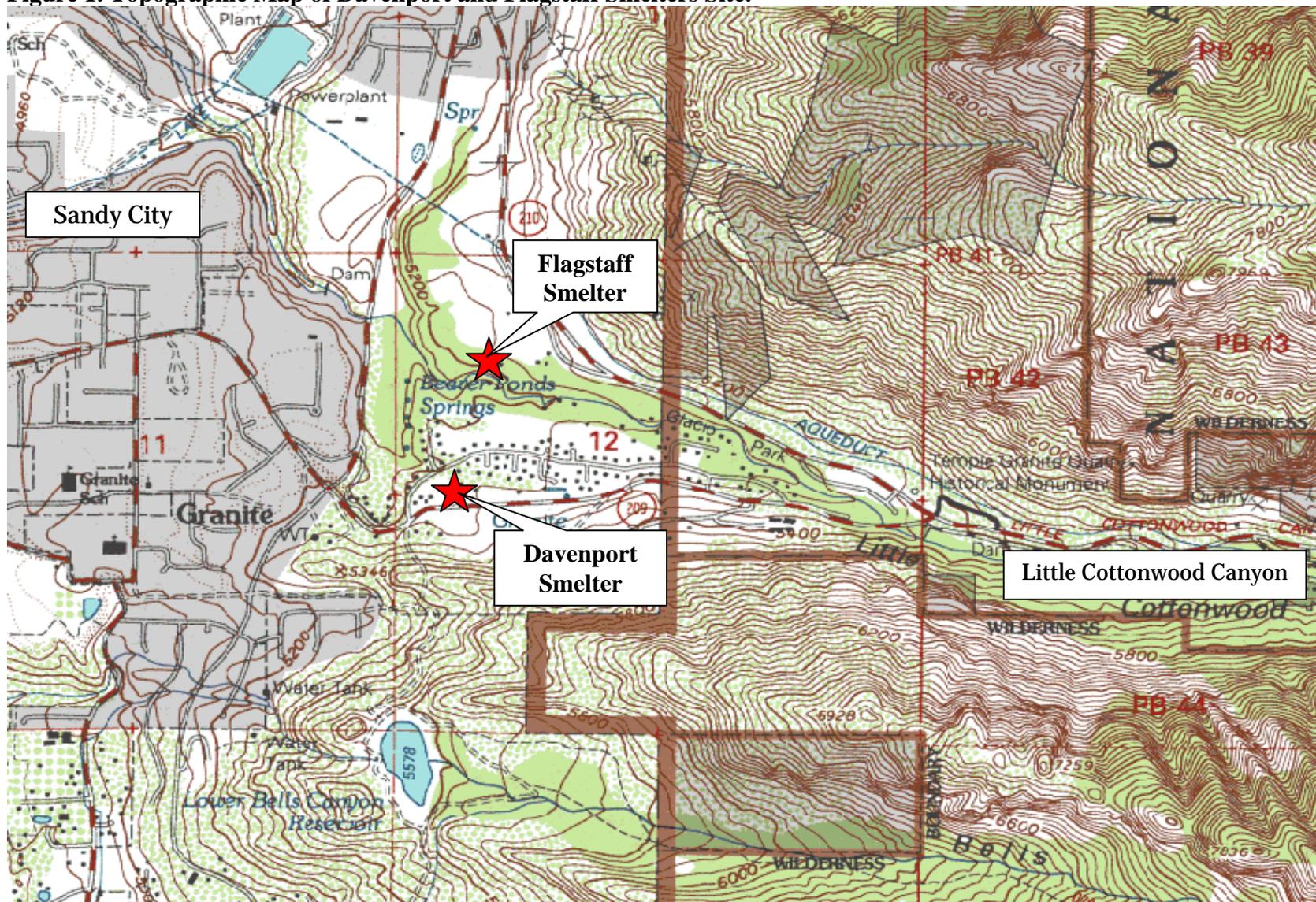


**FIGURES AND TABLES**

Figure 1. Topographic Map of Davenport and Flagstaff Smelters Site.



**Figure 2. Aerial Photo of Davenport and Flagstaff Smelters Site.**

*Outlined residential areas are called Operable Unit 1. Undeveloped/nonresidential areas outside the outlined areas are called Operable Unit 2.*

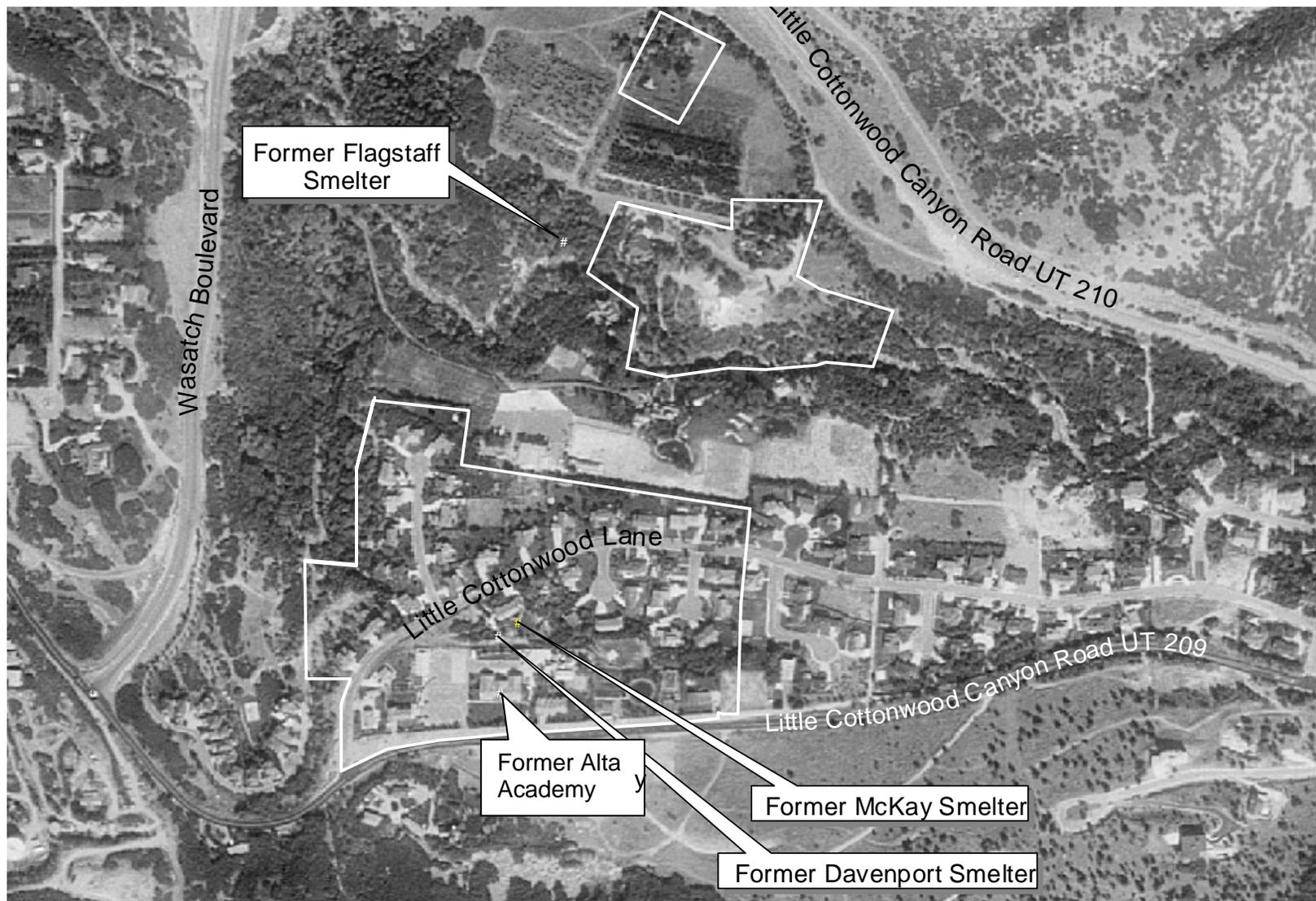
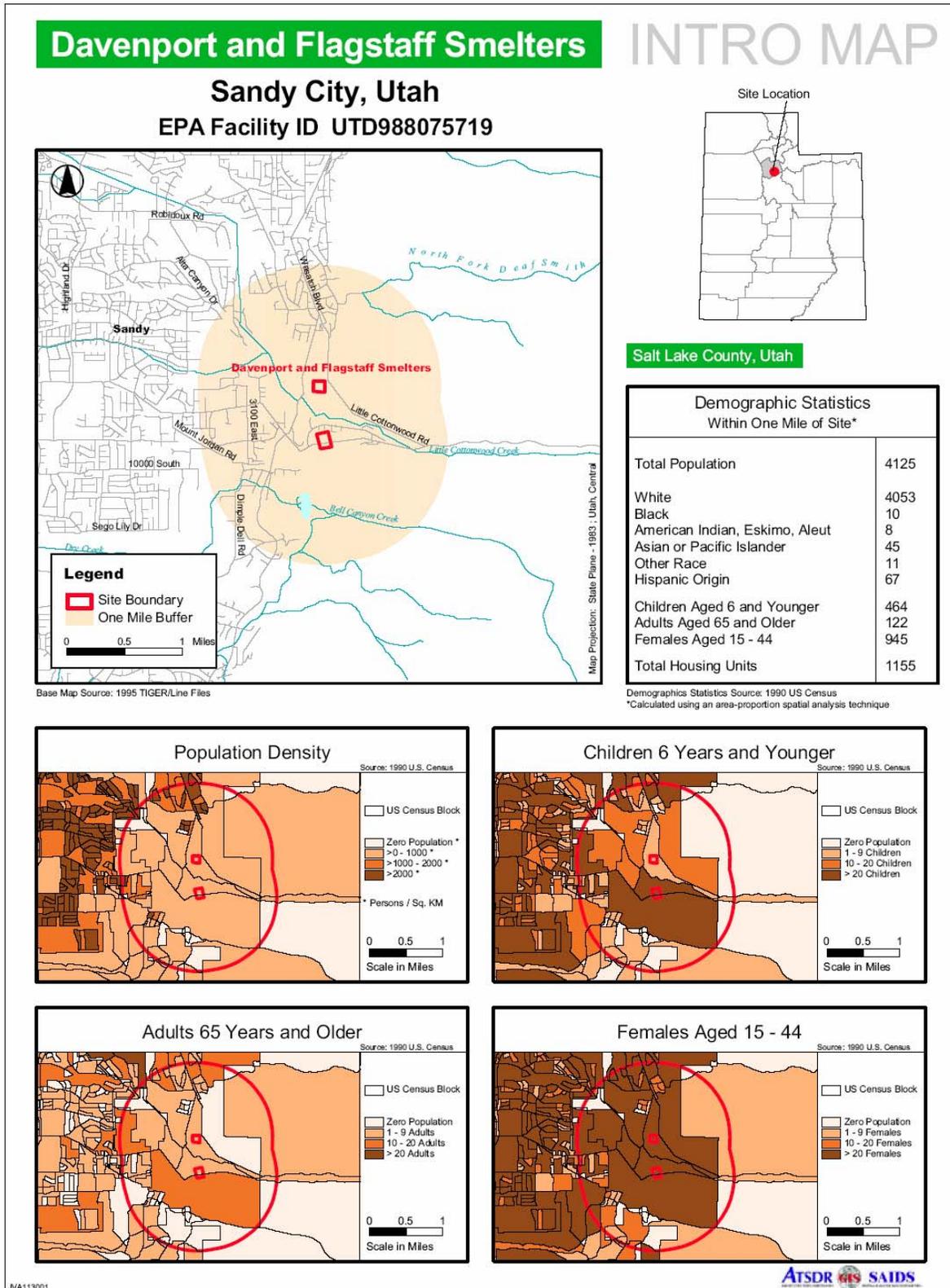


Figure 3. Demographic Map of the Davenport and Flagstaff Smelters Site.



**Table 1. Results of Surface Soil Samples taken from the Residential Area (Operable Unit 1) of the Davenport and Flagstaff Smelters Site.**

	Soil Comparison Values (CV)*					Background Levels for Salt Lake City Area (ppm)	Results of Soil Sampling (SAIC 2000, URSGWC 2001)					
	Non-cancer CV			Cancer CV			Sample Location	Sample Depth (inches)	Median (ppm)	Range		n
	CV for Adult (ppm)	CV for Child (ppm)	CV Source*	CREG (ppm)	Cancer Class†					Low (ppm)	High (ppm)	
<b>Arsenic</b>	200	20	EMEG	0.5	A	14.9	ROU-D	0-2	13	5	530	156
								0-6	14	6	4,690	163
							ROU-F	0-2	30	9	410	45
								0-6	50	7	580	51
<b>Lead</b>	400‡	400‡	EPA	n/a	B2	128	ROU-D	0-2	125	12	24,000	156
								0-6	130	13	123,000	163
							ROU-F	0-2	540	63	9,200	45
								0-6	660	27	13,000	51

n: Number of samples used in calculations.

ppm: parts per million

n/a: Not available

CREG: Cancer Risk Evaluation Guide

EMEG: Environmental Media Evaluation Guide

EPA: U.S. Environmental Protection Agency

ROU-D: samples are from Operable Unit 1, the residential area near the former Davenport Smelter (Figure 2).

ROU-F: samples are from Operable Unit 1, the residential area near the former Flagstaff Smelter (Figure 2).

\* See Appendix A.

† Cancer class: classification of a particular substance's ability to cause cancer in humans. Each health organization has a separate method of classification. See Appendix A for additional information.

‡ EPA Lead Soil Hazard Standards: 1,200 ppm average lead in bare soil in residential areas with the exception of play areas which should not exceed 400 ppm lead in bare soil (EPA 2001).

**Table 2. Results for Surface Soil Samples Taken in 1994 from the Davenport and Flagstaff Smelters Site: Includes Background, Residential and Nonresidential Areas.**

Metal	Soil Comparison Values (CV)*					Background Levels Salt Lake City (ppm)	Results of soil sampling† (UDEQ 1996 a,b)			
	Non-Cancer CV			Cancer CV			Median (ppm)	Range		n
	CV for Adult (ppm)	CV for Child (ppm)	CV Source	CREG (ppm)	Cancer Class‡			Low (ppm)	High (ppm)	
Aluminum	1,000,000	100,000	EMEG	n/a	3	9,749	9,235	4,460	16,300	18
<b>Antimony</b>	300	20	RMEG	n/a	D	10.3	6.2	5.1	<b>270<sup>¶</sup></b>	13
<b>Arsenic</b>	200	20	EMEG	0.5	A	14.9	<b>24.9</b>	7.7	<b>181<sup>¶</sup></b>	17
Barium	50,000	4,000	RMEG	n/a	D	178	110	62.4	221	18
Beryllium	1000	100	EMEG	n/a	B1	0.78	0.45	0.17	0.64	17
<b>Cadmium</b>	100	10	EMEG	n/a	B1	1.46	1.6	0.4	<b>13.3<sup>¶</sup></b>	18
Chromium	2,000	200	RMEG	n/a	A	15.7	10.1	6.2	27.7	18
Cobalt	500	7000	EMEG	n/a	3	6.29	5.7	3.3	11.9	11
Copper	2000	20000	EMEG	n/a	D	50.5	44.5	20.8	1,650	18
<b>Lead</b>	400 <sup>§</sup>	400 <sup>§</sup>	EPA	n/a	B2	128	<b>405.5</b>	38	<b>37,400<sup>¶</sup></b>	18
Magnesium	n/a	n/a	n/a	n/a	n/a	10,500	3,705	2,770	7,430	18
Manganese	40,000	3,000	RMEG	n/a	D	353	366.5	168	702	18
Mercury	100	1000	EMEG	n/a	D	0.18	0.12	0.05	1.00	18
Nickel	10,000	1,000	RMEG	n/a	2	13	11.1	3.6	22.4	18
Selenium	4,000	300	EMEG	n/a	D	0.42	0.22	0.16	1.9	16
Silver	4,000	300	RMEG	n/a	D	1.84	2.0	0.79	91.2	18
Thallium	60	4	RMEG	n/a	D	0.38	0.31	0.17	0.49	18
Vanadium	2,000	200	EMEG	n/a	3	21.8	21.8	15	35.2	18
Zinc	200,000	20,000	EMEG	n/a	D	206	164.5	59.9	2,390	18

Entries in **bold** indicate contaminant concentrations that exceed soil comparison values.

When data did not show chemical species of element, for example, chromium, the worst-case scenario was assumed, which in the case of chromium is hexavalent, the most toxic form. Comparison values reflect these assumptions.

n: Number of samples used in calculations.

ppm: parts per million

n/a: Not available

CREG: Cancer Risk Evaluation Guide

EMEG: Environmental Media Evaluation Guide

RMEG: Reference Dose Media Evaluation Guide

EPA: Environmental Protection Agency

\* See Appendix A.

† Includes estimated values, values at detection limits, or values that are below contract-required detection limits. Data classified as "Rejected" were not used in this table (Utah Department of Environmental Quality 1996a and 1996b).

‡ Cancer class: classification of a particular substance's ability to cause cancer in humans. Each health organization has a separate method of classification. See Appendix A for additional information.

§ EPA Lead Soil Hazard Standards: 1,200 ppm average lead in bare soil in residential areas with the exception of play areas which should not exceed 400 ppm lead in bare soil (EPA 2001).

¶ Sample taken from a slag pile in the nonresidential area.

**Table 3. Summary of Results of Dust Sampling in Homes Near the Davenport and Flagstaff Smelters Site**

	Wipe Sample Lead Results (mg/ft <sup>2</sup> )	High-Flow Pump Sample Lead Results (mg/kg)	Low Flow Pump Sample Lead Results (mg/kg)	Vacuum Sample Lead < 150 micron Results (mg/kg)
Maximum Concentration	0.078	0.027	0.0045	14
Minimum Concentration	<0.00025	<0.00025	<0.00025	<0.00025
Number of Samples	35	34	34	34
Average Concentration*	0.00573	0.0014	0.00031	0.5198
mg/ft <sup>2</sup> = milligrams of lead per square foot of area sampled. mg/kg = milligrams of lead per kilogram of sample. < = less than * Average concentration was calculated using half of the detection limit for results less than the detection limit. Source: URS Greiner Woodward Clyde, 2001				

**Table 4. Results for Sediment Samples Collected from Little Cottonwood Creek. Davenport/Flagstaff Smelters Site, 1996**

Metal	Soil Comparison Values (CV)*					Background Levels Salt Lake City (ppm)	Results of sediment sampling†			
	Non-cancer CV			Cancer CV			Median (ppm)	Range		n
	CV for Adult (ppm)	CV for Child (ppm)	CV Source	CREG (ppm)	Cancer Class‡			Low (ppm)	High (ppm)	
Aluminum	1,000,000	100,000	EMEG	n/a	3	9,749	5,030	2,850	5,610	3
<b>Antimony</b>	300	20	RMEG	n/a	3	10.3	37.75	7.3	<b>68.2</b>	2
<b>Arsenic</b>	200	20	EMEG	0.5	A	14.9	<b>30.7</b>	<b>12.3</b>	<b>257</b>	3
Barium	50,000	4,000	RMEG	n/a	3	178	84	62.4	179	3
Beryllium	1000	100	EMEG	n/a	B1	0.78	0.26	0.2	0.68	3
<b>Cadmium</b>	100	10	EMEG	n/a	B1	1.46	2.2	2.1	<b>164</b>	3
Chromium	2,000	200	RMEG	n/a	A	15.7	7.5	6.4	7.9	3
Cobalt	500	7000	EMEG	n/a	3	6.29	6.3	6.2	10.4	3
Copper	2000	20000	EMEG	n/a	3	50.5	61.6	57	251	3
<b>Lead</b>	400 <sup>§</sup>	400 <sup>§</sup>	EPA	n/a	B2	128	162	147	<b>1,480</b>	3
Magnesium	n/a	n/a	n/a	n/a	n/a	10,500	7,240	3,150	9,050	3
Manganese	40,000	3,000	RMEG	n/a	3	353	305	68.2	434	3
Mercury	100	1000	EMEG	n/a	3	0.18	0.13	0.08	4.00	3
Nickel	10,000	1,000	RMEG	n/a	2	13	9.2	7.9	23.7	3
Selenium	4,000	300	EMEG	n/a	3	0.42	0.23	0.16	4.3	3
Silver	4,000	300	RMEG	n/a	3	1.84	1.4	0.89	15.4	3
Thallium	60	4	RMEG	n/a	3	0.38	0.20	0.2	1.1	3
Vanadium	2,000	200	EMEG	n/a	3	21.7	19.7	16	29.5	3
Zinc	200,000	20,000	EMEG	n/a	3	206	360	284	2,630	3

Entries in **bold** indicate contaminant concentrations that exceed soil comparison values. When data did not show chemical species of element, for example, chromium, the worst-case scenario was assumed, which in the case of chromium is hexavalent, the most toxic form. Comparison values reflect these assumptions.

n: Number of samples used in calculations.

ppm: parts per million

n/a = Not available

CREG: Cancer Risk Evaluation Guide

EMEG: Environmental Media Evaluation Guide

RMEG: Reference Dose Media Evaluation Guide

EPA: Environmental Protection Agency

\* See Appendix A.

† Includes estimated values, values at detection limits, or values that are below contract-required detection limits. Data classified as “Rejected” were not used in this table (Utah Department of Environmental Quality 1996a and 1996b).

‡ Cancer class: classification of a particular substance's ability to cause cancer in humans. Each health organization has a separate method of classification. See Appendix A for additional information.

§ EPA Lead Soil Hazard Standards: 1,200 ppm average lead in bare soil in residential areas with the exception of play areas which should not exceed 400 ppm lead in bare soil (EPA 2001).

**Table 5. Results for Surface Water Samples Collected from Little Cottonwood Creek. Davenport/Flagstaff Smelters Site, 1996**

Metal	Drinking Water Comparison Values (CV)*					Background Levels† (ppb)	Results of water sampling‡			
	Non-Cancer CV			Cancer CV			Median (ppb)	Range		n
	CV for Adult (ppb)	CV for Child (ppb)	CV Source	CREG (ppb)	Cancer Class§			Low (ppb)	High (ppb)	
Aluminum	70,000	20,000	EMEG	n/a	n/a	214	132	44.1	1,930**	5
<b>Antimony</b>	10	4	RMEG	n/a	D	28.5	<b>24.9</b>	<b>24.9</b>	<b>28.5</b>	5
<b>Arsenic</b>	10	3	EMEG	0.02	A	0.9	1.8	0.9	<b>23.4</b>	5
Barium	2,000	700	RMEG	n/a	D	38.9	106	33.2	115	5
Beryllium	70	20	RMEG	n/a	B1	0.2	0.20	0.2	0.23	5
<b>Cadmium</b>	7	2	EMEG	n/a	B1	3.9	<b>3.9</b>	<b>2.2</b>	<b>6</b>	5
Chromium	100	30	RMEG	n/a	A	2.8	4.6	2.8	4.6	5
Cobalt	400	100	EMEG	n/a	2B	4.1	3.8	3.8	4.1	5
Copper	300	1,000	EMEG	n/a	D	8.6	8.6	5.7	14.2	5
<b>Lead</b>	15¶	15¶	EPA	n/a	B2	5.8	5.8	5.1	<b>304**</b>	5
Magnesium	n/a	n/a	n/a	n/a	n/a	3,610	8,870	3,300	16,200	5
Manganese	2,000	500	RMEG	n/a	D	11.3	26.9	9.9	71.9	5
Mercury	2	2	LTHA	n/a	D	0.2	0.10	0.1	0.20	5
Nickel	700	200	RMEG	n/a	2	13.3	14.0	13.3	14	5
Selenium	200	50	EMEG	n/a	D	0.90	0.85	0.8	0.9	5
Silver	200	50	RMEG	n/a	D	2.6	4.2	2.6	4.2	5
Thallium	3	0.8	RMEG	n/a	3	0.80	0.80	0.8	0.8	5
Vanadium	100	30	EMEG	n/a	3	3.5	4.1	3.5	6.2	5
Zinc	10,000	3,000	EMEG	n/a	3	60.7	60.7	37.4	181	5

Entries in **bold** indicate contaminant concentrations that exceed comparison values.

When data did not show chemical species of element, for example, chromium, the worst-case scenario was assumed, which in the case of chromium is hexavalent, the most toxic form. Comparison values reflect these assumptions.

n: Number of samples used in calculations.

ppm: parts per million

n/a = Not available

CREG: Cancer Risk Evaluation Guide

EMEG: Environmental Media Evaluation Guide

RMEG: Reference Dose Media Evaluation Guide

EPA: Environmental Protection Agency

LTHA: Lifetime Health Advisory for drinking water (EPA)

\* See Appendix A

† From single sample in creek upstream of smelters site.

‡ Includes estimated values, values at detection limits, or values that are below contract-required detection limits. Data classified as "Rejected" were not used in this table (Utah Department of Environmental Quality 1996a and 1996b).

§ Cancer class: classification of a particular substance's ability to cause cancer in humans. Each health organization has a separate method of classification. See Appendix A for additional information.

¶ EPA action level for Lead in drinking water.

\*\* This sample was taken from an onsite spring.

**Table 6. Completed Exposure Pathways for the Davenport and Flagstaff Smelters Site.**

Pathway Name	Exposure Pathway Elements					Time Frame	Contaminants
	Source	Environmental Medium	Point of Exposure	Route of Exposure	Receptor Populations		
On-site soil	Davenport/Flagstaff Smelters	On-site soil	On-site homes and yards	Ingestion	Residents	Past, Present, Future	Arsenic, Lead
On-site dust	Davenport/Flagstaff Smelters	On-site dust	On-site homes, yards and trails	Inhalation	Residents, visitors	Past, Present, Future	Arsenic, Lead

**Table 7. Potential Exposure Pathways for the Davenport and Flagstaff Smelters Site.**

Pathway Name	Exposure Pathway Elements					Time Frame	Contaminants
	Source	Environmental Medium	Point of Exposure	Route of Exposure	Receptor Populations		
On-site groundwater and/or surface water	Davenport/Flagstaff Smelters	On-site surface and spring water	Little Cottonwood Creek or area springs	Ingestion	Residents	Past, Present, Future	Arsenic, Lead
On-site groundwater and/or surface water	Davenport/Flagstaff Smelters	Surface-water run-off	Off-site surface water	Ingestion	Residents and visitors of nearby communities	Past, Present, Future	Arsenic, Lead

**Table 8. Calculation of Exposure Doses from Ingestion of Contaminated Soil in Residential Areas of the Davenport and Flagstaff Smelters Site.**

Contaminant	Average contaminant level found in residential areas* (ppm)	Maximum contaminant level found in residential areas* (ppm)	Receptor Population	Average Estimated Exposure Dose (mg/kg/day)	Maximum Estimated Exposure Dose (mg/kg/day)	ATSDR MRL <sup>†</sup> (mg/kg/day)	Source of Guideline	Cancer Class <sup>‡</sup>
Arsenic	50	4,690	Adults	0.00002	0.0022	0.0003	ATSDR 2003	IARC = 1; NTP = 1; EPA = A
			Children	<b>0.0008</b>	<b>0.768</b>			
			Pica children	<b>0.0205</b>	<b>1.9206</b>			
Lead	660	123,000	Adults	0.0003	0.0571	n/a	n/a	IARC = 2B; NTP = 3; EPA = B2
			Children	0.0022	2.015			
			Pica children	0.0532	50.37			

ppm: parts per million

n/a: not available

mg/kg/day: milligrams per kilogram per day

Exposure doses in **BOLD** exceed ATSDR health guideline.

ATSDR: Agency of Toxic Substances and Disease Registry

IARC: International Agency for Research on Cancer

NTP: National Toxicology Program

EPA: Environmental Protection Agency

\* Soil depth: 0-6 inches (Science Applications International Corporation 2000 and URS Greiner Woodward Clyde 2001)

<sup>†</sup> MRL: Minimal Risk Level, an ATSDR estimate of daily human exposure to a hazardous substance at or below which that substance is unlikely to pose a measurable risk of harmful (adverse), noncancerous effects.

<sup>‡</sup> Cancer class: classification of a particular substance's ability to cause cancer in humans. Each health organization has a separate method of classification. See Appendix A for additional information.