

**Watershed Summary Information**

**Accounting Unit Name:** Puget Sound  
**State(s):** WA  
**Political Boundaries:** King, Kittitas  
**Major Waterways:** Elliot Bay  
Green R  
Big Soos Cr  
Newaukum Cr  
Green R, N Fk  
**Number of Stations in Watershed:** Tier1 - 48  
Tier2 - 69  
Tier3 - 10

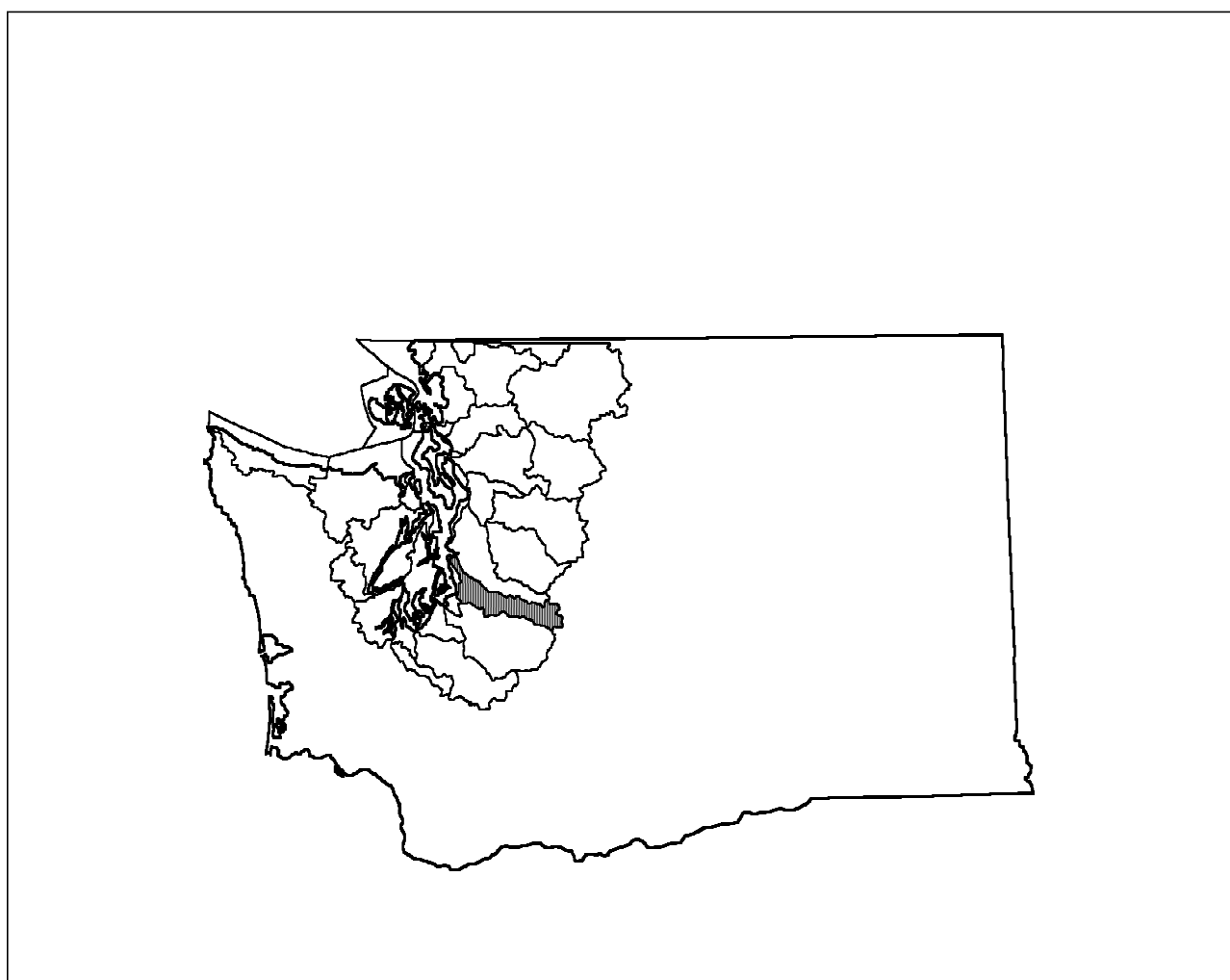


Figure 167. Watershed Location Map

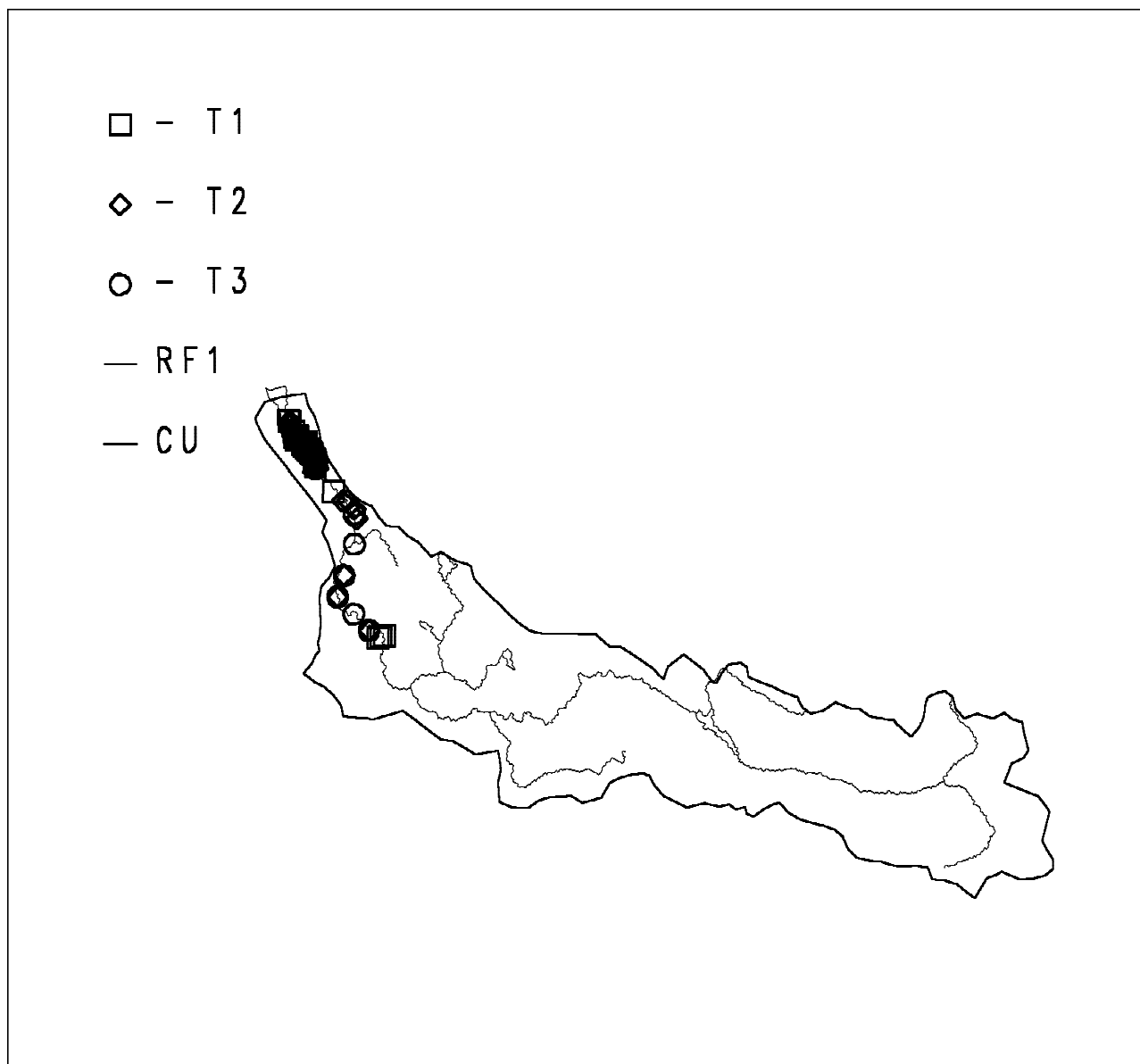


Figure 168. Major Waterways and Location of Sampling Stations

## Data Source(s) Used in Evaluation

Source: **SEACOE** Agency: **DUWA0014**  
 Monitoring Program: **USACE DUWAMISH O&M DY90 ROUND 3**  
 Num. of Stations: 2 Date Range: 1990

Source: **SEACOE** Agency: **DUWA1032**  
 Monitoring Program: **USACE Duwamish O&M, DY92 Phase 1**  
 Num. of Stations: 8 Date Range: 1990

Source: **SEACOE** Agency: **DUWO&M90**  
 Monitoring Program: **Operations & Maint. Dredge Duwamish Riv.**  
 Num. of Stations: 17 Date Range: 1989

Source: **SEACOE** Agency: **DUYACHT1**  
Monitoring Program: **Duwamish Yacht Club marina maint. dredge**  
Num. of Stations: 5 Date Range: 1988

Source: **SEACOE** Agency: **EBCHEM**  
Monitoring Program: **1985 Elliott Bay sediment survey**  
Num. of Stations: 19 Date Range: 1985

Source: **SEACOE** Agency: **EPA8283**  
Monitoring Program: **1982-83 EPA survey of Duwamish River**  
Num. of Stations: 31 Date Range: 1982-83

Source: **SEACOE** Agency: **HURLEN89**  
Monitoring Program: **Hurlen Construction Co. Maint. Dredging.**  
Num. of Stations: 1 Date Range: 1990

Source: **SEACOE** Agency: **LONESTAR**  
Monitoring Program: **Lonestar NW, maint. dredge Duwamish Riv.**  
Num. of Stations: 1 Date Range: 1989

Source: **SEACOE** Agency: **MALINS**  
Monitoring Program: **1980 NOAA OMPA-19 survey of Elliott Bay.**  
Num. of Stations: 1 Date Range: 1980

Source: **SEACOE** Agency: **MORTON89**  
Monitoring Program: **Morton wharf construct. & draft increase**  
Num. of Stations: 1 Date Range: 1989

Source: **SEACOE** Agency: **NOAA84**  
Monitoring Program: **Benthic Surveillance 1984**  
Num. of Stations: 3 Date Range: 1984

Source: **SEACOE** Agency: **NOAA86**  
Monitoring Program: **1986 Benthic Surveillance (NST)**  
Num. of Stations: 3 Date Range: 1986

Source: **STORET** Agency: **10EPAINT**  
Monitoring Program: **USEPA Region 10 Intensive Survey Data**  
Num. of Stations: 32 Date Range: 1982-83

Source: **STORET** Agency: **10EPATOX**  
Monitoring Program: **USEPA Region 10 Water, Sediment & Tissue Data**  
Num. of Stations: 2 Date Range: 1980

Source: **STORET** Agency: **21540000**  
Monitoring Program: **Washington Dept Ecology Southwest Regional Office Estuary & Freshwatrs Data**  
Num. of Stations: 1 Date Range: 1983-84

## Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Copper	119	96	.	96	.	96	.	.
Arsenic	111	88	3	85	3	84	.	1
Nickel	118	87	.	87	.	87	.	.
Lead	118	64	.	64	.	64	.	.
Pyrene	84	52	9	43	9	43	.	.
Cadmium	113	52	.	52	.	52	.	.
Benzo(a)pyrene	90	48	4	44	4	39	.	48
Benzo(a)anthracene	76	46	4	42	4	42	.	34
Fluoranthene	88	45	4	41	4	41	.	.
Chrysene	77	45	2	43	2	43	.	.
Polychlorinated biphenyls	102	44	34	10	33	10	1	43
Zinc	97	40	.	40	.	40	.	.
Phenanthrene	77	34	8	26	8	26	.	.
Dibenzo(a,h)anthracene	92	31	7	24	7	24	.	24
Bis(2-ethylhexyl)phthalate	85	27	6	21	6	21	.	6
Mercury	99	27	.	27	.	27	.	.
Fluorene	89	21	2	19	2	19	.	.
DDT	112	17	3	14	3	14	.	5
HMW_PAHs	64	17	1	16	1	16	.	.
Silver	93	17	.	17	.	17	.	.
Benzo(b)fluoranthene	39	12	.	12	.	.	.	12
Methylnaphthalene, 2-	55	12	.	12	.	12	.	.
LMW_PAHs	66	11	.	11	.	11	.	.
Chromium	74	9	.	9	.	9	.	.
Naphthalene	89	8	1	7	1	7	.	.
Acenaphthene	91	7	2	5	2	5	.	.
Acenaphthylene	91	5	2	3	2	3	.	.
Anthracene	21	5	2	3	2	3	.	.
Indeno(1,2,3-cd)pyrene	85	5	.	5	.	.	.	5
BHC	88	3	.	3	.	2	.	2
Benzo(k)fluoranthene	40	2	.	2	.	.	.	2
Dimethyl phthalate	85	2	.	2	.	2	.	.
Pentachlorophenol	117	2	.	2	.	2	.	.
Benzoic acid	71	1	.	1	.	1	.	.
Cresol, m-	71	1	.	1	.	1	.	.
Dibenzofuran	52	1	.	1	.	1	.	.
Endosulfan, alpha-	33	1	.	1	.	1	.	.
Nitrosodiphenylamine, N-	55	1	.	1	.	1	.	.

## Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	99	30.12	0.00	23	1000.00	5.20
Acenaphthylene	99	30.08	0.00	10	1300.00	1.00
Acrylonitrile	42	0.00	0.00	0	.	.
Aldrin	127	0.00	0.00	0	.	.
Anthracene	21	315.24	0.00	5	2800.00	630.00
Antimony	127	5110.16	0.00	53	101000.0	100.00
Arsenic	129	19363.80	12000.00	129	449000.0	3000.00
Benzene	49	0.00	0.00	0	.	.
Benzo(a)anthracene	76	610.72	200.00	54	7900.00	9.50
Benzo(a)pyrene	98	388.61	51.00	56	3100.00	11.00
Benzo(b)fluoranthene	39	430.77	0.00	12	3000.00	680.00
Benzo(ghi)perylene	93	27.83	0.00	20	360.00	19.00
Benzo(k)fluoranthene	40	410.00	0.00	12	3000.00	680.00
Benzoic acid	71	23.68	0.00	14	1100.00	13.00
Benzyl alcohol	72	0.35	0.00	2	15.00	10.00
Bis(2-ethylhexyl)phthalate	93	743.13	0.00	34	16000.00	37.00
Bromophenyl phenyl ether, 4-	21	0.00	0.00	0	.	.
Butyl benzyl phthalate	94	9.89	0.00	14	96.00	49.00
BHC	398	0.03	0.00	2	7.00	3.30
Cadmium	131	832.91	600.00	117	8300.00	61.00
Chlordane	126	0.00	0.00	1	0.50	0.50
Chlorobenzene	49	0.00	0.00	0	.	.
Chromium	91	25498.90	21000.00	84	174000.0	8000.00
Chrysene	77	728.05	280.00	56	9000.00	5.30
Copper	136	62097.06	44150.00	132	386000.0	1000.00
Cresol, m-	71	45.17	26.00	71	1100.00	3.50
Cresol, o	54	14.15	5.90	53	280.00	3.00
Cresol, p-	1	0.00	0.00	0	.	.
Di-n-butyl phthalate	91	4.54	0.00	14	81.00	7.00
Di-n-octyl phthalate	106	26.52	0.00	20	1300.00	23.10
Dibenzo(a,h)anthracene	152	69.83	0.00	47	2800.00	11.00
Dibenzofuran	52	46.54	0.00	16	2000.00	4.00
Dibromochloromethane	48	0.00	0.00	0	.	.
Dichlorobenzene, 1,2-	112	0.09	0.00	1	10.00	10.00
Dichlorobenzene, 1,3-	112	0.09	0.00	1	10.00	10.00
Dichlorobenzene, 1,4-	111	0.09	0.00	1	10.00	10.00
Dichloroethane 1,1-	48	0.00	0.00	0	.	.
Dichloroethane 1,2-	26	0.00	0.00	0	.	.
Dichloroethene, trans-1,2-	42	0.00	0.00	0	.	.
Dichloromethane	42	137.38	0.00	7	4200.00	140.00
Dichloropropane, 1,2-	48	0.00	0.00	0	.	.
Dieldrin	127	0.00	0.00	0	.	.

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Diethyl phthalate	92	1.09	0.00	12	70.00	2.00
Dimethyl phthalate	93	12.79	0.00	16	510.00	5.70
Dimethylphenol, 2,4-	134	0.00	0.00	0	.	.
Dioxins	20	0.00	0.00	0	.	.
DDT	415	1.66	0.00	42	160.00	0.50
Endosulfan, alpha-	42	0.26	0.00	1	11.00	11.00
Endosulfan, beta-	42	0.00	0.00	0	.	.
Endrin	99	0.00	0.00	0	.	.
Ethylbenzene	83	0.00	0.00	0	.	.
Fluoranthene	96	1676.54	570.00	79	38000.00	10.00
Fluorene	97	137.51	0.00	26	5900.00	3.00
Heptachlor	125	0.00	0.00	0	.	.
Heptachlor epoxide	83	0.00	0.00	0	.	.
Hexachlorobenzene	116	0.29	0.00	10	20.00	0.10
Hexachlorobutadiene	112	0.00	0.00	0	.	.
Hexachloroethane	55	0.00	0.00	0	.	.
HMW_PAHs	72	748.41	0.00	27	9900.00	20.90
Indeno(1,2,3-cd)pyrene	93	32.22	0.00	19	520.00	20.00
Isophorone	40	0.00	0.00	0	.	.
Lead	136	61045.44	35650.00	135	307000.0	3000.00
LMW_PAHs	74	157.42	0.00	15	3000.00	21.00
Mercury	117	96.36	90.00	85	400.00	20.00
Methoxychlor	1	0.00	0.00	0	.	.
Methylnaphthalene, 2-	55	15.80	0.00	17	240.00	14.00
Naphthalene	97	19.39	0.00	18	990.00	17.00
Nickel	135	23397.04	21000.00	131	155000.0	4000.00
Nitrosodiphenylamine, N-	55	1.09	0.00	3	30.00	10.00
Pentachlorophenol	134	7.54	0.00	4	419.00	77.90
Phenanthrene	77	1367.00	280.00	55	32000.00	8.70
Phenol	121	13.77	0.00	20	320.00	10.00
Polychlorinated biphenyls	644	101.29	0.00	66	5600.00	92.00
Pyrene	92	1444.54	510.00	70	30000.00	5.30
Silver	111	355.92	160.00	67	2100.00	70.00
Tetrachloroethane, 1,1,2,2-	48	0.00	0.00	0	.	.
Tetrachloroethene	82	0.00	0.00	0	.	.
Tetrachloromethane	48	0.00	0.00	0	.	.
Toluene	86	0.63	0.00	2	50.00	4.60
Toxaphene	42	0.00	0.00	0	.	.
Tribromomethane/Bromoform	48	0.00	0.00	0	.	.
Trichlorobenzene, 1,2,4-	111	0.06	0.00	1	6.40	6.40
Trichloroethane, 1,1,1-	42	0.00	0.00	0	.	.
Trichloroethane, 1,1,2-	48	0.00	0.00	0	.	.
Trichloroethene	81	0.00	0.00	0	.	.
Trichlorofluoromethane	42	0.00	0.00	0	.	.

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Trichloromethane/Chloroform	48	0.00	0.00	0	.	.
Xylenes	36	0.00	0.00	0	.	.
Zinc	114	158639.5	111000.0	114	1240000	22000.00

## Tissue Residue Data: Chemical Summary

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Aldrin	7	0.00	0.00	0	.	.
Arsenic	7	17.14	0.00	2	90.00	30.00
BHC	6	155.17	115.50	5	460.00	20.00
Cadmium	7	125.71	30.00	6	430.00	10.00
Chlordane	10	0.00	0.00	0	.	.
Chromium	7	117.14	0.00	3	520.00	100.00
Copper	7	5628.57	1600.00	7	24600.00	1000.00
Dieldrin	7	0.00	0.00	0	.	.
DDT	35	341.69	160.00	24	2000.00	13.00
Endrin	1	0.00	0.00	0	.	.
Hexachlorobenzene	1	0.00	0.00	0	.	.
Lead	7	128.57	0.00	2	800.00	100.00
Mercury	5	178.80	130.00	5	530.00	40.00
Methoxychlor	7	0.00	0.00	0	.	.
Pentachlorophenol	4	84.00	78.00	4	170.00	10.00
Polychlorinated biphenyls	7	795.71	600.00	6	1600.00	420.00
Zinc	7	19028.57	16500.00	7	27300.00	11400.00

## Biotoxicity Data

Lat.	Long.	Date	Species Name	Phase	% Mortality		Sign.
					Test	Control	
Monitoring Program: 1985 Elliott Bay sediment survey							
47.5153	122.3032	85-09-30	Rhepoxynius Abronius	S	13.00	2.25	no
47.5190	122.3070	85-10-10	Rhepoxynius Abronius	S	40.00	10.00	Yes
47.5198	122.3010	85-09-30	Rhepoxynius Abronius	S	38.00	2.25	Yes
47.5252	122.3077	85-09-30	Rhepoxynius Abronius	S	14.50	2.25	no
47.5259	122.3073	85-09-30	Rhepoxynius Abronius	S	18.00	2.25	no
47.5300	122.3136	85-09-30	Rhepoxynius Abronius	S	29.00	2.25	Yes
47.5320	122.3187	85-10-09	Rhepoxynius Abronius	S	8.00	5.00	no
47.5344	122.3203	85-09-30	Rhepoxynius Abronius	S	8.00	2.25	no
47.5367	122.3250	85-09-30	Rhepoxynius Abronius	S	17.00	2.25	no
47.5368	122.3175	85-09-30	Rhepoxynius Abronius	S	25.00	2.25	Yes
47.5397	122.3304	85-09-30	Rhepoxynius Abronius	S	7.00	2.25	no
47.5416	122.3309	85-09-30	Rhepoxynius Abronius	S	23.00	2.25	Yes

Lat.	Long.	Date	Species Name	Phase	% Mortality		Sign.
					Test	Control	
47.5429	122.3299	85-09-30	Rhepoxynius Abronius	S	17.00	2.25	no
47.5433	122.3343	85-09-30	Rhepoxynius Abronius	S	57.00	2.25	Yes
47.5440	122.3361	85-09-30	Rhepoxynius Abronius	S	32.00	2.25	Yes
47.5473	122.3341	85-09-30	Rhepoxynius Abronius	S	89.00	2.25	Yes
47.5485	122.3388	85-09-30	Rhepoxynius Abronius	S	45.00	2.25	Yes
47.5528	122.3401	85-09-30	Rhepoxynius Abronius	S	8.00	2.25	no
47.5569	122.3392	85-09-25	Rhepoxynius Abronius	S	22.00	2.25	no