Appendix D

Facility-Specific Raw Data and Calculations, Fish Ingestion Pathway

This appendix outlines the raw data that EPA used in calculating the population risks due to fish consumption. These data were provided by relevant state agencies, and represent the best available standing stock information for waterbodies within five miles of each facility.

This appendix also contains other data that the Agency used in the analysis for the fish ingestion pathway, including the number of stream miles within five miles of each facility and the average stream width. EPA determined this information from topographic maps of the areas surrounding the facilities. Also included in this appendix are exposure assumptions, such as the exploitation rate of 20 percent, which is the default value suggested for use in the EPA's *Hazard Ranking System* (HRS) Final Rule, and the percent of fish tissue that is edible (35%), derived based on conversations with local fisheries authorities and data provided in EPA's *Exposure Factor's Handbook.* The value for the pounds of fish ingested per year by a recreational fisher (5.86 pounds) is based on the daily fish ingestion rate used in the RTC and NODA for calculating individual risks from food chain exposure.

This data provided in this appendix can also be found in Chapter 2 of this report, but is outlined here in a step-by-step manner intended to provide the reader with additional detail.

Facility #35

Stream miles within a five-mile radius of the facility (determined from topographic maps)	Small streams: **2 miles** Large streams: **7.5 miles**
Average stream width (determined from topographic maps)	Small streams: **1/350 mile** Large streams: **1/35 mile**
Stream acres within five miles of the facility	Small streams: 2 mi * 1/350 mi * 640 acres/mi^2 = 3.657 acres Large streams: 7.5 mi * 1/35 mi * 640 acres/mi^2 = 137.142 acres total = **140.8 acres**
Raw standing stock data, for a sampled stream length of 550 ft (obtained directly from studies provided by the relevant state agencies[a])	Site 1: rainbow trout: 0.70 kg brown trout: 2.05 kg longnose dace: 1.30 kg longnose sucker: 2.98 kg white sucker: 2.45 kg yellow perch: 0.03 kg total: **9.51 kg/550 ft** Site 2: carp: 25.9 kg flathead minnow: 0.12 kg longnose dace: 0.32 kg creek chub: 0.14 kg longnose sucker: 4.78 kg white sucker: 4.61 kg total: **35.87 kg/550 ft** Site 3: carp: 1.4 kg sand shiner: 0.48 kg flathead minnow: 0.91 kg cheek chub: 0.08 kg longnose sucker: 0.10 kg white sucker: 0.95 kg plains topminnow: 0.09 kg johnny darter: 0.12 kg total: **4.13 kg/550 ft** Total average = **16.5 kg/550 ft**

Standing stock data (converted to units of lbs/acre/year)	16.5 kg/550 ft * 1/35 ft[b] * 43,500 ft^2/acre * 2.2046 lbs/kg = **82.2 lbs/acre/year**
Exploitation rate	**0.2**
Pounds of fish caught per year within the area of influence	82.2 lbs/acre/yr * 140.8 acres * 0.2 = **2,314.7 lbs/yr**
Pounds of fish ingested per year per recreational fisher	**5.86**
Percent of fish tissue that is edible	**35%**
Number of recreational fishers that can be supported by the harvest	2, 314.7 lbs/yr * 0.35 * 1/5.86 lbs/year/person = **138 people**
Number of recreational fishers that are likely to be exposed	**138 people**

[a] Standing stock data for this facility were obtained from the state Division of Wildlife and were available for three different sites along the widest river located within five miles of the facility.
[b] The average stream width of the wide streams was used in this calculation because standing stock data was available for wide streams only.

Facility #37

Stream miles within a five-mile radius of the facility (determined from topographic maps)	**15 miles**
Average stream width (determined from topographic maps)	**1/350 mile**
Stream acres within five miles of the facility	15 mi * 1/350 mi * 640 acres/mi^2 = **27 acres**
Raw standing stock data (obtained directly from studies provided by the relevant state agencies[a])	Site 1: 140.9 kg/ha (all fish)[b] Site 2: 42.8 kg/ha 72.2 kg/ha 57.5 kg/ha (average) Site 3: 163.9 kg/ha 92.5 kg/ha 128.2 kg/ha (average) Total average = **108.9 kg/ha**

Standing stock data (converted to units of lbs/acre/year)	108.9 kg/ha * 2.471 ha/ac * 2.2046 lbs/kg = **593.2 lbs/acre/year**
Exploitation rate	**0.2**
Pounds of fish caught per year within the area of influence	593.2 lbs/acre/yr * 27 acres * 0.2 = **3,203.3 lbs/year**
Pounds of fish ingested per year per recreational fisher	**5.86**
Percent of fish tissue that is edible	**35%**
Number of recreational fishers that can be supported by the harvest	3,203.3 lbs/yr * 0.35 * 1/5.86 lbs/year/person = **191 people**
Number of recreational fishers that are likely to be exposed	**191 people**

[a] Standing stock data for this facility were obtained from the state Department of Wildlife and Parks
[b] Data from this site were not broken down by species; values provided were for all fish.

Facility #62

Stream miles within a five-mile radius of the facility (determined from topographic maps)	Small streams: **24.5 miles** Large streams: **9 miles**
Average stream width (determined from topographic maps)	Small streams: **1/350 mile** Large streams: **1/70 mile**
Stream acres within five miles of the facility	Small streams: 24.5 miles * 1/350 miles * 640 acres/mi^2 = 44.8 acres Large Streams: 9 miles * 1/70 miles * 640 acres/mi^2 = 82.3 acres Total = **127.1 acres**
Raw standing stock data (obtained directly from studies provided by the relevant state agencies[a])	Site 1: 899 grams/75 m Site 2: 5,869 grams/75 m Total average: **3,384 g/75**

Standing stock data (converted to units of lbs/acre/year)	3,384g/75m * 1/4.5m * $1m^2/2.471x10^{-4}$acres * $2.205x10^{-3}$lbs/g = **89.5** lbs/ac/yr
Exploitation rate	**0.2**
Pounds of fish caught per year within the area of influence	89.5 lbs/acre/yr * 126.8 acres * 0.2 = **2,269.7 lbs/yr**
Pounds of fish ingested per year per recreational fisher	**5.86**
Percent of fish tissue that is edible	**35%**
Number of recreational fishers that can be supported by the harvest	2,269.7 lbs/yr * 0.35 * 1/5.86 lbs/year/person = **136 people**
Number of recreational fishers that are likely to be exposed	**136 people**

[a] Standing stock data for this facility were obtained from the state Department of Natural Resources
[b] The average width of the small streams was used in this calculation because the standing stock data are for a small stream

Facility #81

Stream miles within a five-mile radius of the facility (determined from topographic maps)	Small streams: **7 miles** Large streams: **7 miles**
Average stream width (determined from topographic maps)	Small streams: **1/350 mile** Large streams: **1/70 mile**
Stream acres within five miles of the facility	Small streams: 7 miles * 1/350 miles * 640 acres/mi^2 = 12.7 acres Large Streams: 7 miles * 1/70 miles * 640 acres/mi^2 = 64 acres Total = **76.7 acres**
Raw standing stock data (obtained directly from studies provided by the relevant state agencies[a])	brown trout: 7.931 kg/550 ft rainbow trout: 77 kg 550 ft LN sucker: 2.981 kg/550 ft Total = **87.912 kg/550 ft**

Standing stock data (converted to units of lbs/acre/year)	87.912kg/550 ft * 1/70ft[b] * $4.35 \times 10^4 ft^2$/acre * 2.2046lbs/kg = **219 lbs/acre/year**
Exploitation rate	**0.2**
Pounds of fish caught per year within the area of influence	219 lbs/acre/yr * 76.7 acres * 0.2 = **3,359.5 lbs/year**
Pounds of fish ingested per year per recreational fisher	**5.86**
Percent of fish tissue that is edible	**35%**
Number of recreational fishers that can be supported by the harvest	3,359.5 lbs/yr * 0.35 * 1/5.86 lbs/year/person = **201 people**
Number of recreational fishers that are likely to be exposed	**201 people**

[a] Standing stock data for this site were obtained from the state Department of Natural Resources
[b] The average stream width of the small streams was used in this calculation because the standing stock data are for a small stream

Appendix E

Example of Facility-Level Raw Data, Vegetable Ingestion on Pathway

The data used in calculating the population risks associated with vegetable ingestion were obtained from the National Agricultural Statistics Service (NASS) via the Internet (http//www.usda.gov/NASS). This appendix outlines the various data points used in this analysis, and provides sample pages of the relevant data. Note that these sample pages do not represent actual data used in this analysis; the county displayed in this appendix was chosen randomly from all counties in the United States for the sake of providing an example of the relevant data.

The data points used for this analysis are:

1992 Census of Agriculture

- Total sales, (farms)
- Value of sales less than $1,000 (farms)
- Value of sales $1,000-$2,499 (farms)
- Value of sales $2,500-$4,999 (farms)
- Value of sales $5,000-$9,999 (farms)

These data points were summed to give the total number of farms with sales less than $10,000.

1990 Census of Population and Housing

- Social Characteristics Table: County urban population
  County farm population
  Total county population

USA Counties

- Land area in square miles, 1990

Agriculture Census for Salt Lake County, Utah

Table 2. Market Value and Farms by SIC

Enter keyword to search for a report item:

[Agriculture Census - Utah Home Page]

1992 CENSUS OF AGRICULTURE PAGE 1
Salt Lake County,
Utah

TABLE 2.
MKT VALUE OF AGRI PRODUCTS SOLD & FARMS BY STD INDUSTRIAL CLASSIFICATION

	[1992]	[1987]	[1982]
Total sales, (see text) (farms)	686	734	805
Total sales, (see text) ($,1000)	20155	23794	26142
Total sales, average per farm, ($)	29381	32417	32475
Value of sales-Less than $1,000 (farms)	160	193	164
Value of sales-Less than $1,000 ($1,000)	30	39	(D)
Value of sales $1,000-$2,499 (farms)	154	161	183
Value of sales $1,000-$2,499($1,000)	237	254	272
Value of sales $2,500-$4,999 (farms)	112	126	159
Value of sales $2,500-$4,999($1,000)	391	419	557
Value of sales $5,000-$9,999 (farms)	72	97	97
Value of sales $5,000-$9,999($1,000)	516	637	674
Value of sales $10,000-$19,999 (farms)	77	51	58
Value of sales $10,000-$19,999 ($1,000)	1033	711	849
Value of sales $20,000-$24,999 (farms)	13	7	18
Value of sales $20,000-$24,999 ($1,000)	281	159	395
Value of sales $25,000-$39,999 (farms)	27	20	44
Value of sales $25,000-$39,999 ($1,000)	833	617	1410
Value of sales $40,000-$49,999 (farms)	13	9	9
Value of sales $40,000-$49,999 ($1,000)	558	406	402
Value of sales $50,000-$99,999 (farms)	14	31	29
Value of sales-$50,000-$99,999 ($1,000)	981	2314	1981
Value of sales-$100,000-$249,999 (farms)	26	20	25
Value of sales-$100,000-$249,999($1,000)	3995	3379	3977
Value of sales-$250,000-$499,999 (farms)	11	12	8
Value of sales-$250,000-$499,999($1,000)	3911	3917	2871
Value of sales-$500,000 or more (farms)	7	7	10
Value of sales-$500,000 or more ($1,000)	7390	10942	12195
Crops, incl nurs & grnh crops (farms)	295	277	337
Crops, incl nurs & grnh crops ($1,000)	10474	8007	9428
Grains, (farms)	56	70	129
Grains, ($1,000)	1469	1040	1525
Corn for grain, (farms)	3	7	12
Corn for grain, ($1,000)	(D)	(D)	194
Wheat, (farms)	22	25	49
Wheat, ($1,000)	974	671	867

Soybeans, (farms)	0	0	0
Soybeans, ($1,000)	0	0	0
Sorghum for grain, (farms)	0	0	0
Sorghum for grain, ($1,000)	0	0	0
Barley, (farms)	35	51	(NA)
Barley, ($1,000)	294	261	(NA)
Oats, (farms)	10	8	20
Oats, ($1,000)	31	(D)	23
Other grains, (farms)	1	0	89
Other grains, ($1,000)	(D)	0	442
Cotton and cottonseed, (farms)	0	0	0
Cotton and cottonseed, ($1,000)	0	0	0

TABLE 2.
MKT VALUE OF AGRI PRODUCTS SOLD & FARMS BY STD INDUSTRIAL CLASSIFICATION

	[1992]	[1987]	[1982]
Tobacco, (farms)	0	0	0
Tobacco, ($1,000)	0	0	0
Hay, silage, and field seeds, (farms)	198	185	221
Hay, silage, and field seeds, ($1,000)	1316	1001	1107
Vegetables, sweet corn, & melons (farms)	47	41	51
Vegetables, sweet corn, & melons($1,000)	1265	1341	1113
Fruits, nuts, and berries, (farms)	28	29	28
Fruits, nuts, and berries, ($1,000)	362	109	111
Nursery and greenhouse crops, (farms)	45	34	36
Nursery and greenhouse crops, ($1,000)	6031	4505	5525
Other crops, (farms)	10	8	16
Other crops, ($1,000)	32	11	47
Livestock, poultry, products (farms)	400	435	518
Livestock, poultry, products ($1,000)	9681	15787	16714
Poultry and poultry products, (farms)	24	41	52
Poultry and poultry products, ($1,000)	34	(D)	(D)
Dairy products, (farms)	11	18	29
Dairy products, ($1,000)	3742	2863	3634
Cattle and calves, (farms)	188	198	242
Cattle and calves, ($1,000)	3419	3419	3421
Hogs and pigs, (farms)	38	36	52
Hogs and pigs, ($1,000)	106	(D)	607
Sheep, lambs, and wool, (farms)	95	82	117
Sheep, lambs, and wool, ($1,000)	391	957	559
Other livestock...(see text) (farms)	170	196	210
Other livestock...(see text) ($1,000)	1989	4084	(D)
SIC-Cash grains (011)	25	17	57
SIC-Field crops except cash grains (013)	125	131	135
SIC-Cotton (0131)	0	0	0
SIC-Tobacco (0132)	0	0	0
SIC-Oth field crop(text)(0133,0134,0139)	125	131	135
SIC-Vegetables and melons (016)	20	23	22
SIC-Fruits and tree nuts (017)	20	22	24
SIC-Horticultural specialties (018)	44	31	32
SIC-General farms, primarily crop (019)	12	15	33
SIC-Livestock, except specialties (021)	208	202	236
SIC-Beef cattle, except feedlots (0212)	119	108	116
SIC-Dairy farms (024)	10	14	15
SIC-Poultry and eggs (025)	7	12	19
SIC-Animal Specialties (027)	212	252	216
SIC-Gen farms, prim lvestk & spec(029)	3	15	16

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(D)  Withheld to avoid disclosing data for individual farms.
(X)  Not applicable.
(Z)  Less than half of the unit shown.
(NA) Not available.
...  Unpublished data.
[B]  Not available due to brackets.
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Agriculture Census for Salt Lake County, Utah

Table 2. Market Value and Farms by SIC

Enter keyword to search for a report item:

[Agriculture Census - Utah Home Page]

Navigation to Other Databases

USA Counties - Salt Lake County, Utah

Land Area

Enter keyword to search for a report item:

[USA Counties - Utah Home Page]

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   Salt Lake  County, Utah
        -- Land Area
--------------------------------------------------
LAND AREA IN SQUARE MILES 1980                 756.3
LAND AREA IN SQUARE MILES 1990                 737.4
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[Document Flags and Footnotes]

USA Counties - Salt Lake County, Utah

Land Area

Enter keyword to search for a report item:

[USA Counties - Utah Home Page]

Navigation to Other Databases

Social Characteristics for Salt Lake County, Utah

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1990 Census of Population and Housing
Utah
Salt Lake County

URBAN AND RURAL RESIDENCE	
Total population	725,956
Urban population	721,342
Percent of total population	99.4
Rural population	4,614
Percent of total population	0.6
Farm population	73
SCHOOL ENROLLMENT	
Persons 3 years and over enrolled in school	239,033
Preprimary school	18,212
Elementary or high school	168,237
Percent in private school	3.8
College	52,584
EDUCATIONAL ATTAINMENT	
Persons 3 years and over enrolled in school	398,673
Less than 9th grade	12,137
9th to 12th grade, no diploma	46,409
High school graduate	105,528
Some college, no degree	109,605
Associates degree	29,967
Bachelor's degree	64,799
Graduate or professional degree	30,228
Percent high school graduate or higher	85.3
Percent bachelor's degree or higher	23.8
RESIDENCE IN 1985	
Persons 5 years and over	656,130
Lived in same house	341,076
Lived in different house in U.S	305,677
Same State	240,263
Same county	207,758
Different county	32,505
Different State	65,414
Lived abroad	9,377
DISABILITY OF CIVILIAN NONINSTITUTIONALIZED PERSONS	
Persons 16 to 64 years	430,002
With a mobility or self-care limitation	12,380
With a mobility limitation	6,533
With a self-care limitation	8,443
With a work disability	31,694

In labor force	15,977
Prevented from working	12,264
Persons 65 years and over	58,880
With a mobility or self-care limitation	11,008
With a mobility limitation	8,765
With a self-care limitation	6,105

CHILDREN EVER BORN PER 1,000 WOMEN

Women 15 to 24 years	336
Women 25 to 34 years	1,741
Women 35 to 44 years	2,602

VETERAN STATUS

Civilian veterans 16 years and over	62,602
65 years and over	15,092

NATIVITY AND PLACE OF BIRTH

Native population	692,942
Percent born in state of residence	70.0
Foreign-born population	33,014
Entered the U.S. 1980 to 1990	13,678

LANGUAGE SPOKEN AT HOME

Persons 5 years and over	656,130
Speak a language other than English	58,236
Do not speak English 'very well'	20,590
Speak Spanish	23,207
Do not speak English 'very well'	7,960
Speak Asian or Pacific Island language	13,015
Do not speak English 'very well'	6,409

ANCESTRY

Total ancestries reported	950,646
Arab	1,547
Austrian	1,991
Belgian	525
Canadian	1,762
Czech	2,170
Danish	60,693
Dutch	24,340
English	289,136
Finnish	1,698
French (except Basque)	22,110
French Canadian	2,849
German	132,831
Greek	6,583
Hungarian	1,256
Irish	62,623
Italian	22,275
Lithuanian	575
Norwegian	16,280
Polish	7,593
Portuguese	839
Romanian	392
Russian	2,700
Scotch-Irish	11,279

Scottish	35,848
Slovak	2,009
Subsaharan African	442
Swedish	46,230
Swiss	12,441
Ukrainian	564
United States or American	26,237
Welsh	18,753
West Indian (excluding Hispanic origin groups)	132
Yugoslavian	2,145
Other ancestries	131,798

Social Characteristics for Salt Lake County, Utah

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