

TO Gerry Calkins

FROM Dan Glantz

SUBJECT Pe E11 STP Efficiency Study

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DATE June 5, 1974



On April 3, 1974, the writer conducted a routine efficiency study at the Pe E11 Sewage Treatment Plant. Composite sampling commenced at 0930 and continued on the half hour thru 1600. Six grabs for coliform samples were made during this period.

The Pe E11 plant is quite new, it has been in operation for two years. Normally it is adequate; however, occasionally, during extensive rainy periods, the clarifier becomes overloaded and must be bypassed. My visit was on a cool, clear day, but there had been heavy rain for several days prior to this. Considerable infiltration into the old sewer system was still evidenced by the heavy flow, but not enough to require bypass at this time.

Field data and laboratory results show good reductions and treatment results. The grounds are fenced and well maintained and the appearance of the office and laboratory indicate a good housekeeping program is being followed. Except when there is an infiltration problem created by the antiquated sewer lines, Pe E11's system appears to be performing as designed and is adequately serving the small community.

DG:JMH

STP Survey Report Form

Efficiency Study

City Pe Ell Plant Type Secondary Pop. Served 500 Design 500  
 Capacity  
 Receiving Water Chehalis River Perennial X Intermittent \_\_\_\_\_  
 Date 4/3/74 Survey Period 0930-1600 Survey Personnel D. Glantz  
 Comp. Sampling Frequency 1/2 hr. Sampling Alequot 1000 ml (adj to flow)  
 Weather Conditions (24 hr) clear-cool Are facilities provided for complete by-  
 pass of raw sewage? \_\_\_\_\_ Yes X No/Frequency of bypass \_\_\_\_\_  
 Reason for bypass \_\_\_\_\_ Is bypass chlorinated? \_\_\_\_\_ Yes \_\_\_\_\_ No  
 Was DOE Notified? \_\_\_\_\_ Discharge - Intermittent \_\_\_\_\_ Continuous \_\_\_\_\_

Plant Operation

Total flow 316,000 GPD How measured Recording flowmeter  
 Maximum flow 330,000 Time of Max. 1030  
 Minimum flow 310,000 Time of Min. 1400 & 1530  
 Pre Cl<sub>2</sub> None #/day Post Cl<sub>2</sub> 5 #/day

Field Results

Influent

Effluent

<u>Determinations</u>	<u>Max.</u>	<u>Min.</u>	<u>Mean</u>	<u>Median</u>	<u>Max.</u>	<u>Min.</u>	<u>Mean</u>	<u>Median</u>
Temp °C	12.0	10.0		11.0	12.0	10.0		10.0
pH (Units)	6.8	6.3		6.55	6.8	6.2		6.6
Conductivity (µmhos/cm <sup>2</sup> )	225	160		175	210	125		155
Settleable Solids (mls/l)	5.0	3.5	4.1	4.0	TR	ND	TR	TR

Laboratory Results on Composites

	<u>Influent</u>	<u>Effluent</u>	<u>% Reduction</u>
Laboratory No.	<u>1022</u>	<u>23</u>	
5-Day BOD ppm	<u>43</u>	<u>&lt; 6</u>	<u>86%</u>
COD ppm	<u>43</u>	<u>16</u>	<u>63%</u>
T.S. ppm	<u>146</u>	<u>112</u>	<u>23%</u>
T.N.V.S. ppm	<u>89</u>	<u>71</u>	<u>20%</u>
T.S.S. ppm	<u>23</u>	<u>ND</u>	<u>100%</u>
N.V.S.S. ppm	<u>ND</u>	<u>ND</u>	<u>-</u>
pH (Units)	<u>6.8</u>	<u>6.8</u>	
Conductivity (µmhos/cm <sup>2</sup> )	<u>190</u>	<u>160</u>	
Turbidity (JTU's)	<u>25</u>	<u>5</u>	

Laboratory Bacteriological Results

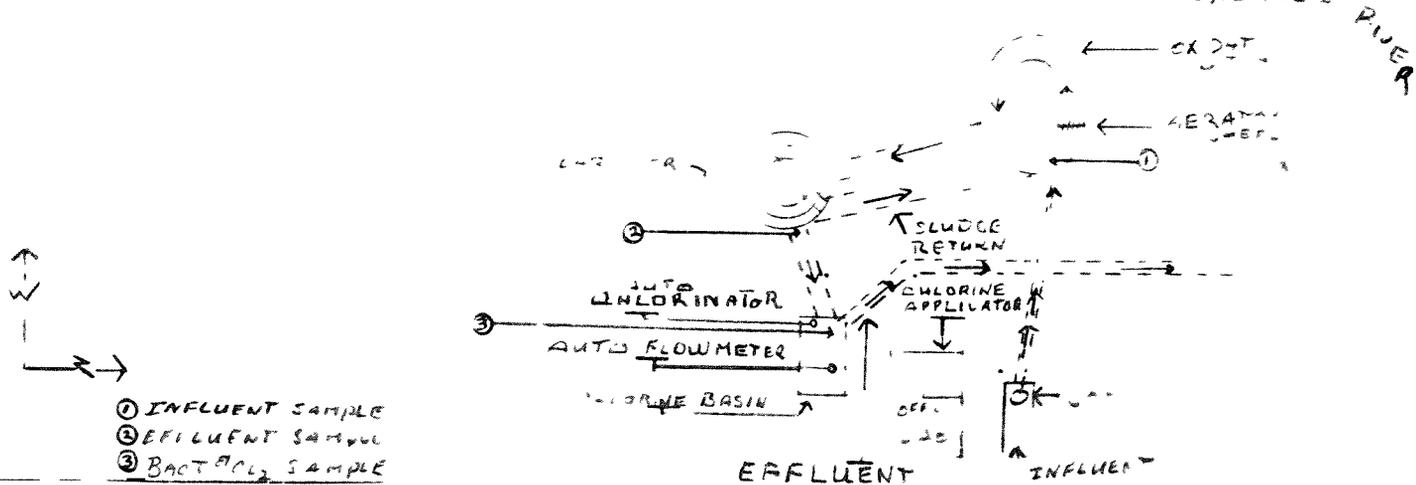
Lab No.	Sampling Time	Colonies/100 ml (MF)			Cl <sub>2</sub> Residual
		Total Coliform	Fecal Coliform	Fecal Strep	
24	1000	600	< 10		.3
25	1100	600	Est. 10		.3
26	1200	Est. 60	< 10		.5
27	1300	< 20	< 10		.5
28	1400	< 20	< 10		.5

Additional Laboratory Results

NO <sub>3</sub> -N ppm	-	3.80
NO <sub>2</sub> -N ppm	-	ND
NH <sub>3</sub> -N ppm	-	0.75
T. Kjeldahl-N ppm	-	0.8
O-PO <sub>4</sub> -P ppm	-	0.08
T-PO <sub>4</sub> -P ppm	-	0.40

Operator's Name \_\_\_\_\_ Phone No. \_\_\_\_\_

8A. IN THE SPACE PROVIDED BELOW FURNISH A SIMPLIFIED FLOW DIAGRAM OR A WRITTEN DESCRIPTION OF THE PLANT AND ITS FLOW SEQUENCE. INCLUDE THE METHOD OF ULTIMATE SLUDGE DISPOSAL. SHOW APPROXIMATE SURFACE AREA OF STABILIZATION PONDS AND NUMBER OF CELLS. INDICATE WHETHER FLOW TO AND FROM PLANT IS BY PUMPING OR GRAVITY.



Combined  Separate  Both

Estimate flow contributed by surface or ground water (infiltration)

50,000/100,000 XXMGD

Plant Loading Information

Annual average daily flow rate (mgd)

Peak flow rate (mgd)

Dry 162,000 GPD

Dry 115,000 GPD

Wet 250,000 GPD

Wet 310,000 GPD

COMMENTS: Heavy rain for several days prior to survey. Sewer line is old, with

considerable infiltration during wet weather. This excessive hydraulic overload



4/3/74				2/13/74								CULIF
TIME	TEMP	PH	COND	SS	FLOW	CL <sub>2</sub>	TEMP	PH	COND	SS		
0930	11°	6.5	175	3.5	300,000 GPD	15" 0.4	10°	6.6	175	0		
1000	11°	6.7	160		320,000	3' 0.3	10°	6.6	175		-	
1030	11°	6.6	200	4.6	330,000	15" 0.4	10°	6.4	150	-TR		
1100	11.5°	6.6	160		325,000	3' 0.3	10°	6.6	150		✓	
1130	11°	6.5	180	3.75	325,000	15" 0.75	10.5°	6.6	125	TR		
1200	12°	6.6	150		320,000	3' 0.5	12°	6.4	150		✓	
1230	11°	6.4	160	4.0	325,000	15" 0.5	10°	6.7	150	0		
1300	10.4°	6.4	190		320,000	3' 0.5	10°	6.8	125		✓	
1330	10°	6.8	200	4.0	305,000	15" 0.3	10°	6.7	150	TR		
1400	10.5°	6.5	200		310,000	3' 0.5	10°	6.2	160		✓	
1430	10°	6.6	160	5.0	315,000	15" 0.3	10°	6.5	160	TR		
1500	11°	6.6	225		315,000	3' 1.0	10°	6.5	210		✓	
1530	11°	6.4	175		310,000		11°	6.2	160			
1600	11°	6.3	175		310,000		11°	6.6	160			

AV = 316,000

NORMAN BROWN - OPERATOR  
 PH - 291-3792  
 JERRY NACHT PH - 291-3543

STATE OF WASHINGTON  
DEPARTMENT OF ECOLOGY

WATER QUALITY LABORATORY

ORIGINAL TO:  
G.S. JEANE.....  
COPIES TO:  
.....  
.....  
LAB FILES.....

DATA SUMMARY

Source Pe ELL SORT YARD

Collected By S.P. & H.C.

Date Collected 12-10-74

Goal, Pro./Obj. \_\_\_\_\_

Log Number:	74-4820 21									STORET
Station:	SORT YARD	Sett. basin overflow								
pH										00403
Turbidity (JTU)	1,000	350								00070
Conductivity (umhos/cm)@25°C										00095
COD										00340
BOD (5 day)										00310
Total Coliform (Col./100ml)										31504
Fecal Coliform (Col./100ml)										31616
NO3-N (Filtered)										00620
NO2-N (Filtered)										00615
NH3-N (Unfiltered)										00610
T. Kjeldahl-N (Unfiltered)										00625
O-PO4-P (Filtered)										00671
Total Phos.-P (Unfiltered)										00665
Total Solids	1316	461								00500
Total Non Vol. Solids	1148	382								
Total Suspended Solids	1148	335								00530
Total Sus. Non Vol. Solids	996	279								

Note: All results are in PPM unless otherwise specified. ND is "None Detected"  
Convert those marked with a \* to PPB (PPM X 10<sup>3</sup>) prior to entry into STORET

Summary By Stephen P. Roll Date 12-18-74