MEMORANDUM WA-07-1015

TO: JOHN ARNQUIST DATE: December 15, 1971

FROM: BOB BISHOP

Publication No. 71-e05

SUBJECT: Tulalip Sanitary Landfill

WA-07-1015

On June 28, 1971, Ron Devitt and I conducted a water quality survey in Ebey and Steamboat Sloughs near Marysville to define possible effects of the Ebey Island Tulalip Sanitary Landfill on surrounding waters. The waste is barged to the site from the Seattle area and unloaded by crane and buried. The waste is not composed of putrescible material such as food waste; it consists of cloth, paper, wood and other construction refuse; note photographs. There have been some local complaints of waste material drifting around, but none on foul odor or decaying matter. On June 28, there was no barge in the channel; a bulldozer was running. The weather was sunny.

Eleven stations were sampled during the day; Figures 1 and 2. The barge channel was about 200 feet wide and 300 yards long. Station 4 was 100 feet from the channel head, Station 5, 150 yards from the mouth, and 6, 30 feet up-channel from the mouth. Barges can only enter at high tide. Station 3, about one mile west of Ebey Island, and 1 and 2 in Steamboat Slough were designated as control stations. The entire sampling area is tide influenced, estuarine water. High tide was 7.4 feet at 1000 hours; the low of 2.8 feet was at 1600 hours. Sampling was conducted from 1000 hours to 1800 hours, field and lab measurements and tests were run; Tables 1 and 2.

Total coliform bacteria counts greatly exceeded Class B water standards in the channel. At Stations 4 and 6 the count exceeded 80,000. In the barge channel, the landfill operation is producing water conditions in violation of Class B standards. Four other stations had counts of 1000 or greater. Turbidity, pH, and D.O. were within standards. Values for turbidity and color were higher in the channel and at the mouth of Quilceda Creek than at other stations. Temperature, conductivity, and salinity measurements were typical of estuarine waters. Iron concentrations were detected in Steamboat Slough, the barge channel, and at the mouth of Quilceda Creek; zinc was detected in the barge channel and at Station 3. No copper or chrome was detected at the stations.

In the barge channel, two gill nets were strung across to keep refuse from drifting out. At low tide, the banks were well exposed. They consisted of rags, wood, dirt, and other refuse, and orange colored leachate was running down the banks into the water. The banks are very unsightly, note photographs.

There was no foul odor. Leachate collected had a pH of 6.4, turbidity of 9, color of 440 and contained 31.6 mg/l. of iron and 0.1 mg/l. zinc. There were no chromium, iron, zinc, or copper concentrations detected in effluent flowing into Ebey Slough on June 30, 1971 from the Marysville sewage treatment lagoon. Results were the same for effluent from the Everett sewage treatment lagoon collected on June 30, 1971, except for iron, which was 0.7 mg/l. in concentration.

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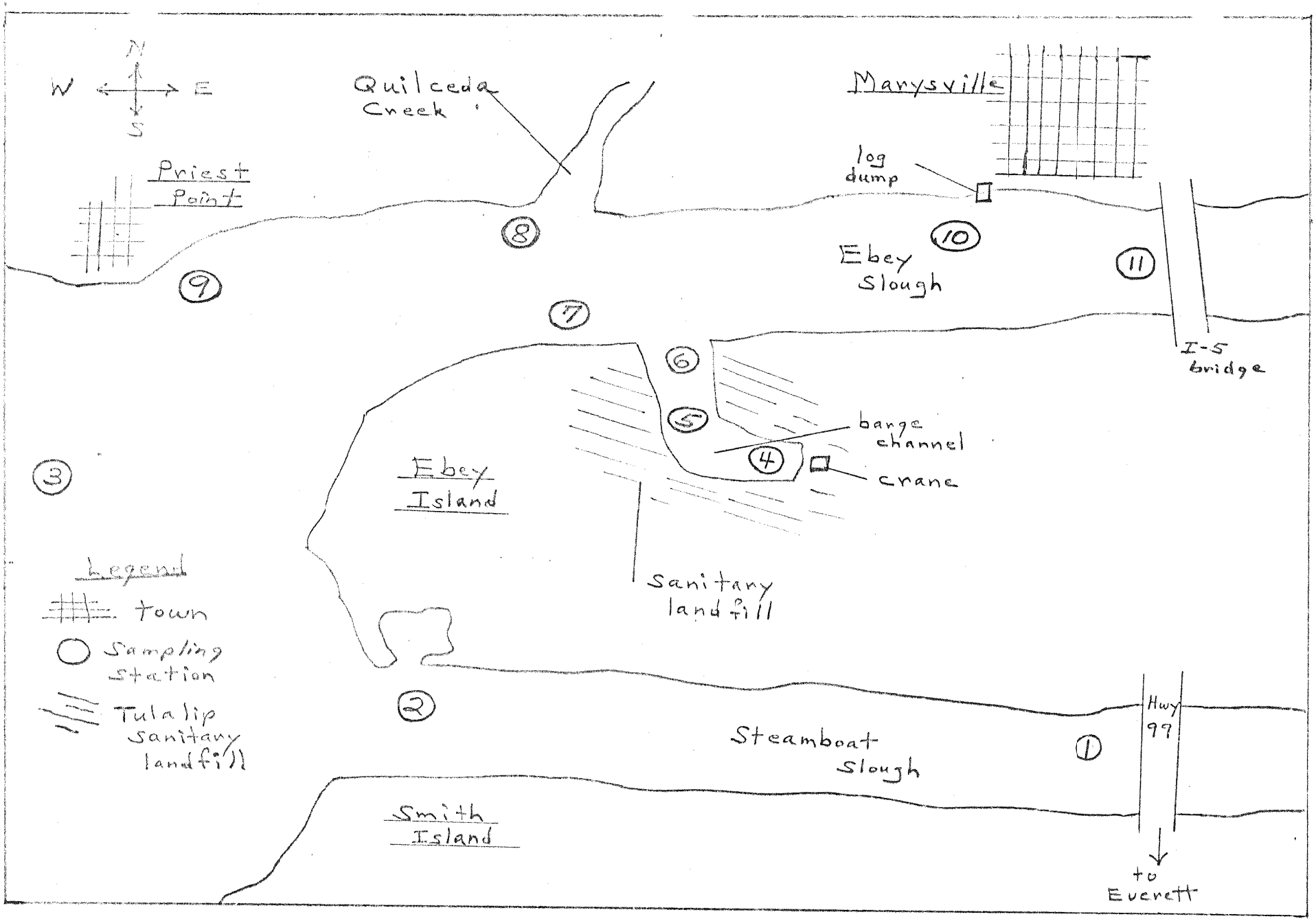

Figure 1. Illustration of sampling stations and landmarks for the Tulalip Sanitary Landfill Survey

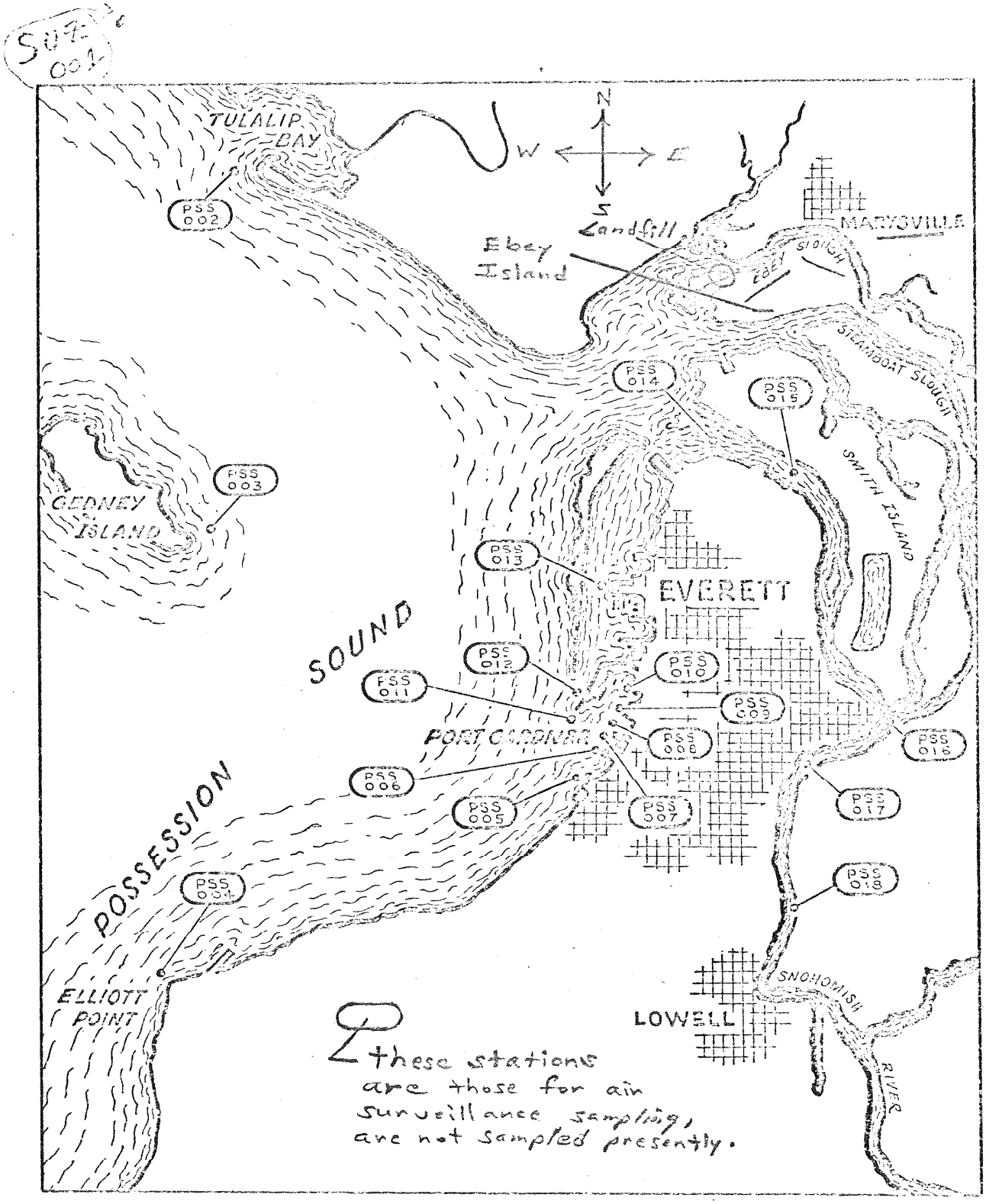

Figure 2. Relative location of Ebey Island to related landmarks.

Table 1. pH, D.O., turbidity, color, conductivity, salinity and temperature at survey stations.

St.	Tide	Daylt. Time	Depth Ft.	Bottom Depth	pH	ppm D.O.	JTU Turb.	Color	Milli-mhos cond.	ppt Sal.	Temp °C
1	High	1015	2	25	6.6	11.1	3	19	.7		9.0
			20						12.9		10.9
2	High	1035	2	12	6.7	10.9	3	20	1.5	1.2	9.3
			14		7.9	8.1	3	14	16.6	13.5	11.2
3	Slack	1100	2	14	7.5	10.1	3	17	10.7	8.6	11.5
			14		7.9	7.8	2	13	22.2	18.3	12.0
4	Slack	1200	2	8	7.1	8.1	6	38	1.0	.6	12.1
			8		6.5	8.8	9	61	1.6	1.3	11.0
5	Ebb	1500	2	4	6.5	9.1	6	38	1.4	1.0	13.7
6	Low	1530	3	6	6.6	9.6	6	36	.6	.4	13.4
7	Low	1550	2	7	6.8	11.0	5	22	.4	.3	11.0
			10		6.8	10.6	3	21	1.1	.8	10.8
8	Low	1615	3	6	7.0	8.5	7	106	.8	.6	16.4
9	Slack	1645	2	8	7.0	10.4	5	23	1.9	1.5	13.0
			6		7.0	10.0	15	23	3.7	2.7	12.7
10	Slack	1715	2	14	7.1	11.0	4	24	.4	.3	10.5
			12		6.9	10.9	3	24	.5	.5	10.4
11	Slack	1730	2	15	6.8	10.8	3	23	.3	.3	10.6
			15		6.9	11.1	5	25	.4	.3	10.6

Table 2. Total coliform colonies, iron, and zinc concentrations at survey stations.

Station °	Day lt. Time	Total coliform, Colonies per 100 ft.	Iron ppm	Zinc ppm
1	1015	600	0.2	ND*
2	1035	600	0.1	"
3	1100	1,000	ND	0.1
4	1200	+ 80,000	0.7	0.1
5	1500	+ 40,000	0.5	0.1
6	1530	+ 80,000	0.4	ND
7	1550	2,000	ND	ND
8	1615	1,200	1.4	ND
9	1645	18,000	ND	ND
10	1715	800	ND	ND
11	1730	600	ND	ND

° Samples at 2 ft.
+, Means greater than
*ND, Means none detected