

Memo To: Gerry Calkins

From: Allen Moore

Subject: Castle Rock STP Efficiency Study

Date: January 14, 1975

On November 25, 1974 an efficiency survey was conducted at the Castle Rock STP. The grounds and equipment were neat and well kept except for the flow records. The float mechanism, to record flow level, was stuck solid and all efforts to loosen it failed. Of course the flow recorder showed a constant rate of flow which the operator had failed to recognize as something being wrong. This problem should again be checked to make sure repairs were made. Flows were obtained by measuring levels in their 6 inch Parshall flume.

The attached STP Survey Report Form summarizes the lab results. Note in the data summary that samples were taken and analyzed for influent, post trickling filter, post secondary filter and final effluent.

AM:ee

Attachment

STP Survey Report Form

Efficiency Study

City Castle Rock Plant Type Trickling filter Pop. Served 1830 Design Capacity _____
 Receiving Water Cowlitz River Perennial Intermittent _____
 Date Nov. 25, 1974 Survey Period 1030-1430 Survey Personnel Allen Moore
 Comp. Sampling Frequency Hourly Sampling Alequot Maximum flow x 1000 ml
 Flow _____
 Weather Conditions (24 hr) light rain Are facilities provided for complete by-pass of raw sewage? Yes _____ No/Frequency of bypass 6/year
 Reason for bypass repairs Is bypass chlorinated? _____ Yes _____ No
 Was DOE Notified? Discharge - Intermittent Continuous _____

Plant Operation

Total flow 58,168 gal. How measured Parshall Flume
 Maximum flow .28 MGD Time of Max. 1330
 Minimum flow .19 MGD Time of Min. 1130
 Pre Cl₂ _____ #/day Post Cl₂ 12 #/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	17	16.5		17	16	15		16
pH (Units)	7.4	7.2		7.3				
Conductivity (µmhos/cm ²)	650	950		830	980	760		890
Settleable Solids (mls/l)	7.0	7.0	7.0	7.0	.6	.5	.55	.5

Laboratory Results on Composites

<u>Laboratory No.</u>	<u>Influent</u> 74-4671	<u>Effluent</u> 74-4674	<u>% Reduction</u>
5-Day BOD ppm	131	<30	>77
COD ppm	225	84	63
T.S. ppm	473	335	29
T.N.V.S. ppm	276	215	22
T.S.S. ppm	179	27	35
N.V.S.S. ppm	79	11	86
pH (Units)	7.4	7.4	
Conductivity (µmhos/cm ²)	580	580	
Turbidity (JTU's)	60	22	

Laboratory Bacteriological Results

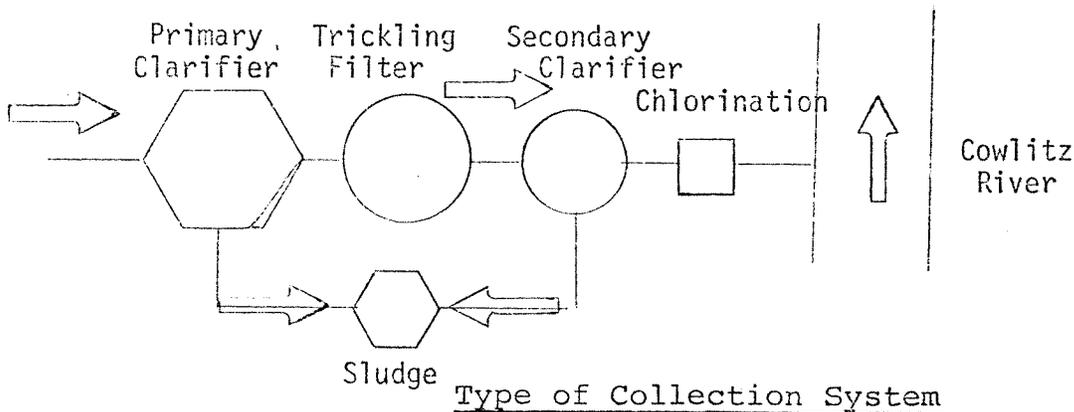
Lab No.	Sampling Time	Colonies/100 ml (MF)			Cl ₂ Residual
		Total Coliform	Fecal Coliform	Fecal Strep	
74-4675	1030	<20	<10		.75
76	1130	<20	<10		>1.00
77	1230	40 Est.	<10		.75
78	1430	<20	<10		>1.00
79	1530	<20	<10		.75
80	1630	<20	<10		

Additional Laboratory Results

NO ₃ -N ppm -	4.30
NO ₂ -N ppm -	0.10
NH ₃ -N ppm -	20.0
T. Kjeldahl-N ppm -	22.4
O-PO ₄ -P ppm -	6.20
T-PO ₄ -P ppm -	6.40

Operator's Name Don Curtis Phone No. 274-8181

Furnish a flow diagram with sequence and relative size and points of chlorination.



Combined Separate Both

Estimate flow contributed by surface or ground water (infiltration)

.4 to 1.0 MGD

Plant Loading Information

Annual average daily flow rate (mgd)

Peak flow rate (mgd)

Dry .180

Dry .12 MGD

Wet .529 MGD

Wet 1.575 MGD

COMMENTS: _____

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

WATER QUALITY LABORATORY

ORIGINAL TO:
A. W. Moore.
COPIES TO:
.....
.....
LAB FILES.....

DATA SUMMARY

Source Castle Rock STP

Collected By AWM

Date Collected 11-25-74

Goal, Pro./Obj. _____

Log Number:	74-4671	72	73	74	75	76	77	78	79	80	STORET
Station:	WF	TRICKLING FILTER	SECONDARY CLARIF.	EFF.	1030	1130	1230	1430	1530	1630	
pH	7.4	7.3	7.3	7.4							00403
Turbidity (JTU)	60.	35.	22.	22.							00070
Conductivity (umhos/cm)@25°C	590.	600.	590.	580.							00095
COD	225.	113.	72.	84							00340
BOD (5 day)	131.	60.	33.	<30.							00310
Total Coliform (Col./100ml)					<20	<20	EST 40	<20	<20	<20	31504
Fecal Coliform (Col./100ml)					<10	<10	<10	<10	<10	<10	31616
NO3-N (Filtered)				4.30							00620
NO2-N (Filtered)				0.10							00615
NH3-N (Unfiltered)				20.							00610
T. Kjeldahl-N (Unfiltered)				22.4							00625
O-PO4-P (Filtered)				6.20							00671
Total Phos.-P (Unfiltered)				6.40							00665
Total Solids	473	406	358	335							00500
Total Non Vol. Solids	276	248	230	215							
Total Suspended Solids	179	82	46	27							00530
Total Sus. Non Vol. Solids	79	27	18	11							
COLOR (COLOR UNITS)	284	199	168	142							

Note: All results are in PPM unless otherwise specified. ND is "None Detected"
Convert those marked with a * to PPB (PPM X 10³) prior to entry into STORET

Summary By Stephen P. Roll Date 12-16-74