



STATE OF
WASHINGTON

Dixy Lee Ray
Governor

DEPARTMENT OF ECOLOGY

7272 Cleanwater Lane, Olympia, Washington 98504

206/753-2353

M E M O R A N D U M

To: Ron Robinson

From: Mike Morhous

Re: Olympia STP
Class II Inspection

Date: November 9, 1977

Findings and Conclusions:

On July 7, 1977 Brett Betts and myself arrived at the Olympia STP to conduct the above referenced inspection. The Olympia STP is presently a primary wastewater treatment facility.

This inspection showed the STP having some difficulty in meeting interim NPDES limitations. The STP was in compliance with loading (lbs/day) limitations for BOD₅ and TSS parameters. However the STP was slightly out of compliance with concentration (mg/l) limitations for the same parameters. Fecal coliform results were out of compliance, in one instance by a factor of two.

As a result of the 24 hour composites collected, the STP was providing a 10.4% reduction in BOD₅ and a 70% reduction in TSS.

MM:ee

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

Sampler	Date and Time Installed	Location
1. Inf.	7/7 at 0935 aliquot - 157 cc/187,500 gals	Inf. wet well (Oly. STP sampler)
2. Unchl. Eff.	7/7 at 1000 aliquot - 250 mls/30 min.	Combined clarifier outfall (DOE sampler)
3. Chl. Eff.	7/7 at 1010 aliquot - 157 cc/187,500 gals	Chl. cont. chamber outfall (Oly. STP sampler)

Grab Samples

	Date and Time	Analysis	Sample Location
1.	7/7 at 1030	Fecal coliforms	Chl. cont. chamber outfall
2.	7/7 at 1100	Fecal coliforms	Chl. cont. chamber outfall
3.	7/8 at 1030	Heavy metals and	Secondary digester
4.		volatile solids	
5.			
6.			

Flow Measuring Device

1. Type - Venturi flume
2. Dimensions

a. Meets standard criteria Yes
 N/A No Explain:

b. Accuracy check

	Actual Instan. Flow	Recorder Reading	Recorder Accuracy (% of inst. flow)
1.	Could not check accuracy of flume		
2.			
3.			

is within accepted 15% error limitations

is in need of calibration

Field Data

Parameter	Date and Time	Sample Location	Result
Total Chl. Residual	7/7 at 1030	Chl. cont. chamber outfall	0.45 ppm
Total Chl. Residual	7/7 at 1100	Chl. cont. chamber outfall	0.70 ppm
pH, temp, sp. cond.	7/7 at 1050	#1 composite sampler location	8.9, 21.0°C, 600 umhos/cm
pH, temp, sp. cond.	7/7 at 1040	#2 composite sampler location	7.2, 20.8°C, 860 umhos/cm
pH, temp, sp. cond.	7/7 at 1030	#3 composite sampler location	6.7, 21.6°C, 1015 umhos/cm

Review of Laboratory Procedures and Techniques

In view of last year's review of the Olympia STP laboratory procedures which showed Asha Mhatre to be an efficient and competent laboratory person, a review of laboratory procedures during this inspection did not appear necessary.

The STP's BOD incubator was being repaired at the time of this inspection, therefore laboratory results were compared from a 24 hour composite split on August 11, 1977. The STP BOD₅ result was the same as the DOE lab result. However there appeared to be a discrepancy in the TSS results. Probable cause may have been inadequate mixing either of the composite sample before splitting or of the two separate half samples before analysis of the wastewater. However, an error in analytical procedures cannot be excluded as a possibility. For this reason an additional 24 hour composite will be split for comparison of TSS results if requested by your office.

It should be noted that the sludge sample collected during this inspection was not totally representative of secondary digested sludge. Sludge had been pumped into the secondary digester on July 7, 1977 and the sample was collected on July 8, 1977 after the mixing pump had been shut off.

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			Olympia STP		NPDES (Monthly average)
	Inf.	Unchl. Eff.	Chl. Eff.	Inf.	Chl. Eff.	
7/28/77 DOE composite						
BOD ₅ mg/l lbs/day	770	770	690 48,800			660 55,000
TSS mg/l lbs/day	528	132	158 11,170			150 15,822
Total Plant Flow MGD				8.48		Not to exceed 20
Fecal Coliforms (colonies/100 mls)						250
at 1030			380			
at 1100			500			
* Total Chl. Residual (ppm)						
at 1030			0.45			
at 1100			0.70			

8/10-11/77 Oly. STP Composite sample						
BOD ₅ mg/l			650		650	
TSS mg/l			350		171	

* Field Analysis

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

	Secondary Digester	DOE				NPDES (Monthly Average)
% dry solids	3.8					
% Volatile solids	32					
Zinc (mg/Kg dry wt)	910					
Chromium (mg/Kg dry wt.)	53					
Lead (mg/Kg dry wt.)	220					
Copper (mg/Kg dry wt.)	300					
Cadmium (mg/Kg dry wt.)	1.8					
Nickel (mg/Kg dry wt.)	24					

* Field Analysis

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

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OLYMPIA LABORATORY

DATA SUMMARY

ORIGINAL TO: .MM.
COPIES TO:
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.....
.....
LAB FILES.....

Source OLYMPIA STP

Collected By Morhous

Date Collected 8-11-77

Log Number: 77-4941 STP Lab

Station:	chl. Eff.									
pH	6.2									
Turbidity (NTU)										
Sp. Conductivity (umhos/cm)	800									
COD	1070									
BOD (5 day)	650	650								
Total Coliform (Col./100ml)										
Fecal Coliform (Col./100ml)										
NO3-N (Filtered)										
NO2-N (Filtered)										
NH3-N (Unfiltered)										
T. Kjeldahl-N (Unfiltered)										
O-PO4-P (Filtered)										
Total Phos.-P (Unfiltered)										
Total Solids	953									
Total Non. Vol. Solids	438									
Total Suspended Solids	350	171								
Total Sus. Non Vol. Solids	50									

Note: All results are in PPM (mg/L) unless otherwise specified. ND is "None Detected"
 "<" is "Less Than" and ">" is "Greater"

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ORIGINAL TO:
MM.....
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OLYMPIA LABORATORY

DATA SUMMARY

Source OLYMPIA STP

Collected By Moehous

Date Collected 7/7-8/77

Log Number: 77-4228 29 30 31 32 33*

Station:	INF	UNChlor EFF	Chlor EFF	EFF @ 1030	EFF @ 1100	2nd. Digest. Sludge			
pH	7.0	6.3	6.9						
Zinc Wet DRY						35. 910.	(mg/Kg)		
Sp. Conductivity (umhos/cm)									
COD	1100	1030	980						
BOD (5 day)	770	770	690						
Total Coliform (Col./100ml)									
Fecal Coliform (Col./100ml)				380	500				
NO3-N (Filtered)	ND	ND	ND						
NO2-N (Filtered)	ND	ND	ND						
NH3-N (Unfiltered)	4.6	13.5	12.9						
T. Kjeldahl-N (Unfiltered)									
O-PO4-P (Filtered)	3.5	4.1	4.0						
Total Phos.-P (Unfiltered)	7.8	6.9	6.8						
Total Solids	1124	934	898						
Total Non. Vol. Solids	572	508	484						
Total Suspended Solids	528	132	158	150	dry STP composite				
Total Sus. Non Vol. Solids	156	46	44						
Chromium Wet DRY						2.0 53.	}	mg/Kg	
Lead Wet DRY						8.3 220.			
Copper Wet DRY						11. 300.			
Cadmium Wet DRY						0.07 1.8			
Nickel Wet DRY						0.9 24.			

Note: All results are in PPM (mg/L) unless otherwise specified. ND is "None Detected"

* 3.8% dry solids, dry solids is 32% volatile
ECY 040-2-32