Table 1
Estimation of Upper Bound Chemical Concentrations in Individual Lamprey Based on Composite Sampling Conducted for Confederated Tribes of Siletz Indians Health Consultation

	Chemical Concentration [a]								
	mg/kg	mg/kg	mg/kg	ug/kg	ug/kg	ug/kg	ug/kg	pg/g	pg/g
	As	**1/10 As [b]**	**Hg**	**PCBs**	**Total DDTs [c]**	**Chlordane [c]**	**Dieldrin [c]**	**Dioxin TEQ [d]**	**PCB TEQ [d]**
Sample 1	0.73	0.073	0.125	39	39	6.5	5	0.239	1
Sample 2	0.61	0.061	0.168	46	47	7.2	5.4	0.265	1.19
Sample 3	0.86	0.086	0.129	46	48	7.6	6.2	0.327	1.26
Sample 4	0.68	0.068	0.129	49	42	6.5	5.4	0.318	1.25
Composite									
Mean	**0.72**	**0.072**	**0.14**	**45**	**44**	**7.0**	**5.5**	**0.29**	**1.2**
Std Dev	0.11	0.011	0.02	4.4	4.3	0.54	0.50	0.04	0.12
DHS Screening Value [a]		0.031	0.47	23	140	130	2.9	0.31	
Individual Fish Estimate (using 30 fish per composite) [e]									
Mean	**0.72**	**0.072**	**0.14**	**45**	**44**	**7.0**	**5.5**	**0.29**	**1.2**
Std Dev	0.58	0.058	0.11	24	24	3.0	2.8	0.23	0.66
90th%tile	1.5	0.15	0.28	76	75	11	9.1	0.59	2.0
95th%tile	1.7	0.17	0.33	86	84	12	10	0.68	2.3
TRV [f]	(1.7)	1.7	0.46	720	DDD = 54	550	220	90	
					DDE = 1,000				
					DDT = 470				
					total DDT = 290				

Notes:

a) Data taken from: Health Consultation, Ingestion of Lamprey for the Conferated Tribes of Siletz Indians
Prepared by the Oregon Department of Human Services, Superfund Health Investigation and Education Program.
Individual composite sample results provided by David Stone.
Screening for adult humans based on HQ = 1 or excess lifetime cancer risk = 1E-5.

b) Arsenic evaluated assuming that 1/10 of total arsenic was the more toxic inorganic form.

c) All concentrations were not detected (qualified as UJ).

d) Dioxin TEQ calculated using human health (mammal) TEFs. Almost all fish TEFs are lower than mammal TEFs, so this is conservative.

e) Approach taken from: Recommended Design and Analysis for the Upper Columbia River Fish Tissue Sample Program.

Prepared by John R. Skalski, Columbia Basin Research, University of Washington, 16 May 2005

SD-individual = SQRT(30 samples) * SD-composite

Example upper percentile calculation: 95th%tile = mean + [t(0.05 one tail) * SD-individual]

Individual 90th%tile, degrees of freedom = 30 - 1 = 29, t(0.10) = 1.311

Individual 95th%tile, df = 29, t(0.05) = 1.699

f) TRVs taken from draft Portland Harbor RI/FS: Ecological Preliminary Risk Evaluation, 9 September 2005.

LOCATION	Willamette Falls	Willamette Falls	Willamette Falls	Willamette Falls
AXYS ID	L6017-14	L6017-15	L6017-12	L6017-13
SPECIES	Lamprey	Lamprey	Lamprey	Lamprey
TISSUE TYPE	Whole body	Whole body	Whole body	Whole body
UNITS	pg/g (wet)	pg/g (wet)	pg/g (wet)	pg/g (wet)
PCB-1	10.5	17	14.1	9.55
PCB-2	4.26	4.79	6.6	3.81
PCB-3	6.25	8.32	K16.7	4.61
PCB-4	72.6	78.7	87.6	96.1
PCB-5	1.2	2.01	<2.63	1.27
PCB-6	20.4	23.4	26.6	19.5
PCB-7	3.53	3.99	K4.82	3.15
PCB-8	84.8	95.9	101	78.4
PCB-9	5.94	6.31	6.1	5.41
PCB-10	K3.51	4.42	5.04	3.24
PCB-11	288	294	540	351
PCB-12/13	12.4	K10.5	K19.3	11.1
PCB-14	<1.10	<1.25	<2.53	0.871
PCB-15	42.4	44.5	62.4	56.5
PCB-16	121	158	147	130
PCB-17	157	202	185	179
PCB-18/30	357	461	405	380
PCB-19	38.7	45.1	55.3	59.2
PCB-20/28	849	1060	1030	969
PCB-21/33	197	236	226	197
PCB-22	191	221	246	233
PCB-23	2.44	K3.09	2.74	2.26
PCB-24	5.64	7.31	K6.70	5.66
PCB-25	36.8	43.5	43.9	40.1
PCB-26/29	119	136	129	126
PCB-27	26.3	34.4	34.2	31.3
PCB-31	708	833	785	783
PCB-32	59.1	72.2	78.2	71.4
PCB-34	5.49	6.2	K5.91	5.57
PCB-35	K1.62	K0.938	K2.93	2.05
PCB-36	K1.86	K1.13	3.02	2.13
PCB-37	30.8	31.7	45.2	42.8
PCB-38	K1.03	K0.805	<1.05	0.673
PCB-39	K7.75	7.57	9.05	8.3
PCB-40/41/71	422	466	477	466
PCB-42	254	291	297	305
PCB-43	45.2	47.9	49.8	45.7
PCB-44/47/65	1120	1300	1280	1200
PCB-45/51	88.7	113	112	111
PCB-46	28	33.7	35.3	33.8
PCB-48	165	197	179	190
PCB-49/69	748	880	825	893
PCB-50/53	89.9	108	103	107
PCB-52	1700	1940	1840	1990
PCB-54	1.64	K1.92	3.44	3.61
PCB-55	<2.34	<2.17	<9.19	<3.39
PCB-56	175	180	211	273
PCB-57	10.6	10.3	10	11.5

PCB-58	<2.23	<2.07	<8.79	53.6
PCB-59/62/75	83.2	96.1	89.6	87.3
PCB-60	268	312	329	363
PCB-61/70/74/76	2270	2530	2440	2520
PCB-63	81.3	91.5	84.4	100
PCB-64	353	401	413	389
PCB-66	1010	1120	1170	1190
PCB-67	26.1	25.5	24.9	27.6
PCB-68	37.6	40.4	42.7	45.2
PCB-72	19.7	23.9	21.5	24
PCB-73	<0.145	<0.124	<0.137	<0.0374
PCB-77	14.3	15.6	19.5	17.5
PCB-78	<2.31	<2.14	<9.09	<3.50
PCB-79	29.5	29.9	K32.1	27.8
PCB-80	<2.10	<1.94	<8.26	<3.13
PCB-81	1.02	0.976	1.1	1.19
PCB-82	97.9	117	141	122
PCB-83/99	2090	2660	2490	2860
PCB-84	149	162	223	179
PCB-85/116/117	509	659	634	605
PCB-86/87/97/108/119/125	1280	1560	1620	1410
PCB-88/91	150	166	204	194
PCB-89	10.8	11.4	13.9	12.4
PCB-90/101/113	2560	3030	2910	3500
PCB-92	477	588	551	512
PCB-93/95/98/100/102	869	938	1110	1000
PCB-94	K7.36	7.89	9.3	8.61
PCB-96	4.37	5.09	5.34	4.69
PCB-103	20.2	24.8	25.9	23.1
PCB-104	0.922	0.791	K1.02	0.668
PCB-105	507	630	609	570
PCB-106	<6.33	<2.71	<4.20	<2.53
PCB-107/124	58.3	68	K72.0	70.5
PCB-109	206	263	243	250
PCB-110/115	958	1110	1290	1100
PCB-111	4.93	5.7	K5.08	6.54
PCB-112	<2.39	<3.51	<3.92	<0.868
PCB-114	58.6	74	72.3	77.6
PCB-118	2240	2770	2680	2910
PCB-120	17.6	23.6	20.4	20.1
PCB-121	8.74	12.6	11	15.5
PCB-122	<7.41	<3.18	<4.93	7.98
PCB-123	31.8	30.3	35.4	30.9
PCB-126	6.02	6.84	7.74	7.51
PCB-127	<6.81	<2.92	K6.52	6.39
PCB-128/166	252	325	350	367
PCB-129/138/160/163	2810	3460	3560	4160
PCB-130	96.2	102	116	101
PCB-131	12	14.1	16	12.8
PCB-132	147	160	231	175
PCB-133	66.8	85.3	88.4	83.8
PCB-134/143	60.6	65.3	73.4	72.5
PCB-135/151/154	640	736	794	710

PCB-136	70.1	72.8	91	92
PCB-137	151	184	190	178
PCB-139/140	49.2	62.8	62.2	58.2
PCB-141	249	310	307	279
PCB-142	<2.07	<3.29	<8.36	<1.96
PCB-144	102	K87.6	125	84.5
PCB-145	<0.0925	K0.789	<0.0307	0.818
PCB-146	579	671	701	762
PCB-147/149	915	1000	1170	1130
PCB-148	7.56	9.68	10	8.2
PCB-150	2.25	2.78	K3.11	2.47
PCB-152	1.76	1.68	K2.27	2.36
PCB-153/168	3890	4870	4820	5940
PCB-155	10.2	12.6	11.3	11
PCB-156	108	149	149	139
PCB-157	20.8	27	28.8	25.3
PCB-158	148	180	184	176
PCB-159	K4.55	5.8	6.07	5.02
PCB-161	<1.39	<2.21	<5.61	<1.43
PCB-162	14.5	18.5	17.2	18.3
PCB-164	33.7	41.5	49.3	39.5
PCB-165	3.43	4.22	<6.27	3.44
PCB-167	78.5	92.7	99.1	96.8
PCB-169	2.32	3.08	2.82	2.78
PCB-170	205	258	271	268
PCB-171/173	77.1	97	96	105
PCB-172	67.5	81.8	84.6	90.1
PCB-174	61.3	75	87.1	74.5
PCB-175	22.1	27.3	27	26.7
PCB-176	14.4	13.9	17.7	15.1
PCB-177	82.2	85.5	102	93.3
PCB-178	138	164	169	175
PCB-179	64.8	63.9	80.7	72.5
PCB-180/193	824	1000	1020	1090
PCB-181	4.55	5.58	5.3	5.19
PCB-182	8.19	10.1	10.2	9.76
PCB-183/185	311	401	386	373
PCB-184	7	8	8.54	7.99
PCB-186	<0.135	<0.235	K0.178	<0.107
PCB-187	664	767	786	862
PCB-188	3.69	4.67	K4.57	3.95
PCB-189	10.3	12.7	13.7	13.4
PCB-190	40.5	47.3	49.4	51
PCB-191	9.83	11.7	12.7	11.3
PCB-192	0.638	0.559	K0.696	0.644
PCB-194	76.6	82.6	90.2	90
PCB-195	20.9	24.3	26.2	26.9
PCB-196	49	52.9	55.9	57.3
PCB-197/200	12.2	13.1	13	13.9
PCB-198/199	118	136	139	139
PCB-201	22.3	24.6	28.4	26.8
PCB-202	54	61.8	69.3	68.3
PCB-203	76	83.7	91.8	91.3

PCB-204	0.838	K1.18	K1.10	0.981
PCB-205	5.65	K6.08	6.83	5.75
PCB-206	36.1	37.8	44.8	35.9
PCB-207	13.3	14.8	18	15
PCB-208	19.5	20.9	24.3	19.3
PCB-209	31.6	30.6	35.2	34.1
Total Monochloro Biphenyls	21	30.1	20.7	18
Total Dichloro Biphenyls	532	553	829	627
Total Trichloro Biphenyls	2910	3560	3420	3270
Total Tetrachloro Biphenyls	9040	10200	10100	10500
Total Pentachloro Biphenyls	12300	14900	14900	15500
Total Hexachloro Biphenyls	10500	12700	13300	14700
Total Heptachloro Biphenyls	2620	3140	3230	3350
Total Octachloro Biphenyls	435	479	521	520
Total Nonachloro Biphenyls	68.9	73.6	87.1	70.3
Decachloro Biphenyl	31.6	30.6	35.2	34.1
TOTAL PCBs	38500	45700	46400	48600
PCB TEQ 3	1	1.19	1.26	1.25
PCB TEQ 4	1	1.19	1.26	1.25

**TEQ 3: ND = 1/2 detection limit
***TEQ4: ND = 0

Location	Willamette Falls	Willamette Falls	Willamette Falls	Willamette Falls
AXYS ID	L6017-14	L6017-15	L6017-12	L6017-13
SPECIES	Lamprey	Lamprey	Lamprey	Lamprey
TISSUE TYPE	Whole body	Whole body	Whole body	Whole body
UNITS	pg/g (wet)	pg/g (wet)	pg/g (wet)	pg/g (wet)
2,3,7,8-TCDD	K0.041	0.041	0.049	0.052
1,2,3,7,8-PeCDD	0.057	K0.054	0.07	0.062
1,2,3,4,7,8-HxCDD	K0.027	K0.037	0.033	K0.030
1,2,3,6,7,8-HxCDD	0.122	0.147	0.163	0.131
1,2,3,7,8,9-HxCDD	0.033	0.036	0.05	K0.040
1,2,3,4,6,7,8-HpCDD	0.284	0.357	0.421	0.368
OCDD	0.496	0.5	0.731	0.618
2,3,7,8-TCDF	0.956	1.09	1.04	1.03
2,3,7,8-TCDF(C)	0.931	1.08	0.983	1.05
1,2,3,7,8-PeCDF	0.145	0.17	0.137	0.13
2,3,4,7,8-PeCDF	0.103	0.127	0.115	0.126
1,2,3,4,7,8-HxCDF	0.074	0.111	0.068	0.073
1,2,3,6,7,8-HxCDF	K0.044	0.056	0.052	0.053
1,2,3,7,8,9-HxCDF	<0.0190	<0.0200	<0.0190	<0.0200
2,3,4,6,7,8-HxCDF	0.034	0.056	0.044	K0.038
1,2,3,4,6,7,8-HpCDF	0.075	K0.106	K0.123	K0.115
1,2,3,4,7,8,9-HpCDF	<0.0190	<0.0200	<0.0190	<0.0200
OCDF	K0.050	K0.052	0.054	K0.056
Total Tetra-Dioxins	0.376	0.426	0.401	0.418
Total Penta-Dioxins	0.082	<0.0200	0.124	0.062
Total Hexa-Dioxins	0.275	0.239	0.391	0.259
Total Hepta-Dioxins	0.284	0.357	0.488	0.43
Total Tetra-Furans	2.85	3.19	3.2	3.17
Total Penta-Furans	0.728	0.859	0.904	0.827
Total Hexa-Furans	0.337	0.474	0.473	0.316
Total Hepta-Furans	0.167	0.104	0.142	0.105
DX TEQ 1	**0.251**	**0.277**	**0.328**	**0.322**
DX TEQ 2	0.239	0.265	0.327	0.318