

July 19, 1973

Memo to: Bill Burwell

From: Ron Devitt

Subject: Weyerhaeuser Wood Mills - B & C Everett - Industrial Wastewater Treatment Surveys

Re: Bill Burwell's Memorandum Dated April 18, 1973

INTRODUCTION

On June 16, 1973, Scott Jeane and I surveyed Weyerhaeuser Wood Mills C and B respectively in Everett.

Composite samples were taken from 0830 until lunch shutdown at 11:15. The flows to both mills were estimated by Weyerhaeuser Company personnel to be 1,000 gpm. Samples were split with industry; a comparison to our data is presented.

SAMPLE LOCATIONS

1. B-primary influent: A bleed off-line present under the screens was turned on and permitted to run for approximately one minute before sampling.
2. B-effluent: The vertical drain at the effluent from the clarifier and about 1/2 of the discharge was allowed to bypass the regular outfall pipe to obtain a more representative sample.
3. "Treated Water to Barkers": Samples were taken from the sink tap in the water treatment system lab. This water is from the river, treated and then piped to both mills for use in the hydraulic barkers.
4. Boiler Blowdown Water: The boilers are only blown down once per day during the graveyard shift. Water usage was said to be small. Sample was taken from spigot in powerhouse.
5. C-influent: Samples were secured in headworks below shaker screens.
6. C-effluent: Samples were taken as effluent exited launders to outfall.

SAMPLING ACTIVITIES

1. Composite Samples were taken at the following locations B-influent, B-effluent, C-influent, and C-effluent. Lab analysis was performed for BOD, COD, pH, turbidity, conductivity, solids, color and PBI.
2. Grab samples were taken of the "treated water to barkers", and boiler blowdown water and analyzed for the above listed parameters. In addition, samples were taken for coliform, and NH₃. Field Analyses were conducted each 1/2 hour for T, pH and conductivity. Settleable solids were determined.
3. Each sample was shared with industry. Parts of their analyses were conducted at Everett and portions by their regional lab at Longview. BOD and solids data were reported by Fred Howard, head lab technician, via telephone on July 12, 1973.

TABLE NO. 1 - FIELD DATA

WEYERHAEUSER WOOD MILLS AT EVERETT

Mill B

6* Determinations	INFLUENT				EFFLUENT			
	Max.	Min.	Mean	Median	Max.	Min.	Mean	Median
TEMP (°C)	18	18	18	18	18	18	18	18
pH	6.1	5.2	5.7	5.5	4.4	4.2	4.3	4.3
COND. (µmhos/cm)	190	30	100	75	155	110	130	130
Settleable Solids (ml/l)	27	3.5	15	14	.2	.05	.1	.05

*only 3 on solids

Mill C

	Max.	Min.	Mean	Median	Max.	Min.	Mean	Median
TEMP (°C)	14.7	14.4	14.5	14.5	14.8	14.3	14.5	14.5
pH	7.0	5.2	6.1	6.1	6.0	5.6	5.8	5.8
Settleable Solids (ml/l)	28	1.0	15	23	.25	.25	.25	.25

WEYERHAEUSER COMPANY WOOD MILL B - EVERETT

	pH	Turb. (JTU)	Cond. μmhos/cm	COD (ppm)	BOD	NH ₃ (ppm)	TS (ppm)	TNVS (ppm)	TSS (ppm)	TNVSS (ppm)	PBI (ppm)	Color (alpha units)
<u>Chemical Data</u>												
Influent Composite	5.2	150	150	1820	135		1183	283	259*	214*	3000	2020
Effluent Composite	4.7	50	165	337	79	.40	291	62	100	13	2270	490
Percent Reduction				81	41		75	78		94		
Boiler Blowdown	11.8	175	3000	188	28		1621	1356	264	206	300	1560
Treated H ₂ O	7.3	1	43	8	< 2		16	0	22	4	0	8

Bacteriological Data (Coliform Colonies/100 mls)

	<u>Total</u>	<u>Fecal</u>	<u>Fecal Strep.</u>
Effluent - 0930 hours	110,000	< 100	200
Effluent - 1100 hours	75,000	< 100	< 100

*Questionable data

WEYERHAEUSER COMPANY WOOD MILL C - EVERETT

	pH	Turb. (JTU)	Cond. µmhos/cm	COD (ppm)	BOD	NH ₃ (ppm)	TS (ppm)	TNVS (ppm)	TSS (ppm)	TNVSS (ppm)	PBI (ppm)	Color (alpha units)
<u>Chemical Data</u>												
Influent Composite	5.8	100	250	1110	132		1162	263	1184	222	5940	1200
Effluent Composite	6.0	75	210	514	138		459	112	179	49		
Percent Reduction				54	- 5		60	57	85	78		
Effluent Grab						.16						

Bacteriological Data (Coliform Colonies/100 mls)

	<u>Total</u>	<u>Fecal</u>	<u>Fecal Strep.</u>	<u>FC:FS</u>
Effluent #1	300,000	1,100	1,600	.69
Effluent #2	450,000	1,000	2,000	.50
Effluent #3	500,000	1,000	1,750	.57

TABLE NO. 2 - WEYERHAEUSER COMPANY AND DEPARTMENT OF ECOLOGY DATA

	BOD		TSS		TVSS	
	Wey. Co.	DOE	Wey. Co.	DOE	Wey. Co.	DOE.
Mill B INF.	155	135	1,162	259*	922	45*
Mill B Eff.	97	79	106	100	80	87
Mill C. Inf.	163	132	862	1,184	676	962
Mill C Eff.	127	138	170	179	124	130
Boiler Blowdown	46	28	138	264	40	58
Treated H ² O	-	-	-	22	-	17

*Questionable data

DISCUSSION OF DATA

1. Field Data indicated there was a similarity between the two clarifiers. The temperature remained essentially constant through the treatment system. The pH tended to become more acidic during treatment especially in Mill B which involves chemical treatments. Mill B accomplishes better settling than C.

2. Chemical Data

a. Mill B - There is a significant decrease in the most significant parameters.

By comparing the "treated water" to the primary influent the effect of usage in the hydraulic barkers can be observed. The influent has been pretreated by screening however.

Another significant observation is the high numbers of total coliform but low values for fecal and fecal strep.

b. Mill C - There is a general similarity to the influent to B. The degree of treatment is very poor in C as indicated by the BOD reduction. Evidently the chemical treatment used in Mill B explains the higher degree of treatment. The chemical treatment may also explain the low number of fecal and fecal strep coliform in Mill B compared to Mill C. The high coliform values indicate that this discharge should be disinfected. The ratio of fecal to fecal strep does not indicate that the contamination is of human origin. Additional sampling at various points throughout the waste water collection system might give a better insight as to the source of these high numbers.

COMPARISON OF SAMPLE ANALYSES

All numbers compare tolerably well except solids on Mill C influent. Comparison of the other numbers indicates that the value reported by DOE on Mill C influent solids is in error. The reason is unknown.

Weyerhaeuser Company ran their solids by Reeve-Angel Method; we ran the gooch method. Industry and Department of Ecology used the same volume of sample for analyses.

OBSERVATIONS & COMMENTS ON MILL B

Gordon Chafe, Gus Whipple (Weyerhaeuser Company) and Bill Burwell were present at various times throughout the survey.

The hopper below the screens was corroded. An intermittent leak plugged and unplugged throughout the survey. Maximum flow was 1,000 mls/5 sec.

The two floor screens behind the screens in the area of the chip belt were ajar.

Chips and saw dust enter state waters from the dock at the barge loading area, from the storm drain northeast of the clarifier, and from the log staging area on the river side of the hydraulic barker. The log boom is fairly effective in retaining foam and floating debris.

Oil was observed surfacing in clarifier in bead-like droplets at 1045.

No shore crabs, barnacles, or other biota were observed in the intertidal area.

Rain and sprinkles fell throughout the survey.

RD:pam