Publication No. 75-e55

WA-CR-1020

MEMORANDUM

July 3, 1975

To: Clar Pratt and Jim Milton

From: Shirley Prescott

Subject: Bingen STP Efficiency Study

A routine efficiency study was conducted on the above plant on May 15, 1974 by Hans Cregg and myself.

Attached is the report form showing plant information and the results of the laboratory and field tests which indicate that at the time of this visit the plant was meeting permit conditions with a BOD reduction of 97% and suspended solids reduction of 95%. Based on an approximate daily flow of .35 MGD (average of six-hour survey period extended to 24 hours), gave a figure of 12 #/day BOD and 30#/day T.S.S.

The effluent composite measured a pH of 5.9 [redacted] and field tests showed a median of 5.3 [redacted]. In checking back with George Walker, plant operator, we were told that he felt one of the parts in a suction pipe in the clarifier was plugged and causing a septic condition in one area of the clarifier. They have been working on this problem and pH is now running about 6.5 [redacted].

The total and fecal coliform count jumped drastically (24,000 and 700 respectively) at the 1500 hour sampling although the CL_2 residual showed 0.3 in 15 seconds and 1.0 in three minutes. In view of this, and the two previous readings which are within permit limitations and most acceptable, it is possible we had a contaminated sample bottle or some other unknown factor. However, this was the period of lowest flow during the 6-hour survey.

The lab area is not large and could be neater. The operator runs weekly BOD, DO, settleable solids, suspended solids, pH, temperature, flow and CL_2. At the July 1 council meeting he is putting in the formal request for the necessary lab equipment to run coliform tests.

The waste sludge is now being stored in an unused anaerobic digestor. This is taking care of the situation now, but could be a problem at some future date.

The oxidation ditch has two paddle wheels, one of which was inoperative at the time of the study. Repair parts are on order.

The comminutor is ahead of the screens, probably as part of the old plant operation. The operator realizes this is a problem that should be corrected.

The plant, as modified and upgraded, has been in operation just over a year. The plant area is fenced and kept locked, buildings are in good repair. Landscaping has not yet been completed.

George Walker, plant operator, has been on the job about 1 year. He was most cooperative. He has one full-time assistant.

SP:ee

STP Survey Report Form

Efficiency Study

City Bingen Plant Type Oxidation ditch Pop. Served 2300 Design Capacity 1 MGD

Receiving Water Columbia River Perennial X Intermittent

Date 5/14/75 Survey Period 0800 - 1600 Survey Personnel Shirley Prescott, Hans Cregg

Comp. Sampling Frequency Hourly Sampling Alequot 1000

Weather Conditions (24 hr) Clear & dry Are facilities provided for complete by-pass of raw sewage? X Yes ___ No/Frequency of bypass 2 in one year - breakdown

Reason for bypass Breakdown Is bypass chlorinated? ___ Yes X No

Was DOE Notified? Yes Discharge - Intermittent ___ Continuous Yes - 1 1/2 to 2 hrs.

Plant Operation

Total flow .09 MGD How measured Totalizer

Maximum flow 29,000 Time of Max. 1200 hrs.

Minimum flow 10,000 Time of Min. 1500 hrs.

Pre Cl_2 No #/day Post Cl_2 12 - 13 #/day

Field Results

	Influent				Effluent			
Determinations	Max.	Min.	Mean	Median	Max.	Min.	Mean	Median
Temp °C	17	15		16	18	16		17
pH (Units)	7.4	6.8		7.2	5.6	5		5.3
Conductivity (µmhos/cm²)	600	200		350	350	250		300
Settleable Solids (mls/l)	10.0	1.0	6.2	7	trace	trace	trace	trace

Laboratory Results on Composites

	Influent	Effluent	% Reduction	lbs/6 hrs.
Laboratory No.	1851	1852		
5-Day BOD ppm	135	< 4	97%	3.0
COD ppm	330	24		
T.S. ppm	449	260		
T.N.V.S. ppm	207	158		
T.S.S. ppm	200	10	95%	7.5
N.V.S.S. ppm	36	2		
pH (Units)	7.5	5.9		
Conductivity (µmhos/cm²)	510	350		
Turbidity (JTU's)	70	4		

Laboratory Bacteriological Results

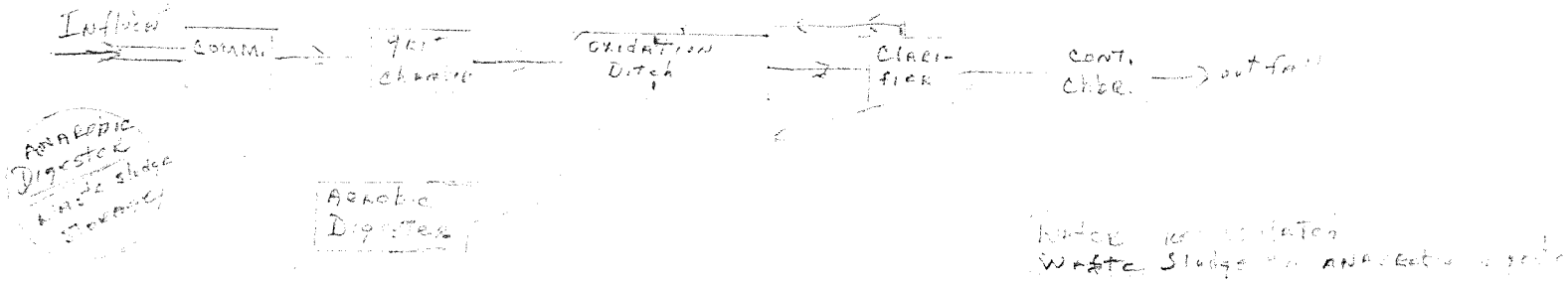
Lab No.	Sampling Time	Colonies/100 ml (MF) Total Coliform	Fecal Coliform	Fecal Strep	Cl_2 Residual 15 sec.	3 min.
1753	1015	<20	<10		.2	.5
1754	1245	400	<10		.2	.5
1755	1500	24,000	1700		.3	1.0

Additional Laboratory Results

	Effluent 1852	2.09 and 8.34
NO_3-N ppm -	16.7	12.5
NO_2-N ppm -	.05	.04
NH_3-N ppm -	.66	.5
T. Kjeldahl-N ppm -	1.06	.8
O-PO_4-P ppm -	7.0	5.3
T-PO_4-P ppm -	7.10	5.3

Operator's Name George Walker Phone No. _____

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



Type of Collection System

___ Combined __X__ Separate ___ Both

Estimate flow contributed by surface or ground water (infiltration)

_____ MGD

Plant Loading Information

Annual average daily flow rate(mgd)

Dry 300

Wet 572

Peak flow rate(mgd)

Dry _____

Wet 572

COMMENTS: _____

STATE OF WASHINGTON

DEPARTMENT OF ECOLOGY

WATER QUALITY LABORATORY

ORIGINAL TO: S.P.
COPIES TO:
LAB FILES

DATA SUMMARY

Source Bingen STP — Collected By S. Prescott

Date Collected 5-14-75 — Goal, Pro./Obj.

Log Number: 75-	1851	52	53	54	55						STORET
Station:	INF. COMP.	EFF COMP.	1015	1245	1500						
pH	7.5	5.9									00403
Turbidity (JTU)	70.	4.									00070
Conductivity (μmhos/cm)@25°C	510.	350.									00095
COD	330.	24.									00340
BOD (5 day)	135.	< 4.									00310
Total Coliform (Col./100ml)	-	-	<20.	400.	24,000						31504
Fecal Coliform (Col./100ml)	-	-	<10.	<10	1700.						31616
NO3-N (Filtered)	-	16.7									00620
NO2-N (Filtered)	-	.05									00615
NH3-N (Unfiltered)	-	0.66									00610
T. Kjeldahl-N (Unfiltered)	-	1.06									00625
O-PO4-P (Filtered)	-	7.0									00671
Total Phos.-P (Unfiltered)	-	7.10									00665
Total Solids	449	260									00500
Total Non Vol. Solids	207	158									
Total Suspended Solids	200	10									00530
Total Sus. Non Vol. Solids	36	2									

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

Summary By Stephen D. Roll Date 6-16-75