N/A		--
56-23-5	Carbon Tetrachloride	1.3		6.6		ug/L	MW-17-3	4/20	0.5	N/A	N/A	0.17	N/A	N/A		--
67-66-3	Chloroform	0.6		8.5		ug/L	MW-17-3	17/20	0.5	N/A	N/A	0.16	N/A	N/A		--
7440-47-3	Hexavalent Chromium	0.006		0.008		mg/L	MW-17-3	2/21	0.005	N/A	N/A	0.00016	N/A	N/A		--
7439-92-1	Lead	0.0025		0.0025		mg/L	MW-17-5	1/20	0.002	N/A	N/A	0.004	N/A	N/A		--
14797-55-8	Nitrate	0.2		2.3		mg/L	MW-17-3	18/20	0.1	N/A	N/A	10	N/A	N/A		--
7601-90-3	Perchlorate	12		55		ug/L	MW-17-3	9/15	4	N/A	N/A	7.8	N/A	N/A		--
127-18-4	Tetrachloroethene	0.5		1.4		ug/L	MW-17-3	7/20	0.5	N/A	N/A	0.87	N/A	N/A		--
79-01-6	Trichloroethene	4.5		23		ug/L	MW-17-3	12/20	0.5	N/A	N/A	0.063	N/A	N/A		--

(1) Minimum/maximum detected concentration
(2) Screening was not performed on a well-by-well basis.
(3) Background information was not available.
(4) Screening toxicity value derived in accordance with State of California Department of Toxic Substances Control *Preliminary Endangerment Assessment Guidance Manual* (DTSC 1994) and EPA *Region IX PRG Table* (EPA 1999)

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EPA = U.S. Environmental Protection Agency
mg/L = milligrams per liter
MW = monitoring well
N/A = Not applicable
N/D = Not detected
PRG = Preliminary Remedial Goal
RAGS = Risk Assessment Guidance for Superfund
ug/L = micrograms per liter

Table I-20 (RAGS Part D, TABLE 2.19)
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Jet Propulsion Laboratory—Monitoring Well 18

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 18—Tap Water

CAS Number	Chemical	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (4)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection
75-35-4	1,1-Dichloroethene	N/D		N/D		N/A	N/D	N/D	0.5	N/A	N/A	0.046	N/A	N/A		--
107-06-2	1,2-Dichloroethane	N/D		N/D		N/A	N/D	N/D	0.5	N/A	N/A	0.12	N/A	N/A		--
7440-38-2	Arsenic	0.005		0.005		mg/L	MW-18-4	1/18	0.005	N/A	N/A	0.00004	N/A	N/A		--
75-27-4	Bromodichloromethane	0.5		0.8		ug/L	MW-18-2	4/18	0.5	N/A	N/A	0.18	N/A	N/A		--
56-23-5	Carbon Tetrachloride	0.6		2.6		ug/L	MW-18-4	6/18	0.5	N/A	N/A	0.17	N/A	N/A		--
67-66-3	Chloroform	0.5		6.6		ug/L	MW-18-3	12/18	0.5	N/A	N/A	0.16	N/A	N/A		--
7440-47-3	Hexavalent Chromium	0.007		0.007		mg/L	MW-18-3	1/18	0.005	N/A	N/A	0.00016	N/A	N/A		--
7439-92-1	Lead	N/D		N/D		N/A	N/D	N/D	0.002	N/A	N/A	0.004	N/A	N/A		--
14797-55-8	Nitrate	0.1		6		mg/L	MW-18-1	16/18	0.1	N/A	N/A	10	N/A	N/A		--
7601-90-3	Perchlorate	11		12		ug/L	MW-18-4	3/13	4	N/A	N/A	7.8	N/A	N/A		--
127-18-4	Tetrachloroethene	0.7		2.9		ug/L	MW-18-3	8/18	0.5	N/A	N/A	0.87	N/A	N/A		--
79-01-6	Trichloroethene	1.9		6.6		ug/L	MW-18-3	4/18	0.5	N/A	N/A	0.063	N/A	N/A		--

(1) Minimum/maximum detected concentration

(2) Screening was not performed on a well-by-well basis.

(3) Background information was not available.

(4) Screening toxicity value derived in accordance with State of California Department of Toxic Substances Control *Preliminary Endangerment Assessment Guidance Manual* (DTSC 1994) and EPA *Region IX PRG Table* (EPA 1999)

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EPA = U.S. Environmental Protection Agency
mg/L = milligrams per liter
MW = monitoring well
N/A = Not applicable
N/D = Not detected
PRG = Preliminary Remedial Goal
RAGS = Risk Assessment Guidance for Superfund
ug/L = micrograms per liter

Table I-21 (RAGS Part D, TABLE 2.20)
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Jet Propulsion Laboratory—Monitoring Well 19

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 19—Tap Water

CAS Number	Chemical	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (4)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection
75-35-4	1,1-Dichloroethene	N/D		N/D		N/D	N/D	N/D	0.5	N/A	N/A	0.046	N/A	N/A		--
107-06-2	1,2-Dichloroethane	N/D		N/D		N/D	N/D	N/D	0.5	N/A	N/A	0.12	N/A	N/A		--
7440-38-2	Arsenic	N/D		N/D		N/D	N/D	N/D	0.005	N/A	N/A	0.00004	N/A	N/A		--
75-27-4	Bromodichloromethane	0.5		0.5		ug/L	MW-19-1	1/19	0.5	N/A	N/A	0.18	N/A	N/A		--
56-23-5	Carbon Tetrachloride	N/D		N/D		N/D	N/D	N/D	0.5	N/A	N/A	0.17	N/A	N/A		--
67-66-3	Chloroform	0.8		2.0		ug/L	MW-19-1	9/19	0.5	N/A	N/A	0.16	N/A	N/A		--
7440-47-3	Hexavalent Chromium	N/D		N/D		N/D	N/D	N/D	0.005	N/A	N/A	0.00016	N/A	N/A		--
7439-92-1	Lead	0.0025		0.0025		mg/L	MW-19-4	1/19	0.002	N/A	N/A	0.004	N/A	N/A		--
14797-55-8	Nitrate	0.66		11		mg/L	MW-19-3	19/19	0.1	N/A	N/A	10	N/A	N/A		--
7601-90-3	Perchlorate	4.1		4.9		ug/L	MW-19-4	2/15	4	N/A	N/A	7.8	N/A	N/A		--
127-18-4	Tetrachloroethene	0.6		2.2		ug/L	MW-19-5	13/19	0.5	N/A	N/A	0.87	N/A	N/A		--
79-01-6	Trichloroethene	0.5		1.1		ug/L	MW-19-4	5/19	0.5	N/A	N/A	0.063	N/A	N/A		--

(1) Minimum/maximum detected concentration
(2) Screening was not performed on a well-by-well basis.
(3) Background information was not available.
(4) Screening toxicity value derived in accordance with State of California Department of Toxic Substances Control *Preliminary Endangerment Assessment Guidance Manual* (DTSC 1994) and EPA *Region IX PRG Table* (EPA 1999)

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ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
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EPA = U.S. Environmental Protection Agency
mg/L = milligrams per liter
MW = monitoring well
N/A = Not applicable
N/D = Not detected
PRG = Preliminary Remedial Goal
RAGS = Risk Assessment Guidance for Superfund
ug/L = micrograms per liter

Table I-22 (RAGS Part D, TABLE 2.21)
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Jet Propulsion Laboratory—Monitoring Well 20

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 20—Tap Water

CAS Number	Chemical	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (4)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection
75-35-4	1,1-Dichloroethene	N/D		N/D		N/D	N/D	N/D	0.5	N/A	N/A	0.046	N/A	N/A		--
107-06-2	1,2-Dichloroethane	N/D		N/D		N/D	N/D	N/D	0.5	N/A	N/A	0.12	N/A	N/A		--
7440-38-2	Arsenic	0.006		0.006		mg/L	MW-20-5	1/19	0.005	N/A	N/A	0.00004	N/A	N/A		--
75-27-4	Bromodichloromethane	0.5		0.5		ug/L	MW-20-2	1/19	0.5	N/A	N/A	0.18	N/A	N/A		--
56-23-5	Carbon Tetrachloride	N/D		N/D		N/D	N/D	N/D	0.5	N/A	N/A	0.17	N/A	N/A		--
67-66-3	Chloroform	0.8		5.2		ug/L	MW-20-2	7/19	0.5	N/A	N/A	0.16	N/A	N/A		--
7440-47-3	Hexavalent Chromium	N/D		N/D		N/D	N/D	N/D	0.005	N/A	N/A	0.00016	N/A	N/A		--
7439-92-1	Lead	0.0012		0.0038		mg/L	MW-20-5	2/19	0.002	N/A	N/A	0.004	N/A	N/A		--
14797-55-8	Nitrate	0.1		15		mg/L	MW-20-1	12/19	0.1	N/A	N/A	10	N/A	N/A		--
7601-90-3	Perchlorate	5.7		6.3		ug/L	MW-20-1	2/14	4	N/A	N/A	7.8	N/A	N/A		--
127-18-4	Tetrachloroethene	N/D		N/D		N/D	N/D	N/D	0.5	N/A	N/A	0.87	N/A	N/A		--
79-01-6	Trichloroethene	N/D		N/D		N/D	N/D	N/D	0.5	N/A	N/A	0.063	N/A	N/A		--

(1) Minimum/maximum detected concentration
(2) Screening was not performed on a well-by-well basis.
(3) Background information was not available.
(4) Screening toxicity value derived in accordance with State of California Department of Toxic Substances Control *Preliminary Endangerment Assessment Guidance Manual* (DTSC 1994) and EPA *Region IX PRG Table* (EPA 1999)

Definitions:
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
CAS = Chemical Abstract Service
COPC = Chemical of Potential Concern
DTSC = Department of Toxic Substances Control
EPA = U.S. Environmental Protection Agency
mg/L = milligrams per liter
MW = monitoring well
N/A = Not applicable
N/D = Not detected
PRG = Preliminary Remedial Goal
RAGS = Risk Assessment Guidance for Superfund
ug/L = micrograms per liter

Table I-23 (RAGS Part D, TABLE 2.22)
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Jet Propulsion Laboratory—Monitoring Well 21

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 21—Tap Water

CAS Number	Chemical	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (4)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection
75-35-4	1,1-Dichloroethene	N/D		N/D		N/D	N/D	N/D	0.5	N/A	N/A	0.046	N/A	N/A		--
107-06-2	1,2-Dichloroethane	N/D		N/D		N/D	N/D	N/D	0.5	N/A	N/A	0.12	N/A	N/A		--
7440-38-2	Arsenic	N/D		N/D		N/D	N/D	N/D	0.005	N/A	N/A	0.00004	N/A	N/A		--
75-27-4	Bromodichloromethane	N/D		N/D		N/D	N/D	N/D	0.5	N/A	N/A	0.18	N/A	N/A		--
56-23-5	Carbon Tetrachloride	N/D		N/D		N/D	N/D	N/D	0.5	N/A	N/A	0.17	N/A	N/A		--
67-66-3	Chloroform	1.6		2.2		ug/L	MW-21-1	3/19	0.5	N/A	N/A	0.16	N/A	N/A		--
7440-47-3	Hexavalent Chromium	N/D		N/D		N/D	N/D	N/D	0.005	N/A	N/A	0.00016	N/A	N/A		--
7439-92-1	Lead	0.003		0.0035		mg/L	MW-21-4	3/19	0.002	N/A	N/A	0.004	N/A	N/A		--
14797-55-8	Nitrate	7.0		17		mg/L	MW-21-1	18/19	0.1	N/A	N/A	10	N/A	N/A		--
7601-90-3	Perchlorate	4.6		19		ug/L	MW-21-1	5/14	4	N/A	N/A	7.8	N/A	N/A		--
127-18-4	Tetrachloroethene	0.7		4.4		ug/L	MW-21-4	15/19	0.5	N/A	N/A	0.87	N/A	N/A		--
79-01-6	Trichloroethene	0.5		29		ug/L	MW-21-1	7/19	0.5	N/A	N/A	0.063	N/A	N/A		--

(1) Minimum/maximum detected concentration
(2) Screening was not performed on a well-by-well basis.
(3) Background information was not available.
(4) Screening toxicity value derived in accordance with State of California Department of Toxic Substances Control *Preliminary Endangerment Assessment Guidance Manual* (DTSC 1994) and EPA *Region IX PRG Table* (EPA 1999)

Definitions:
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
CAS = Chemical Abstract Service
COPC = Chemical of Potential Concern
DTSC = Department of Toxic Substances Control
EPA = U.S. Environmental Protection Agency
mg/L = milligrams per liter
MW = monitoring well
N/A = Not applicable
N/D = Not detected
PRG = Preliminary Remedial Goal
RAGS = Risk Assessment Guidance for Superfund
ug/L = micrograms per liter

Table I-24 (RAGS Part D, TABLE 2.23)
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Jet Propulsion Laboratory—Monitoring Well 22

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 22—Tap Water

CAS Number	Chemical	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (4)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection
75-35-4	1,1-Dichloroethene	N/D		N/D		N/D	N/D	N/D	0.5	N/A	N/A	0.046	N/A	N/A		--
107-06-2	1,2-Dichloroethane	N/D		N/D		N/D	N/D	N/D	0.5	N/A	N/A	0.12	N/A	N/A		--
7440-38-2	Arsenic	N/D		N/D		N/D	N/D	N/D	0.005	N/A	N/A	0.00004	N/A	N/A		--
75-27-4	Bromodichloromethane	N/D		N/D		N/D	N/D	N/D	0.5	N/A	N/A	0.18	N/A	N/A		--
56-23-5	Carbon Tetrachloride	N/D		N/D		N/D	N/D	N/D	0.5	N/A	N/A	0.17	N/A	N/A		--
67-66-3	Chloroform	N/D		N/D		N/D	N/D	N/D	0.5	N/A	N/A	0.16	N/A	N/A		--
7440-47-3	Hexavalent Chromium	N/D		N/D		N/D	N/D	N/D	0.005	N/A	N/A	0.00016	N/A	N/A		--
7439-92-1	Lead	N/D		N/D		N/D	N/D	N/D	0.002	N/A	N/A	0.004	N/A	N/A		--
14797-55-8	Nitrate	0.16		11		mg/L	MW-22-1	9/10	0.1	N/A	N/A	10	N/A	N/A		--
7601-90-3	Perchlorate	15		15		ug/L	MW-22-3	1/10	4	N/A	N/A	7.8	N/A	N/A		--
127-18-4	Tetrachloroethene	2.0		2.3		ug/L	MW-22-1	2/10	0.5	N/A	N/A	0.87	N/A	N/A		--
79-01-6	Trichloroethene	N/D		N/D		N/D	N/D	N/D	0.5	N/A	N/A	0.063	N/A	N/A		--

(1) Minimum/maximum detected concentration
(2) Screening was not performed on a well-by-well basis.
(3) Background information was not available.
(4) Screening toxicity value derived in accordance with State of California Department of Toxic Substances Control *Preliminary Endangerment Assessment Guidance Manual* (DTSC 1994) and EPA *Region IX PRG Table* (EPA 1999)

Definitions:
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
CAS = Chemical Abstract Service
COPC = Chemical of Potential Concern
DTSC = Department of Toxic Substances Control
EPA - Environmental Protection Agency
mg/L = milligrams per liter
MW = monitoring well
N/A = Not applicable
N/D = Not detected
PRG = Preliminary Remediation Goal
RAGS = Risk Assessment Guidance for Superfund
ug/L = micrograms per liter

Table I-25 (RAGS Part D, TABLE 2.24)
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Jet Propulsion Laboratory—Monitoring Well 23

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 23—Tap Water

CAS Number	Chemical	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (4)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection
75-35-4	1,1-Dichloroethene	N/D		N/D		N/D	N/D	N/D	0.5	N/A	N/A	0.046	N/A	N/A		--
107-06-2	1,2-Dichloroethane	N/D		N/D		N/D	N/D	N/D	0.5	N/A	N/A	0.12	N/A	N/A		--
7440-38-2	Arsenic	N/D		N/D		N/D	N/D	N/D	0.005	N/A	N/A	0.00004	N/A	N/A		--
75-27-4	Bromodichloromethane	N/D		N/D		N/D	N/D	N/D	0.5	N/A	N/A	0.18	N/A	N/A		--
56-23-5	Carbon Tetrachloride	N/D		N/D		N/D	N/D	N/D	0.5	N/A	N/A	0.17	N/A	N/A		--
67-66-3	Chloroform	0.7		0.9		ug/L	MW-23-1	2/10	0.5	N/A	N/A	0.16	N/A	N/A		--
7440-47-3	Hexavalent Chromium	N/D		N/D		N/D	N/D	N/D	0.005	N/A	N/A	0.00016	N/A	N/A		--
7439-92-1	Lead	N/D		N/D		N/D	N/D	N/D	0.002	N/A	N/A	0.004	N/A	N/A		--
14797-55-8	Nitrate	3.6		15		mg/L	MW-23-2	8/10	0.1	N/A	N/A	10	N/A	N/A		--
7601-90-3	Perchlorate	4.4		7.6		ug/L	MW-23-2	4/10	4	N/A	N/A	7.8	N/A	N/A		--
127-18-4	Tetrachloroethene	0.6		1.6		ug/L	MW-23-1	2/10	0.5	N/A	N/A	0.87	N/A	N/A		--
79-01-6	Trichloroethene	3.1		4.2		ug/L	MW-23-1	2/10	0.5	N/A	N/A	0.063	N/A	N/A		--

(1) Minimum/maximum detected concentration

(2) Screening was not performed on a well-by-well basis.

(3) Background information was not available.

(4) Screening toxicity value derived in accordance with State of California Department of Toxic Substances Control *Preliminary Endangerment Assessment Guidance Manual* (DTSC 1994) and EPA *Region IX PRG Table* (EPA 1999)

Definitions:

ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
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DTSC = Department of Toxic Substances Control
EPA = Environmental Protection Agency
mg/L = milligrams per liter
MW = monitoring well
N/A = Not applicable
N/D = Not detected
PRG = Preliminary Remediation Goal
RAGS = Risk Assessment Guidance for Superfund
ug/L = micrograms per liter

Table I-26 (RAGS Part D, TABLE 2.25)
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Jet Propulsion Laboratory—Monitoring Well 24

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 24—Tap Water

CAS Number	Chemical	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (4)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection
75-35-4	1,1-Dichloroethene	N/D		N/D		N/D	N/D	N/D	0.5	N/A	N/A	0.046	N/A	N/A		--
107-06-2	1,2-Dichloroethane	0.8		0.8		ug/L	MW-24-1	1/10	0.5	N/A	N/A	0.12	N/A	N/A		--
7440-38-2	Arsenic	0.006		0.006		mg/L	MW-24-3	1/10	0.005	N/A	N/A	0.00004	N/A	N/A		--
75-27-4	Bromodichloromethane	N/D		N/D		N/D	N/D	N/D	0.5	N/A	N/A	0.18	N/A	N/A		--
56-23-5	Carbon Tetrachloride	5.0		30		ug/L	MW-24-1	4/10	0.5	N/A	N/A	0.17	N/A	N/A		--
67-66-3	Chloroform	2.4		15		ug/L	MW-24-1	4/10	0.5	N/A	N/A	0.16	N/A	N/A		--
7440-47-3	Hexavalent Chromium	N/D		N/D		N/D	N/D	N/D	0.005	N/A	N/A	0.00016	N/A	N/A		--
7439-92-1	Lead	N/D		N/D		N/D	N/D	N/D	0.002	N/A	N/A	0.004	N/A	N/A		--
14797-55-8	Nitrate	0.9		5.6		mg/L	MW-24-1	10/10	0.1	N/A	N/A	10	N/A	N/A		--
7601-90-3	Perchlorate	92		330		ug/L	MW-24-1	4/10	4	N/A	N/A	7.8	N/A	N/A		--
127-18-4	Tetrachloroethene	0.5		0.5		ug/L	MW-24-1	1/10	0.5	N/A	N/A	0.87	N/A	N/A		--
79-01-6	Trichloroethene	0.7		15		ug/L	MW-24-1	4/10	0.5	N/A	N/A	0.063	N/A	N/A		--

(1) Minimum/maximum detected concentration
(2) Screening was not performed on a well-by-well basis.
(3) Background information was not available.
(4) Screening toxicity value derived in accordance with State of California Department of Toxic Substances Control *Preliminary Endangerment Assessment Guidance Manual* (DTSC 1994) and EPA *Region IX PRG Table* (EPA 1999)

Definitions:
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
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DTSC = Department of Toxic Substances Control
EPA = Environmental Protection Agency
mg/L = milligrams per liter
MW = monitoring well
N/A = Not applicable
N/D = Not detected
PRG = Preliminary Remediation Goal
RAGS = Risk Assessment Guidance for Superfund
ug/L = micrograms per liter

Table I-27 (RAGS Part D, TABLE 2.26)
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Jet Propulsion Laboratory—La Canada Well #1

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: La Canada Well #1—Tap Water

CAS Number	Chemical	(1) Minimum Concentration	Minimum Qualifier	(1) Maximum Concentration	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	(2) Concentration Used for Screening	(3) Background Value	(4) Screening Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection
75-35-4	1,1-Dichloroethene	N/D		N/D		N/D	N/D	N/D	0.5	N/A	N/A	0.046	N/A	N/A		--
107-06-2	1,2-Dichloroethane	N/D		N/D		N/D	N/D	N/D	0.5	N/A	N/A	0.12	N/A	N/A		--
7440-38-2	Arsenic	N/D		N/D		N/D	N/D	N/D	2.0	N/A	N/A	0.00004	N/A	N/A		--
75-27-4	Bromodichloromethane	N/D		N/D		N/D	N/D	N/D	N/A	N/A	N/A	0.18	N/A	N/A		--
56-23-5	Carbon Tetrachloride	N/D		N/D		N/D	N/D	N/D	0.5	N/A	N/A	0.17	N/A	N/A		--
67-66-3	Chloroform	N/D		N/D		N/D	N/D	N/D	N/A	N/A	N/A	0.16	N/A	N/A		--
7440-47-3	Hexavalent Chromium	N/D		N/D		N/D	N/D	N/D	N/A	N/A	N/A	0.00016	N/A	N/A		--
7439-92-1	Lead	N/D		N/D		N/D	N/D	N/D	5.0	N/A	N/A	0.004	N/A	N/A		--
14797-55-8	Nitrate	N/D		N/D		N/D	N/D	N/D	N/A	N/A	N/A	10	N/A	N/A		--
7601-90-3	Perchlorate	N/D		N/D		N/D	N/D	N/D	4.0	N/A	N/A	7.8	N/A	N/A		--
127-18-4	Tetrachloroethene	0.3		0.6		ug/l	LCW-1	1/3	0.5	N/A	N/A	0.87	N/A	N/A		--
79-01-6	Trichloroethene	N/D		N/D		N/D	N/D	N/D	0.5	N/A	N/A	0.063	N/A	N/A		--

(1) Minimum/maximum detected concentration
(2) Screening was not performed on a well-by-well basis.
(3) Background information was not available.
(4) Screening toxicity value derived in accordance with State of California Department of Toxic Substances Control *Preliminary Endangerment Assessment Guidance Manual* (DTSC 1994) and EPA *Region IX PRG Table* (EPA 1999)

Definitions:
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
CAS = Chemical Abstract Service
COPC = Chemical of Potential Concern
DTSC = Department of Toxic Substances Control
EPA - Environmental Protection Agency
N/A = Not applicable
N/D = Not detected
PRG = Preliminary Remediation Goal

Table I-28 (RAGS Part D, TABLE 2.27)
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Jet Propulsion Laboratory—Las Flores Well #2

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Las Flores Well #2—Tap Water

CAS Number	Chemical	(1) Minimum Concentration	Minimum Qualifier	(1) Maximum Concentration	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	(2) Concentration Used for Screening	(3) Background Value	(4) Screening Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection
75-35-4	1,1-Dichloroethene	N/D		N/D		N/D	N/D	N/D	0.5	N/A	N/A	0.046	N/A	N/A		--
107-06-2	1,2-Dichloroethane	N/D		N/D		N/D	N/D	N/D	0.5	N/A	N/A	0.12	N/A	N/A		--
7440-38-2	Arsenic	2.4		2.4		ug/L	LFW-2	1/1	2.0	N/A	N/A	0.00004	N/A	N/A		--
75-27-4	Bromodichloromethane	N/D		N/D		N/D	N/D	N/D	N/A	N/A	N/A	0.18	N/A	N/A		--
56-23-5	Carbon Tetrachloride	N/D		N/D		N/D	N/D	N/D	0.5	N/A	N/A	0.17	N/A	N/A		--
67-66-3	Chloroform	N/D		N/D		N/D	N/D	N/D	N/A	N/A	N/A	0.16	N/A	N/A		--
7440-47-3	Hexavalent Chromium	N/D		N/D		N/D	N/D	N/D	N/A	N/A	N/A	0.00016	N/A	N/A		--
7439-92-1	Lead	N/D		N/D		N/D	N/D	N/D	5.0	N/A	N/A	0.004	N/A	N/A		--
14797-55-8	Nitrate	N/D		N/D		N/D	N/D	N/D	N/A	N/A	N/A	10	N/A	N/A		--
7601-90-3	Perchlorate	5.0		7.0		ug/L	LFW-2	2/2	4.0	N/A	N/A	7.8	N/A	N/A		--
127-18-4	Tetrachloroethene	4.7		4.8		ug/L	LFW-2	2/2	0.5	N/A	N/A	0.87	N/A	N/A		--
79-01-6	Trichloroethene	N/D		N/D		N/D	N/D	N/D	0.5	N/A	N/A	0.063	N/A	N/A		--

(1) Minimum/maximum detected concentration
(2) Screening was not performed on a well-by-well basis.
(3) Background information was not available.
(4) Screening toxicity value derived in accordance with State of California Department of Toxic Substances Control *Preliminary Endangerment Assessment Guidance Manual* (DTSC 1994) and EPA *Region IX PRG Table* (EPA 1999)

Definitions:
CAS = Chemical Abstract Service
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
COPC = Chemical of Potential Concern
DTSC = Department of Toxic Substances Control
EPA = U. S. Environmental Protection Agency
LFW-2 = Las Flores Well #2
N/A = Not applicable
N/D = Not detected
PRG = Preliminary Remedial Goal
RAGS = Risk Assessment Guidance for Superfund
ug/L = micrograms per liter

Table I-29 (RAGS Part D, TABLE 2.28)
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Jet Propulsion Laboratory—Lincoln Ave. Well #3

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Lincoln Ave. Well #3—Tap Water

CAS Number	Chemical	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (4)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection
75-35-4	1,1-Dichloroethene	N/D		N/D		N/D	N/D	N/D	0.5	N/A	N/A	0.046	N/A	N/A		--
107-06-2	1,2-Dichloroethane	N/D		N/D		N/D	N/D	N/D	0.5	N/A	N/A	0.12	N/A	N/A		--
7440-38-2	Arsenic	N/D		N/D		N/D	N/D	N/D	2.0	N/A	N/A	0.00004	N/A	N/A		--
75-27-4	Bromodichloromethane	N/D		N/D		N/D	N/D	N/D	N/A	N/A	N/A	0.18	N/A	N/A		--
56-23-5	Carbon Tetrachloride	0.3		1.5		ug/L	LAW-3	7/10	0.5	N/A	N/A	0.17	N/A	N/A		--
67-66-3	Chloroform	N/D		N/D		N/D	N/D	N/D	N/A	N/A	N/A	0.16	N/A	N/A		--
7440-47-3	Hexavalent Chromium	N/D		N/D		N/D	N/D	N/D	N/A	N/A	N/A	0.00016	N/A	N/A		--
7439-92-1	Lead	N/D		N/D		N/D	N/D	N/D	5.0	N/A	N/A	0.004	N/A	N/A		--
14797-55-8	Nitrate	N/D		N/D		N/D	N/D	N/D	N/A	N/A	N/A	10	N/A	N/A		--
7601-90-3	Perchlorate	7.0		17		ug/L	LAW-3	9/9	4.0	N/A	N/A	7.8	N/A	N/A		--
127-18-4	Tetrachloroethene	0.3		1.1		ug/L	LAW-3	8/10	0.5	N/A	N/A	0.87	N/A	N/A		--
79-01-6	Trichloroethene	0.3		16		ug/L	LAW-3	8/10	0.5	N/A	N/A	0.063	N/A	N/A		--

(1) Minimum/maximum detected concentration
(2) Screening was not performed on a well-by-well basis.
(3) Background information was not available.
(4) Screening toxicity value derived in accordance with State of California Department of Toxic Substances Control *Preliminary Endangerment Assessment Guidance Manual* (DTSC 1994) and EPA *Region IX PRG Table* (EPA 1999)

Definitions:
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
CAS = Chemical Abstract Service
COPC = Chemical of Potential Concern
DTSC = Department of Toxic Substances Control
EPA = Environmental Protection Agency
LAW-3 = Lincoln Ave. Well #3
N/A = Not applicable
N/D = Not detected
PRG = Preliminary Remediation Goal
RAGS = Risk Assessment Guidance for Superfund
ug/L = micrograms per liter

Table I-30 (RAGS Part D, TABLE 2.29)
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Jet Propulsion Laboratory—Lincoln Ave. Well #5

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Lincoln Ave. Well #5—Tap Water

CAS Number	Chemical	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (4)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection
75-35-4	1,1-Dichloroethene	N/D		N/D		N/D	N/D	N/D	0.5	N/A	N/A	0.046	N/A	N/A		--
107-06-2	1,2-Dichloroethane	N/D		N/D		N/D	N/D	N/D	0.5	N/A	N/A	0.12	N/A	N/A		--
7440-38-2	Arsenic	N/D		N/D		N/D	N/D	N/D	2.0	N/A	N/A	0.00004	N/A	N/A		--
75-27-4	Bromodichloromethane	N/D		N/D		N/D	N/D	N/D	N/A	N/A	N/A	0.18	N/A	N/A		--
56-23-5	Carbon Tetrachloride	N/D		N/D		N/D	N/D	N/D	0.5	N/A	N/A	0.17	N/A	N/A		--
67-66-3	Chloroform	N/D		N/D		N/D	N/D	N/D	N/A	N/A	N/A	0.16	N/A	N/A		--
7440-47-3	Hexavalent Chromium	N/D		N/D		N/D	N/D	N/D	N/A	N/A	N/A	0.00016	N/A	N/A		--
7439-92-1	Lead	N/D		N/D		N/D	N/D	N/D	5.0	N/A	N/A	0.004	N/A	N/A		--
14797-55-8	Nitrate	N/D		N/D		N/D	N/D	N/D	N/A	N/A	N/A	10	N/A	N/A		--
7601-90-3	Perchlorate	6.0		7.0		ug/L	LAW-5	3/3	4.0	N/A	N/A	7.8	N/A	N/A		--
127-18-4	Tetrachloroethene	0.7		0.7		ug/L	LAW-5	1/1	0.5	N/A	N/A	0.87	N/A	N/A		--
79-01-6	Trichloroethene	13		13		ug/L	LAW-5	1/1	0.5	N/A	N/A	0.063	N/A	N/A		--

(1) Minimum/maximum detected concentration

(2) Screening was not performed on a well-by-well basis.

(3) Background information was not available.

(4) Screening toxicity value derived in accordance with State of California Department of Toxic Substances Control *Preliminary Endangerment Assessment Guidance Manual* (DTSC 1994) and EPA *Region IX PRG Table* (EPA 1999)

Definitions:

ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
CAS = Chemical Abstract Service
COPC = Chemical of Potential Concern
DTSC = Department of Toxic Substances Control
EPA - Environmental Protection Agency
LAW-5 = Lincoln Ave. Well #5
N/A = Not applicable
N/D = Not detected
PRG = Preliminary Remediation Goal
RAGS = Risk Assessment Guidance for Superfund
ug/L = micrograms per liter

Table I-31 (RAGS Part D, TABLE 2.30)
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Jet Propulsion Laboratory—Pasadena Arroyo Well

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Pasadena Arroyo Well—Tap Water

CAS Number	Chemical	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (4)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection
75-35-4	1,1-Dichloroethene	N/D		N/D		N/D	N/D	N/D	0.5	N/A	N/A	0.046	N/A	N/A		--
107-06-2	1,2-Dichloroethane	N/D		N/D		N/D	N/D	N/D	0.5	N/A	N/A	0.12	N/A	N/A		--
7440-38-2	Arsenic	N/D		N/D		N/D	N/D	N/D	2.0	N/A	N/A	0.00004	N/A	N/A		--
75-27-4	Bromodichloromethane	N/D		N/D		N/D	N/D	N/D	N/A	N/A	N/A	0.18	N/A	N/A		--
56-23-5	Carbon Tetrachloride	3		4.7		ug/L	PAW	5/5	0.5	N/A	N/A	0.17	N/A	N/A		--
67-66-3	Chloroform	N/D		N/D		N/D	N/D	N/D	N/A	N/A	N/A	0.16	N/A	N/A		--
7440-47-3	Hexavalent Chromium	N/D		N/D		N/D	N/D	N/D	N/A	N/A	N/A	0.00016	N/A	N/A		--
7439-92-1	Lead	N/D		N/D		N/D	N/D	N/D	5.0	N/A	N/A	0.004	N/A	N/A		--
14797-55-8	Nitrate	N/D		N/D		N/D	N/D	N/D	N/A	N/A	N/A	10	N/A	N/A		--
7601-90-3	Perchlorate	54		130		ug/L	PAW	3/3	4.0	N/A	N/A	7.8	N/A	N/A		--
127-18-4	Tetrachloroethene	0.6		1.1		ug/L	PAW	2/2	0.5	N/A	N/A	0.87	N/A	N/A		--
79-01-6	Trichloroethene	2.2		3.5		ug/L	PAW	5/5	0.5	N/A	N/A	0.063	N/A	N/A		--

(1) Minimum/maximum detected concentration
(2) Screening was not performed on a well-by-well basis.
(3) Background information was not available.
(4) Screening toxicity value derived in accordance with State of California Department of Toxic Substances Control *Preliminary Endangerment Assessment Guidance Manual* (DTSC 1994) and EPA *Region IX PRG Table* (EPA 1999)

Definitions:
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
CAS = Chemical Abstract Service
COPC = Chemical of Potential Concern
DTSC = Department of Toxic Substances Control
EPA = Environmental Protection Agency
N/A = Not applicable
N/D = Not detected
PAW = Pasadena Arroyo Well
PRG = Preliminary Remediation Goal
RAGS = Risk Assessment Guidance for Superfund
ug/L = micrograms per liter

Table I-32 (RAGS Part D, TABLE 2.31)
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Jet Propulsion Laboratory—Pasadena Ventura Well

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Pasadena Ventura Well—Tap Water

CAS Number	Chemical	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (4)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection
75-35-4	1,1-Dichloroethene	N/D		N/D		N/D	N/D	N/D	0.5	N/A	N/A	0.046	N/A	N/A		--
107-06-2	1,2-Dichloroethane	N/D		N/D		N/D	N/D	N/D	0.5	N/A	N/A	0.12	N/A	N/A		--
7440-38-2	Arsenic	N/D		N/D		N/D	N/D	N/D	2.0	N/A	N/A	0.00004	N/A	N/A		--
75-27-4	Bromodichloromethane	N/D		N/D		N/D	N/D	N/D	N/A	N/A	N/A	0.18	N/A	N/A		--
56-23-5	Carbon Tetrachloride	N/D		N/D		N/D	N/D	N/D	0.5	N/A	N/A	0.17	N/A	N/A		--
67-66-3	Chloroform	N/D		N/D		N/D	N/D	N/D	N/A	N/A	N/A	0.16	N/A	N/A		--
7440-47-3	Hexavalent Chromium	N/D		N/D		N/D	N/D	N/D	N/A	N/A	N/A	0.00016	N/A	N/A		--
7439-92-1	Lead	N/D		N/D		N/D	N/D	N/D	5.0	N/A	N/A	0.004	N/A	N/A		--
14797-55-8	Nitrate	N/D		N/D		N/D	N/D	N/D	N/A	N/A	N/A	10	N/A	N/A		--
7601-90-3	Perchlorate	4.0		5.0		ug/L	PVW	4/4	4.0	N/A	N/A	7.8	N/A	N/A		--
127-18-4	Tetrachloroethene	0.25		0.7		ug/L	PVW	2/5	0.5	N/A	N/A	0.87	N/A	N/A		--
79-01-6	Trichloroethene	0.25		1.2		ug/L	PVW	8/10	0.5	N/A	N/A	0.063	N/A	N/A		--

(1) Minimum/maximum detected concentration

(2) Screening was not performed on a well-by-well basis.

(3) Background information was not available.

(4) Screening toxicity value derived in accordance with State of California Department of Toxic Substances Control *Preliminary Endangerment Assessment Guidance Manual* (DTSC 1994) and EPA *Region IX PRG Table* (EPA 1999)

Definitions:

ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
CAS = Chemical Abstract Service
COPC = Chemical of Potential Concern
DTSC = Department of Toxic Substances Control
EPA = Environmental Protection Agency
N/A = Not applicable
N/D = Not detected
PRG = Preliminary Remediation Goal
PVW = Pasadena Ventura Well
RAGS = Risk Assessment Guidance for Superfund
ug/L = micrograms per liter

Table I-33 (RAGS Part D, TABLE 2.32)
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Jet Propulsion Laboratory—Pasadena Well 52

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Pasadena Well 52—Tap Water

CAS Number	Chemical	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (4)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection
75-35-4	1,1-Dichloroethene	N/D		N/D		N/D	N/D	N/D	0.5	N/A	N/A	0.046	N/A	N/A		--
107-06-2	1,2-Dichloroethane	N/D		N/D		N/D	N/D	N/D	0.5	N/A	N/A	0.12	N/A	N/A		--
7440-38-2	Arsenic	N/D		N/D		N/D	N/D	N/D	2.0	N/A	N/A	0.00004	N/A	N/A		--
75-27-4	Bromodichloromethane	N/D		N/D		N/D	N/D	N/D	N/A	N/A	N/A	0.18	N/A	N/A		--
56-23-5	Carbon Tetrachloride	0.7		1.3		ug/L	PW-52	5/5	0.5	N/A	N/A	0.17	N/A	N/A		--
67-66-3	Chloroform	N/D		N/D		N/D	N/D	N/D	N/A	N/A	N/A	0.16	N/A	N/A		--
7440-47-3	Hexavalent Chromium	N/D		N/D		N/D	N/D	N/D	N/A	N/A	N/A	0.00016	N/A	N/A		--
7439-92-1	Lead	N/D		N/D		N/D	N/D	N/D	5.0	N/A	N/A	0.004	N/A	N/A		--
14797-55-8	Nitrate	N/D		N/D		N/D	N/D	N/D	N/A	N/A	N/A	10	N/A	N/A		--
7601-90-3	Perchlorate	7.0		15		ug/L	PW-52	4/4	4.0	N/A	N/A	7.8	N/A	N/A		--
127-18-4	Tetrachloroethene	N/D		N/D		N/D	N/D	N/D	0.5	N/A	N/A	0.87	N/A	N/A		--
79-01-6	Trichloroethene	2.0		7.3		ug/L	PW-52	11/11	0.5	N/A	N/A	0.063	N/A	N/A		--

(1) Minimum/maximum detected concentration
(2) Screening was not performed on a well-by-well basis.
(3) Background information was not available.
(4) Screening toxicity value derived in accordance with State of California Department of Toxic Substances Control *Preliminary Endangerment Assessment Guidance Manual* (DTSC 1994) and EPA *Region IX PRG Table* (EPA 1999)

Definitions:
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
CAS = Chemical Abstract Service
COPC = Chemical of Potential Concern
DTSC = Department of Toxic Substances Control
EPA = Environmental Protection Agency
N/A = Not applicable
N/D = Not detected
PW = Pasadena Well
PRG = Preliminary Remediation Goal
RAGS = Risk Assessment Guidance for Superfund
ug/L = micrograms per liter

Table I-34 (RAGS Part D, TABLE 2.33)
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Jet Propulsion Laboratory—Pasadena Windsor Well

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Pasadena Windsor Well—Tap Water

CAS Number	Chemical	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (4)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection
75-35-4	1,1-Dichloroethene	N/D		N/D		N/D	N/D	N/D	0.5	N/A	N/A	0.046	N/A	N/A		--
107-06-2	1,2-Dichloroethane	N/D		N/D		N/D	N/D	N/D	0.5	N/A	N/A	0.12	N/A	N/A		--
7440-38-2	Arsenic	N/D		N/D		N/D	N/D	N/D	2.0	N/A	N/A	0.00004	N/A	N/A		--
75-27-4	Bromodichloromethane	N/D		N/D		N/D	N/D	N/D	N/A	N/A	N/A	0.18	N/A	N/A		--
56-23-5	Carbon Tetrachloride	N/D		N/D		N/D	N/D	N/D	0.5	N/A	N/A	0.17	N/A	N/A		--
67-66-3	Chloroform	N/D		N/D		N/D	N/D	N/D	N/A	N/A	N/A	0.16	N/A	N/A		--
7440-47-3	Hexavalent Chromium	N/D		N/D		N/D	N/D	N/D	N/A	N/A	N/A	0.00016	N/A	N/A		--
7439-92-1	Lead	N/D		N/D		N/D	N/D	N/D	5.0	N/A	N/A	0.004	N/A	N/A		--
14797-55-8	Nitrate	N/D		N/D		N/D	N/D	N/D	N/A	N/A	N/A	10	N/A	N/A		--
7601-90-3	Perchlorate	N/D		N/D		N/D	N/D	N/D	4.0	N/A	N/A	7.8	N/A	N/A		--
127-18-4	Tetrachloroethene	0.25		1.1		ug/L	PWW	10/11	0.5	N/A	N/A	0.87	N/A	N/A		--
79-01-6	Trichloroethene	0.25		1.2		ug/L	PWW	8/9	0.5	N/A	N/A	0.063	N/A	N/A		--

(1) Minimum/maximum detected concentration
(2) Screening was not performed on a well-by-well basis.
(3) Background information was not available.
(4) Screening toxicity value derived in accordance with State of California Department of Toxic Substances Control *Preliminary Endangerment Assessment Guidance Manual* (DTSC 1994) and EPA *Region IX PRG Table* (EPA 1999)

Definitions:
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
CAS = Chemical Abstract Service
COPC = Chemical of Potential Concern
DTSC = Department of Toxic Substances Control
EPA = Environmental Protection Agency
N/A = Not applicable
N/D = Not detected
PRG = Preliminary Remediation Goal
PWW = Pasadena Water Well
RAGS = Risk Assessment Guidance for Superfund
ug/L = micrograms per liter

Table I-35 (RAGS Part D, TABLE 2.34)
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Jet Propulsion Laboratory—Rubio Cañon #4

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Rubio Cañon #4—Tap Water

CAS Number	Chemical	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (4)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection
75-35-4	1,1-Dichloroethene	N/D		N/D		N/D	N/D	N/D	0.5	N/A	N/A	0.046	N/A	N/A		--
107-06-2	1,2-Dichloroethane	N/D		N/D		N/D	N/D	N/D	0.5	N/A	N/A	0.12	N/A	N/A		--
7440-38-2	Arsenic	N/D		N/D		N/D	N/D	N/D	2.0	N/A	N/A	0.00004	N/A	N/A		--
75-27-4	Bromodichloromethane	N/D		N/D		N/D	N/D	N/D	N/A	N/A	N/A	0.18	N/A	N/A		--
56-23-5	Carbon Tetrachloride	N/D		N/D		N/D	N/D	N/D	0.5	N/A	N/A	0.17	N/A	N/A		--
67-66-3	Chloroform	N/D		N/D		N/D	N/D	N/D	N/A	N/A	N/A	0.16	N/A	N/A		--
7440-47-3	Hexavalent Chromium	N/D		N/D		N/D	N/D	N/D	N/A	N/A	N/A	0.00016	N/A	N/A		--
7439-92-1	Lead	N/D		N/D		N/D	N/D	N/D	5.0	N/A	N/A	0.004	N/A	N/A		--
14797-55-8	Nitrate	N/D		N/D		N/D	N/D	N/D	N/A	N/A	N/A	10	N/A	N/A		--
7601-90-3	Perchlorate	5.0		6.0		ug/L	RCW-4	2/2	4.0	N/A	N/A	7.8	N/A	N/A		--
127-18-4	Tetrachloroethene	N/D		N/D		N/D	N/D	N/D	0.5	N/A	N/A	0.87	N/A	N/A		--
79-01-6	Trichloroethene	N/D		N/D		N/D	N/D	N/D	0.5	N/A	N/A	0.063	N/A	N/A		--

(1) Minimum/maximum detected concentration

(2) Screening was not performed on a well-by-well basis.

(3) Background information was not available.

(4) Screening toxicity value derived in accordance with State of California Department of Toxic Substances Control *Preliminary Endangerment Assessment Guidance Manual* (DTSC 1994) and EPA *Region IX PRG Table* (EPA 1999)

Definitions:

ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
CAS = Chemical Abstract Service
COPC = Chemical of Potential Concern
DTSC = Department of Toxic Substances Control
N/A = Not applicable
N/D = Not detected
PRG = Preliminary Remediation Goal
RAGS = Risk Assessment Guidance for Superfund
RCW = Rubio Cañon Well
ug/L = micrograms per liter

Table I-36 (RAGS Part D, TABLE 2.35)
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Jet Propulsion Laboratory—Rubio Cañon Well #7

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Rubio Cañon Well #7—Tap Water

CAS Number	Chemical	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (4)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection
75-35-4	1,1-Dichloroethene	N/D		N/D		N/D	N/D	N/D	0.5	N/A	N/A	0.046	N/A	N/A		--
107-06-2	1,2-Dichloroethane	N/D		N/D		N/D	N/D	N/D	0.5	N/A	N/A	0.12	N/A	N/A		--
7440-38-2	Arsenic	N/D		N/D		N/D	N/D	N/D	2.0	N/A	N/A	0.00004	N/A	N/A		--
75-27-4	Bromodichloromethane	N/D		N/D		N/D	N/D	N/D	N/A	N/A	N/A	0.18	N/A	N/A		--
56-23-5	Carbon Tetrachloride	N/D		N/D		N/D	N/D	N/D	0.5	N/A	N/A	0.17	N/A	N/A		--
67-66-3	Chloroform	N/D		N/D		N/D	N/D	N/D	N/A	N/A	N/A	0.16	N/A	N/A		--
7440-47-3	Hexavalent Chromium	N/D		N/D		N/D	N/D	N/D	N/A	N/A	N/A	0.00016	N/A	N/A		--
7439-92-1	Lead	N/D		N/D		N/D	N/D	N/D	5.0	N/A	N/A	0.004	N/A	N/A		--
14797-55-8	Nitrate	N/D		N/D		N/D	N/D	N/D	N/A	N/A	N/A	10	N/A	N/A		--
7601-90-3	Perchlorate	2.0		4.0		ug/L	RCW-7	1/2	4.0	N/A	N/A	7.8	N/A	N/A		--
127-18-4	Tetrachloroethene	N/D		N/D		N/D	N/D	N/D	0.5	N/A	N/A	0.87	N/A	N/A		--
79-01-6	Trichloroethene	N/D		N/D		N/D	N/D	N/D	0.5	N/A	N/A	0.063	N/A	N/A		--

(1) Minimum/maximum detected concentration
(2) Screening was not performed on a well-by-well basis.
(3) Background information was not available.
(4) Screening toxicity value derived in accordance with State of California Department of Toxic Substances Control *Preliminary Endangerment Assessment Guidance Manual* (DTSC 1994) and EPA *Region IX PRG Table* (EPA 1999)

Definitions:
CAS = Chemical Abstract Service
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
COPC = Chemical of Potential Concern
DTSC = Department of Toxic Substances Control
EPA = U. S. Environmental Protection Agency
N/A = Not applicable
N/D = Not detected
PRG = Preliminary Remedial Goal
RAGS = Risk Assessment Guidance for Superfund
RCW-7 = Rubio Cañon Well #7
ug/L = micrograms per liter

Table I-37 (RAGS Part D, TABLE 2.36)
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Jet Propulsion Laboratory—Valley Well #1

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Valley Well #1—Tap Water

CAS Number	Chemical	(1) Minimum Concentration	Minimum Qualifier	(1) Maximum Concentration	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	(2) Concentration Used for Screening	(3) Background Value	(4) Screening Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection
75-35-4	1,1-Dichloroethene	N/D		N/D		N/D	N/D	N/D	0.5	N/A	N/A	0.046	N/A	N/A		--
107-06-2	1,2-Dichloroethane	N/D		N/D		N/D	N/D	N/D	0.5	N/A	N/A	0.12	N/A	N/A		--
7440-38-2	Arsenic	1.9		1.9		ug/L	VW-1	1/1	2.0	N/A	N/A	0.00004	N/A	N/A		--
75-27-4	Bromodichloromethane	N/D		N/D		N/D	N/D	N/D	N/A	N/A	N/A	0.18	N/A	N/A		--
56-23-5	Carbon Tetrachloride	N/D		N/D		N/D	N/D	N/D	0.5	N/A	N/A	0.17	N/A	N/A		--
67-66-3	Chloroform	N/D		N/D		N/D	N/D	N/D	N/A	N/A	N/A	0.16	N/A	N/A		--
7440-47-3	Hexavalent Chromium	N/D		N/D		N/D	N/D	N/D	N/A	N/A	N/A	0.00016	N/A	N/A		--
7439-92-1	Lead	N/D		N/D		N/D	N/D	N/D	5.0	N/A	N/A	0.004	N/A	N/A		--
14797-55-8	Nitrate	N/D		N/D		N/D	N/D	N/D	N/A	N/A	N/A	10	N/A	N/A		--
7601-90-3	Perchlorate	2.0		5.0		ug/L	VW-1	1/2	4.0	N/A	N/A	7.8	N/A	N/A		--
127-18-4	Tetrachloroethene	28		38		ug/L	VW-1	3/3	0.5	N/A	N/A	0.87	N/A	N/A		--
79-01-6	Trichloroethene	2.3		3.5		ug/L	VW-1	3/3	0.5	N/A	N/A	0.063	N/A	N/A		--

(1) Minimum/maximum detected concentration

(2) Screening was not performed on a well-by-well basis.

(3) Background information was not available.

(4) Screening toxicity value derived in accordance with State of California Department of Toxic Substances Control *Preliminary Endangerment Assessment Guidance Manual* (DTSC 1994) and EPA *Region IX PRG Table* (EPA 1999)

Definitions:

CAS = Chemical Abstract Service
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
COPC = Chemical of Potential Concern
DTSC = Department of Toxic Substances Control
EPA = U. S. Environmental Protection Agency
N/A = Not applicable
N/D = Not detected
PRG = Preliminary Remedial Goal
RAGS = Risk Assessment Guidance for Superfund
ug/L = micrograms per liter
VW-1= Valley Well #1

Table I-38 (RAGS Part D, TABLE 2.37)
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Jet Propulsion Laboratory—Valley Well #2

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Valley Well #2—Tap Water

CAS Number	Chemical	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (4)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection
75-35-4	1,1-Dichloroethene	N/D		N/D		N/D	N/D	N/D	0.5	N/A	N/A	0.046	N/A	N/A		--
107-06-2	1,2-Dichloroethane	N/D		N/D		N/D	N/D	N/D	0.5	N/A	N/A	0.12	N/A	N/A		--
7440-38-2	Arsenic	2.0		2.0		ug/L	VW-2	1/1	2.0	N/A	N/A	0.00004	N/A	N/A		--
75-27-4	Bromodichloromethane	N/D		N/D		N/D	N/D	N/D	N/A	N/A	N/A	0.18	N/A	N/A		--
56-23-5	Carbon Tetrachloride	N/D		N/D		N/D	N/D	N/D	0.5	N/A	N/A	0.17	N/A	N/A		--
67-66-3	Chloroform	N/D		N/D		N/D	N/D	N/D	N/A	N/A	N/A	0.16	N/A	N/A		--
7440-47-3	Hexavalent Chromium	N/D		N/D		N/D	N/D	N/D	N/A	N/A	N/A	0.00016	N/A	N/A		--
7439-92-1	Lead	N/D		N/D		N/D	N/D	N/D	5.0	N/A	N/A	0.004	N/A	N/A		--
14797-55-8	Nitrate	N/D		N/D		N/D	N/D	N/D	N/A	N/A	N/A	10	N/A	N/A		--
7601-90-3	Perchlorate	2.0		4.0		ug/L	VW-2	3/4	4.0	N/A	N/A	7.8	N/A	N/A		--
127-18-4	Tetrachloroethene	4.5		9.1		ug/L	VW-2	4/4	0.5	N/A	N/A	0.87	N/A	N/A		--
79-01-6	Trichloroethene	0.25		1.0		ug/L	VW-2	3/4	0.5	N/A	N/A	0.063	N/A	N/A		--

(1) Minimum/maximum detected concentration
(2) Screening was not performed on a well-by-well basis.
(3) Background information was not available.
(4) Screening toxicity value derived in accordance with State of California Department of Toxic Substances Control *Preliminary Endangerment Assessment Guidance Manual* (DTSC 1994) and EPA *Region IX PRG Table* (EPA 1999)

Definitions:
CAS = Chemical Abstract Service
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
COPC = Chemical of Potential Concern
DTSC = Department of Toxic Substances Control
EPA = U. S. Environmental Protection Agency
N/A = Not applicable
N/D = Not detected
PRG = Preliminary Remedial Goal
RAGS = Risk Assessment Guidance for Superfund
ug/L = micrograms per liter
VW-2 = Valley Well #2

Table I-39 (RAGS Part D, TABLE 2.38)
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Jet Propulsion Laboratory—Valley Well #3

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Valley Well #3—Tap Water

CAS Number	Chemical	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (4)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection
75-35-4	1,1-Dichloroethene	N/D		N/D		N/D	N/D	N/D	0.5	N/A	N/A	0.046	N/A	N/A		--
107-06-2	1,2-Dichloroethane	N/D		N/D		N/D	N/D	N/D	0.5	N/A	N/A	0.12	N/A	N/A		--
7440-38-2	Arsenic	1.5		1.5		ug/L	VW-3	1/1	2.0	N/A	N/A	0.00004	N/A	N/A		--
75-27-4	Bromodichloromethane	N/D		N/D		N/D	N/D	N/D	N/A	N/A	N/A	0.18	N/A	N/A		--
56-23-5	Carbon Tetrachloride	N/D		N/D		N/D	N/D	N/D	0.5	N/A	N/A	0.17	N/A	N/A		--
67-66-3	Chloroform	N/D		N/D		N/D	N/D	N/D	N/A	N/A	N/A	0.16	N/A	N/A		--
7440-47-3	Hexavalent Chromium	N/D		N/D		N/D	N/D	N/D	N/A	N/A	N/A	0.00016	N/A	N/A		--
7439-92-1	Lead	N/D		N/D		N/D	N/D	N/D	5.0	N/A	N/A	0.004	N/A	N/A		--
14797-55-8	Nitrate	N/D		N/D		N/D	N/D	N/D	N/A	N/A	N/A	10	N/A	N/A		--
7601-90-3	Perchlorate	2.0		4.4		ug/L	VW-3	2/4	4.0	N/A	N/A	7.8	N/A	N/A		--
127-18-4	Tetrachloroethene	0.25		1.1		ug/L	VW-3	3/4	0.5	N/A	N/A	0.87	N/A	N/A		--
79-01-6	Trichloroethene	N/D		N/D		N/D	N/D	N/D	0.5	N/A	N/A	0.063	N/A	N/A		--

(1) Minimum/maximum detected concentration
(2) Screening was not performed on a well-by-well basis.
(3) Background information was not available.
(4) Screening toxicity value derived in accordance with State of California Department of Toxic Substances Control *Preliminary Endangerment Assessment Guidance Manual* (DTSC 1994) and EPA *Region IX PRG Table* (EPA 1999)

Definitions:
CAS = Chemical Abstract Service
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
COPC = Chemical of Potential Concern
DTSC = Department of Toxic Substances Control
EPA = U. S. Environmental Protection Agency
N/A = Not applicable
N/D = Not detected
PRG = Preliminary Remedial Goal
RAGS = Risk Assessment Guidance for Superfund
ug/L = micrograms per liter
VW-3 = Valley Well #3

Table I-40 (RAGS Part D, TABLE 2.39)
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Jet Propulsion Laboratory—Valley Well #4

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Valley Well #4—Tap Water

CAS Number	Chemical	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (4)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection
75-35-4	1,1-Dichloroethene	N/D		N/D		N/D	N/D	N/D	0.5	N/A	N/A	0.046	N/A	N/A		--
107-06-2	1,2-Dichloroethane	N/D		N/D		N/D	N/D	N/D	0.5	N/A	N/A	0.12	N/A	N/A		--
7440-38-2	Arsenic	1.9		1.9		ug/L	VW-4	1/1	2.0	N/A	N/A	0.00004	N/A	N/A		--
75-27-4	Bromodichloromethane	N/D		N/D		N/D	N/D	N/D	N/A	N/A	N/A	0.18	N/A	N/A		--
56-23-5	Carbon Tetrachloride	N/D		N/D		N/D	N/D	N/D	0.5	N/A	N/A	0.17	N/A	N/A		--
67-66-3	Chloroform	N/D		N/D		N/D	N/D	N/D	N/A	N/A	N/A	0.16	N/A	N/A		--
7440-47-3	Hexavalent Chromium	N/D		N/D		N/D	N/D	N/D	N/A	N/A	N/A	0.00016	N/A	N/A		--
7439-92-1	Lead	N/D		N/D		N/D	N/D	N/D	5.0	N/A	N/A	0.004	N/A	N/A		--
14797-55-8	Nitrate	N/D		N/D		N/D	N/D	N/D	N/A	N/A	N/A	10	N/A	N/A		--
7601-90-3	Perchlorate	2.0		5.0		ug/L	VW-4	1/2	4.0	N/A	N/A	7.8	N/A	N/A		--
127-18-4	Tetrachloroethene	16		23		ug/L	VW-4	3/3	0.5	N/A	N/A	0.87	N/A	N/A		--
79-01-6	Trichloroethene	1.7		2.6		ug/L	VW-4	3/3	0.5	N/A	N/A	0.063	N/A	N/A		--

(1) Minimum/maximum detected concentration
(2) Screening was not performed on a well-by-well basis.
(3) Background information was not available.
(4) Screening toxicity value derived in accordance with State of California Department of Toxic Substances Control *Preliminary Endangerment Assessment Guidance Manual* (DTSC 1994) and EPA *Region IX PRG Table* (EPA 1999)

Definitions:
CAS = Chemical Abstract Service
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
COPC = Chemical of Potential Concern
DTSC = Department of Toxic Substances Control
EPA = U. S. Environmental Protection Agency
N/A = Not applicable
N/D = Not detected
PRG = Preliminary Remedial Goal
RAGS = Risk Assessment Guidance for Superfund
ug/L = micrograms per liter
VW-4 = Valley Well #4

Table I-41 (RAGS Part D, TABLE 2.40)
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Jet Propulsion Laboratory—Summary of Lead Data (1997-1998) and Comparison of
Modeled Blood Lead Concentrations to Screening Toxicity Value

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: All Wells (1997-1998)—Tap Water

CAS Number	Chemical	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (4)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection
7439-92-1	Lead	0.0076		0.0076		mg/L	MW-03	1/20	0.002	5.9	N/A	10	N/A	N/A	--	--
7439-92-1	Lead	0.0023		0.0023		mg/L	MW-08	1/4	0.002	6.0	N/A	10	N/A	N/A	--	--
7439-92-1	Lead	0.0024		0.0093		mg/L	MW-11	2/20	0.002	6.0	N/A	10	N/A	N/A	--	--
7439-92-1	Lead	0.0032		0.0032		mg/L	MW-12	1/22	0.002	5.9	N/A	10	N/A	N/A	--	--
7439-92-1	Lead	0.0028		0.0028		mg/L	MW-13	1/8	0.002	5.9	N/A	10	N/A	N/A	--	--
7439-92-1	Lead	0.0024		0.028		mg/L	MW-14	5/20	0.002	6.2	N/A	10	N/A	N/A	--	--
7439-92-1	Lead	0.0025		0.0025		mg/L	MW-17	1/20	0.002	5.9	N/A	10	N/A	N/A	--	--
7439-92-1	Lead	0.0025		0.0025		mg/L	MW-19	1/19	0.002	5.9	N/A	10	N/A	N/A	--	--
7439-92-1	Lead	0.0012		0.0038		mg/L	MW-20	2/19	0.002	5.9	N/A	10	N/A	N/A	--	--
7439-92-1	Lead	0.003		0.0035		mg/L	MW-21	3/19	0.002	5.9	N/A	10	N/A	N/A	--	--

(1) Minimum/maximum detected concentration

(2) Values are 99th percentile child blood lead concentrations estimated using State of California guidance (DTSC 1996) and are expressed in micrograms of lead per deciliter of blood (ug/dl). Exposure point concentrations used to estimate blood lead concentrations are presented in Appendix H along with model and input parameters.

(3) Background information was not available.

(4) Blood lead concentration of concern in children and adults is 10 ug/dl (DTSC 1996).

Definitions:

ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
CAS = Chemical Abstract Service
COPC = chemical of potential concern
DTSC = Department of Toxic Substance Control
mg/L = milligrams per liter
MW = monitoring well
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
ug/dl = micrograms of lead per deciliter of lead

Table I-42 (RAGS Part D, TABLE 3.1)
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
Jet Propulsion Laboratory—Monitoring Well 01

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 01—Tap Water

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Nitrate	mg/L	1.40	N/A	1.5		mg/L	1.5	Max	(1)	N/A	N/A	N/A

Statistics: Maximum Detected Value (Max)

(1) Assumes that data are lognormally distributed. The 95% UCL is used as the EPC unless it exceeds the maximum value. If the 95% UCL exceeds the maximum value, the maximum value is used as the EPC. See text for discussion.

Definitions: EPC = exposure point concentration
mg/L = milligrams per liter
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
UCL = upper confidence limit

Table I-43 (RAGS Part D, TABLE 3.2)
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
Jet Propulsion Laboratory—Monitoring Well 03

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 03—Tap Water

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Arsenic	mg/L	0.0034	N/A	0.01		mg/L	0.0041	95% UCL-T	(1)	N/A	N/A	N/A
Bromodichloromethane	ug/L	0.27	N/A	0.7		ug/L	0.3	95% UCL-T	(1)	N/A	N/A	N/A
Carbon Tetrachloride	ug/L	0.39	N/A	1.2		ug/L	0.49	95% UCL-T	(1)	N/A	N/A	N/A
Chloroform	ug/L	0.79	N/A	3.7		ug/L	1.3	95% UCL-T	(1)	N/A	N/A	N/A
Lead	mg/L	0.0013	N/A	0.0076		mg/L	0.0015	95% UCL-T	(1)	N/A	N/A	N/A
Nitrate	mg/L	0.47	N/A	1.5		mg/L	1.1	95% UCL-T	(1)	N/A	N/A	N/A
Perchlorate	ug/L	4.3	N/A	21		ug/L	6.4	95% UCL-T	(1)	N/A	N/A	N/A
Tetrachloroethene	ug/L	0.27	N/A	0.6		ug/L	0.29	95% UCL-T	(1)	N/A	N/A	N/A
Trichloroethene	ug/L	0.29	N/A	0.8		ug/L	0.32	95% UCL-T	(1)	N/A	N/A	N/A

Statistics: 95% UCL of Log-transformed Data (95% UCL-T)

(1) Assumes that data are lognormally distributed. The 95% UCL is used as the EPC unless it exceeds the maximum value. If the 95% UCL exceeds the maximum value, the maximum value is used as the EPC. See text for discussion.

Definitions: EPC = exposure point concentration
mg/L = milligrams per liter
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
UCL = upper confidence limit
ug/L = micrograms per liter

Table I-44 (RAGS Part D, TABLE 3.3)
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
Jet Propulsion Laboratory—Monitoring Well 04

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 04—Tap Water

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
1,1-Dichloroethene	ug/L	0.335	N/A	0.8		ug/L	0.39	95% UCL-T	(1)	N/A	N/A	N/A
1,2-Dichloroethane	ug/L	0.3	N/A	0.8		ug/L	0.33	95% UCL-T	(1)	N/A	N/A	N/A
Carbon Tetrachloride	ug/L	1.7	N/A	7.9		ug/L	3.7	95% UCL-T	(1)	N/A	N/A	N/A
Chloroform	ug/L	1.5	N/A	7.8		ug/L	3.2	95% UCL-T	(1)	N/A	N/A	N/A
Nitrate	mg/L	4.4	N/A	9.1		mg/L	8.2	95% UCL-T	(1)	N/A	N/A	N/A
Perchlorate	ug/L	13	N/A	51.0		ug/L	38	95% UCL-T	(1)	N/A	N/A	N/A
Tetrachloroethene	ug/L	0.27	N/A	0.6		ug/L	0.29	95% UCL-T	(1)	N/A	N/A	N/A
Trichloroethene	ug/L	3.2	N/A	22.0		ug/L	10	95% UCL-T	(1)	N/A	N/A	N/A

Statistics: 95% UCL of Log-transformed Data (95% UCL-T)

(1) Assumes that data are lognormally distributed. The 95% UCL is used as the EPC unless it exceeds the maximum value. If the 95% UCL exceeds the maximum value, the maximum value is used as the EPC. See text for discussion.

Definitions: EPC = exposure point concentration
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
UCL = upper confidence limit
ug/L = micrograms per liter

Table I-45 (RAGS Part D, TABLE 3.4)
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
Jet Propulsion Laboratory—Monitoring Well 05

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 05—Tap Water

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Nitrate	mg/L	2.0	N/A	2.4		mg/L	2.4	Max	(1)	N/A	N/A	N/A
Perchlorate	ug/L	2.7	N/A	4.2		ug/L	4.2	Max	(1)	N/A	N/A	N/A

Statistics: Maximum Detected Value (Max)

(1) Assumes that data are lognormally distributed. The 95% UCL is used as the EPC unless it exceeds the maximum value. If the 95% UCL exceeds the maximum value, the maximum value is used as the EPC. See text for discussion.

Definitions: EPC = exposure point concentration
mg/L = milligrams per liter
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
UCL = upper confidence limit
ug/L = micrograms per liter

Table I-46 (RAGS Part D, TABLE 3.5)
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
Jet Propulsion Laboratory—Monitoring Well 06

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 06—Tap Water

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Nitrate	mg/L	7.7	N/A	11		mg/L	11	Max	(1)	N/A	N/A	N/A
Perchlorate	ug/L	3.2	N/A	5.5		ug/L	5.5	Max	(1)	N/A	N/A	N/A
Tetrachloroethene	ug/L	0.69	N/A	2.0		ug/L	2.0	Max	(1)	N/A	N/A	N/A

Statistics: Maximum Detected Value (Max)

(1) Assumes that data are lognormally distributed. The 95% UCL is used as the EPC unless it exceeds the maximum value. If the 95% UCL exceeds the maximum value, the maximum value is used as the EPC. See text for discussion.

Definitions: EPC = exposure point concentration
mg/L = milligrams per liter
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
UCL = upper confidence limit
ug/L = micrograms per liter

Table I-47 (RAGS Part D, TABLE 3.6)
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
Jet Propulsion Laboratory—Monitoring Well 07

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 07—Tap Water

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
1,1-Dichloroethene	ug/L	1.3	N/A	2.1		ug/L	2.1	Max	(1)	N/A	N/A	N/A
1,2-Dichloroethane	ug/L	0.83	N/A	0.90		ug/L	0.89	95% UCL-T	(1)	N/A	N/A	N/A
Carbon Tetrachloride	ug/L	82	N/A	150		ug/L	150	Max	(1)	N/A	N/A	N/A
Chloroform	ug/L	12	N/A	13		ug/L	13	Max	(1)	N/A	N/A	N/A
Hexavalent Chromium	mg/L	0.0044	N/A	0.01		mg/L	0.01	Max	(1)	N/A	N/A	N/A
Nitrate	mg/L	6.1	N/A	6.5		mg/L	6.5	Max	(1)	N/A	N/A	N/A
Perchlorate	ug/L	518	N/A	720		ug/L	720	Max	(1)	N/A	N/A	N/A
Tetrachloroethene	ug/L	1.5	N/A	3.7		ug/L	3.7	Max	(1)	N/A	N/A	N/A
Trichloroethene	ug/L	24	N/A	27.0		ug/L	27	Max	(1)	N/A	N/A	N/A

Statistics: Maximum Detected Value (Max); 95% UCL of Log-transformed Data (95% UCL-T)

(1) Assumes that data are lognormally distributed. The 95% UCL is used as the EPC unless it exceeds the maximum value. If the 95% UCL exceeds the maximum value, the maximum value is used as the EPC. See text for discussion.

Definitions: EPC = exposure point concentration
mg/L = milligrams per liter
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
UCL = upper confidence limit
ug/L = micrograms per liter

Table I-48 (RAGS Part D, TABLE 3.7)
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
Jet Propulsion Laboratory—Monitoring Well 08

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 08—Tap Water

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Carbon Tetrachloride	ug/L	1.7	N/A	3.2		ug/L	3.2	Max	(1)	N/A	N/A	N/A
Chloroform	ug/L	0.89	N/A	1.3		ug/L	1.3	Max	(1)	N/A	N/A	N/A
Lead	mg/L	0.0013	N/A	0.0023		mg/L	0.0023	Max	(1)	N/A	N/A	N/A
Nitrate	mg/L	2.6	N/A	3.7		mg/L	3.7	Max	(1)	N/A	N/A	N/A
Perchlorate	ug/L	15	N/A	29		ug/L	29	Max	(1)	N/A	N/A	N/A
Trichloroethene	ug/L	2.4	N/A	4.5		ug/L	4.5	Max	(1)	N/A	N/A	N/A

Statistics: Maximum Detected Value (Max)

(1) Assumes that data are lognormally distributed. The 95% UCL is used as the EPC unless it exceeds the maximum value. If the 95% UCL exceeds the maximum value, the maximum value is used as the EPC. See text for discussion.

Definitions: EPC = exposure point concentration
mg/L = milligrams per liter
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
UCL = upper confidence limit
ug/L = micrograms per liter

Table I-49 (RAGS Part D, TABLE 3.8)
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
Jet Propulsion Laboratory—Monitoring Well 09

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 09—Tap Water

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Nitrate	mg/L	1.7	N/A	5.5		mg/L	5.5	Max	(1)	N/A	N/A	N/A

Statistics: Maximum Detected Value (Max)

(1) Assumes that data are lognormally distributed. The 95% UCL is used as the EPC unless it exceeds the maximum value. If the 95% UCL exceeds the maximum value, the maximum value is used as the EPC. See text for discussion.

Definitions: EPC = exposure point concentration
mg/L = milligrams per liter
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
UCL = upper confidence limit

Table I-50 (RAGS Part D, TABLE 3.9)
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
Jet Propulsion Laboratory—Monitoring Well 10

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 10—Tap Water

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Chloroform	ug/L	0.81	N/A	1.4		ug/L	1.4	Max	(1)	N/A	N/A	N/A
Nitrate	mg/L	12	N/A	18		mg/L	18	Max	(1)	N/A	N/A	N/A
Perchlorate	ug/L	11	N/A	16		ug/L	16	Max	(1)	N/A	N/A	N/A
Tetrachloroethene	ug/L	1.0	N/A	2.2		ug/L	2.2	Max	(1)	N/A	N/A	N/A
Trichloroethene	ug/L	3.2	N/A	5.2		ug/L	5.2	Max	(1)	N/A	N/A	N/A

Statistics: Maximum Detected Value (Max)

(1) Assumes that data are lognormally distributed. The 95% UCL is used as the EPC unless it exceeds the maximum value. If the 95% UCL exceeds the maximum value, the maximum value is used as the EPC. See text for discussion.

Definitions: EPC = exposure point concentration
mg/L = milligrams per liter
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
UCL = upper confidence limit
ug/L = micrograms per liter

Table I-51 (RAGS Part D, TABLE 3.10)
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
Jet Propulsion Laboratory—Monitoring Well 11

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 11—Tap Water

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Carbon Tetrachloride	ug/L	0.51	N/A	1.7		ug/L	0.69	95% UCL-T	(1)	N/A	N/A	N/A
Chloroform	ug/L	0.59	N/A	1.4		ug/L	0.85	95% UCL-T	(1)	N/A	N/A	N/A
Lead	mg/L	0.0015	N/A	0.0093		mg/L	0.0017	95% UCL-T	(1)	N/A	N/A	N/A
Nitrate	mg/L	0.27	N/A	0.85		mg/L	0.63	95% UCL-T	(1)	N/A	N/A	N/A

Statistics: 95% UCL of Log-transformed Data (95% UCL-T)

(1) Assumes that data are lognormally distributed. The 95% UCL is used as the EPC unless it exceeds the maximum value. If the 95% UCL exceeds the maximum value, the maximum value is used as the EPC. See text for discussion.

Definitions: EPC = exposure point concentration
mg/L = milligrams per liter
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
UCL = upper confidence limit
ug/L = micrograms per liter

Table I-52 (RAGS Part D, TABLE 3.11)
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
Jet Propulsion Laboratory—Monitoring Well 12

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 12—Tap Water

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Carbon Tetrachloride	ug/L	4.3	N/A	23		ug/L	12	95% UCL-T	(1)	N/A	N/A	N/A
Chloroform	ug/L	1.3	N/A	5.8		ug/L	2.0	95% UCL-T	(1)	N/A	N/A	N/A
Lead	mg/L	0.0011	N/A	0.0032		mg/L	0.0012	95% UCL-T	(1)	N/A	N/A	N/A
Nitrate	mg/L	1.3	N/A	2.3		mg/L	1.5	95% UCL-T	(1)	N/A	N/A	N/A
Perchlorate	ug/L	5.0	N/A	8.0		ug/L	7.0	95% UCL-T	(1)	N/A	N/A	N/A
Trichloroethene	ug/L	0.26	N/A	0.5		ug/L	0.28	95% UCL-T	(1)	N/A	N/A	N/A

Statistics: 95% UCL of Log-transformed Data (95% UCL-T)

(1) Assumes that data are lognormally distributed. The 95% UCL is used as the EPC unless it exceeds the maximum value. If the 95% UCL exceeds the maximum value, the maximum value is used as the EPC. See text for discussion.

Definitions: EPC = exposure point concentration
mg/L = milligrams per liter
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
UCL = upper confidence limit
ug/L = micrograms per liter

Table I-53 (RAGS Part D, TABLE 3.12)
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
Jet Propulsion Laboratory—Monitoring Well 13

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 13—Tap Water

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
1,1-Dichloroethene	ug/L	0.58	N/A	1.1		ug/L	0.96	95% UCL-T	(1)	N/A	N/A	N/A
1,2-Dichloroethane	ug/L	0.79	N/A	1.1		ug/L	1.1	Max	(1)	N/A	N/A	N/A
Carbon Tetrachloride	ug/L	11	N/A	18		ug/L	16	95% UCL-T	(1)	N/A	N/A	N/A
Chloroform	ug/L	8.4	N/A	11		ug/L	11	Max	(1)	N/A	N/A	N/A
Hexavalent Chromium	mg/L	0.038	N/A	0.045		mg/L	0.041	95% UCL-T	(1)	N/A	N/A	N/A
Lead	mg/L	0.0012	N/A	0.0028		mg/L	0.0016	95% UCL-T	(1)	N/A	N/A	N/A
Nitrate	mg/L	7.2	N/A	9.6		mg/L	9.6	Max	(1)	N/A	N/A	N/A
Perchlorate	ug/L	158	N/A	280		ug/L	255	95% UCL-T	(1)	N/A	N/A	N/A
Tetrachloroethene	ug/L	0.31	N/A	0.5		ug/L	0.4	95% UCL-T	(1)	N/A	N/A	N/A
Trichloroethene	ug/L	18	N/A	29		ug/L	29	Max	(1)	N/A	N/A	N/A

Statistics: Maximum Detected Value (Max); 95% UCL of Log-transformed Data (95% UCL-T)

(1) Assumes that data are lognormally distributed. The 95% UCL is used as the EPC unless it exceeds the maximum value. If the 95% UCL exceeds the maximum value, the maximum value is used as the EPC. See text for discussion.

Definitions: EPC = exposure point concentration
mg/L = milligrams per liter
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
UCL = upper confidence limit
ug/L = micrograms per liter

Table I-54 (RAGS Part D, TABLE 3.13)
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
Jet Propulsion Laboratory—Monitoring Well 14

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 14—Tap Water

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Chloroform	ug/L	0.37	N/A	0.9		ug/L	0.46	95% UCL-T	(1)	N/A	N/A	N/A
Lead	mg/L	0.0028	N/A	0.028		mg/L	0.0032	95% UCL-T	(1)	N/A	N/A	N/A
Nitrate	mg/L	11	N/A	19		mg/L	19	Max	(1)	N/A	N/A	N/A
Perchlorate	ug/L	2.9	N/A	9.0		ug/L	3.6	95% UCL-T	(1)	N/A	N/A	N/A
Tetrachloroethene	ug/L	0.56	N/A	1.9		ug/L	0.79	95% UCL-T	(1)	N/A	N/A	N/A
Trichloroethene	ug/L	0.37	N/A	1.2		ug/L	0.46	95% UCL-T	(1)	N/A	N/A	N/A

Statistics: Maximum Detected Value (Max); 95% UCL of Log-transformed Data (95% UCL-T)

(1) Assumes that data are lognormally distributed. The 95% UCL is used as the EPC unless it exceeds the maximum value. If the 95% UCL exceeds the maximum value, the maximum value is used as the EPC. See text for discussion.

Definitions: EPC = exposure point concentration
mg/L = milligrams per liter
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
UCL = upper confidence limit
ug/L = micrograms per liter

Table I-55 (RAGS Part D, TABLE 3.14)
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
Jet Propulsion Laboratory—Monitoring Well 15

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 15—Tap Water

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Nitrate	mg/L	2.2	N/A	4.4		mg/L	4.4	Max	(1)	N/A	N/A	N/A

Statistics: Maximum Detected Value (Max)

(1) Assumes that data are lognormally distributed. The 95% UCL is used as the EPC unless it exceeds the maximum value. If the 95% UCL exceeds the maximum value, the maximum value is used as the EPC. See text for discussion.

Definitions: EPC = exposure point concentration
mg/L = milligrams per liter
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
UCL = upper confidence limit
ug/L = micrograms per liter

Table I-56 (RAGS Part D, TABLE 3.15)
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
Jet Propulsion Laboratory—Monitoring Well 16

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 16—Tap Water

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
1,1-Dichloroethene	ug/L	1.9	N/A	2.6		ug/L	2.6	Max	(1)	N/A	N/A	N/A
1,2-Dichloroethane	ug/L	1.4	N/A	2.1		ug/L	2.1	Max	(1)	N/A	N/A	N/A
Carbon Tetrachloride	ug/L	63	N/A	91		ug/L	91	Max	(1)	N/A	N/A	N/A
Chloroform	ug/L	29	N/A	43		ug/L	43	Max	(1)	N/A	N/A	N/A
Hexavalent Chromium	mg/L	0.004	N/A	0.007		mg/L	0.007	Max	(1)	N/A	N/A	N/A
Nitrate	mg/L	12	N/A	18		mg/L	18	Max	(1)	N/A	N/A	N/A
Perchlorate	ug/L	923	N/A	1230		ug/L	1230	Max	(1)	N/A	N/A	N/A
Tetrachloroethene	ug/L	1.1	N/A	1.3		ug/L	1.3	Max	(1)	N/A	N/A	N/A
Trichloroethene	ug/L	17	N/A	25		ug/L	25	Max	(1)	N/A	N/A	N/A

Statistics: Maximum Detected Value (Max)

(1) Assumes that data are lognormally distributed. The 95% UCL is used as the EPC unless it exceeds the maximum value. If the 95% UCL exceeds the maximum value, the maximum value is used as the EPC. See text for discussion.

Definitions: EPC = exposure point concentration
mg/L = milligrams per liter
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
UCL = upper confidence limit
ug/L = micrograms per liter

Table I-57 (RAGS Part D, TABLE 3.16)
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
Jet Propulsion Laboratory—Monitoring Well 17

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 17—Tap Water

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Bromochloromethane	ug/L	0.36	N/A	0.9		ug/L	0.44	95% UCL-T	(1)	N/A	N/A	N/A
Carbon Tetrachloride	ug/L	1.0	N/A	6.6		ug/L	1.6	95% UCL-T	(1)	N/A	N/A	N/A
Chloroform	ug/L	3.0	N/A	8.5		ug/L	7.6	95% UCL-T	(1)	N/A	N/A	N/A
Hexavalent Chromium	mg/L	0.0029	N/A	0.008		mg/L	0.0033	95% UCL-T	(1)	N/A	N/A	N/A
Lead	mg/L	0.0011	N/A	0.0025		mg/L	0.0012	95% UCL-T	(1)	N/A	N/A	N/A
Nitrate	mg/L	1.3	N/A	2.3		mg/L	2.3	Max	(1)	N/A	N/A	N/A
Perchlorate	ug/L	13	N/A	55		ug/L	36.3	95% UCL-T	(1)	N/A	N/A	N/A
Tetrachloroethene	ug/L	0.44	N/A	1.4		ug/L	0.57	95% UCL-T	(1)	N/A	N/A	N/A
Trichloroethene	ug/L	6.4	N/A	23		ug/L	23	Max	(1)	N/A	N/A	N/A

Statistics: Maximum Detected Value (Max); 95% UCL of Log-transformed Data (95% UCL-T)

(1) Assumes that data are lognormally distributed. The 95% UCL is used as the EPC unless it exceeds the maximum value. If the 95% UCL exceeds the maximum value, the maximum value is used as the EPC. See text for discussion.

Definitions: EPC = exposure point concentration
mg/L = milligrams per liter
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
UCL = upper confidence limit
ug/L = micrograms per liter

Table I-58 (RAGS Part D, TABLE 3.17)
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
Jet Propulsion Laboratory—Monitoring Well 18

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 18—Tap Water

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Arsenic	mg/L	0.0026	N/A	0.005		mg/L	0.0028	95% UCL-T	(1)	N/A	N/A	N/A
Bromochloromethane	ug/L	0.34	N/A	0.8		ug/L	0.41	95% UCL-T	(1)	N/A	N/A	N/A
Carbon Tetrachloride	ug/L	0.75	N/A	2.6		ug/L	1.3	95% UCL-T	(1)	N/A	N/A	N/A
Chloroform	ug/L	2.2	N/A	6.6		ug/L	6.6	Max	(1)	N/A	N/A	N/A
Hexavalent Chromium	mg/L	0.0028	N/A	0.007		mg/L	0.003	95% UCL-T	(1)	N/A	N/A	N/A
Nitrate	mg/L	1.1	N/A	6.0		mg/L	3.8	95% UCL-T	(1)	N/A	N/A	N/A
Perchlorate	ug/L	4.2	N/A	12		ug/L	6.8	95% UCL-T	(1)	N/A	N/A	N/A
Tetrachloroethene	ug/L	0.82	N/A	2.9		ug/L	1.5	95% UCL-T	(1)	N/A	N/A	N/A
Trichloroethene	ug/L	1.0	N/A	6.6		ug/L	1.7	95% UCL-T	(1)	N/A	N/A	N/A

Statistics: Maximum Detected Value (Max); 95% UCL of Log-transformed Data (95% UCL-T)

(1) Assumes that data are lognormally distributed. The 95% UCL is used as the EPC unless it exceeds the maximum value. If the 95% UCL exceeds the maximum value, the maximum value is used as the EPC. See text for discussion.

Definitions: EPC = exposure point concentration
mg/L = milligrams per liter
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
UCL = upper confidence limit
ug/L = micrograms per liter

Table I-59 (RAGS Part D, TABLE 3.18)
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
Jet Propulsion Laboratory—Monitoring Well 19

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 19—Tap Water

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Bromochloromethane	ug/L	0.26	N/A	0.5		ug/L	0.28	95% UCL-T	(1)	N/A	N/A	N/A
Chloroform	ug/L	0.74	N/A	2.0		ug/L	1.2	95% UCL-T	(1)	N/A	N/A	N/A
Lead	mg/L	0.0011	N/A	0.0025		mg/L	0.0012	95% UCL-T	(1)	N/A	N/A	N/A
Nitrate	mg/L	5.5	N/A	11		mg/L	11	Max	(1)	N/A	N/A	N/A
Perchlorate	ug/L	2.3	N/A	4.9		ug/L	2.7	95% UCL-T	(1)	N/A	N/A	N/A
Tetrachloroethene	ug/L	1.0	N/A	2.2		ug/L	1.8	95% UCL-T	(1)	N/A	N/A	N/A
Trichloroethene	ug/L	0.37	N/A	1.1		ug/L	0.46	95% UCL-T	(1)	N/A	N/A	N/A

Statistics: Maximum Detected Value (Max); 95% UCL of Log-transformed Data (95% UCL-T)

(1) Assumes that data are lognormally distributed. The 95% UCL is used as the EPC unless it exceeds the maximum value. If the 95% UCL exceeds the maximum value, the maximum value is used as the EPC. See text for discussion.

Definitions: EPC = exposure point concentration
mg/L = milligrams per liter
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
UCL = upper confidence limit
ug/L = micrograms per liter

Table I-60 (RAGS Part D, TABLE 3.19)
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
Jet Propulsion Laboratory—Monitoring Well 20

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 20—Tap Water

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Arsenic	mg/L	0.0027	N/A	0.006		mg/L	0.0029	95% UCL-T	(1)	N/A	N/A	N/A
Bromochloromethane	ug/L	0.26	N/A	0.5		ug/L	0.28	95% UCL-T	(1)	N/A	N/A	N/A
Chloroform	ug/L	1.1	N/A	5.2		ug/L	2.2	95% UCL-T	(1)	N/A	N/A	N/A
Lead	mg/L	0.0012	N/A	0.0038		mg/L	0.0013	95% UCL-T	(1)	N/A	N/A	N/A
Nitrate	mg/L	2.8	N/A	15		mg/L	15	Max	(1)	N/A	N/A	N/A
Perchlorate	ug/L	2.6	N/A	6.3		ug/L	3.2	95% UCL-T	(1)	N/A	N/A	N/A

Statistics: Maximum Detected Value (Max); 95% UCL of Log-transformed Data (95% UCL-T)

(1) Assumes that data are lognormally distributed. The 95% UCL is used as the EPC unless it exceeds the maximum value. If the 95% UCL exceeds the maximum value, the maximum value is used as the EPC. See text for discussion.

Definitions: EPC = exposure point concentration
mg/L = milligrams per liter
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
UCL = upper confidence limit
ug/L = micrograms per liter

Table I-61 (RAGS Part D, TABLE 3.20)
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
Jet Propulsion Laboratory—Monitoring Well 21

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 21—Tap Water

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Chloroform	ug/L	0.51	N/A	2.2		ug/L	0.68	95% UCL-T	(1)	N/A	N/A	N/A
Lead	mg/L	0.0014	N/A	0.0035		mg/L	0.0016	95% UCL-T	(1)	N/A	N/A	N/A
Nitrate	mg/L	9.2	N/A	17		mg/L	17	Max	(1)	N/A	N/A	N/A
Perchlorate	ug/L	4.9	N/A	19		ug/L	8.1	95% UCL-T	(1)	N/A	N/A	N/A
Tetrachloroethene	ug/L	1.8	N/A	4.4		ug/L	3.7	95% UCL-T	(1)	N/A	N/A	N/A
Trichloroethene	ug/L	3.7	N/A	29		ug/L	9.0	95% UCL-T	(1)	N/A	N/A	N/A

Statistics: Maximum Detected Value (Max); 95% UCL of Log-transformed Data (95% UCL-T)

(1) Assumes that data are lognormally distributed. The 95% UCL is used as the EPC unless it exceeds the maximum value. If the 95% UCL exceeds the maximum value, the maximum value is used as the EPC. See text for discussion.

Definitions: EPC = exposure point concentration
mg/L = milligrams per liter
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
UCL = upper confidence limit
ug/L = micrograms per liter

Table I-62 (RAGS Part D, TABLE 3.21)
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
Jet Propulsion Laboratory—Monitoring Well 22

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 22—Tap Water

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Nitrate	mg/L	6.4	N/A	11		mg/L	11	Max	(1)	N/A	N/A	N/A
Perchlorate	ug/L	3.3	N/A	15		ug/L	5.0	95% UCL-T	(1)	N/A	N/A	N/A
Tetrachloroethene	ug/L	0.63	N/A	2.3		ug/L	1.4	95% UCL-T	(1)	N/A	N/A	N/A

Statistics: Maximum Detected Value (Max); 95% UCL of Log-transformed Data (95% UCL-T).

(1) Assumes that data are lognormally distributed. The 95% UCL is used as the EPC unless it exceeds the maximum value. If the 95% UCL exceeds the maximum value, the maximum value is used as the EPC. See text for discussion.

Definitions: EPC = exposure point concentration
mg/L = milligrams per liter
N/A = Not applicable
RAGS - Risk Assessment Guidance for Superfund
UCL = upper confidence limit
ug/L = micrograms per liter

Table I-63 (RAGS Part D, TABLE 3.22)
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
Jet Propulsion Laboratory—Monitoring Well 23

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 23—Tap Water

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Chloroform	ug/L	0.36	N/A	0.9		ug/L	0.52	95% UCL-T	(1)	N/A	N/A	N/A
Nitrate	mg/L	8.3	N/A	15		mg/L	15	Max	(1)	N/A	N/A	N/A
Perchlorate	ug/L	3.6	N/A	7.6		ug/L	5.6	95% UCL-T	(1)	N/A	N/A	N/A
Tetrachloroethene	ug/L	0.42	N/A	1.6		ug/L	0.65	95% UCL-T	(1)	N/A	N/A	N/A
Trichloroethene	ug/L	0.93	N/A	4.2		ug/L	2.9	95% UCL-T	(1)	N/A	N/A	N/A

Statistics: Maximum Detected Value (Max); 95% UCL of Log-transformed data (95% UCL -T).

(1) Assumes that data are lognormally distributed. The 95% UCL is used as the EPC unless it exceeds the maximum value. If the 95% UCL exceeds the maximum value, the maximum value is used as the EPC. See text for discussion.

Definitions: EPC = exposure point concentration
mg/L = milligrams per liter
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
UCL = upper confidence limit
ug/L = micrograms per liter

Table I-64 (RAGS Part D, TABLE 3.23)
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
Jet Propulsion Laboratory—Monitoring Well 24

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 24—Tap Water

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
1,2-Dichloroethane	ug/L	0.31	N/A	0.8		ug/L	0.39	95% UCL-T	(1)	N/A	N/A	N/A
Arsenic	mg/L	0.0029	N/A	0.006		mg/L	0.0034	95% UCL-T	(1)	N/A	N/A	N/A
Carbon Tetrachloride	ug/L	5.6	N/A	30		ug/L	30	Max	(1)	N/A	N/A	N/A
Chloroform	ug/L	2.6	N/A	15		ug/L	15	Max	(1)	N/A	N/A	N/A
Nitrate	mg/L	2.2	N/A	5.6		mg/L	3.4	95% UCL-T	(1)	N/A	N/A	N/A
Perchlorate	ug/L	74	N/A	330		ug/L	330	Max	(1)	N/A	N/A	N/A
Tetrachloroethene	ug/L	0.28	N/A	0.5		ug/L	0.32	95% UCL-T	(1)	N/A	N/A	N/A
Trichloroethene	ug/L	2.4	N/A	15		ug/L	15	Max	(1)	N/A	N/A	N/A

Statistics: Maximum Detected Value (Max); 95% UCL of Log-transformed Data (95% UCL-T).

(1) Assumes that data are lognormally distributed. The 95% UCL is used as the EPC unless it exceeds the maximum value. If the 95% UCL exceeds the maximum value, the maximum value is used as the EPC. See text for discussion.

Definitions: EPC = exposure point concentration
mg/L = milligrams per liter
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
UCL = upper confidence limit
ug/L = micrograms per liter

Table I-65 (RAGS Part D, TABLE 3.24)
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
Jet Propulsion Laboratory—La Canada Well #1

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: La Canada Well #1—Tap Water

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Tetrachloroethene	ug/L	0.37	N/A	0.6		ug/L	0.6	Max	(1)	N/A	N/A	N/A

Statistics: Maximum Detected Value (Max).

(1) Assumes that data are lognormally distributed. The 95% UCL is used as the EPC unless it exceeds the maximum value. If the 95% UCL exceeds the maximum value, the maximum value is used as the EPC. See text for discussion.

Definitions: EPC = exposure point concentration
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
UCL = upper confidence limit
ug/L = micrograms per liter

Table I-66 (RAGS Part D, TABLE 3.25)
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
Jet Propulsion Laboratory—Las Flores Well #2

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Las Flores Well #2—Tap Water

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Arsenic	ug/L	2.4	N/A	2.4		ug/L	2.4	Max	(1)	N/A	N/A	N/A
Perchlorate	ug/L	6.0	N/A	7.0		ug/L	6.1	95% UCL-T	(1)	N/A	N/A	N/A
Tetrachloroethene	ug/L	4.8	N/A	4.8		ug/L	4.8	Max	(1)	N/A	N/A	N/A

Statistics: 95% UCL of Log-transformed Data (95% UCL-T)

(1) Assumes that data are lognormally distributed. The 95% UCL is used as the EPC unless it exceeds the maximum value. If the 95% UCL exceeds the maximum value, the maximum value is used as the EPC. See text for discussion

Definitions: EPC = exposure point concentration
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
UCL = upper confidence limit
ug/L = micrograms per liter

Table I-67 (RAGS Part D, TABLE 3.26)
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
Jet Propulsion Laboratory—Lincoln Ave. Well #3

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Lincoln Ave. Well #3—Tap Water

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Carbon Tetrachloride	ug/L	0.66	N/A	1.5		ug/L	1.1	95% UCL-T	(1)	N/A	N/A	N/A
Perchlorate	ug/L	12	N/A	17		ug/L	14	95% UCL-T	(1)	N/A	N/A	N/A
Tetrachloroethene	ug/L	0.71	N/A	1.1		ug/L	1.1	Max	(1)	N/A	N/A	N/A
Trichloroethene	ug/L	9.9	N/A	16		ug/L	16	Max	(1)	N/A	N/A	N/A

Statistics: Maximum Detected Value (Max); 95% UCL of Log-transformed Data (95% UCL-T).

(1) Assumes that data are lognormally distributed. The 95% UCL is used as the EPC unless it exceeds the maximum value. If the 95% UCL exceeds the maximum value, the maximum value is used as the EPC. See text for discussion.

Definitions: EPC = exposure point concentration
N/A = Not applicable
RAGS - Risk Assessment Guidance for Superfund
UCL = upper confidence limit
ug/L = micrograms per liter

Table I-68 (RAGS Part D, TABLE 3.27)
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
Jet Propulsion Laboratory—Lincoln Ave. Well #5

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Lincoln Ave. Well #5—Tap Water

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Perchlorate	ug/L	6.3	N/A	7.0		ug/L	7.0	Max	(1)	N/A	N/A	N/A
Tetrachloroethene	ug/L	0.7	N/A	0.7		ug/L	0.7	Max	(1)	N/A	N/A	N/A
Trichloroethene	ug/L	13	N/A	13.0		ug/L	13	Max	(1)	N/A	N/A	N/A

Statistics: Maximum Detected Value (Max); 95% UCL of Log-transformed Data (95% UCL-T).

(1) Assumes that data are lognormally distributed. The 95% UCL is used as the EPC unless it exceeds the maximum value. If the 95% UCL exceeds the maximum value, the maximum value is used as the EPC. See text for discussion.

Definitions: EPC = exposure point concentration
N/A = Not applicable
RAGS - Risk Assessment Guidance for Superfund
UCL = upper confidence limit
ug/L = micrograms per liter

Table I-69 (RAGS Part D, TABLE 3.28)
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
Jet Propulsion Laboratory—Pasadena Arroyo Well

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Pasadena Arroyo Well—Tap Water

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Carbon Tetrachloride	ug/L	3.9	N/A	4.7		ug/L	4.7	Max	(1)	N/A	N/A	N/A
Perchlorate	ug/L	98	N/A	130.0		ug/L	130	Max	(1)	N/A	N/A	N/A
Tetrachloroethene	ug/L	0.85	N/A	1.1		ug/L	0.89	95% UCL-T	(1)	N/A	N/A	N/A
Trichloroethene	ug/L	2.8	N/A	3.5		ug/L	3.4	95% UCL-T	(1)	N/A	N/A	N/A

Statistics: Maximum Detected Value (Max); 95% UCL of Log-transformed Data (95% UCL-T).

(1) Assumes that data are lognormally distributed. The 95% UCL is used as the EPC unless it exceeds the maximum value. If the 95% UCL exceeds the maximum value, the maximum value is used as the EPC. See text for discussion.

Definitions: EPC = exposure point concentration
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
UCL = upper confidence limit
ug/L = micrograms per liter

Table I-70 (RAGS Part D, TABLE 3.29)
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
Jet Propulsion Laboratory—Pasadena Ventura Well

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Pasadena Ventura Well—Tap Water

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Perchlorate	ug/L	4.3	N/A	5.0		ug/L	4.9	95% UCL-T	(1)	N/A	N/A	N/A
Tetrachloroethene	ug/L	0.41	N/A	0.7		ug/L	0.7	Max	(1)	N/A	N/A	N/A
Trichloroethene	ug/L	0.69	N/A	1.2		ug/L	1.1	95% UCL-T	(1)	N/A	N/A	N/A

Statistics: Maximum Detected Value (Max); 95% UCL of Log-transformed Data (95% UCL-T).

(1) Assumes that data are lognormally distributed. The 95% UCL is used as the EPC unless it exceeds the maximum value. If the 95% UCL exceeds the maximum value, the maximum value is used as the EPC. See text for discussion.

Definitions: EPC = exposure point concentration
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
UCL = upper confidence limit
ug/L = micrograms per liter

Table I-71 (RAGS Part D, TABLE 3.30)
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
Jet Propulsion Laboratory—Pasadena Well 52

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Pasadena Well 52—Tap Water

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Carbon Tetrachloride	ug/L	0.94	N/A	1.3		ug/L	1.3	Max	(1)	N/A	N/A	N/A
Perchlorate	ug/L	11	N/A	15		ug/L	15	Max	(1)	N/A	N/A	N/A
Trichloroethene	ug/L	4.2	N/A	7.3		ug/L	5.2	95% UCL-T	(1)	N/A	N/A	N/A

Statistics: Maximum Detected Value (Max); 95% UCL of Log-transformed Data (95% UCL-T).

(1) Assumes that data are lognormally distributed. The 95% UCL is used as the EPC unless it exceeds the maximum value. If the 95% UCL exceeds the maximum value, the maximum value is used as the EPC. See text for discussion.

Definitions: EPC = exposure point concentration
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
UCL = upper confidence limit
ug/L = micrograms per liter

Table I-72 (RAGS Part D, TABLE 3.31)
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
Jet Propulsion Laboratory—Pasadena Windsor Well

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Pasadena Windsor Well—Tap Water

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Tetrachloroethene	ug/L	0.78	N/A	1.1		ug/L	1.1	Max	(1)	N/A	N/A	N/A
Trichloroethene	ug/L	0.82	N/A	1.2		ug/L	1.2	Max	(1)	N/A	N/A	N/A

Statistics: Maximum Detected Value (Max)

(1) Assumes that data are lognormally distributed. The 95% UCL is used as the EPC unless it exceeds the maximum value. If the 95% UCL exceeds the maximum value, the maximum value is used as the EPC. See text for discussion.

Definitions: EPC = exposure point concentration
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
UCL = upper confidence limit
ug/L = micrograms per liter

Table I-73 (RAGS Part D, TABLE 3.32)
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
Jet Propulsion Laboratory—Rubio Cañon #4

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Rubio Cañon #4—Tap Water

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Perchlorate	ug/L	5.5	N/A	6.0		ug/L	5.5	95% UCL-T	(1)	N/A	N/A	N/A

Statistics: 95% UCL of Log-transformed Data (95% UCL-T).

(1) Assumes that data are lognormally distributed. The 95% UCL is used as the EPC unless it exceeds the maximum value. If the 95% UCL exceeds the maximum value, the maximum value is used as the EPC. See text for discussion.

Definitions: EPC = exposure point concentration
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
UCL = upper confidence limit
ug/L = micrograms per liter

Table I-74 (RAGS Part D, TABLE 3.33)
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
Jet Propulsion Laboratory—Rubio Cañon Well #7

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Rubio Cañon Well #7—Tap Water

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Perchlorate	ug/L	3.0	N/A	4.0		ug/L	3.2	95% UCL-T	(1)	N/A	N/A	N/A

Statistics: 95% UCL of Log-transformed Data (95% UCL-T)

(1) Assumes that data are lognormally distributed. The 95% UCL is used as the EPC unless it exceeds the maximum value. If the 95% UCL exceeds the maximum value, the maximum value is used as the EPC. See text for discussion

Definitions: EPC = exposure point concentration
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
UCL = upper confidence limit
ug/L = micrograms per liter

Table I-75 (RAGS Part D, TABLE 3.34)
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
Jet Propulsion Laboratory—Valley Well #1

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Valley Well #1—Tap Water

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Arsenic	ug/L	1.9	N/A	1.9		ug/L	1.9	Max	(1)	N/A	N/A	N/A
Perchlorate	ug/L	3.5	N/A	5.0		ug/L	3.9	95% UCL-T	(1)	N/A	N/A	N/A
Tetrachloroethene	ug/L	32	N/A	38		ug/L	38	Max	(1)	N/A	N/A	N/A
Trichloroethene	ug/L	2.9	N/A	3.5		ug/L	3.5	Max	(1)	N/A	N/A	N/A

Statistics: Maximum Detected Value (Max); 95% UCL of Log-transformed Data (95% UCL-T)

(1) Assumes that data are lognormally distributed. The 95% UCL is used as the EPC unless it exceeds the maximum value. If the 95% UCL exceeds the maximum value, the maximum value is used as the EPC. See text for discussion

Definitions: EPC = exposure point concentration
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
UCL = upper confidence limit
ug/L = micrograms per liter

Table I-76 (RAGS Part D, TABLE 3.35)
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
Jet Propulsion Laboratory—Valley Well #2

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Valley Well #2—Tap Water

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Arsenic	ug/L	2.0	N/A	2.0		ug/L	2.0	Max	(1)	N/A	N/A	N/A
Perchlorate	ug/L	3.2	N/A	4.0		ug/L	4.0	Max	(1)	N/A	N/A	N/A
Tetrachloroethene	ug/L	7.4	N/A	9.1		ug/L	9.1	Max	(1)	N/A	N/A	N/A
Trichloroethene	ug/L	0.71	N/A	1.0		ug/L	1.0	Max	(1)	N/A	N/A	N/A

Statistics: Maximum Detected Value (Max)

(1) Assumes that data are lognormally distributed. The 95% UCL is used as the EPC unless it exceeds the maximum value. If the 95% UCL exceeds the maximum value, the maximum value is used as the EPC. See text for discussion

Definitions: EPC = exposure point concentration
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
UCL = upper confidence limit
ug/L = micrograms per liter

Table I-77 (RAGS Part D, TABLE 3.36)
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
Jet Propulsion Laboratory—Valley Well #3

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Valley Well #3—Tap Water

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Arsenic	ug/L	1.5	N/A	1.5		ug/L	1.5	Max	(1)	N/A	N/A	N/A
Perchlorate	ug/L	2.9	N/A	4.4		ug/L	4.4	Max	(1)	N/A	N/A	N/A
Tetrachloroethene	ug/L	0.84	N/A	1.1		ug/L	1.1	Max	(1)	N/A	N/A	N/A

Statistics: Maximum Detected Value (Max)

(1) Assumes that data are lognormally distributed. The 95% UCL is used as the EPC unless it exceeds the maximum value. If the 95% UCL exceeds the maximum value, the maximum value is used as the EPC. See text for discussion

Definitions: EPC = exposure point concentration
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
UCL = upper confidence limit
ug/L = micrograms per liter

Table I-78 (RAGS Part D, TABLE 3.37)
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
Jet Propulsion Laboratory—Valley Well #4

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Valley Well #4—Tap Water

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Arsenic	ug/L	1.9	N/A	1.9	1.9	ug/L	1.9	Max	(1)	N/A	N/A	N/A
Perchlorate	ug/L	3.5	N/A	5.0	3.9	ug/L	3.9	95% UCL-T	(1)	N/A	N/A	N/A
Tetrachloroethene	ug/L	19	N/A	23	23	ug/L	23	Max	(1)	N/A	N/A	N/A
Trichloroethene	ug/L	2.2	N/A	2.6	2.6	ug/L	2.6	Max	(1)	N/A	N/A	N/A

Statistics: Maximum Detected Value (Max); 95% UCL of Log-transformed Data (95% UCL-T)

(1) Assumes that data are lognormally distributed. The 95% UCL is used as the EPC unless it exceeds the maximum value. If the 95% UCL exceeds the maximum value, the maximum value is used as the EPC. See text for discussion

Definitions: EPC = exposure point concentration
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
UCL = upper confidence limit
ug/L = micrograms per liter

Table I-79 (RAGS Part D, TABLE 4 1)

VALUES USED FOR DAILY INTAKE CALCULATIONS

Jet Propulsion Laboratory—Operable Units 1 and 3

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Tap Water
Exposure Point: Sitewide
Receptor Population: Resident
Receptor Age: Child/Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CW	Chemical Concentration in Water	ug/L	See Series 3 Tables	See Series 3 Tables	--	--	Chronic Daily Intake (CDI) for carcinogens (mg/kg-day) =
	IRW-A	Ingestion Rate of Water for Adults	liters/day	2	EPA, 1991	--	--	(CW x IRW-A x EF x ED-A x CF1 x 1/BW-A x 1/AT-C x 1/CF2) +
	IRW-C	Ingestion Rate of Water for Children	liters/day	1	EPA, 1991	--	--	(CW x IRW-C x EF x ED-C x CF1 x 1/BW-C x 1/AT-C x 1/CF2)
	EF	Exposure Frequency	days/year	350	EPA, 1991	--	--	
	ED-A	Exposure Duration for Adults	years	24	EPA, 1991	--	--	CDI for non-carcinogens (mg/kg-day) =
	ED-C	Exposure Duration for Children	years	6	EPA, 1991	--	--	(CW x IRW-C x EF x ED-C x CF1 x 1/BW-C x 1/AT-N x 1/CF2)
	CF1	Conversion Factor 1	mg/ug	1.00E-03	N/A	--	--	
	CF2	Conversion Factor 2	days/year	365	N/A	--	--	
	BW-A	Body Weight for Adults	kg	70	EPA, 1991	--	--	
	BW-C	Body Weight for Children	kg	15	EPA, 1991	--	--	
	AT-C	Averaging Time (Cancer)	years	70	EPA, 1989	--	--	
	AT-N	Averaging Time (Non-cancer)	years	6	EPA, 1989	--	--	
Dermal	CW	Chemical Concentration in Water	ug/L	See Series 3 Tables	See Series 3 Tables	--	--	CDI for carcinogens (mg/kg-day) =
	CF1	Conversion Factor 1	mg/ug	1.00E-03	N/A	--	--	(CW x SA-A x PC x ET-A x EF-A x ED-A x CF1 x CF3 x
	CF2	Conversion Factor 2	days/year	365	N/A	--	--	1/BW-A x 1/AT-C x1/CF2) +
	CF3	Volumetric Conversion Factor for Water	L/cm3	1.00E-03	N/A	--	--	(CW x SA-C x PC x ET-C x EF-C x ED-C x CF1 x CF3 x
	PC	Permeability Constant	cm/hr	chemical-specific	DTSC, 1994	--	--	1/BW-C x 1/AT-C x 1/CF2)
	ET-A	Exposure Time for Adults	hr/day	0.25	EPA, 1992	--	--	
	ET-C	Exposure Time for Children	hr/day	0.25	EPA, 1992			
	SA-A	Skin Surface Area Available for Contact for Adults	cm2	18,000	EPA, 1997	--	--	
	SA-C	Skin Surface Area Available for Contact for Children	cm2	6,600	EPA, 1997	--	--	CDI for non-carcinogens (mg/kg-day) =
	EF-A	Exposure Frequency for Adults	days/year	350	EPA, 1991	--	--	(CW x SA-C x PC x ET-C x EF-C x ED-C x CF1 x CF3
	EF-C	Exposure Frequency for Children	days/year	350	EPA, 1991	--	--	1/BW-C x 1/AT-N x 1/CF2)
	ED-A	Exposure Duration for Adults	years	24	EPA, 1991	--	--	
	ED-C	Exposure Duration for Children	years	6	EPA, 1991	--	--	
	BW-A	Body Weight for Adults	kg	70	EPA, 1991	--	--	
	BW-C	Body Weight for Children	kg	15	EPA, 1991	--	--	
	AT-C	Averaging Time (Cancer)	years	70	EPA, 1989	--	--	
	AT-N	Averaging Time (Non-cancer)	years	6	EPA, 1989	--	--	

References: DTSC. 1994. *Preliminary Endangerment Assessment Guidance Manual*. January 1994.

United States Environmental Protection Agency (EPA). 1989. *Risk Assessment Guidance for Superfund, Volume 1: Human Health Evaluation Manual (Part A)*. Interim Final. EPA/540/1-89/002. Office of Research and Development. Office of Emergency and Remedial Response. December 1989.

United States Environmental Protection Agency (EPA). 1991. *Human Health Evaluation Manual, Supplemental Guidance: Standard*

Definitions: -- = Central tendency not considered
cm/hr = centimeters per hour
cm2 = centimeters squared
CT = central tendancy
days/year = days per year

Table I-79 (RAGS Part D, TABLE 4.1)

VALUES USED FOR DAILY INTAKE CALCULATIONS

Jet Propulsion Laboratory—Operable Units 1 and 3

Default Exposure Factors. March 25, 1991. OSWER Directive 9285.6-03.

United States Environmental Protection Agency (EPA). 1992. *Dermal Exposure Assessment: Principles and Applications*. Interim Report. EPA 600/8-91-OHB. Office of Health and Environmental Assessment.

United States Environmental Protection Agency (EPA). 1997. *Exposure Factors Handbook Volume I: General Factors*. EPA/600/P-95/002FA. Office of Research and Development. August 1997

DTSC = Department of Toxic Substances Control

hr/day = hours per day

kg = kilogram

L/cm3 = liters per cubic centimeter

liters/day = liters per day

mg/ug = milligrams per microgram

N/A = Not applicable

RAGS = Risk Assessment Guidance for Superfund

RME = reasonable maximum exposure

ug/L = micrograms per liter

Table I-80 (RAGS Part D, TABLE 4.2)

VALUES USED FOR DAILY INTAKE CALCULATIONS

Jet Propulsion Laboratory—Operable Units 1 and 3

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Tap Water
Exposure Point: Sitewide
Receptor Population: Resident
Receptor Age: Child/Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Inhalation	CA	Chemical Concentration in Air	ug/L	See Series 3 Tables	See Series 3 Tables	--	--	CDI for carcinogens (mg/kg-day) =
	CF1	Conversion Factor 1	mg/ug	1.0E-03	N/A			(CW x VF x IH-A x ED-A x EF-A x CF1 x 1/BW-A x 1/AT-C x 1/CF2) +
	CF2	Conversion Factor 2	days/year	365	N/A	--	--	(CW x VF x IH-C x ED-C x EF-C x CF1 x 1/BW-C x 1/AT-C x 1/CF2)
	IH-A	Inhalation Rate for Adults	m3/day	20	EPA, 1991, DTSC, 1992	--	--	
	IH-C	Inhalation Rate for Children	m3/day	10	EPA, 1989, DTSC, 1992	--	--	CDI for non-carcinogens (mg/kg-day) =
	EF-A	Exposure Frequency for Adults	days/year	350	EPA, 1991	--	--	(CW x VF x IH-C x ED-C x EF-C x CF1 x 1/BW-C x 1/AT-N x 1/CF2)
	EF-C	Exposure Frequency for Children	days/year	350	EPA, 1991	--	--	
	ED-A	Exposure Duration for Adults	years	24	EPA, 1991	--	--	
	ED-C	Exposure Duration for Children	years	6	EPA, 1991	--	--	
	BW-A	Body Weight for Adults	kg	70	EPA, 1991	--	--	
	BW-C	Body Weight for Children	kg	15	EPA, 1991	--	--	
	AT-C	Averaging Time (Cancer)	years	70	EPA, 1989	--	--	
	AT-N	Averaging Time (Non-cancer)	years	6	EPA, 1989	--	--	
	VF	Volatilization Factor	L/m3	0.5	EPA, 1996	--	--	

References:

DTSC. 1992. *Supplemental Guidance for Human Health Multimedia Risk Assessment Hazardous Waste Sites and Permitted Facilities.* July 1992.

United States Envrionmental Protection Agency (EPA). 1989. *Risk Assessment Guidance for Superfund, Volume 1: Human Health Evaluation Manual (Part A).* Interim Final. EPA/540/1-89/002. Office of Research and Development. Office of Emergency and Remedial Response. December 1989.

United States Envrionmental Protection Agency (EPA). 1991. *Human Health Evaluation Manual, Supplemental Guidance: Standard Default Exposure Factors*. March 25, 1991. OSWER Directive 9285.6-03.

United States Envrionmental Protection Agency (EPA). 1996. *Soil Screening Guidance: Technical Background Document*. EPA/540/R-95/128. Office of Emergency and Remedial Response. PB96-963502.

Definitions:

-- = Central endency not considered
CT = central tendancy
days/year = days per year
kg = kilograms
L/m3 = liters per cubic meter
m3/day = cubic meter per day
mg/ug = milligrams per microgram
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table 6-81 (RAGS Part D, TABLE 5.1)

NON-CANCER TOXICITY DATA—ORAL/DERMAL

Jet Propulsion Laboratory—Operable Units 1 and 3

Chemical of Potential Concern	Chronic/ Subchronic	Oral RfD Value	Oral RfD Units	Oral to Dermal Adjustment Factor (1)	Adjusted Dermal RfD (2)	Units	Primary Target Organ	Combined Uncertainty/Modifying Factors	Sources of RfD: Target Organ	Dates of RfD: Target Organ (MM/DD/YY)
1,1-Dichloroethene	Chronic	0.009	mg/kg/day	0.8	0.0072	mg/kg/day	Liver	1000/1	IRIS	2/16/99
1,2-Dichloroethane (3)	Chronic	0.0029	mg/kg/day	0.8	0.0023	mg/kg/day	N/A (4)	N/A (4)	Region IX PRG	3/99 (5)
Arsenic	Chronic	0.0003	mg/kg/day	0.2	0.00006	mg/kg/day	Skin	3/1	IRIS	2/16/99
Bromodichloromethane	Chronic	0.02	mg/kg/day	0.8	0.016	mg/kg/day	Kidney	1000/1	IRIS	2/16/99
Carbon Tetrachloride	Chronic	0.0007	mg/kg/day	0.8	0.00056	mg/kg/day	Liver	1000/1	IRIS	2/16/99
Chloroform	Chronic	0.01	mg/kg/day	0.8	0.008	mg/kg/day	Liver	1000/1	IRIS	2/16/99
Hexavalent Chromium	Chronic	0.005	mg/kg/day	0.2	0.001	mg/kg/day	No effects	500/1	IRIS	2/16/99
Lead	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Nitrate	Chronic	1.6	mg/kg/day	0.2	0.32	mg/kg/day	Red blood cells	1/1	IRIS	2/16/99
Perchlorate	Chronic	0.0005	mg/kg/day	0.2	0.0001	mg/kg/day	Thyroid	N/A (4)	NCEA	3/99 (5)
Tetrachloroethene	Chronic	0.01	mg/kg/day	0.8	0.008	mg/kg/day	Liver	1000/1	IRIS	2/16/99
Trichloroethene (6)	Chronic	0.006	mg/kg/day	0.8	0.0048	mg/kg/day	N/A (4)	N/A (4)	Region IX PRG	3/99 (5)

(1) Oral to dermal adjustment factor obtained from EPA. 1995. *Supplemental Guidance to RAGS: Region 4 Bulletins*. Office of Health Assessment. November, 1995

(2) Adjusted dermal RfD = oral RfD x oral to dermal adjustment factor

(3) RfD value is based on route-to-route extrapolation.

(4) Value obtained from EPA Region IX PRG Summary Table (EPA 1999). Target organ and uncertainty/modifying factors are not provided.

(5) EPA Region IX PRG Summary Table expires May 1999

(6) RfD value has been withdrawn.

Definitions:

EPA = U.S. Environmental Protection Agency

IRIS = Integrated Risk Information System

mg/kg/day = milligrams per kilogram per day

MM/DD/YY = month/day/year

N/A = Not applicable

NCEA = National Center for Environmental Assessment

PRG = preliminary remediation goal

RAGS = Risk Assessment Guidance for Superfund

RfD = referece dose

Table 6-82 (RAGS Part D, TABLE 5.2)

NON-CANCER TOXICITY DATA—INHALATION

Jet Propulsion Laboratory—Operable Units 1 and 3

Chemical of Potential Concern	Chronic/ Subchronic	Value Inhalation RfC	Units	Adjusted Inhalation RfD (1)	Units	Primary Target Organ	Combined Uncertainty/Modifying Factors	Sources of RfC:RfD: Target Organ	Dates (MM/DD/YY)
1,1-Dichloroethene (2)	chronic	0.03	mg/m3	0.009	mg/kg/day	N/A (3)	N/A (3)	Region IX PRG	3/99 (4)
1,2-Dichloroethane (5)	chronic	0.01	mg/m3	0.0029	mg/kg/day	N/A (3)	N/A (3)	Region IX PRG	3/99 (4)
Arsenic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Bromodichloromethane (2)	chronic	0.07	mg/m3	0.02	mg/kg/day	N/A (3)	N/A (3)	Region IX PRG	3/99 (4)
Carbon Tetrachloride (5)	chronic	0.002	mg/m3	0.00057	mg/kg/day	N/A (3)	N/A (3)	Region IX PRG	3/99 (4)
Chloroform (2)	chronic	0.04	mg/m3	0.01	mg/kg/day	N/A (3)	N/A (3)	Region IX PRG	3/99 (4)
Hexavalent Chromium	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Lead	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Nitrate	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Perchlorate	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tetrachloroethene	chronic	0.4	mg/m3	0.11	mg/kg/day	N/A (3)	N/A (3)	NCEA	3/99 (4)
Trichloroethene (2)	chronic	0.02	mg/m3	0.006	mg/kg/day	N/A (3)	N/A (3)	Region IX PRG	3/99 (4)

(1) Adjusted Inhalation RfD = RfC x (20 m3/day) / (70 kg)

(2) RfD based on route-to-route extrapolation.

(3) Value obtained from EPA Region IX PRG Summary Table (EPA 1999). Target organ and uncertainty/modifying factors are not provided.

(4) EPA Region IX PRG Summary Table expires May 1999

(5) RfD value has been withdrawn.

Definitions:

EPA = U.S. Environmental Protection Agency

kg= kilograms

m3/day = cubic meters per day

mg/kg/day = milligrams per kilogram per day

mg/m3 = milligrams per cubic meter

MM/DD/YY = month/day/year

N/A = Not applicable

NCEA = EPA's National Center for Environmental Assessment

PRG = preliminary remediation goal

RAGS = Risk Assessment Guidance for Superfund

RfC = reference concentration

RfD = reference dose

Table 6-83 (RAGS Part D, TABLE 6.1)

CANCER TOXICITY DATA—ORAL/DERMAL

Jet Propulsion Laboratory—Operable Units 1 and 3

Chemical of Potential Concern	Oral Cancer Slope Factor	Oral to Dermal Adjustment Factor	Adjusted Dermal Cancer Slope Factor (1)	Units	Weight of Evidence/ Cancer Guideline Description	Source	Date (MM/DD/YY)
1,1-Dichloroethene	0.6	0.8	0.75	(mg/kg/day)-1	C	IRIS	2/17/99
1,2-Dichloroethane	0.07	0.8	0.088	(mg/kg/day)-1	B2	CAOEHHA	11/98
Arsenic	1.5	0.2	7.5	(mg/kg/day)-1	A	CAOEHHA	11/98
Bromodichloromethane	0.13	0.8	0.16	(mg/kg/day)-1	B2	CAOEHHA	11/98
Carbon Tetrachloride	0.15	0.8	0.19	(mg/kg/day)-1	B2	CAOEHHA	11/98
Chloroform	0.031	0.8	0.039	(mg/kg/day)-1	B2	CAOEHHA	11/98
Hexavalent Chromium	0.42	0.2	2.1	(mg/kg/day)-1	A	CAOEHHA	11/98
Lead	N/A	N/A	N/A	N/A	B2	N/A	N/A
Nitrate	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Perchlorate	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tetrachloroethene	0.051	0.8	0.064	(mg/kg/day)-1	N/A	CAOEHHA	11/98
Trichloroethene	0.015	0.8	0.019	(mg/kg/day)-1	N/A	CAOEHHA	11/98

(1) Adjusted dermal cancer slope factor = oral cancer slope factor/oral to dermal adjustment factor. Obtained from EPA. 1995. *Supplemental Guidance to RAGS: Region 4 Bulletins*. Office of Health Assessment. November, 1995

EPA Group:

A - Human carcinogen

B2 - Probable human carcinogen - indicates sufficient evidence in animals and inadequate or no evidence in humans

C - Possible human carcinogen

Definitions:

CAOEHHA = California Office of Environmental Health Hazard Assessment

EPA = U.S. Environmental Protection Agency

IRIS = Integrated Risk Information System

mg/kg/day = milligrams per kilogram per day

MM/DD/YY = month/day/year

N/A = Not applicable

RAGS = Risk Assessment Guidance for Superfund

Table 6-84 (RAGS Part D, TABLE 6.2)

CANCER TOXICITY DATA—INHALATION

Jet Propulsion Laboratory—Operable Units 1 and 3

Chemical of Potential Concern	Unit Risk	Units	Adjustment (1)	Inhalation Cancer Slope Factor	Units	Weight of Evidence/ Cancer Guideline Description	Source	Date (MM/DD/YY)
1,1-Dichloroethene	5.0E-05	ug/m3	3,500	0.18	(mg/kg/day)-1	C	IRIS	2/17/99
1,2-Dichloroethane	2.2E-05	ug/m3	3,500	0.07	(mg/kg/day)-1	B2	CAOEHHA	11/98
Arsenic	3.3E-03	ug/m3	3,500	12.0	(mg/kg/day)-1	A	CAOEHHA	11/98
Bromodichloromethane	3.7E-05	ug/m3	3,500	0.13	(mg/kg/day)-1	B2	CAOEHHA	11/98
Carbon Tetrachloride	4.2E-05	ug/m3	3,500	0.15	(mg/kg/day)-1	B2	CAOEHHA	11/98
Chloroform	5.3E-06	ug/m3	3,500	0.019	(mg/kg/day)-1	B2	CAOEHHA	11/98
Hexavalent Chromium	1.5E-01	ug/m3	3,500	510	(mg/kg/day)-1	A	CAOEHHA	11/98
Lead	N/A	N/A	N/A	N/A	N/A	B2	N/A	N/A
Nitrate	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Perchlorate	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tetrachloroethene	5.9E-06	ug/m3	3,500	0.021	(mg/kg/day)-1	N/A	CAOEHHA	11/98
Trichloroethene	2.0E-06	ug/m3	3,500	0.01	(mg/kg/day)-1	N/A	CAOEHHA	11/98

(1) Adjustment factor applied to unit risk to calculate inhalation slope factor = (70 kg) x (1/20 m3/day) x (1000 ug/mg)

EPA Group:

A - Human carcinogen

B2 - Probable human carcinogen - indicates sufficient evidence in animals and inadequate or no evidence in humans

C - Possible human carcinogen

Definitions:

1.0E-02 = 1.0 x 10-2 = 0.010

CAOEHHA = California Office of Environmental Health Hazard Assessment

EPA = U.S. Environmental Protection Agency

IRIS = Integrated Risk Information System

kg = kilograms

m3/day = cubic meters per day

mg/kg/day = milligrams per kilogram per day

MM/DD/YY = month/day/year

N/A = Not applicable

ug/m3 = micrograms per cubic meter

Table I-85 (RAGS Part D, TABLE 7.1.RME)
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 01

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 01—Tap Water
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Nitrate	1.5	mg/L	1.5	mg/L	M	9.6E-02	mg/kg/day	1.6	mg/kg/day	N/A	N/A	0.060
	(Total)												0.060
Dermal	Nitrate	1.5	mg/L	1.5	mg/L	M	1.6E-04	mg/kg/day	0.32	mg/kg/day	N/A	N/A	0.00049
	(Total)												0.00049
												Total Hazard Index Across All Exposure Routes/Pathways	0.060

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
M = Medium-specific EPC selected for hazard calculation
mg/kg/day = milligrams per kilogram per day
mg/L = milligrams per liter
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure

Table I-86 (RAGS Part D, TABLE 7.2.RME)
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 01

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 01—Water Vapor
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inhalation	-- (Total)	--	--	--	--	--	--	--	--	--	--	--	-- --
												Total Hazard Index Across All Exposure Routes/Pathways	--

Definitions: EPC = exposure point concentration
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure

Table I-87 (RAGS Part D, TABLE 7.3.RME)
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 03

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 03—Tap Water
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Arsenic	0.0041	mg/L	0.0041	mg/L	M	2.6E-04	mg/kg/day	0.0003	mg/kg/day	N/A	N/A	0.87
	Bromodichloromethane	0.3	ug/L	0.3	ug/L	M	1.9E-05	mg/kg/day	0.02	mg/kg/day	N/A	N/A	0.00096
	Carbon Tetrachloride	0.49	ug/L	0.49	ug/L	M	3.1E-05	mg/kg/day	0.0007	mg/kg/day	N/A	N/A	0.045
	Chloroform	1.3	ug/L	1.3	ug/L	M	8.3E-05	mg/kg/day	0.01	mg/kg/day	N/A	N/A	0.0083
	Lead	0.0015	mg/L	0.0015	mg/L	M	N/A	mg/kg/day	N/A	N/A	N/A	N/A	N/A
	Nitrate	1.1	mg/L	1.1	mg/L	M	7.0E-02	mg/kg/day	1.6	mg/kg/day	N/A	N/A	0.044
	Perchlorate	6.4	ug/L	6.4	ug/L	M	4.1E-04	mg/kg/day	0.0005	mg/kg/day	N/A	N/A	0.82
	Tetrachloroethene	0.29	ug/L	0.29	ug/L	M	1.9E-05	mg/kg/day	0.01	mg/kg/day	N/A	N/A	0.0019
	Trichloroethene	0.32	ug/L	0.32	ug/L	M	2.0E-05	mg/kg/day	0.006	mg/kg/day	N/A	N/A	0.0034
	(Total)												1.8
Dermal	Arsenic	0.0041	mg/L	0.0041	mg/L	M	4.3E-07	mg/kg/day	0.00006	mg/kg/day	N/A	N/A	0.0072
	Lead	0.0015	mg/L	0.0015	mg/L	M	N/A	mg/kg/day	N/A	N/A	N/A	N/A	N/A
	Nitrate	1.1	mg/L	1.1	mg/L	M	1.2E-04	mg/kg/day	0.32	mg/kg/day	N/A	N/A	0.00036
	Perchlorate	6.4	ug/L	6.4	ug/L	M	6.8E-07	mg/kg/day	0.0001	mg/kg/day	N/A	N/A	0.0068
	(Total)												0.014
												Total Hazard Index Across All Exposure Routes/Pathways	1.8

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
M = Medium-specific EPC selected for hazard calculation
mg/kg/day = milligrams per kilogram per day
mg/L = milligrams per liter
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-88 (RAGS Part D, TABLE 7.4.RME)
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 03

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 03—Water Vapor
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inhalation	Bromodichloromethane	0.3	ug/L	0.3	ug/L	R	9.6E-05	mg/kg/day	0.02	mg/kg/day	N/A	N/A	0.0048
	Carbon Tetrachloride	0.49	ug/L	0.49	ug/L	R	1.6E-04	mg/kg/day	0.00057	mg/kg/day	N/A	N/A	0.27
	Chloroform	1.3	ug/L	1.3	ug/L	R	4.2E-04	mg/kg/day	0.01	mg/kg/day	N/A	N/A	0.042
	Tetrachloroethene	0.29	ug/L	0.29	ug/L	R	9.3E-05	mg/kg/day	0.11	mg/kg/day	N/A	N/A	0.00084
	Trichloroethene	0.32	ug/L	0.32	ug/L	R	1.0E-04	mg/kg/day	0.006	mg/kg/day	N/A	N/A	0.017
	(Total)												0.34
												Total Hazard Index Across All Exposure Routes/Pathways	0.34

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
mg/kg/day = milligrams per kilogram per day
N/A = Not applicable
R =Route-specific EPC selected for hazard calculation
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-89 (RAGS Part D, TABLE 7.5.RME)
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 04

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 04—Tap Water
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	1,1-Dichloroethene	0.39	ug/L	0.39	ug/L	M	2.5E-05	mg/kg/day	0.009	mg/kg/day	N/A	N/A	0.0028
	1,2-Dichloroethane	0.33	ug/L	0.33	ug/L	M	2.1E-05	mg/kg/day	0.0029	mg/kg/day	N/A	N/A	0.0073
	Carbon Tetrachloride	3.7	ug/L	3.7	ug/L	M	2.4E-04	mg/kg/day	0.0007	mg/kg/day	N/A	N/A	0.34
	Chloroform	3.2	ug/L	3.2	ug/L	M	2.0E-04	mg/kg/day	0.01	mg/kg/day	N/A	N/A	0.020
	Nitrate	8.2	mg/L	8.2	mg/L	M	5.2E-01	mg/kg/day	1.6	mg/kg/day	N/A	N/A	0.33
	Perchlorate	38	ug/L	38	ug/L	M	2.4E-03	mg/kg/day	0.0005	mg/kg/day	N/A	N/A	4.9
	Tetrachloroethene	0.29	ug/L	0.29	ug/L	M	1.9E-05	mg/kg/day	0.01	mg/kg/day	N/A	N/A	0.0019
	Trichloroethene	10	ug/L	10	ug/L	M	6.4E-04	mg/kg/day	0.006	mg/kg/day	N/A	N/A	0.11
	(Total)												5.7
Dermal	Nitrate	8.2	mg/L	8.2	mg/L	M	8.6E-04	mg/kg/day	0.32	mg/kg/day	N/A	N/A	0.0027
	Perchlorate	38	ug/L	38	ug/L	M	4.0E-06	mg/kg/day	0.0001	mg/kg/day	N/A	N/A	0.040
	(Total)												0.043
												Total Hazard Index Across All Exposure Routes/Pathways	5.7

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
M = Medium-specific EPC selected for hazard calculation
mg/kg/day = milligrams per kilogram per day
mg/L = milligrams per liter
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-90 (RAGS Part D, TABLE 7.6.RME)
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 04

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 04—Water Vapor
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inhalation	1,1-Dichloroethene	0.39	ug/L	0.39	ug/L	R	1.2E-04	mg/kg/day	0.009	mg/kg/day	N/A	N/A	0.014
	1,2-Dichloroethane	0.33	ug/L	0.33	ug/L	R	1.1E-04	mg/kg/day	0.0029	mg/kg/day	N/A	N/A	0.036
	Carbon Tetrachloride	3.7	ug/L	3.7	ug/L	R	1.2E-03	mg/kg/day	0.00057	mg/kg/day	N/A	N/A	2.1
	Chloroform	3.2	ug/L	3.2	ug/L	R	1.0E-03	mg/kg/day	0.01	mg/kg/day	N/A	N/A	0.10
	Tetrachloroethene	0.29	ug/L	0.29	ug/L	R	9.3E-05	mg/kg/day	0.11	mg/kg/day	N/A	N/A	0.00084
	Trichloroethene	10	ug/L	10	ug/L	R	3.2E-03	mg/kg/day	0.006	mg/kg/day	N/A	N/A	0.53
	(Total)												2.8
												Total Hazard Index Across All Exposure Routes/Pathways	2.8

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
mg/kg/day = milligrams per kilogram per day
N/A = Not applicable
R =Route-specific EPC selected for hazard calculation
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-91 (RAGS Part D, TABLE 7.7.RME)
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 05

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 05—Tap Water
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Nitrate	2.4	mg/L	2.4	mg/L	M	1.5E-01	mg/kg/day	1.6	mg/kg/day	N/A	N/A	0.096
	Perchlorate	4.2	ug/L	4.2	ug/L	M	2.7E-04	mg/kg/day	0.0005	mg/kg/day	N/A	N/A	0.54
	(Total)												0.63
Dermal	Nitrate	2.4	mg/L	2.4	mg/L	M	2.5E-04	mg/kg/day	0.32	mg/kg/day	N/A	N/A	0.00079
	Perchlorate	4.2	ug/L	4.2	ug/L	M	4.4E-07	mg/kg/day	0.0001	mg/kg/day	N/A	N/A	0.0044
	(Total)												0.0052
												Total Hazard Index Across All Exposure Routes/Pathways	0.64

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
M = Medium-specific EPC selected for hazard calculation
mg/kg/day = milligrams per kilogram per day
mg/L = milligrams per liter
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-92 (RAGS Part D, TABLE 7.8.RME)
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 05

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 05—Water Vapor
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inhalation	-- (Total)	-- --	--	--	--	--	--	--	--	--	--	--	-- --
												Total Hazard Index Across All Exposure Routes/Pathways	--

Definitions: EPC = exposure point concentration
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure

Table I-93 (RAGS Part D, TABLE 7.9.RME)
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 06

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 06—Tap Water
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Nitrate	11	mg/L	11	mg/L	M	7.0E-01	mg/kg/day	1.6	mg/kg/day	N/A	N/A	0.44
	Perchlorate	5.5	ug/L	5.5	ug/L	M	3.5E-04	mg/kg/day	0.0005	mg/kg/day	N/A	N/A	0.70
	Tetrachloroethene	2.0	ug/L	2.0	ug/L	M	1.3E-04	mg/kg/day	0.01	mg/kg/day	N/A	N/A	0.013
	(Total)												1.2
Dermal	Nitrate	11	mg/L	11	mg/L	M	1.2E-03	mg/kg/day	0.32	mg/kg/day	N/A	N/A	0.0036
	Perchlorate	5.5	ug/L	5.5	ug/L	M	5.8E-07	mg/kg/day	0.0001	mg/kg/day	N/A	N/A	0.0058
	(Total)												0.0094
												Total Hazard Index Across All Exposure Routes/Pathways	1.2

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
M = Medium-specific EPC selected for hazard calculation
mg/kg/day = milligrams per kilogram per day
mg/L = milligrams per liter
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-94 (RAGS Part D, TABLE 7.10.RME)
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 06

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 06—Water Vapor
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inhalation	Tetrachloroethene	2.0	ug/L	2.0	ug/L	R	6.4E-04	mg/kg/day	0.11	mg/kg/day	N/A	N/A	0.0058
	(Total)												0.0058
												Total Hazard Index Across All Exposure Routes/Pathways	0.0058

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
mg/kg/day = milligrams per kilogram per day
N/A = Not applicable
R =Route-specific EPC selected for hazard calculation
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure

Table I-95 (RAGS Part D, TABLE 7.11.RME)
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 07

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 07—Tap Water
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	1,1-Dichloroethene	2.1	ug/L	2.1	ug/L	M	1.3E-04	mg/kg/day	0.009	mg/kg/day	N/A	N/A	0.015
	1,2-Dichloroethane	0.89	ug/L	0.89	ug/L	M	5.7E-05	mg/kg/day	0.0029	mg/kg/day	N/A	N/A	0.020
	Carbon Tetrachloride	150	ug/L	150	ug/L	M	9.6E-03	mg/kg/day	0.0007	mg/kg/day	N/A	N/A	14
	Chloroform	13	ug/L	13	ug/L	M	8.3E-04	mg/kg/day	0.01	mg/kg/day	N/A	N/A	0.083
	Hexavalent Chromium	0.01	mg/L	0.01	mg/L	M	6.4E-04	mg/kg/day	0.005	mg/kg/day	N/A	N/A	0.13
	Nitrate	6.5	mg/L	6.5	mg/L	M	4.2E-01	mg/kg/day	1.6	mg/kg/day	N/A	N/A	0.26
	Perchlorate	720	ug/L	720	ug/L	M	4.6E-02	mg/kg/day	0.0005	mg/kg/day	N/A	N/A	92
	Tetrachloroethene	3.7	ug/L	3.7	ug/L	M	2.4E-04	mg/kg/day	0.01	mg/kg/day	N/A	N/A	0.024
	Trichloroethene	27	ug/L	27	ug/L	M	1.7E-03	mg/kg/day	0.006	mg/kg/day	N/A	N/A	0.29
	(Total)												110
Dermal	Hexavalent Chromium	0.01	mg/L	0.01	mg/L	M	2.1E-06	mg/kg/day	0.001	mg/kg/day	N/A	N/A	0.0021
	Nitrate	6.5	mg/L	6.5	mg/L	M	6.9E-04	mg/kg/day	0.32	mg/kg/day	N/A	N/A	0.0021
	Perchlorate	720	ug/L	720	ug/L	M	7.6E-05	mg/kg/day	0.0001	mg/kg/day	N/A	N/A	0.76
	(Total)												0.76
												Total Hazard Index Across All Exposure Routes/Pathways	110

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
M = Medium-specific EPC selected for hazard calculation
mg/kg/day = milligrams per kilogram per day
mg/L = milligrams per liter
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-96 (RAGS Part D, TABLE 7.12.RME)
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 07

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 07—Water Vapor
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inhalation	1,1-Dichloroethene	2.1	ug/L	2.1	ug/L	R	6.7E-04	mg/kg/day	0.009	mg/kg/day	N/A	N/A	0.075
	1,2-Dichloroethane	0.89	ug/L	0.89	ug/L	R	2.8E-04	mg/kg/day	0.0029	mg/kg/day	N/A	N/A	0.098
	Carbon Tetrachloride	150	ug/L	150	ug/L	R	4.8E-02	mg/kg/day	0.00057	mg/kg/day	N/A	N/A	84
	Chloroform	13	ug/L	13	ug/L	R	4.2E-03	mg/kg/day	0.01	mg/kg/day	N/A	N/A	0.42
	Tetrachloroethene	3.7	ug/L	3.7	ug/L	R	1.2E-03	mg/kg/day	0.11	mg/kg/day	N/A	N/A	0.011
	Trichloroethene	27	ug/L	27	ug/L	R	8.6E-03	mg/kg/day	0.006	mg/kg/day	N/A	N/A	1.4
	(Total)												86
												Total Hazard Index Across All Exposure Routes/Pathways	86

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
mg/kg/day = milligrams per kilogram per day
N/A = Not applicable
R =Route-specific EPC selected for hazard calculation
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-97 (RAGS Part D, TABLE 7.13.RME)
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 08

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 08—Tap Water
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Carbon Tetrachloride	3.2	ug/L	3.2	ug/L	M	2.0E-04	mg/kg/day	0.0007	mg/kg/day	N/A	N/A	0.29
	Chloroform	1.3	ug/L	1.3	ug/L	M	8.3E-05	mg/kg/day	0.01	mg/kg/day	N/A	N/A	0.0083
	Lead	0.0023	mg/L	0.0023	mg/L	M	N/A	mg/kg/day	N/A	N/A	N/A	N/A	N/A
	Nitrate	3.7	mg/L	3.7	mg/L	M	2.4E-01	mg/kg/day	1.6	mg/kg/day	N/A	N/A	0.15
	Perchlorate	29	ug/L	29	ug/L	M	1.9E-03	mg/kg/day	0.0005	mg/kg/day	N/A	N/A	3.7
	Trichloroethene	4.5	ug/L	4.5	ug/L	M	2.9E-04	mg/kg/day	0.006	mg/kg/day	N/A	N/A	0.048
	(Total)												4.2
Dermal	Lead	0.0023	mg/L	0.0023	mg/L	M	N/A	mg/kg/day	N/A	N/A	N/A	N/A	N/A
	Nitrate	3.7	mg/L	3.7	mg/L	M	3.9E-04	mg/kg/day	0.32	mg/kg/day	N/A	N/A	0.00122
	Perchlorate	29	ug/L	29	ug/L	M	3.1E-06	mg/kg/day	0.0001	mg/kg/day	N/A	N/A	0.031
	(Total)												0.032
												Total Hazard Index Across All Exposure Routes/Pathways	4.2

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
M = Medium-specific EPC selected for hazard calculation
mg/kg/day = milligrams per kilogram per day
mg/L = milligrams per liter
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-98 (RAGS Part D, TABLE 7.14.RME)
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 08

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 08—Water Vapor
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inhalation	Carbon Tetrachloride	3.2	ug/L	3.2	ug/L	R	1.0E-03	mg/kg/day	0.00057	mg/kg/day	N/A	N/A	1.8
	Chloroform	1.3	ug/L	1.3	ug/L	R	4.2E-04	mg/kg/day	0.01	mg/kg/day	N/A	N/A	0.042
	Trichloroethene	4.5	ug/L	4.5	ug/L	R	1.4E-03	mg/kg/day	0.006	mg/kg/day	N/A	N/A	0.24
	(Total)												2.1
												Total Hazard Index Across All Exposure Routes/Pathways	2.1

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
mg/kg/day = milligrams per kilogram per day
N/A = Not applicable
R =Route-specific EPC selected for hazard calculation
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-99 (RAGS Part D, TABLE 7.15.RME)
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 09

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 09—Tap Water
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Nitrate (Total)	5.5	mg/L	5.5	mg/L	M	3.5E-01	mg/kg/day	1.6	mg/kg/day	N/A	N/A	0.22
													0.22
Dermal	Nitrate (Total)	5.5	mg/L	5.5	mg/L	M	5.8E-04	mg/kg/day	0.32	mg/kg/day	N/A	N/A	0.0018
													0.0018
												Total Hazard Index Across All Exposure Routes/Pathways	0.22

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
M = Medium-specific EPC selected for hazard calculation
mg/kg/day = milligrams per kilogram per day
mg/L = milligrams per liter
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure

Table I-100 (RAGS Part D, TABLE 7.16.RME)
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 09

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 09—Water Vapor
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inhalation	-- (Total)	--	--	--	--	--	--	--	--	--	--	--	--
													--
												Total Hazard Index Across All Exposure Routes/Pathways	--

Definitions: EPC = exposure point concentration
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure

Table I-101 (RAGS Part D, TABLE 7.17.RME)
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 10

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 10—Tap Water
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Chloroform	1.4	ug/L	1.4	ug/L	M	8.9E-05	mg/kg/day	0.01	mg/kg/day	N/A	N/A	0.0089
	Nitrate	18	mg/L	18	mg/L	M	1.2E+00	mg/kg/day	1.6	mg/kg/day	N/A	N/A	0.72
	Perchlorate	16	ug/L	16	ug/L	M	1.0E-03	mg/kg/day	0.0005	mg/kg/day	N/A	N/A	2.0
	Tetrachloroethene	2.2	ug/L	2.2	ug/L	M	1.4E-04	mg/kg/day	0.01	mg/kg/day	N/A	N/A	0.014
	Trichloroethene	5.2	ug/L	5.2	ug/L	M	3.3E-04	mg/kg/day	0.006	mg/kg/day	N/A	N/A	0.055
	(Total)												2.8
Dermal	Nitrate	18	mg/L	18	mg/L	M	1.9E-03	mg/kg/day	0.32	mg/kg/day	N/A	N/A	0.0059
	Perchlorate	16	ug/L	16	ug/L	M	1.7E-06	mg/kg/day	0.0001	mg/kg/day	N/A	N/A	0.017
	(Total)												0.023
										Total Hazard Index Across All Exposure Routes/Pathways			2.9

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
M = Medium-specific EPC selected for hazard calculation
mg/kg/day = milligrams per kilogram per day
mg/L = milligrams per liter
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-102 (RAGS Part D, TABLE 7.18.RME)
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 10

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 10—Water Vapor
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inhalation	Chloroform	1.4	ug/L	1.4	ug/L	R	4.5E-04	mg/kg/day	0.01	mg/kg/day	N/A	N/A	0.045
	Tetrachloroethene	2.2	ug/L	2.2	ug/L	R	7.0E-04	mg/kg/day	0.11	mg/kg/day	N/A	N/A	0.0064
	Trichloroethene	5.2	ug/L	5.2	ug/L	R	1.7E-03	mg/kg/day	0.006	mg/kg/day	N/A	N/A	0.28
	(Total)												0.33
												Total Hazard Index Across All Exposure Routes/Pathways	0.33

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
mg/kg/day = milligrams per kilogram per day
N/A = Not applicable
R =Route-specific EPC selected for hazard calculation
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-103 (RAGS Part D, TABLE 7.19.RME)
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory---Monitoring Well 11

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 11---Tap Water
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Carbon Tetrachloride	0.69	ug/L	0.69	ug/L	M	4.4E-05	mg/kg/day	0.0007	mg/kg/day	N/A	N/A	0.063
	Chloroform	0.85	ug/L	0.85	ug/L	M	5.4E-05	mg/kg/day	0.01	mg/kg/day	N/A	N/A	0.0054
	Lead	0.0017	mg/L	0.0017	mg/L	M	N/A	mg/kg/day	N/A	N/A	N/A	N/A	N/A
	Nitrate	0.63	mg/L	0.63	mg/L	M	4.0E-02	mg/kg/day	1.6	mg/kg/day	N/A	N/A	0.025
	(Total)												0.094
Dermal	Lead	0.0017	mg/L	0.0017	mg/L	M	N/A	mg/kg/day	N/A	N/A	N/A	N/A	N/A
	Nitrate	0.63	mg/L	0.63	mg/L	M	6.6E-05	mg/kg/day	0.32	mg/kg/day	N/A	N/A	0.00021
	(Total)												0.00021
												Total Hazard Index Across All Exposure Routes/Pathways	0.094

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
M = Medium-specific EPC selected for hazard calculation
mg/kg/day = milligrams per kilogram per day
mg/L = milligrams per liter
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-104 (RAGS Part D, TABLE 7.20.RME)
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 11

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 11—Water Vapor
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inhalation	Carbon Tetrachloride	0.69	ug/L	0.69	ug/L	R	2.2E-04	mg/kg/day	0.00057	mg/kg/day	N/A	N/A	0.39
	Chloroform	0.85	ug/L	0.85	ug/L	R	2.7E-04	mg/kg/day	0.01	mg/kg/day	N/A	N/A	0.027
	(Total)												0.41
												Total Hazard Index Across All Exposure Routes/Pathways	0.41

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
mg/kg/day = milligrams per kilogram per day
N/A = Not applicable
R =Route-specific EPC selected for hazard calculation
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-105 (RAGS Part D, TABLE 7.21.RME)
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 12

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 12—Tap Water
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Carbon Tetrachloride	12.0	ug/L	12.0	ug/L	M	7.7E-04	mg/kg/day	0.0007	mg/kg/day	N/A	N/A	1.1
	Chloroform	2.0	ug/L	2.0	ug/L	M	1.3E-04	mg/kg/day	0.01	mg/kg/day	N/A	N/A	0.013
	Lead	0.0012	mg/L	0.0012	mg/L	M	N/A	mg/kg/day	N/A	N/A	N/A	N/A	N/A
	Nitrate	1.5	mg/L	1.5	mg/L	M	9.6E-02	mg/kg/day	1.6	mg/kg/day	N/A	N/A	0.060
	Perchlorate	7.0	ug/L	7.0	ug/L	M	4.5E-04	mg/kg/day	0.0005	mg/kg/day	N/A	N/A	0.89
	Trichloroethene	0.28	ug/L	0.28	ug/L	M	1.8E-05	mg/kg/day	0.006	mg/kg/day	N/A	N/A	0.0030
	(Total)												2.1
Dermal	Lead	0.0012	mg/L	0.0012	mg/L	M	N/A	mg/kg/day	N/A	N/A	N/A	N/A	N/A
	Nitrate	1.5	mg/L	1.5	mg/L	M	1.6E-04	mg/kg/day	0.32	mg/kg/day	N/A	N/A	0.00049
	Perchlorate	7.0	ug/L	7.0	ug/L	M	7.4E-07	mg/kg/day	0.0001	mg/kg/day	N/A	N/A	0.0074
	(Total)												0.0079
												Total Hazard Index Across All Exposure Routes/Pathways	2.1

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
M = Medium-specific EPC selected for hazard calculation
mg/kg/day = milligrams per kilogram per day
mg/L = milligrams per liter
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-106 (RAGS Part D, TABLE 7.22.RME)
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory —Monitoring Well 12

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 12—Water Vapor
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inhalation	Carbon Tetrachloride	12	ug/L	12	ug/L	R	3.8E-03	mg/kg/day	0.00057	mg/kg/day	N/A	N/A	6.7
	Chloroform	2.0	ug/L	2.0	ug/L	R	6.4E-04	mg/kg/day	0.01	mg/kg/day	N/A	N/A	0.064
	Trichloroethene	0.28	ug/L	0.28	ug/L	R	8.9E-05	mg/kg/day	0.006	mg/kg/day	N/A	N/A	0.015
	(Total)												6.8
												Total Hazard Index Across All Exposure Routes/Pathways	6.8

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
mg/kg/day = milligrams per kilogram per day
N/A = Not applicable
R =Route-specific EPC selected for hazard calculation
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-107 (RAGS Part D, TABLE 7.23.RME)
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 13

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 13—Tap Water
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	1,1-Dichloroethene	0.96	ug/L	0.96	ug/L	M	6.1E-05	mg/kg/day	0.009	mg/kg/day	N/A	N/A	0.0068
	1,2-Dichloroethane	1.1	ug/L	1.1	ug/L	M	7.0E-05	mg/kg/day	0.0029	mg/kg/day	N/A	N/A	0.024
	Carbon Tetrachloride	16	ug/L	16	ug/L	M	1.0E-03	mg/kg/day	0.0007	mg/kg/day	N/A	N/A	1.5
	Chloroform	11	ug/L	11	ug/L	M	7.0E-04	mg/kg/day	0.01	mg/kg/day	N/A	N/A	0.070
	Hexavalent Chromium	0.041	mg/L	0.041	mg/L	M	2.6E-03	mg/kg/day	0.005	mg/kg/day	N/A	N/A	0.52
	Lead	0.0016	mg/L	0.0016	mg/L	M	N/A	mg/kg/day	N/A	N/A	N/A	N/A	N/A
	Nitrate	9.6	mg/L	9.6	mg/L	M	6.1E-01	mg/kg/day	1.6	mg/kg/day	N/A	N/A	0.38
	Perchlorate	255	ug/L	255	ug/L	M	1.6E-02	mg/kg/day	0.0005	mg/kg/day	N/A	N/A	33
	Tetrachloroethene	0.4	ug/L	0.4	ug/L	M	2.6E-05	mg/kg/day	0.01	mg/kg/day	N/A	N/A	0.0026
	Trichloroethene	29	ug/L	29	ug/L	M	1.9E-03	mg/kg/day	0.006	mg/kg/day	N/A	N/A	0.31
	(Total)												35
Dermal	Hexavalent Chromium	0.041	mg/L	0.041	mg/L	M	8.6E-06	mg/kg/day	0.001	mg/kg/day	N/A	N/A	0.0086
	Lead	0.0016	mg/L	0.0016	mg/L	M	N/A	mg/kg/day	N/A	N/A	N/A	N/A	N/A
	Nitrate	9.6	mg/L	9.6	mg/L	M	1.0E-03	mg/kg/day	0.32	mg/kg/day	N/A	N/A	0.0032
	Perchlorate	255	ug/L	255	ug/L	M	2.7E-05	mg/kg/day	0.0001	mg/kg/day	N/A	N/A	0.27
	(Total)												0.28
												Total Hazard Index Across All Exposure Routes/Pathways	36

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
M = Medium-specific EPC selected for hazard calculation
mg/kg/day = milligrams per kilogram per day
mg/L = milligrams per liter
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-108 (RAGS Part D, TABLE 7.24.RME)
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 13

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 13—Water Vapor
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inhalation	1,1-Dichloroethene	0.96	ug/L	0.96	ug/L	R	3.1E-04	mg/kg/day	0.009	mg/kg/day	N/A	N/A	0.034
	1,2-Dichloroethane	1.1	ug/L	1.1	ug/L	R	3.5E-04	mg/kg/day	0.0029	mg/kg/day	N/A	N/A	0.12
	Carbon Tetrachloride	16	ug/L	16	ug/L	R	5.1E-03	mg/kg/day	0.00057	mg/kg/day	N/A	N/A	9.0
	Chloroform	11	ug/L	11	ug/L	R	3.5E-03	mg/kg/day	0.01	mg/kg/day	N/A	N/A	0.35
	Tetrachloroethene	0.40	ug/L	0.4	ug/L	R	1.3E-04	mg/kg/day	0.11	mg/kg/day	N/A	N/A	0.0012
	Trichloroethene	29	ug/L	29	ug/L	R	9.3E-03	mg/kg/day	0.006	mg/kg/day	N/A	N/A	1.5
	(Total)												11
												Total Hazard Index Across All Exposure Routes/Pathways	11

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
mg/kg/day = milligrams per kilogram per day
N/A = Not applicable
R =Route-specific EPC selected for hazard calculation
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-109 (RAGS Part D, TABLE 7.25.RME)
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 14

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 14—Tap Water
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Chloroform	0.46	ug/L	0.46	ug/L	M	2.9E-05	mg/kg/day	0.01	mg/kg/day	N/A	N/A	0.0029
	Lead	0.0032	mg/L	0.0032	mg/L	M	N/A	mg/kg/day	N/A	N/A	N/A	N/A	N/A
	Nitrate	19	mg/L	19	mg/L	M	1.2E+00	mg/kg/day	1.6	mg/kg/day	N/A	N/A	0.76
	Perchlorate	3.6	ug/L	3.6	ug/L	M	2.3E-04	mg/kg/day	0.0005	mg/kg/day	N/A	N/A	0.46
	Tetrachloroethene	0.79	ug/L	0.79	ug/L	M	5.1E-05	mg/kg/day	0.01	mg/kg/day	N/A	N/A	0.0051
	Trichloroethene	0.46	ug/L	0.46	ug/L	M	2.9E-05	mg/kg/day	0.006	mg/kg/day	N/A	N/A	0.0049
	(Total)												1.2
Dermal	Lead	0.0032	mg/L	0.0032	mg/L	M	N/A	mg/kg/day	N/A	N/A	N/A	N/A	N/A
	Nitrate	19	mg/L	19	mg/L	M	2.0E-03	mg/kg/day	0.32	mg/kg/day	N/A	N/A	0.0063
	Perchlorate	3.6	ug/L	3.6	ug/L	M	3.8E-07	mg/kg/day	0.0001	mg/kg/day	N/A	N/A	0.0038
	(Total)												0.010
												Total Hazard Index Across All Exposure Routes/Pathways	1.2

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
M = Medium-specific EPC selected for hazard calculation
mg/kg/day = milligrams per kilogram per day
mg/L = milligrams per liter
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-110 (RAGS Part D, TABLE 7.26.RME)
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 14

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 14—Water Vapor
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inhalation	Chloroform	0.46	ug/L	0.46	ug/L	R	1.5E-04	mg/kg/day	0.01	mg/kg/day	N/A	N/A	0.015
	Tetrachloroethene	0.79	ug/L	0.79	ug/L	R	2.5E-04	mg/kg/day	0.11	mg/kg/day	N/A	N/A	0.0023
	Trichloroethene	0.46	ug/L	0.46	ug/L	R	1.5E-04	mg/kg/day	0.006	mg/kg/day	N/A	N/A	0.025
	(Total)												0.042
												Total Hazard Index Across All Exposure Routes/Pathways	0.042

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
mg/kg/day = milligrams per kilogram per day
N/A = Not applicable
R =Route-specific EPC selected for hazard calculation
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-111 (RAGS Part D, TABLE 7.27.RME)
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 15

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 15—Tap Water
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Nitrate (Total)	4.4	mg/L	4.4	mg/L	M	2.8E-01	mg/kg/day	1.6	mg/kg/day	N/A	N/A	0.18
													0.18
Dermal	Nitrate (Total)	4.4	mg/L	4.4	mg/L	M	4.6E-04	mg/kg/day	0.32	mg/kg/day	N/A	N/A	0.0015
													0.0015
												Total Hazard Index Across All Exposure Routes/Pathways	0.18

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
M = Medium-specific EPC selected for hazard calculation
mg/kg/day = milligrams per kilogram per day
mg/L = milligrams per liter
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure

Table I-112 (RAGS Part D, TABLE 7.28.RME)
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 15

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 15—Water Vapor
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inhalation	-- (Total)	-- --	--	--	--	--	--	--	--	--	--	--	-- --
												Total Hazard Index Across All Exposure Routes/Pathways	--

Definitions: EPC = exposure point concentration
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure

Table I-113 (RAGS Part D, TABLE 7.29.RME)
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 16

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 16—Tap Water
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	1,1-Dichloroethene	2.6	ug/L	2.6	ug/L	M	1.7E-04	mg/kg/day	0.009	mg/kg/day	N/A	N/A	0.018
	1,2-Dichloroethane	2.1	ug/L	2.1	ug/L	M	1.3E-04	mg/kg/day	0.0029	mg/kg/day	N/A	N/A	0.046
	Carbon Tetrachloride	91	ug/L	91	ug/L	M	5.8E-03	mg/kg/day	0.0007	mg/kg/day	N/A	N/A	8.3
	Chloroform	43	ug/L	43	ug/L	M	2.7E-03	mg/kg/day	0.01	mg/kg/day	N/A	N/A	0.27
	Hexavalent Chromium	0.007	mg/L	0.007	mg/L	M	4.5E-04	mg/kg/day	0.005	mg/kg/day	N/A	N/A	0.089
	Nitrate	18	mg/L	18	mg/L	M	1.2E+00	mg/kg/day	1.6	mg/kg/day	N/A	N/A	0.72
	Perchlorate	1230	ug/L	1230	ug/L	M	7.9E-02	mg/kg/day	0.0005	mg/kg/day	N/A	N/A	160
	Tetrachloroethene	1.3	ug/L	1.3	ug/L	M	8.3E-05	mg/kg/day	0.01	mg/kg/day	N/A	N/A	0.0083
	Trichloroethene	25	ug/L	25	ug/L	M	1.6E-03	mg/kg/day	0.006	mg/kg/day	N/A	N/A	0.27
	(Total)												170
Dermal	Hexavalent Chromium	0.007	mg/L	0.007	mg/L	M	1.5E-06	mg/kg/day	0.001	mg/kg/day	N/A	N/A	0.0015
	Nitrate	18	mg/L	18	mg/L	M	1.9E-03	mg/kg/day	0.32	mg/kg/day	N/A	N/A	0.0059
	Perchlorate	1230	ug/L	1230	ug/L	M	1.3E-04	mg/kg/day	0.0001	mg/kg/day	N/A	N/A	1.3
	(Total)												1.3
												Total Hazard Index Across All Exposure Routes/Pathways	170

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
M = Medium-specific EPC selected for hazard calculation
mg/kg/day = milligrams per kilogram per day
mg/L = milligrams per liter
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-114 (RAGS Part D, TABLE 7.30.RME)
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 16

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 16—Water Vapor
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inhalation	1,1-Dichloroethene	2.6	ug/L	2.6	ug/L	R	8.3E-04	mg/kg/day	0.009	mg/kg/day	N/A	N/A	0.092
	1,2-Dichloroethane	2.1	ug/L	2.1	ug/L	R	6.7E-04	mg/kg/day	0.0029	mg/kg/day	N/A	N/A	0.23
	Carbon Tetrachloride	91	ug/L	91	ug/L	R	2.9E-02	mg/kg/day	0.00057	mg/kg/day	N/A	N/A	51
	Chloroform	43	ug/L	43	ug/L	R	1.4E-02	mg/kg/day	0.01	mg/kg/day	N/A	N/A	1.4
	Tetrachloroethene	1.3	ug/L	1.3	ug/L	R	4.2E-04	mg/kg/day	0.11	mg/kg/day	N/A	N/A	0.0038
	Trichloroethene	25	ug/L	25	ug/L	R	8.0E-03	mg/kg/day	0.006	mg/kg/day	N/A	N/A	1.3
	(Total)												54
												Total Hazard Index Across All Exposure Routes/Pathways	54

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
mg/kg/day = milligrams per kilogram per day
N/A = Not applicable
R =Route-specific EPC selected for hazard calculation
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-115 (RAGS Part D, TABLE 7.31.RME)
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 17

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 17—Tap Water
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Bromodichloromethane	0.44	ug/L	0.44	ug/L	M	2.8E-05	mg/kg/day	0.02	mg/kg/day	N/A	N/A	0.0014
	Carbon Tetrachloride	1.6	ug/L	1.6	ug/L	M	1.0E-04	mg/kg/day	0.0007	mg/kg/day	N/A	N/A	0.15
	Chloroform	7.6	ug/L	7.6	ug/L	M	4.9E-04	mg/kg/day	0.01	mg/kg/day	N/A	N/A	0.049
	Hexavalent Chromium	0.0033	mg/L	0.0033	mg/L	M	2.1E-04	mg/kg/day	0.005	mg/kg/day	N/A	N/A	0.042
	Lead	0.0012	mg/L	0.0012	mg/L	M	N/A	mg/kg/day	N/A	N/A	N/A	N/A	N/A
	Nitrate	2.3	mg/L	2.3	mg/L	M	1.5E-01	mg/kg/day	1.6	mg/kg/day	N/A	N/A	0.092
	Perchlorate	36	ug/L	36	ug/L	M	2.3E-03	mg/kg/day	0.0005	mg/kg/day	N/A	N/A	4.6
	Tetrachloroethene	0.57	ug/L	0.57	ug/L	M	3.6E-05	mg/kg/day	0.01	mg/kg/day	N/A	N/A	0.0036
	Trichloroethene	23	ug/L	23	ug/L	M	1.5E-03	mg/kg/day	0.006	mg/kg/day	N/A	N/A	0.25
	(Total)												5.2
Dermal	Hexavalent Chromium	0.0033	mg/L	0.0033	mg/L	M	7.0E-07	mg/kg/day	0.001	mg/kg/day	N/A	N/A	0.0007
	Lead	0.0012	mg/L	0.0012	mg/L	M	N/A	mg/kg/day	N/A	N/A	N/A	N/A	N/A
	Nitrate	2.3	mg/L	2.3	mg/L	M	2.4E-04	mg/kg/day	0.32	mg/kg/day	N/A	N/A	0.00076
	Perchlorate	36	ug/L	36	ug/L	M	3.8E-06	mg/kg/day	0.0001	mg/kg/day	N/A	N/A	0.038
	(Total)												0.040
												Total Hazard Index Across All Exposure Routes/Pathways	5.3

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
M = Medium-specific EPC selected for hazard calculation
mg/kg/day = milligrams per kilogram per day
mg/L = milligrams per liter
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-116 (RAGS Part D, TABLE 7.32.RME)
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 17

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 17—Water Vapor
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inhalation	Bromodichloromethane	0.44	ug/L	0.44	ug/L	R	1.4E-04	mg/kg/day	0.02	mg/kg/day	N/A	N/A	0.0070
	Carbon Tetrachloride	1.6	ug/L	1.6	ug/L	R	5.1E-04	mg/kg/day	0.00057	mg/kg/day	N/A	N/A	0.90
	Chloroform	7.6	ug/L	7.6	ug/L	R	2.4E-03	mg/kg/day	0.01	mg/kg/day	N/A	N/A	0.24
	Tetrachloroethene	0.57	ug/L	0.57	ug/L	R	1.8E-04	mg/kg/day	0.11	mg/kg/day	N/A	N/A	0.0017
	Trichloroethene	23	ug/L	23	ug/L	R	7.4E-03	mg/kg/day	0.006	mg/kg/day	N/A	N/A	1.2
	(Total)												2.4
												Total Hazard Index Across All Exposure Routes/Pathways	2.4

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
mg/kg/day = milligrams per kilogram per day
N/A = Not applicable
R =Route-specific EPC selected for hazard calculation
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-117 (RAGS Part D, TABLE 7.33.RME)
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 18

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 18—Tap Water
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Arsenic	0.0028	mg/L	0.0028	mg/L	M	1.8E-04	mg/kg/day	0.0003	mg/kg/day	N/A	N/A	0.60
	Bromodichloromethane	0.41	ug/L	0.41	ug/L	M	2.6E-05	mg/kg/day	0.02	mg/kg/day	N/A	N/A	0.0013
	Carbon Tetrachloride	1.3	ug/L	1.3	ug/L	M	8.3E-05	mg/kg/day	0.0007	mg/kg/day	N/A	N/A	0.12
	Chloroform	6.6	ug/L	6.6	ug/L	M	4.2E-04	mg/kg/day	0.01	mg/kg/day	N/A	N/A	0.042
	Hexavalent Chromium	0.003	mg/L	0.003	mg/L	M	1.9E-04	mg/kg/day	0.005	mg/kg/day	N/A	N/A	0.038
	Nitrate	3.8	mg/L	3.8	mg/L	M	2.4E-01	mg/kg/day	1.6	mg/kg/day	N/A	N/A	0.15
	Perchlorate	6.8	ug/L	6.8	ug/L	M	4.3E-04	mg/kg/day	0.0005	mg/kg/day	N/A	N/A	0.87
	Tetrachloroethene	1.5	ug/L	1.5	ug/L	M	9.6E-05	mg/kg/day	0.01	mg/kg/day	N/A	N/A	0.0096
	Trichloroethene	1.7	ug/L	1.7	ug/L	M	1.1E-04	mg/kg/day	0.006	mg/kg/day	N/A	N/A	0.018
	(Total)												1.8
Dermal	Arsenic	0.0028	mg/L	0.0028	mg/L	M	3.0E-07	mg/kg/day	0.00006	mg/kg/day	N/A	N/A	0.0049
	Hexavalent Chromium	0.003	mg/L	0.003	mg/L	M	6.3E-07	mg/kg/day	0.001	mg/kg/day	N/A	N/A	0.00063
	Nitrate	3.8	mg/L	3.8	mg/L	M	4.0E-04	mg/kg/day	0.32	mg/kg/day	N/A	N/A	0.0013
	Perchlorate	6.8	ug/L	6.8	ug/L	M	7.2E-07	mg/kg/day	0.0001	mg/kg/day	N/A	N/A	0.0072
	(Total)												0.014
												Total Hazard Index Across All Exposure Routes/Pathways	1.9

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
M = Medium-specific EPC selected for hazard calculation
mg/kg/day = milligrams per kilogram per day
mg/L = milligrams per liter
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-118 (RAGS Part D, TABLE 7.34.RME)
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 18

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 18—Water Vapor
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inhalation	Bromodichloromethane	0.41	ug/L	0.41	ug/L	R	1.3E-04	mg/kg/day	0.02	mg/kg/day	N/A	N/A	0.0066
	Carbon Tetrachloride	1.3	ug/L	1.3	ug/L	R	4.2E-04	mg/kg/day	0.00057	mg/kg/day	N/A	N/A	0.73
	Chloroform	6.6	ug/L	6.6	ug/L	R	2.1E-03	mg/kg/day	0.01	mg/kg/day	N/A	N/A	0.21
	Tetrachloroethene	1.5	ug/L	1.5	ug/L	R	4.8E-04	mg/kg/day	0.11	mg/kg/day	N/A	N/A	0.0044
	Trichloroethene	1.7	ug/L	1.7	ug/L	R	5.4E-04	mg/kg/day	0.006	mg/kg/day	N/A	N/A	0.091
	(Total)												1.0
												Total Hazard Index Across All Exposure Routes/Pathways	1.0

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
mg/kg/day = milligrams per kilogram per day
N/A = Not applicable
R =Route-specific EPC selected for hazard calculation
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-119 (RAGS Part D, TABLE 7.35.RME)
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 19

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 19—Tap Water
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Bromodichloromethane	0.28	ug/L	0.28	ug/L	M	1.8E-05	mg/kg/day	0.02	mg/kg/day	N/A	N/A	0.00089
	Chloroform	1.2	ug/L	1.2	ug/L	M	7.7E-05	mg/kg/day	0.01	mg/kg/day	N/A	N/A	0.0077
	Lead	0.0012	mg/L	0.0012	mg/L	M	N/A	mg/kg/day	N/A	N/A	N/A	N/A	N/A
	Nitrate	11	mg/L	11	mg/L	M	7.0E-01	mg/kg/day	1.6	mg/kg/day	N/A	N/A	0.44
	Perchlorate	2.7	ug/L	2.7	ug/L	M	1.7E-04	mg/kg/day	0.0005	mg/kg/day	N/A	N/A	0.35
	Tetrachloroethene	1.8	ug/L	1.8	ug/L	M	1.2E-04	mg/kg/day	0.01	mg/kg/day	N/A	N/A	0.012
	Trichloroethene	0.46	ug/L	0.46	ug/L	M	2.9E-05	mg/kg/day	0.006	mg/kg/day	N/A	N/A	0.0049
	(Total)												0.81
Dermal	Lead	0.0012	mg/L	0.0012	mg/L	M	N/A	mg/kg/day	N/A	N/A	N/A	N/A	N/A
	Nitrate	11	mg/L	11	mg/L	M	1.2E-03	mg/kg/day	0.32	mg/kg/day	N/A	N/A	0.0036
	Perchlorate	2.7	ug/L	2.7	ug/L	M	2.8E-07	mg/kg/day	0.0001	mg/kg/day	N/A	N/A	0.0028
	(Total)												0.0065
												Total Hazard Index Across All Exposure Routes/Pathways	0.82

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
M = Medium-specific EPC selected for hazard calculation
mg/kg/day = milligrams per kilogram per day
mg/L = milligrams per liter
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-120 (RAGS Part D, TABLE 7.36.RME)
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 19

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 19—Water Vapor
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inhalation	Bromodichloromethane	0.28	ug/L	0.28	ug/L	R	8.9E-05	mg/kg/day	0.02	mg/kg/day	N/A	N/A	0.0045
	Chloroform	1.2	ug/L	1.2	ug/L	R	3.8E-04	mg/kg/day	0.01	mg/kg/day	N/A	N/A	0.038
	Tetrachloroethene	1.8	ug/L	1.8	ug/L	R	5.8E-04	mg/kg/day	0.11	mg/kg/day	N/A	N/A	0.0052
	Trichloroethene	0.46	ug/L	0.46	ug/L	R	1.5E-04	mg/kg/day	0.006	mg/kg/day	N/A	N/A	0.025
	(Total)												0.073
												Total Hazard Index Across All Exposure Routes/Pathways	0.073

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
mg/kg/day = milligrams per kilogram per day
N/A = Not applicable
R =Route-specific EPC selected for hazard calculation
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-121 (RAGS Part D, TABLE 7.37.RME)
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 20

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 20—Tap Water
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Arsenic	0.0029	mg/L	0.0029	mg/L	M	1.9E-04	mg/kg/day	0.0003	mg/kg/day	N/A	N/A	0.62
	Bromodichloromethane	0.28	ug/L	0.28	ug/L	M	1.8E-05	mg/kg/day	0.02	mg/kg/day	N/A	N/A	0.00089
	Chloroform	2.2	ug/L	2.2	ug/L	M	1.4E-04	mg/kg/day	0.01	mg/kg/day	N/A	N/A	0.014
	Lead	0.0013	mg/L	0.0013	mg/L	M	N/A	mg/kg/day	N/A	N/A	N/A	N/A	N/A
	Nitrate	15	mg/L	15	mg/L	M	9.6E-01	mg/kg/day	1.6	mg/kg/day	N/A	N/A	0.60
	Perchlorate	3.2	ug/L	3.2	ug/L	M	2.0E-04	mg/kg/day	0.0005	mg/kg/day	N/A	N/A	0.41
	(Total)												1.6
Dermal	Arsenic	0.0029	mg/L	0.0029	mg/L	M	3.1E-07	mg/kg/day	0.00006	mg/kg/day	N/A	N/A	0.0051
	Lead	0.0013	mg/L	0.0013	mg/L	M	N/A	mg/kg/day	N/A	N/A	N/A	N/A	N/A
	Nitrate	15	mg/L	15	mg/L	M	1.6E-03	mg/kg/day	0.32	mg/kg/day	N/A	N/A	0.0049
	Perchlorate	3.2	ug/L	3.2	ug/L	M	3.4E-07	mg/kg/day	0.0001	mg/kg/day	N/A	N/A	0.0034
	(Total)												0.013
												Total Hazard Index Across All Exposure Routes/Pathways	1.7

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
M = Medium-specific EPC selected for hazard calculation
mg/kg/day = milligrams per kilogram per day
mg/L = milligrams per liter
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-122 (RAGS Part D, TABLE 7.38.RME)
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 20

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 20—Water Vapor
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inhalation	Bromodichloromethane	0.28	ug/L	0.28	ug/L	R	8.9E-05	mg/kg/day	0.02	mg/kg/day	N/A	N/A	0.0045
	Chloroform	2.2	ug/L	2.2	ug/L	R	7.0E-04	mg/kg/day	0.01	mg/kg/day	N/A	N/A	0.070
	(Total)												0.075
												Total Hazard Index Across All Exposure Routes/Pathways	0.075

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
mg/kg/day = milligrams per kilogram per day
N/A = Not applicable
R =Route-specific EPC selected for hazard calculation
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-123 (RAGS Part D, TABLE 7.39.RME)
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 21

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 21—Tap Water
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Chloroform	0.68	ug/L	0.68	ug/L	M	4.3E-05	mg/kg/day	0.01	mg/kg/day	N/A	N/A	0.0043
	Lead	0.0016	mg/L	0.0016	mg/L	M	N/A	mg/kg/day	N/A	N/A	N/A	N/A	N/A
	Nitrate	17	mg/L	17	mg/L	M	1.1E+00	mg/kg/day	1.6	mg/kg/day	N/A	N/A	0.68
	Perchlorate	8.1	ug/L	8.1	ug/L	M	5.2E-04	mg/kg/day	0.0005	mg/kg/day	N/A	N/A	1.0
	Tetrachloroethene	3.7	ug/L	3.7	ug/L	M	2.4E-04	mg/kg/day	0.01	mg/kg/day	N/A	N/A	0.024
	Trichloroethene	9.0	ug/L	9.0	ug/L	M	5.8E-04	mg/kg/day	0.006	mg/kg/day	N/A	N/A	0.096
	(Total)												1.8
Dermal	Lead	0.0016	mg/L	0.0016	mg/L	M	N/A	mg/kg/day	N/A	N/A	N/A	N/A	N/A
	Nitrate	17	mg/L	17	mg/L	M	1.8E-03	mg/kg/day	0.32	mg/kg/day	N/A	N/A	0.0056
	Perchlorate	8.1	ug/L	8.1	ug/L	M	8.5E-07	mg/kg/day	0.0001	mg/kg/day	N/A	N/A	0.0085
	(Total)												0.014
												Total Hazard Index Across All Exposure Routes/Pathways	1.9

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
M = Medium-specific EPC selected for hazard calculation
mg/kg/day = milligrams per kilogram per day
mg/L = milligrams per liter
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-124 (RAGS Part D, TABLE 7.40.RME)
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 21

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 21—Water Vapor
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inhalation	Chloroform	0.68	ug/L	0.68	ug/L	R	2.2E-04	mg/kg/day	0.01	mg/kg/day	N/A	N/A	0.022
	Tetrachloroethene	3.7	ug/L	3.7	ug/L	R	1.2E-03	mg/kg/day	0.11	mg/kg/day	N/A	N/A	0.011
	Trichloroethene	9.0	ug/L	9.0	ug/L	R	2.9E-03	mg/kg/day	0.006	mg/kg/day	N/A	N/A	0.48
	(Total)												0.51
												Total Hazard Index Across All Exposure Routes/Pathways	0.51

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
mg/kg/day = milligrams per kilogram per day
N/A = Not applicable
R =Route-specific EPC selected for hazard calculation
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-125 (RAGS Part D, TABLE 7.41.RME)
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 22

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 22—Tap Water
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Nitrate	11	mg/L	11	mg/L	M	7.0E-01	mg/kg/day	1.6	mg/kg/day	N/A	N/A	0.44
	Perchlorate	5.0	ug/L	5.0	ug/L	M	3.2E-04	mg/kg/day	0.0005	mg/kg/day	N/A	N/A	0.64
	Tetrachloroethene	1.4	ug/L	1.4	ug/L	M	8.9E-05	mg/kg/day	0.01	mg/kg/day	N/A	N/A	0.0089
	(Total)												1.1
Dermal	Nitrate	11	mg/L	11	mg/L	M	1.2E-03	mg/kg/day	0.32	mg/kg/day	N/A	N/A	0.0036
	Perchlorate	5.0	ug/L	5.0	ug/L	M	5.3E-07	mg/kg/day	0.0001	mg/kg/day	N/A	N/A	0.0053
	(Total)												0.0089
												Total Hazard Index Across All Exposure Routes/Pathways	1.1

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
M = Medium-specific EPC selected for hazard calculation
mg/kg/day = milligrams per kilogram per day
mg/L = milligrams per liter
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-126 (RAGS Part D, TABLE 7.42.RME)
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 22

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 22—Water Vapor
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inhalation	Tetrachloroethene	1.4	ug/L	1.4	ug/L	R	4.5E-04	mg/kg/day	0.11	mg/kg/day	N/A	N/A	0.0041
	(Total)												0.0041
												Total Hazard Index Across All Exposure Routes/Pathways	0.0041

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
mg/kg/day = milligrams per kilogram per day
N/A = Not applicable
R = Route-specific EPC selected for hazard calculation
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-127 (RAGS Part D, TABLE 7.43.RME)
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 23

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 23—Tap Water
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Chloroform	0.52	ug/L	0.52	ug/L	M	3.3E-05	mg/kg/day	0.01	mg/kg/day	N/A	N/A	0.0033
	Nitrate	15	mg/L	15	mg/L	M	9.6E-01	mg/kg/day	1.6	mg/kg/day	N/A	N/A	0.60
	Perchlorate	5.6	ug/L	5.6	ug/L	M	3.6E-04	mg/kg/day	0.0005	mg/kg/day	N/A	N/A	0.72
	Tetrachloroethene	0.65	ug/L	0.65	ug/L	M	4.2E-05	mg/kg/day	0.01	mg/kg/day	N/A	N/A	0.0042
	Trichloroethene	2.9	ug/L	2.9	ug/L	M	1.9E-04	mg/kg/day	0.006	mg/kg/day	N/A	N/A	0.031
	(Total)												1.4
Dermal	Nitrate	15	mg/L	15	mg/L	M	1.6E-03	mg/kg/day	0.32	mg/kg/day	N/A	N/A	0.0049
	Perchlorate	5.6	ug/L	5.6	ug/L	M	5.9E-07	mg/kg/day	0.0001	mg/kg/day	N/A	N/A	0.0059
	(Total)												0.011
												Total Hazard Index Across All Exposure Routes/Pathways	1.4

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
M = Medium-specific EPC selected for hazard calculation.
mg/kg/day = milligrams per kilogram per day
mg/L = milligrams per liter
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-128 (RAGS Part D, TABLE 7.44.RME)
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 23

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 23—Water Vapor
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inhalation	Chloroform	0.52	ug/L	0.52	ug/L	R	1.7E-04	mg/kg/day	0.01	mg/kg/day	N/A	N/A	0.017
	Tetrachloroethene	0.65	ug/L	0.65	ug/L	R	2.1E-04	mg/kg/day	0.11	mg/kg/day	N/A	N/A	0.0019
	Trichloroethene	2.9	ug/L	2.9	ug/L	R	9.3E-04	mg/kg/day	0.006	mg/kg/day	N/A	N/A	0.15
	(Total)												0.17
												Total Hazard Index Across All Exposure Routes/Pathways	0.17

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
mg/kg/day = milligrams per kilogram per day
N/A = Not applicable
R =Route-specific EPC selected for hazard calculation.
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-129 (RAGS Part D, TABLE 7.45.RME)
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 24

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 24—Tap Water
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	1,2-Dichloroethane	0.39	ug/L	0.39	ug/L	M	2.5E-05	mg/kg/day	0.0029	mg/kg/day	N/A	N/A	0.0086
	Arsenic	0.0034	mg/L	0.0034	mg/L	M	2.2E-04	mg/kg/day	0.0003	mg/kg/day	N/A	N/A	0.72
	Carbon Tetrachloride	30	ug/L	30	ug/L	M	1.9E-03	mg/kg/day	0.0007	mg/kg/day	N/A	N/A	2.7
	Chloroform	15	ug/L	15	ug/L	M	9.6E-04	mg/kg/day	0.01	mg/kg/day	N/A	N/A	0.096
	Nitrate	3.4	mg/L	3.4	mg/L	M	2.2E-01	mg/kg/day	1.6	mg/kg/day	N/A	N/A	0.14
	Perchlorate	330	ug/L	330	ug/L	M	2.1E-02	mg/kg/day	0.0005	mg/kg/day	N/A	N/A	42
	Tetrachloroethene	0.32	ug/L	0.32	ug/L	M	2.0E-05	mg/kg/day	0.01	mg/kg/day	N/A	N/A	0.0020
	Trichloroethene	15	ug/L	15	ug/L	M	9.6E-04	mg/kg/day	0.006	mg/kg/day	N/A	N/A	0.16
	(Total)												46
Dermal	Arsenic	0.0034	mg/L	0.0034	mg/L	M	3.6E-07	mg/kg/day	0.00006	mg/kg/day	N/A	N/A	0.0060
	Nitrate	3.4	mg/L	3.4	mg/L	M	3.6E-04	mg/kg/day	0.32	mg/kg/day	N/A	N/A	0.0011
	Perchlorate	330	ug/L	330	ug/L	M	3.5E-05	mg/kg/day	0.0001	mg/kg/day	N/A	N/A	0.35
	(Total)												0.36
												Total Hazard Index Across All Exposure Routes/Pathways	46

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
M = Medium-specific EPC selected for hazard calculation
mg/kg/day = milligrams per kilogram per day
mg/L = milligrams per liter
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-130 (RAGS Part D, TABLE 7.46.RME)
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 24

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 24—Water Vapor
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inhalation	1,2-Dichloroethane	0.39	ug/L	0.39	ug/L	R	1.2E-04	mg/kg/day	0.0029	mg/kg/day	N/A	N/A	0.043
	Carbon Tetrachloride	30	ug/L	30	ug/L	R	9.6E-03	mg/kg/day	0.00057	mg/kg/day	N/A	N/A	17
	Chloroform	15	ug/L	15	ug/L	R	4.8E-03	mg/kg/day	0.01	mg/kg/day	N/A	N/A	0.48
	Tetrachloroethene	0.32	ug/L	0.32	ug/L	R	1.0E-04	mg/kg/day	0.11	mg/kg/day	N/A	N/A	0.00093
	Trichloroethene	15	ug/L	15	ug/L	R	4.8E-03	mg/kg/day	0.006	mg/kg/day	N/A	N/A	0.80
	(Total)												18
												Total Hazard Index Across All Exposure Routes/Pathways	18

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
mg/kg/day = milligrams per kilogram per day
N/A = Not applicable
R =Route-specific EPC selected for hazard calculation.
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-131 (RAGS Part D, TABLE 7.47.RME)
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—La Canada Well #1

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: La Canada Well #1—Tap Water
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Tetrachloroethene	0.6	ug/L	0.6	ug/L	M	3.8E-05	mg/kg/day	0.01	mg/kg/day	N/A	N/A	0.0038
	(Total)												0.0038
Dermal	--	-- --	--	--	--	--	--	--	--	--	--	--	--
	(Total)												--
												Total Hazard Index Across All Exposure Routes/Pathways	0.0038

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
M = Medium-specific EPC selected for hazard calculation
mg/kg/day = milligrams per kilogram per day
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure

Table I-132 (RAGS Part D, TABLE 7.48.RME)
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—La Canada Well #1

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: La Canada Well #1—Water Vapor
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inhalation	Tetrachloroethene	0.6	ug/L	0.6	ug/L	R	1.9E-04	mg/kg/day	0.11	mg/kg/day	N/A	N/A	0.0017
	(Total)												0.0017
												Total Hazard Index Across All Exposure Routes/Pathways	0.0017

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
mg/kg/day = milligrams per kilogram per day
N/A = Not applicable
R =Route-specific EPC selected for hazard calculation
RAGS = Risk Assessment Guidance for Superfund

Table I-133 (RAGS Part D, TABLE 7.49.RME)
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Las Flores Well #2

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Las Flores Well #2—Tap Water
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Arsenic	2.4	ug/L	2.4	ug/L	M	1.5E-04	mg/kg/day	0.0003	mg/kg/day	N/A	N/A	0.51
	Perchlorate	6.1	ug/L	6.1	ug/L	M	3.9E-04	mg/kg/day	0.0005	mg/kg/day	N/A	N/A	0.78
	Tetrachloroethene	4.8	ug/L	4.8	ug/L	M	3.1E-04	mg/kg/day	0.01	mg/kg/day	N/A	N/A	0.031
	(Total)												1.3
Dermal	Arsenic	2.4	ug/L	2.4	ug/L	M	2.5E-07	mg/kg/day	0.00006	mg/kg/day	N/A	N/A	0.0042
	Perchlorate	6.1	ug/L	6.1	ug/L	M	6.4E-07	mg/kg/day	0.0001	mg/kg/day	N/A	N/A	0.0064
	(Total)												0.011
												Total Hazard Index Across All Exposure Routes/Pathways	1.3

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
M = Medium-specific EPC selected for hazard calculation
mg/kg/day = milligrams per kilogram per day
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-134 (RAGS Part D, TABLE 7.50.RME)
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Las Flores Well #2

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Las Flores Well #2—Water Vapor
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inhalation	Tetrachloroethene	4.8	ug/L	4.8	ug/L	R	1.5E-03	mg/kg/day	0.11	mg/kg/day	N/A	N/A	0.014
	(Total)												0.014
												Total Hazard Index Across All Exposure Routes/Pathways	0.014

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
mg/kg/day = milligrams per kilogram per day
N/A = Not applicable
R =Route-specific EPC selected for hazard calculation
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-135 (RAGS Part D, TABLE 7.51.RME)
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Lincoln Ave. Well #3

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Lincoln Ave. Well #3—Tap Water
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Carbon Tetrachloride	1.1	ug/L	1.1	ug/L	M	7.0E-05	mg/kg/day	0.0007	mg/kg/day	N/A	N/A	0.10
	Perchlorate	14	ug/L	14	ug/L	M	8.9E-04	mg/kg/day	0.0005	mg/kg/day	N/A	N/A	1.8
	Tetrachloroethene	1.1	ug/L	1.1	ug/L	M	7.0E-05	mg/kg/day	0.01	mg/kg/day	N/A	N/A	0.0070
	Trichloroethene	16	ug/L	16	ug/L	M	1.0E-03	mg/kg/day	0.006	mg/kg/day	N/A	N/A	0.17
	(Total)												2.1
Dermal	Perchlorate	14	ug/L	14	ug/L	M	1.5E-06	mg/kg/day	0.0001	mg/kg/day	N/A	N/A	0.015
	(Total)												0.015
												Total Hazard Index Across All Exposure Routes/Pathways	2.1

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
M = Medium-specific EPC selected for hazard calculation
mg/kg/day = milligrams per kilogram per day
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-136 (RAGS Part D, TABLE 7.52.RME)
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Lincoln Ave. Well #3

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Lincoln Ave. Well #3—Water Vapor
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inhalation	Carbon Tetrachloride	1.1	ug/L	1.1	ug/L	R	3.5E-04	mg/kg/day	0.00057	mg/kg/day	N/A	N/A	0.62
	Tetrachloroethene	1.1	ug/L	1.1	ug/L	R	3.5E-04	mg/kg/day	0.11	mg/kg/day	N/A	N/A	0.0032
	Trichloroethene	16	ug/L	16	ug/L	R	5.1E-03	mg/kg/day	0.006	mg/kg/day	N/A	N/A	0.85
	(Total)												1.5
												Total Hazard Index Across All Exposure Routes/Pathways	1.5

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
mg/kg/day = milligrams per kilogram per day
N/A = Not applicable
R = Route-specific EPC selected for hazard calculation
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-137 (RAGS Part D, TABLE 7.53.RME)
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Lincoln Ave. Well #5

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Lincoln Ave. Well #5—Tap Water
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Perchlorate	7.0	ug/L	7.0	ug/L	M	4.5E-04	mg/kg/day	0.0005	mg/kg/day	N/A	N/A	0.89
	Tetrachloroethene	0.7	ug/L	0.7	ug/L	M	4.5E-05	mg/kg/day	0.01	mg/kg/day	N/A	N/A	0.0045
	Trichloroethene	13	ug/L	13	ug/L	M	8.3E-04	mg/kg/day	0.006	mg/kg/day	N/A	N/A	0.14
	(Total)												1.0
Dermal	Perchlorate	7.0	ug/L	7.0	ug/L	M	7.4E-07	mg/kg/day	0.0001	mg/kg/day	N/A	N/A	0.0074
	(Total)												0.0074
												Total Hazard Index Across All Exposure Routes/Pathways	1.0

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
M = Medium-specific EPC selected for hazard calculation
mg/kg/day = milligrams per kilogram per day
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-138 (RAGS Part D, TABLE 7.54.RME)
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Lincoln Ave. Well #5

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Lincoln Ave. Well #5—Water Vapor
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inhalation	Tetrachloroethene	0.7	ug/L	0.7	ug/L	R	2.2E-04	mg/kg/day	0.11	mg/kg/day	N/A	N/A	0.0020
	Trichloroethene	13	ug/L	13	ug/L	R	4.2E-03	mg/kg/day	0.006	mg/kg/day	N/A	N/A	0.69
	(Total)												0.69
												Total Hazard Index Across All Exposure Routes/Pathways	0.69

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
mg/kg/day = milligrams per kilogram per day
N/A = Not applicable
R = Route-specific EPC selected for hazard calculation
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-139 (RAGS Part D, TABLE 7.55.RME)
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Pasadena Arroyo Well

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Pasadena Arroyo Well—Tap Water
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Carbon Tetrachloride	4.7	ug/L	4.7	ug/L	M	3.0E-04	mg/kg/day	0.0007	mg/kg/day	N/A	N/A	0.43
	Perchlorate	130	ug/L	130	ug/L	M	8.3E-03	mg/kg/day	0.0005	mg/kg/day	N/A	N/A	17
	Tetrachloroethene	0.89	ug/L	0.89	ug/L	M	5.7E-05	mg/kg/day	0.01	mg/kg/day	N/A	N/A	0.0057
	Trichloroethene	3.4	ug/L	3.4	ug/L	M	2.2E-04	mg/kg/day	0.006	mg/kg/day	N/A	N/A	0.036
	(Total)												17
Dermal	Perchlorate	130	ug/L	130	ug/L	M	1.4E-05	mg/kg/day	0.0001	mg/kg/day	N/A	N/A	0.14
	(Total)												0.14
												Total Hazard Index Across All Exposure Routes/Pathways	17

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
M = Medium-specific EPC selected for hazard calculation
mg/kg/day = milligrams per kilogram per day
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-140 (RAGS Part D, TABLE 7.56.RME)
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Pasadena Arroyo Well

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Pasadena Arroyo Well—Water Vapor
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inhalation	Carbon Tetrachloride	4.7	ug/L	4.7	ug/L	R	1.5E-03	mg/kg/day	0.00057	mg/kg/day	N/A	N/A	2.6
	Tetrachloroethene	0.89	ug/L	0.89	ug/L	R	2.8E-04	mg/kg/day	0.11	mg/kg/day	N/A	N/A	0.0026
	Trichloroethene	3.4	ug/L	3.4	ug/L	R	1.1E-03	mg/kg/day	0.006	mg/kg/day	N/A	N/A	0.18
	(Total)												2.8
												Total Hazard Index Across All Exposure Routes/Pathways	2.8

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
mg/kg/day = milligrams per kilogram per day
N/A = Not applicable
R =Route-specific EPC selected for hazard calculation
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-141 (RAGS Part D, TABLE 7.57.RME)
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Pasadena Ventura Well

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Pasadena Ventura Well—Tap Water
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Perchlorate	4.9	ug/L	4.9	ug/L	M	3.1E-04	mg/kg/day	0.0005	mg/kg/day	N/A	N/A	0.63
	Tetrachloroethene	0.7	ug/L	0.7	ug/L	M	4.5E-05	mg/kg/day	0.01	mg/kg/day	N/A	N/A	0.0045
	Trichloroethene	1.1	ug/L	1.1	ug/L	M	7.0E-05	mg/kg/day	0.006	mg/kg/day	N/A	N/A	0.012
	(Total)												0.64
Dermal	Perchlorate	4.9	ug/L	4.9	ug/L	M	5.2E-07	mg/kg/day	0.0001	mg/kg/day	N/A	N/A	0.0052
	(Total)												0.0052
										Total Hazard Index Across All Exposure Routes/Pathways			0.65

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
M = Medium-specific EPC selected for hazard calculation
mg/kg/day = milligrams per kilogram per day
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-142 (RAGS Part D, TABLE 7.58.RME)
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Pasadena Ventura Well

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Pasadena Ventura Well—Water Vapor
Receptor Population: Resident
Receptor Age: Child/Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inhalation	Tetrachloroethene	0.7	ug/L	0.7	ug/L	R	2.2E-04	mg/kg/day	0.11	mg/kg/day	N/A	N/A	0.0020
	Trichloroethene	1.1	ug/L	1.1	ug/L	R	3.5E-04	mg/kg/day	0.006	mg/kg/day	N/A	N/A	0.059
	(Total)												0.061
												Total Hazard Index Across All Exposure Routes/Pathways	0.061

Definitions:
1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
mg/kg/day = milligrams per kilogram per day
N/A = Not applicable
R =Route-specific EPC selected for hazard calculation
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-143 (RAGS Part D, TABLE 7.59.RME)
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Pasadena Well 52

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Pasadena Well 52—Tap Water
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Carbon Tetrachloride	1.3	ug/L	1.3	ug/L	M	8.3E-05	mg/kg/day	0.0007	mg/kg/day	N/A	N/A	0.12
	Perchlorate	15	ug/L	15	ug/L	M	9.6E-04	mg/kg/day	0.0005	mg/kg/day	N/A	N/A	1.9
	Trichloroethene	5.2	ug/L	5.2	ug/L	M	3.3E-04	mg/kg/day	0.006	mg/kg/day	N/A	N/A	0.055
	(Total)												2.1
Dermal	Perchlorate	15	ug/L	15	ug/L	M	1.6E-06	mg/kg/day	0.0001	mg/kg/day	N/A	N/A	0.016
	(Total)												0.016
												Total Hazard Index Across All Exposure Routes/Pathways	2.1

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
M = Medium-specific EPC selected for hazard calculation
mg/kg/day = milligrams per kilogram per day
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-144 (RAGS Part D, TABLE 7.60.RME)
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Pasadena Well 52

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Pasadena Well 52—Water Vapor
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inhalation	Carbon Tetrachloride	1.3	ug/L	1.3	ug/L	R	4.2E-04	mg/kg/day	0.00057	mg/kg/day	N/A	N/A	0.73
	Trichloroethene	5.2	ug/L	5.2	ug/L	R	1.7E-03	mg/kg/day	0.006	mg/kg/day	N/A	N/A	0.28
	(Total)												1.0
												Total Hazard Index Across All Exposure Routes/Pathways	1.0

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
mg/kg/day = milligrams per kilogram per day
N/A = Not applicable
R =Route-specific EPC selected for hazard calculation
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-145 (RAGS Part D, TABLE 7.61.RME)
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Pasadena Windsor Well

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Pasadena Windsor Well—Tap Water
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Tetrachloroethene	1.1	ug/L	1.1	ug/L	M	7.0E-05	mg/kg/day	0.01	mg/kg/day	N/A	N/A	0.007
	Trichloroethene	1.2	ug/L	1.2	ug/L	M	7.7E-05	mg/kg/day	0.006	mg/kg/day	N/A	N/A	0.013
	(Total)												0.020
Dermal	--	-- --	--	--	--	--	--	--	--	--	--	--	--
	(Total)												--
												Total Hazard Index Across All Exposure Routes/Pathways	0.020

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
M = Medium-specific EPC selected for hazard calculation
mg/kg/day = milligrams per kilogram per day
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-146 (RAGS Part D, TABLE 7.62.RME)
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Pasadena Windsor Well

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Pasadena Windsor Well—Water Vapor
Receptor Population: Resident
Receptor Age: Child/Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inhalation	Tetrachloroethene	1.1	ug/L	1.1	ug/L	R	3.5E-04	mg/kg/day	0.11	mg/kg/day	N/A	N/A	0.0032
	Trichloroethene	1.2	ug/L	1.2	ug/L	R	3.8E-04	mg/kg/day	0.006	mg/kg/day	N/A	N/A	0.064
	(Total)												0.067
												Total Hazard Index Across All Exposure Routes/Pathways	0.067

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
mg/kg/day = milligrams per kilogram per day
N/A = Not applicable
R =Route-specific EPC selected for hazard calculation
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-147 (RAGS Part D, TABLE 7.63.RME)
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Rubio Cañon #4

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Rubio Cañon #4—Tap Water
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Perchlorate	5.5	ug/L	5.5	ug/L	M	3.5E-04	mg/kg/day	0.0005	mg/kg/day	N/A	N/A	0.70
	(Total)												0.70
Dermal	Perchlorate	5.5	ug/L	5.5	ug/L	M	5.8E-07	mg/kg/day	0.0001	mg/kg/day	N/A	N/A	0.0058
	(Total)												0.0058
												Total Hazard Index Across All Exposure Routes/Pathways	0.71

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
M = Medium-specific EPC selected for hazard calculation
mg/kg/day = milligrams per kilogram per day
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-148 (RAGS Part D, TABLE 7.64.RME)
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Rubio Cañon #4

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Rubio Cañon #4—Water Vapor
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inhalation	-- (Total)	--	--	--	--	--	--	--	--	--	--	--	--
													--
												Total Hazard Index Across All Exposure Routes/Pathways	--

Definitions: EPC = exposure point concentration
RAGS - Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure

Table I-149 (RAGS Part D, TABLE 7.65.RME)
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Rubio Cañon Well #7

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Rubio Cañon Well #7—Tap Water
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Perchlorate (Total)	3.2	ug/L	3.2	ug/L	M	2.0E-04	mg/kg/day	0.0005	mg/kg/day	N/A	N/A	0.41
													0.41
Dermal	Perchlorate (Total)	3.2	ug/L	3.2	ug/L	M	3.4E-07	mg/kg/day	0.0001	mg/kg/day	N/A	N/A	0.0034
													0.0034
												Total Hazard Index Across All Exposure Routes/Pathways	0.41

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
M = Medium-specific EPC selected for hazard calculation
mg/kg/day = milligrams per kilogram per day
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-150 (RAGS Part D, TABLE 7.66.RME)
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Rubio Cañon Well #7

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Rubio Cañon Well #7—Water Vapor
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inhalation	-- (Total)	-- --	--	--	--	--	--	--	--	--	--	--	-- --
												Total Hazard Index Across All Exposure Routes/Pathways	--

Definitions: EPC = exposure point concentration
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure

Table I-151 (RAGS Part D, TABLE 7.67.RME)
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Valley Well #1

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Valley Well #1—Tap Water
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Arsenic	1.9	ug/L	1.9	ug/L	M	1.2E-04	mg/kg/day	0.0003	mg/kg/day	N/A	N/A	0.40
	Perchlorate	3.9	ug/L	3.9	ug/L	M	2.5E-04	mg/kg/day	0.0005	mg/kg/day	N/A	N/A	0.50
	Tetrachloroethene	38	ug/L	38	ug/L	M	2.4E-03	mg/kg/day	0.01	mg/kg/day	N/A	N/A	0.24
	Trichloroethene	3.5	ug/L	3.5	ug/L	M	2.2E-04	mg/kg/day	0.006	mg/kg/day	N/A	N/A	0.037
	(Total)												1.2
Dermal	Arsenic	1.9	ug/L	1.9	ug/L	M	2.0E-07	mg/kg/day	0.00006	mg/kg/day	N/A	N/A	0.0033
	Perchlorate	3.9	ug/L	3.9	ug/L	M	4.1E-07	mg/kg/day	0.0001	mg/kg/day	N/A	N/A	0.0041
	(Total)												0.0075
												Total Hazard Index Across All Exposure Routes/Pathways	1.2

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
M = Medium-specific EPC selected for hazard calculation
mg/kg/day = milligrams per kilogram per day
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-152 (RAGS Part D, TABLE 7.68.RME)
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Valley Well #1

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Valley Well #1—Water Vapor
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inhalation	Tetrachloroethene	38	ug/L	38	ug/L	R	1.2E-02	mg/kg/day	0.11	mg/kg/day	N/A	N/A	0.11
	Trichloroethene	3.5	ug/L	3.5	ug/L	R	1.1E-03	mg/kg/day	0.006	mg/kg/day	N/A	N/A	0.19
	(Total)												0.30
												Total Hazard Index Across All Exposure Routes/Pathways	0.30

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
mg/kg/day = milligrams per kilogram per day
N/A = Not applicable
R =Route-specific EPC selected for hazard calculation
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-153 (RAGS Part D, TABLE 7.69.RME)
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Valley Well #2

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Valley Well #2—Tap Water
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Arsenic	2.0	ug/L	2.0	ug/L	M	1.3E-04	mg/kg/day	0.0003	mg/kg/day	N/A	N/A	0.43
	Perchlorate	4.0	ug/L	4.0	ug/L	M	2.6E-04	mg/kg/day	0.0005	mg/kg/day	N/A	N/A	0.51
	Tetrachloroethene	9.1	ug/L	9.1	ug/L	M	5.8E-04	mg/kg/day	0.01	mg/kg/day	N/A	N/A	0.058
	Trichloroethene	1.0	ug/L	1.0	ug/L	M	6.4E-05	mg/kg/day	0.006	mg/kg/day	N/A	N/A	0.011
	(Total)												1.0
Dermal	Arsenic	2.0	ug/L	2.0	ug/L	M	2.1E-07	mg/kg/day	0.00006	mg/kg/day	N/A	N/A	0.0035
	Perchlorate	4.0	ug/L	4.0	ug/L	M	4.2E-07	mg/kg/day	0.0001	mg/kg/day	N/A	N/A	0.0042
	(Total)												0.0077
												Total Hazard Index Across All Exposure Routes/Pathways	1.0

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
M = Medium-specific EPC selected for hazard calculation
mg/kg/day = milligrams per kilogram per day
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-154 (RAGS Part D, TABLE 7.70.RME)
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Valley Well #2

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Valley Well #2—Water Vapor
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inhalation	Tetrachloroethene	9.1	ug/L	9.1	ug/L	R	2.9E-03	mg/kg/day	0.11	mg/kg/day	N/A	N/A	0.026
	Trichloroethene	1.0	ug/L	1.0	ug/L	R	3.2E-04	mg/kg/day	0.006	mg/kg/day	N/A	N/A	0.053
	(Total)												0.080
												Total Hazard Index Across All Exposure Routes/Pathways	0.080

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
mg/kg/day = milligrams per kilogram per day
N/A = Not applicable
R =Route-specific EPC selected for hazard calculation
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-155 (RAGS Part D, TABLE 7.71.RME)
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Valley Well #3

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Valley Well #3—Tap Water
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Arsenic	1.5	ug/L	1.5	ug/L	M	9.6E-05	mg/kg/day	0.0003	mg/kg/day	N/A	N/A	0.32
	Perchlorate	4.4	ug/L	4.4	ug/L	M	2.8E-04	mg/kg/day	0.0005	mg/kg/day	N/A	N/A	0.56
	Tetrachloroethene	1.1	ug/L	1.1	ug/L	M	7.0E-05	mg/kg/day	0.01	mg/kg/day	N/A	N/A	0.0070
	(Total)												0.89
Dermal	Arsenic	1.5	ug/L	1.5	ug/L	M	1.6E-07	mg/kg/day	0.00006	mg/kg/day	N/A	N/A	0.0026
	Perchlorate	4.4	ug/L	4.4	ug/L	M	4.6E-07	mg/kg/day	0.0001	mg/kg/day	N/A	N/A	0.0046
	(Total)												0.0073
												Total Hazard Index Across All Exposure Routes/Pathways	0.90

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
M = Medium-specific EPC selected for hazard calculation
mg/kg/day = milligrams per kilogram per day
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-156 (RAGS Part D, TABLE 7.72.RME)
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Valley Well #3

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Valley Well #3—Water Vapor
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inhalation	Tetrachloroethene	1.1	ug/L	1.1	ug/L	R	3.5E-04	mg/kg/day	0.11	mg/kg/day	N/A	N/A	0.0032
	(Total)												0.0032
												Total Hazard Index Across All Exposure Routes/Pathways	0.0032

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
mg/kg/day = milligrams per kilogram per day
N/A = Not applicable
R =Route-specific EPC selected for hazard calculation
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-157 (RAGS Part D, TABLE 7.73.RME)
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Valley Well #4

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Valley Well #4—Tap Water
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Arsenic	1.9	ug/L	1.9	ug/L	M	1.2E-04	mg/kg/day	0.0003	mg/kg/day	N/A	N/A	0.40
	Perchlorate	3.9	ug/L	3.9	ug/L	M	2.5E-04	mg/kg/day	0.0005	mg/kg/day	N/A	N/A	0.50
	Tetrachloroethene	23	ug/L	23	ug/L	M	1.4E-03	mg/kg/day	0.01	mg/kg/day	N/A	N/A	0.14
	Trichloroethene	2.6	ug/L	2.6	ug/L	M	1.7E-04	mg/kg/day	0.006	mg/kg/day	N/A	N/A	0.028
	(Total)												1.1
Dermal	Arsenic	1.9	ug/L	1.9	ug/L	M	2.0E-07	mg/kg/day	0.00006	mg/kg/day	N/A	N/A	0.0033
	Perchlorate	3.9	ug/L	3.9	ug/L	M	4.1E-07	mg/kg/day	0.0001	mg/kg/day	N/A	N/A	0.0041
	(Total)												0.0075
												Total Hazard Index Across All Exposure Routes/Pathways	1.1

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
M = Medium-specific EPC selected for hazard calculation
mg/kg/day = milligrams per kilogram per day
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-158 (RAGS Part D, TABLE 7.74.RME)
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Valley Well #4

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Valley Well #4—Water Vapor
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inhalation	Tetrachloroethene	23	ug/L	23	ug/L	R	7.2E-03	mg/kg/day	0.11	mg/kg/day	N/A	N/A	0.066
	Trichloroethene	2.6	ug/L	2.6	ug/L	R	8.3E-04	mg/kg/day	0.006	mg/kg/day	N/A	N/A	0.14
	(Total)												0.20
												Total Hazard Index Across All Exposure Routes/Pathways	0.20

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
mg/kg/day = milligrams per kilogram per day
N/A = Not applicable
R =Route-specific EPC selected for hazard calculation
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-159 (RAGS Part D, TABLE 8.1.RME)
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 01

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 01—Tap Water
Receptor Population: Resident
Receptor Age: Child/Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Nitrate (Total)	1.5	mg/L	1.5	mg/L	M	2.2E-02	mg/kg/day	N/A	N/A	N/A
											--
Dermal	Nitrate (Total)	1.5	mg/L	1.5	mg/L	M	4.5E-05	mg/kg/day	N/A	N/A	N/A
											--
										Total Risk Across All Exposure Routes/Pathways	--

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
M = Medium-specific EPC selected for risk calculation
mg/kg/day = milligrams per kilogram per day
mg/L = milligrams per liter
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure

Table I-160 (RAGS Part D, TABLE 8.2.RME)
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 01

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 01—Water Vapor
Receptor Population: Resident
Receptor Age: Child/Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Inhalation	-- (Total)	--	--	--	--	--	--	--	--	--	--
											--
										Total Risk Across All Exposure Routes/Pathways	--

Definitions: EPC = exposure point concentration
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure

Table I-161 (RAGS Part D, TABLE 8.3.RME)
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 03

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 03—Tap Water
Receptor Population: Resident
Receptor Age: Child/Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Arsenic	0.0041	mg/L	0.0041	mg/L	M	6.1E-05	mg/kg/day	1.5	(mg/kg/day)-1	9.1E-05
	Bromodichloromethane	0.3	ug/L	0.3	ug/L	M	4.5E-06	mg/kg/day	0.13	(mg/kg/day)-1	5.8E-07
	Carbon Tetrachloride	0.49	ug/L	0.49	ug/L	M	7.3E-06	mg/kg/day	0.15	(mg/kg/day)-1	1.1E-06
	Chloroform	1.3	ug/L	1.3	ug/L	M	1.9E-05	mg/kg/day	0.031	(mg/kg/day)-1	6.0E-07
	Lead	0.0015	mg/L	0.0015	mg/L	M	N/A	mg/kg/day	N/A	N/A	N/A
	Nitrate	1.1	mg/L	1.1	mg/L	M	1.6E-02	mg/kg/day	N/A	N/A	N/A
	Perchlorate	6.4	ug/L	6.4	ug/L	M	9.5E-05	mg/kg/day	N/A	N/A	N/A
	Tetrachloroethene	0.29	ug/L	0.29	ug/L	M	4.3E-06	mg/kg/day	0.051	(mg/kg/day)-1	2.2E-07
	Trichloroethene	0.32	ug/L	0.32	ug/L	M	4.8E-06	mg/kg/day	0.015	(mg/kg/day)-1	7.1E-08
	(Total)										9.4E-05
Dermal	Arsenic	0.0041	mg/L	0.0041	mg/L	M	1.2E-07	mg/kg/day	7.5	(mg/kg/day)-1	9.3E-07
	Lead	0.0015	mg/L	0.0015	mg/L	M	N/A	mg/kg/day	N/A	N/A	N/A
	Nitrate	1.1	mg/L	1.1	mg/L	M	3.3E-05	mg/kg/day	N/A	N/A	N/A
	Perchlorate	6.4	ug/L	6.4	ug/L	M	1.9E-07	mg/kg/day	N/A	N/A	N/A
	(Total)										9.3E-07
										Total Risk Across All Exposure Routes/Pathways	9.5E-05

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
M = Medium-specific EPC selected for risk calculation
mg/kg/day = milligrams per kilogram per day
mg/L = milligrams per liter
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-162 (RAGS Part D, TABLE 8.4.RME)
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 03

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 03—Water Vapor
Receptor Population: Resident
Receptor Age: Child/Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Inhalation	Bromodichloromethane	0.3	ug/L	0.3	ug/L	R	2.2E-05	mg/kg/day	0.13	(mg/kg/day)-1	2.9E-06
	Carbon Tetrachloride	0.49	ug/L	0.49	ug/L	R	3.6E-05	mg/kg/day	0.15	(mg/kg/day)-1	5.5E-06
	Chloroform	1.3	ug/L	1.3	ug/L	R	9.7E-05	mg/kg/day	0.019	(mg/kg/day)-1	1.8E-06
	Tetrachloroethene	0.29	ug/L	0.29	ug/L	R	2.2E-05	mg/kg/day	0.021	(mg/kg/day)-1	4.5E-07
	Trichloroethene	0.32	ug/L	0.32	ug/L	R	2.4E-05	mg/kg/day	0.01	(mg/kg/day)-1	2.4E-07
	(Total)										1.1E-05
										Total Risk Across All Exposure Routes/Pathways	1.1E-05

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
mg/kg/day = milligrams per kilogram per day
R = Route-specific EPC selected for risk calculation
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-163 (RAGS Part D, TABLE 8.5.RME)
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 04

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 04—Tap Water
Receptor Population: Resident
Receptor Age: Child/Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	1,1-Dichloroethene	0.39	ug/L	0.39	ug/L	M	5.8E-06	mg/kg/day	0.6	(mg/kg/day)-1	3.5E-06
	1,2-Dichloroethene	0.33	ug/L	0.33	ug/L	M	4.9E-06	mg/kg/day	0.07	(mg/kg/day)-1	3.4E-07
	Carbon Tetrachloride	3.7	ug/L	3.7	ug/L	M	5.5E-05	mg/kg/day	0.15	(mg/kg/day)-1	8.3E-06
	Chloroform	3.2	ug/L	3.2	ug/L	M	4.8E-05	mg/kg/day	0.031	(mg/kg/day)-1	1.5E-06
	Nitrate	8.2	mg/L	8.2	mg/L	M	1.2E-01	mg/kg/day	N/A	N/A	N/A
	Perchlorate	38	ug/L	38	ug/L	M	5.7E-04	mg/kg/day	N/A	N/A	N/A
	Tetrachloroethene	0.29	ug/L	0.29	ug/L	M	4.3E-06	mg/kg/day	0.051	(mg/kg/day)-1	2.2E-07
	Trichloroethene	10	ug/L	10	ug/L	M	1.5E-04	mg/kg/day	0.015	(mg/kg/day)-1	2.2E-06
	(Total)										1.6E-05
Dermal	Nitrate	8.2	mg/L	8.2	mg/L	M	2.5E-04	mg/kg/day	N/A	N/A	N/A
	Perchlorate	38	ug/L	38	ug/L	M	1.1E-06	mg/kg/day	N/A	N/A	N/A
	(Total)										N/A
										Total Risk Across All Exposure Routes/Pathways	1.6E-05

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
M = Medium-specific EPC selected for risk calculation
mg/kg/day = milligrams per kilogram per day
mg/L = milligrams per liter
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-164 (RAGS Part D, TABLE 8.6.RME)
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 04

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 04—Water Vapor
Receptor Population: Resident
Receptor Age: Child/Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Inhalation	1,1-Dichloroethene	0.39	ug/L	0.39	ug/L	R	2.9E-05	mg/kg/day	0.18	(mg/kg/day)-1	5.2E-06
	1,2-Dichloroethane	0.33	ug/L	0.33	ug/L	R	2.5E-05	mg/kg/day	0.07	(mg/kg/day)-1	1.7E-06
	Carbon Tetrachloride	3.7	ug/L	3.7	ug/L	R	2.8E-04	mg/kg/day	0.15	(mg/kg/day)-1	4.1E-05
	Chloroform	3.2	ug/L	3.2	ug/L	R	2.4E-04	mg/kg/day	0.019	(mg/kg/day)-1	4.5E-06
	Tetrachloroethene	0.29	ug/L	0.29	ug/L	R	2.2E-05	mg/kg/day	0.021	(mg/kg/day)-1	4.5E-07
	Trichloroethene	10	ug/L	10	ug/L	R	7.4E-04	mg/kg/day	0.01	(mg/kg/day)-1	7.4E-06
	(Total)										6.1E-05
										Total Risk Across All Exposure Routes/Pathways	6.1E-05

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
mg/kg/day = milligrams per kilogram per day
R = Route-specific EPC selected for risk calculation
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-165 (RAGS Part D, TABLE 8.7.RME)
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 05

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 05—Tap Water
Receptor Population: Resident
Receptor Age: Child/Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Nitrate	2.4	mg/L	2.4	mg/L	M	3.6E-02	mg/kg/day	N/A	N/A	N/A
	Perchlorate	4.2	ug/L	4.2	ug/L	M	6.2E-05	mg/kg/day	N/A	N/A	N/A
	(Total)										N/A
Dermal	Nitrate	2.4	mg/L	2.4	mg/L	M	7.2E-05	mg/kg/day	N/A	N/A	N/A
	Perchlorate	4.2	ug/L	4.2	ug/L	M	1.3E-07	mg/kg/day	N/A	N/A	N/A
	(Total)										N/A
								Total Risk Across All Exposure Routes/Pathways			N/A

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
M = Medium-specific EPC selected for risk calculation
mg/kg/day = milligrams per kilogram per day
mg/L = milligrams per liter
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-166 (RAGS Part D, TABLE 8.8.RME)
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 05

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 05—Water Vapor
Receptor Population: Resident
Receptor Age: Child/Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Inhalation	-- (Total)	--	--	--	--	--	--	--	--	-- --	-- --
										Total Risk Across All Exposure Routes/Pathways	--

Definitions: EPC = exposure point concentration
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure

Table I-167 (RAGS Part D, TABLE 8.9.RME)
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 06

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 06—Tap Water
Receptor Population: Resident
Receptor Age: Child/Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Nitrate	11	mg/L	11	mg/L	M	1.6E-01	mg/kg/day	N/A	N/A	N/A
	Perchlorate	5.5	ug/L	5.5	ug/L	M	8.2E-05	mg/kg/day	N/A	N/A	N/A
	Tetrachloroethene	2.0	ug/L	2.0	ug/L	M	3.0E-05	mg/kg/day	0.051	(mg/kg/day)-1	1.5E-06
	(Total)										1.5E-06
Dermal	Nitrate	11	mg/L	11	mg/L	M	3.3E-04	mg/kg/day	N/A	N/A	N/A
	Perchlorate	5.5	ug/L	5.5	ug/L	M	1.7E-07	mg/kg/day	N/A	N/A	N/A
	(Total)										N/A
										Total Risk Across All Exposure Routes/Pathways	1.5E-06

Definitions:
1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
M = Medium-specific EPC selected for risk calculation
mg/kg/day = milligrams per kilogram per day
mg/L = milligrams per liter
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-168 (RAGS Part D, TABLE 8.10.RME)
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 06

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 06—Water Vapor
Receptor Population: Resident
Receptor Age: Child/Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Inhalation	Tetrachloroethene	2.0	ug/L	2.0	ug/L	R	1.5E-04	mg/kg/day	0.021	(mg/kg/day)-1	3.1E-06
	(Total)										3.1E-06
										Total Risk Across All Exposure Routes/Pathways	3.1E-06

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
mg/kg/day = milligrams per kilogram per day
R = Route-specific EPC selected for risk calculation
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-169 (RAGS Part D, TABLE 8.11.RME)
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 07

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 07—Tap Water
Receptor Population: Resident
Receptor Age: Child/Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	1,1-Dichloroethene	2.1	ug/L	2.1	ug/L	M	3.1E-05	mg/kg/day	0.6	(mg/kg/day)-1	1.9E-05
	1,2-Dichloroethene	0.89	ug/L	0.89	ug/L	M	1.3E-05	mg/kg/day	0.07	(mg/kg/day)-1	9.3E-07
	Carbon Tetrachloride	150	ug/L	150	ug/L	M	2.2E-03	mg/kg/day	0.15	(mg/kg/day)-1	3.3E-04
	Chloroform	13	ug/L	13	ug/L	M	1.9E-04	mg/kg/day	0.031	(mg/kg/day)-1	6.0E-06
	Hexavalent Chromium	0.01	mg/L	0.01	mg/L	M	1.5E-04	mg/kg/day	0.42	(mg/kg/day)-1	6.2E-05
	Nitrate	6.5	mg/L	6.5	mg/L	M	9.7E-02	mg/kg/day	N/A	N/A	N/A
	Perchlorate	720	ug/L	720	ug/L	M	1.1E-02	mg/kg/day	N/A	N/A	N/A
	Tetrachloroethene	3.7	ug/L	3.7	ug/L	M	5.5E-05	mg/kg/day	0.051	(mg/kg/day)-1	2.8E-06
	Trichloroethene	27	ug/L	27	ug/L	M	4.0E-04	mg/kg/day	0.015	(mg/kg/day)-1	6.0E-06
	(Total)										4.3E-04
Dermal	Hexavalent Chromium	0.01	mg/L	0.01	mg/L	M	6.0E-07	mg/kg/day	2.1	(mg/kg/day)-1	1.3E-06
	Nitrate	6.5	mg/L	6.5	mg/L	M	2.0E-04	mg/kg/day	N/A	N/A	N/A
	Perchlorate	720	ug/L	720	ug/L	M	2.2E-05	mg/kg/day	N/A	N/A	N/A
	(Total)										1.3E-06
										Total Risk Across All Exposure Routes/Pathways	4.3E-04

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
M = Medium-specific EPC selected for risk calculation
mg/kg/day = milligrams per kilogram per day
mg/L = milligrams per liter
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-170 (RAGS Part D, TABLE 8.12.RME)
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 07

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 07—Water Vapor
Receptor Population: Resident
Receptor Age: Child/Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Inhalation	1,1-Dichloroethene	2.1	ug/L	2.1	ug/L	R	1.6E-04	mg/kg/day	0.18	(mg/kg/day)-1	2.8E-05
	1,2-Dichloroethane	0.89	ug/L	0.89	ug/L	R	6.6E-05	mg/kg/day	0.07	(mg/kg/day)-1	4.6E-06
	Carbon Tetrachloride	150	ug/L	150	ug/L	R	1.1E-02	mg/kg/day	0.15	(mg/kg/day)-1	1.7E-03
	Chloroform	13	ug/L	13	ug/L	R	9.7E-04	mg/kg/day	0.019	(mg/kg/day)-1	1.8E-05
	Tetrachloroethene	3.7	ug/L	3.7	ug/L	R	2.8E-04	mg/kg/day	0.021	(mg/kg/day)-1	5.8E-06
	Trichloroethene	27	ug/L	27	ug/L	R	2.0E-03	mg/kg/day	0.01	(mg/kg/day)-1	2.0E-05
	(Total)										1.8E-03
										Total Risk Across All Exposure Routes/Pathways	1.8E-03

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
mg/kg/day = milligrams per kilogram per day
R = Route-specific EPC selected for risk calculation
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-171 (RAGS Part D, TABLE 8.13.RME)
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 08

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 08—Tap Water
Receptor Population: Resident
Receptor Age: Child/Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Carbon Tetrachloride	3.2	ug/L	3.2	ug/L	M	4.8E-05	mg/kg/day	0.15	(mg/kg/day)-1	7.1E-06
	Chloroform	1.3	ug/L	1.3	ug/L	M	1.9E-05	mg/kg/day	0.031	(mg/kg/day)-1	6.0E-07
	Lead	0.0023	mg/L	0.0023	mg/L	M	N/A	mg/kg/day	N/A	N/A	N/A
	Nitrate	3.7	mg/L	3.7	mg/L	M	5.5E-02	mg/kg/day	N/A	N/A	N/A
	Perchlorate	29	ug/L	29	ug/L	M	4.3E-04	mg/kg/day	N/A	N/A	N/A
	Trichloroethene	4.5	ug/L	4.5	ug/L	M	6.7E-05	mg/kg/day	0.015	(mg/kg/day)-1	1.0E-06
	(Total)										8.7E-06
Dermal	Lead	0.0023	mg/L	0.0023	mg/L	M	N/A	mg/kg/day	N/A	N/A	N/A
	Nitrate	3.7	mg/L	3.7	mg/L	M	1.1E-04	mg/kg/day	N/A	N/A	N/A
	Perchlorate	29	ug/L	29	ug/L	M	8.8E-07	mg/kg/day	N/A	N/A	N/A
	(Total)										N/A
										Total Risk Across All Exposure Routes/Pathways	8.7E-06

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
M = Medium-specific EPC selected for risk calculation
mg/kg/day = milligrams per kilogram per day
mg/L = milligrams per liter
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-172 (RAGS Part D, TABLE 8.14.RME)
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 08

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 08—Water Vapor
Receptor Population: Resident
Receptor Age: Child/Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Inhalation	Carbon Tetrachloride	3.2	ug/L	3.2	ug/L	R	2.4E-04	mg/kg/day	0.15	(mg/kg/day)-1	3.6E-05
	Chloroform	1.3	ug/L	1.3	ug/L	R	9.7E-05	mg/kg/day	0.019	(mg/kg/day)-1	1.8E-06
	Trichloroethene	4.5	ug/L	4.5	ug/L	R	3.3E-04	mg/kg/day	0.01	(mg/kg/day)-1	3.3E-06
	(Total)										4.1E-05
										Total Risk Across All Exposure Routes/Pathways	4.1E-05

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
mg/kg/day = milligrams per kilogram per day
R = Route-specific EPC selected for risk calculation
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-173 (RAGS Part D, TABLE 8.15.RME)
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 09

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 09—Tap Water
Receptor Population: Resident
Receptor Age: Child/Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Nitrate (Total)	5.5	mg/L	5.5	mg/L	M	8.2E-02	mg/kg/day	N/A	N/A	N/A
											N/A
Dermal	Nitrate (Total)	5.5	mg/L	5.5	mg/L	M	1.7E-04	mg/kg/day	N/A	N/A	N/A
											N/A
										Total Risk Across All Exposure Routes/Pathways	N/A

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
M = Medium-specific EPC selected for risk calculation
mg/kg/day = milligrams per kilogram per day
mg/L = milligrams per liter
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure

Table I-174 (RAGS Part D, TABLE 8.16.RME)
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 09

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 09—Water Vapor
Receptor Population: Resident
Receptor Age: Child/Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Inhalation	-- (Total)	--	--	--	--	--	--	--	--	--	--
											--
										Total Risk Across All Exposure Routes/Pathways	--

Definitions: EPC = exposure point concentration
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure

Table I-175 (RAGS Part D, TABLE 8.17.RME)
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 10

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 10—Tap Water
Receptor Population: Resident
Receptor Age: Child/Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Chloroform	1.4	ug/L	1.4	ug/L	M	2.1E-05	mg/kg/day	0.031	(mg/kg/day)-1	6.5E-07
	Nitrate	18	mg/L	18	mg/L	M	2.7E-01	mg/kg/day	N/A	N/A	N/A
	Perchlorate	16	ug/L	16	ug/L	M	2.4E-04	mg/kg/day	N/A	N/A	N/A
	Tetrachloroethene	2.2	ug/L	2.2	ug/L	M	3.3E-05	mg/kg/day	0.051	(mg/kg/day)-1	1.7E-06
	Trichloroethene	5.2	ug/L	5.2	ug/L	M	7.7E-05	mg/kg/day	0 015	(mg/kg/day)-1	1.2E-06
	(Total)										3.5E-06
Dermal	Nitrate	18	mg/L	18	mg/L	M	5.4E-04	mg/kg/day	N/A	N/A	N/A
	Perchlorate	16	ug/L	16	ug/L	M	4.8E-07	mg/kg/day	N/A	N/A	N/A
	(Total)										N/A
										Total Risk Across All Exposure Routes/Pathways	3.5E-06

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
M = Medium-specific EPC selected for risk calculation
mg/kg/day = milligrams per kilogram per day
mg/L = milligrams per liter
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-176 (RAGS Part D, TABLE 8.18.RME)
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 10

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 10—Water Vapor
Receptor Population: Resident
Receptor Age: Child/Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Inhalation	Chloroform	1.4	ug/L	1.4	ug/L	R	1.0E-04	mg/kg/day	0.019	(mg/kg/day)-1	2.0E-06
	Tetrachloroethene	2.2	ug/L	2.2	ug/L	R	1.6E-04	mg/kg/day	0.021	(mg/kg/day)-1	3.4E-06
	Trichloroethene	5.2	ug/L	5.2	ug/L	R	3.9E-04	mg/kg/day	0.01	(mg/kg/day)-1	3.9E-06
	(Total)										9.3E-06
										Total Risk Across All Exposure Routes/Pathways	9.3E-06

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
mg/kg/day = milligrams per kilogram per day
R = Route-specific EPC selected for risk calculation
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-177 (RAGS Part D, TABLE 8.19.RME)
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 11

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 11—Tap Water
Receptor Population: Resident
Receptor Age: Child/Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Carbon Tetrachloride	0.69	ug/L	0.69	ug/L	M	1.0E-05	mg/kg/day	0.15	(mg/kg/day)-1	1.5E-06
	Chloroform	0.85	ug/L	0.85	ug/L	M	1.3E-05	mg/kg/day	0.031	(mg/kg/day)-1	3.9E-07
	Lead	0.0017	mg/L	0.0017	mg/L	M	N/A	mg/kg/day	N/A	N/A	N/A
	Nitrate	0.63	mg/L	0.63	mg/L	M	9.4E-03	mg/kg/day	N/A	N/A	N/A
	(Total)										1.9E-06
Dermal	Lead	0.0017	mg/L	0.0017	mg/L	M	N/A	mg/kg/day	N/A	N/A	N/A
	Nitrate	0.63	mg/L	0.63	mg/L	M	1.9E-05	mg/kg/day	N/A	N/A	N/A
	(Total)										N/A
								Total Risk Across All Exposure Routes/Pathways			1.9E-06

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
M = Medium-specific EPC selected for risk calculation
mg/kg/day = milligrams per kilogram per day
mg/L = milligrams per liter
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-178 (RAGS Part D, TABLE 8.20.RME)
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 11

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 11—Water Vapor
Receptor Population: Resident
Receptor Age: Child/Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Inhalation	Carbon Tetrachloride	0.69	ug/L	0.69	ug/L	R	5.1E-05	mg/kg/day	0.15	(mg/kg/day)-1	7.7E-06
	Chloroform	0.85	ug/L	0.85	ug/L	R	6.3E-05	mg/kg/day	0.019	(mg/kg/day)-1	1.2E-06
	(Total)										8.9E-06
										Total Risk Across All Exposure Routes/Pathways	8.9E-06

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
mg/kg/day = milligrams per kilogram per day
R = Route-specific EPC selected for risk calculation
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-179 (RAGS Part D, TABLE 8.21.RME)
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 12

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 12—Tap Water
Receptor Population: Resident
Receptor Age: Child/Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Carbon Tetrachloride	12	ug/L	12	ug/L	M	1.8E-04	mg/kg/day	0.15	(mg/kg/day)-1	2.7E-05
	Chloroform	2.0	ug/L	2.0	ug/L	M	3.0E-05	mg/kg/day	0.031	(mg/kg/day)-1	9.2E-07
	Lead	0.0012	mg/L	0.0012	mg/L	M	N/A	mg/kg/day	N/A	N/A	N/A
	Nitrate	1.5	mg/L	1.5	mg/L	M	2.2E-02	mg/kg/day	N/A	N/A	N/A
	Perchlorate	7.0	ug/L	7.0	ug/L	M	1.0E-04	mg/kg/day	N/A	N/A	N/A
	Trichloroethene	0.28	ug/L	0.28	ug/L	M	4.2E-06	mg/kg/day	0.015	(mg/kg/day)-1	6.2E-08
	(Total)										2.8E-05
Dermal	Lead	0.0012	mg/L	0.0012	mg/L	M	N/A	mg/kg/day	N/A	N/A	N/A
	Nitrate	1.5	mg/L	1.5	mg/L	M	4.5E-05	mg/kg/day	N/A	N/A	N/A
	Perchlorate	7.0	ug/L	7.0	ug/L	M	2.1E-07	mg/kg/day	N/A	N/A	N/A
	(Total)										N/A
										Total Risk Across All Exposure Routes/Pathways	2.8E-05

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
M = Medium-specific EPC selected for risk calculation
mg/kg/day = milligrams per kilogram per day
mg/L = milligrams per liter
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-180 (RAGS Part D, TABLE 8.22.RME)
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 12

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 12—Water Vapor
Receptor Population: Resident
Receptor Age: Child/Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Inhalation	Carbon Tetrachloride	12	ug/L	12	ug/L	R	8.9E-04	mg/kg/day	0.15	(mg/kg/day)-1	1.3E-04
	Chloroform	2.0	ug/L	2.0	ug/L	R	1.5E-04	mg/kg/day	0.019	(mg/kg/day)-1	2.8E-06
	Trichloroethene	0.28	ug/L	0.28	ug/L	R	2.1E-05	mg/kg/day	0.01	(mg/kg/day)-1	2.1E-07
	(Total)										1.4E-04
										Total Risk Across All Exposure Routes/Pathways	1.4E-04

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
mg/kg/day = milligrams per kilogram per day
R = Route-specific EPC selected for risk calculation
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-181 (RAGS Part D, TABLE 8.23.RME)
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 13

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 13—Tap Water
Receptor Population: Resident
Receptor Age: Child/Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	1,1-Dichloroethene	0.96	ug/L	0.96	ug/L	M	1.4E-05	mg/kg/day	0.6	(mg/kg/day)-1	8.6E-06
	1,2-Dichloroethene	1.1	ug/L	1.1	ug/L	M	1.6E-05	mg/kg/day	0.07	(mg/kg/day)-1	1.1E-06
	Carbon Tetrachloride	16	ug/L	16	ug/L	M	2.4E-04	mg/kg/day	0.15	(mg/kg/day)-1	3.6E-05
	Chloroform	11	ug/L	11	ug/L	M	1.6E-04	mg/kg/day	0.031	(mg/kg/day)-1	5.1E-06
	Hexavalent Chromium	0.041	mg/L	0.041	mg/L	M	6.1E-04	mg/kg/day	0.42	(mg/kg/day)-1	2.6E-04
	Lead	0.0016	mg/L	0.0016	mg/L	M	N/A	mg/kg/day	N/A	N/A	N/A
	Nitrate	9.6	mg/L	9.6	mg/L	M	1.4E-01	mg/kg/day	N/A	N/A	N/A
	Perchlorate	255	ug/L	255	ug/L	M	3.8E-03	mg/kg/day	N/A	N/A	N/A
	Tetrachloroethene	0.4	ug/L	0.4	ug/L	M	5.9E-06	mg/kg/day	0.051	(mg/kg/day)-1	3.0E-07
	Trichloroethene	29	ug/L	29	ug/L	M	4.3E-04	mg/kg/day	0.015	(mg/kg/day)-1	6.5E-06
	(Total)										3.1E-04
Dermal	Lead	0.0016	mg/L	0.0016	mg/L	M	N/A	mg/kg/day	N/A	N/A	N/A
	Hexavalent Chromium	0.041	mg/L	0.041	mg/L	M	2.5E-06	mg/kg/day	2.1	(mg/kg/day)-1	5.2E-06
	Nitrate	9.6	mg/L	9.6	mg/L	M	2.9E-04	mg/kg/day	N/A	N/A	N/A
	Perchlorate	255	ug/L	255	ug/L	M	7.7E-06	mg/kg/day	N/A	N/A	N/A
	(Total)										5.2E-06
										Total Risk Across All Exposure Routes/Pathways	3.2E-04

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
M = Medium-specific EPC selected for risk calculation
mg/kg/day = milligrams per kilogram per day
mg/L = milligrams per liter
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-182 (RAGS Part D, TABLE 8.24.RME)
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 13

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 13—Water Vapor
Receptor Population: Resident
Receptor Age: Child/Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Inhalation	1,1-Dichloroethene	0.96	ug/L	0.96	ug/L	R	7.1E-05	mg/kg/day	0.18	(mg/kg/day)-1	1.3E-05
	1,2-Dichloroethane	1.1	ug/L	1.1	ug/L	R	8.2E-05	mg/kg/day	0.07	(mg/kg/day)-1	5.7E-06
	Carbon Tetrachloride	16	ug/L	16	ug/L	R	1.2E-03	mg/kg/day	0.15	(mg/kg/day)-1	1.8E-04
	Chloroform	11	ug/L	11	ug/L	R	8.2E-04	mg/kg/day	0.019	(mg/kg/day)-1	1.6E-05
	Tetrachloroethene	0.4	ug/L	0.4	ug/L	R	3.0E-05	mg/kg/day	0.021	(mg/kg/day)-1	6.2E-07
	Trichloroethene	29	ug/L	29	ug/L	R	2.2E-03	mg/kg/day	0.01	(mg/kg/day)-1	2.2E-05
	(Total)										2.3E-04
										Total Risk Across All Exposure Routes/Pathways	2.3E-04

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
mg/kg/day = milligrams per kilogram per day
R = Route-specific EPC selected for risk calculation
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-183 (RAGS Part D, TABLE 8.25.RME)
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 14

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 14—Tap Water
Receptor Population: Resident
Receptor Age: Child/Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Chloroform	0.46	ug/L	0.46	ug/L	M	6.8E-06	mg/kg/day	0.031	(mg/kg/day)-1	2.1E-07
	Lead	0.0032	mg/L	0.0032	mg/L	M	N/A	mg/kg/day	N/A	N/A	N/A
	Nitrate	19	mg/L	19	mg/L	M	2.8E-01	mg/kg/day	N/A	N/A	N/A
	Perchlorate	3.6	ug/L	3.6	ug/L	M	5.4E-05	mg/kg/day	N/A	N/A	N/A
	Tetrachloroethene	0.79	ug/L	0.79	ug/L	M	1.2E-05	mg/kg/day	0.051	(mg/kg/day)-1	6.0E-07
	Trichloroethene	0.46	ug/L	0.46	ug/L	M	6.8E-06	mg/kg/day	0.015	(mg/kg/day)-1	1.0E-07
	(Total)										9.1E-07
Dermal	Lead	0.0032	mg/L	0.0032	mg/L	M	N/A	mg/kg/day	N/A	N/A	N/A
	Nitrate	19	mg/L	19	mg/L	M	5.7E-04	mg/kg/day	N/A	N/A	N/A
	Perchlorate	3.6	ug/L	3.6	ug/L	M	1.1E-07	mg/kg/day	N/A	N/A	N/A
	(Total)										N/A
										Total Risk Across All Exposure Routes/Pathways	9.1E-07

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
M = Medium-specific EPC selected for risk calculation
mg/kg/day = milligrams per kilogram per day
mg/L = milligrams per liter
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-184 (RAGS Part D, TABLE 8.26.RME)
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 14

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 14—Water Vapor
Receptor Population: Resident
Receptor Age: Child/Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Inhalation	Chloroform	0.46	ug/L	0.46	ug/L	R	3.4E-05	mg/kg/day	0.019	(mg/kg/day)-1	6.5E-07
	Tetrachloroethene	0.79	ug/L	0.79	ug/L	R	5.9E-05	mg/kg/day	0.021	(mg/kg/day)-1	1.2E-06
	Trichloroethene	0.46	ug/L	0.46	ug/L	R	3.4E-05	mg/kg/day	0.01	(mg/kg/day)-1	3.4E-07
	(Total)										2.2E-06
										Total Risk Across All Exposure Routes/Pathways	2.2E-06

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
mg/kg/day = milligrams per kilogram per day
R = Route-specific EPC selected for risk calculation
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-185 (RAGS Part D, TABLE 8.27.RME)
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 15

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 15—Tap Water
Receptor Population: Resident
Receptor Age: Child/Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Nitrate (Total)	4.4	mg/L	4.4	mg/L	M	6.5E-02	mg/kg/day	N/A	N/A	N/A
											N/A
Dermal	Nitrate (Total)	4.4	mg/L	4.4	mg/L	M	1.3E-04	mg/kg/day	N/A	N/A	N/A
											N/A
										Total Risk Across All Exposure Routes/Pathways	N/A

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
M = Medium-specific EPC selected for risk calculation
mg/kg/day = milligrams per kilogram per day
mg/L = milligrams per liter
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure

Table I-186 (RAGS Part D, TABLE 8.28.RME)
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 15

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 15—Water Vapor
Receptor Population: Resident
Receptor Age: Child/Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Inhalation	-- (Total)	--	--	--	--	--	--	--	--	-- --	-- --
										Total Risk Across All Exposure Routes/Pathways	--

Definitions: EPC = exposure point concentration
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure

Table I-187 (RAGS Part D, TABLE 8.29.RME)
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 16

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 16—Tap Water
Receptor Population: Resident
Receptor Age: Child/Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	1,1-Dichloroethene	2.6	ug/L	2.6	ug/L	M	3.9E-05	mg/kg/day	0.6	(mg/kg/day)-1	2.3E-05
	1,2-Dichloroethene	2.1	ug/L	2.1	ug/L	M	3.1E-05	mg/kg/day	0.07	(mg/kg/day)-1	2.2E-06
	Carbon Tetrachloride	91	ug/L	91	ug/L	M	1.4E-03	mg/kg/day	0.15	(mg/kg/day)-1	2.0E-04
	Chloroform	43	ug/L	43	ug/L	M	6.4E-04	mg/kg/day	0.031	(mg/kg/day)-1	2.0E-05
	Hexavalent Chromium	0.007	mg/L	0.007	mg/L	M	1.0E-04	mg/kg/day	0.42	(mg/kg/day)-1	4.4E-05
	Nitrate	18	mg/L	18	mg/L	M	2.7E-01	mg/kg/day	N/A	N/A	N/A
	Perchlorate	1230	ug/L	1230	ug/L	M	1.8E-02	mg/kg/day	N/A	N/A	N/A
	Tetrachloroethene	1.3	ug/L	1.3	ug/L	M	1.9E-05	mg/kg/day	0.051	(mg/kg/day)-1	9.9E-07
	Trichloroethene	25	ug/L	25	ug/L	M	3.7E-04	mg/kg/day	0.015	(mg/kg/day)-1	5.6E-06
	(Total)										3.0E-04
Dermal	Hexavalent Chromium	0.007	mg/L	0.007	mg/L	M	4.2E-07	mg/kg/day	2.1	(mg/kg/day)-1	8.9E-07
	Nitrate	18	mg/L	18	mg/L	M	5.4E-04	mg/kg/day	N/A	N/A	N/A
	Perchlorate	1230	ug/L	1230	ug/L	M	3.7E-05	mg/kg/day	N/A	N/A	N/A
	(Total)										8.9E-07
										Total Risk Across All Exposure Routes/Pathways	3.0E-04

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
M = Medium-specific EPC selected for risk calculation
mg/kg/day = milligrams per kilogram per day
mg/L = milligrams per liter
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-188 (RAGS Part D, TABLE 8.30.RME)
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 16

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 16—Water Vapor
Receptor Population: Resident
Receptor Age: Child/Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Inhalation	1,1-Dichloroethene	2.6	ug/L	2.6	ug/L	R	1.9E-04	mg/kg/day	0.18	(mg/kg/day)-1	3.5E-05
	1,2-Dichloroethane	2.1	ug/L	2.1	ug/L	R	1.6E-04	mg/kg/day	0.07	(mg/kg/day)-1	1.1E-05
	Carbon Tetrachloride	91	ug/L	91	ug/L	R	6.8E-03	mg/kg/day	0.15	(mg/kg/day)-1	1.0E-03
	Chloroform	43	ug/L	43	ug/L	R	3.2E-03	mg/kg/day	0.019	(mg/kg/day)-1	6.1E-05
	Tetrachloroethene	1.3	ug/L	1.3	ug/L	R	9.7E-05	mg/kg/day	0.021	(mg/kg/day)-1	2.0E-06
	Trichloroethene	25	ug/L	25	ug/L	R	1.9E-03	mg/kg/day	0.01	(mg/kg/day)-1	1.9E-05
	(Total)										1.1E-03
										Total Risk Across All Exposure Routes/Pathways	1.1E-03

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
mg/kg/day = milligrams per kilogram per day
R = Route-specific EPC selected for risk calculation
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-189 (RAGS Part D, TABLE 8.31.RME)
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 17

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 17—Tap Water
Receptor Population: Resident
Receptor Age: Child/Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Bromodichloromethane	0.44	ug/L	0.44	ug/L	M	6.5E-06	mg/kg/day	0.13	(mg/kg/day)-1	8.5E-07
	Carbon Tetrachloride	1.6	ug/L	1.6	ug/L	M	2.4E-05	mg/kg/day	0.15	(mg/kg/day)-1	3.6E-06
	Chloroform	7.6	ug/L	7.6	ug/L	M	1.1E-04	mg/kg/day	0.031	(mg/kg/day)-1	3.5E-06
	Hexavalent Chromium	0.0033	mg/L	0.0033	mg/L	M	4.9E-05	mg/kg/day	0.42	(mg/kg/day)-1	2.1E-05
	Lead	0.0012	mg/L	0.0012	mg/L	M	N/A	mg/kg/day	N/A	N/A	N/A
	Nitrate	2.3	mg/L	2.3	mg/L	M	3.4E-02	mg/kg/day	N/A	N/A	N/A
	Perchlorate	36	ug/L	36	ug/L	M	5.4E-04	mg/kg/day	N/A	N/A	N/A
	Tetrachloroethene	0.57	ug/L	0.57	ug/L	M	8.5E-06	mg/kg/day	0.051	(mg/kg/day)-1	4.3E-07
	Trichloroethene	23	ug/L	23	ug/L	M	3.4E-04	mg/kg/day	0.015	(mg/kg/day)-1	5.1E-06
	(Total)										3.4E-05
Dermal	Lead	0.0012	mg/L	0.0012	mg/L	M	N/A	mg/kg/day	N/A	N/A	N/A
	Hexavalent Chromium	0.0033	mg/L	0.0033	mg/L	M	2.0E-07	mg/kg/day	2.1	(mg/kg/day)-1	4.2E-07
	Nitrate	2.3	mg/L	2.3	mg/L	M	6.9E-05	mg/kg/day	N/A	N/A	N/A
	Perchlorate	36	ug/L	36	ug/L	M	1.1E-06	mg/kg/day	N/A	N/A	N/A
	(Total)										4.2E-07
										Total Risk Across All Exposure Routes/Pathways	3.5E-05

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
M = Medium-specific EPC selected for risk calculation
mg/kg/day = milligrams per kilogram per day
mg/L = milligrams per liter
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-190 (RAGS Part D, TABLE 8.32.RME)
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 17

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 17—Water Vapor
Receptor Population: Resident
Receptor Age: Child/Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Inhalation	Bromodichloromethane	0.44	ug/L	0.44	ug/L	R	3.3E-05	mg/kg/day	0.13	(mg/kg/day)-1	4.3E-06
	Carbon Tetrachloride	1.6	ug/L	1.6	ug/L	R	1.2E-04	mg/kg/day	0.15	(mg/kg/day)-1	1.8E-05
	Chloroform	7.6	ug/L	7.6	ug/L	R	5.7E-04	mg/kg/day	0.019	(mg/kg/day)-1	1.1E-05
	Tetrachloroethene	0.57	ug/L	0.57	ug/L	R	4.2E-05	mg/kg/day	0.021	(mg/kg/day)-1	8.9E-07
	Trichloroethene	23	ug/L	23	ug/L	R	1.7E-03	mg/kg/day	0.01	(mg/kg/day)-1	1.7E-05
	(Total)										5.1E-05
										Total Risk Across All Exposure Routes/Pathways	5.1E-05

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
mg/kg/day = milligrams per kilogram per day
R = Route-specific EPC selected for risk calculation
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-191 (RAGS Part D, TABLE 8.33.RME)
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 18

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 18—Tap Water
Receptor Population: Resident
Receptor Age: Child/Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Arsenic	0.0028	mg/L	0.0028	mg/L	M	4.2E-05	mg/kg/day	1.5	(mg/kg/day)-1	6.2E-05
	Bromodichloromethane	0.41	ug/L	0.41	ug/L	M	6.1E-06	mg/kg/day	0.13	(mg/kg/day)-1	7.9E-07
	Carbon Tetrachloride	1.3	ug/L	1.3	ug/L	M	1.9E-05	mg/kg/day	0.15	(mg/kg/day)-1	2.9E-06
	Chloroform	6.6	ug/L	6.6	ug/L	M	9.8E-05	mg/kg/day	0.031	(mg/kg/day)-1	3.0E-06
	Hexavalent Chromium	0.003	mg/L	0.003	mg/L	M	4.5E-05	mg/kg/day	0.42	(mg/kg/day)-1	1.9E-05
	Nitrate	3.8	mg/L	3.8	mg/L	M	5.7E-02	mg/kg/day	N/A	N/A	N/A
	Perchlorate	6.8	ug/L	6.8	ug/L	M	1.0E-04	mg/kg/day	N/A	N/A	N/A
	Tetrachloroethene	1.5	ug/L	1.5	ug/L	M	2.2E-05	mg/kg/day	0.051	(mg/kg/day)-1	1.1E-06
	Trichloroethene	1.7	ug/L	1.7	ug/L	M	2.5E-05	mg/kg/day	0.015	(mg/kg/day)-1	3.8E-07
	(Total)										8.9E-05
Dermal	Arsenic	0.0028	mg/L	0.0028	mg/L	M	8.4E-08	mg/kg/day	7.5	(mg/kg/day)-1	6.3E-07
	Hexavalent Chromium	0.003	mg/L	0.003	mg/L	M	1.8E-07	mg/kg/day	2.1	(mg/kg/day)-1	3.8E-07
	Nitrate	3.8	mg/L	3.8	mg/L	M	1.1E-04	mg/kg/day	N/A	N/A	N/A
	Perchlorate	6.8	ug/L	6.8	ug/L	M	2.1E-07	mg/kg/day	N/A	N/A	N/A
	(Total)										1.0E-06
										Total Risk Across All Exposure Routes/Pathways	9.0E-05

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
M = Medium-specific EPC selected for risk calculation
mg/kg/day = milligrams per kilogram per day
mg/L = milligrams per liter
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-192 (RAGS Part D, TABLE 8.34.RME)
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 18

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 18—Water Vapor
Receptor Population: Resident
Receptor Age: Child/Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Inhalation	Bromodichloromethane	0.41	ug/L	0.41	ug/L	R	3.0E-05	mg/kg/day	0.13	(mg/kg/day)-1	4.0E-06
	Carbon Tetrachloride	1.3	ug/L	1.3	ug/L	R	9.7E-05	mg/kg/day	0.15	(mg/kg/day)-1	1.5E-05
	Chloroform	6.6	ug/L	6.6	ug/L	R	4.9E-04	mg/kg/day	0.019	(mg/kg/day)-1	9.3E-06
	Tetrachloroethene	1.5	ug/L	1.5	ug/L	R	1.1E-04	mg/kg/day	0.021	(mg/kg/day)-1	2.3E-06
	Trichloroethene	1.7	ug/L	1.7	ug/L	R	1.3E-04	mg/kg/day	0.01	(mg/kg/day)-1	1.3E-06
	(Total)										3.1E-05
										Total Risk Across All Exposure Routes/Pathways	3.1E-05

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
mg/kg/day = milligrams per kilogram per day
R = Route-specific EPC selected for risk calculation
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-193 (RAGS Part D, TABLE 8.35.RME)
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 19

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 19—Tap Water
Receptor Population: Resident
Receptor Age: Child/Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Bromodichloromethane	0.28	ug/L	0.28	ug/L	M	4.2E-06	mg/kg/day	0.13	(mg/kg/day)-1	5.4E-07
	Chloroform	1.2	ug/L	1.2	ug/L	M	1.8E-05	mg/kg/day	0.031	(mg/kg/day)-1	5.5E-07
	Lead	0.0012	mg/L	0.0012	mg/L	M	N/A	mg/kg/day	N/A	N/A	N/A
	Nitrate	11	mg/L	11	mg/L	M	1.6E-01	mg/kg/day	N/A	N/A	N/A
	Perchlorate	2.7	ug/L	2.7	ug/L	M	4.0E-05	mg/kg/day	N/A	N/A	N/A
	Tetrachloroethene	1.8	ug/L	1.8	ug/L	M	2.7E-05	mg/kg/day	0.051	(mg/kg/day)-1	1.4E-06
	Trichloroethene	0.46	ug/L	0.46	ug/L	M	6.8E-06	mg/kg/day	0.015	(mg/kg/day)-1	1.0E-07
	(Total)										2.6E-06
Dermal	Lead	0.0012	mg/L	0.0012	mg/L	M	N/A	mg/kg/day	N/A	N/A	N/A
	Nitrate	11	mg/L	11	mg/L	M	3.3E-04	mg/kg/day	N/A	N/A	N/A
	Perchlorate	2.7	ug/L	2.7	ug/L	M	8.1E-08	mg/kg/day	N/A	N/A	N/A
	(Total)										N/A
										Total Risk Across All Exposure Routes/Pathways	2.6E-06

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
M = Medium-specific EPC selected for risk calculation
mg/kg/day = milligrams per kilogram per day
mg/L = milligrams per liter
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-194 (RAGS Part D, TABLE 8.36.RME)
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 19

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 19—Water Vapor
Receptor Population: Resident
Receptor Age: Child/Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Inhalation	Bromodichloromethane	0.28	ug/L	0.28	ug/L	R	2.1E-05	mg/kg/day	0.13	(mg/kg/day)-1	2.7E-06
	Chloroform	1.2	ug/L	1.2	ug/L	R	8.9E-05	mg/kg/day	0.019	(mg/kg/day)-1	1.7E-06
	Tetrachloroethene	1.8	ug/L	1.8	ug/L	R	1.3E-04	mg/kg/day	0.021	(mg/kg/day)-1	2.8E-06
	Trichloroethene	0.46	ug/L	0.46	ug/L	R	3.4E-05	mg/kg/day	0.01	(mg/kg/day)-1	3.4E-07
	(Total)										7.6E-06
										Total Risk Across All Exposure Routes/Pathways	7.6E-06

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
mg/kg/day = milligrams per kilogram per day
R = Route-specific EPC selected for risk calculation
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-195 (RAGS Part D, TABLE 8.37.RME)
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 20

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 20—Tap Water
Receptor Population: Resident
Receptor Age: Child/Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Arsenic	0.0029	mg/L	0.0029	mg/L	M	4.3E-05	mg/kg/day	1.5	(mg/kg/day)-1	6.5E-05
	Bromodichloromethane	0.28	ug/L	0.28	ug/L	M	4.2E-06	mg/kg/day	0.13	(mg/kg/day)-1	5.4E-07
	Chloroform	2.2	ug/L	2.2	ug/L	M	3.3E-05	mg/kg/day	0.031	(mg/kg/day)-1	1.0E-06
	Lead	0.0013	mg/L	0.0013	mg/L	M	N/A	mg/kg/day	N/A	N/A	N/A
	Nitrate	15	mg/L	15	mg/L	M	2.2E-01	mg/kg/day	N/A	N/A	N/A
	Perchlorate	3.2	ug/L	3.2	ug/L	M	4.8E-05	mg/kg/day	N/A	N/A	N/A
	(Total)										6.6E-05
Dermal	Arsenic	0.0029	mg/L	0.0029	mg/L	M	8.8E-08	mg/kg/day	7.5	(mg/kg/day)-1	6.6E-07
	Lead	0.0013	mg/L	0.0013	mg/L	M	N/A	mg/kg/day	N/A	N/A	N/A
	Nitrate	15	mg/L	15	mg/L	M	4.5E-04	mg/kg/day	N/A	N/A	N/A
	Perchlorate	3.2	ug/L	3.2	ug/L	M	9.7E-08	mg/kg/day	N/A	N/A	N/A
	(Total)										6.6E-07
										Total Risk Across All Exposure Routes/Pathways	6.7E-05

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
M = Medium-specific EPC selected for risk calculation
mg/kg/day = milligrams per kilogram per day
mg/L = milligrams per liter
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-196 (RAGS Part D, TABLE 8.38.RME)
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 20

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 20—Water Vapor
Receptor Population: Resident
Receptor Age: Child/Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Inhalation	Bromodichloromethane	0.28	ug/L	0.28	ug/L	R	2.1E-05	mg/kg/day	0.13	(mg/kg/day)-1	2.7E-06
	Chloroform	2.2	ug/L	2.2	ug/L	R	1.6E-04	mg/kg/day	0.019	(mg/kg/day)-1	3.1E-06
	(Total)										5.8E-06
										Total Risk Across All Exposure Routes/Pathways	5.8E-06

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
mg/kg/day = milligrams per kilogram per day
R = Route-specific EPC selected for risk calculation
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-197 (RAGS Part D, TABLE 8.39.RME)
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 21

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 21—Tap Water
Receptor Population: Resident
Receptor Age: Child/Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Chloroform	0.68	ug/L	0.68	ug/L	M	1.0E-05	mg/kg/day	0.031	(mg/kg/day)-1	3.1E-07
	Lead	0.0016	mg/L	0.0016	mg/L	M	N/A	mg/kg/day	N/A	N/A	N/A
	Nitrate	17	mg/L	17	mg/L	M	2.5E-01	mg/kg/day	N/A	N/A	N/A
	Perchlorate	8.1	ug/L	8.1	ug/L	M	1.2E-04	mg/kg/day	N/A	N/A	N/A
	Tetrachloroethene	3.7	ug/L	3.7	ug/L	M	5.5E-05	mg/kg/day	0.051	(mg/kg/day)-1	2.8E-06
	Trichloroethene	9.0	ug/L	9.0	ug/L	M	1.3E-04	mg/kg/day	0.015	(mg/kg/day)-1	2.0E-06
	(Total)										5.1E-06
Dermal	Lead	0.0016	mg/L	0.0016	mg/L	M	N/A	mg/kg/day	N/A	N/A	N/A
	Nitrate	17	mg/L	17	mg/L	M	5.1E-04	mg/kg/day	N/A	N/A	N/A
	Perchlorate	8.1	ug/L	8.1	ug/L	M	2.4E-07	mg/kg/day	N/A	N/A	N/A
	(Total)										N/A
										Total Risk Across All Exposure Routes/Pathways	5.1E-06

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
M = Medium-specific EPC selected for risk calculation
mg/kg/day = milligrams per kilogram per day
mg/L = milligrams per liter
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-198 (RAGS Part D, TABLE 8.40.RME)
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 21

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 21—Water Vapor
Receptor Population: Resident
Receptor Age: Child/Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Inhalation	Chloroform	0.68	ug/L	0.68	ug/L	R	5.1E-05	mg/kg/day	0.019	(mg/kg/day)-1	9.6E-07
	Tetrachloroethene	3.7	ug/L	3.7	ug/L	R	2.8E-04	mg/kg/day	0.021	(mg/kg/day)-1	5.8E-06
	Trichloroethene	9.0	ug/L	9.0	ug/L	R	6.7E-04	mg/kg/day	0.01	(mg/kg/day)-1	6.7E-06
	(Total)										1.3E-05
										Total Risk Across All Exposure Routes/Pathways	1.3E-05

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
mg/kg/day = milligrams per kilogram per day
R = Route-specific EPC selected for risk calculation
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-199 (RAGS Part D, TABLE 8.41.RME)
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 22

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 22—Tap Water
Receptor Population: Resident
Receptor Age: Child/Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Nitrate	11	mg/L	11	mg/L	M	1.6E-01	mg/kg/day	N/A	N/A	N/A
	Perchlorate	5.0	ug/L	5.0	ug/L	M	7.4E-05	mg/kg/day	N/A	N/A	N/A
	Tetrachloroethene	1.4	ug/L	1.4	ug/L	M	2.1E-05	mg/kg/day	0.051	(mg/kg/day)-1	1.1E-06
	(Total)										1.1E-06
Dermal	Nitrate	11	mg/L	11	mg/L	M	3.3E-04	mg/kg/day	N/A	N/A	N/A
	Perchlorate	5.0	ug/L	5.0	ug/L	M	1.5E-07	mg/kg/day	N/A	N/A	N/A
	(Total)										N/A
										Total Risk Across All Exposure Routes/Pathways	1.1E-06

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
M = Medium-specific EPC selected for risk calculation
mg/kg/day = milligrams per kilogram per day
mg/L = milligrams per liter
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-200 (RAGS Part D, TABLE 8.42.RME)
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 22

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 22—Water Vapor
Receptor Population: Resident
Receptor Age: Child/Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Inhalation	Tetrachloroethene	1.4	ug/L	1.4	ug/L	R	1.0E-04	mg/kg/day	0.021	(mg/kg/day)-1	2.2E-06
	(Total)										2.2E-06
										Total Risk Across All Exposure Routes/Pathways	2.2E-06

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
mg/kg/day = milligrams per kilogram per day
R = Route-specific EPC selected for risk calculation
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-201 (RAGS Part D, TABLE 8.43.RME)
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 23

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 23—Tap Water
Receptor Population: Resident
Receptor Age: Child/Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Chloroform	0.52	ug/L	0.52	ug/L	M	7.7E-06	mg/kg/day	0.031	(mg/kg/day)-1	2.4E-07
	Nitrate	15	mg/L	15	mg/L	M	2.2E-01	mg/kg/day	N/A	N/A	N/A
	Perchlorate	5.6	ug/L	5.6	ug/L	M	8.3E-05	mg/kg/day	N/A	N/A	N/A
	Tetrachloroethene	0.65	ug/L	0.65	ug/L	M	9.7E-06	mg/kg/day	0.051	(mg/kg/day)-1	4.9E-07
	Trichloroethene	2.9	ug/L	2.9	ug/L	M	4.3E-05	mg/kg/day	0.015	(mg/kg/day)-1	6.5E-07
	(Total)										1.4E-06
Dermal	Nitrate	15	mg/L	15	mg/L	M	4.5E-04	mg/kg/day	N/A	N/A	N/A
	Perchlorate	5.6	ug/L	5.6	ug/L	M	1.7E-07	mg/kg/day	N/A	N/A	N/A
	(Total)										N/A
										Total Risk Across All Exposure Routes/Pathways	1.4E-06

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
M = Medium-specific EPC selected for risk calculation.
mg/kg/day = milligrams per kilogram per day
mg/L = milligrams per liter
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-202 (RAGS Part D, TABLE 8.44.RME)
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 23

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 23—Water Vapor
Receptor Population: Resident
Receptor Age: Child/Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Inhalation	Chloroform	0.52	ug/L	0.52	ug/L	R	3.9E-05	mg/kg/day	0.019	(mg/kg/day)-1	7.3E-07
	Tetrachloroethene	0.65	ug/L	0.65	ug/L	R	4.8E-05	mg/kg/day	0.021	(mg/kg/day)-1	1.0E-06
	Trichloroethene	2.9	ug/L	2.9	ug/L	R	2.2E-04	mg/kg/day	0.01	(mg/kg/day)-1	2.2E-06
	(Total)										3.9E-06
										Total Risk Across All Exposure Routes/Pathways	3.9E-06

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
mg/kg/day = milligrams per kilogram per day
R = Route-specific EPC selected for risk calculation.
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-203 (RAGS Part D, TABLE 8.45.RME)
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 24

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 24—Tap Water
Receptor Population: Resident
Receptor Age: Child/ Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	1,2-Dichloroethene	0.39	ug/L	0.39	ug/L	M	5.8E-06	mg/kg/day	0.07	(mg/kg/day)-1	4.1E-07
	Arsenic	0.0034	mg/L	0.0034	mg/L	M	5.1E-05	mg/kg/day	1.5	(mg/kg/day)-1	7.6E-05
	Carbon Tetrachloride	30	ug/L	30	ug/L	M	4.5E-04	mg/kg/day	0.15	(mg/kg/day)-1	6.7E-05
	Chloroform	15	ug/L	15	ug/L	M	2.2E-04	mg/kg/day	0.031	(mg/kg/day)-1	6.9E-06
	Nitrate	3.4	mg/L	3.4	mg/L	M	5.1E-02	mg/kg/day	N/A	N/A	N/A
	Perchlorate	330	ug/L	330	ug/L	M	4.9E-03	mg/kg/day	N/A	N/A	N/A
	Tetrachloroethene	0.32	ug/L	0.32	ug/L	M	4.8E-06	mg/kg/day	0.051	(mg/kg/day)-1	2.4E-07
	Trichloroethene	15	ug/L	15	ug/L	M	2.2E-04	mg/kg/day	0.015	(mg/kg/day)-1	3.3E-06
	(Total)										1.5E-04
Dermal	Arsenic	0.0034	mg/L	0.0034	mg/L	M	1.0E-07	mg/kg/day	7.5	(mg/kg/day)-1	7.7E-07
	Nitrate	3.4	mg/L	3.4	mg/L	M	1.0E-04	mg/kg/day	N/A	N/A	N/A
	Perchlorate	330	ug/L	330	ug/L	M	1.0E-05	mg/kg/day	N/A	N/A	N/A
	(Total)										7.7E-07
										Total Risk Across All Exposure Routes/Pathways	1.5E-04

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
M = Medium-specific EPC selected for risk calculation
mg/kg/day = milligrams per kilogram per day
mg/L = milligrams per liter
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-204 (RAGS Part D, TABLE 8.46.RME)
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 24

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Monitoring Well 24—Water Vapor
Receptor Population: Resident
Receptor Age: Child/Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Inhalation	1,2-Dichloroethane	0.39	ug/L	0.39	ug/L	R	2.9E-05	mg/kg/day	0.07	(mg/kg/day)-1	2.0E-06
	Carbon Tetrachloride	30	ug/L	30	ug/L	R	2.2E-03	mg/kg/day	0.15	(mg/kg/day)-1	3.3E-04
	Chloroform	15	ug/L	15	ug/L	R	1.1E-03	mg/kg/day	0.019	(mg/kg/day)-1	2.1E-05
	Tetrachloroethene	0.32	ug/L	0.32	ug/L	R	2.4E-05	mg/kg/day	0.021	(mg/kg/day)-1	5.0E-07
	Trichloroethene	15	ug/L	15	ug/L	R	1.1E-03	mg/kg/day	0.01	(mg/kg/day)-1	1.1E-05
	(Total)										3.7E-04
										Total Risk Across All Exposure Routes/Pathways	3.7E-04

Definitions: 1.0E-02 = 1 x 10-2 = 0.01
EPC = exposure point concentration
mg/kg/day = milligrams per kilogram per day
R = Route-specific EPC selected for risk calculation
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-205 (RAGS Part D, TABLE 8.47.RME)
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—La Canada Well #1

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: La Canada Well #1—Tap Water
Receptor Population: Resident
Receptor Age: Child/Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Tetrachloroethene	0.6	ug/L	0.6	ug/L	M	8.9E-06	mg/kg/day	0.051	(mg/kg/day)-1	4.6E-07
	(Total)										4.6E-07
Dermal	--	--	--	--	--	--	--	--	--	-- --	--
	(Total)										--
										Total Risk Across All Exposure Routes/Pathways	4.6E-07

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
M = Medium-specific EPC selected for risk calculation
mg/kg/day = milligrams per kilogram per day
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-206 (RAGS Part D, TABLE 8.48.RME)
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—La Canada Well #1

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: La Canada Well #1—Water Vapor
Receptor Population: Resident
Receptor Age: Child/ Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Inhalation	Tetrachloroethene	0.6	ug/L	0.6	ug/L	R	4.5E-05	mg/kg/day	0.021	(mg/kg/day)-1	9.4E-07
	(Total)										9.4E-07
										Total Risk Across All Exposure Routes/Pathways	9.4E-07

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
mg/kg/day = milligrams per kilogram per day
R = Route-specific EPC selected for risk calculation
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-207 (RAGS Part D, TABLE 8.49.RME)
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Las Flores Well #2

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Las Flores Well #2—Tap Water
Receptor Population: Resident
Receptor Age: Child/Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Arsenic	2.4	ug/L	2.4	ug/L	M	3.6E-05	mg/kg/day	1.5	(mg/kg/day)-1	5.4E-05
	Perchlorate	6.1	ug/L	6.1	ug/L	M	9.1E-05	mg/kg/day	N/A	N/A	N/A
	Tetrachloroethene	4.8	ug/L	4.8	ug/L	M	7.1E-05	mg/kg/day	0.051	(mg/kg/day)-1	3.6E-06
	(Total)										5.7E-05
Dermal	Arsenic	2.4	ug/L	2.4	ug/L	M	7.2E-08	mg/kg/day	7.5	(mg/kg/day)-1	5.4E-07
	Perchlorate	6.1	ug/L	6.1	ug/L	M	1.8E-07	mg/kg/day	N/A	N/A	N/A
	(Total)										5.4E-07
										Total Risk Across All Exposure Routes/Pathways	5.8E-05

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
M = Medium-specific EPC selected for risk calculation
mg/kg/day = milligrams per kilogram per day
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-208 (RAGS Part D, TABLE 8.50.RME)
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Las Flores Well #2

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Las Flores Well #2—Water Vapor
Receptor Population: Resident
Receptor Age: Child/Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Inhalation	Tetrachloroethene	4.8	ug/L	4.8	ug/L	R	3.6E-04	mg/kg/day	0.021	(mg/kg/day)-1	7.5E-06
	(Total)										7.5E-06
										Total Risk Across All Exposure Routes/Pathways	7.5E-06

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
mg/kg/day = milligrams per kilogram per day
R = Route-specific EPC selected for risk calculation.
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-209 (RAGS Part D, TABLE 8.51.RME)
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Lincoln Ave. Well #3

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Lincoln Ave. Well #3—Tap Water
Receptor Population: Resident
Receptor Age: Child/Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Carbon Tetrachloride	1.1	ug/L	1.1	ug/L	M	1.6E-05	mg/kg/day	0.15	(mg/kg/day)-1	2.5E-06
	Perchlorate	14	ug/L	14	ug/L	M	2.1E-04	mg/kg/day	N/A	N/A	N/A
	Tetrachloroethene	1.1	ug/L	1.1	ug/L	M	1.6E-05	mg/kg/day	0.051	(mg/kg/day)-1	8.3E-07
	Trichloroethene	16	ug/L	16	ug/L	M	2.4E-04	mg/kg/day	0.015	(mg/kg/day)-1	3.5E-06
	(Total)										6.8E-06
Dermal	Perchlorate	14	ug/L	14	ug/L	M	4.2E-07	mg/kg/day	N/A	N/A	N/A
	(Total)										N/A
										Total Risk Across All Exposure Routes/Pathways	6.8E-06

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
M = Medium-specific EPC selected for risk calculation
mg/kg/day = milligrams per kilogram per day
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-210 (RAGS Part D, TABLE 8.52.RME)
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Lincoln Ave. Well #3

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Lincoln Ave. Well #3—Water Vapor
Receptor Population: Resident
Receptor Age: Child/Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Inhalation	Carbon Tetrachloride	1.1	ug/L	1.1	ug/L	R	8.2E-05	mg/kg/day	0.15	(mg/kg/day)-1	1.2E-05
	Tetrachloroethene	1.1	ug/L	1.1	ug/L	R	8.2E-05	mg/kg/day	0.021	(mg/kg/day)-1	1.7E-06
	Trichloroethene	16	ug/L	16	ug/L	R	1.2E-03	mg/kg/day	0.01	(mg/kg/day)-1	1.2E-05
	(Total)										2.6E-05
										Total Risk Across All Exposure Routes/Pathways	2.6E-05

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
mg/kg/day = milligrams per kilogram per day
R = Route-specific EPC selected for risk calculation
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-211 (RAGS Part D, TABLE 8.53.RME)
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Lincoln Ave. Well #5

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Lincoln Ave. Well #5—Tap Water
Receptor Population: Resident
Receptor Age: Child/Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Perchlorate	7.0	ug/L	7.0	ug/L	M	1.0E-04	mg/kg/day	N/A	N/A	N/A
	Tetrachloroethene	0.7	ug/L	0.7	ug/L	M	1.0E-05	mg/kg/day	0.051	(mg/kg/day)-1	5.3E-07
	Trichloroethene	13	ug/L	13	ug/L	M	1.9E-04	mg/kg/day	0.015	(mg/kg/day)-1	2.9E-06
	(Total)										3.4E-06
Dermal	Perchlorate	7.0	ug/L	7.0	ug/L	M	2.1E-07	mg/kg/day	N/A	N/A	N/A
	(Total)										N/A
										Total Risk Across All Exposure Routes/Pathways	3.4E-06

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
M = Medium-specific EPC selected for risk calculation
mg/kg/day = milligrams per kilogram per day
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-212 (RAGS Part D, TABLE 8.54.RME)
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Lincoln Ave. Well #5

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Lincoln Ave. Well #5—Water Vapor
Receptor Population: Resident
Receptor Age: Child/Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Inhalation	Tetrachloroethene	0.7	ug/L	0.7	ug/L	R	5.2E-05	mg/kg/day	0.021	(mg/kg/day)-1	1.1E-06
	Trichloroethene	13	ug/L	13	ug/L	R	9.7E-04	mg/kg/day	0.01	(mg/kg/day)-1	9.7E-06
	(Total)										1.1E-05
										Total Risk Across All Exposure Routes/Pathways	1.1E-05

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
mg/kg/day = milligrams per kilogram per day
R = Route-specific EPC selected for risk calculation
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-213 (RAGS Part D, TABLE 8.55.RME)
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Pasadena Arroyo Well

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Pasadena Arroyo Well—Tap Water
Receptor Population: Resident
Receptor Age: Child/Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Carbon Tetrachloride	4.7	ug/L	4.7	ug/L	M	7.0E-05	mg/kg/day	0.15	(mg/kg/day)-1	1.0E-05
	Perchlorate	130	ug/L	130	ug/L	M	1.9E-03	mg/kg/day	N/A	N/A	N/A
	Tetrachloroethene	0.89	ug/L	0.89	ug/L	M	1.3E-05	mg/kg/day	0.051	(mg/kg/day)-1	6.8E-07
	Trichloroethene	3.4	ug/L	3.4	ug/L	M	5.1E-05	mg/kg/day	0.015	(mg/kg/day)-1	7.6E-07
	(Total)										1.2E-05
Dermal	Perchlorate	130	ug/L	130	ug/L	M	3.9E-06	mg/kg/day	N/A	N/A	N/A
	(Total)										N/A
										Total Risk Across All Exposure Routes/Pathways	1.2E-05

Definitons: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
M = Medium-specific EPC selected for risk calculation
mg/kg/day = milligrams per kilogram per day
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-214 (RAGS Part D, TABLE 8.56.RME)
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Pasadena Arroyo Well

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Pasadena Arroyo Well—Water Vapor
Receptor Population: Resident
Receptor Age: Child/Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Inhalation	Carbon Tetrachloride	4.7	ug/L	4.7	ug/L	R	3.5E-04	mg/kg/day	0.15	(mg/kg/day)-1	5.2E-05
	Tetrachloroethene	0.89	ug/L	0.89	ug/L	R	6.6E-05	mg/kg/day	0.021	(mg/kg/day)-1	1.4E-06
	Trichloroethene	3.4	ug/L	3.4	ug/L	R	2.5E-04	mg/kg/day	0.01	(mg/kg/day)-1	2.5E-06
	(Total)										5.6E-05
										Total Risk Across All Exposure Routes/Pathways	5.6E-05

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
mg/kg/day = milligrams per kilogram per day
R = Route-specific EPC selected for risk calculation
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-215 (RAGS Part D, TABLE 8.57.RME)
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Pasadena Ventura Well

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Pasadena Ventura Well—Tap Water
Receptor Population: Resident
Receptor Age: Child/Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Perchlorate	4.9	ug/L	4.9	ug/L	M	7.3E-05	mg/kg/day	N/A	N/A	N/A
	Tetrachloroethene	0.7	ug/L	0.7	ug/L	M	1.0E-05	mg/kg/day	0.051	(mg/kg/day)-1	5.3E-07
	Trichloroethene	1.1	ug/L	1.1	ug/L	M	1.6E-05	mg/kg/day	0.015	(mg/kg/day)-1	2.5E-07
	(Total)										7.8E-07
Dermal	Perchlorate	4.9	ug/L	4.9	ug/L	M	1.5E-07	mg/kg/day	N/A	N/A	N/A
	(Total)										N/A
										Total Risk Across All Exposure Routes/Pathways	7.8E-07

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
M = Medium-specific EPC selected for risk calculation.
mg/kg/day = milligrams per kilogram per day
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-216 (RAGS Part D, TABLE 8.58.RME)
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Pasadena Ventura Well

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Pasadena Ventura Well—Water Vapor
Receptor Population: Resident
Receptor Age: Child/Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Inhalation	Tetrachloroethene	0.7	ug/L	0.7	ug/L	R	5.2E-05	mg/kg/day	0.021	(mg/kg/day)-1	1.1E-06
	Trichloroethene	1.1	ug/L	1.1	ug/L	R	8.2E-05	mg/kg/day	0.01	(mg/kg/day)-1	8.2E-07
	(Total)										1.9E-06
										Total Risk Across All Exposure Routes/Pathways	1.9E-06

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
mg/kg/day = milligrams per kilogram per day
R = Route-specific EPC selected for risk calculation.
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-217 (RAGS Part D, TABLE 8.59.RME)
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Pasadena Well 52

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Pasadena Well 52—Tap Water
Receptor Population: Resident
Receptor Age: Child/Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Carbon Tetrachloride	1.3	ug/L	1.3	ug/L	M	1.9E-05	mg/kg/day	0.15	(mg/kg/day)-1	2.9E-06
	Perchlorate	15	ug/L	15	ug/L	M	2.2E-04	mg/kg/day	N/A	N/A	N/A
	Trichloroethene	5.2	ug/L	5.2	ug/L	M	7.7E-05	mg/kg/day	0.015	(mg/kg/day)-1	1.2E-06
	(Total)										4.1E-06
Dermal	Perchlorate	15	ug/L	15	ug/L	M	4.5E-07	mg/kg/day	N/A	N/A	N/A
	(Total)										N/A
										Total Risk Across All Exposure Routes/Pathways	4.1E-06

Definitons: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
M = Medium-specific EPC selected for risk calculation
mg/kg/day = milligrams per kilogram per day
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-218 (RAGS Part D, TABLE 8.60.RME)
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Pasadena Well 52

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Pasadena Well 52—Water Vapor
Receptor Population: Resident
Receptor Age: Child/Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Inhalation	Carbon Tetrachloride	1.3	ug/L	1.3	ug/L	R	9.7E-05	mg/kg/day	0.15	(mg/kg/day)-1	1.5E-05
	Trichloroethene	5.2	ug/L	5.2	ug/L	R	3.9E-04	mg/kg/day	0.01	(mg/kg/day)-1	3.9E-06
	(Total)										1.8E-05
										Total Risk Across All Exposure Routes/Pathways	1.8E-05

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
mg/kg/day = milligrams per kilogram per day
R = Route-specific EPC selected for risk calculation.
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-219 (RAGS Part D, TABLE 8.61.RME)
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Pasadena Windsor Well

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Pasadena Windsor Well—Tap Water
Receptor Population: Resident
Receptor Age: Child/Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Tetrachloroethene	1.1	ug/L	1.1	ug/L	M	1.6E-05	mg/kg/day	0.051	(mg/kg/day)-1	8.3E-07
	Trichloroethene	1.2	ug/L	1.2	ug/L	M	1.8E-05	mg/kg/day	0.015	(mg/kg/day)-1	2.7E-07
	(Total)										1.1E-06
Dermal	--	--	--	--	--	--	--	--	--	-- --	--
	(Total)										--
										Total Risk Across All Exposure Routes/Pathways	1.1E-06

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
M = Medium-specific EPC selected for risk calculation
mg/kg/day = milligrams per kilogram per day
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-220 (RAGS Part D, TABLE 8.62.RME)
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Pasadena Windsor Well

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Pasadena Windsor Well—Water Vapor
Receptor Population: Resident
Receptor Age: Child/Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Inhalation	Tetrachloroethene	1.1	ug/L	1.1	ug/L	R	8.2E-05	mg/kg/day	0.021	(mg/kg/day)-1	1.7E-06
	Trichloroethene	1.2	ug/L	1.2	ug/L	R	8.9E-05	mg/kg/day	0.01	(mg/kg/day)-1	8.9E-07
	(Total)										2.6E-06
										Total Risk Across All Exposure Routes/Pathways	2.6E-06

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
mg/kg/day = milligrams per kilogram per day
R = Route-specific EPC selected for risk calculation
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-221 (RAGS Part D, TABLE 8.63.RME)
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Rubio Cañon #4

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Rubio Cañon #4—Tap Water
Receptor Population: Resident
Receptor Age: Child/ Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Perchlorate (Total)	5.5	ug/L	5.5	ug/L	M	8.2E-05	mg/kg/day	N/A	N/A	N/A N/A
Dermal	Perchlorate (Total)	5.5	ug/L	5.5	ug/L	M	1.7E-07	mg/kg/day	N/A	N/A	N/A N/A
										Total Risk Across All Exposure Routes/Pathways	N/A

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
M = Medium-specific EPC selected for risk calculation
mg/kg/day = milligrams per kilogram per day
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-222 (RAGS Part D, TABLE 8.64.RME)
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Rubio Cañon #4

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Rubio Cañon #4—Water Vapor
Receptor Population: Resident
Receptor Age: Child/Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Inhalation	-- (Total)	--	--	--	--	--	--	--	--	-- --	-- --
										Total Risk Across All Exposure Routes/Pathways	--

Definitions:

EPC = exposure point concentration
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure

Table I-223 (RAGS Part D, TABLE 8.65.RME)
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Rubio Cañon Well #7

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Rubio Cañon Well #7—Tap Water
Receptor Population: Resident
Receptor Age: Child/Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Perchlorate (Total)	3.2	ug/L	3.2	ug/L	M	4.8E-05	mg/kg/day	N/A	N/A	N/A
											N/A
Dermal	Perchlorate (Total)	3.2	ug/L	3.2	ug/L	M	9.7E-08	mg/kg/day	N/A	N/A	N/A
											N/A
										Total Risk Across All Exposure Routes/Pathways	N/A

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
M = Medium-specific EPC selected for risk calculation
mg/kg/day = milligrams per kilogram per day
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-224 (RAGS Part D, TABLE 8.66.RME)
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Rubio Cañon Well #7

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Rubio Cañon Well #7—Water Vapor
Receptor Population: Resident
Receptor Age: Child/Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Inhalation	-- (Total)	--	--	--	--	--	--	--	--	-- --	--
											--
										Total Risk Across All Exposure Routes/Pathways	--

Definitions: EPC = exposure point concentration
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure

Table I-225 (RAGS Part D, TABLE 8.67.RME)
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Valley Well #1

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Valley Well #1—Tap Water
Receptor Population: Resident
Receptor Age: Child/Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Arsenic	1.9	ug/L	1.9	ug/L	M	2.8E-05	mg/kg/day	1.5	(mg/kg/day)-1	4.2E-05
	Perchlorate	3.9	ug/L	3.9	ug/L	M	5.8E-05	mg/kg/day	N/A	N/A	N/A
	Tetrachloroethene	38	ug/L	38	ug/L	M	5.7E-04	mg/kg/day	0.051	(mg/kg/day)-1	2.9E-05
	Trichloroethene	3.5	ug/L	3.5	ug/L	M	5.2E-05	mg/kg/day	0.015	(mg/kg/day)-1	7.8E-07
	(Total)										7.2E-05
Dermal	Arsenic	1.9	ug/L	1.9	ug/L	M	5.7E-08	mg/kg/day	7.5	(mg/kg/day)-1	4.3E-07
	Perchlorate	3.9	ug/L	3.9	ug/L	M	1.2E-07	mg/kg/day	N/A	N/A	N/A
	(Total)										4.3E-07
										Total Risk Across All Exposure Routes/Pathways	7.2E-05

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
M = Medium-specific EPC selected for risk calculation
mg/kg/day = milligrams per kilogram per day
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-226 (RAGS Part D, TABLE 8.68.RME)
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Valley Well #1

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Valley Well #1—Water Vapor
Receptor Population: Resident
Receptor Age: Child/Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Inhalation	Tetrachloroethene	38	ug/L	38	ug/L	R	2.8E-03	mg/kg/day	0.021	(mg/kg/day)-1	5.9E-05
	Trichloroethene	3.5	ug/L	3.5	ug/L	R	2.6E-04	mg/kg/day	0.01	(mg/kg/day)-1	2.6E-06
	(Total)										6.2E-05
										Total Risk Across All Exposure Routes/Pathways	6.2E-05

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
mg/kg/day = milligrams per kilogram per day
R = Route-specific EPC selected for risk calculation.
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-227 (RAGS Part D, TABLE 8.69.RME)
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Valley Well #2

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Valley Well #2—Tap Water
Receptor Population: Resident
Receptor Age: Child/Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Arsenic	2.0	ug/L	2.0	ug/L	M	3.0E-05	mg/kg/day	1.5	(mg/kg/day)-1	4.5E-05
	Perchlorate	4.0	ug/L	4.0	ug/L	M	5.9E-05	mg/kg/day	N/A	N/A	N/A
	Tetrachloroethene	9.1	ug/L	9.1	ug/L	M	1.4E-04	mg/kg/day	0.051	(mg/kg/day)-1	6.9E-06
	Trichloroethene	1.0	ug/L	1.0	ug/L	M	1.5E-05	mg/kg/day	0.015	(mg/kg/day)-1	2.2E-07
	(Total)										5.2E-05
Dermal	Arsenic	2.0	ug/L	2.0	ug/L	M	6.0E-08	mg/kg/day	7.5	(mg/kg/day)-1	4.5E-07
	Perchlorate	4.0	ug/L	4.0	ug/L	M	1.2E-07	mg/kg/day	N/A	N/A	N/A
	(Total)										4.5E-07
										Total Risk Across All Exposure Routes/Pathways	5.2E-05

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
M = Medium-specific EPC selected for risk calculation
mg/kg/day = milligrams per kilogram per day
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-228 (RAGS Part D, TABLE 8.70.RME)
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Valley Well #2

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Valley Well #2—Water Vapor
Receptor Population: Resident
Receptor Age: Child/Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Inhalation	Tetrachloroethene	9.1	ug/L	9.1	ug/L	R	6.8E-04	mg/kg/day	0.021	(mg/kg/day)-1	1.4E-05
	Trichloroethene	1.0	ug/L	1.0	ug/L	R	7.4E-05	mg/kg/day	0.01	(mg/kg/day)-1	7.4E-07
	(Total)										1.5E-05
										Total Risk Across All Exposure Routes/Pathways	1.5E-05

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
mg/kg/day = milligrams per kilogram per day
R = Route-specific EPC selected for risk calculation.
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-229 (RAGS Part D, TABLE 8.71.RME)
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Valley Well #3

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Valley Well #3—Tap Water
Receptor Population: Resident
Receptor Age: Child/Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Arsenic	1.5	ug/L	1.5	ug/L	M	2.2E-05	mg/kg/day	1.5	(mg/kg/day)-1	3.3E-05
	Perchlorate	4.4	ug/L	4.4	ug/L	M	6.5E-05	mg/kg/day	N/A	N/A	N/A
	Tetrachloroethene	1.1	ug/L	1.1	ug/L	M	1.6E-05	mg/kg/day	0.051	(mg/kg/day)-1	8.3E-07
	(Total)										3.4E-05
Dermal	Arsenic	1.5	ug/L	1.5	ug/L	M	4.5E-08	mg/kg/day	7.5	(mg/kg/day)-1	3.4E-07
	Perchlorate	4.4	ug/L	4.4	ug/L	M	1.3E-07	mg/kg/day	N/A	N/A	N/A
	(Total)										3.4E-07
										Total Risk Across All Exposure Routes/Pathways	3.5E-05

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
M = Medium-specific EPC selected for risk calculation
mg/kg/day = milligrams per kilogram per day
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-230 (RAGS Part D, TABLE 8.72.RME)
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Valley Well #3

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Valley Well #3—Water Vapor
Receptor Population: Resident
Receptor Age: Child/Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Inhalation	Tetrachloroethene	1.1	ug/L	1.1	ug/L	R	8.2E-05	mg/kg/day	0.021	(mg/kg/day)-1	1.7E-06
	(Total)										1.7E-06
										Total Risk Across All Exposure Routes/Pathways	1.7E-06

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
mg/kg/day = milligrams per kilogram per day
R = Route-specific EPC selected for risk calculation.
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-231 (RAGS Part D, TABLE 8.73.RME)
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Valley Well #4

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Valley Well #4—Tap Water
Receptor Population: Resident
Receptor Age: Child/Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Arsenic	1.9	ug/L	1.9	ug/L	M	2.8E-05	mg/kg/day	1.5	(mg/kg/day)-1	4.2E-05
	Perchlorate	3.9	ug/L	3.9	ug/L	M	5.8E-05	mg/kg/day	N/A	N/A	N/A
	Tetrachloroethene	23	ug/L	23	ug/L	M	3.4E-04	mg/kg/day	0.051	(mg/kg/day)-1	1.7E-05
	Trichloroethene	2.6	ug/L	2.6	ug/L	M	3.9E-05	mg/kg/day	0.015	(mg/kg/day)-1	5.8E-07
	(Total)										6.0E-05
Dermal	Arsenic	1.9	ug/L	1.9	ug/L	M	5.7E-08	mg/kg/day	7.5	(mg/kg/day)-1	4.3E-07
	Perchlorate	3.9	ug/L	3.9	ug/L	M	1.2E-07	mg/kg/day	N/A	N/A	N/A
	(Total)										4.3E-07
										Total Risk Across All Exposure Routes/Pathways	6.1E-05

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
M = Medium-specific EPC selected for risk calculation
mg/kg/day = milligrams per kilogram per day
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-232 (RAGS Part D, TABLE 8.74.RME)
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Valley Well #4

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Valley Well #4—Water Vapor
Receptor Population: Resident
Receptor Age: Child/Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Inhalation	Tetrachloroethene	23	ug/L	23	ug/L	R	1.7E-03	mg/kg/day	0.021	(mg/kg/day)-1	3.5E-05
	Trichloroethene	2.6	ug/L	2.6	ug/L	R	1.9E-04	mg/kg/day	0.01	(mg/kg/day)-1	1.9E-06
	(Total)										3.7E-05
										Total Risk Across All Exposure Routes/Pathways	3.7E-05

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
EPC = exposure point concentration
mg/kg/day = milligrams per kilogram per day
R = Route-specific EPC selected for risk calculation.
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
ug/L = micrograms per liter

Table I-233 (RAGS Part D, TABLE 9.1.RME)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 01

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

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Monitoring Well 01—Tap Water	Nitrate	N/A	--	N/A	N/A	Nitrate	Red blood cells	0.060	--	0.00049	0.060
			(Total)	--	--	--	--	(Total)		0.060	--	0.00049	0.060
	Air	Monitoring Well 01—Water Vapor	--	--	--	--	--	--	--	--	--	--	--
			(Total)	--	--	--	--	(Total)		--	--	--	--
							Total Risk Across Groundwater	--					Total Hazard Index Across All Media and All Exposure Routes	0.060
							Total Risk Across Air	--						
							Total Risk Across All Media and All Exposure Routes	--					Total Red blood cell HI =	0.060

Definitions:
COPC = chemical of potential concern
HI = hazard index
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure

Table I-234 (RAGS Part D, TABLE 9.2.RME)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 03

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

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Monitoring Well 03—Tap Water	Arsenic	9.1E-05	--	9.3E-07	9.2E-05	Arsenic	Skin	0.87	--	0.0072	0.88
			Bromodichloromethane	5.8E-07	--	--	5.8E-07	Bromodichloromethane	Kidney	0.00096	--	--	0.00096
			Carbon Tetrachloride	1.1E-06	--	--	1.1E-06	Carbon Tetrachloride	Liver	0.045	--	--	0.045
			Chloroform	6.0E-07	--	--	6.0E-07	Chloroform	Liver	0.0083	--	--	0.0083
			Lead	N/A	--	N/A	N/A	Lead	N/A	N/A	--	N/A	N/A
			Nitrate	N/A	--	N/A	N/A	Nitrate	Red blood cells	0.044	--	0.00036	0.044
			Perchlorate	N/A	--	N/A	N/A	Perchlorate	Thyroid	0.82	--	0.0068	0.83
			Tetrachloroethene	2.2E-07	--	--	2.2E-07	Tetrachloroethene	Liver	0.0019	--	--	0.0019
			Trichloroethene	7.1E-08	--	--	7.1E-08	Trichloroethene	N/A	0.0034	--	--	0.0034
			(Total)	9.4E-05	--	9.3E-07	9.5E-05	(Total)		1.8	--	0.014	1.8
	Air	Monitoring Well 03—Water Vapor	Bromodichloromethane	--	2.9E-06	--	2.9E-06	Bromodichloromethane	Kidney	--	0.0048	--	0.0048
			Carbon Tetrachloride	--	5.5E-06	--	5.5E-06	Carbon Tetrachloride	Liver	--	0.27	--	0.27
			Chloroform	--	1.8E-06	--	1.8E-06	Chloroform	Liver	--	0.042	--	0.042
			Tetrachloroethene	--	4.5E-07	--	4.5E-07	Tetrachloroethene	Liver	--	0.00084	--	0.00084
			Trichloroethene	--	2.4E-07	--	2.4E-07	Trichloroethene	N/A	--	0.017	--	0.017
			(Total)	--	1.1E-05	--	1.1E-05	(Total)		--	0.34	--	0.34

Total Risk Across Groundwater	9.5E-05
Total Risk Across Air	1.1E-05
Total Risk Across All Media and All Exposure Routes	1.1E-04

Total Hazard Index Across All Media and All Exposure Routes	2.1

Total Skin HI =	0.88
Total Kidney HI =	0.0058
Total Liver HI =	0.37
Total Red blood cell HI =	0.044
Total Thyroid HI =	0.83

Definitions:

1.0E-02 = 1.0 x 10-2 = 0.010
COPC = chemical of potential concern
HI = hazard index
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure

Table I-235 (RAGS Part D, TABLE 9.3.RME)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 04

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

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Monitoring Well 04—Tap Water	1,1-Dichloroethene	3.5E-06	--	--	3.5E-06	1,1-Dichloroethene	Liver	0.0028	--	--	0.0028
			1,2-Dichloroethane	3.4E-07	--	--	3.4E-07	1,2-Dichloroethane	N/A	0.0073	--	--	0.0073
			Carbon Tetrachloride	8.3E-06	--	--	8.3E-06	Carbon Tetrachloride	Liver	0.34	--	--	0.34
			Chloroform	1.5E-06	--	--	1.5E-06	Chloroform	Liver	0.020	--	--	0.020
			Nitrate	N/A	--	N/A	N/A	Nitrate	Red blood cells	0.33	--	0.0027	0.33
			Perchlorate	N/A	--	N/A	N/A	Perchlorate	Thyroid	4.9	--	0.04	4.9
			Tetrachloroethene	2.2E-07	--	--	2.2E-07	Tetrachloroethene	Liver	0.0019	--	--	0.0019
			Trichloroethene	2.2E-06	--	--	2.2E-06	Trichloroethene	N/A	0.11	--	--	0.11
			(Total)	1.6E-05	--	N/A	1.6E-05	(Total)		5.7	--	0.043	5.7
	Air	Monitoring Well 04—Water Vapor	1,1-Dichloroethene	--	5.2E-06	--	5.2E-06	1,1-Dichloroethene	Liver	--	0.014	--	0.014
			1,2-Dichloroethane	--	1.7E-06	--	1.7E-06	1,2-Dichloroethane	N/A	--	0.036	--	0.036
			Carbon Tetrachloride	--	4.1E-05	--	4.1E-05	Carbon Tetrachloride	Liver	--	2.1	--	2.1
			Chloroform	--	4.5E-06	--	4.5E-06	Chloroform	Liver	--	0.10	--	0.10
			Tetrachloroethene	--	4.5E-07	--	4.5E-07	Tetrachloroethene	Liver	--	0.00084	--	0.00084
			Trichloroethene	--	7.4E-06	--	7.4E-06	Trichloroethene	N/A	--	0.53	--	0.53
			(Total)	--	6.1E-05	--	6.1E-05	(Total)		--	2.8	--	2.8

Total Risk Across Groundwater	1.6E-05
Total Risk Across Air	6.1E-05
Total Risk Across All Media and All Exposure Routes	7.7E-05

Total Hazard Index Across All Media and All Exposure Routes	8.5

Total Liver HI =	2.6
Total Red blood cell HI =	0.33
Total Thyroid HI =	4.9

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010

COPC = chemical of potential concern

HI = hazard index

N/A = Not applicable

RAGS = Risk Assessment Guidance for Superfund

RME = reasonable maximum exposure

Table I-236 (RAGS Part D, TABLE 9.4.RME)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 05

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

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Monitoring Well 05—Tap Water	Nitrate	N/A	--	N/A	N/A	Nitrate	Red blood cells	0.096	--	0.0008	0.097
			Perchlorate	N/A	--	N/A	N/A	Perchlorate	Thyroid	0.54	--	0.0044	0.54
			(Total)	N/A	--	N/A	N/A	(Total)		0.63	--	0.0052	0.64
	Air	Monitoring Well 05—Water Vapor	--	--	--	--	--	--	--	--	--	--	--
			(Total)	--	--	--	--	(Total)		--	--	--	--
						Total Risk Across Groundwater	N/A					Total Hazard Index Across All Media and All Exposure Routes	0.64
						Total Risk Across Air	--						
						Total Risk Across All Media and All Exposure Routes	N/A					Total Red blood cell HI =	0.097
												Total Thyroid HI =	0.54

Definitions:
COPC = chemical of potential concern
HI = hazard index
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure

Table I-237 (RAGS Part D, TABLE 9.5.RME)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 06

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

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Monitoring Well 06—Tap Water	Nitrate	N/A	--	N/A	N/A	Nitrate	Red blood cells	0.44	--	0.0036	0.44
			Perchlorate	N/A	--	N/A	N/A	Perchlorate	Thyroid	0.70	--	0.0058	0.71
			Tetrachloroethene	1.5E-06	--	--	1.5E-06	Tetrachloroethene	Liver	0.013	--	--	0.013
			(Total)	1.5E-06	--	N/A	1.5E-06	(Total)		1.2	--	0.0094	1.2
	Air	Monitoring Well 06—	Tetrachloroethene	--	3.1E-06	--	3.1E-06	Tetrachloroethene	Liver	--	0.0058	--	0.0058
			(Total)	--	3.1E-06	--	3.1E-06	(Total)		--	0.0058	--	0.0058

Total Risk Across Groundwater	1.5E-06
Total Risk Across Air	3.1E-06
Total Risk Across All Media and All Exposure Routes	4.6E-06

Total Hazard Index Across All Media and All Exposure Routes	1.2

Total Liver HI =	0.019
Total Red blood cell HI =	0.44
Total Thyroid HI =	0.71

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010

COPC = chemical of potential concern

HI = hazard index

N/A = Not applicable

RAGS = Risk Assessment Guidance for Superfund

RME = reasonable maximum exposure

Table I-238 (RAGS Part D, TABLE 9.6.RME)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 07

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

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Monitoring Well 07— Tap Water	1,1-Dichloroethene	1.9E-05	--	--	1.9E-05	1,1-Dichloroethene	Liver	0.015	--	--	0.015
			1,2-Dichloroethane	9.3E-07	--	--	9.3E-07	1,2-Dichloroethane	N/A	0.020	--	--	0.020
			Carbon Tetrachloride	3.3E-04	--	--	3.3E-04	Carbon Tetrachloride	Liver	14	--	--	14
			Chloroform	6.0E-06	--	--	6.0E-06	Chloroform	Liver	0.083	--	--	0.083
			Hexavalent Chromium	6.2E-05	--	1.3E-06	6.4E-05	Hexavalent Chromium	No effects	0.13	--	0.0021	0.13
			Nitrate	N/A	--	N/A	N/A	Nitrate	Red blood cells	0.26	--	0.0021	0.26
			Perchlorate	N/A	--	N/A	N/A	Perchlorate	Thyroid	92	--	0.76	93
			Tetrachloroethene	2.8E-06	--	--	2.8E-06	Tetrachloroethene	Liver	0.024	--	--	0.024
			Trichloroethene	6.0E-06	--	--	6.0E-06	Trichloroethene	N/A	0.29	--	--	0.29
			(Total)	4.3E-04	--	1.3E-06	4.3E-04	(Total)		110	--	0.76	110
	Air	Monitoring Well 07— Water Vapor	1,1-Dichloroethene	--	2.8E-05	--	2.8E-05	1,1-Dichloroethene	Liver	--	0.075	--	0.075
			1,2-Dichloroethane	--	4.6E-06	--	4.6E-06	1,2-Dichloroethane	N/A	--	0.098	--	0.098
			Carbon Tetrachloride	--	1.7E-03	--	1.7E-03	Carbon Tetrachloride	Liver	--	84	--	84
			Chloroform	--	1.8E-05	--	1.8E-05	Chloroform	Liver	--	0.42	--	0.42
			Tetrachloroethene	--	5.8E-06	--	5.8E-06	Tetrachloroethene	Liver	--	0.011	--	0.011
			Trichloroethene	--	2.0E-05	--	2.0E-05	Trichloroethene	N/A	--	1.4	--	1.4
			(Total)	--	1.8E-03	--	1.8E-03	(Total)		--	86	--	86

Total Risk Across Groundwater	4.3E-04
Total Risk Across Air	1.8E-03
Total Risk Across All Media and All Exposure Routes	2.2E-03

Total Hazard Index Across All Media and All Exposure Routes	200
Total No effects HI =	0.13
Total Liver HI =	98
Total Red blood cell HI =	0.26
Total Thyroid HI =	93

Definitions:
1.0E-02 = 1.0 x 10-2 = 0.010
COPC = chemical of potential concern
HI = hazard index
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure

Table I-239 (RAGS Part D, TABLE 9.7.RME)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 08

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

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Monitoring Well 08—Tap Water	Carbon Tetrachloride	7.1E-06	--	--	7.1E-06	Carbon Tetrachloride	Liver	0.29	--	--	0.29
			Chloroform	6.0E-07	--	--	6.0E-07	Chloroform	Liver	0.0083	--	--	0.0083
			Lead	N/A	--	N/A	N/A	Lead	N/A	N/A	--	N/A	N/A
			Nitrate	N/A	--	N/A	N/A	Nitrate	Red blood cells	0.15	--	0.00122	0.15
			Perchlorate	N/A	--	N/A	N/A	Perchlorate	Thyroid	3.7	--	0.031	3.7
			Trichloroethene	1.0E-06	--	--	1.0E-06	Trichloroethene	N/A	0.048	--	--	0.048
			(Total)	8.7E-06	--	N/A	8.7E-06	(Total)		4.2	--	0.032	4.2
	Air	Monitoring Well 08—Water Vapor	Carbon Tetrachloride	--	3.6E-05	--	3.6E-05	Carbon Tetrachloride	Liver	--	1.8	--	1.8
			Chloroform	--	1.8E-06	--	1.8E-06	Chloroform	Liver	--	0.042	--	0.042
			Trichloroethene	--	3.3E-06	--	3.3E-06	Trichloroethene	N/A	--	0.24	--	0.24
			(Total)	--	4.1E-05	--	4.1E-05	(Total)		--	2.1	--	2.1

Total Risk Across Groundwater	8.7E-06
Total Risk Across Air	4.1E-05
Total Risk Across All Media and All Exposure Routes	5.0E-05

Total Hazard Index Across All Media and All Exposure Routes	6.3

Total Liver HI =	2.1
Total Red blood cell HI =	0.15
Total Thyroid HI =	3.7

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010

COPC = chemical of potential concern

HI = hazard index

N/A = Not applicable

RAGS = Risk Assessment Guidance for Superfund

RME = reasonable maximum exposure

Table I-240 (RAGS Part D, TABLE 9.8.RME)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 09

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

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Monitoring Well 09—Tap Water	Nitrate	N/A	--	N/A	N/A	Nitrate	Red blood cells	0.22	--	0.0018	0.22
			(Total)	N/A	--	N/A	N/A	(Total)		0.22	--	0.0018	0.22
	Air	Monitoring Well 09—Water Vapor	--	--	--	--	--	--	--	--	--	--	--
			(Total)	--	--	--	--	(Total)		--	--	--	--
							Total Risk Across Groundwater	N/A					
							Total Risk Across Air	--					
							Total Risk Across All Media and All Exposure Routes	N/A					
									Total Hazard Index Across All Media and All Exposure Routes				0.22
												Total Red blood cell HI =	0.22

Definitions:
COPC = chemical of potential concern
HI = hazard index
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure

Table I-241 (RAGS Part D, TABLE 9.9.RME)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 10

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

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Monitoring Well 10—Tap Water	Chloroform	6.5E-07	--	--	6.5E-07	Chloroform	Liver	0.0089	--	--	0.0089
			Nitrate	N/A	--	N/A	N/A	Nitrate	Red blood cells	0.72	--	0.0059	0.73
			Perchlorate	N/A	--	N/A	N/A	Perchlorate	Thyroid	2.0	--	0.017	2.1
			Tetrachloroethene	1.7E-06	--	--	1.7E-06	Tetrachloroethene	Liver	0.014	--	--	0.014
			Trichloroethene	1.2E-06	--	--	1.2E-06	Trichloroethene	N/A	0.055	--	--	0.055
			(Total)	3.5E-06	--	N/A	3.5E-06	(Total)		2.8	--	0.023	2.9
	Air	Monitoring Well 10—Water Vapor	Chloroform	--	2.0E-06	--	2.0E-06	Chloroform	Liver	--	0.045	--	0.045
			Tetrachloroethene	--	3.4E-06	--	3.4E-06	Tetrachloroethene	Liver	--	0.0064	--	0.0064
			Trichloroethene	--	3.9E-06	--	3.9E-06	Trichloroethene	N/A	--	0.28	--	0.28
			(Total)	--	9.3E-06	--	9.3E-06	(Total)		--	0.33	--	0.33

Total Risk Across Groundwater	3.5E-06
Total Risk Across Air	9.3E-06
Total Risk Across All Media and All Exposure Routes	1.3E-05

Total Hazard Index Across All Media and All Exposure Routes	3.2

Total Liver HI =	0.074
Total Red blood cell HI =	0.73
Total Thyroid HI =	2.1

Definitions:

1.0E-02 = 1.0 x 10-2 = 0.010

COPC = chemical of potential concern

HI = hazard index

N/A = Not applicable

RAGS = Risk Assessment Guidance for Superfund

RME = reasonable maximum exposure

Table I-242 (RAGS Part D, TABLE 9.10.RME)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 11

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

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Monitoring Well 11— Tap Water	Carbon Tetrachloride	1.5E-06	--	--	1.5E-06	Carbon Tetrachloride	Liver	0.063	--	--	0.063
			Chloroform	3.9E-07	--	--	3.9E-07	Chloroform	Liver	0.0054	--	--	0.0054
			Lead	N/A	--	N/A	N/A	Lead	N/A	N/A	--	N/A	N/A
			Nitrate	N/A	--	N/A	N/A	Nitrate	Red blood cells	0.025	--	0.00021	0.025
			(Total)	1.9E-06	--	N/A	1.9E-06	(Total)		0.094	--	0.00021	0.094
	Air	Monitoring Well 11— Water Vapor	Carbon Tetrachloride	--	7.7E-06	--	7.7E-06	Carbon Tetrachloride	Liver	--	0.39	--	0.39
			Chloroform	--	1.2E-06	--	1.2E-06	Chloroform	Liver	--	0.027	--	0.027
			(Total)	--	8.9E-06	--	8.9E-06	(Total)		--	0.41	--	0.41
						Total Risk Across Groundwater	1.9E-06					Total Hazard Index Across All Media and All Exposure Routes	0.51
						Total Risk Across Air	8.9E-06						
						Total Risk Across All Media and All Exposure Routes	1.1E-05					Total Liver HI =	0.48
												Total Red blood cell HI =	0.025

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010

COPC = chemical of potential concern

HI = hazard index

N/A = Not applicable

RAGS = Risk Assessment Guidance for Superfund

RME = reasonable maximum exposure

Table I-243 (RAGS Part D, TABLE 9.11.RME)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 12

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

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Monitoring Well 12— Tap Water	Carbon Tetrachloride	2.7E-05	--	--	2.7E-05	Carbon Tetrachloride	Liver	1.1	--	--	1.1
			Chloroform	9.2E-07	--	--	9.2E-07	Chloroform	Liver	0.013	--	--	0.013
			Lead	N/A	--	N/A	N/A	Lead	N/A	N/A	--	N/A	N/A
			Nitrate	N/A	--	N/A	N/A	Nitrate	Red blood cells	0.060	--	0.00049	0.060
			Perchlorate	N/A	--	N/A	N/A	Perchlorate	Thyroid	0.89	--	0.0074	0.90
			Trichloroethene	6.2E-08	--	--	6.2E-08	Trichloroethene	N/A	0.0030	--	--	0.0030
			(Total)	2.8E-05	--	N/A	2.8E-05	(Total)		2.1	--	0.0079	2.1
	Air	Monitoring Well 12— Water Vapor	Carbon Tetrachloride	--	1.3E-04	--	1.3E-04	Carbon Tetrachloride	Liver	--	6.7	--	6.7
			Chloroform	--	2.8E-06	--	2.8E-06	Chloroform	Liver	--	0.064	--	0.064
			Trichloroethene	--	2.1E-07	--	2.1E-07	Trichloroethene	N/A	--	0.015	--	0.015
			(Total)	--	1.4E-04	--	1.4E-04	(Total)		--	6.8	--	6.8

Total Risk Across Groundwater	2.8E-05
Total Risk Across Air	1.4E-04
Total Risk Across All Media and All Exposure Routes	1.6E-04

Total Hazard Index Across All Media and All Exposure Routes	8.9

Total Liver HI =	7.9
Total Red blood cell HI =	0.060
Total Thyroid HI =	0.90

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010

COPC = chemical of potential concern

HI = hazard index

N/A = Not applicable

RAGS = Risk Assessment Guidance for Superfund

RME = reasonable maximum exposure

Table I-244 (RAGS Part D, TABLE 9.12.RME)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 13

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

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Monitoring Well 13— Tap Water	1,1-Dichloroethene	8.6E-06	--	--	8.6E-06	1,1-Dichloroethene	Liver	0.0068	--	--	0.0068
			1,2-Dichloroethane	1.1E-06	--	--	1.1E-06	1,2-Dichloroethane	N/A	0.024	--	--	0.024
			Carbon Tetrachloride	3.6E-05	--	--	3.6E-05	Carbon Tetrachloride	Liver	1.5	--	--	1.5
			Chloroform	5.1E-06	--	--	5.1E-06	Chloroform	Liver	0.070	--	--	0.070
			Hexavalent Chromium	2.6E-04	--	5.2E-06	2.6E-04	Hexavalent Chromium	No effects	0.52	--	0.0086	0.53
			Lead	N/A	--	N/A	N/A	Lead	N/A	N/A	--	N/A	N/A
			Nitrate	N/A	--	N/A	N/A	Nitrate	Red blood cells	0.38	--	0.0032	0.39
			Perchlorate	N/A	--	N/A	N/A	Perchlorate	Thyroid	33	--	0.27	33
			Tetrachloroethene	3.0E-07	--	--	3.0E-07	Tetrachloroethene	Liver	0.0026	--	--	0.0026
			Trichloroethene	6.5E-06	--	--	6.5E-06	Trichloroethene	N/A	0.31	--	--	0.31
			(Total)	3.1E-04	--	5.2E-06	3.2E-04	(Total)		35	--	0.28	36
	Air	Monitoring Well 13— Water Vapor	1,1-Dichloroethene	--	1.3E-05	--	1.3E-05	1,1-Dichloroethene	Liver	--	0.034	--	0.034
			1,2-Dichloroethane	--	5.7E-06	--	5.7E-06	1,2-Dichloroethane	N/A	--	0.12	--	0.12
			Carbon Tetrachloride	--	1.8E-04	--	1.8E-04	Carbon Tetrachloride	Liver	--	9.0	--	9.0
			Chloroform	--	1.6E-05	--	1.6E-05	Chloroform	Liver	--	0.35	--	0.35
			Tetrachloroethene	--	6.2E-07	--	6.2E-07	Tetrachloroethene	Liver	--	0.0012	--	0.0012
			Trichloroethene	--	2.2E-05	--	2.2E-05	Trichloroethene	N/A	--	1.5	--	1.5
			(Total)	--	2.3E-04	--	2.3E-04	(Total)		--	11	--	11

Total Risk Across Groundwater	3.2E-04
Total Risk Across Air	2.3E-04
Total Risk Across All Media and All Exposure Routes	5.5E-04

Total Hazard Index Across All Media and All Exposure Routes	47

Total No effects HI =	0.53
Total Liver HI =	11
Total Red blood cell HI =	0.39
Total Thyroid HI =	33

Definitions:
1.0E-02 = 1.0 x 10-2 = 0.010
COPC = chemical of potential concern
HI = hazard index
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure

Table I-245 (RAGS Part D, TABLE 9.13.RME)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 14

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

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Monitoring Well 14—Tap Water	Chloroform	2.1E-07	--	--	2.1E-07	Chloroform	Liver	0.0029	--	--	0.0029
			Lead	N/A	--	N/A	N/A	Lead	N/A	N/A	--	N/A	N/A
			Nitrate	N/A	--	N/A	N/A	Nitrate	Red blood cells	0.76	--	0.0063	0.77
			Perchlorate	N/A	--	N/A	N/A	Perchlorate	Thyroid	0.46	--	0.0038	0.46
			Tetrachloroethene	6.0E-07	--	--	6.0E-07	Tetrachloroethene	Liver	0.0051	--	--	0.0051
			Trichloroethene	1.0E-07	--	--	1.0E-07	Trichloroethene	N/A	0.0049	--	--	0.0049
			(Total)	9.1E-07	--	N/A	9.1E-07	(Total)		1.2	--	0.01	1.2
	Air	Monitoring Well 14—Water Vapor	Chloroform	--	6.5E-07	--	6.5E-07	Chloroform	Liver	--	0.015	--	0.015
			Tetrachloroethene	--	1.2E-06	--	1.2E-06	Tetrachloroethene	Liver	--	0.0023	--	0.0023
			Trichloroethene	--	3.4E-07	--	3.4E-07	Trichloroethene	N/A	--	0.025	--	0.025
			(Total)	--	2.2E-06	--	2.2E-06	(Total)		--	0.042	--	0.042

Total Risk Across Groundwater	9.1E-07
Total Risk Across Air	2.2E-06
Total Risk Across All Media and All Exposure Routes	3.1E-06

Total Hazard Index Across All Media and All Exposure Routes	1.3

Total Liver HI =	0.025
Total Red blood cell HI =	0.77
Total Thyroid HI =	0.46

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010

COPC = chemical of potential concern

HI = hazard index

N/A = Not applicable

RAGS = Risk Assessment Guidance for Superfund

RME = reasonable maximum exposure

Table I-246 (RAGS Part D, TABLE 9.14.RME)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 15

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

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Monitoring Well 15—Tap Water	Nitrate	N/A	--	N/A	N/A	Nitrate	Red blood cells	0.18	--	0.0015	0.18
			(Total)	N/A	--	N/A	N/A	(Total)		0.18	--	0.0015	0.18
	Air	Monitoring Well 15—Water Vapor	--	--	--	--	--	--	--	--	--	--	--
			(Total)	--	--	--	--	(Total)		--	--	--	--
							Total Risk Across Groundwater	N/A					Total Hazard Index Across All Media and All Exposure Routes	0.18
							Total Risk Across Air	--						
							Total Risk Across All Media and All Exposure Routes	N/A					Total Red blood cell HI =	0.18

Definitions:
COPC = chemical of potential concern
HI = hazard index
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure

Table I-247 (RAGS Part D, TABLE 9.15.RME)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 16

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

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Monitoring Well 16—Tap Water	1,1-Dichloroethene	2.3E-05	--	--	2.3E-05	1,1-Dichloroethene	Liver	0.018	--	--	0.018
			1,2-Dichloroethane	2.2E-06	--	--	2.2E-06	1,2-Dichloroethane	N/A	0.046	--	--	0.046
			Carbon Tetrachloride	2.0E-04	--	--	2.0E-04	Carbon Tetrachloride	Liver	8.3	--	--	8.3
			Chloroform	2.0E-05	--	--	2.0E-05	Chloroform	Liver	0.27	--	--	0.27
			Hexavalent Chromium	4.4E-05	--	8.9E-07	4.5E-05	Hexavalent Chromium	No effects	0.089	--	0.0015	0.091
			Nitrate	N/A	--	N/A	N/A	Nitrate	Red blood cells	0.72	--	0.0059	0.73
			Perchlorate	N/A	--	N/A	N/A	Perchlorate	Thyroid	160	--	1.3	160
			Tetrachloroethene	9.9E-07	--	--	9.9E-07	Tetrachloroethene	Liver	0.0083	--	--	0.0083
			Trichloroethene	5.6E-06	--	--	5.6E-06	Trichloroethene	N/A	0.27	--	--	0.27
			(Total)	3.0E-04	--	8.9E-07	3.0E-04	(Total)		170	--	1.3	170
	Air	Monitoring Well 16—Water Vapor	1,1-Dichloroethene	--	3.5E-05	--	3.5E-05	1,1-Dichloroethene	Liver	--	0.092	--	0.092
			1,2-Dichloroethane	--	1.1E-05	--	1.1E-05	1,2-Dichloroethane	N/A	--	0.23	--	0.23
			Carbon Tetrachloride	--	1.0E-03	--	1.0E-03	Carbon Tetrachloride	Liver	--	51	--	51
			Chloroform	--	6.1E-05	--	6.1E-05	Chloroform	Liver	--	1.4	--	1.4
			Tetrachloroethene	--	2.0E-06	--	2.0E-06	Tetrachloroethene	Liver	--	0.0038	--	0.0038
			Trichloroethene	--	1.9E-05	--	1.9E-05	Trichloroethene	N/A	--	1.3	--	1.3
			(Total)	--	1.1E-03	--	1.1E-03	(Total)		--	54	--	54

Total Risk Across Groundwater	3.0E-04
Total Risk Across Air	1.1E-03
Total Risk Across All Media and All Exposure Routes	1.4E-03

Total Hazard Index Across All Media and All Exposure Routes	230

Total No effects HI =	0.091
Total Liver HI =	61
Total Red blood cell HI =	0.73
Total Thyroid HI =	160

Definitions:
1.0E-02 = 1.0 x 10-2 = 0.010
COPC = chemical of potential concern
HI = hazard index
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure

Table I-248 (RAGS Part D, TABLE 9.16.RME)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 17

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

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Monitoring Well 17—Tap Water	Bromodichloromethane	8.5E-07	--	--	8.5E-07	Bromodichloromethane	Kidney	0.0014	--	--	0.0014
			Carbon Tetrachloride	3.6E-06	--	--	3.6E-06	Carbon Tetrachloride	Liver	0.15	--	--	0.15
			Chloroform	3.5E-06	--	--	3.5E-06	Chloroform	Liver	0.049	--	--	0.049
			Hexavalent Chromium	2.1E-05	--	4.2E-07	2.1E-05	Hexavalent Chromium	No effects	0.042	--	0.00070	0.043
			Lead	N/A	--	N/A	N/A	Lead	N/A	N/A	--	N/A	N/A
			Nitrate	N/A	--	N/A	N/A	Nitrate	Red blood cells	0.092	--	0.00076	0.093
			Perchlorate	N/A	--	N/A	N/A	Perchlorate	Thyroid	4.6	--	0.038	4.7
			Tetrachloroethene	4.3E-07	--	--	4.3E-07	Tetrachloroethene	Liver	0.0036	--	--	0.0036
			Trichloroethene	5.1E-06	--	--	5.1E-06	Trichloroethene	N/A	0.25	--	--	0.25
			(Total)	3.4E-05	--	4.2E-07	3.5E-05	(Total)		5.2	--	0.040	5.3
	Air	Monitoring Well 17—Water Vapor	Bromodichloromethane	--	4.3E-06	--	4.3E-06	Bromodichloromethane	Kidney	--	0.0070	--	0.0070
			Carbon Tetrachloride	--	1.8E-05	--	1.8E-05	Carbon Tetrachloride	Liver	--	0.90	--	0.90
			Chloroform	--	1.1E-05	--	1.1E-05	Chloroform	Liver	--	0.24	--	0.24
			Tetrachloroethene	--	8.9E-07	--	8.9E-07	Tetrachloroethene	Liver	--	0.0017	--	0.0017
			Trichloroethene	--	1.7E-05	--	1.7E-05	Trichloroethene	N/A	--	1.2	--	1.2
			(Total)	--	5.1E-05	--	5.1E-05	(Total)		--	2.4	--	2.4

Total Risk Across Groundwater	3.5E-05
Total Risk Across Air	5.1E-05
Total Risk Across All Media and All Exposure Routes	8.5E-05

Total Hazard Index Across All Media and All Exposure Routes	7.6

Total Kidney HI =	0.0084
Total No effects HI =	0.043
Total Liver HI =	1.3
Total Red blood cell HI =	0.093
Total Thyroid HI =	4.7

Definitions:

1.0E-02 = 1.0 x 10-2 = 0.010

COPC = chemical of potential concern

HI = hazard index

N/A = Not applicable

RAGS = Risk Assessment Guidance for Superfund

RME = reasonable maximum exposure

Table I-249 (RAGS Part D. TABLE 9.17.RME)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 18

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

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Monitoring Well 18—Tap Water	Arsenic	6.2E-05	--	6.3E-07	6.3E-05	Arsenic	Skin	0.60	--	0.0049	0.60
			Bromodichloromethane	7.9E-07	--	--	7.9E-07	Bromodichloromethane	Kidney	0.0013	--	--	0.0013
			Carbon Tetrachloride	2.9E-06	--	--	2.9E-06	Carbon Tetrachloride	Liver	0.12	--	--	0.12
			Chloroform	3.0E-06	--	--	3.0E-06	Chloroform	Liver	0.042	--	--	0.042
			Hexavalent Chromium	1.9E-05	--	3.8E-07	1.9E-05	Hexavalent Chromium	No effects	0.038	--	0.00063	0.039
			Nitrate	N/A	--	N/A	N/A	Nitrate	Red blood cells	0.15	--	0.0013	0.15
			Perchlorate	N/A	--	N/A	N/A	Perchlorate	Thyroid	0.87	--	0.0072	0.88
			Tetrachloroethene	1.1E-06	--	--	1.1E-06	Tetrachloroethene	Liver	0.0096	--	--	0.0096
			Trichloroethene	3.8E-07	--	--	3.8E-07	Trichloroethene	N/A	0.018	--	--	0.018
			(Total)	8.9E-05	--	1.0E-06	9.0E-05	(Total)		1.8	--	0.014	1.9
	Air	Monitoring Well 18—Water Vapor	Bromodichloromethane	--	4.0E-06	--	4.0E-06	Bromodichloromethane	Kidney	--	0.0066	--	0.0066
			Carbon Tetrachloride	--	1.5E-05	--	1.5E-05	Carbon Tetrachloride	Liver	--	0.73	--	0.73
			Chloroform	--	9.3E-06	--	9.3E-06	Chloroform	Liver	--	0.21	--	0.21
			Tetrachloroethene	--	2.3E-06	--	2.3E-06	Tetrachloroethene	Liver	--	0.0044	--	0.0044
			Trichloroethene	--	1.3E-06	--	1.3E-06	Trichloroethene	N/A	--	0.091	--	0.091
			(Total)	--	3.1E-05	--	3.1E-05	(Total)		--	1.0	--	1.0

Total Risk Across Groundwater	9.0E-05
Total Risk Across Air	3.1E-05
Total Risk Across All Media and All Exposure Routes	1.2E-04

Total Hazard Index Across All Media and All Exposure Routes	2.9

Total Skin HI =	0.60
Total Kidney HI =	0.0079
Total No effects HI =	0.039
Total Liver HI =	1.1
Total Red blood cell HI =	0.15
Total Thyroid HI =	0.88

Definitions:

1.0E-02 = 1.0 x 10-2 = 0.010

COPC = chemical of potential concern

HI = hazard index

N/A = Not applicable

RAGS = Risk Assessment Guidance for Superfund

RME = reasonable maximum exposure

Table I-250 (RAGS Part D, TABLE 9.18.RME)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 19

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

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Monitoring Well 19—Tap Water	Bromodichloromethane	5.4E-07	--	--	5.4E-07	Bromodichloromethane	Kidney	0.00089	--	--	0.00089
			Chloroform	5.5E-07	--	--	5.5E-07	Chloroform	Liver	0.0077	--	--	0.0077
			Lead	N/A	--	N/A	N/A	Lead	N/A	N/A	--	N/A	N/A
			Nitrate	N/A	--	N/A	N/A	Nitrate	Red blood cells	0.44	--	0.0036	0.44
			Perchlorate	N/A	--	N/A	N/A	Perchlorate	Thyroid	0.35	--	0.0028	0.35
			Tetrachloroethene	1.4E-06	--	--	1.4E-06	Tetrachloroethene	Liver	0.012	--	--	0.012
			Trichloroethene	1.0E-07	--	--	1.0E-07	Trichloroethene	N/A	0.0049	--	--	0.0049
			(Total)	2.6E-06	--	N/A	2.6E-06	(Total)		0.81	--	0.0065	0.82
	Air	Monitoring Well 19—Water Vapor	Bromodichloromethane	--	2.7E-06	--	2.7E-06	Bromodichloromethane	Kidney	--	0.0045	--	0.0045
			Chloroform	--	1.7E-06	--	1.7E-06	Chloroform	Liver	--	0.038	--	0.038
			Tetrachloroethene	--	2.8E-06	--	2.8E-06	Tetrachloroethene	Liver	--	0.0052	--	0.0052
			Trichloroethene	--	3.4E-07	--	3.4E-07	Trichloroethene	N/A	--	0.025	--	0.025
			(Total)	--	7.6E-06	--	7.6E-06	(Total)		--	0.073	--	0.073

Total Risk Across Groundwater	2.6E-06
Total Risk Across Air	7.6E-06
Total Risk Across All Media and All Exposure Routes	1.0E-05

Total Hazard Index Across All Media and All Exposure Routes	0.89

Total Kidney HI =	0.0054
Total Liver HI =	0.063
Total Red blood cell HI =	0.44
Total Thyroid HI =	0.35

Definitions:

1.0E-02 = 1.0 x 10-2 = 0.010
COPC = chemical of potential concern
HI = hazard index
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure

Table I-251 (RAGS Part D, TABLE 9.19.RME)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 20

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

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Monitoring Well 20—	Arsenic	6.5E-05	--	6.6E-07	6.5E-05	Arsenic	Skin	0.62	--	0.0051	0.62
		Tap Water	Bromodichloromethane	5.4E-07	--	--	5.4E-07	Bromodichloromethane	Kidney	0.00089	--	--	0.00089
			Chloroform	1.0E-06	--	--	1.0E-06	Chloroform	Liver	0.014	--	--	0.014
			Lead	N/A	--	N/A	N/A	Lead	N/A	N/A	--	N/A	N/A
			Nitrate	N/A	--	N/A	N/A	Nitrate	Red blood cells	0.60	--	0.0049	0.60
			Perchlorate	N/A	--	N/A	N/A	Perchlorate	Thyroid	0.41	--	0.0034	0.41
			(Total)	6.6E-05	--	6.6E-07	6.7E-05	(Total)		1.6	--	0.013	1.7
	Air	Monitoring Well 20—	Bromodichloromethane	--	2.7E-06	--	2.7E-06	Bromodichloromethane	Kidney	--	0.0045	--	0.0045
		Water Vapor	Chloroform	--	3.1E-06	--	3.1E-06	Chloroform	Liver	--	0.070	--	0.070
			(Total)	--	5.8E-06	--	5.8E-06	(Total)		--	0.075	--	0.075

Total Risk Across Groundwater	6.7E-05
Total Risk Across Air	5.8E-06
Total Risk Across All Media and All Exposure Routes	7.3E-05

Total Hazard Index Across All Media and All Exposure Routes	1.7

Total Skin HI =	0.62
Total Kidney HI =	0.0054
Total Liver HI =	0.084
Total Red blood cell HI =	0.60
Total Thyroid HI =	0.41

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010

COPC = chemical of potential concern

HI = hazard index

N/A = Not applicable

RAGS = Risk Assessment Guidance for Superfund

RME = reasonable maximum exposure

Table I-252 (RAGS Part D, TABLE 9.20.RME)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 21

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

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Monitoring Well 21—Tap Water	Chloroform	3.1E-07	--	--	3.1E-07	Chloroform	Liver	0.0043	--	--	0.0043
			Lead	N/A	--	N/A	N/A	Lead	N/A	N/A	--	N/A	N/A
			Nitrate	N/A	--	N/A	N/A	Nitrate	Red blood cells	0.68	--	0.0056	0.68
			Perchlorate	N/A	--	N/A	N/A	Perchlorate	Thyroid	1.0	--	0.0085	1.0
			Tetrachloroethene	2.8E-06	--	--	2.8E-06	Tetrachloroethene	Liver	0.024	--	--	0.024
			Trichloroethene	2.0E-06	--	--	2.0E-06	Trichloroethene	N/A	0.096	--	--	0.096
			(Total)	5.1E-06	--	N/A	5.1E-06	(Total)		1.8	--	0.014	1.9
	Air	Monitoring Well 21—Water Vapor	Chloroform	--	9.6E-07	--	9.6E-07	Chloroform	Liver	--	0.022	--	0.022
			Tetrachloroethene	--	5.8E-06	--	5.8E-06	Tetrachloroethene	Liver	--	0.011	--	0.011
			Trichloroethene	--	6.7E-06	--	6.7E-06	Trichloroethene	N/A	--	0.48	--	0.48
			(Total)	--	1.3E-05	--	1.3E-05	(Total)		--	0.51	--	0.51

Total Risk Across Groundwater	5.1E-06	Total Hazard Index Across All Media and All Exposure Routes	2.4
Total Risk Across Air	1.3E-05		
Total Risk Across All Media and All Exposure Routes	1.9E-05		
		Total Liver HI =	0.060
		Total Red blood cell HI =	0.68
		Total Thyroid HI =	1.0

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010

COPC = chemical of potential concern

HI = hazard index

N/A = Not applicable

RAGS = Risk Assessment Guidance for Superfund

RME = reasonable maximum exposure

Table I-253 (RAGS Part D, TABLE 9.21.RME)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 22

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

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Monitoring Well 22—Tap Water	Nitrate	N/A	--	N/A	N/A	Nitrate	Red blood cells	0.44	--	0.0036	0.44
			Perchlorate	N/A	--	N/A	N/A	Perchlorate	Thyroid	0.64	--	0.0053	0.64
			Tetrachloroethene	1.1E-06	--	--	1.1E-06	Tetrachloroethene	Liver	0.0089	--	--	0.0089
			(Total)	1.1E-06	--	N/A	1.1E-06	(Total)		1.1	--	0.0089	1.1
	Air	Monitoring Well 22—Water Vapor	Tetrachloroethene	--	2.2E-06	--	2.2E-06	Tetrachloroethene	Liver	--	0.0041	--	0.0041
			(Total)	--	2.2E-06	--	2.2E-06	(Total)		--	0.0041	--	0.0041

Total Risk Across Groundwater	1.1E-06
Total Risk Across Air	2.2E-06
Total Risk Across All Media and All Exposure Routes	3.2E-06

Total Hazard Index Across All Media and All Exposure Routes	1.1
Total Liver HI =	0.013
Total Red blood cell HI =	0.44
Total Thyroid HI =	0.64

Definitions:

1.0E-02 = 1.0 x 10-2 = 0.010

COPC = chemical of potential concern

HI = hazard index

N/A = Not applicable

RAGS = Risk Assessment Guidance for Superfund

RME = reasonable maximum exposure

Table I-254 (RAGS Part D, TABLE 9.23.RME)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 23

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

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Monitoring Well 23—Tap Water	Chloroform	2.4E-07	--	--	2.4E-07	Chloroform	Liver	0.0033	--	--	0.0033
			Nitrate	N/A	--	N/A	N/A	Nitrate	Red blood cells	0.60	--	0.0049	0.60
			Perchlorate	N/A	--	N/A	N/A	Perchlorate	Thyroid	0.72	--	0.0059	0.72
			Tetrachloroethene	4.9E-07	--	--	4.9E-07	Tetrachloroethene	Liver	0.0042	--	--	0.0042
			Trichloroethene	6.5E-07	--	--	6.5E-07	Trichloroethene	N/A	0.031	--	--	0.031
			(Total)	1.4E-06	--	N/A	1.4E-06	(Total)		1.4	--	0.011	1.4
	Air	Monitoring Well 23—Water Vapor	Chloroform	--	7.3E-07	--	7.3E-07	Chloroform	Liver	--	0.017	--	0.017
			Tetrachloroethene	--	1.0E-06	--	1.0E-06	Tetrachloroethene	Liver	--	0.0019	--	0.0019
			Trichloroethene	--	2.2E-06	--	2.2E-06	Trichloroethene	N/A	--	0.15	--	0.15
			(Total)	--	3.9E-06	--	3.9E-06	(Total)		--	0.17	--	0.17

Total Risk Across Groundwater	1.4E-06
Total Risk Across Air	3.9E-06
Total Risk Across All Media and All Exposure Routes	5.3E-06

Total Hazard Index Across All Media and All Exposure Routes	1.5

Total Liver HI =	0.026
Total Red blood cell HI =	0.60
Total Thyroid HI =	0.72

Definitions:
1.0E-02 = 1.0 x 10-2 = 0.010
COPC = chemical of potential concern
HI = hazard index
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure

Table I-255 (RAGS Part D, TABLE 9.23.RME)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 24

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

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Monitoring Well 24—Tap Water	1,2-Dichloroethane	4.1E-07	--	--	4.1E-07	1,2-Dichloroethane	N/A	0.0086	--	--	0.0086
			Arsenic	7.6E-05	--	7.7E-07	7.7E-05	Arsenic	Skin	0.72	--	0.0060	0.73
			Carbon Tetrachloride	6.7E-05	--	--	6.7E-05	Carbon Tetrachloride	Liver	2.7	--	--	2.7
			Chloroform	6.9E-06	--	--	6.9E-06	Chloroform	Liver	0.096	--	--	0.096
			Nitrate	N/A	--	N/A	N/A	Nitrate	Red blood cells	0.14	--	0.0011	0.14
			Perchlorate	N/A	--	N/A	N/A	Perchlorate	Thyroid	42	--	0.35	43
			Tetrachloroethene	2.4E-07	--	--	2.4E-07	Tetrachloroethene	Liver	0.0020	--	--	0.0020
			Trichloroethene	3.3E-06	--	--	3.3E-06	Trichloroethene	N/A	0.16	--	--	0.16
			(Total)	1.5E-04	--	7.7E-07	1.5E-04	(Total)		46	--	0.36	46
	Air	Monitoring Well 24—Water Vapor	1,2-Dichloroethane	--	2.0E-06	--	2.0E-06	1,2-Dichloroethane	N/A	--	0.043	--	0.043
			Carbon Tetrachloride	--	3.3E-04	--	3.3E-04	Carbon Tetrachloride	Liver	--	17	--	17
			Chloroform	--	2.1E-05	--	2.1E-05	Chloroform	Liver	--	0.48	--	0.48
			Tetrachloroethene	--	5.0E-07	--	5.0E-07	Tetrachloroethene	Liver	--	0.00093	--	0.00093
			Trichloroethene	--	1.1E-05	--	1.1E-05	Trichloroethene	N/A	--	0.80	--	0.80
			(Total)	--	3.7E-04	--	3.7E-04	(Total)		--	18	--	18

Total Risk Across Groundwater	1.5E-04
Total Risk Across Air	3.7E-04
Total Risk Across All Media and All Exposure Routes	5.2E-04

Total Hazard Index Across All Media and All Exposure Routes	65

Total Skin HI =	0.73
Total Liver HI =	20
Total Red blood cell HI =	0.14
Total Thyroid HI =	43

Definitions:
1.0E-02 = 1.0 x 10-2 = 0.010
COPC = chemical of potential concern
HI = hazard index
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure

Table I-256 (RAGS Part D, TABLE 9.24.RME)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—La Canada Well #1

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

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	La Canada Well #1—Tap Water	Tetrachloroethene	4.6E-07	--	--	4.6E-07	Tetrachloroethene	Liver	0.0038	--	--	0.0038
			(Total)	4.6E-07	--	--	4.6E-07	(Total)		0.0038	--	--	0.0038
	Air	La Canada Well #1—Water Vapor	Tetrachloroethene	--	9.4E-07	--	9.4E-07	Tetrachloroethene	Liver	--	0.0017	--	0.0017
			(Total)	--	9.4E-07	--	9.4E-07	(Total)		--	0.0017	--	0.0017
						Total Risk Across Groundwater	4.6E-07					Total Hazard Index Across All Media and All Exposure Routes	0.0056
						Total Risk Across Air	9.4E-07						
						Total Risk Across All Media and All Exposure Routes	1.4E-06					Total Liver HI =	0.0056

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010

COPC = chemical of potential concern

HI = hazard index

RAGS = Risk Assessment Guidance for Superfund

RME = reasonable maximum exposure

Table I-257 (RAGS Part D, TABLE 9.25.RME)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Las Flores Well #2

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

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Las Flores Well #2—Tap Water	Arsenic	5.4E-05	--	5.4E-07	5.4E-05	Arsenic	Skin	0.51	--	0.0042	0.52
			Perchlorate	N/A	--	N/A	N/A	Perchlorate	Thyroid	0.78	--	0.0064	0.79
			Tetrachloroethene	3.6E-06	--	--	3.6E-06	Tetrachloroethene	Liver	0.031	--	--	0.031
			(Total)	5.7E-05	--	5.4E-07	5.8E-05	(Total)		1.3	--	0.011	1.3
	Air	Las Flores Well #2—Water Vapor	Tetrachloroethene	--	7.5E-06	--	7.5E-06	Tetrachloroethene	Liver	--	0.014	--	0.014
			(Total)	--	7.5E-06	--	7.5E-06	(Total)		--	0.014	--	0.014

Total Risk Across Groundwater	5.8E-05
Total Risk Across Air	7.5E-06
Total Risk Across All Media and All Exposure Routes	6.5E-05

Total Hazard Index Across All Media and All Exposure Routes	1.3

Total Skin HI =	0.52
Total Liver HI =	0.045
Total Thyroid HI =	0.79

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
COPC = chemical of potential concern
HI = hazard index
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure

Table I-258 (RAGS Part D, TABLE 9.26.RME)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Lincoln Ave. Well #3

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

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Lincoln Ave. Well #3—Tap Water	Carbon Tetrachloride	2.5E-06	--	--	2.5E-06	Carbon Tetrachloride	Liver	0.10	--	--	0.10
			Perchlorate	N/A	--	N/A	N/A	Perchlorate	Thyroid	1.8	--	0.015	1.8
			Tetrachloroethene	8.3E-07	--	--	8.3E-07	Tetrachloroethene	Liver	0.007	--	--	0.007
			Trichloroethene	3.5E-06	--	--	3.5E-06	Trichloroethene	N/A	0.17	--	--	0.17
			(Total)	6.8E-06	--	N/A	6.8E-06	(Total)		2.1	--	0.015	2.1
	Air	Lincoln Ave. Well #3—Water Vapor	Carbon Tetrachloride	--	1.2E-05	--	1.2E-05	Carbon Tetrachloride	Liver	--	0.62	--	0.62
			Tetrachloroethene	--	1.7E-06	--	1.7E-06	Tetrachloroethene	Liver	--	0.0032	--	0.0032
			Trichloroethene	--	1.2E-05	--	1.2E-05	Trichloroethene	N/A	--	0.85	--	0.85
			(Total)	--	2.6E-05	--	2.6E-05	(Total)		--	1.5	--	1.5
						Total Risk Across Groundwater	6.8E-06					Total Hazard Index Across All Media and All Exposure Routes	3.5
						Total Risk Across Air	2.6E-05						
						Total Risk Across All Media and All Exposure Routes	3.3E-05					Total Liver HI =	0.73
												Total Thyroid HI =	1.8

Definitions:
1.0E-02 = 1.0 x 10-2 = 0.010
COPC = chemical of potential concern
HI = hazard index
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure

Table I-259 (RAGS Part D, TABLE 9.27.RME)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Lincoln Ave. Well #5

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

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Lincoln Ave. Well #5— Tap Water	Perchlorate	N/A	--	N/A	N/A	Perchlorate	Thyroid	0.89	--	0.0074	0.90
			Tetrachloroethene	5.3E-07	--	--	5.3E-07	Tetrachloroethene	Liver	0.0045	--	--	0.0045
			Trichloroethene	2.9E-06	--	--	2.9E-06	Trichloroethene	N/A	0.14	--	--	0.14
			(Total)	3.4E-06	--	N/A	3.4E-06	(Total)		1.0	--	0.0074	1.0
	Air	Lincoln Ave. Well #5— Water Vapor	Tetrachloroethene	--	1.1E-06	--	1.1E-06	Tetrachloroethene	Liver	--	0.0020	--	0.0020
			Trichloroethene	--	9.7E-06	--	9.7E-06	Trichloroethene	N/A	--	0.69	--	0.69
			(Total)	--	1.1E-05	--	1.1E-05	(Total)		--	0.69	--	0.69

Total Risk Across Groundwater	3.4E-06
Total Risk Across Air	1.1E-05
Total Risk Across All Media and All Exposure Routes	1.4E-05

Total Hazard Index Across All Media and All Exposure Routes	1.7
Total Liver HI =	0.0065
Total Thyroid HI =	0.90

Definitions:
1.0E-02 = 1.0 x 10-2 = 0.010
COPC = chemical of potential concern
HI = hazard index
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure

Table I-260 (RAGS Part D, TABLE 9.28.RME)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Pasadena Arroyo Well

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

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Pasadena Arroyo Well—Tap Water	Carbon Tetrachloride	1.0E-05	--	--	1.0E-05	Carbon Tetrachloride	Liver	0.43	--	--	0.43
			Perchlorate	N/A	--	N/A	N/A	Perchlorate	Thyroid	17	--	0.14	17
			Tetrachloroethene	6.8E-07	--	--	6.8E-07	Tetrachloroethene	Liver	0.0057	--	--	0.0057
			Trichloroethene	7.6E-07	--	--	7.6E-07	Trichloroethene	N/A	0.036	--	--	0.036
			(Total)	1.2E-05	--	N/A	1.2E-05	(Total)		17	--	0.14	17
	Air	Pasadena Arroyo Well—Water Vapor	Carbon Tetrachloride	--	5.2E-05	--	5.2E-05	Carbon Tetrachloride	Liver	--	2.6	--	2.6
			Tetrachloroethene	--	1.4E-06	--	1.4E-06	Tetrachloroethene	Liver	--	0.0026	--	0.0026
			Trichloroethene	--	2.5E-06	--	2.5E-06	Trichloroethene	N/A	--	0.18	--	0.18
			(Total)	--	5.6E-05	--	5.6E-05	(Total)		--	2.8	--	2.8

Total Risk Across Groundwater	1.2E-05
Total Risk Across Air	5.6E-05
Total Risk Across All Media and All Exposure Routes	6.8E-05

Total Hazard Index Across All Media and All Exposure Routes	20
Total Liver HI =	3.1
Total Thyroid HI =	17

Definitions:
1.0E-02 = 1.0 x 10-2 = 0.010
COPC = chemical of potential concern
HI = hazard index
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure

Table I-261 (RAGS Part D, TABLE 9.29.RME)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Pasadena Ventura Well

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

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Pasadena Ventura Well—Tap Water	Perchlorate	N/A	--	N/A	N/A	Perchlorate	Thyroid	0.63	--	0.0052	0.63
			Tetrachloroethene	5.3E-07	--	--	5.3E-07	Tetrachloroethene	Liver	0.0045	--	--	0.0045
			Trichloroethene	2.5E-07	--	--	2.5E-07	Trichloroethene	N/A	0.012	--	--	0.012
			(Total)	7.8E-07	--	N/A	7.8E-07	(Total)		0.64	--	0.0052	0.65
	Air	Pasadena Ventura Well—Water Vapor	Tetrachloroethene	--	1.1E-06	--	1.1E-06	Tetrachloroethene	Liver	--	0.0020	--	0.0020
			Trichloroethene	--	8.2E-07	--	8.2E-07	Trichloroethene	N/A	--	0.059	--	0.059
			(Total)	--	1.9E-06	--	1.9E-06	(Total)		--	0.061	--	0.061

Total Risk Across Groundwater	7.8E-07
Total Risk Across Air	1.9E-06
Total Risk Across All Media and All Exposure Routes	2.7E-06

Total Hazard Index Across All Media and All Exposure Routes	0.71
Total Liver HI =	0.0065
Total Thyroid HI =	0.63

Definitions:

1.0E-02 = 1.0 x 10-2 = 0.010
COPC = chemical of potential concern
HI = hazard index
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure
TWA = time weighted average

Table I-262 (RAGS Part D, TABLE 9.30.RME)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Pasadena Well 52

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

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Pasadena Well 52—Tap Water	Carbon Tetrachloride	2.9E-06	--	--	2.9E-06	Carbon Tetrachloride	Liver	0.12	--	--	0.12
			Perchlorate	N/A	--	N/A	N/A	Perchlorate	Thyroid	1.9	--	0.016	1.9
			Trichloroethene	1.2E-06	--	--	1.2E-06	Trichloroethene	N/A	0.055	--	--	0.055
			(Total)	4.1E-06	--	N/A	4.1E-06	(Total)		2.1	--	0.016	2.1
	Air	Pasadena Well 52—Water Vapor	Carbon Tetrachloride	--	1.5E-05	--	1.5E-05	Carbon Tetrachloride	Liver	--	0.73	--	0.73
			Trichloroethene	--	3.9E-06	--	3.9E-06	Trichloroethene	N/A	--	0.28	--	0.28
			(Total)	--	1.8E-05	--	1.8E-05	(Total)		--	1.0	--	1.0

Total Risk Across Groundwater	4.1E-06
Total Risk Across Air	1.8E-05
Total Risk Across All Media and All Exposure Routes	2.2E-05

Total Hazard Index Across All Media and All Exposure Routes	3.1
Total Liver HI =	0.85
Total Thyroid HI =	1.9

Definitions:
1.0E-02 = 1.0 x 10-2 = 0.010
COPC = chemical of potential concern
HI = hazard index
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure

Table I-263 (RAGS Part D, TABLE 9.31.RME)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Pasadena Windsor Well

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

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Pasadena Windsor Well—Tap Water	Tetrachloroethene	8.3E-07	--	--	8.3E-07	Tetrachloroethene	Liver	0.0070	--	--	0.0070
			Trichloroethene	2.7E-07	--	--	2.7E-07	Trichloroethene	N/A	0.013	--	--	0.013
			(Total)	1.1E-06	--	--	1.1E-06	(Total)		0.020	--	--	0.020
	Air	Pasadena Windsor Well—Water Vapor	Tetrachloroethene	--	1.7E-06	--	1.7E-06	Tetrachloroethene	Liver	--	0.0032	--	0.0032
			Trichloroethene	--	8.9E-07	--	8.9E-07	Trichloroethene	N/A	--	0.064	--	0.064
			(Total)	--	2.6E-06	--	2.6E-06	(Total)		--	0.067	--	0.067
						Total Risk Across Groundwater	1.1E-06					Total Hazard Index Across All Media and All Exposure Routes	0.087
						Total Risk Across Air	2.6E-06						
						Total Risk Across All Media and All Exposure Routes	3.7E-06					Total Liver HI =	0.010

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010

COPC = chemical of potential concern

HI = hazard index

N/A = Not applicable

RAGS = Risk Assessment Guidance for Superfund

RME = reasonable maximum exposure

Table I-264 (RAGS Part D, TABLE 9.32.RME)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory -- Rubio Cañon #4

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

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Rubio Cañon #4— Tap Water	Perchlorate	N/A	--	N/A	N/A	Perchlorate	Thyroid	0.70	--	0.0058	0.71
			(Total)	N/A	--	N/A	N/A	(Total)		0.70	--	0.0058	0.71
	Air	Rubio Cañon #4— Water Vapor	--	--	--	--	--	--	--	--	--	--	--
			(Total)	--	--	--	--	(Total)		--	-	--	--
						Total Risk Across Groundwater	N/A					Total Hazard Index Across All Media and All Exposure Routes	0.71
						Total Risk Across Air	--						
						Total Risk Across All Media and All Exposure Routes	N/A					Total Thyroid HI =	0.71

Definitions: COPC = chemical of potential concern
HI = hazard index
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure

Table I-265 (RAGS Part D, TABLE 9.33.RME)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Rubio Cañon Well #7

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

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Rubio Cañon Well #7—Tap Water	Perchlorate	N/A	--	N/A	N/A	Perchlorate	Thyroid	0.41	--	0.0034	0.41
			(Total)	N/A	--	N/A	N/A	(Total)		0.41	--	0.0034	0.41
	Air	Rubio Cañon Well #7—Water Vapor	--	--	--	--	--	--	--	--	--	--	--
			(Total)	--	--	--	--	(Total)		--	--	--	--
							Total Risk Across Groundwater	N/A					Total Hazard Index Across All Media and All Exposure Routes	0.41
							Total Risk Across Air	--						
							Total Risk Across All Media and All Exposure Routes	N/A					Total Thyroid HI =	0.41

Definitions: COPC = chemical of potential concern
HI = hazard index
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure

Table I-266 (RAGS Part D, TABLE 9.34.RME)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Valley Well #1

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

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Valley Well #1— Tap Water	Arsenic	4.2E-05	--	4.3E-07	4.3E-05	Arsenic	Skin	0.40	--	0.0033	0.41
			Perchlorate	N/A	--	N/A	N/A	Perchlorate	Thyroid	0.50	--	0.0041	0.50
			Tetrachloroethene	2.9E-05	--	--	2.9E-05	Tetrachloroethene	Liver	0.24	--	--	0.24
			Trichloroethene	7.8E-07	--	--	7.8E-07	Trichloroethene	N/A	0.037	--	--	0.037
			(Total)	7.2E-05	--	4.3E-07	7.2E-05	(Total)		1.2	--	0.0075	1.2
	Air	Valley Well #1— Water Vapor	Tetrachloroethene	--	5.9E-05	--	5.9E-05	Tetrachloroethene	Liver	--	0.11	--	0.11
			Trichloroethene	--	2.6E-06	--	2.6E-06	Trichloroethene	N/A	--	0.19	--	0.19
			(Total)	--	6.2E-05	--	6.2E-05	(Total)		--	0.30	--	0.30
						Total Risk Across Groundwater	7.2E-05					Total Hazard Index Across All Media and All Exposure Routes	1.5
						Total Risk Across Air	6.2E-05						
						Total Risk Across All Media and All Exposure Routes	1.3E-04					Total Skin HI =	0.41
												Total Liver HI =	0.35
												Total Thyroid HI =	0.50

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010

COPC = chemical of potential concern

HI = hazard index

N/A = Not applicable

RAGS = Risk Assessment Guidance for Superfund

RME = reasonable maximum exposure

Table I-267 (RAGS Part D, TABLE 9.35.RME)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Valley Well #2

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

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Valley Well #2—Tap Water	Arsenic	4.5E-05	--	4.5E-07	4.5E-05	Arsenic	Skin	0.43	--	0.0035	0.43
			Perchlorate	N/A	--	N/A	N/A	Perchlorate	Thyroid	0.51	--	0.0042	0.52
			Tetrachloroethene	6.9E-06	--	--	6.9E-06	Tetrachloroethene	Liver	0.058	--	--	0.058
			Trichloroethene	2.2E-07	--	--	2.2E-07	Trichloroethene	N/A	0.011	--	--	0.011
			(Total)	5.2E-05	--	4.5E-07	5.2E-05	(Total)		1.0	--	0.0077	1.0
	Air	Valley Well #2—Water Vapor	Tetrachloroethene	--	1.4E-05	--	1.4E-05	Tetrachloroethene	Liver	--	0.026	--	0.026
			Trichloroethene	--	7.4E-07	--	7.4E-07	Trichloroethene	N/A	--	0.053	--	0.053
			(Total)	--	1.5E-05	--	1.5E-05	(Total)		--	0.080	--	0.080

Total Risk Across Groundwater	5.2E-05
Total Risk Across Air	1.5E-05
Total Risk Across All Media and All Exposure Routes	6.7E-05

Total Hazard Index Across All Media and All Exposure Routes	1.1

Total Skin HI =	0.43
Total Liver HI =	0.085
Total Thyroid HI =	0.52

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010

COPC = chemical of potential concern

HI = hazard index

N/A = Not applicable

RAGS = Risk Assessment Guidance for Superfund

RME = reasonable maximum exposure

Table I-268 (RAGS Part D, TABLE 9.36.RME)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Valley Well #3

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

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Valley Well #3— Tap Water	Arsenic	3.3E-05	--	3.4E-07	3.4E-05	Arsenic	Skin	0.32	--	0.0026	0.32
			Perchlorate	N/A	--	N/A	N/A	Perchlorate	Thyroid	0.56	--	0.0046	0.57
			Tetrachloroethene	8.3E-07	--	--	8.3E-07	Tetrachloroethene	Liver	0.0070	--	--	0.0070
			(Total)	3.4E-05	--	3.4E-07	3.5E-05	(Total)		0.89	--	0.0073	0.90
	Air	Valley Well #3— Water Vapor	Tetrachloroethene	--	1.7E-06	--	1.7E-06	Tetrachloroethene	Liver	--	0.0032	--	0.0032
			(Total)	--	1.7E-06	--	1.7E-06	(Total)		--	0.0032	--	0.0032

Total Risk Across Groundwater	3.5E-05
Total Risk Across Air	1.7E-06
Total Risk Across All Media and All Exposure Routes	3.6E-05

Total Hazard Index Across All Media and All Exposure Routes	0.90

Total Skin HI =	0.32
Total Liver HI =	0.010
Total Thyroid HI =	0.57

Definitions:

1.0E-02 = 1.0 x 10-2 = 0.010
COPC = chemical of potential concern
HI = hazard index
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure

Table I-269 (RAGS Part D, TABLE 9.37.RME)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Valley Well #4

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

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Valley Well #4—Tap Water	Arsenic	4.2E-05	--	4.3E-07	4.3E-05	Arsenic	Skin	0.40	--	0.0033	0.41
			Perchlorate	N/A	--	N/A	N/A	Perchlorate	Thyroid	0.50	--	0.0041	0.50
			Tetrachloroethene	1.7E-05	--	--	1.7E-05	Tetrachloroethene	Liver	0.14	--	--	0.14
			Trichloroethene	5.8E-07	--	--	5.8E-07	Trichloroethene	N/A	0.028	--	--	0.028
			(Total)	6.0E-05	--	4.3E-07	6.1E-05	(Total)		1.1	--	0.0075	1.1
		Valley Well #4—Water Vapor	Tetrachloroethene	--	3.5E-05	--	3.5E-05	Tetrachloroethene	Liver	--	0.066	--	0.066
			Trichloroethene	--	1.9E-06	--	1.9E-06	Trichloroethene	N/A	--	0.14	--	0.14
			(Total)	--	3.7E-05	--	3.7E-05	(Total)		--	0.20	--	0.20
						Total Risk Across Groundwater	6.1E-05					Total Hazard Index Across All Media and All Exposure Routes	1.3
						Total Risk Across Air	3.7E-05						
						Total Risk Across All Media and All Exposure Routes	9.8E-05					Total Skin HI =	0.41
												Total Liver HI =	0.21
												Total Thyroid HI =	0.50

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010

COPC = chemical of potential concern

HI = hazard index

N/A = Not applicable

RAGS = Risk Assessment Guidance for Superfund

RME = reasonable maximum exposure

Table I-270 (RAGS Part D, TABLE 10.1 RME)
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 03

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

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Monitoring Well 03—Tap Water	Arsenic	9.1E-05	--	9.3E-07	9.2E-05	--	--	--	--	--	--
			Carbon Tetrachloride	1.1E-06	--	--	1.1E-06	--	--	--	--	--	--
			(Total)	9.3E-05	--	9.3E-07	9.3E-05	(Total)		--	--	--	--
	Air	Monitoring Well 03—Water Vapor	Bromodichloromethane	--	2.9E-06	--	2.9E-06	--	--	--	--	--	--
			Carbon Tetrachloride	--	5.5E-06	--	5.5E-06	--	--	--	--	--	--
			Chloroform	--	1.8E-06	--	1.8E-06	--	--	--	--	--	--
			(Total)		1.0E-05		1.0E-05	(Total)		--	--	--	--
							Total Risk Across Groundwater	9.3E-05					
							Total Risk Across Air	1.0E-05					
							Total Risk Across All Media and All Exposure Routes	1.0E-04					
													Total Hazard Index Across All Media and All Exposure Routes	--

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure

Table I-271 (RAGS Part D, TABLE 10.2.RME)
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 04

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

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Monitoring Well 04—	1,1-Dichloroethene	3.5E-06	--	--	3.5E-06	--	--	--	--	--	--
		Tap Water	Carbon Tetrachloride	8.3E-06	--	--	8.3E-06	--	--	--	--	--	--
			Chloroform	1.5E-06	--	--	1.5E-06	--	--	--	--	--	--
			Perchlorate	--	--	--	--	Perchlorate	Thyroid	4.9	--	0.040	4.9
			Trichloroethene	2.2E-06	--	--	2.2E-06	--	--	--	--	--	--
			(Total)	1.5E-05	--	--	1.5E-05	(Total)		4.9	--	0.040	4.9
	Air	Monitoring Well 04—	1,1-Dichloroethene	--	5.2E-06	--	5.2E-06	--	--	--	--	--	--
		Water Vapor	1,2-Dichloroethane	--	1.7E-06	--	1.7E-06	--	--	--	--	--	--
			Carbon Tetrachloride	--	4.1E-05	--	4.1E-05	Carbon Tetrachloride	Liver	--	2.1	--	2.1
			Chloroform	--	4.5E-06	--	4.5E-06	--	--	--	--	--	--
			Trichloroethene	--	7.4E-06	--	7.4E-06	--	--	--	--	--	--
			(Total)	--	6.0E-05	--	6.0E-05	(Total)		--	2.1	--	2.1

Total Risk Across Groundwater	1.5E-05
Total Risk Across Air	6.0E-05
Total Risk Across All Media and All Exposure Routes	7.6E-05

Total Hazard Index Across All Media and All Exposure Routes	7.0
Total Liver HI =	2.1
Total Thyroid HI =	4.9

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
HI = hazard index
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure

Table I-272 (RAGS Part D, TABLE 10 3.RME)
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 06

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

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Monitoring Well 06—Tap Water	Tetrachloroethene	1.5E-06	--	--	1.5E-06	--	--	--	--	--	--
			(Total)	1.5E-06	--	--	1.5E-06	(Total)		--	--	--	--
	Air	Monitoring Well 06—Water Vapor	Tetrachloroethene	--	3.1E-06	--	3.1E-06	--	--	--	--	--	--
			(Total)	--	3.1E-06	--	3.1E-06	(Total)		--	--	--	--
						Total Risk Across Groundwater	1.5E-06						
						Total Risk Across Air	3.1E-06						
						Total Risk Across All Media and All Exposure Routes	4.6E-06						
												Total Hazard Index Across All Media and All Exposure Routes	--

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure

Table I-273 (RAGS Part D, TABLE 10.4.RME)
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 07

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

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Monitoring Well 07—Tap Water	1,1-Dichloroethene	1.9E-05	--	--	1.9E-05	--	--	--	--	--	--
			Carbon Tetrachloride	3.3E-04	--	--	3.3E-04	Carbon Tetrachloride	Liver	14	--	--	14
			Chloroform	6.0E-06	--	--	6.0E-06	--	--	--	--	--	--
			Hexavalent Chromium	6.2E-05	--	1.3E-06	6.4E-05	--	--	--	--	--	--
			--	--	--	--	--	Perchlorate	Thyroid	92	--	0.76	93
			Tetrachloroethene	2.8E-06	--	--	2.8E-06	--	--	--	--	--	--
			Trichloroethene	6.0E-06	--	--	6.0E-06	--	--	--	--	--	--
			(Total)	4.3E-04	--	1.3E-06	4.3E-04	(Total)		110	--	0.76	110
	Air	Monitoring Well 07—Water Vapor	1,1-Dichloroethene	--	2.8E-05	--	2.8E-05	--	--	--	--	--	--
			1,2-Dichloroethane	--	4.6E-06	--	4.6E-06	--	--	--	--	--	--
			Carbon Tetrachloride	--	1.7E-03	--	1.7E-03	Carbon Tetrachloride	Liver	--	84	--	84
			Chloroform	--	1.8E-05	--	1.8E-05	--	--	--	--	--	--
			Tetrachloroethene	--	5.8E-06	--	5.8E-06	--	--	--	--	--	--
			Trichloroethene	--	2.0E-05	--	2.0E-05	Trichloroethene	N/A	--	1.4	--	1.4
			(Total)	--	1.8E-03	--	1.8E-03	(Total)		--	86	--	86
						Total Risk Across Groundwater	4.3E-04						
						Total Risk Across Air	1.8E-03						
						Total Risk Across All Media and All Exposure Routes	2.2E-03						
												Total Hazard Index Across All Media and All Exposure Routes	200
												Total Liver HI =	98
												Total Thyroid HI =	93

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
HI = hazard index
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure

Table I-274 (RAGS Part D, TABLE 10.5.RME)
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 08

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

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Monitoring Well 08—Tap Water	Carbon Tetrachloride	7.1E-06	--	--	7.1E-06	--	--	--	--	--	--
			--	--	--	--	--	Perchlorate	Thyroid	3.7	--	0.031	3.7
			Trichloroethene	1.0E-06	--	--	1.0E-06	--	--	--	--	--	--
			(Total)	8.1E-06	--	--	8.1E-06	(Total)		3.7	--	0.031	3.7
	Air	Monitoring Well 08—Water Vapor	Carbon Tetrachloride	--	3.6E-05	--	3.6E-05	Carbon Tetrachloride	Liver	--	1.8	--	1.8
			Chloroform	--	1.8E-06	--	1.8E-06	--	--	--	--	--	--
			Trichloroethene	--	3.3E-06	--	3.3E-06	--	--	--	--	--	--
			(Total)	--	4.1E-05	--	4.1E-05	(Total)		--	1.8	--	1.8
						Total Risk Across Groundwater	8.1E-06					Total Hazard Index Across All Media and All Exposure Routes	5.5
						Total Risk Across Air	4.1E-05						
						Total Risk Across All Media and All Exposure Routes	4.9E-05					Total Liver HI =	1.8
												Total Thyroid HI =	3.7

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
HI = hazard index
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure

Table I-275 (RAGS Part D, TABLE 10.6.RME)
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory---Monitoring Well 10

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

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Monitoring Well 10—	--	--	--	--	--	Perchlorate	Thyroid	2.0	--	0.017	2.1
		Tap Water	Tetrachloroethene	1.7E-06	--	--	1.7E-06	--	--	--	--	--	--
			Trichloroethene	1.2E-06	--	--	1.2E-06	--	--	--	--	--	--
			(Total)	2.8E-06	--	--	2.8E-06	(Total)		2.0	--	0.017	2.1
	Air	Monitoring Well 10—	Chloroform	--	2.0E-06	--	2.0E-06	--	--	--	--	--	--
		Water Vapor	Tetrachloroethene	--	3.4E-06	--	3.4E-06	--	--	--	--	--	--
			Trichloroethene	--	3.9E-06	--	3.9E-06	--	--	--	--	--	--
			(Total)	--	9.3E-06	--	9.3E-06	(Total)		--	--	--	--
						Total Risk Across Groundwater	2.8E-06					Total Hazard Index Across All Media and All Exposure Routes	2.1
						Total Risk Across Air	9.3E-06						
						Total Risk Across All Media and All Exposure Routes	1.2E-05					Total Thyroid HI =	2.1

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
HI = hazard index
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure

Table I-276 (RAGS Part D, TABLE 10.7 RME)

RISK ASSESSMENT SUMMARY

REASONABLE MAXIMUM EXPOSURE

Jet Propulsion Laboratory—Monitoring Well 11

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

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Monitoring Well 11—Tap Water	Carbon Tetrachloride	1.5E-06	--	--	1.5E-06	--	--	--	--	--	--
			(Total)	1.5E-06	--	--	1.5E-06	(Total)		--	--	--	--
	Air	Monitoring Well 11—Water Vapor	Carbon Tetrachloride	--	7.7E-06	--	7.7E-06	--	--	--	--	--	--
			Chloroform	--	1.2E-06	--	1.2E-06	--	--	--	--	--	--
			(Total)	--	8.9E-06	--	8.9E-06	(Total)		--	--	--	--
						Total Risk Across Groundwater	1.5E-06						
						Total Risk Across Air	8.9E-06						
						Total Risk Across All Media and All Exposure Routes	1.0E-05						

Total Hazard Index Across All Media and All Exposure Routes: --

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010

RAGS = Risk Assessment Guidance for Superfund

RME = reasonable maximum exposure

Table I-277 (RAGS Part D, TABLE 10.8.RME)
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 12

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

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Monitoring Well 12—Tap Water	Carbon Tetrachloride	2.7E-05	--	--	2.7E-05	Carbon Tetrachloride	Liver	1.1	--	--	1.1
			(Total)	2.7E-05	--	--	2.7E-05	(Total)		1.1	--	--	1.1
	Air	Monitoring Well 12—Water Vapor	Carbon Tetrachloride	--	1.3E-04	--	1.3E-04	Carbon Tetrachloride	Liver	--	6.7	--	6.7
			Chloroform	--	2.8E-06	--	2.8E-06	--	--	--	--	--	--
			(Total)	--	1.4E-04	--	1.4E-04	(Total)		--	6.7	--	6.7
						Total Risk Across Groundwater	2.7E-05					Total Hazard Index Across All Media and All Exposure Routes	7.9
						Total Risk Across Air	1.4E-04						
						Total Risk Across All Media and All Exposure Routes	1.6E-04					Total Liver HI =	7.9

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
HI = hazard index
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure

Table I-278 (RAGS Part D, TABLE 10.9.RME)

RISK ASSESSMENT SUMMARY

REASONABLE MAXIMUM EXPOSURE

Jet Propulsion Laboratory—Monitoring Well 13

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

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Monitoring Well 13—Tap Water	1,1-Dichloroethene	8.6E-06	--	--	8.6E-06	--	--	--	--	--	--
			1,2-Dichloroethane	1.1E-06	--	--	1.1E-06	--	--	--	--	--	--
			Carbon Tetrachloride	3.6E-05	--	--	3.6E-05	Carbon Tetrachloride	Liver	1.5	--	--	1.5
			Chloroform	5.1E-06	--	--	5.1E-06	--	--	--	--	--	--
			Hexavalent Chromium	2.6E-04	--	5.2E-06	2.6E-04	--	--	--	--	--	--
			--	--	--	--	--	Perchlorate	Thyroid	33	--	0.27	33
			Trichloroethene	6.5E-06	--	--	6.5E-06	--	--	--	--	--	--
			(Total)	3.1E-04	--	5.2E-06	3.2E-04	(Total)		34	--	0.27	34
	Air	Monitoring Well 13—Water Vapor	1,1-Dichloroethene	--	1.3E-05	--	1.3E-05	--	--	--	--	--	--
			1,2-Dichloroethane	--	5.7E-06	--	5.7E-06	--	--	--	--	--	--
			Carbon Tetrachloride	--	1.8E-04	--	1.8E-04	Carbon Tetrachloride	Liver	--	9.0	--	9.0
			Chloroform	--	1.6E-05	--	1.6E-05	--	--	--	--	--	--
			Trichloroethene	--	2.2E-05	--	2.2E-05	Trichloroethene	N/A	--	1.5	--	1.5
			(Total)	--	2.3E-04	--	2.3E-04	(Total)		--	11	--	11

Total Risk Across Groundwater	3.2E-04
Total Risk Across Air	2.3E-04
Total Risk Across All Media and All Exposure Routes	5.5E-04

Total Hazard Index Across All Media and All Exposure Routes	45
Total Liver HI =	10
Total Thyroid HI =	33

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010

HI = hazard index

RAGS = Risk Assessment Guidance for Superfund

RME = reasonable maximum exposure

Table I-279 (RAGS Part D, TABLE 10.10.RME)
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory---Monitoring Well 14

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

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Monitoring Well 14— Tap Water	-- (Total)	--	--	--	--	-- (Total)	--	--	--	--	--
	Air	Monitoring Well 14— Water Vapor	Tetrachloroethene (Total)	--	1.2E-06	--	1.2E-06	-- (Total)	--	--	--	--	--
						Total Risk Across Groundwater	--					Total Hazard Index Across All Media and All Exposure Routes	--
						Total Risk Across Air	1.2E-06						
						Total Risk Across All Media and All Exposure Routes	1.2E-06						

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure

Table I-280 (RAGS Part D, TABLE 10.11.RME)
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 16

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

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Monitoring Well 16—Tap Water	1,1-Dichloroethene	2.3E-05	--	--	2.3E-05	--	--	--	--	--	--
			1,2-Dichloroethane	2.2E-06	--	--	2.2E-06	--	--	--	--	--	--
			Carbon Tetrachloride	2.0E-04	--	--	2.0E-04	Carbon Tetrachloride	Liver	8.3	--	--	8.3
			Chloroform	2.0E-05	--	--	2.0E-05	--	--	--	--	--	--
			Hexavalent Chromium	4.4E-05	--	8.9E-07	4.5E-05	--	--	--	--	--	--
			--	--	--	--	--	Perchlorate	Thyroid	157	--	1.3	159
			Trichloroethene	5.6E-06	--	--	5.6E-06	--	--	--	--	--	--
			(Total)	3.0E-04	--	8.9E-07	3.0E-04	(Total)		166	--	1.3	167
	Air	Monitoring Well 16—Water Vapor	1,1-Dichloroethene	--	3.5E-05	--	3.5E-05	--	--	--	--	--	--
			1,2-Dichloroethane	--	1.1E-05	--	1.1E-05	--	--	--	--	--	--
			Carbon Tetrachloride	--	1.0E-03	--	1.0E-03	Carbon Tetrachloride	Liver	--	51	--	51
			Chloroform	--	6.1E-05	--	6.1E-05	Chloroform	Liver	--	1.4	--	1.4
			Tetrachloroethene	--	2.0E-06	--	2.0E-06	--	--	--	--	--	--
			Trichloroethene	--	1.9E-05	--	1.9E-05	Trichloroethene	N/A	--	1.3	--	1.3
			(Total)	--	1.1E-03	--	1.1E-03	(Total)		--	54	--	54
							Total Risk Across Groundwater						3.0E-04
							Total Risk Across Air						1.1E-03
							Total Risk Across All Media and All Exposure Routes						1.4E-03
													Total Hazard Index Across All Media and All Exposure Routes	221

Total Liver HI = 61
Total Thyroid HI = 159

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
HI = hazard index
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure

Table I-281 (RAGS Part D, TABLE 10.12 RME)
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 17

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

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Monitoring Well 17—Tap Water	Carbon Tetrachloride	3.6E-06	--	--	3.6E-06	--	--	--	--	--	--
			Chloroform	3.5E-06	--	--	3.5E-06	--	--	--	--	--	--
			Hexavalent Chromium	2.1E-05	--	4.2E-07	2.1E-05	--	--	--	--	--	--
			--	--	--	--	--	Perchlorate	Thyroid	4.6	--	0.038	4.7
			Trichloroethene	5.1E-06	--	--	5.1E-06	--	--	--	--	--	--
			(Total)	3.3E-05	--	4.2E-07	3.3E-05	(Total)		4.6	--	0.038	4.7
	Air	Monitoring Well 17—Water Vapor	Bromodichloromethane	--	4.3E-06	--	4.3E-06	--	--	--	--	--	--
			Carbon Tetrachloride	--	1.8E-05	--	1.8E-05	--	--	--	--	--	--
			Chloroform	--	1.1E-05	--	1.1E-05	--	--	--	--	--	--
			Trichloroethene	--	1.7E-05	--	1.7E-05	Trichloroethene	N/A	--	1.2	--	1.2
			(Total)	--	5.0E-05	--	5.0E-05	(Total)		--	1.2	--	1.2
							Total Risk Across Groundwater	3.3E-05					Total Hazard Index Across All Media and All Exposure Routes	5.9
							Total Risk Across Air	5.0E-05						
							Total Risk Across All Media and All Exposure Routes	8.3E-05					Total Thyroid HI =	4.7

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
HI = hazard index
N/A = Not applicable
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure

Table I-282 (RAGS Part D, TABLE 10.13.RME)
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 18

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

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Monitoring Well 18—Tap Water	Arsenic	6.2E-05	--	6.3E-07	6.3E-05	--	--	--	--	--	--
			Carbon Tetrachloride	2.9E-06	--	--	2.9E-06	--	--	--	--	--	--
			Chloroform	3.0E-06	--	--	3.0E-06	--	--	--	--	--	--
			Hexavalent Chromium	1.9E-05	--	3.8E-07	1.9E-05	--	--	--	--	--	--
			Tetrachloroethene	1.1E-06	--	--	1.1E-06	--	--	--	--	--	--
			(Total)	8.8E-05	--	1.0E-06	8.9E-05	(Total)		--	--	--	--
	Air	Monitoring Well 18—Water Vapor	Bromodichloromethane	--	4.0E-06	--	4.0E-06	--	--	--	--	--	--
			Carbon Tetrachloride	--	1.5E-05	--	1.5E-05	--	--	--	--	--	--
			Chloroform	--	9.3E-06	--	9.3E-06	--	--	--	--	--	--
			Tetrachloroethene	--	2.3E-06	--	2.3E-06	--	--	--	--	--	--
			Trichloroethene	--	1.3E-06	--	1.3E-06	--	--	--	--	--	--
			(Total)	--	3.1E-05	--	3.1E-05	(Total)		--	--	--	--

Total Risk Across Groundwater	8.9E-05
Total Risk Across Air	3.1E-05
Total Risk Across All Media and All Exposure Routes	1.2E-04

Total Hazard Index Across All Media and All Exposure Routes: --

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure

Table I-283 (RAGS Part D, TABLE 10.14 RME)
RISK ASSESSMENT SUMMARY.
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 19

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

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Monitoring Well 19—Tap Water	Tetrachloroethene	1.4E-06	--	--	1.4E-06	--	--	--	--	--	--
			(Total)	1.4E-06	--	--	1.4E-06	(Total)		--	--	--	--
	Air	Monitoring Well 19—Water Vapor	Bromodichloromethane	--	2.7E-06	--	2.7E-06	--	--	--	--	--	--
			Chloroform	--	1.7E-06	--	1.7E-06	--	--	--	--	--	--
			Tetrachloroethene	--	2.8E-06	--	2.8E-06	--	--	--	--	--	--
			(Total)	--	7.2E-06	--	7.2E-06	(Total)		--	--	--	--

Total Risk Across Groundwater	1.4E-06
Total Risk Across Air	7.2E-06
Total Risk Across All Media and All Exposure Routes	8.6E-06

Total Hazard Index Across All Media and All Exposure Routes	--

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure

Table I-284 (RAGS Part D, TABLE 10.15.RME)
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 20

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

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Monitoring Well 20—Tap Water	Arsenic	6.5E-05	--	6.6E-07	6.5E-05	--	--	--	--	--	--
			Chloroform	1.0E-06	--	--	1.0E-06	--	--	--	--	--	--
			(Total)	6.6E-05	--	6.6E-07	6.6E-05	(Total)		--	--	--	--
	Air	Monitoring Well 20—Water Vapor	Bromodichloromethane	--	2.7E-06	--	2.7E-06	--	--	--	--	--	--
			Chloroform	--	3.1E-06	--	3.1E-06	--	--	--	--	--	--
			(Total)	--	5.8E-06	--	5.8E-06	(Total)		--	--	--	--
						Total Risk Across Groundwater	6.6E-05						
						Total Risk Across Air	5.8E-06						
						Total Risk Across All Media and All Exposure Routes	7.2E-05						
												Total Hazard Index Across All Media and All Exposure Routes	--

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure

Table I-285 (RAGS Part D, TABLE 10.16.RME)
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 21

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

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Monitoring Well 21—	--	--	--	--	--	Perchlorate	Thyroid	1.0	--	0.0085	1.0
		Tap Water	Tetrachloroethene	2.8E-06	--	--	2.8E-06	--	--	--	--	--	--
			Trichloroethene	2.0E-06	--	--	2.0E-06	--	--	--	--	--	--
			(Total)	4.8E-06	--	--	4.8E-06	(Total)		1.0	--	0.0085	1.0
	Air	Monitoring Well 21—	Tetrachloroethene	--	5.8E-06	--	5.8E-06	--	--	--	--	--	--
		Water Vapor	Trichloroethene	--	6.7E-06	--	6.7E-06	--	--	--	--	--	--
			(Total)	--	1.2E-05	--	1.2E-05	(Total)		--	--	--	--
						Total Risk Across Groundwater	4.8E-06					Total Hazard Index Across All Media and All Exposure Routes	1.0
						Total Risk Across Air	1.2E-05						
						Total Risk Across All Media and All Exposure Routes	1.7E-05					Total Thyroid HI =	1.0

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
HI = hazard index
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure

Table I-286 (RAGS Part D, TABLE 10.17.RME)

RISK ASSESSMENT SUMMARY

REASONABLE MAXIMUM EXPOSURE

Jet Propulsion Laboratory—Monitoring Well 22

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

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Monitoring Well 22—Tap Water	Tetrachloroethene	1.1E-06	--	--	1.1E-06	--	--	--	--	--	--
			(Total)	1.1E-06	--	--	1.1E-06	(Total)		--	--	--	--
	Air	Monitoring Well 22—Water Vapor	Tetrachloroethene	--	2.2E-06	--	2.2E-06	--	--	--	--	--	--
			(Total)	--	2.2E-06	--	2.2E-06	(Total)		--	--	--	--
						Total Risk Across Groundwater	1.1E-06						
						Total Risk Across Air	2.2E-06						
						Total Risk Across All Media and All Exposure Routes	3.2E-06						
												Total Hazard Index Across All Media and All Exposure Routes	--

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010

RAGS = Risk Assessment Guidance for Superfund

RME = reasonable maximum exposure

Table I-287 (RAGS Part D, TABLE 10.18.RME)
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 23

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

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Monitoring Well 23—Tap Water	--	--	--	--	--	--	--	--	--	--	--
			(Total)	--	--	--	--	(Total)		--	--	--	--
	Air	Monitoring Well 23—Water Vapor	Tetrachloroethene	--	1.0E-06	--	1.0E-06	--	--	--	--	--	--
			Trichloroethene	--	2.2E-06	--	2.2E-06	--	--	--	--	--	--
			(Total)	--	3.2E-06	--	3.2E-06	(Total)		--	--	--	--

Total Risk Across Groundwater	--
Total Risk Across Air	3.2E-06
Total Risk Across All Media and All Exposure Routes	3.2E-06

Total Hazard Index Across All Media and All Exposure Routes: --

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure

Table I-288 (RAGS Part D, TABLE 10.19.RME)
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Monitoring Well 24

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

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Monitoring Well 24—Tap Water	Arsenic	7.6E-05	--	7.7E-07	7.7E-05	--	--	--	--	--	--
			Carbon Tetrachloride	6.7E-05	--	--	6.7E-05	Carbon Tetrachloride	Liver	2.7	--	--	2.7
			Chloroform	6.9E-06	--	--	6.9E-06	--	--	--	--	--	--
			--	--	--	--	--	Perchlorate	Thyroid	42	--	0.35	43
			Trichloroethene	3.3E-06	--	--	3.3E-06	--	--	--	--	--	--
			(Total)	1.5E-04	--	7.7E-07	1.5E-04	(Total)		45	--	0.35	45
	Air	Monitoring Well 24—Water Vapor	1,2-Dichloroethane	--	2.0E-06	--	2.0E-06	--	--	--	--	--	--
			Carbon Tetrachloride	--	3.3E-04	--	3.3E-04	Carbon Tetrachloride	Liver	--	17	--	17
			Chloroform	--	2.1E-05	--	2.1E-05	--	--	--	--	--	--
			Trichloroethene	--	1.1E-05	--	1.1E-05	--	--	--	--	--	--
			(Total)	--	3.7E-04	--	3.7E-04	(Total)		--	17	--	17

Total Risk Across Groundwater	1.5E-04
Total Risk Across Air	3.7E-04
Total Risk Across All Media and All Exposure Routes	5.2E-04

Total Hazard Index Across All Media and All Exposure Routes	62
Total Liver HI =	20
Total Thyroid HI =	43

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
HI = hazard index
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure

Table I-289 (RAGS Part D, TABLE 10.20.RME)
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Las Flores Well #2

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

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Las Flores Well #2—Tap Water	Arsenic	5.4E-05	--	5.4E-07	5.4E-05	--	--	--	--	--	--
			Tetrachloroethene	3.6E-06	--	--	3.6E-06	--	--	--	--	--	--
			(Total)	5.7E-05	--	5.4E-07	5.8E-05	(Total)		--	--	--	--
	Air	Las Flores Well #2—Water Vapor	Tetrachloroethene	--	7.5E-06	--	7.5E-06	--	--				
			(Total)	--	7.5E-06	--	7.5E-06	(Total)		--	--	--	--
						Total Risk Across Groundwater	5.8E-05					Total Hazard Index Across All Media and All Exposure Routes	--
						Total Risk Across Air	7.5E-06						
						Total Risk Across All Media and All Exposure Routes	6.5E-05						

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure

Table I-290 (RAGS Part D, TABLE 10.21.RME)
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Lincoln Ave Well #3

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

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Lincoln Ave Well #3—Tap Water	Carbon Tetrachloride	2.5E-06	--	--	2.5E-06	--	--	--	--	--	--
			--	--	--	--	--	Perchlorate	Thyroid	1.8	--	0.015	1.8
			Trichloroethene	3.5E-06	--	--	3.5E-06	--	--	--	--	--	--
			(Total)	6.0E-06	--	--	6.0E-06	(Total)		1.8	--	0.015	1.8
	Air	Lincoln Ave Well #3—Water Vapor	Carbon Tetrachloride	--	1.2E-05	--	1.2E-05	--	--	--	--	--	--
			Tetrachloroethene	--	1.7E-06	--	1.7E-06	--	--	--	--	--	--
			Trichloroethene	--	1.2E-05	--	1.2E-05	--	--	--	--	--	--
			(Total)	--	2.6E-05	--	2.6E-05	(Total)		--	--	--	--
						Total Risk Across Groundwater	6.0E-06					Total Hazard Index Across All Media and All Exposure Routes	1.8
						Total Risk Across Air	2.6E-05						
						Total Risk Across All Media and All Exposure Routes	3.2E-05					Total Thyroid HI =	1.8

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
HI = hazard index
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure

Table I-291 (RAGS Part D, TABLE 10.22.RME)
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Lincoln Ave Well #5

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

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Lincoln Ave Well #5—Tap Water	Trichloroethene	2.9E-06	--	--	2.9E-06	--	--	--	--	--	--
			(Total)	2.9E-06	--	--	2.9E-06	(Total)		--	--	--	--
	Air	Lincoln Ave Well #5—Water Vapor	Tetrachloroethene	--	1.1E-06	--	1.1E-06	--	--	--	--	--	--
			Trichloroethene	--	9.7E-06	--	9.7E-06	--	--	--	--	--	--
			(Total)	--	1.1E-05	--	1.1E-05	(Total)		--	--	--	--
						Total Risk Across Groundwater	2.9E-06						
						Total Risk Across Air	1.1E-05						
						Total Risk Across All Media and All Exposure Routes	1.4E-05						
												Total Hazard Index Across All Media and All Exposure Routes	--

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure

Table I-292 (RAGS Part D, TABLE 10.23.RME)
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Pasadena Arroyo Well

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

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Pasadena Arroyo Well—Tap Water	Carbon Tetrachloride	1.0E-05	--	--	1.0E-05	--	--	--	--	--	--
			--	--	--	--	--	Perchlorate	Thyroid	17	--	0.14	17
			(Total)	1.0E-05	--	--	1.0E-05	(Total)		17	--	0.14	17
	Air	Pasadena Arroyo Well—Water Vapor	Carbon Tetrachloride	--	5.2E-05	--	5.2E-05	Carbon Tetrachloride	Liver	--	2.6	--	2.6
			Tetrachloroethene	--	1.4E-06	--	1.4E-06	--	--	--	--	--	--
			Trichloroethene	--	2.5E-06	--	2.5E-06	--	--	--	--	--	--
			(Total)	--	5.6E-05	--	5.6E-05	(Total)		--	2.6	--	2.6
						Total Risk Across Groundwater	1.0E-05					Total Hazard Index Across All Media and All Exposure Routes	19
						Total Risk Across Air	5.6E-05						
						Total Risk Across All Media and All Exposure Routes	6.7E-05					Total Liver HI =	2.6
												Total Thyroid HI =	17

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
HI = hazard index
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure

Table I-293 (RAGS Part D, TABLE 10.24.RME)
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Pasadena Ventura Well

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

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Pasadena Ventura Well—Tap Water	--	--	--	--	--	--	--	--	--	--	--
			(Total)	--	--	--	--	(Total)		--	--	--	--
	Air	Pasadena Ventura Well—Water Vapor	Tetrachloroethene	--	1.1E-06	--	1.1E-06	--	--	--	--	--	--
			(Total)	--	1.1E-06	--	1.1E-06	(Total)		--	--	--	--
						Total Risk Across Groundwater	--					Total Hazard Index Across All Media and All Exposure Routes	--
						Total Risk Across Air	1.1E-06						
						Total Risk Across All Media and All Exposure Routes	1.1E-06						

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure

Table I-294 (RAGS Part D, TABLE 10.25.RME)
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Pasadena Well 52

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

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Pasadena Well 52—Tap Water	Carbon Tetrachloride	2.9E-06	--	--	2.9E-06	--	--	--	--	--	--
			--	--	--	--	--	Perchlorate	Thyroid	1.9	--	0.016	1.9
			Trichloroethene	1.2E-06	--	--	1.2E-06	--	--	--	--	--	--
			(Total)	4.1E-06	--	--	4.1E-06	(Total)		1.9	--	0.016	1.9
	Air	Pasadena Well 52—Water Vapor	Carbon Tetrachloride	--	1.5E-05	--	1.5E-05	--	--	--	--	--	--
			Trichloroethene	--	3.9E-06	--	3.9E-06	--	--	--	--	--	--
			(Total)	--	1.8E-05	--	1.8E-05	(Total)		--	--	--	--
						Total Risk Across Groundwater	4.1E-06					Total Hazard Index Across All Media and All Exposure Routes	1.9
						Total Risk Across Air	1.8E-05						
						Total Risk Across All Media and All Exposure Routes	2.2E-05					Total Thyroid HI =	1.9

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
HI = hazard index
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure

Table I-295 (RAGS Part D, TABLE 10.26.RME)

RISK ASSESSMENT SUMMARY

REASONABLE MAXIMUM EXPOSURE

Jet Propulsion Laboratory—Pasadena Windsor Well

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

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Pasadena Windsor Well—Tap Water	--	--	--	--	--	--	--	--	--	--	--
			(Total)	--	--	--	--	(Total)		--	--	--	--
	Air	Pasadena Windsor Well—Water Vapor	Tetrachloroethene	--	1.7E-06	--	1.7E-06	--	--	--	--	--	--
			(Total)	--	1.7E-06	--	1.7E-06	(Total)		--	--	--	--
						Total Risk Across Groundwater	--					Total Hazard Index Across All Media and All Exposure Routes	--
						Total Risk Across Air	1.7E-06						
						Total Risk Across All Media and All Exposure Routes	1.7E-06						

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010

RAGS = Risk Assessment Guidance for Superfund

RME = reasonable maximum exposure

Table I-296 (RAGS Part D, TABLE 10.27.RME)

RISK ASSESSMENT SUMMARY

REASONABLE MAXIMUM EXPOSURE

Jet Propulsion Laboratory—Valley Well #1

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

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Valley Well #1— Tap Water	Arsenic	4.2E-05	--	4.3E-07	4.3E-05	--	--	--	--	--	--
			Tetrachloroethene	2.9E-05	--	--	2.9E-05	--	--	--	--	--	--
			(Total)	7.1E-05	--	4.3E-07	7.2E-05	(Total)		--	--	--	--
	Air	Valley Well #1— Water Vapor	Tetrachloroethene	--	5.9E-05	--	5.9E-05	--	--	--	--	--	--
			Trichloroethene	--	2.6E-06	--	2.6E-06	--	--	--	--	--	--
			(Total)	--	6.2E-05	--	6.2E-05	(Total)		--	--	--	--
						Total Risk Across Groundwater	7.2E-05						
						Total Risk Across Air	6.2E-05						
						Total Risk Across All Media and All Exposure Routes	1.3E-04						

								Total Hazard Index Across All Media and All Exposure Routes	--

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010

RAGS = Risk Assessment Guidance for Superfund

RME = reasonable maximum exposure

Table I-297 (RAGS Part D, TABLE 10.28 RME)
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Valley Well #2

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

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Valley Well #2—	Arsenic	4.5E-05	--	4.5E-07	4.5E-05	--	--	--	--	--	--
		Tap Water	Tetrachloroethene	6.9E-06	--	--	6.9E-06	--	--	--	--	--	--
			(Total)	5.2E-05	--	4.5E-07	5.2E-05	(Total)		--	--	--	--
	Air	Valley Well #2—	Tetrachloroethene	--	1.4E-05	--	1.4E-05	--	--	--	--	--	--
		Water Vapor	(Total)	--	1.4E-05	--	1.4E-05	(Total)		--	--	--	--
						Total Risk Across Groundwater	5.2E-05			Total Hazard Index Across All Media and All Exposure Routes			--
						Total Risk Across Air	1.4E-05						
						Total Risk Across All Media and All Exposure Routes	6.6E-05						

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure

Table I-298 (RAGS Part D, TABLE 10.29.RME)
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Valley Well #3

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

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Valley Well #3—Tap Water	Arsenic	3.3E-05	--	3.4E-07	3.4E-05	--	--	--	--	--	--
			(Total)	3.3E-05	--	3.4E-07	3.4E-05	(Total)		--	--	--	--
	Air	Valley Well #3—Water Vapor	Tetrachloroethene	--	1.7E-06	--	1.7E-06	--	--	--	--	--	--
			(Total)	--	1.7E-06	--	1.7E-06	(Total)		--	--	--	--
						Total Risk Across Groundwater	3.4E-05						
						Total Risk Across Air	1.7E-06						
						Total Risk Across All Media and All Exposure Routes	3.6E-05						

Total Hazard Index Across All Media and All Exposure Routes: --

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
RME = reasonable maximum exposure
RAGS = Risk Assessment Guidance for Superfund

Table I-299 (RAGS Part D, TABLE 10.30.RME)
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
Jet Propulsion Laboratory—Valley Well #4

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

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Valley Well #4—Tap Water	Arsenic	4.2E-05	--	4.3E-07	4.3E-05	--	--	--	--	--	--
			Tetrachloroethene	1.7E-05	--	--	1.7E-05	--	--	--	--	--	--
			(Total)	6.0E-05	--	4.3E-07	6.0E-05	(Total)		--	--	--	--
	Air	Valley Well #4—Water Vapor	Tetrachloroethene	--	3.5E-05	--	3.5E-05	--	--	--	--	--	--
			Trichloroethene	--	1.9E-06	--	1.9E-06	--	--	--	--	--	--
			(Total)	--	3.7E-05	--	3.7E-05	(Total)		--	--	--	--
						Total Risk Across Groundwater	6.0E-05		Total Hazard Index Across All Media and All Exposure Routes				--
						Total Risk Across Air	3.7E-05						
						Total Risk Across All Media and All Exposure Routes	9.7E-05						

Definitions: 1.0E-02 = 1.0 x 10-2 = 0.010
RAGS = Risk Assessment Guidance for Superfund
RME = reasonable maximum exposure

APPENDIX J

METHODOLOGY FOR DETERMINING TOXICITY SCREENING VALUES

TABLE OF CONTENTS

LIST OF TABLES

LIST OF EQUATIONS

ACRONYMS

CAOEHHA	California Office of Environmental Health Hazard Assessment
CSF	cancer slope factor
CSF_i	inhalation cancer slope factor
CSF_o	oral cancer slope factor
DTSC	Department of Toxic Substances Control
EPA	United States Environmental Protection Agency
K_p	dermal permeability coefficient
PEA	preliminary endangerment assessment
PRG	preliminary remediation goal
RfD	noncarcinogenic reference dose
RfD_i	noncancer inhalation reference dose
RfD_o	noncancer oral reference dose

1.0 INTRODUCTION

This appendix explains the methodology used to derive screening toxicity value for use in the baseline risk assessment. Screening toxicity values were derived in accordance with the State of California Environmental Protection Agency Department of Toxic Substances Control (DTSC) *Preliminary Endangerment Assessment* (PEA) *Guidance Manual* (DTSC, 1994) and United States Environmental Protection Agency (EPA) *Risk Assessment Guidance for Superfund* (EPA, 1989). California PEA values and EPA PRG values are derived using similar equations and input parameters with slight modifications. The California PEA values were calculated using the residential human receptor exposure parameters listed in Table J-1. Chemical-specific toxicity values used in developing the PRGs are shown in Tables J-2 and J-3. Potential household exposure from direct ingestion, dermal contact, and inhalation of volatile organic compounds was evaluated for the residential land use scenario. The EPA PRG values were obtained directly from the Region IX PRG tables (EPA, 1999).

1.1 Toxicity Values

Toxicity values, chronic noncarcinogenic reference doses (RfDs) and carcinogenic slope factors (CSFs) were obtained from the California Office of Environmental Health Hazard Assessment (CAOEHHA) (CAOEHHA, 1994), the Integrated Risk Information System (EPA, 1998), the Health Effects Assessment Summary Tables (EPA, 1997), and the Region IX PRG tables (EPA, 1999).

When no toxicity values were available for a given route of exposure, EPA Region IX's route-to-route extrapolations were used (EPA, 1999). Oral cancer slope factors (CSF_o) and oral reference doses (RfD_o) were used for both oral and inhaled exposures for organic compounds lacking inhalation values. Inhalation cancer slope factors (CSF_i) and inhalation reference doses (RfD_i) were used for both inhaled and oral exposures for organic compounds lacking oral values. Oral toxicity values were used for evaluating dermal exposure (DTSC, 1994).

1.2 Dermal Permeability Coefficients

Chemical-specific dermal permeability coefficients (K_p) estimates for contaminants in groundwater are presented in Table J-4. When a chemical-specific K_p was not available, the K_p was estimated using a surrogate chemical with similar molecular weight and K_{ow} value (DTSC, 1994). Information used to estimate K_ps is presented in Table J-5.

1.3 Exposure Factors

Default exposure factors were obtained primarily from the PEA manual (DTSC, 1994) and from *Supplemental Guidance: Standard Default Exposure Factors* (EPA, 1991). Because contact rates may be different for children and adults, carcinogenic risks were calculated using a time-weighted average approach which incorporates both childhood

exposure (0 to 6 years) and adult exposure (7 to 30 years). This approach approximates the integrated exposure from birth until age 30. Noncarcinogenic contaminants were evaluated for children only. It is assumed if the hazard index is not exceeded for the child, it will not be exceeded for any other age group (DTSC, 1994).

1.4 PRG Equations

The equations used to calculate the California PEA values for carcinogenic and noncarcinogenic chemicals are presented in Equations J-1 through J-4. The equations are based on DTSC equations contained in the PEA manual (DTSC, 1994). The methodology back-calculates a groundwater concentration level that corresponds to a target risk of 1.0×10^{-6} for carcinogens or a hazard quotient of 1.0 for noncarcinogens.

1.5 Determining the Appropriate PRG

California PEA values were derived using available carcinogenic and noncarcinogenic toxicity values. For example, chronic RfDs and CSFs have been developed for 1,1-dichloroethane; therefore, two screening toxicity values were derived for this chemical—one reflecting its carcinogenic toxicity and one reflecting its noncarcinogenic toxicity. The derived California PEAs are shown in Table J-6. Also shown in Table J-6 are the Region IX PRGs (EPA, 1999). The California PEA values and EPA Region IX PRGs were compared; the lower, more conservative value was used for the screening level comparison.

2.0 REFERENCES

California Office of Environmental Health Hazard Assessment (CAOEHHA). 1994. *California Cancer Potency Factors: Update.* November 1994.

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United States Environmental Protection Agency (EPA). 1989. *Risk Assessment Guidance for Superfund, Volume 1: Human Health Evaluation Manual (Part A) Interim Final.* EPA/540/1-89/002. Office of Research and Development. Office of Emergency and Remedial Response. December 1989.

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TABLES

TABLE J-1 EXPOSURE PARAMETERS USED TO DERIVE PRELIMINARY ENDANGERMENT ASSESSMENT VALUES

Parameter	Definition (units)	Value	Reference
AT_c	averaging time-carcinogens (years)	70	DTSC, 1994
AT_n	averaging time-noncarcinogens (years)	6	DTSC, 1994
BW_a	body weight, adult (kg)	70	DTSC, 1994
BW_c	body weight, child (kg)	15	DTSC, 1994
C_s	chemical concentration in water corresponding to the PEA value	See Table J-6	
ED_a	exposure duration-adult (years)	24	DTSC, 1994
ED_c	exposure duration-child (years)	6	DTSC, 1994
EF	exposure frequency (d/y)	350	EPA, 1991
ET_a	exposure time during showering/bathing-adult (hr/day)	0.25	EPA, 1992
ET_c	exposure time during showering/bathing-child (hr/day)	0.14	EPA, 1992
Hazard	target hazard quotient	1	
$IRA_{voc,a}$	intake from inhalation of VOCs from domestic water use of water is equivalent to the amount of ingested water	2	EPA, 1989a
$IRA_{voc,c}$	intake from inhalation of VOCs from domestic water use of water is equivalent to the amount of ingested water	1	EPA, 1989a
IRW_a	water ingestion-adult (L/day)	2	DTSC, 1994
IRW_c	water ingestion-child (L/day)	1	DTSC, 1994
K_p	chemical-specific dermal permeability coefficient from water (cm^2/hour)	See Table J-4	
RfD_i	inhalation reference dose (mg/kg-day)	See Table J-3	
RfD_o	oral reference dose (mg/kg-day)	See Table J-3	
Risk	target cancer risk (unitless)	1.00E-06	
SA_a	skin surface area available for contact--adult (cm^2)	23,000	EPA, 1992
SA_c	skin surface area available for contact--child (cm^2)	7,200	EPA, 1989b
CSF_i	inhalation cancer slope factor $(mg/kg\text{-}day)^{-1}$	See Table J-2	
CSF_o	oral cancer slope factor $(mg/kg\text{-}day)^{-1}$	See Table J-2	

Notes:

cm^2 = square centimeters

cm^2/hour = square centimeters per hour

d/y = days per year

DTSC = Department of Toxic Substances Control

EPA = United States Environmental Protection Agency

hr/day = hours per day

TABLE J-1 EXPOSURE PARAMETERS USED TO DERIVE PRELIMINARY ENDANGERMENT ASSESSMENT VALUES

kg = kilogram
L/day = liters per day
m^3/day = cubic meters per day
mg/kg-day = milligrams per kilogram per day
PEA = Preliminary Endangerment Assessment
VOC = volatile organic compounds

References:

Department of Toxic Substances Control (DTSC). 1994. *Preliminary Endangerment Assessment Guidance Manual.* January 1994.

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TABLE J-2 TOXICITY VALUES USED TO DERIVE CARCINOGENIC PRELIMINARY ENDANGERMENT ASSESSMENT VALUES[a]

Chemical of Potential Concern	Oral Slope Factor (mg/kg-day)-1	Oral Slope Factor Source [a]	Inhalation Slope Factor (mg/kg-day)-1	Inhalation Slope Factor Source [a]
1,1,1-Trichloroethane	--		--	
1,1,2,2-Tetrachloroethane	2.7E-01		2.7E-01	
1,1-Dichloroethane	5.7E-03		5.7E-03	
1,1-Dichloroethene	6.0E-01	EPA, 1999	1.8E-01	EPA, 1999
1,2,3-Trichlorobenzene	--		--	
1,2-Dichloroethane	7.0E-02		7.0E-02	
Aluminum	--		--	
Arsenic	1.5E+00	EPA, 1999	1.2E+01	
Barium	--		--	
Benzo(a)anthracene	1.2E+00		3.9E-01	
Benzo(a)pyrene	1.2E+01		3.9E+00	
Benzo(b)fluoranthene	1.2E+00		3.9E-01	
Benzo(g,h,i)perylene	--		--	
Benzo(k)fluoranthene	1.2E+00		3.9E-01	
Bromodichloromethane	1.3E-01		1.3E-01	
Calcium	--		--	
Carbon tetrachloride	1.5E-01		1.5E-01	
Chloroform	3.1E-02		1.9E-02	
Chloromethane	1.3E-02	EPA, 1997	6.3E-03	EPA, 1997
Chromium	--		--	
Chysene	1.2E-01		3.9E-02	
cis-1,2-Dichloroethene	--		--	
Copper	--		--	
Cyanide	--		--	
Di-n-butylphthalate	--		--	
Dichloromethane	1.4E-02		3.5E-03	
Ethylbenzene	--		--	
Fluoranthene	--		--	
Fluoride	--		--	
Fluorotrichloromethane	--		--	
Hexavalent Chromium	4.2E-01		5.1E+02	
Indeno(1,2,3-c,d)pyrene	1.2E+00		3.9E-01	
Iron	--		--	
Lead	--		--	

TABLE J-2 TOXICITY VALUES USED TO DERIVE CARCINOGENIC PRELIMINARY ENDANGERMENT ASSESSMENT VALUES[a]

Chemical of Potential Concern	Oral Slope Factor (mg/kg-day)-1	Oral Slope Factor Source [a]	Inhalation Slope Factor (mg/kg-day)-1	Inhalation Slope Factor Source [a]
m,p-Xylenes	--		--	
Magnesium	--		--	
Mercury	--		--	
Methyl tertbutyl ether	--		--	
Molybdenum	--		--	
Naphthalene	--		--	
Nickel	--		9.1E-01	
Nitrate	--		--	
Perchlorate	--		--	
Phenanthrene	--		--	
Potassium	--		--	
Pyrene	--		--	
Sodium	--		--	
Strontium	--		--	
Tetrachloroethene	5.1E-02		2.1E-02	
Toluene	--		--	
Tributyltin [b]	--		--	
Trichloroethene	1.5E-02		1.0E-02	
Trichlorotrifluoroethane	--		--	
Zinc	--		--	

Notes:

(a) Unless otherwise noted: California Office of Environmental Health Hazard Assessment (CAOEHHA). 1994.

(b) Toxicity value used was developed for tributylin oxide.

EPA = United States Environmental Protection Agency

(mg/kg-day)-1 = (milligrams per kilogram per day)-1

References:

California Office of Environmental Health Hazard Assessment (CAOEHHA). 1994. *California Cancer Potency Factors: Update*. November 1994.

United States Environmental Protection Agency (EPA). 1999. *IRIS: Integrated Risk Information System*. Online. March 1999.

United States Environmental Protection Agency (EPA). 1997. *Health Effects Assessment Summary Tables*. EPA-540-R-97-036.

TABLE J-3 TOXICITY VALUES USED TO DERIVE NONCARCINOGENIC PRELIMINARY ENDANGERMENT ASSESSMENT VALUES

Chemical of Potential Concern	Oral Reference Dose (mg/kg-day)	Oral Reference Dose Source	Inhalation Reference Dose (mg/kg-day)	Inhalation Reference Dose Source
1,1,1-Trichloroethane	3.5E-02	EPA, 1999b [a]	2.9E-01	EPA, 1999b [a]
1,1,2,2-Tetrachloroethane	--		--	
1,1-Dichloroethane	1.0E-01	EPA, 1997	1.4E-01	EPA, 1999b
1,1-Dichloroethene	9.0E-03	EPA, 1999a	9.0E-03	EPA, 1999b [b]
1,2,3-Trichlorobenzene	--		--	
1,2-Dichloroethane	2.9E-03	EPA, 1999b [b]	2.9E-03	EPA, 1999b [c]
Aluminum	1.0E+00	EPA, 1999b [a]	--	
Arsenic	3.0E-04	EPA, 1999a	--	
Barium	7.0E-02	EPA, 1999a	1.4E-04	EPA, 1999b
Benzo(a)anthracene	--		--	
Benzo(a)pyrene	--		--	
Benzo(b)fluoranthene	--		--	
Benzo(g,h,i)perylene	--		--	
Benzo(k)fluoranthene	--		--	
Bromodichloromethane	2.0E-02	EPA, 1999a	2.0E-02	EPA, 1999b [b]
Calcium	--		--	
Carbon tetrachloride	7.0E-04	EPA, 1999a	5.7E-04	EPA, 1999b [c]
Chloroform	1.0E-02	EPA, 1999a	1.0E-02	EPA, 1999b [b]
Chloromethane	--		--	
Chromium	--		--	
Chysene	--		--	
cis-1,2-Dichloroethene	1.0E-02	EPA, 1997	1.0E-02	EPA, 1999b [b]
Copper	3.7E-02	EPA, 1999b	--	
Cyanide [d]	2.0E-02	EPA, 1999a	8.6E-04	EPA, 1999a
Di-n-butylphthalate	1.0E-01	EPA, 1999a	1.0E-01	EPA, 1999b [b]
Dichloromethane	6.0E-02	EPA, 1999a	8.6E-01	EPA, 1997
Ethylbenzene	1.0E-01	EPA, 1999a	2.9E-01	EPA, 1999a
Fluoranthene	4.0E-02	EPA, 1999a	4.0E-02	EPA, 1999b [b]
Fluoride	6.0E-02	EPA, 1999a	--	
Fluorotrichloromethane	3.0E-01	EPA, 1999a	2.0E-01	EPA, 1999b
Hexavalent Chromium	5.0E-03	EPA, 1999a	--	
Indeno(1,2,3-c,d)pyrene	--		--	

TABLE J-3 TOXICITY VALUES USED TO DERIVE NONCARCINOGENIC PRELIMINARY ENDANGERMENT ASSESSMENT VALUES

Chemical of Potential Concern	Oral Reference Dose (mg/kg-day)	Oral Reference Dose Source	Inhalation Reference Dose (mg/kg-day)	Inhalation Reference Dose Source
Iron	3.0E-01	EPA, 1999a [a]	--	
Lead	--		--	
m,p-Xylenes	2.0E+00	EPA, 1999a	2.0E-01	EPA, 1999b [c]
Magnesium	--		--	
Mercury	3.0E-04	EPA, 1999b	8.6E-05	EPA, 1999a
Methyl tertbutyl ether	--		8.6E-01	EPA, 1999a
Molybdenum	5.0E-03	EPA, 1999a	--	
Naphthalene	2.0E-02	EPA, 1999a	8.6E-04	EPA, 1999b
Nickel	2.0E-02	EPA, 1999a	--	
Nitrate	1.6E+00	EPA, 1999a [a]	--	
Perchlorate	5.0E-04	EPA, 1999a	--	
Phenanthrene	--		--	
Potassium	--		--	
Pyrene	3.0E-02	EPA, 1999a	3.0E-02	EPA, 1999b [b]
Sodium	--		--	
Strontium	6.0E-01	EPA, 1999a	--	
Tetrachloroethene	1.0E-02	EPA, 1999a	1.1E-01	EPA, 1999b [a]
Toluene	2.0E-01	EPA, 1999a	1.1E-01	EPA, 1999a
Tributyltin [e]	3.0E-04	EPA, 1999a	--	
Trichloroethene	6.0E-03	EPA, 1999b [c]	6.0E-03	EPA, 1999b [b]
Trichlorotrifluoroethane	3.0E+01	EPA, 1999a	8.6E+00	EPA, 1999b
Zinc	3.0E-01	EPA, 1999a	--	

Notes:
(a) Source cited in EPA, 1999b is the National Center for Environmental Assessment
(b) Referenced in EPA, 1999b as based on route-to-route extrapolation
(c) Referenced in EPA, 1999b as withdrawn
(d) Toxicity value was developed for hydrogen cyanide
(e) Toxicity value used was developed for tributyltin oxide.

mg/kg-day = milligrams per killogram per day
EPA = United States Environmental Protection Agency

References:
United States Environmental Protection Agency (EPA). 1999a. *IRIS: Integrated Risk Information System*. Online. March 1999.
United States Environmental Protection Agency (EPA). 1999b. *Region 9 Preliminary Remediation Goals*.
United States Environmental Protection Agency (EPA). 1997. *Health Effects Assessment Summary Tables*. EPA-540-R-97-036.

TABLE J-4 PREDICTED K_p ESTIMATES FOR COMMON POLLUTANTS

Chemical of Potential Concern	K_p (cm/hour) [a]
1,1,1-Trichloroethane	1.7E-02
1,1,2,2-Tetrachloroethane	9.0E-03
1,1-Dichloroethane	8.9E-03
1,1-Dichloroethene	1.6E-02
1,2,3-Trichlorobenzene[b]	1.0E-01
1,2-Dichloroethane	5.3E-03
Aluminum [c]	1.0E-03
Arsenic [c]	1.0E-03
Barium [c]	1.0E-03
Benzo(a)anthracene	8.1E-01
Benzo(a)pyrene	1.2E+00
Benzo(b)fluoranthene	1.2E+00
Benzo(g,h,i)perylene[b]	2.7E+00
Benzo(k)fluoranthene[b]	1.2E+00
Bromodichloromethane	5.8E-03
Calcium [c]	1.0E-03
Carbon tetrachloride	2.2E-02
Chloroform	8.9E-03
Chloromethane	4.2E-03
Chromium [c]	1.0E-03
Chysene	8.1E-01
cis-1,2-Dichloroethene	1.0E-02
Copper [c]	1.0E-03
Cyanide [c]	1.0E-03
Di-n-butylphthalate	3.3E-02
Dichloromethane	4.5E-03
Ethylbenzene	7.4E-02
Fluoranthene	3.6E-01
Fluoride [c]	1.0E-03
Fluorotrichloromethane	1.7E-02
Hexavalent Chromium [c]	2.0E-03
Indeno(1,2,3-c,d)pyrene	1.9E+00
Iron [c]	1.0E-03
Lead [c]	1.0E-04
m,p-Xylenes	8.0E-02

TABLE J-4 PREDICTED K_p ESTIMATES FOR COMMON POLLUTANTS

Chemical of Potential Concern	K_p (cm/hour) [a]
Magnesium [c]	1.0E-03
Mercury [c]	1.0E-03
Methyl tertbutyl ether [b]	7.1E-03
Molybdenum [c]	1.0E-03
Naphthalene	6.9E-02
Nickel [c]	2.0E-04
Nitrate [c]	1.0E-03
Perchlorate [b]	
Phenanthrene	2.7E-01
Potassium [c]	2.0E-03
Pyrene [b]	
Sodium [c]	1.0E-03
Strontium [c]	1.0E-03
Tetrachloroethene	4.8E-02
Toluene	4.5E-02
Tributyltin [b]	
Trichloroethene	1.6E-02
Trichlorotrifluoroethane [b]	1.7E-02
Zinc [c]	1.0E-03

Notes:

(a) DTSC. 1994. *Preliminary Endangerment Assessment Guidance Manual.* January 1994.

(b) K_p used was developed for a chemical with similar molecular weight and K_{ow} values. See Table J-5.

(c) United States Environmental Protection Agency (EPA). 1998. *Risk Assessment Guidance for Superfund Volume 1: Human Health Evaluation Manual. Supplemental Guidance. Dermal Risk Assessment Guidance Interim Guidance.* NCEA-W-0364. May 1998.

cm/hour = centimeters per hour

DTSC = Department of Toxic Substances Control

K_p = chemical-specific dermal permeability coefficient from water

Table J-5. Surrogate Kp Estimates

Chemical of Potential Concern	log K_{ow}	MW (g/mol)	Surrogate	Surrogate log K_{ow}	Surrogate MW (g/mol)	Surrogate K_p
1,2,3-Trichlorobenzene	--	181.5	1,2,4-trichlorobenzene	3.98	181.5	1.0E-01
Benzo(g,h,i)perylene	6.58	276.34	dibenzo(a,h)anthracene	6.84	278.4	2.7E+00
Benzo(k)fluoranthene	6.84	252.32	benzo(b)fluoranthene	6.12	252.3	1.2E+00
Cyanide	--	26.02	--	--	--	--
Fluoride	--	--	--	--	--	--
Methyl tertbutyl ether	--	88.15	pentanol	1.56	88	7.1E-03
Perchlorate	--	--	--	--	--	--
Pyrene	--	200	--	--	--	--
Tributyltin	--	--	--	--	--	--
Trichlorotrifluoroethane	--	187	trichlorofluoromethane	2.53	137.4	1.7E-02

Notes:

g/mol = grams per mole

K_{ow} = octanol-water partition coefficient

K_p = chemical-specific dermal permeability coefficient from water

MW=molecular weight

TABLE J-6 COMPARISON OF SCREENING TOXICITY VALUES: CALIFORNIA PEA VALUES AND EPA REGION IX PRGS

Chemicals of Potential Concern	CAS #	California PEA Value (µg/L)	EPA Region IX PRG[a] (µg/L)
1,1,1-Trichloroethane	71-55-6	480	790
1,1,2,2-Tetrachloroethane	79-34-5	0.12	0.055
1,1-Dichloroethane	75-34-3	5.8	810
1,1-Dichloroethene	75-35-4	0.084	0.046
1,2,3-Trichlorobenzene [b]	87-61-6	120	190
1,2-Dichloroethane	107-06-2	0.48	0.12
Aluminum	7429-90-5	16,000	37,000
Arsenic	7440-38-2	0.045	0.045
Barium	7440-39-3	1,100	2,600
Benzo(a)anthracene	56-55-3	0.020	0.092
Benzo(a)pyrene	50-32-8	0.0016	0.0092
Benzo(b)fluoranthene	205-99-2	0.016	0.092
Benzo(g,h,i)perylene	191-24-2	N/A	N/A
Benzo(k)fluoranthene	207-08-9	0.016	0.92
Bromodichloromethane	75-27-4	0.26	0.18
Calcium	7440-70-2	N/A	N/A
Carbon tetrachloride	56-23-5	0.22	0.17
Chloroform	67-66-3	1.3	0.16
Chloromethane	74-87-3	3.5	1.5
Chromium	N/A	N/A	N/A
Chysene	218-01-9	0.20	9.2
cis-1,2-Dichloroethene	156-59-2	78	61
Copper	7440-50-8	580	1,400
Cyanide [c]	74-90-8	310	6.2
Di-n-butylphthalate	84-74-2	1,500	3,700
Dichloromethane	75-09-2	3.8	4.3
Ethylbenzene	100-41-4	1,500	1,300
Fluoranthene	206-44-0	460	1,500
Fluoride	16984-48-8	940	2,200
Fluorotrichloromethane	75-69-4	1,900	1,300
Hexavalent Chromium	7440-47-3	0.16	180
Indeno(1,2,3-c,d)pyrene	193-39-5	0.011	0.092
Iron	7439-89-6	4,700	11,000
Lead [d]	7439-92-1	N/A	4.0
m,p-Xylenes	N/A	2,800	1,400

TABLE J-6 COMPARISON OF SCREENING TOXICITY VALUES: CALIFORNIA PEA VALUES AND EPA REGION IX PRGS

Chemicals of Potential Concern	CAS #	California PEA Value (µg/L)	EPA Region IX PRG[a] (µg/L)
Magnesium	7439-95-4	N/A	N/A
Mercury	7439-94-7	4.7	11
Methyl tert-butyl ether	1634-04-4	6,700	20
Molybdenum	7439-98-7	78	180
Naphthalene	91-20-3	0.017	6.2
Nickel	7440-02-0	310	730
Nitrate	14797-55-8	25,000	10,000
Perchlorate	7601-90-3	7.8	18
Phenanthrene	85-01-8	N/A	N/A
Potassium	7440-09-7	N/A	N/A
Pyrene	129-00-0	470	180
Sodium	7440-23-5	N/A	N/A
Strontium	7440-24-6	9,400	22,000
Tetrachloroethene	127-18-4	0.87	1.1
Toluene	108-88-3	1,100	720
Tributyltin [e]	688-73-3	4.7	11
Trichloroethene	79-01-6	2.6	1.6
Trichlorotrifluoroethane	76-13-1	100,000	59,000
Zinc	7440-66-6	4,700	11,000

Notes:
(a) United States Environmental Protection Agency (EPA). *1999. Region 9 Preliminary Remediation Goals*.
(b) Based on toxicity of 1,2,4-trichlorobenzene
(c) Based on toxicity of hydrogen cyanide
(d) PRG Based on EPA models, IEUBK (1994) and TRW (1996)
(e) Based on toxicity of tributyltin oxide

-- = no PRG derived due to lack of toxicity information
CAS # = Chemical Abstract Service number
µg/L = micrograms per liter
N/A = not applicable
PRG = Preliminary Remediation Goal
EPA = United States Environmental Protection Agency

EQUATIONS

EQUATION J-1 PRELIMINARY ENDANGERMENT ASSESSMENT VALUE FOR CARCINOGENIC NON-VOCS IN WATER

$$C_w = \frac{Risk}{SF_o \; x \left[0.0149 + \left(0.0325 \; x \; K_p\right)\right]}$$

EQUATION J-2 PRELIMINARY ENDANGERMENT ASSESSMENT VALUE FOR CARCINOGENIC VOCS IN WATER

$$C_w = \frac{Risk}{\left(SF_o \; x \; 0.0149\right) + \left(SF_i \; x \; 0.0149\right) + \left(SF_o \; x \; 0.0325 \; xK_p\right)}$$

EQUATION J-3 PRELIMINARY ENDANGERMENT ASSESSMENT VALUE FOR NONCARCINOGENIC NON-VOCS IN WATER

$$C_w = \frac{Hazard}{\left(\frac{0.0639}{RfD_o}\right) + \left(\frac{0.0644 \; x \; K_p}{RfD_o}\right)}$$

EQUATION J-4 PRELIMINARY ENDANGERMENT ASSESSMENT VALUE FOR NONCARCINOGENIC VOCS IN WATER

$$C_w = \frac{Hazard}{\left(\frac{0.0639}{RfD_o}\right) + \left(\frac{0.0639}{RfD_i}\right) + \left(\frac{0.0644 \; x \; K_p}{RfD_o}\right)}$$

C_W = chemical concentration in water
Hazard = target hazard quotient
K_p = dermal permeability coefficient
RfD_O = noncancer oral reference dose
RfD_i = noncancer inhalation reference dose

Risk = target risk level
SF_O = oral cancer slope factor
SF_i = inhalation cancer slope factor

APPENDIX K

METHODOLOGY FOR ASSESSING HEALTH RISKS FROM INORGANIC LEAD

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LIST OF EQUATIONS

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MODEL OUTPUTS

ACRONYMS

DTSC	Department of Toxic Substances Control
Pb	Lead
µg/dl	micrograms of lead per deciliter of blood
$\mu g/m^3$	micrograms per cubic meter

1.0 INTRODUCTION

This appendix explains the methodology used to assess health risks from inorganic lead (Pb) for use in the baseline human health risk assessment. Health risks from exposure to inorganic Pb were assessed based on a mathematical model provided by State of California Department of Toxic Substance Control (DTSC) guidance (DTSC, 1996).

The traditional reference dose approach to toxic chemicals is not applied to Pb because most human health effects data are based on blood Pb concentrations rather than on a dose. Therefore, site-specific blood Pb concentrations were estimated for the receptor populations, and then compared to a blood Pb concentration of concern for the protection of human health. Blood Pb concentrations in adults and children were estimated based on a multipathway analysis. Blood Pb concentrations reflect total exposure from site-related and background sources.

1.1 Exposure Pathways

This methodology estimates blood Pb concentrations resulting from exposure via diet, drinking water, soil and dust ingestion, inhalation, and dermal intake. Each pathway is represented by an equation relating an incremental blood Pb increase to a concentration in a medium, using contact rates and empirically determined ratios. The contributions via the five pathways are added to arrive at an estimate of median blood Pb concentration resulting from the multipathway exposure. The resulting estimate reflects total exposure from site-related and background sources.

1.2 Equations

The equations used in the mathematical model to estimate blood Pb concentrations are presented in Equations K-1 through K-5 and are based on DTSC equations (DTSC, 1996). The model estimates 90^{th}, 95^{th}, 98^{th}, and 99^{th} percentile concentrations from the median by assuming a lognormal distribution with a geometric standard deviation of 1.42.

The State of California guidance (DTSC, 1996) was used in conjunction with a spreadsheet obtained from DTSC. The parameters used in the spreadsheet are discussed below. Although the only potential receptors applicable to this human health risk assessment are adults and children, the equations used in the spreadsheet estimate blood Pb concentrations for adults, children, pica children, and industrial workers as micrograms of Pb per deciliter of blood (µg/dl). For completeness, blood Pb estimates are presented for all potential receptors. Outputs from the model are included as Model Outputs K-1 through K-10.

1.3 Model Parameters

Model parameters are listed in Table K-1. The distribution of blood PB concentrations for a given set of environmental inputs is a factor in protecting sensitive members of the population. Because blood Pb concentrations are assumed to be lognormally distributed, upper-bound values for contact rates are not used, because they would distort the percentiles corresponding to blood Pb concentrations.

In the absence of applicable site-specific data, the DTSC recommended default values for the concentration of Pb in ambient air and the concentration of respirable airborne dust were assumed to be 0.18 micrograms per cubic meter ($\mu g/m^3$) and 50 $\mu g/m^3$, respectively. The concentration of Pb in soil was assumed to be equal to the mean Pb background value for

California of 23.9 milligrams per kilogram (Bradford *et al.*, 1996). The regional background level of lead was selected for use in the model because appropriate site-specific background concentrations of lead were not available. Concentrations of Pb in water are summarized in Table K-2. Refer to Section 6.1.7 of the text for the discussion regarding determining the concentration of Pb in water. The concentration of Pb in the diet was assumed to be 10 micrograms per kilogram (Bolger *et al.*, 1990).

1.4 Comparison to the Blood Lead Concentration of Concern

After blood Pb concentrations were estimated, a comparison of the estimated 99th percentile blood Pb concentration to the blood Pb concentration of concern was completed. The State of California has established a blood Pb concentration of concern for children and adults of 10 μg/dl (DTSC, 1996). The comparison is summarized in Table K-3. The results show that all the estimated blood Pb levels associated with each well are less than the 10 μg/dl level of concern.

2.0 REFERENCES

Bolger, P.M., S.G. Capar, and M.A. Adams, 1990 (September 24-27). "Reductions in Dietary Lead Exposure in the United States". Presented at the Symposium on the Bioavailability and Dietary Exposure of Lead.

Bradford, G.R., A.C. Chang, A.L. Page, D. Bakhtar, J.A. Frampton, and H. Wright. 1996 (March). *Background Concentrations of Trace and Major Elements in California Soils. Kearney Foundation of Soil Science.* Division of Agriculture and Natural Resources. University of California.

Department of Toxic Substances Control (DTSC). 1996 (August). *Supplemental Guidance for Human Health Multimedia Risk Assessments of Hazardous Waste Sites and Permitted Facilities.*

APPENDIX K TABLES

TABLE K-1 EXPOSURE PARAMETERS USED TO ESTIMATE BLOOD LEAD CONCENTRATIONS IN CHILDREN AND ADULTS

Parameter	Definition (units)	Value	Reference
C_{air}	concentration of lead in air (ug/m^3)	0.18	DTSC, 1996
C_{diet}	concentration of lead in the diet (ug/kg)	10	Bolger *et al.*, 1990
C_{soil}	concentration of lead in soil (ug/g)	23.9	Bradford *et al.*, 1996
C_{water}	concentration of lead in drinking water (ug/L)		see Table K-2
DC_a	dietary constant, adults (ug/dl)/(ug/day)	0.04	DTSC, 1996
DC_c	dietary constant, children (ug/dl)/(ug/day)	0.16	DTSC, 1996
DCR_a	dietary contact rate, adults (kg/day	2.2	DTSC, 1996
DCR_c	dietary contact rate, children (kg/day)	1.3	DTSC, 1996
$DERM_a$	dermal contact rate, adult (g/day)	1.85	DTSC, 1996
$DERM_c$	dermal contact rate, children (g/day)	1.4	DTSC, 1996
IC_a	inhalation constant, adults (ug/dl)/(ug/m^3)	1.64	DTSC, 1996
IC_c	inhalation constant, children (ug/dl)/(ug/m^3)	1.92	DTSC, 1996
SC_d	soil constant, dermal (ug/dl blood)/(ug/day)	0.0001	DTSC, 1996
SC_a	soil constant, adults (ug/dl)/(ug/day)	0.018	DTSC, 1996
SC_c	soil constant, children (ug/dl)/(ug/day)	0.07	DTSC, 1996
SCR_a	soil contact rate, adults (g/day)	0.025	DTSC, 1996
SCR_c	soil contact rate, children (g/day)	0.055	DTSC, 1996
WCR_a	drinking water contact rate, adults (L/day)	1.4	DTSC, 1996
WCR_c	drinking water contact rate, children (L/day)	0.4	DTSC, 1996

Notes:

DTSC = Department of Toxic Substances Control
g/day = grams per day
kg/day = kilograms per day
L/day = liters per day
(ug/dl)/(ug/day) = micrograms per deciliter per micrograms per day
(ug/dl)/(ug/m3) = micrograms per deciliter per micrograms per cubic meter
ug/kg = micrograms per kilogram
ug/L = micrograms per liter
ug/g = micrograms per gram
ug/m3 = micrograms per cubic meter

References:

Department of Toxic Substances Control (DTSC). 1996. *Supplemental Guidance for Human Health Multimedia Risk Assessments of Hazardous Waste Sites and Permitted Facilities*. Office of Scientific Affairs. August 1996.

Bolger, P.M., S.G. Capar, and M.A. Adams. 1990. "Reduction in Dietary Lead Exposure in the United States". Presented at the Symposium on the Bioavailability and Dietary Exposure of Lead, September 24-27, 1990.

Bradford, G.R., A.C. Chang, A.L. Pae, D. Gakhtar, J.A. Frampton, and H. Wright. 1996. *Background Concentrations of Trace and Major Elements in California Soils*. Kearney Foundation of Soil Science. Division of agriculture and Natural Resources. University of California. March 1996.

TABLE K-2 CONCENTRATIONS OF LEAD IN GROUNDWATER

Location	Minimum Detection (µg/L)	Maximum Detection (µg/L)	Detection Frequency	Exposure Point Concentration (µg/L)	Comment [a]
MW-03	7.6	7.6	1/20	1.5	EPC = UCL
MW-08	2.3	2.3	1/4	2.3	EPC = Maximum
MW-11	2.4	9.3	2/20	1.7	EPC = UCL
MW-12	3.2	3.2	1/22	1.2	EPC = UCL
MW-13	2.8	2.8	1/8	1.6	EPC = UCL
MW-14	2.4	28	5/20	3.2	EPC = UCL
MW-17	2.5	2.5	1/20	1.2	EPC = UCL
MW-19	2.5	2.5	1/19	1.2	EPC = UCL
MW-20	1.2	3.8	2/19	1.3	EPC = UCL
MW-21	3	3.5	3/19	1.6	EPC = UCL

Notes:

(a) Refer to Section 6.7.2 of the text for the discussion regarding determining the exposure point concentration.

EPC = exposure point concentration

µg/L = micrograms per liter

MW = monitoring well

UCL = 95% upper confidence limit of the log-transformed data based on the Land equation

TABLE K-3 COMPARISON OF ESTIMATED 99TH PERCENTILE BLOOD LEAD CONCENTRATIONS WITH THE BLOOD LEAD CONCENTRATION OF CONCERN

Location	Blood Lead Concentration Estimate (µg/dl) [a]				Concentration of Concern [b]	Exceeds Concentration of Concern?
	Adult	Child	Pica Child	Industrial	(µg/dl)	
MW-03	2.9	5.9	8.7	2.7	10	no
MW-08	3.0	6.0	8.8	2.8	10	no
MW-11	2.9	6.0	8.8	2.7	10	no
MW-12	2.9	5.9	8.7	2.7	10	no
MW-13	2.9	5.9	8.7	2.7	10	no
MW-14	3.1	6.2	9.0	2.9	10	no
MW-17	2.9	5.9	8.7	2.7	10	no
MW-19	2.9	5.9	8.7	2.7	10	no
MW-20	2.9	5.9	8.7	2.7	10	no
MW-21	2.9	5.9	8.7	2.7	10	no

Notes:

(a) Adults and children are the only applicable potential receptors for this human health risk assessment. The pica child and industrial receptor are presented for completeness.

(b) Department of Toxic Substances Control (DTSC). 1996. *Supplemental Guidance for Human Health Multimedia Risk Assessments of Hazardous Waste Sites and Permitted Facilities*. Office of Scientific Affairs. August 1996.

MW = monitoring well

µg/dl = micrograms per deciliter

APPENDIX K EQUATIONS

EQUATION K-1 DIETARY INTAKE EQUATION

$$Intake = C_{diet} \cdot DCR \cdot DC$$

EQUATION K-2 DRINKING WATER INTAKE EQUATION

$$Intake = C_{water} \cdot WCR \cdot DC$$

EQUATION K-3 SOIL AND DUST INGESTION INTAKE EQUATION

$$Intake = C_{soil} \cdot SCR \cdot SC$$

EQUATION K-4 INHALATION INTAKE EQUATION

$$Intake = C_{air} \cdot IC$$

EQUATION K-5 DERMAL CONTACT INTAKE EQUATION

$$Intake = C_{soil} \cdot DERM \cdot SC_d$$

C_{air}	=	concentration of lead in the air
C_{diet}	=	concentration of lead in the diet
C_{soil}	=	concentration of lead in soil
C_{water}	=	concentration of lead in drinking water
DC	=	dietary constant
DCR	=	dietary contact rate
DERM	=	dermal contact rate, adults
IC	=	inhalation constant
SC	=	soil constant
SC_d	=	soil constant, dermal
SCR	=	soil contact rate
WCR	=	drinking water contact rate

APPENDIX K MODEL OUTPUTS

Model Output K-1. Lead Risk Assessment Spreadsheet for Well MW-03

CALIFORNIA DEPARTMENT OF TOXIC SUBSTANCES CONTROL

INPUT		OUTPUT							
MEDIUM	LEVEL		percentiles					PRG-99	PRG-95
			50th	90th	95th	98th	99th	(ug/g)	(ug/g)
LEAD IN AIR (ug/m^3)	0.18								
LEAD IN SOIL (ug/g)	23.9	BLOOD Pb, ADULT (ug/dl)	1.3	2.0	2.3	2.6	2.9	4402.6	6088.2
LEAD IN WATER (ug/l)	1.5	BLOOD Pb, CHILD (ug/dl)	2.6	4.1	4.7	5.4	5.9	460.6	754.4
PLANT UPTAKE? 1=YES 0=NO	0	BLOOD Pb, PICA CHILD (ug/dl)	3.9	6.0	6.9	7.9	8.7	33.9	55.6
RESPIRABLE DUST (ug/m^3)	50	BLOOD Pb, INDUSTRIAL (ug/dl)	1.2	1.9	2.1	2.4	2.7	5481.0	7524.9

EXPOSURE PARAMETERS

	units	residential			industrial
		adults	children	children with pica	adults
General					
Days per week	days/wk	7	7	7	5
Dermal Contact					
Skin area	cm^2	3700	2800	2800	5800
Soil adherence	mg/cm^2	0.5	0.5	0.5	0.5
Route-specific constant	(ug/dl)/(ug/day)	0.00011	0.00011	0.00011	0.00011
Soil ingestion					
Soil ingestion	mg/day	25	55	790	25
Route-specific constant	(ug/dl)/(ug/day)	0.0176	0.0704	0.0704	0.0176
Inhalation					
Breathing rate	m^3/day	20	10	10	20
Route-specific constant	(ug/dl)/(ug/day)	0.082	0.192	0.192	0.082
Water ingestion					
Water ingestion	l/day	1.4	0.4	0.4	1.4
Route-specific constant	(ug/dl)/(ug/day)	0.04	0.16	0.16	0.04
Food ingestion					
Food ingestion	kg/day	2.2	1.3	1.3	2.2
Route-specific constant	(ug/dl)/(ug/day)	0.04	0.16	0.16	0.04
Dietary concentration	ug/kg	10.0	10.0	10.0	10.0
Lead in produce	ug/kg	10.0	10.0	10.0	

PATHWAYS, ADULTS

Pathway	Residential Blood Pb ug/dl	Residential percent of total	Industrial Blood Pb ug/dl	Industrial percent of total	Concentration in medium
SOIL CONTACT:	0.00	0%	0.01	0%	24 ug/g
SOIL INGESTION:	0.01	1%	0.01	1%	23.9 ug/g
INHALATION:	0.30	23%	0.21	18%	0.18 ug/m^3
WATER INGESTION:	0.08	7%	0.08	7%	1.5 ug/l
FOOD INGESTION:	0.88	69%	0.88	74%	10.0 ug Pb/kg diet

PATHWAYS, CHILDREN

Pathway	Typical Blood Pb ug/dl	Typical percent of total	with pica Blood Pb ug/dl	with pica percent of total	concentration in medium
SOIL CONTACT:	0.00	0%	0.00	0%	24 ug/g
SOIL INGESTION:	0.09	4%	1.33	34%	23.9 ug/g
INHALATION:	0.35	13%	0.35	9%	0.18 ug/m^3
WATER INGESTION:	0.10	4%	0.10	2%	1.5 ug/l
FOOD INGESTION:	2.08	79%	2.08	54%	10.0 ug Pb/kg diet

Model Output K-2. Lead Risk Assessment Spreadsheet for Well MW-08

CALIFORNIA DEPARTMENT OF TOXIC SUBSTANCES CONTROL

INPUT		OUTPUT							
MEDIUM	LEVEL		percentiles					PRG-99	PRG-95
			50th	90th	95th	98th	99th	(ug/g)	(ug/g)
LEAD IN AIR (ug/m^3)	0.18								
LEAD IN SOIL (ug/g)	23.9	BLOOD Pb, ADULT (ug/dl)	1.3	2.1	2.3	2.7	3.0	4340.1	6025.7
LEAD IN WATER (ug/l)	2.3	BLOOD Pb, CHILD (ug/dl)	2.7	4.2	4.7	5.5	6.0	448.2	742.0
PLANT UPTAKE? 1=YES 0=NO	0	BLOOD Pb, PICA CHILD (ug/dl)	3.9	6.1	6.9	8.0	8.8	33.0	54.7
RESPIRABLE DUST (ug/m^3)	50	BLOOD Pb, INDUSTRIAL (ug/dl)	1.2	1.9	2.2	2.5	2.8	5405.3	7449.2

EXPOSURE PARAMETERS

	units	residential			industrial
		adults	children	children with pica	adults
General					
Days per week	days/wk	7	7	7	5
Dermal Contact					
Skin area	cm^2	3700	2800	2800	5800
Soil adherence	mg/cm^2	0.5	0.5	0.5	0.5
Route-specific constant	(ug/dl)/(ug/day)	0.00011	0.00011	0.00011	0.00011
Soil ingestion					
Soil ingestion	mg/day	25	55	790	25
Route-specific constant	(ug/dl)/(ug/day)	0.0176	0.0704	0.0704	0.0176
Inhalation					
Breathing rate	m^3/day	20	10	10	20
Route-specific constant	(ug/dl)/(ug/day)	0.082	0.192	0.192	0.082
Water ingestion					
Water ingestion	l/day	1.4	0.4	0.4	1.4
Route-specific constant	(ug/dl)/(ug/day)	0.04	0.16	0.16	0.04
Food ingestion					
Food ingestion	kg/day	2.2	1.3	1.3	2.2
Route-specific constant	(ug/dl)/(ug/day)	0.04	0.16	0.16	0.04
Dietary concentration	ug/kg	10.0	10.0	10.0	10.0
Lead in produce	ug/kg	10.0	10.0	10.0	

PATHWAYS, ADULTS

Pathway	Residential Blood Pb ug/dl	Residential percent of total	Industrial Blood Pb ug/dl	Industrial percent of total	Concentration in medium
SOIL CONTACT:	0.00	0%	0.01	0%	24 ug/g
SOIL INGESTION:	0.01	1%	0.01	1%	23.9 ug/g
INHALATION:	0.30	22%	0.21	17%	0.18 ug/m^3
WATER INGESTION:	0.13	10%	0.13	10%	2.3 ug/l
FOOD INGESTION:	0.88	67%	0.88	71%	10.0 ug Pb/kg diet

PATHWAYS, CHILDREN

Pathway	Typical Blood Pb ug/dl	Typical percent of total	with pica Blood Pb ug/dl	with pica percent of total	concentration in medium
SOIL CONTACT:	0.00	0%	0.00	0%	24 ug/g
SOIL INGESTION:	0.09	3%	1.33	34%	23.9 ug/g
INHALATION:	0.35	13%	0.35	9%	0.18 ug/m^3
WATER INGESTION:	0.15	6%	0.15	4%	2.3 ug/l
FOOD INGESTION:	2.08	78%	2.08	53%	10.0 ug Pb/kg diet

Model Output K-3. Lead Risk Assessment Spreadsheet for Well MW-11

CALIFORNIA DEPARTMENT OF TOXIC SUBSTANCES CONTROL

INPUT		OUTPUT							
MEDIUM	LEVEL		percentiles					PRG-99	PRG-95
			50th	90th	95th	98th	99th	(ug/g)	(ug/g)
LEAD IN AIR (ug/m^3)	0.18								
LEAD IN SOIL (ug/g)	23.9	BLOOD Pb, ADULT (ug/dl)	1.3	2.0	2.3	2.6	2.9	4386.9	6072.6
LEAD IN WATER (ug/l)	1.7	BLOOD Pb, CHILD (ug/dl)	2.6	4.1	4.7	5.4	6.0	457.5	751.3
PLANT UPTAKE? 1=YES 0=NO	0	BLOOD Pb, PICA CHILD (ug/dl)	3.9	6.1	6.9	8.0	8.8	33.7	55.4
RESPIRABLE DUST (ug/m^3)	50	BLOOD Pb, INDUSTRIAL (ug/dl)	1.2	1.9	2.1	2.5	2.7	5462.1	7506.0

EXPOSURE PARAMETERS

	units	residential			industrial
		adults	children	children with pica	adults
General					
Days per week	days/wk	7	7	7	5
Dermal Contact					
Skin area	cm^2	3700	2800	2800	5800
Soil adherence	mg/cm^2	0.5	0.5	0.5	0.5
Route-specific constant	(ug/dl)/(ug/day)	0.00011	0.00011	0.00011	0.00011
Soil ingestion					
Soil ingestion	mg/day	25	55	790	25
Route-specific constant	(ug/dl)/(ug/day)	0.0176	0.0704	0.0704	0.0176
Inhalation					
Breathing rate	m^3/day	20	10	10	20
Route-specific constant	(ug/dl)/(ug/day)	0.082	0.192	0.192	0.082
Water ingestion					
Water ingestion	l/day	1.4	0.4	0.4	1.4
Route-specific constant	(ug/dl)/(ug/day)	0.04	0.16	0.16	0.04
Food ingestion					
Food ingestion	kg/day	2.2	1.3	1.3	2.2
Route-specific constant	(ug/dl)/(ug/day)	0.04	0.16	0.16	0.04
Dietary concentration	ug/kg	10.0	10.0	10.0	10.0
Lead in produce	ug/kg	10.0	10.0	10.0	

PATHWAYS, ADULTS

	Residential		Industrial		
Pathway	Blood Pb ug/dl	percent of total	Blood Pb ug/dl	percent of total	Concentration in medium
SOIL CONTACT:	0.00	0%	0.01	0%	24 ug/g
SOIL INGESTION:	0.01	1%	0.01	1%	23.9 ug/g
INHALATION:	0.30	23%	0.21	18%	0.18 ug/m^3
WATER INGESTION:	0.10	7%	0.10	8%	1.7 ug/l
FOOD INGESTION:	0.88	68%	0.88	73%	10.0 ug Pb/kg diet

PATHWAYS, CHILDREN

	Typical		with pica		
Pathway	Blood Pb ug/dl	percent of total	Blood Pb ug/dl	percent of total	concentration in medium
SOIL CONTACT:	0.00	0%	0.00	0%	24 ug/g
SOIL INGESTION:	0.09	4%	1.33	34%	23.9 ug/g
INHALATION:	0.35	13%	0.35	9%	0.18 ug/m^3
WATER INGESTION:	0.11	4%	0.11	3%	1.7 ug/l
FOOD INGESTION:	2.08	79%	2.08	54%	10.0 ug Pb/kg diet

Model Output K-4. Lead Risk Assessment Spreadsheet for Well MW-12

CALIFORNIA DEPARTMENT OF TOXIC SUBSTANCES CONTROL

INPUT		OUTPUT							
MEDIUM	LEVEL		percentiles					PRG-99	PRG-95
			50th	90th	95th	98th	99th	(ug/g)	(ug/g)
LEAD IN AIR (ug/m^3)	0.18								
LEAD IN SOIL (ug/g)	23.9	BLOOD Pb, ADULT (ug/dl)	1.3	2.0	2.2	2.6	2.9	4426.0	6111.6
LEAD IN WATER (ug/l)	1.2	BLOOD Pb, CHILD (ug/dl)	2.6	4.1	4.6	5.3	5.9	465.3	759.1
PLANT UPTAKE? 1=YES 0=NO	0	BLOOD Pb, PICA CHILD (ug/dl)	3.8	6.0	6.8	7.9	8.7	34.3	55.9
RESPIRABLE DUST (ug/m^3)	50	BLOOD Pb, INDUSTRIAL (ug/dl)	1.2	1.8	2.1	2.4	2.7	5509.4	7553.3

EXPOSURE PARAMETERS

	units	residential			industrial
		adults	children	children with pica	adults
General					
Days per week	days/wk	7	7	7	5
Dermal Contact					
Skin area	cm^2	3700	2800	2800	5800
Soil adherence	mg/cm^2	0.5	0.5	0.5	0.5
Route-specific constant	(ug/dl)/(ug/day)	0.00011	0.00011	0.00011	0.00011
Soil ingestion					
Soil ingestion	mg/day	25	55	790	25
Route-specific constant	(ug/dl)/(ug/day)	0.0176	0.0704	0.0704	0.0176
Inhalation					
Breathing rate	m^3/day	20	10	10	20
Route-specific constant	(ug/dl)/(ug/day)	0.082	0.192	0.192	0.082
Water ingestion					
Water ingestion	l/day	1.4	0.4	0.4	1.4
Route-specific constant	(ug/dl)/(ug/day)	0.04	0.16	0.16	0.04
Food ingestion					
Food ingestion	kg/day	2.2	1.3	1.3	2.2
Route-specific constant	(ug/dl)/(ug/day)	0.04	0.16	0.16	0.04
Dietary concentration	ug/kg	10.0	10.0	10.0	10.0
Lead in produce	ug/kg	10.0	10.0	10.0	

PATHWAYS, ADULTS

Pathway	Residential		Industrial		
	Blood Pb ug/dl	percent of total	Blood Pb ug/dl	percent of total	Concentration in medium
SOIL CONTACT:	0.00	0%	0.01	0%	24 ug/g
SOIL INGESTION:	0.01	1%	0.01	1%	23.9 ug/g
INHALATION:	0.30	24%	0.21	18%	0.18 ug/m^3
WATER INGESTION:	0.07	5%	0.07	6%	1.2 ug/l
FOOD INGESTION:	0.88	70%	0.88	75%	10.0 ug Pb/kg diet

PATHWAYS, CHILDREN

Pathway	Typical		with pica		
	Blood Pb ug/dl	percent of total	Blood Pb ug/dl	percent of total	concentration in medium
SOIL CONTACT:	0.00	0%	0.00	0%	24 ug/g
SOIL INGESTION:	0.09	4%	1.33	35%	23.9 ug/g
INHALATION:	0.35	13%	0.35	9%	0.18 ug/m^3
WATER INGESTION:	0.08	3%	0.08	2%	1.2 ug/l
FOOD INGESTION:	2.08	80%	2.08	54%	10.0 ug Pb/kg diet

Model Output K-5. Lead Risk Assessment Spreadsheet for Well MW-13

CALIFORNIA DEPARTMENT OF TOXIC SUBSTANCES CONTROL

INPUT		OUTPUT								
MEDIUM	LEVEL		percentiles					PRG-99	PRG-95
			50th	90th	95th	98th	99th	(ug/g)	(ug/g)
LEAD IN AIR (ug/m^3)	0.18								
LEAD IN SOIL (ug/g)	23.9	BLOOD Pb, ADULT (ug/dl)	1.3	2.0	2.3	2.6	2.9	4394.7	6080.4
LEAD IN WATER (ug/l)	1.6	BLOOD Pb, CHILD (ug/dl)	2.6	4.1	4.7	5.4	5.9	459.1	752.9
PLANT UPTAKE? 1=YES 0=NO	0	BLOOD Pb, PICA CHILD (ug/dl)	3.9	6.1	6.9	7.9	8.7	33.8	55.5
RESPIRABLE DUST (ug/m^3)	50	BLOOD Pb, INDUSTRIAL (ug/dl)	1.2	1.9	2.1	2.5	2.7	5471.5	7515.5

EXPOSURE PARAMETERS

		residential			industrial
	units	*adults*	*children*	*children with pica*	*adults*
General					
Days per week	days/wk	7	7	7	5
Dermal Contact					
Skin area	cm^2	3700	2800	2800	5800
Soil adherence	mg/cm^2	0.5	0.5	0.5	0.5
Route-specific constant	(ug/dl)/(ug/day)	0.00011	0.00011	0.00011	0.00011
Soil ingestion					
Soil ingestion	*mg/day*	25	55	790	25
Route-specific constant	(ug/dl)/(ug/day)	0.0176	0.0704	0.0704	0.0176
Inhalation					
Breathing rate	m^3/day	20	10	10	20
Route-specific constant	(ug/dl)/(ug/day)	0.082	0.192	0.192	0.082
Water ingestion					
Water ingestion	l/day	1.4	0.4	0.4	1.4
Route-specific constant	(ug/dl)/(ug/day)	0.04	0.16	0.16	0.04
Food ingestion					
Food ingestion	kg/day	2.2	1.3	1.3	2.2
Route-specific constant	(ug/dl)/(ug/day)	0.04	0.16	0.16	0.04
Dietary concentration	ug/kg	10.0	10.0	10.0	10.0
Lead in produce	ug/kg	10.0	10.0	10.0	

PATHWAYS, ADULTS

	Residential		Industrial		
Pathway	Blood Pb ug/dl	percent of total	Blood Pb ug/dl	percent of total	Concentration in medium
SOIL CONTACT:	0.00	0%	0.01	0%	24 ug/g
SOIL INGESTION:	0.01	1%	0.01	1%	23.9 ug/g
INHALATION:	0.30	23%	0.21	18%	0.18 ug/m^3
WATER INGESTION:	0.09	7%	0.09	8%	1.6 ug/l
FOOD INGESTION:	0.88	69%	0.88	74%	10.0 ug Pb/kg diet

PATHWAYS, CHILDREN

	Typical		with pica		
Pathway	Blood Pb ug/dl	percent of total	Blood Pb ug/dl	percent of total	concentration in medium
SOIL CONTACT:	0.00	0%	0.00	0%	24 ug/g
SOIL INGESTION:	0.09	4%	1.33	34%	23.9 ug/g
INHALATION:	0.35	13%	0.35	9%	0.18 ug/m^3
WATER INGESTION:	0.10	4%	0.10	3%	1.6 ug/l
FOOD INGESTION:	2.08	79%	2.08	54%	10.0 ug Pb/kg diet

Model Output K-6. Lead Risk Assessment Spreadsheet for Well MW-14

CALIFORNIA DEPARTMENT OF TOXIC SUBSTANCES CONTROL

INPUT		OUTPUT							
MEDIUM	LEVEL		percentiles					PRG-99	PRG-95
			50th	90th	95th	98th	99th	(ug/g)	(ug/g)
LEAD IN AIR (ug/m^3)	0.18								
LEAD IN SOIL (ug/g)	23.9	BLOOD Pb, ADULT (ug/dl)	1.4	2.2	2.4	2.8	3.1	4269.8	5955.5
LEAD IN WATER (ug/l)	3.2	BLOOD Pb, CHILD (ug/dl)	2.7	4.3	4.8	5.6	6.2	434.2	728.0
PLANT UPTAKE? 1=YES 0=NO	0	BLOOD Pb, PICA CHILD (ug/dl)	4.0	6.2	7.0	8.2	9.0	32.0	53.6
RESPIRABLE DUST (ug/m^3)	50	BLOOD Pb, INDUSTRIAL (ug/dl)	1.3	2.0	2.3	2.6	2.9	5320.1	7364.0

EXPOSURE PARAMETERS

		residential			industrial
	units	adults	children	children with pica	adults
General					
Days per week	days/wk	7	7	7	5
Dermal Contact					
Skin area	cm^2	3700	2800	2800	5800
Soil adherence	mg/cm^2	0.5	0.5	0.5	0.5
Route-specific constant	(ug/dl)/(ug/day)	0.00011	0.00011	0.00011	0.00011
Soil ingestion					
Soil ingestion	mg/day	25	55	790	25
Route-specific constant	(ug/dl)/(ug/day)	0.0176	0.0704	0.0704	0.0176
Inhalation					
Breathing rate	m^3/day	20	10	10	20
Route-specific constant	(ug/dl)/(ug/day)	0.082	0.192	0.192	0.082
Water ingestion					
Water ingestion	l/day	1.4	0.4	0.4	1.4
Route-specific constant	(ug/dl)/(ug/day)	0.04	0.16	0.16	0.04
Food ingestion					
Food ingestion	kg/day	2.2	1.3	1.3	2.2
Route-specific constant	(ug/dl)/(ug/day)	0.04	0.16	0.16	0.04
Dietary concentration	ug/kg	10.0	10.0	10.0	10.0
Lead in produce	ug/kg	10.0	10.0	10.0	

PATHWAYS, ADULTS

	Residential		Industrial		
Pathway	Blood Pb ug/dl	percent of total	Blood Pb ug/dl	percent of total	Concentration in medium
SOIL CONTACT:	0.00	0%	0.01	0%	24 ug/g
SOIL INGESTION:	0.01	1%	0.01	1%	23.9 ug/g
INHALATION:	0.30	22%	0.21	17%	0.18 ug/m^3
WATER INGESTION:	0.18	13%	0.18	14%	3.2 ug/l
FOOD INGESTION:	0.88	64%	0.88	69%	10.0 ug Pb/kg diet

PATHWAYS, CHILDREN

	Typical		with pica		
Pathway	Blood Pb ug/dl	percent of total	Blood Pb ug/dl	percent of total	concentration in medium
SOIL CONTACT:	0.00	0%	0.00	0%	24 ug/g
SOIL INGESTION:	0.09	3%	1.33	34%	23.9 ug/g
INHALATION:	0.35	13%	0.35	9%	0.18 ug/m^3
WATER INGESTION:	0.20	8%	0.20	5%	3.2 ug/l
FOOD INGESTION:	2.08	76%	2.08	52%	10.0 ug Pb/kg diet

Model Output K-7. Lead Risk Assessment Spreadsheet for Well MW-17

CALIFORNIA DEPARTMENT OF TOXIC SUBSTANCES CONTROL

INPUT		OUTPUT

MEDIUM	LEVEL
LEAD IN AIR (ug/m^3)	0.18
LEAD IN SOIL (ug/g)	23.9
LEAD IN WATER (ug/l)	1.2
PLANT UPTAKE? 1=YES 0=NO	0
RESPIRABLE DUST (ug/m^3)	50

	percentiles					PRG-99	PRG-95
	50th	90th	95th	98th	99th	(ug/g)	(ug/g)
BLOOD Pb, ADULT (ug/dl)	1.3	2.0	2.2	2.6	2.9	4426.0	6111.6
BLOOD Pb, CHILD (ug/dl)	2.6	4.1	4.6	5.3	5.9	465.3	759.1
BLOOD Pb, PICA CHILD (ug/dl)	3.8	6.0	6.8	7.9	8.7	34.3	55.9
BLOOD Pb, INDUSTRIAL (ug/dl)	1.2	1.8	2.1	2.4	2.7	5509.4	7553.3

EXPOSURE PARAMETERS

	units	residential			industrial
General		adults	children	children with pica	adults
Days per week	days/wk	7	7	7	5
Dermal Contact					
Skin area	cm^2	3700	2800	2800	5800
Soil adherence	mg/cm^2	0.5	0.5	0.5	0.5
Route-specific constant	(ug/dl)/(ug/day)	0.00011	0.00011	0.00011	0.00011
Soil ingestion					
Soil ingestion	mg/day	25	55	790	25
Route-specific constant	(ug/dl)/(ug/day)	0.0176	0.0704	0.0704	0.0176
Inhalation					
Breathing rate	m^3/day	20	10	10	20
Route-specific constant	(ug/dl)/(ug/day)	0.082	0.192	0.192	0.082
Water ingestion					
Water ingestion	l/day	1.4	0.4	0.4	1.4
Route-specific constant	(ug/dl)/(ug/day)	0.04	0.16	0.16	0.04
Food ingestion					
Food ingestion	kg/day	2.2	1.3	1.3	2.2
Route-specific constant	(ug/dl)/(ug/day)	0.04	0.16	0.16	0.04
Dietary concentration	ug/kg	10.0	10.0	10.0	10.0
Lead in produce	ug/kg	10.0	10.0	10.0	

PATHWAYS, ADULTS

Pathway	Residential Blood Pb ug/dl	Residential percent of total	Industrial Blood Pb ug/dl	Industrial percent of total	Concentration in medium
SOIL CONTACT:	0.00	0%	0.01	0%	24 ug/g
SOIL INGESTION:	0.01	1%	0.01	1%	23.9 ug/g
INHALATION:	0.30	24%	0.21	18%	0.18 ug/m^3
WATER INGESTION:	0.07	5%	0.07	6%	1.2 ug/l
FOOD INGESTION:	0.88	70%	0.88	75%	10.0 ug Pb/kg diet

PATHWAYS, CHILDREN

Pathway	Typical Blood Pb ug/dl	Typical percent of total	with pica Blood Pb ug/dl	with pica percent of total	concentration in medium
SOIL CONTACT:	0.00	0%	0.00	0%	24 ug/g
SOIL INGESTION:	0.09	4%	1.33	35%	23.9 ug/g
INHALATION:	0.35	13%	0.35	9%	0.18 ug/m^3
WATER INGESTION:	0.08	3%	0.08	2%	1.2 ug/l
FOOD INGESTION:	2.08	80%	2.08	54%	10.0 ug Pb/kg diet

Model Output K-8. Lead Risk Assessment Spreadsheet for Well MW-19

CALIFORNIA DEPARTMENT OF TOXIC SUBSTANCES CONTROL

INPUT		OUTPUT							
MEDIUM	LEVEL		percentiles					PRG-99	PRG-95
			50th	90th	95th	98th	99th	(ug/g)	(ug/g)
LEAD IN AIR (ug/m^3)	0.18								
LEAD IN SOIL (ug/g)	23.9	BLOOD Pb, ADULT (ug/dl)	1.3	2.0	2.2	2.6	2.9	4426.0	6111.6
LEAD IN WATER (ug/l)	1.2	BLOOD Pb, CHILD (ug/dl)	2.6	4.1	4.6	5.3	5.9	465.3	759.1
PLANT UPTAKE? 1=YES 0=NO	0	BLOOD Pb, PICA CHILD (ug/dl)	3.8	6.0	6.8	7.9	8.7	34.3	55.9
RESPIRABLE DUST (ug/m^3)	50	BLOOD Pb, INDUSTRIAL (ug/dl)	1.2	1.8	2.1	2.4	2.7	5509.4	7553.3

EXPOSURE PARAMETERS

		residential			industrial
	units	adults	children	children with pica	adults
General					
Days per week	days/wk	7	7	7	5
Dermal Contact					
Skin area	cm^2	3700	2800	2800	5800
Soil adherence	mg/cm^2	0.5	0.5	0.5	0.5
Route-specific constant	(ug/dl)/(ug/day)	0.00011	0.00011	0.00011	0.00011
Soil ingestion					
Soil ingestion	mg/day	25	55	790	25
Route-specific constant	(ug/dl)/(ug/day)	0.0176	0.0704	0.0704	0.0176
Inhalation					
Breathing rate	m^3/day	20	10	10	20
Route-specific constant	(ug/dl)/(ug/day)	0.082	0.192	0.192	0.082
Water ingestion					
Water ingestion	l/day	1.4	0.4	0.4	1.4
Route-specific constant	(ug/dl)/(ug/day)	0.04	0.16	0.16	0.04
Food ingestion					
Food ingestion	kg/day	2.2	1.3	1.3	2.2
Route-specific constant	(ug/dl)/(ug/day)	0.04	0.16	0.16	0.04
Dietary concentration	ug/kg	10.0	10.0	10.0	10.0
Lead in produce	ug/kg	10.0	10.0	10.0	

PATHWAYS, ADULTS

	Residential		Industrial		
Pathway	Blood Pb ug/dl	percent of total	Blood Pb ug/dl	percent of total	Concentration in medium
SOIL CONTACT:	0.00	0%	0.01	0%	24 ug/g
SOIL INGESTION:	0.01	1%	0.01	1%	23.9 ug/g
INHALATION:	0.30	24%	0.21	18%	0.18 ug/m^3
WATER INGESTION:	0.07	5%	0.07	6%	1.2 ug/l
FOOD INGESTION:	0.88	70%	0.88	75%	10.0 ug Pb/kg diet

PATHWAYS, CHILDREN

	Typical		with pica		
Pathway	Blood Pb ug/dl	percent of total	Blood Pb ug/dl	percent of total	concentration in medium
SOIL CONTACT:	0.00	0%	0.00	0%	24 ug/g
SOIL INGESTION:	0.09	4%	1.33	35%	23.9 ug/g
INHALATION:	0.35	13%	0.35	9%	0.18 ug/m^3
WATER INGESTION:	0.08	3%	0.08	2%	1.2 ug/l
FOOD INGESTION:	2.08	80%	2.08	54%	10.0 ug Pb/kg diet

Model Output K-9. Lead Risk Assessment Spreadsheet for Well MW-20

CALIFORNIA DEPARTMENT OF TOXIC SUBSTANCES CONTROL

INPUT		OUTPUT								
MEDIUM	LEVEL		percentiles					PRG-99	PRG-95
			50th	90th	95th	98th	99th	(ug/g)	(ug/g)
LEAD IN AIR (ug/m^3)	0.18								
LEAD IN SOIL (ug/g)	23.9	BLOOD Pb, ADULT (ug/dl)	1.3	2.0	2.2	2.6	2.9	4418.2	6103.8
LEAD IN WATER (ug/l)	1.3	BLOOD Pb, CHILD (ug/dl)	2.6	4.1	4.6	5.4	5.9	463.7	757.5
PLANT UPTAKE? 1=YES 0=NO	0	BLOOD Pb, PICA CHILD (ug/dl)	3.8	6.0	6.8	7.9	8.7	34.2	55.8
RESPIRABLE DUST (ug/m^3)	50	BLOOD Pb, INDUSTRIAL (ug/dl)	1.2	1.8	2.1	2.4	2.7	5499.9	7543.9

EXPOSURE PARAMETERS

	units	residential			industrial
		adults	children	children with pica	adults
General					
Days per week	days/wk	7	7	7	5
Dermal Contact					
Skin area	cm^2	3700	2800	2800	5800
Soil adherence	mg/cm^2	0.5	0.5	0.5	0.5
Route-specific constant	(ug/dl)/(ug/day)	0.00011	0.00011	0.00011	0.00011
Soil ingestion					
Soil ingestion	mg/day	25	55	790	25
Route-specific constant	(ug/dl)/(ug/day)	0.0176	0.0704	0.0704	0.0176
Inhalation					
Breathing rate	m^3/day	20	10	10	20
Route-specific constant	(ug/dl)/(ug/day)	0.082	0.192	0.192	0.082
Water ingestion					
Water ingestion	l/day	1.4	0.4	0.4	1.4
Route-specific constant	(ug/dl)/(ug/day)	0.04	0.16	0.16	0.04
Food ingestion					
Food ingestion	kg/day	2.2	1.3	1.3	2.2
Route-specific constant	(ug/dl)/(ug/day)	0.04	0.16	0.16	0.04
Dietary concentration	ug/kg	10.0	10.0	10.0	10.0
Lead in produce	ug/kg	10.0	10.0	10.0	

PATHWAYS, ADULTS

Pathway	Residential Blood Pb ug/dl	Residential percent of total	Industrial Blood Pb ug/dl	Industrial percent of total	Concentration in medium
SOIL CONTACT:	0.00	0%	0.01	0%	24 ug/g
SOIL INGESTION:	0.01	1%	0.01	1%	23.9 ug/g
INHALATION:	0.30	23%	0.21	18%	0.18 ug/m^3
WATER INGESTION:	0.07	6%	0.07	6%	1.3 ug/l
FOOD INGESTION:	0.88	70%	0.88	75%	10.0 ug Pb/kg diet

PATHWAYS, CHILDREN

Pathway	Typical Blood Pb ug/dl	Typical percent of total	with pica Blood Pb ug/dl	with pica percent of total	concentration in medium
SOIL CONTACT:	0.00	0%	0.00	0%	24 ug/g
SOIL INGESTION:	0.09	4%	1.33	35%	23.9 ug/g
INHALATION:	0.35	13%	0.35	9%	0.18 ug/m^3
WATER INGESTION:	0.08	3%	0.08	2%	1.3 ug/l
FOOD INGESTION:	2.08	80%	2.08	54%	10.0 ug Pb/kg diet

Model Output K-10. Lead Risk Assessment Spreadsheet for Well MW-21

CALIFORNIA DEPARTMENT OF TOXIC SUBSTANCES CONTROL

INPUT		OUTPUT

MEDIUM	LEVEL
LEAD IN AIR (ug/m^3)	0.18
LEAD IN SOIL (ug/g)	23.9
LEAD IN WATER (ug/l)	1.6
PLANT UPTAKE? 1=YES 0=NO	0
RESPIRABLE DUST (ug/m^3)	50

	percentiles					PRG-99	PRG-95
	50th	90th	95th	98th	99th	(ug/g)	(ug/g)
BLOOD Pb, ADULT (ug/dl)	1.3	2.0	2.3	2.6	2.9	4394.7	6080.4
BLOOD Pb, CHILD (ug/dl)	2.6	4.1	4.7	5.4	5.9	459.1	752.9
BLOOD Pb, PICA CHILD (ug/dl)	3.9	6.1	6.9	7.9	8.7	33.8	55.5
BLOOD Pb, INDUSTRIAL (ug/dl)	1.2	1.9	2.1	2.5	2.7	5471.5	7515.5

EXPOSURE PARAMETERS

		residential			industrial
	units	adults	children	children with pica	adults
General					
Days per week	days/wk	7	7	7	5
Dermal Contact					
Skin area	cm^2	3700	2800	2800	5800
Soil adherence	mg/cm^2	0.5	0.5	0.5	0.5
Route-specific constant	(ug/dl)/(ug/day)	0.00011	0.00011	0.00011	0.00011
Soil ingestion					
Soil ingestion	mg/day	25	55	790	25
Route-specific constant	(ug/dl)/(ug/day)	0.0176	0.0704	0.0704	0.0176
Inhalation					
Breathing rate	m^3/day	20	10	10	20
Route-specific constant	(ug/dl)/(ug/day)	0.082	0.192	0.192	0.082
Water ingestion					
Water ingestion	l/day	1.4	0.4	0.4	1.4
Route-specific constant	(ug/dl)/(ug/day)	0.04	0.16	0.16	0.04
Food ingestion					
Food ingestion	kg/day	2.2	1.3	1.3	2.2
Route-specific constant	(ug/dl)/(ug/day)	0.04	0.16	0.16	0.04
Dietary concentration	ug/kg	10.0	10.0	10.0	10.0
Lead in produce	ug/kg	10.0	10.0	10.0	

PATHWAYS, ADULTS

Pathway	Residential Blood Pb ug/dl	Residential percent of total	Industrial Blood Pb ug/dl	Industrial percent of total	Concentration in medium
SOIL CONTACT:	0.00	0%	0.01	0%	24 ug/g
SOIL INGESTION:	0.01	1%	0.01	1%	23.9 ug/g
INHALATION:	0.30	23%	0.21	18%	0.18 ug/m^3
WATER INGESTION:	0.09	7%	0.09	8%	1.6 ug/l
FOOD INGESTION:	0.88	69%	0.88	74%	10.0 ug Pb/kg diet

PATHWAYS, CHILDREN

Pathway	Typical Blood Pb ug/dl	Typical percent of total	with pica Blood Pb ug/dl	with pica percent of total	concentration in medium
SOIL CONTACT:	0.00	0%	0.00	0%	24 ug/g
SOIL INGESTION:	0.09	4%	1.33	34%	23.9 ug/g
INHALATION:	0.35	13%	0.35	9%	0.18 ug/m^3
WATER INGESTION:	0.10	4%	0.10	3%	1.6 ug/l
FOOD INGESTION:	2.08	79%	2.08	54%	10.0 ug Pb/kg diet

APPENDIX L

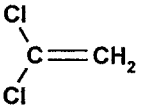
TOXILOGICAL PROFILES

TABLE OF CONTENTS

LIST OF ACRONYMS

µg/dL	micrograms per deciliter
µg/m^3	micrograms per cubic meter
atm-m^3/mol	atmospheres per cubic meter per mole
BDCM	bromodichloromethane
cm^2/sec	square centimeter per second
CSF	cancer slope factor
DCA	dichloroethane
DCE	dichloroethene
DNA	deoxyribonucleic acid
DTSC	Department of Toxic Substance Control
ECAO	Environmental Criteria and Assessment Office
ECETOC	European Chemical Industry Ecology and Toxicology Center
EPA	U.S. Environmental Protection Agency
FDA	United States Food and Drug Administration
g/kg	grams per kilogram
g/m^3	grams per cubic meter
GI	gastrointestinal
IARC	International Agency for Research on Cancer
IRIS	Integrated Risk Information System
L/kg	liters per kilogram
LD_{50}	lethal dose to 50% of study group
LOAEL	lowest observable adverse effect level
mg/kg	milligrams per kilogram
mg/kg/day	milligrams per kilogram per day
mg/L	milligrams per liter
mg/m^3	milligrams per cubic meter
ml/g	milliliters per gram
mL/kg	milliliters per kilogram
MTD	maximum tolerated doses
NAS	National Academy of Sciences
NOAEL	no observable adverse effect level
NTP	National Toxicology Program
OEHHA	Office of Environmental Health Hazard Assessment
PCE	tetrachloroethene
ppm	parts per million
RfC	reference concentration
RfD	Oral reference dose
TCE	Trichloroethene
VOCs	Volatile Organic Compound

1,1-DICHLOROETHENE

COMMON SYNONYMS:	CAS NUMBER: 75-35-4	CHEMICAL STRUCTURE
• Vinylidene chloride	FORMULA: $C_2H_4Cl_2$	
	MOLECULAR WEIGHT: 96.94	
PHYSICAL/CHEMICAL DATA	Physical State - liquid	EPA, 1999a
	Solubility in water (mg/L) - 2,500 at 20°C	EPA, 1999a
	K_{oc} (mL/g) - 65	EPA, 1999a
	Diffusivity in air (cm^2/sec) - 0.0791	EPA, 1999a
	Difusivity in water (cm^2/sec) - 1.04×10^{-5}	EPA, 1999a
	Henry's Law constant (atm-m^3/mol) - 0.154	EPA, 1999a
	Bioconcentration factor (L/kg) - no data	
MAJOR USES	Used primarily in the production of other chlorinated hydrocarbons, plastics, refrigerants, and polymers.	EPA, 1999a ATSDR, 1996

TOXICOKINETICS

In laboratory animals, 1,1-dichloroethylene (DCE) is rapidly absorbed via inhalation. Substantial amounts of the parent compound were found in the blood of rats 2 minutes after inhalation exposure. Absorption was dose- and duration-dependent, and decreased over time until equilibrium was reached. Animal studies also show that oral exposure to 1,1-DCE results in rapid and almost complete absorption. Once absorbed, 1,1-DCE was found to distribute rapidly in the bodies of experimental animals. 1,1-DCE appears to partition preferrentially in the liver, kidney, and lung tissues. Much of the absorbed 1,1-DCE is breathed out unchanged through the lungs. The bulk of the remaining chemical that is eliminated exits the body via the urine (EPA, 1999a; ATSDR, 1996).

TOXICITY

Noncarcinogenic Effects

1,1-DCE is irritating to the lungs and eyes. Acute exposure to high concentrations of 1,1-DCE may cause narcosis similar to drunkenness. Exposure to 1,1-DCE over prolonged periods may cause renal and hepatic dysfunction. Effects on the heart have also been noted. Dermal exposure to 1,1-DCE may cause irritation of the skin. Based on studies conducted in rats, mice, and rabbits, 1,1-DCE may be weakly teratogenic (EPA, 1999a; ATSDR, 1996). EPA has established an oral reference dose (RfD) for 1,1-DCE of 9×10^{-3} milligrams per kilogram body weight per day (mg/kg/day), based on hepatic lesions in a chronic rat oral bioassay (EPA, 1999b).

Carcinogenic Effects

There is inadequate evidence in humans linking exposure to 1,1-DCE and incidence of tumors. Epidemiologic data have shown no carcinogenic effect associated with 1,1-DCE exposure. The evidence for carcinogenicity in animals is also limited. Most of the 18 animal studies reported were limited in design and were not designed for maximum sensitivity. The

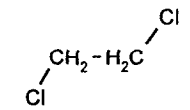
results of these studies are mixed. 1,1-DCE has been shown to be mutagenic for *Salmonella typhimurium* in multiple assays, but did not produce chromosomal aberrations in V79 cells or bone marrow cells of ICR mice treated *in vivo*. Because of the limited and varying data, The U.S. Environmental Protection Agency (EPA) has listed 1,1-DCE as a Group C possible human carcinogen.

Of the 18 studies reported, only one inhalation study showed 1,1-DCE to be a complete carcinogen. This study was performed by Maltoni *et al.* Both sexes of Swiss mice were exposed to 10 and 25 parts per million (ppm) 1,1-DCE for 4 to 5 days per week for 1 year. A statistically significant increase in kidney adenocarcinomas was noted but a dose-response relationship was not clear (EPA, 1999b). At no time has the Maltoni *et al.* data been subjected to the peer review process, which would ensure the quality of the data. In addition, the Maltoni *et al.* studies were performed at the Bologna Institute of Oncology, which has not been inspected by the EPA; therefore, the data can't have the same confidence for regulatory purposes as the data that originate in certified, inspected laboratories. The weight of evidence indicates that 1,1-DCE is not carcinogenic in experimental animals, except for the data reported by Maltoni *et al.*

Based on this single study demonstrating tumors in one mouse strain after inhalation exposure, EPA has set an oral cancer slope factor (CSF) of 6×10^{-1} $(mg/kg/day)^{-1}$, and an inhalation unit risk of 5×10^{-5} per gram per cubic meter $(g/m^3)^{-1}$ (EPA, 1999b). The California Office of Environmental Health Hazard Assessment (OEHHA) has not set an inhalation or oral CSF for 1,1-DCE (OEHHA, 1994a). In summary, the cancer assessment of 1,1-DCE is uncertain for the following reasons:

- Seventeen out of 18 animal bioassays did not show 1,1-DCE to be carcinogenic.
- A dose-response relationship was not apparent in the Maltoni *et al.* study.
- The Maltoni *et al.* data on which the CSFs are based have not been peer reviewed.
- The Bologna Institute of Oncology has not been inspected by the EPA, so the claim that Maltoni *et al.* followed good laboratory practices can't be confirmed.
- OEHHA has not promulgated a CSF.

1,2-DICHLOROETHANE

COMMON SYNONYMS:	CAS NUMBER: 107-06-2	CHEMICAL STRUCTURE
• Ethylene dichloride	FORMULA: $C_2H_4Cl_2$	
	MOLECULAR WEIGHT: 98.96	
PHYSICAL/CHEMICAL DATA	Physical State - oily	EPA, 1999a
	Solubility in water (mg/L) - 8,700 at 20°C	EPA, 1999a
	K_{oc} (mL/g) - 33	EPA, 1999a
	Diffusivity in air (cm^2/sec) - 0.091	EPA, 1999a
	Difusivity in water (cm^2/sec) - 9.9×10^{-6}	EPA, 1999a
	Henry's Law constant (atm-m^3/mol) - 0.0012	EPA, 1999a
	Bioconcentration factor (L/kg) - 2.0	EPA, 1999a
MAJOR USES	Used as a solvent for fats, oils, waxes, and rubber; as a chemical intermediate for various chlorinated compounds including vinyl chloride; insecticidal properties recognized in the late 1920s when it was first used as a fumigant for stored products.	Budavari *et al.*, 1989 EPA, 1984c, 1999a Smith, 1991

TOXICOKINETICS

High absorption of 1,2-dichloroethane (DCA) has been demonstrated in laboratory animals. Absorption across the gastrointestinal tract is rapid with peak blood levels occurring within 20 minutes after a single oral dose. Since 1,2-DCA has a fairly high vapor pressure and a high blood-to-air partition coefficient, pulmonary absorption is expected to be rapid and complete (EPA, 1984c). Rats exposed absorbed about 70 percent of the 1,2-DCA inhaled (Smith, 1991). Slight absorption may occur through the skin (EPA, 1984c). 1,2-DCA is rapidly cleared from the body, with a biological half-life of less than 1hour. Urine is the primary route of elimination. Approximately 30 percent of an oral dose will be eliminated through the lungs, whereas only 2 percent of an inhaled dose will be removed through this pathway. The metabolism of 1,2-DCA is mediated by cytochrome P450. Metabolites found in the urine are thiodiacetic acid and thiodiacetic acid sulfoxide (Smith, 1991).

TOXICITY

Noncarcinogenic Effects

Exposure to 1,2-DCA vapors in the workplace has caused anorexia, nausea, vomiting, weakness, fatigue, nervousness, and irritation of the respiratory tract and eyes. Nervous system dysfunction has also been reported in chronically exposed workers (EPA, 1984c). Rats exposed to lethal levels of 1,2-DCA died from cardiac arrest, preceded by respiratory arrest. Rats fed diets fumigated with 500 and ppm 1,2-DCA for 2 years were not affected in terms of their growth, fertility, reproduction, or biochemistry (Smith, 1991). Accidental oral exposure to 1,2-DCA in humans has resulted in gastroenteritis, followed by liver and kidney injury. Intestinal hemorrhaging was observed in some cases (Smith, 1991). Death of one individual occurred following a single oral exposure of 0.5-1.0 grams per kilogram (g/kg) of

1,2-DCA. The autopsy revealed liver necrosis and focal adrenal degeneration and necrosis (EPA, 1999a). No inhalation or oral reference doses have been set by the EPA due to a lack of data (EPA, 1999b).

Carcinogenic Effects

1,2-DCA does bind covalently to deoxyribonucleic acid (DNA) and other cellular macromolecules. It has been found to be only weakly mutagenic in the Ames mutagenicity assay, but its metabolites are more positively mutagenic. Chronic bioassays in rodents have been positive for carcinogenicity by the oral but not the inhalation route. Chronic, oral exposures to the maximum tolerated doses (MTD) have produced an increased incidence of alveolar and bronchiolar adenomas in both sexes; hepatocellular carcinomas in males; and mammary adenocarcinomas, endometrial tumors, and squamous cell carcinomas in females. Similar tumors were not observed in mice or rats exposed via inhalation to the MTD. Pathological examinations revealed damage to tissues including necrosis of the liver and tubular and glomerular degeneration of the kidney (Smith, 1991). Some epidemiological studies have shown a positive association between exposure to 1,2-DCA and cancer, while others have not (Smith, 1991).

EPA has placed 1,2-DCA in Group B2, indicating that it is a probable human carcinogen based on positive findings in chronic bioassays in which rats were exposed orally. The inhalation unit risk is 2.6×10^{-5} per microgram per cubic meter $[(mg/m^3)^{-1}]$ for inhalation. The CSFs are 0.091 $(mg/kg/day)^{-1}$ for both inhalation and oral exposure (EPA, 1999b). The California OEHHA has set both oral and inhalation CSFs of 7.0×10^{-2} $(mg/kg/day)^{-1}$ (OEHHA, 1994b).

ARSENIC

COMMON SYNONYMS:	CAS NUMBER: 7440-38-2 FORMULA: As MOLECULAR WEIGHT: 74.92	
PHYSICAL/CHEMICAL DATA	Physical State - metal (crystalline solid)	EPA, 1999a
	Density - 5.727at 14°C	EPA, 1999a
	Solubility in water (mg/L) - insoluble	EPA, 1999a
	K_{oc} (mL/g) - NA	
	Diffusivity in air (cm^2/sec) - NA	
	Difusivity in water (cm^2/sec) - NA	
	Henry's Law constant (atm-m^3/mol) - NA	
	Bioconcentration factor (L/kg) - 4	ATSDR, 1993a
MAJOR USES	Used in arsenical pesticides; metallurgy for making alloys of copper or lead; making various types of glass.	EPA, 1999a

INTRODUCTION

Arsenic occurs naturally in air, water, soil, plant, and in the tissues of living organisms. Occurrence of arsenic in the environment can be a result of industrial and agricultural activities. Arsenate (As^{+5}) is the main species of arsenic found in environments such as unflooded soils. Mildly reducing conditions favor the arsenite (As^{+3}) form (Goyer, 1991; EPA, 1999a; Lewis, 1992).

TOXICOKINETICS

Studies of tri- and pentavalent arsenic indicate almost complete absorption through the gastrointestinal tract in most laboratory animals and humans. Inhalation and absorption of arsenic is dependent upon the size of the particle inhaled. Large particles are quickly deposited in the upper airways and removed by ciliary action; therefore, there is only limited absorption across lung tissue. Small particles penetrate deep into the lungs into the alveoli and, dependent upon the chemical form of the arsenic, absorption across alveolar epithelium occurs. Data also indicate soluble forms (*e.g.*, tri- and pentavalent arsenic) are rapidly absorbed through the skin (EPA, 1999a; ATSDR, 1993a).

Once absorbed, all but a small fraction of systemic arsenic is cleared from tissues. Arsenic seems to distribute preferentially in the nails, skin and hair. There is also general agreement that arsenic will initially accumulate in the kidney, liver, bile, brain, skeleton, and blood (ATSDR, 1993a).

Most of the absorbed arsenic is quickly cleared from tissue. The major metabolite is dimethylarsenate, which is found in the urine. Monomethylarsenate is often a secondary metabolite, and can also appear in the urine. Arsenic is also known to be eliminated through the skin in sweat, particularly during periods of perfuse sweating (Goyer, 1991).

TOXICITY

Noncarcinogenic Effects

Oral exposures of humans to arsenic can produce a large range of gastrointestinal disturbances, including nausea, vomiting, diarrhea, and thirst. Anemia, cardiovascular effects, seizures, and toxic delirium have also been noted. Inhalation exposures can cause all of the above, including pulmonary edema. Skin exposures have commonly caused hyper-pigmentation, keratosis, epidermoid carcinomas, and occasionally skin sensitization (EPA 1999a; ATSDR,1993a; Goyer, 1991).

A no observable adverse effect level (NOAEL) of 0.009 mg/L was established by the EPA, based on hyperpigmentation, keratosis and possible vascular complications. An oral RfD of 3×10^{-4} mg/kg/day was also established by the EPA based on these effects (EPA, 1999b).

Carcinogenic Effects

Arsenic is a confirmed teratogen that can traverse placental barriers and cause fetal death and malformations in many species of mammals (EPA, 1999a; Goyer, 1991). It is carcinogenic in humans, and is classified by EPA as a Group A carcinogen. EPA has established an inhalation unit risk of 4.3×10^{-3} $(mg/m^3)^{-1}$ and an oral CSF of 1.5 $mg/kg/day^{-1}$. The California OEHHA has set an inhalation CSFs of 12 $(mg/kg/day)^{-1}$ (OEHHA, 1994b). OEHHA has not established an oral CSF for arsenic.

BROMODICHLOROMETHANE

INTRODUCTION

Bromodichloromethane (BDCM), is a low-molecular-weight halogenated hydrocarbon and a trihalomethane (others being chloroform, dibromochloromethane, and bromoform). The trihalomethanes are produced during use of chlorination for water purification and result from interaction with naturally occurring humic substances in the raw water. Raw water with lower turbidity has generally been found to yield treated water that is low in the trihalomethanes (Casarett and Doull, 1986).

TOXICOKINETICS

As with the other trihalomethanes, BDCM can be absorbed through the lungs, gastrointestinal, and to a limited extent, through the skin. Humans are primarily exposed via inhalation. Once absorbed, BDCM is distributed to all organs with relatively high concentrations accumulating in nervous and adipose tissues. The majority of an absorbed dose is excreted unchanged by the lungs or as the carbon dioxide metabolite. BDCM can cross the placenta rapidly and enter fetal circulation. (EPA, 1995)

TOXICITY

Noncarcinogenic Effects

An oral RfD of .02 mg/kg/day was established by EPA, based on a lowest observable adverse effect level (LOAEL) of 17.9 mg/kg/day from a chronic rat and mouse gavage assay (EPA, 1995). In this assay, final mean body weights of dosed female and male mice were 75 to 91 percent that of control mice. Changes observed in dosed specimens included cytomegaly and tubular cell hyperplasia of the kidney, fatty metamorphosis of the liver, clear cell change, focal cellular change, and eosinophilic cytoplasmic change. In another subchronic bioassay, degeneration of the liver, degeneration and necrosis of the kidney, and kidney and liver lesions were observed in rats and mice administered varying doses of BDCM orally. The data from the study defined a NOAEL of 35.7 mg/kg/day, above which male mice experienced kidney lesions and depressed body weight. However, greater confidence is placed in the LOAEL. Overall confidence in the EPA RfD is rated medium to low (EPA, 1995).

Carcinogenic Effects

EPA classifies BDCM as a Group B2 probable human carcinogen, based on inadequate human data and sufficient evidence of carcinogenicity in rats and mice, as shown by increased incidence of kidney tumors and tumors of the large intestine in male and female rats, kidney tumors in male mice, and liver tumors in female mice (EPA, 1995; National

Toxicology Program [NTP], 1987). Several ecological and case-control studies have indicated a positive correlation between drinking chlorinated water and the incidence of several human cancers; in particular, bladder, rectal, and colon cancer. However, the contribution of BDCM to these carcinogenic effects cannot be distinguished from the possible contributions of the other trihalomethanes. Based on the available animal data, EPA has developed an oral CSF of 0.062 mg/kg/day (EPA, 1995). The California OEHHA has established an oral and inhalation CSF of 0.13 $(mg/kg/day)^{-1}$ (OEHHA, 1994b).

CARBON TETRACHLORIDE

Introduction

Carbon tetrachloride (CCl_4) is a clear liquid with a sweet odor resembling chloroform. Major uses of carbon tetrachloride include as a solvent, as a cleaning agent for machinery and electrical equipment, as a catalyst, and in the synthesis of other chemicals, such as freons (EPA, 1996b). It was previously used as a fumigant to kill insects in grain (ATSDR, 1994).

Toxicokinetics

Carbon tetrachloride is readily absorbed through the lungs, gastrointestinal (GI) tract, and skin. It is distributed to all organs and tissues, but concentrates in body fat, liver, and bone marrow. Absorption through the lungs decreases as duration increases until an equilibrium is reached. Absorption through the GI tract is greatly affected by diet. Carbon tetrachloride in air is predominantly expired unchanged. Some is metabolized in the liver to chloroform or carbon dioxide. An intermediate compound in the metabolic pathway, trichloromethyl radical, can irreversibly bind hepatic macromolecules and may be responsible for lipid peroxidation, a process that causes damage to membranes and enzymes (EPA, 1996a; Andrews and Snyder, 1991).

TOXICITY

Noncarcinogenic Effects

Prolonged skin exposure to carbon tetrachloride can cause irritation. Effects following acute exposure to high levels may be delayed and may include damage to the heart, liver, and kidneys. Kidney damage is more likely after inhalation exposure, whereas liver damage is more likely after oral exposure. Carbon tetrachloride vapor may act as a central nervous system depressant (EPA, 1996b). The mechanism of action for toxicity in the liver is centrilobular necrosis and fat accumulation. Metabolites of carbon tetrachloride are considered to be responsible for its toxic action in the liver.

EPA has established an oral RfD for carbon tetrachloride of 7×10^{-4} mg/kg/day. The basis for the RfD is a study in which rats administered carbon tetrachloride by gavage developed liver lesions. In extrapolating from the study results to a human toxicity criteria, an uncertainty factor of 1,000 was applied the toxicity data from the study (EPA, 1996b). Compared to the oral RfDs for other common chlorinated volatile organic compounds (VOCs) such as perchloroethylene (0.01 mg/kg/day), and 1,1-dichloroethane (0.1 mg/kg/day), carbon tetrachloride (RfD equal to 0.0007 mg/kg/day) is clearly a highly toxic VOC. (A lower RfD indicates a more toxic compound.) EPA has not established an inhalation RfD due to a lack of data. However, EPA's Environmental Criteria and Assessment Office (ECAO) has established a provisional inhalation RfD of 5.7×10^{-4}

mg/kg/day. This RfD has not been formally reviewed by EPA and it is not considered promulgated until EPA enters it into its Integrated Risk Information System (IRIS) database.

Carcinogenic Effects

Cases of liver tumors in people who had been exposed to carbon tetrachloride have been reported. Oral exposure of laboratory animals including hamsters, rats, and mice, to carbon tetrachloride has resulted in the formation of liver cell carcinomas. No studies regarding the carcinogenicity of carbon tetrachloride following inhalation were located; however, because it has caused cancer via other exposure routes (*i.e.*, oral, parenteral), EPA has extrapolated oral dose-response data to inhalation data (EPA, 1996a; ATSDR, 1994).

EPA has classified carbon tetrachloride as a Group B2 carcinogen - probable human carcinogen - based on inadequate data in humans and sufficient data in animals. An oral CSF of 0.13 $(mg/kg/day)^{-1}$ has been developed for carbon tetrachloride based on liver tumors incidence in exposed hamsters, mice, and rats. An inhalation CSF of 0.053 $(mg/kg/day)^{-1}$ was extrapolated from the oral cancer studies. An inhalation unit risk of 1.5×10^{-5} per micrograms per cubic meter $(\mu g/m^3)^{-1}$ was established by EPA (1996b). OEHHA (1994a) has established both oral and inhalation cancer slope factors of 0.15 $(mg/kg/day)^{-1}$.

CHLOROFORM

INTRODUCTION

Chloroform is trichloromethane, a volatile but nonflammable liquid with a characteristic odor. Its solubility in water is low (0.822 milliliters per 100 milliliters at 20°C) and it is miscible with organic liquids such as alcohol, benzene, ether, and carbon disulfide. It has been used as an anesthetic and in pharmaceutical preparations. It is also used as a solvent for fats, oils, rubber, alkaloids, waxes, and resins, as a cleaning agent, and as an insecticidal fumigant. The U.S. Food and Drug Administration (FDA) banned the use of chloroform in drug, cosmetic, and food packaging products in 1976. Use as an anesthetic has been discouraged since the early 1900s (Andrews and Snyder, 1991; Budavari *et al.*, 1989; EPA, 1996a).

TOXICOKINETICS

Chloroform can be absorbed through the lungs (77 to 94 percent), gastrointestinal tract (approximately 100 percent), and to a limited extent, through the skin. Humans are primarily exposed via inhalation. Once absorbed, chloroform is distributed to all organs with relatively high concentrations accumulating in nervous and adipose tissues. Sixty-eight percent of an absorbed dose is excreted unchanged by the lungs or as the carbon dioxide metabolite. The biological half-life of chloroform in the blood and expired air of humans is 1.5 hours. Chloroform can cross the placenta rapidly and enter fetal circulation (EPA, 1996a).

TOXICITY

Noncarcinogenic Effects

Due to the former use of chloroform as an anesthetic, there is a great deal of information on the effects on humans. Levels of 400 ppm are tolerable without complaint for 30 minutes. Levels of 100 ppm for 7 minutes can cause dizziness and gastrointestinal distress. Narcosis is achieved at 14,000 ppm. The central nervous system is the primary target organ for chloroform toxicity.

Chloroform toxicity is dependent on its metabolism to a reactive metabolite (possibly phosgene) which binds the proteins in the liver and deplete the organ of glutathione (Andrews and Snyder, 1991). Phosgene may also be the proximal toxicant for nephrotoxicity (Hewitt, 1991). Hepatocyte death, which accompanies chloroform toxicity, results in the influx of calcium ions into the cell, initiating a series of cytotoxic events (Plaa, 1991).

Liver and kidney damage and cardiac arrhythmias may occur following exposure to very high levels. It has been postulated that hepatotoxicity and nephrotoxicity occur independently because they are related to metabolic processes unique to each organ. Liver damage induced by chloroform has been well documented in experimental animal models. Both male and female rodents display hepatotoxicity but only males display nephrotoxicity. Sex dependent nephrotoxicity was attributed to a reactive metabolite formed by a male-specific cytochrome P-450 (Andrews and Snyder, 1991; Plaa, 1991).

Liver failure in humans is a potential side effect of chloroform-induced anesthesia. Patients experienced nausea and vomiting followed by jaundice and coma. Autopsies revealed centrilobular necrosis extending into the periportal regions. Necrotic tissues contained cells which were ballooned and had abnormally high fat concentrations. Workers exposed to chloroform complained of depression and gastrointestinal distress, but liver function tests did not indicate liver damage (Andrews and Snyder, 1991).

A chronic oral RfD of 0.01 mg/kg/day has been set for chloroform. A chronic inhalation reference concentration (RfC) does not exist at this time (EPA, 1996b).

Carcinogenic Effects

Chloroform may be embryotoxic at sufficient doses, but it does not appear to be teratogenic or mutagenic, as it produced negative results in the Ames mutagenicity assay with and without metabolic activation. Male rats developed renal epithelial cell tumors and mice developed liver tumors following oral administration of chloroform in a chronic bioassay. Carcinogenic Effects bioassays revealed that carcinogenic doses produced severe necrosis at sites where tumors developed. Noncarcinogenic doses failed to produce the same response (EPA, 1996b).

The EPA has classified chloroform as a Group B2 carcinogen based on positive results of several carcinogenicity bioassays in rodents. The inhalation unit risk is 2.3×10^{-5} $(mg/m^3)^{-1}$. The oral CSF is 6.1×10^{-3} $(mg/kg/day)^{-1}$ and the inhalation CSF is 8.1×10^{-2} $(mg/kg/day)^{-1}$ (EPA, 1996b). OEHHA has established an inhalation and oral CSFs of 1.9×10^{-2} $(mg/kg/day)^{-1}$ and 3.1×10^{-2} $(mg/kg/day)^{-1}$, respectively (OEHHA, 1994a).

CHROMIUM

COMMON SYNONYMS:	CAS NUMBER: 7440-47-3 FORMULA: Cr MOLECULAR WEIGHT: 51.996	
PHYSICAL/CHEMICAL DATA	Physical State – Solid	EPA, 1999a
	Solubility in water (mg/L) - Insoluble	EPA, 1999a
	K_{oc} (mL/g) - no data	
	Diffusivity in air (cm^2/sec) - no data	
	Difusivity in water (cm^2/sec) - no data	
	Henry's Law constant (atm-m^3/mol) - no data	
	Bioconcentration factor (L/kg) - 1×10^6	EPA, 1999a
MAJOR USES	It is commonly used in the manufacture of chrome steel or chrome-nickel steel, and for plating of other metals.	ATSDR, 1993

TOXICOKINETICS

Absorption via the GI tract is relatively low, and is dependent on the water solubility of the compound and the GI transit time. Absorption following inhalation exposure is influenced by the particle size of the aerosols, as smaller sizes are able to penetrate more readily to the pulmonary regions of the respiratory tract. Chromium has been identified in the urine and blood serum of humans following occupational exposure to chromium, indicating that it is absorbed via inhalation exposure. No data was found to indicate the rate of absorption. Chromium is expected to be absorbed slowly because it can bind to extracellular macromolecules (ATSDR, 1993b).

Chromium is distributed equally among human tissues with the exception of the lung, which may contain 2-3 times the concentration of other tissues. Chromium is normally excreted through the kidneys and urine, with this route accounting for approximately 80% of absorbed chromium. Other routes of excretion include the bile and feces, milk, sweat, hair, and nails (EPA, 1999a).

TOXICITY

Noncarcinogenic Effects

Although much of the available toxicity data for chromium is for hexavalent chromium, limited data on the toxicity of trivalent chromium is available. Inhalation of trivalent chromium compounds results in depression of some indices of immune system function, including the reduction in viability of rabbit macrophages at concentrations greater than 52 ppm. Data from other studies indicate that trivalent chromium can complex with proteins and amino acids to cause allergic reactions and potentially sensitization. Parenternal administration of trivalent chromium has resulted in adverse developmental and reproductive effects in experimental animals. Chronic oral studies of chromium compounds

have not identified any adverse effects on toxicological endpoints including body and organ weights, histological appearance of tissues or on clinical chemistry values.

The EPA has established an oral reference dose of 1.0 mg/kg/day, based on a NOAEL of approximately 1,468 mg/kg/day in a feeding study in rats. An uncertainty factor of 100 and a modifying factor of 10 were applied to the NOAEL in the RfD derivation. The confidence in the RfD is low (EPA, 1999b). The federal inhalation RfD is currently under review by a EPA work group.

Carcinogenic Effects

In vivo assays for genotoxicity have demonstrated negative results for chromosome effects in non-human systems. Similarly, in vitro assays for gene mutations, chromosome effects and cell transformation have given negative results for trivalent chromium.

LEAD

COMMON SYNONYMS:	CAS NUMBER: 7439-92-1 FORMULA: Pb MOLECULAR WEIGHT: 207.2	
PHYSICAL/CHEMICAL DATA	Physical State - metal (solid)	EPA, 1999
	Density - 11.34 at 20°C	EPA, 1999
	Solubility in water (mg/L) - insoluble	EPA, 1999
	K_{oc} (mL/g) – NA	
	Diffusivity in air (cm^2/sec) - NA	
	Difusivity in water (cm^2/sec) - NA	
	Henry's Law constant (atm-m^3/mol) - NA	
	Bioconcentration factor (L/kg) - 42	ATSDR, 1993c
MAJOR USES	Used in the past extensively as an additive to gasoline and in paint; used primarily in the production of storage batteries, oxides, chemicals, ammunition, and various metal products; in recent years, the use of lead in ceramic glazes, gasoline, solder, and in paints has declined in the U.S. in response to the adverse health effects known to be the result of lead exposure.	EPA, 1999 ATSDR, 1993c

TOXICOKINETICS

Gastrointestinal absorption of lead from consumption of food and beverages containing lead, and ingestion of soil with measurable lead levels, is the primary route of exposure. Inhaled lead deposited in the upper respiratory tract and subsequently swallowed also contributes to gastrointestinal absorption (EPA, 1986). Inorganic lead is not readily absorbed through the skin.

Once absorbed, the distribution of lead throughout the body is initially dependent on the blood level concentration and the rate of delivery to the various organs and tissues. Redistribution then occurs based on the relative affinity of the tissues for lead. The exact nature of the overall distribution and body burden are age-related. Mineralized tissues (bone) make up the largest pool for absorbed lead, accounting for approximately 95% of the total body burden in adults. Lead is also distributed in soft tissues, primarily the blood, liver, and kidneys, with lesser amounts in other tissues such as the brain, and readily passes through the placenta and distributes to fetal tissues. As a result, maternal exposure to lead can influence the overall lead body burden in infants and small children (EPA, 1990).

Inorganic lead is not metabolized in the body, but is absorbed, distributed and excreted in its original form. Lead that is absorbed from all routes is eliminated via biliary secretion and in the urine. Approximately 50-60% of absorbed lead is excreted with a half-life of 30-50 days (Kehoe, 1961; Rabinowitz *et al.*, 1976; Chamberlain *et al.*, 1978).

TOXICITY

Noncarcinogenic Effects

Extensive information regarding the health effects of exposure to lead is available. There is convincing evidence that lead exposure resulting in blood lead levels greater than 30 micrograms per deciliter (µg/dL) results in toxic effects on the peripheral and central nervous systems, the cardiovascular system, and the kidneys. In addition, evidence now suggests that children and infants are more susceptible than adults to lead toxicity, and that deleterious effects may be caused by blood lead levels upwards of 10 - 15 µg/dL. In addition, children frequently exhibit behavioral patterns that facilitate the intake of environmental lead (*e.g.*, pica).

In adults and children, severe lead toxicity is characterized by symptoms of irritability, short attention span and loss of memory, headaches, muscle tremor, peripheral neuropathy, abdominal pain, and hallucinations. In adults, these symptoms may occur at blood lead levels in the range of 40-60 µg/dL (EPA, 1986, 1990). Non-overt symptoms of lead toxicity include decreased nerve conduction velocity and impaired cognitive function, and impaired psychomotor performance at blood lead levels upwards of 30 µg/dL. Children appear to be more sensitive than adults to the effects of blood lead levels, and the EPA has concluded that severe psychomotor and cognitive deficits appear to be associated with blood lead levels in the range of 40-60 µg/dL (EPA, 1986, 1990). More subtle effects on mental development and cognitive ability in children are associated with blood lead levels ≤10-15 µg/dL (EPA 1990). Recent studies with primates have shown that exposure to low levels of lead can disrupt the normal maturation of the nervous system, which may result in subsequent functional deficits (Cookman *et al.*, 1987, 1988).

Blood lead levels ≥10-15 µg/dL have been associated with effects on heme metabolism, mental development of infants and children, and serum vitamin D levels. EPA (1990) has concluded that the weight-of-evidence suggests that blood lead levels in this range or possibly even lower are likely to be associated with one or more undesirable effects. At levels >30 µg/dL, nephrotoxicity and overt neurological effects are likely to occur. Reference doses for lead have not been established by EPA because lead is not considered to exhibit a threshold below which no adverse effects are expected. Instead, the EPA and the California Department of Toxic Substances Control (DTSC) have adopted a blood lead level which is considered "acceptable" based on the above data. Currently, this level is 10 µg/dL (personal communication, Dr. Jim Carlisle, DTSC, Office of Scientific Affairs, 1993).

Carcinogenic Effects

Lead has consistently tested negative for mutagenicity in microbial systems, although the EPA has concluded that these systems are not sufficiently developed to demonstrate mutagenicity for metals that are known carcinogens. There is some evidence that lead has an effect on chromosomes in human and other mammalian species. The EPA has concluded that lead is clearly carcinogenic in animals, but that the data is insufficient for quantitative

assessment. Epidemiological data at present does not allow for an assessment of the carcinogenicity of lead in humans (ATSDR, 1993c).

NITRATE

INTRODUCTION

Nitrates arise from a number of environmental and industrial sources including fertilizers, nitrogen concentrating plants, and various organic nitrate drugs. It is also a normal component of the human diet. A typical daily intake by an adult in the United States is about 75 mg/kg-day. Of this, over 85 percent comes from the natural nitrate content of vegetables such as beets, celery, lettuce, and spinach. The contribution from drinking water is usually about 2 to 3 percent of the total (National Academy of Sciences [NAS], 1981).

TOXICOKINETICS

Nitrate toxicity is due primarily to its conversion to nitrite, which oxidizes the Fe (+2) form of iron in hemoglobin to the F3 (+3) state. This compound (methemoglobin) does not bind oxygen, resulting in reduced oxygen transport from lungs to tissues. Low levels of methemoglobin occur in normal individuals, with typical values usually ranging from 0.5 to 2.0 percent (NAS, 1981). However, due to the large excess capacity of blood to carry oxygen, levels of methemoglobin up to around 10 percent are not associated with any significant clinical signs (Walton, 1951; European Chemical Industry Ecology and Toxicology Center [ECETOC], 1988). Concentrations above 10 percent may cause a bluish color to skin and lips, while values above 25 percent lead to weakness, rapid pulse and tachypnea (Jones et al., 1973). Death may occur if methemoglobin values exceed 50 to 60 percent.

Conversion of nitrate to nitrite is mostly mediated by bacteria in the gastrointestinal system. Consequently, the risk of methemoglobinemia from ingestion of nitrate depends not only on the dose of nitrate, but also on the number and type of enteric bacteria. In healthy adults, available data suggest about 5 percent of a does of nitrate is reduced to nitrite by bacteria in the mouth (NAS, 1981). Conversion of nitrate to nitrite may also occur in the stomach if the pH of the gastric fluid is sufficiently high (about pH 5) to permit bacterial growth. This is of concern in adults with diseases such as achlorhydria or atrophic gastritis and in infants.

TOXICITY

Noncarcinogenic Effects

Common findings associated with nitrate poisoning include unconsciousness, dizziness, fatigue, shortness of breath, nausea, vomiting, hypotension, and headache. An association between drinking nitrate-contaminated groundwater and congenital anomalies (especially neural tube defects) has been suggested by Dorsch et al., 1984 and Scragg et al., 1982. Arbuckle et al. (1988) studied water nitrates and the incidence of CNS defects in human infants. Nitrate levels of 26 ppm were associated with a moderate, but not statistically significant increase in the risk of CNS effects.

Carcinogenic Effects

An increased incidence of stomach cancer has been observed in one group of workers with occupational exposure to nitrate fertilizer. A group of 1756 male workers at a nitrate fertilizer plant experienced a slight increase in stomach cancer incidence; no increased risk of total cancers was seen (Zandjani et al., 1994). At the time of this review, no data were available to assess the mutagenic or genotoxic potential of nitrate (Micromedex, 1999).

PERCHLORATE

INTRODUCTION

Perchlorate is an oxidizing anion that originates as a contaminant in ground and surface waters from the dissolution of ammonium, potassium, magnesium, or sodium salts. Perchlorate is exceedingly mobile in aqueous systems and can persist for many decades under typical ground and surface water conditions. Ammonium perchlorate is manufactured for use in rockets, missiles, and fireworks (Rogers, 1998). Perchlorate salts are used as a component of air bay inflators, in nuclear reactors and electronic tubes, in lubricating oils, in tanning and finishing leather, in electroplating, in aluminum refining, and in the production of paints and enamels (Siddiqui et al., 1998).

TOXICOKINETICS

Perchlorate is readily absorbed from the intestinal tract, and oral uptake is considered to be the major route of exposure. Perchlorate does not pass readily through the skin (Schueplein and Bronaugh, 1983). Exposure via inhalation is expected to be negligible because the vapor pressure of perchlorate salts and acids is expected to be low at room temperatures.

Perchlorate is known to inhibit the uptake of iodide in the thyroid, causing a reduction in the hormones thyroxine and triiodothyronine (Cavalieri, 1997). Potential effects of perchlorate, given its mode of action, include concerns for carcinogenic, neurodevelopmental, developmental, reproductive, and immunotoxic effects.

TOXICITY

The EPA has established a provisional oral RfD of 0.0005 mg/kg/day for perchlorate (Stralka, 1992). This RfD is based on a study performed on 12 patients diagnosed with Graves' disease. A dose of 10 mg resulted in only partial thyroid iodine reduction. EPA considered this dosage to be a no-effect-level, which, when normalized to body weight using a standard EPA body weight of 70 kilograms, corresponds to a NOAEL of 0.15 mg/kg/day. EPA further applied an uncertainty factor of 300 (10 for acute to chronic study duration extrapolation, 10 for the protections of sensitive subpopulations, and 3 to account for database deficiencies). Applying these factors results in an oral RfD ranging from 0.0005 to 0.0001 mg/kg/d, implying that a perchlorate intake as high as 0.0005 mg/kg/day would not result in adverse health effects.

An external peer review of an analogous RfD derivation was the determination that the health effects and toxicity data were insufficient for a credible quantitative risk analysis (Toxicology Excellence for Risk Assessment, 1998a). The external peer review panel concluded that the limited database was insufficient to rule out effects of perchlorate on other organs, so it could not be determined unequivocally that the effect on the thyroid was the critical effect. In particular, the reviewers were concerned that developmental toxicity, notably neurological development affected by hypothyroidism during pregnancy, could be a

critical effect of perchlorate that had not been examined adequately in studies to date. In response to the March 1997 external peer review of the provisional RfD values, a subsequent external peer review of experts was convened in May 1997 to recommend and prioritize a set of studies to address the key data gaps and reduce uncertainties in various extrapolations (Toxicology Excellence for Risk Assessment, 1998b). The objective of the new studies is to provide a comprehensive database that provides for development of a robust RfD estimate that reduces the uncertainties inherent in the provisional values. It is anticipated that the new RfD will also be protective of subsequent cancer development.

TRICHLOROETHENE

INTRODUCTION

Trichloroethene (TCE) is widely used as an industrial solvent and is primarily used for vapor degreasing and cold-cleaning of fabricated metal parts. It is also used in textile cleaning and solvent extraction processes. Of the total TCE produced in the United States in 1982, 66 percent was used in vapor degreasing, 22 percent for export, 7 percent as chemical intermediates (in chlorinated hydrocarbons and polyvinyl chloride), and 5 percent for miscellaneous uses. TCE is not known to occur naturally in the environment. By far the greatest source of environmental release is vapor degreasing operations, which eventually release most of the TCE used in this application to the atmosphere. Sources in groundwater have included leaching from waste disposal landfills, and leakage from underground storage tanks or conveyance pipes (Bogen, 1988; EPA, 1984b, 1996a; Torkelson and Rowe, 1981).

TOXICOKINETICS

Inhaled TCE is initially taken up by the lungs at a high rate. Retention of TCE has been measured at between 37 and 75 percent of the amount inhaled regardless of the TCE concentration in the air. In animal studies, however, exposure to higher concentrations of TCE (*i.e.*, 600 ppm) results in metabolic saturation. Absorption of TCE in humans and animals following oral exposure is rapid and extensive. In animals, absorption from the gastrointestinal tract has been measured at 91 to 98 percent. Peak TCE blood levels are attained within a few hours. Absorption of TCE in animals and humans via the dermal route is poor, but dermal absorption studies are complicated by the fact that pure liquid TCE has the capability of defatting the skin, thereby enhancing its own absorption. The general conclusion has been made that normal industrial use of TCE would rarely be absorbed through the human skin in toxic amounts (ATSDR, 1988; Bogen, 1988; EPA, 1996a).

Following absorption into the body, TCE is distributed mostly into adipose tissue and highly perfused tissues such as liver and kidneys. TCE is relatively insoluble in body fluids and tends to accumulate in fatty tissues. It is capable of distributing widely throughout the body and into the fetus. Evidence from both animals and humans indicates TCE is metabolized primarily in the liver, to a wide variety of metabolites, some of which are reactive intermediates (*i.e.*, more toxic than TCE). The major metabolites of TCE are the same in humans and animals; however, metabolism in animals is much more efficient than in humans.

The mode of elimination for TCE is dose-dependent; at high levels of exposure, a larger percentage of TCE is excreted unchanged in expired air. At low levels of exposure, a greater percentage of the dose is excreted in the urine as water soluble metabolites. TCE concentrated in the adipose tissue has a long half-life, on the order of 1.75 and 2.25 hours, based on oral exposures of rats and mice (ATSDR, 1988b; Bogen, 1988; EPA, 1996a).

TOXICITY

Noncarcinogenic Effects

There is very little toxicological data for humans. Acute inhalation exposure results in mucous membrane irritation, drowsiness, and headaches. In humans, longer-term exposure (3.75 years average duration) at relatively high air concentrations (mean concentration of 85 ppm) has resulted in vertigo, headache, short-term memory loss, and decreased word association. All effects were reversed once exposure was discontinued. No other effects in humans have been definitively linked to TCE exposure. Following inhalation exposure in animals, the most sensitive target organs/systems affected vary depending on whether the exposure duration is acute, subchronic, or chronic. Short-term exposure tends to adversely impact the blood, nervous system, and reproductive system; whereas, longer-term exposure affects the liver and kidneys. Whether acute or chronic, however, the LOAEL tends to be about 100 ppm in air (ATSDR, 1988b; Bogen, 1988; EPA, 1996a).

The most sensitive organ/system impacted by oral exposure in animals is the immune system. At much greater exposure, liver, kidney and blood effects are reported. Information was not available on the oral or dermal toxicity of TCE to humans. In rabbits, the dermal lethal dose for 50 percent of the population (LD_{50}) is greater than 20 milliliters per kilogram (mL/kg), or 29 g/kg (ATSDR, 1988b; Bogen, 1988; EPA, 1996a).

Inhalation and oral studies in rodents indicate that TCE is fetotoxic, but there is no evidence that it is teratogenic. For example, skeletal ossification anomalies and other effects indicative of delayed development were reported following inhalation exposure. In a two-generation rat study (TCE in diet), liver and kidney enlargement occurred in the offspring. Other reproductive effects have been reported (*e.g.*, mating behavior), but only at levels of exposure greater than 75 milligrams per kilogram (mg/kg). No definitive developmental or reproductive toxic effects have been reported in humans. Increased incidence of miscarriages among nurses exposed to chemicals in operating rooms and developmental effects in humans that consumed contaminated drinking water have been suggested as attributable to TCE, but in all cases, exposure has been to a multiplicity of chemicals (ATSDR, 1988b; Bogen, 1988; EPA, 1996a).

EPA has withdrawn all noncarcinogenic toxicity criteria for TCE from its IRIS database. An oral RfD of 7.35×10^{-3} mg/kg/day for TCE was located in the EPA's *Hazard Assessment for Trichloroethylene* (EPA, 1985).

Carcinogenic Effects

Available evidence indicates that TCE is carcinogenic in animals. Inhalation and oral exposure produced liver and lung tumors in mice and kidney adenocarcinoma at 600 ppm, and testicular Leydig cell tumors and possibly leukemia at concentrations greater than 100 ppm in rats. TCE did not serve as either an initiator or as a complete skin carcinogen in animal bioassays (ATSDR, 1988b; EPA, 1996b).

The mechanism of action of TCE carcinogenesis in laboratory rodents is believed to be chronic oxidative stress, caused by peroxisome proliferation in the liver. Peroxisome proliferation appears to occur at high TCE doses and is more apparent in mice than in rats. It has been argued that peroxisome proliferation does not occur in humans to an appreciable degree; therefore, rodents may not be suitable test animals for human toxicity assessment (Stott, 1988). In addition, the carcinogenic toxicity criteria is based on liver tumors in a strain of mice (B6C3F1) that is sensitive to hepatocarcinogenesis and has a high rate of spontaneous tumors in that organ, ranging from 5 to 45 percent (Stott *et al.*, 1982).

Whereas there is evidence that TCE is carcinogenic in laboratory animals, similar evidence in humans is lacking. Several epidemiological studies have attempted to assess the association between TCE exposure in the workplace atmosphere and cancer. The Agency for Toxic Substances and Disease Registry (ATSDR, 1988b) concluded that "the available human data are inadequate to either confirm or refute the carcinogenicity of trichloroethylene" in humans via the inhalation exposure route. No studies have successfully demonstrated a significant cause and effect relationship between human cancer and ingestion of TCE-contaminated water. The International Agency for Research on Cancer (IARC, 1987) concluded that TCE cannot be classified as to its carcinogenicity in humans, based on their designation of "limited evidence" of carcinogenicity in animals and "inadequate evidence" of carcinogenicity in humans. Although EPA had listed TCE as a probable human carcinogen (B2), it withdrew this classification in 1989 and another carcinogen assessment summary is in preparation (EPA, 1996b).

Until the new summary is completed, it is assumed that TCE is a B2 carcinogen for the purposes of human health risk assessment. The previous inhalation CSF was 0.006 $(mg/kg/day)^{-1}$ and the previous oral CSF was 0.011 $(mg/kg/day)^{-1}$ (EPA, 1989). This factor is a geometric mean of four slope factors prepared by modeling the animal data on the basis of a metabolized dose. California EPA (Cal-EPA) has established an inhalation CSF of 0.010 $(mg/kg/day)^{-1}$ and has proposed an oral CSF of 0.015 $(mg/kg/day)^{-1}$. It should be noted that confidence in the carcinogenic potential of TCE in humans is low.

TETRACHLOROETHENE

COMMON SYNONYMS:	CAS NUMBER: 127-18-4	CHEMICAL
• Tetrachloroethylene	FORMULA: C_2Cl_4	STRUCTURE
• Ethylene tetrachloride	MOLECULAR WEIGHT: 165.83	
PHYSICAL/CHEMICAL DATA	Physical State - Liquid	ATSDR, 1995
	Solubility in water (mg/L) – 150	
	K_{oc} (mL/g) – 2.2-2.7	
	Diffusivity in air (cm^2/sec) – Not Available	
	Difusivity in water (cm^2/sec) – Not Available	
	Henry's Law constant (atm-m^3/mol) – 0.018	
	Bioconcentration factor (L/kg) – No Data	
MAJOR USES		

INTRODUCTION

Tetrachlorethene, also known as perchloroethylene (PCE), is a widely-used solvent with applications as a dry-cleaning agent, a metal degreaser, and a chemical intermediate in the manufacturing of fluorocarbons. It is also used as a heat-exchange fluid, in the extraction of caffeine from coffee, and was formerly used as a fumigant. It is the most stable of the chlorinated ethanes and ethylenes, requiring only small amounts of stabilizers. PCE is non-flammable. Naturally-occurring sources of PCE have not been found (Bogen et al., 1987; EPA, 1996a; Torkelson and Rowe, 1981).

TOXICOKINETICS

Inhalation is the primary route of absorption into the body. PCE is readily absorbed by humans, and pulmonary uptake is proportional to ventilation rate, duration of exposure, and concentration in air. In animals, PCE is also absorbed readily and proportionally over air concentrations ranging from 10 to 600 ppm. Absorption following oral exposure of both humans and animals is rapid and virtually 100 percent. Absorption from the gastrointestinal tract has been measured in animals to be 91 to 98 percent. Absorption of PCE via the dermal route is poor in both humans and animals. Average industrial concentrations of PCE would rarely be absorbed through the human skin in toxic amounts (ATSDR, 1988a; Bogen et al., 1987; EPA, 1996a).

Distribution of PCE in the body following absorption is widespread with accumulation occurring in adipose tissue. Its metabolism is dose-dependent; at low doses a greater percentage of the absorbed dose is converted to water-soluble metabolites that are excreted in the urine. The principal metabolic pathway is oxidation. A secondary pathway involving glutathione conjugation has also been described. PCE is excreted relatively rapidly, primarily as the unchanged compound in expired air; therefore, PCE does not persist in the body (ATSDR, 1988a; Bogen et al., 1987; EPA, 1987, 1996a).

TOXICITY

Noncarcinogenic Effects

There is very little data on the toxicity of PCE in human. Acute exposure can result in irritation to lungs, eyes, and skin. In animals, the most sensitive organs and systems affected vary, depending on whether the exposure duration is acute, subchronic, or chronic, but the greatest effects appear to involve the central nervous system, liver, and kidneys. Short-term exposure tends to adversely impact the nervous system, whereas longer term exposure tends to impact the liver and kidneys. Although the reproductive system is a target, it is not as sensitive as the liver and kidneys. The toxic action of PCE is believed to be caused by reactive metabolites generated during its oxidative metabolism, which occurs primarily in the liver.

A RfD for chronic oral exposure of 0.01 mg/kg/day was calculated by EPA, using the results of a 6-week mouse gavage study (EPA, 1995). The RfD was based on hepatotoxicity (liver effects) with a NOAEL of 14 mg/kg/day and a LOAEL of 71 mg/kg/day.

Carcinogenic Effects

Whereas the evidence for carcinogenicity in rodents following inhalaion exposure to PCE is considered conclusive, the evidence via oral exposure is controversial. Types of cancer observed in laboratory animals include mononuclear cell leukemia and hepatocellular (liver) and renal (kidney) carcinomas and adenomas (generally benign epithelial tumors). Humans are not susceptible to mononuclear leukemia. Evidence for a genotoxic action is weak and most studies show little to no evidence of mutagenic activity. The EPA previously classified PCE in Group B2; indicating its status as a probable human carcinogen. The B2 classification was questioned by the EPA Science Advisory Board, which has recommended a classification of Group C, indicating that it is a possible human carcinogen (EPA, 1987). The EPA is currently reconsidering the classification of PCE and has not published a classification in IRIS database.

When EPA withdraws the carcinogenic weight-of-evidence classification for a chemical published in IRIS for further review, the most recent EPA cancer slope factor is used in a risk assessment. In the case of PCE, the most recent cancer slope factor that was located is 2.0×10^{-3} $(mg/kg/day)^{-1}$, established by EPA's ECAO, which has not yet been formally approved. The previously established oral slope factor of 0.052 $(mg/kg/day)^{-1}$ and inhalation slope factor of 0.002 $(mg/kg/day)^{-1}$ may also be considered appropriate (EPA, 1991).

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