

**BATTELLE MARINE SCIENCE LABORATORIES**

1529 West Sequim Bay Road  
 Sequim, Washington 98382-9099  
 360/681-3604

**DELONG MOUNTAIN TERMINAL PROJECT**

METALS IN SALMON BERRIES

(Samples Received 8/24/01)

MSL Code	Sponsor ID	Percent Dry Wt	concentrations in µg/g dry weight - data are not blank corrected)									
			Cr	Co	Ni	Cu	Zn	Se	Cd	Pb	Mn (d)	
1701-29	OIDMTO01SY	13.0	0.223	0.0835	1.74	3.21	20.3	0.5 U	0.103	0.114	113	
1701-30	OIDMTO01SY	12.2	0.177	0.0765	1.39	3.24	22.1	0.5 U	0.111	0.138	130	
1701-31	OIDMTO02SY	13.0	0.225	0.136	1.95	3.59	26.4	0.5 U	0.140	0.222	107	
1701-32 r1	OIDMTO02SY	12.5	0.212	0.116	1.17	2.08	19.8	0.5 U	0.135	0.370	292	
1701-32 r2	OIDMTO02SY	12.5	0.213	0.127	1.45	2.24	21.1	0.5 U	0.139	0.272	289	
1701-33	OIDMTO03SY	13.3	0.248	0.0856	1.35	2.99	20.1	0.5 U	0.105	0.263	151	
1701-34	OIDMTO03SY	12.2	0.250	0.116	1.51	3.59	18.1	0.5 U	0.113	0.116	123	
1701-35	OIDMTO04SY	13.8	0.232	0.110	2.79	4.01	20.3	0.5 U	0.131	0.162	163	
1701-36	OIDMTO04SY	13.4	0.235	0.116	2.61	3.76	20.9	0.5 U	0.134	0.136	224	
1701-37	OIDMTO05SY	13.2	0.223	0.147	2.73	4.17	23.4	0.5 U	0.150	0.225	160	
1701-38	OIDMTO05SY	12.7	0.228	0.136	3.00	4.00	19.9	0.5 U	0.138	0.104	137	
1701-39	OIDMTO06SY	11.9	0.213	0.0837	2.96	3.68	26.4	0.5 U	0.201	0.339	152	
1701-40	OIDMTO06SY	11.9	0.254	0.0757	3.72	4.64	22.6	0.5 U	0.195	0.260	131	
1701-41	OIDMTO07SY	12.9	0.194	0.0857	2.60	4.08	24.1	0.5 U	0.195	0.289	118	
1701-42	OIDMTO07SY	13.2	0.206	0.0997	2.14	3.54	20.6	0.5 U	0.203	0.271	155	
1701-43	OIDMTO08SY	12.9	0.241	0.105	2.37	4.20	29.5	0.5 U	0.241	0.204	103	
1701-44	OIDMTO08SY	13.1	0.228	0.107	3.05	4.61	27.3	0.5 U	0.246	0.132	92.7	
1701-45	OIDMTO09SY	13.7	0.237	0.0714	2.01	4.23	22.9	0.5 U	0.166	0.111	122	
1701-46	OIDMTO09SY	14.2	0.212	0.0921	2.33	3.87	23.0	0.5 U	0.190	0.174	100	
1701-47a	OIDMTO10SY	12.7	0.218	0.0803	2.39	4.38	22.9	0.5 U	0.173	0.161	102	
1701-48a	OIDMTO10SY	12.6	0.213	0.113	3.45	5.47	26.4	0.5 U	0.245	0.235	88.2	
Procedural Blank			0.03 U	0.003 U	0.04 U	0.0209	0.0805	0.5 U	0.01 U	0.02 U	0.01 U	
Target Detection Limits			0.5	0.5	0.5	0.2	1.0	1.0	0.05	0.05	0.1	
Acheived Detection Limits			0.03	0.003	0.04	0.02	0.02	0.5	0.01	0.02	0.01	

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MSL Code	Sponsor ID	Percent Dry Wt	concentrations in µg/g dry weight - data are not blank corrected)									
			Cr	Co	Ni	Cu	Zn	Se	Cd	Pb	Mn (d)	
<b><u>STANDARD REFERENCE MATERIAL</u></b>												
MOSS 1136			0.694	0.126	1.17	3.61	19.3	0.107 J	0.0973	3.47	501	
	certified value		0.67	0.115	0.95	3.76	25.4	0.115	0.106	3.33	535	
	percent recovery		104%	110%	123%	96%	76%	93%	92%	104%	94%	
IAEA 366			1.07	0.286	0.962	3.07	22.7	0.205 J	0.100	4.57	62.4	
	certified value		1.03	0.287	NC	3.55	31.6	0.216	0.117	5.0	64.0	
	percent recovery		104%	100%	NA	86%	72% #	95%	85%	91%	98%	
<b><u>LABORATORY CONTROL SAMPLE</u></b>												
1640 (µg/L)			35.5	22.4	28.9	89.7	64.4	29.4	26.6	28.3	117	
			35.9	21.8	29.1	94.0	64.2	27.7	24.6	30.1	110	
	certified value		38.6	20.3	27.4	85.2	53.2	22.0	22.8	27.9	122	
	percent recovery		92%	110%	105%	105%	121%	134% #	117%	101%	96%	
			93%	107%	106%	110%	121%	126% #	108%	108%	90%	
<b><u>REPLICATE ANALYSIS RESULTS</u></b>												
1701-32 r1	OIDMTO02SYC	12.5	0.212	0.116	1.17	2.08	19.8	0.5 U	0.135	0.370	292	
1701-32 r2	OIDMTO02SYC	12.5	0.213	0.127	1.45	2.24	21.1	0.5 U	0.139	0.272	289	
	<b>Relative percent difference</b>		<b>0%</b>	<b>9%</b>	<b>21%</b>	<b>7%</b>	<b>6%</b>	<b>0%</b>	<b>3%</b>	<b>31% #</b>	<b>1%</b>	

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(Samples Received 8/24/01)

MSL Code	Sponsor ID	Percent Dry Wt	concentrations in µg/g <b>dry</b> weight - data are not blank corrected)								
			Cr	Co	Ni	Cu	Zn	Se	Cd	Pb	Mn (d)
<b>MATRIX SPIKE RESULTS</b>											
Amount Spiked			5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
1701-29	OIDMTO01SY	13.0	0.223	0.0835	1.74	3.21	20.3	0.5 U	0.103	0.114	113
1701-29 MS			5.02	5.68	6.80	8.65	24.5	5.07	4.44	5.00	122
Amount Recovered			4.80	5.60	5.06	5.44	4.20	5.07	4.34	4.89	9.0
Percent Recovery			96%	112%	101%	109%	84%	101%	87%	98%	SL
Amount Spiked			5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
1701-29	OIDMTO01SY	13.0	0.223	0.0835	1.74	3.21	20.3	0.5 U	0.103	0.114	113
1701-29 MSD			4.94	5.53	6.77	8.10	24.6	5.04	4.60	4.86	121
Amount Recovered			4.72	5.45	5.03	4.89	4.30	5.04	4.50	4.75	8.0
Percent Recovery			94%	109%	101%	98%	86%	101%	90%	95%	SL
<b>Relative percent difference</b>			<b>2%</b>	<b>3%</b>	<b>1%</b>	<b>11%</b>	<b>2%</b>	<b>1%</b>	<b>4%</b>	<b>3%</b>	<b>NA</b>

(d) Mn was diluted and re-analyzed; concentrations shown have been corrected for dilution

U Not detected at or above DL shown

J Reported below DL shown; estimated value

NC Not certified

NA Not applicable.available

# Outside standard DQO (±25%)

SL Inappropriate spike level; native sample concentrations overwhelmed spike

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MSL Code	Sponsor ID	Percent Dry Wt	concentrations in µg/g wet weight - data are not blank corrected)								
			Cr	Co	Ni	Cu	Zn	Se	Cd	Pb	Mn
1701-29	OIDMTO01SY	13.0	0.0290	0.0109	0.226	0.417	2.64	0.0645 U	0.0134	0.0148	14.7
1701-30	OIDMTO01SYC	12.2	0.0216	0.00933	0.170	0.395	2.70	0.0645 U	0.0135	0.0168	15.9
1701-31	OIDMTO02SY	13.0	0.0293	0.0177	0.254	0.467	3.43	0.0645 U	0.0182	0.0289	13.9
1701-32 r1	OIDMTO02SYC	12.5	0.0265	0.0145	0.146	0.260	2.48	0.0645 U	0.0169	0.0463	36.5
1701-32 r2	OIDMTO02SYC	12.5	0.0266	0.0159	0.181	0.280	2.64	0.0645 U	0.0174	0.0340	36.1
1701-33	OIDMTO03SY	13.3	0.0330	0.0114	0.180	0.398	2.67	0.0645 U	0.0140	0.0350	20.1
1701-34	OIDMTO03SYC	12.2	0.0305	0.0142	0.184	0.438	2.21	0.0645 U	0.0138	0.0142	15.0
1701-35	OIDMTO04SY	13.8	0.0320	0.0152	0.385	0.553	2.80	0.0645 U	0.0181	0.0224	22.5
1701-36	OIDMTO04SYC	13.4	0.0315	0.0155	0.350	0.504	2.80	0.0645 U	0.0180	0.0182	30.0
1701-37	OIDMTO05SY	13.2	0.0294	0.0194	0.360	0.550	3.09	0.0645 U	0.0198	0.0297	21.1
1701-38	OIDMTO05SYC	12.7	0.0290	0.0173	0.381	0.508	2.53	0.0645 U	0.0175	0.0132	17.4
1701-39	OIDMTO06SY	11.9	0.0253	0.00996	0.352	0.438	3.14	0.0645 U	0.0239	0.0403	18.1
1701-40	OIDMTO06SYC	11.9	0.0302	0.00901	0.443	0.552	2.69	0.0645 U	0.0232	0.0309	15.6
1701-41	OIDMTO07SY	12.9	0.0250	0.0111	0.335	0.526	3.11	0.0645 U	0.0252	0.0373	15.2
1701-42	OIDMTO07SYC	13.2	0.0272	0.0132	0.282	0.467	2.72	0.0645 U	0.0268	0.0358	20.5
1701-43	OIDMTO08SY	12.9	0.0311	0.0135	0.306	0.542	3.81	0.0645 U	0.0311	0.0263	13.3
1701-44	OIDMTO08SYC	13.1	0.0299	0.0140	0.400	0.604	3.58	0.0645 U	0.0322	0.0173	12.1
1701-45	OIDMTO09SY	13.7	0.0325	0.00978	0.275	0.580	3.14	0.0645 U	0.0227	0.0152	16.7
1701-46	OIDMTO09SYC	14.2	0.0301	0.0131	0.331	0.550	3.27	0.0645 U	0.0270	0.0247	14.2
1701-47a	OIDMTO10SY	12.7	0.0277	0.0102	0.304	0.556	2.91	0.0645 U	0.0220	0.0204	13.0
1701-48a	OIDMTO10SYC	12.6	0.0268	0.0142	0.435	0.689	3.33	0.0645 U	0.0309	0.0296	11.1
Procedural Blank		12.9	0.00387 U	0.000387 U	0.00516 U	0.0209	0.0805	0.0645 U	0.00129 U	0.00258 U	0.00129 U
Target Detection Limits		12.9	0.0645	0.0645	0.0645	0.0258	0.129	0.129	0.00645	0.00645	0.0129
Acheived Detection Limits		12.9	0.00387	0.000387	0.00516	0.00258	0.00258	0.0645	0.00129	0.00258	0.00129

U Not detected at or above DL shown

Wet weight concentrations are calculated values (dry wt conc \* % dry wt/100)