STATE OF WASHINGTON

DEPARTMENT OF ECOLOGY

DANIEL J. EVANS
GOVERNOR

JOHN A. BIGGS
DIRECTOR

August 13, 1971

Publication No. 71-e02

MEMORANDUM

WA-17-0030

TO: Jim Knudson

FROM: Bob Bishop

SUBJECT: Crown Zellerbach Diffuser Outfall Survey at Port Townsend Bay

On 5-27-71, Jim Baumer and I conducted a water quality survey at stations located adjacent to the diffuser outfall line of the Crown Zellerbach Company mill at Port Townsend Bay. The mill was not operating at this time, and data were recorded as background to be compared with those from a future survey. On 7-8-71, Ron Lee and Jim Baumer conducted that survey while the mill was in full operation.

On 5-27, the diffuser line was seen on the bottom at stations A and B, at low tide. The pipe passes between piling 8 and 9, counting from the south end of the row at the breakwater. We did not locate the end of the diffuser line. The stations sampled and their relative locations for both surveys are illustrated in Figure 1. Station H was not sampled. The stations were located using landmarks and a range finder. Due to rough water, the high tide run was not done on 5-27.

Station E, located approximately 1,500 yards east of the diffuser, was the control station. Station C was above, or close to the diffuser. Station D was in the diffusion zone.

The following three tables give parameter data comparisons for each station, C, D, and E, for both surveys.

TABLES

			Station (E)							Std.
Date	Tide	Depth	Temp.	Cond.	Sal.	D.O.	pH	PBI	Color	Time
5-27	- low	1	10.1	31.7	24.6	9.5	8.0	0.0	18	1220
5-27	- low	20	9.2	31.4	24.6	9.1	8.0	5.0	19	1220
7-8	- low	1	11.5	31.5	24.3	11.1	8.4	5.0	6	1030
7-8	- low	40	10.0	31.4	24.5	7.6	8.3	5.0	1	1030
7-8	- high	1	11.5	32.2	24.4	13.1	8.5	9.0	12	1600
7-8	- high	40	10.8	31.5	24.0	8.9	8.2	0.0	0	1600

Station (C)

Date	Tide	Depth	Temp.	Cond.	Sal.	D.O.	pH	PBI	Color	Std. Time
5-27	low	1	9.3	30.7	23.9	8.1	7.8	5	17	1140
5-27	low	12	9.0	31.0	25.0	8.1	7.9	0	12	1140
7-8	low	1	10.6	31.4	24.9	7.7	8.2	14	6	1000
7-8	low	24	9.8	31.4	24.5	7.8	8.2	5	1	1000
7-8	high	1	11.7	32.2	24.1	10.7	8.4	14	0	1540
7-8	high	28	10.0	31.4	24.3	7.7	8.2	0.0	1	1540

Station (D)

Date	Tide	Depth	Temp.	Cond.	Sal.	D.O.	pH	PBI	Color	Std. Time
5-27	low	1	10.11	31.0	24.5	8.3	—	—	18	1145
5-27	low	16	9.4	31.3	25.0	9.2	—	—	17	1145
7-8	low	1	10.3	31.3	24.2	7.8	8.2	18	10	1010
7-8	low	25	9.6	31.4	24.4	7.8	8.2	18	9	1010
7-8	high	1	10.7	31.7	24.0	8.1	8.3	23	13	1530
7-8	high	30	9.8	31.3	24.7	7.6	8.2	5	1	1530

Lab report data and log book entrees for all stations both surveys, are enclosed.

For stations C, D, and E, values for D.O., temperature, and pH, are within the ranges for Class A water as outlined in the Department of Ecology Water Quality Standards for interstate waters for Port Townsend Bay.

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Enclosures

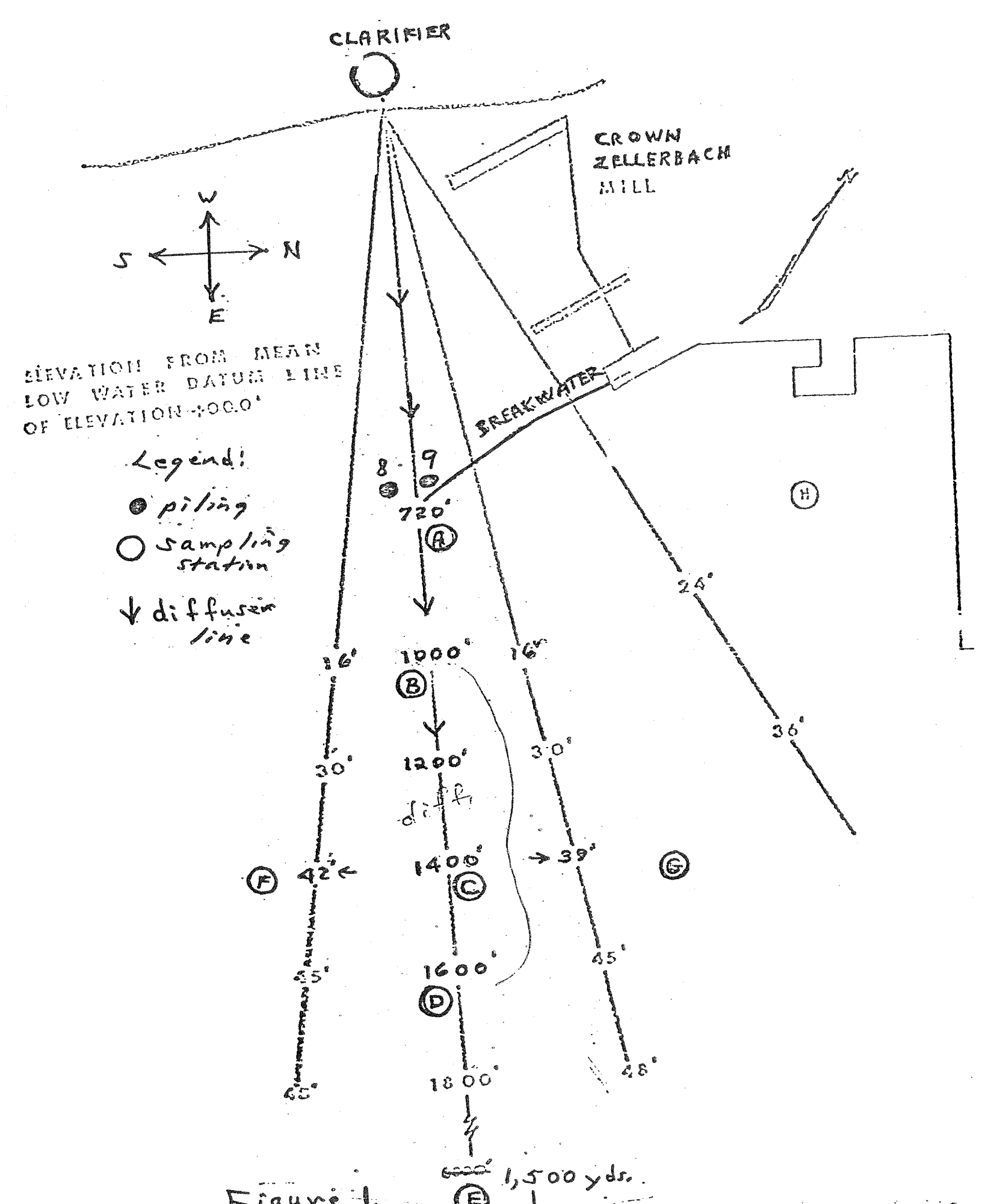


Figure 1. Illustration of sampling stations, for diffuse
line outfall, Crown Zellerbach at Port Townse

STATE OF WASHINGTON

WATER POLLUTION CONTROL COMMISSION

ANALYTICAL REPORT SHEET

Routing

Original to LAB

Copies to: RON LEE

to: RON LEE

The following are the analytical results from survey conducted at:

PORT TOWNSEND BAY

Collected 7-15-70

LAB. NO.	STATION NO.	COLOR (APHA UNITS)	TURBIDITY	pH	P.B.I.	SP. COND.	SUSP. SOLIDS.	S.N.V.S.
70-3395	1 E	10	6.9	8.6	0	41,900	32	21
3396	2 C	10	6.4	8.4	7	42,000	52	36
3397	3 B	20	6.7	8.5	10	42,900	38	26
3398	4 A	10	5.6	8.5	5	41,400	54	35
3399	5 F	10	7.1	8.5	5	42,500	37	23
3400	6 G	20	7.8	8.5	10	40,900	45	30
3401	7 D	10	5.6	8.6	5	42,200	32	21
3402	8 H	20	11	8.6	24	38,300	40	27
3403	10	10	0	6.6	.7	10.0	I.S.	I.S.
3404	1a E	20	3.0	8.4	7	42,300	30	21
3405	2a C	20	4.1	8.7	5	41,900	38	29
3406	3a B	20	5.2	8.5	27	41,400	25	15
3407	4a A	20	4.8	8.6	17	40,000	23	15
3408	5a F	20	3.6	8.6	7	41,900	36	25
3409	6a G	20	9.8	8.7	27	40,900	33	23
3410	7a D	10	5.0	8.5	12	42,400	27	21
3411	8a H	10	4.0	8.7	46	38,600	66	40

Notes:

Summarized by ED. DENIKE

Date 7-21-70

WASHINGTON STATE WATER POLLUTION CONTROL COMMISSION

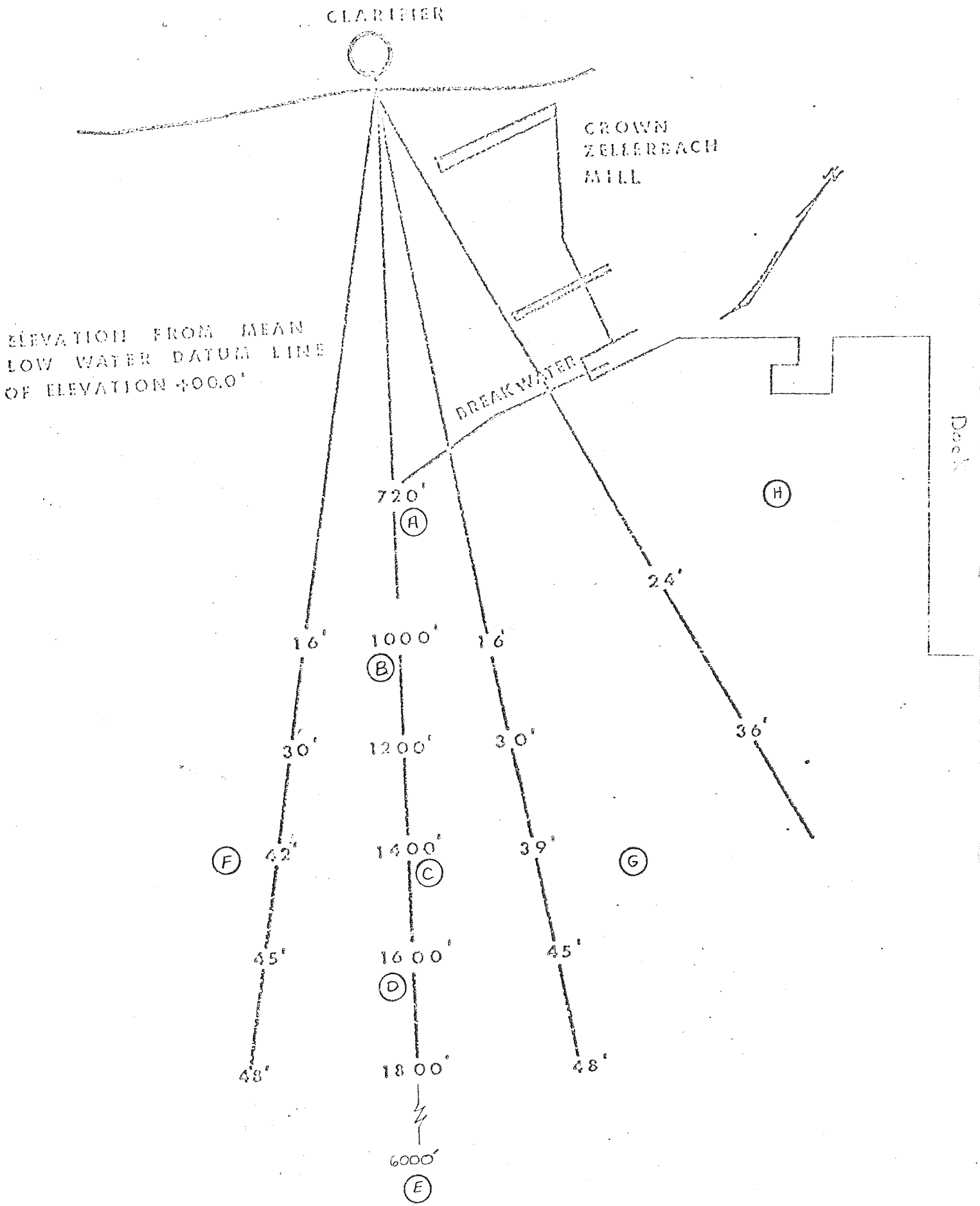
BACTERIOLOGICAL EXAMINATION

Date Collected	Collected By	Lab. No.	Endo Agar											
7/15/70	Ron Lee		Time On	Sheen Colonies Per:										
Date Reported	Reported By													
7/17/70	Ø		7/16	10	100									Count Per 100 ml
Fort Townsend Sta 1		70-3386	900	✓	1									1
2		3387		✓	0									0
3		3388		✓	14									14
4		3389		41	✓									410
5		3390		✓	0									0
6		3391		✓	6									6
7		3392		✓	0									0
8		3393		✓	5									5
10		3394		✓	0									

COMMENTS: CROWN ZELLERBACH AREA

Coliform Set 18

Coliform Reported 9


CLARIFIER
CROWN ZELLERBACH MILL
ELEVATION FROM MEAN LOW WATER DATUM LINE OF ELEVATION +00.0'
BREAKWATER
Dock
720'
A
H
24'
16'
1000'
B
16'
36'
30'
1200'
30'
F
42'
1400'
C
39'
G
45'
1600'
D
45'
48'
1800'
48'
6000'
E

WASHINGTON STATE
DEPARTMENT OF ECOLOGY
WATER POLLUTION CONTROL DIVISION

SPECIAL TEST WORK SHEET
FOR SALINITY CORRECTED BY CONDUCTIVITY AT 25°C.

DATE STARTED: _____ DATE FINISHED: _____

SAMPLE LOG NO.	~~READING~~ CONDUCTIVITY micromhos/cm FIRST	SECOND	RESULT FIRST	SECOND	AVERAGE RESULT	~~REMARKS~~ SALINITY	ANALYST
70 - 3395	41,900					26,900	
96	42,000					27,000	
97	42,900					27,800	
98	41,400					26,500	
99	42,500					27,500	
400	40,900					26,200	
01	42,700					27,500	
02	38,300					24,500	
03	385					200	
04	42,300					27,200	
05	41,900					26,900	
06	41,400					26,600	
07	40,000					25,600	
08	41,900					26,900	
09	40,700					26,200	

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SPECIAL TEST WORK SHEET
FOR SALINITY CORRECTION BY CONDUCTIVITY AT 25°C

ATE STARTED: _____ DATE FINISHED: _____

AMPLE OG NO.	~~READING~~ COND. µmhos/cm FIRST	SECOND	RESULT FIRST	SECOND	AVERAGE RESULT	~~REMARKS~~ SALINITY	ANALYST
70 — 3410	42,400					27,400	
11	38,600					24,500	