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STATE OF WASHINGTON
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Olympia, Washington 98504 206/753-2800

M E M O R A N D U M

To: Harold Porath

From: Mike Morhous

Re: Wenatchee STP
Class II Inspection

Date: May 17, 1978

Findings and Conclusions:

The above referenced inspection was conducted on March 7 and 8, 1978 by Eric Egbers and myself. The Wenatchee STP is a secondary (activated sludge) waste treatment facility.

At the time of the inspection, the STP was experiencing an increase in plant flows due to the stormwater runoff. The STP has also had an ongoing problem with sludge bulking which results in excessive TSS in the secondary effluent. These two problems were apparently responsible for the STP not meeting NPDES permit limitations for TSS during this inspection. However, all other permit limitations were met.

STP personnel have observed filamentous organisms in the sludge and have concluded that the filamentous growth is primarily responsible for the poor settling characteristics of the activated sludge. Subsequent to this inspection, the STP initiated a program involving the introduction of small dosages of chlorine into the secondary clarifier. Al Board, Laboratory Technician, indicated the procedure is apparently successful and TSS have been reduced from the effluent during both dry and wet weather conditions. It should be of interest to observe and compare future monthly TSS values with previously reported TSS values.

In conjunction with the results obtained from an accuracy check of the STP's flume/recorder (flume field data enclosed), it is recommended that the flume/recorder be recalibrated. The STP indicated the flume/recorder had not been recalibrated for three years.

MM:ee

cc: Dick Cunningham
Central Files through George Houck
Bill Yake

Class II Field Review and Sample Collection
24 Hour Composite Sampler Installations

Sampler	Date and Time Installed	Location
1. Influent aliquot - 250 ml/30 min.	3/7/78 at 0930	Wet well downstream from grit chamber.
2. Primary effluent[1] aliquot - 250 ml/30 min.	3/7/78 at 1005	Primary clarifier effluent.
3. Chlorinated effluent aliquot - 250 ml/30 min.	3/7/78 at 0945	Chlorine contact chamber outfall. (head end of Parshall flume)

Grab Samples

	Date and Time	Analysis	Sample Location
1.	March 8	Heavy metals	Floatation thickener - waste activated sludge.
2.	March 8	Heavy metals	Vacuum filter - 2nd digester sludge.
3.	March 8 at 0930	Fecal coliforms	Chl. effluent.
4.			
5.			
6.			

Flow Measuring Device

1. Type - Parshall flume
2. Dimensions

a. Meets standard criteria ☐ Yes
☐ No Explain:

See enclosed Parshall flume data sheet.

b. Accuracy check

	Actual Instan. Flow	Recorder Reading	Recorder Accuracy (% of inst. flow)
1.	3.3 MG	2.7 MG	82%
2.	3.04 MG	2.45 MG	81%
3.			

☐ is within accepted 15% error limitations
☒ is in need of calibration

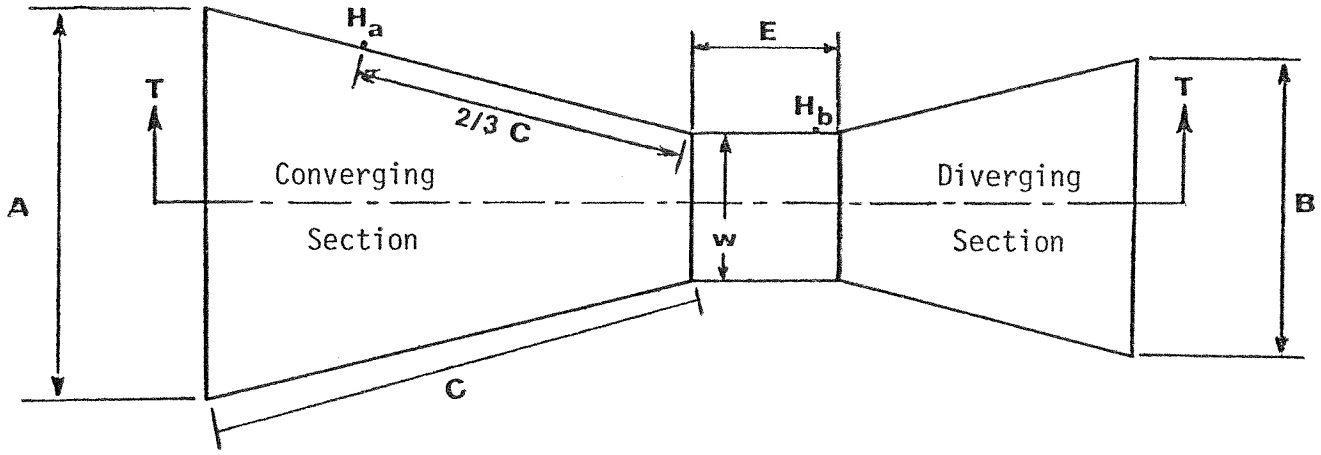
Field Data

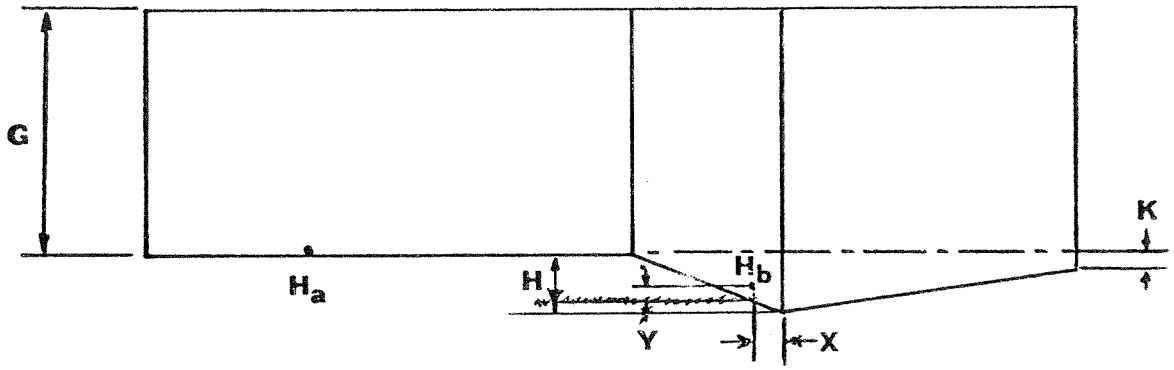
Parameter	Date and Time	Sample Location	Result
Temp., sp. cond., pH	3/7 @ 1255	Chl. Effluent	10.9°C, 460 µmhos/cm, 6.5
Temp., sp. cond., pH	3/7 @ 1310	Influent	12.3°C, 470 µmhos/cm, 8.7
Temp., sp. cond., pH	3/7 @ 1312	Prim. Clar. Eff.	12.0°C, 455 µmhos/cm, 8.5
Total Res. Chlorine	3/8 @ 0930	Chl. Effluent	3.0 ppm

(1) Was not an accurate 24 hr. composite. Sample jug was only 1/4 full = 3/4 gallon

PARSHALL FLUME:

Dimensions & Flow





Code	Spec's	Measured
A	61 7/8"	63"
B	48"	48"
C	66"	66"
1) 2/3C		
E	24"	24"
G		
H	9"	9"
K	3"	6"
W	36"	36 1/2"
X		
Y		

Date	H_a	H_b	Theoretical Flow	Recorded Flow	
9/8/76	.77'		5.15 mg	5.40 mg	104%
9/8/76	.65'		3.95 mg	3.40 mg	86%
3/7/78	.58'		3.30 mg	2.70 mg	82%
3/7/78	.55'		3.04 mg	2.45 mg	81%

1) Uses a float in the center of the converging section instead of a stilling well float off to the side.

Review of Laboratory Procedures and Techniques

Laboratory procedures were reviewed with Al Board, Laboratory Technician.

Lab procedures including BOD_5, TSS and Fecal Coliform analyses were reviewed. Procedures and techniques were all acceptable with the exception of total residual chlorine test procedure. The lab was using a non-acceptable method: orthotolidine colormetric.

The following recommendations were made during this review.

TSS - When processing TSS samples, the sample volume should be sufficient to reduce the initial filtration rate by approximately 50-60 percent, at the end of the sample filtering period. Sample volumes should be adjusted accordingly. Duplicate or triplicate sample volumes should be filtered when the sample volume is less than 50 mls.

Total Residual Chlorine - The orthotolidine colormetric procedure should be replaced with an acceptable method i.e. DPD or amperometric.

Subsequent to this inspection the lab had obtained a DPD chlorine test kit. The lab personnel should be commended for their conscientious performance of laboratory duties.

The following table is a comparison of laboratory results from 24 hour composite(s) together with NPDES permit effluent limitations. Additional results pertinent to this inspection have also been included.

	DOE			Wenatchee STP			NPDES
	Influent	Prim. Clar. Eff.	Chl. Eff.	Influent	Prim. Clar. Eff.	Chl. Eff.	(Monthly average)
BOD_5 mg/l (1)	rejected	> 30	12	188	121	26	30
lbs/day			202			438	600
TSS mg/l	200	160	44	187	125	48	30
lbs/day			741			809	600
Total Plant Flow MGD						2.02	Not to exceed 3.5
Fecal Coliforms col./100 mls @ 0930			Est. 10				200
*Total Res. Chlorine ppm @ 0930			3.0				
pH	8.3	8.5	7.2				6.5 to 8.
Total Solids (mg/l)	541	400	301				
Total Non Vol. Solids (mg/l)	290	225	209				
Total Sus. Non Vol. Solids (mg/l)	16	24	< 1				
NO_3-N (filtered) (mg/l)	0.6	0.6	0.4				
NO_2-N (filtered) (mg/l)	< .02	<.02	< .02				
NH_3-N (unfiltered) (mg/l)	17.8	16.0	15.6				
O-PO_4-P (filtered) (mg/l)	3.4	2.8	3.4				
Total Phos.-P (unfiltered) mg/l	7.5	5.8	4.6				

* Field Analysis- DPD, "<" is "less than" and ">" is "greater than"

(1) results suspect due to unusual BOD data.

Results from Collected Sludge Samples

	Vacuum Filter	DOE	Floatation Thickener			NPDES (Monthly Average
% Solids	26		4.2			
Zinc, mg/Kg dry wt.	1700		1250			
Lead, mg/Kg dry wt.	600		460			
Copper mg/Kg dry wt.	400		350			
Cadmium mg/Kg dry wt.	11		13			
Chromium mg/Kg dry wt.	85		50			

* Field Analysis

"<" is "less than" and ">" is "greater than"