



STATE OF  
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M E M O R A N D U M

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**WA-22-4010**

To: Frank Monahan  
From: Greg Cloud  
Subject: Ocean Spray Markham  
Class II Inspection

A Class II inspection was conducted by Eric Egbers and Greg Cloud on the Ocean Spray wastewater treatment facility June 20 and 21, 1978.

The plant's waste treatment system consists of one oxidation pond, one settling (polishing) pond and chlorination. The final chlorinated effluent is discharged to the Johns River estuary (Grays Harbor).

Automatic composite samplers were installed on the influent, unchlorinated effluent, and the chlorinated effluent. The influent sampler was located in the wet well prior to screening and discharge to the primary pond. The unchlorinated effluent composite sampler was located at the plant's effluent composite sampling station. The chlorinated effluent sampler was placed in the final chamber of the 'B' series contact chambers (see April 11, 1977 Class II survey).

Findings and Conclusions:

The flow measuring device is a venturi meter and could not be checked for accuracy.

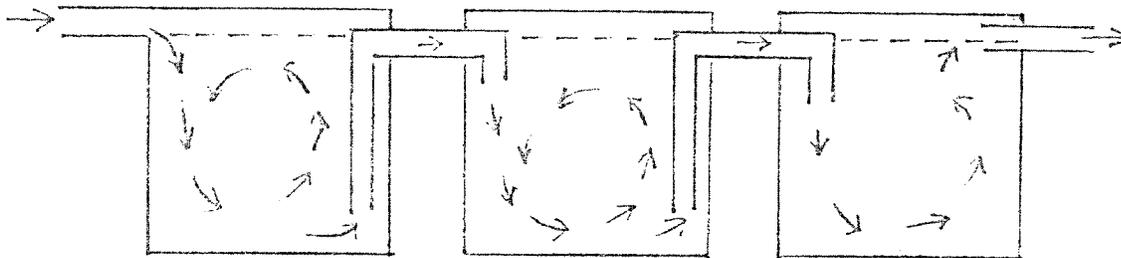
The waste treatment system works very well and is easily meeting permit limitations. Chlorine residual is the only parameter that is not being met.

The chlorination system is working but is very difficult to adjust to a 1.0 ppm residual. This is due to the metering device and the low wastewater flows. At the time of inspection the chlorine residual was in excess of 6.0 ppm.

The plant is still using the orthotolidine colorimetric method for chlorine residuals. During the inspection results were compared between orthotolidine and the DPD system. The DPD read 5.5 ppm and orthotolidine 1.5 ppm.

In the Class II report of April 1977 it was noted that orthotolidine was no longer recognized as an approved method by Standard Methods or EPA.

Adequate disinfection could probably be achieved at chlorine residuals of 1.0 ppm. Contact chamber design is marginal. The use of two sets of three in-line septic tanks with inflow and outfall piping at the same elevation probably results in short-circuiting. Improved disinfection efficiency would probably be improved if, as a minimum, inflow and outfall piping to each contact tank were as illustrated below. This is an idea on improved disinfection, not a recommendation.



All samples collected by Ocean Spray for DMR's are sent to the Westport STP for determination. The Westport STP was not inspected for lab technique and sample determination. The values reported to DOE from sample splits at the time of the inspection appear to agree well with those of the DOE Laboratory.

The photovolt pH meter used at the plant is very unreliable. It is a vacuum tube type that takes considerable time to warm up. It was checked with our buffers and calibrated to 7. The 4 buffer was then used and the meter read 5.3. With a pH 10 buffer, the meter read 7.2. All the pH values that have been reported by the plant are therefore suspect.

GC:ee

cc: Dick Cunningham  
Central Files through Skip Harlan  
Bill Yake (2)

24 Hour Composite Sampler Installations

Sampler	Date and Time Installed	Location
1. influent aliquot - 250 ml</30 min.	6/20/78 @ 1100	Wet well prior to primary pond.
2. unchlor. eff. aliquot - 250 mls/30 min.	6/20/78 @ 1110	Concrete box at and of second pond.
3. chlor. eff. aliquot - 250 mls/30 min.	6/20/78 @ 1210	Third tank at contact chamber series.

Grab Samples

	Date and Time	Analysis	Sample Location
1.	6/20/78 1310	Fecal Coli., Chlorine Res.	Chlor. eff.
2.	6/20/78 1250	All parameters (comp. grab)	Inf. into primary pond & primary
3.	6/21/78 1030 & 1320	All parameters (comp. grab)	" " " " pond eff.
4.			" "
5.	6/21/78 1020	Fecal coliform	Unchlor. eff.
6.			

Flow Measuring Device

- Type in-line flow meter, venturi
- Dimensions

a. Meets standard criteria  Yes  No Explain: The meter was not checked for accuracy.

b. Accuracy check

Actual Instan. Flow	Recorder Reading	Recorder Accuracy (% of inst. flow)
1. No way to measure	No recorder reading	
2.		
3.		

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

Field Data

Parameter	Date and Time	Sample Location	Result
Temp	6-21-78 @ 1320	Influent pipe	24.5°C
pH	" "		4.3
Cond.	" "		225 $\mu$ mhos/cm

Review of Laboratory Procedures and Techniques

Analysis by Westport STP.

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.

Analysis by DOE Lab 6/23/78	DOE			Ocean Spray results analysis by Westport STP			NPDES (Monthly average)
	influent	unchl. effluent	chl. effluent	influent	unchl. eff.	chl. eff.	
BOD <sub>5</sub> mg/l	2850	< 10	< 10		17.5		428 <sup>1</sup>
lbs/day	2949	< 10.3	< 10.3		18.1		442 <sup>1</sup>
TSS mg/l	1282	7	7	960	4		128 <sup>2</sup>
lbs/day	1327	7.2	7.2	993	4.1		133 <sup>2</sup>
Total Plant Flow MGD		.124 mgd					
pH	7.2	7.5	7.5				
Total Coliforms (#/100 ml)			< 5				
Fecal Coliforms (#/100 ml)			< 5				200
Chlorine Residual (mg/l)			6.0+* 5.5*				1.0
COD	3712	115	77				
NH <sub>3</sub> -N (mg/l)	0.5	15.2	13.9				
NO <sub>2</sub> -N (mg/l)	< .01	--	--				
NO <sub>3</sub> -N (mg/l)	< .01	--	--				
O-PO <sub>4</sub> -P (mg/l)	1.2	5.9	5.5				
T-PO <sub>4</sub> -P (mg/l)	6.1	6.3	5.9				
Turbidity (NTU)	132	27	17				
Spec. Cond.	290	527	488				
Total Solids (mg/l)	3356	296	291				
Tot. N. Vol. Solids (mg/l)	830	212	214				
Tot. Sus. Solids (mg/l)	1282	7	7				
Tot. Sus. Non Vol. Solids (mg/l)	1084	2	2				

\* Field Analysis      "<" is "less than" and ">" is "greater than"

1) 85% removal, based on DOE influent values

2) 90% removal, based on DOE influent values

The following table is the result of two grab composite samples. The samples were collected on June 20, 1978 at 1250 and June 21, 1978 at 1030 hrs. and 1320 hrs. 1000 mls of sample was collected during each grab.

Analysis by DOE lab 6/23/78	Influent pipe to primary pond	DOE primary pond eff.	NPDES (Monthly Average)
BOD <sub>5</sub> (mg/l)	1450	125	
lbs/day	1500	128	
TSS (mg/l)	31	375	
lbs/day	32	386	
Total Plant Flow MGD			.124 mgd
pH	7.4	7.4	
COD (mg/l)	2419	349	
NH <sub>3</sub> -N (mg/l)	.8	3.2	
NO <sub>2</sub> -N (mg/l)	<.01	<.01	
NO <sub>3</sub> -N (mg/l)	<.01	<.01	
O-PO <sub>4</sub> -P (mg/l)	0.6	3.5	
T-PO <sub>4</sub> -P (mg/l)	1.2	7.6	
Turbidity	30	80	
Spec. Cond.	222	345	
Total Solids (mg/l)	2052	639	
Total N. Vol. Sol. (mg/l)	152	354	
Total Sus. Non. Vol. Sol. (mg/l)	31	135	

\* Field Analysis

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