Publication No. 76-e52
WA-PS-0240

M E M O R A N D U M

June 24, 1976

To: Ken Mauermann

From: Mike Morhous

Subject: Richmond Beach STP (Metro)
Class II Inspection

On May 6, 1976 I arrived at Metro's Richmond Beach STP to conduct the above referenced inspection.

Composite samplers were installed at the influent and pre- and post-chlorinated effluents. The influent and pre-chlorinated effluent samplers were installed adjacent to the treatment plant's composite samplers located immediately downstream from the Parshall flume and at the clarifier outfall line. The post-chlorinated sampler was installed immediately below the weir located just downstream from the chlorine injection point. All three samplers were adjusted to take a 250 ml aliquot every 30 minutes.

The Parshall flume and stilling well appeared well maintained. An instantaneous flow through the flume was calculated and compared with the corresponding flow reading on the recorder located inside the plant. The accuracy of the flow recorder was 98% of the calculated flow.

On May 7 I returned to pick up the samplers and split the influent and pre-chlorinated effluent composites with Richmond Beach STP. The following table lists the results from the DOE and Richmond Beach together with the NPDES permit limitations.

	DOE			Richmond Beach		NPDES
	Inf.	Unchl. Eff.	Chl. Eff.	Inf.	Unchl. Eff.	(monthly avg.)
BOD_5 (mg/l)	120	100	84	166	123	120
TSS (mg/l)	138	60	38	76	24	70
Fecal Coliforms (colonies/100 ml)			>4000			700
pH			7.1			6.5 - 8.5
Chlorine Residual (ppm)			3.5			

The above list shows a 60% difference between the DOE and Richmond Beach TSS results (unchlorinated effluent). In conjunction with the unusually high fecal count, Richmond Beach indicated their highest fecal count for the week of May 2-8 was 1500/100 mls. It should also be noted the Richmond Beach lab uses the MPN technique for fecal coliform analysis.

Additional grab samples will be taken in the near future for fecal coliforms and TSS with DOE's Redmond lab and Richmond Beach conducting the analyses. This will provide an additional check of the Richmond Beach lab techniques and a follow-up on fecal coliform data previously mentioned.

The laboratory techniques appeared to be in order with no major discrepancies. However, during the inspection the following observations and suggestions were made.

BOD_5:

High initial D.O. readings of the unseeded blank with as much as 1-2 ppm D.O. drop in the final D.O. reading (unseeded blank).

Suggested reducing the amount of time the dilution water is aerated and storing the dilution water at 20°C.

TSS:

Using a Reeves Angel glass fiber filter, the effluent sample filtering time averaged 3-5 seconds.

Suggested using more sample in order to increase filtering time to approximately 1-3 minutes.

Fecal Coliforms - MPN:

Hot bath thermometer had 1° increments and was too short. In order to read the thermometer it had to be pulled up and out of the water.

Suggested a longer thermometer with at least 1/2° increments.

MM:ee

Enclosure

cc: Ron Pine
Doug Houck
Central Files

STP Survey Report Form

Efficiency Study

City Seattle (Metro) Richmond Beach Plant Type Primary Pop. Served 18,000 Design Capacity 3.2 mgd/ dry flow

Receiving Water Puget Sound Perennial X Intermittent

Date May 6-7, 1976 Survey Period 24 hr. Survey Personnel Morhous/Glynn

Comp. Sampling Frequency 30 min. Sampling Alequot 250 mls.

Weather Conditions (24 hr) Clear & dry Are facilities provided for complete by-pass of raw sewage? X Yes No/Frequency of bypass None

Reason for bypass N/A Can bypass be chlorinated? X Yes Pre'+ Post No

Was DOE Notified? N/A Discharge - Intermittent N/A Continuous N/A

Plant Operation

during 24-hr. comp
Total flow 1,531,000 gals. How measured Parshall flume
(X1000) Tot.
Maximum flow 2.5 Time of Max. 0815

Minimum flow 0.6 Time of Min. 0515

Pre Cl_2 only when disch. supernate/not in operation #/day Post Cl_2 100 #/day

Field Results

Determinations	Influent Max.	Influent Min.	Influent Mean	Influent Median	Effluent Max.	Effluent Min.	Effluent Mean	Effluent Median
Temp °C								
pH (Units)								
Conductivity (μmhos/cm^2)								
Settleable Solids (mls/l)								

Laboratory Results on Composites

	Influent	Effluent Chlorinated	% Reduction	lbs/day
Laboratory No.	76-1503	76-1504		
5-Day BOD ppm	120	84	30%	
COD ppm	260	200	23%	
T.S. ppm	331	283	15%	
F.N.V.S. ppm	166	159	4%	
T.S.S. ppm	138	38	73%	
F.V.S.S. ppm	24	17	29%	
pH (Units)				
Conductivity (μmhos/cm^2)				
Turbidity (JTU's)				

Lab No.	Sampling Time	Colonies/100 ml (MF) Total Coliform	Fecal Coliform	Fecal Strep	Cl_2 Residual
76-1491	5/6 1050		>4,000		
76-1492	5/6 1430		>4,000		

Additional Laboratory Results

	Chl. Eff.	
NO_3-N ppm -	0.32	
NO_2-N ppm -	0.01	
NH_3-N ppm -	17.0	
T. Kjeldahl-N ppm -		
O-PO_4-P ppm -	4.7	
T-PO_4-P ppm -	7.2	

Operator's Name Dave Hall Phone No. 546-2826

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

Type of Collection System

X Combined ___ Separate ___ Both

Estimate flow contributed by surface or ground water (infiltratio

Very little if any-new lines (1962) MGD

Plant Loading Information

Annual average daily flow rate(mgd)

Dry 2.2

Wet 3.1

Daily or instan. Peak flow rate(mgd) within last 2 y

Dry .03 (instan)

Wet 6.8 mgd (instan)

COMMENTS:

Ken Mauermann 8-241-2270

State of Washington
Department of Ecology

OLYMPIA LABORATORY

DATA SUMMARY

ORIGINAL TO: D. Houck
COPIES TO: M.M.
LAB. FILES

Source Richmond Beach STP

Collected By MORhous

Date Collected 5/6-7/76

Log Number:	76- 1491	1492	1503	1504	1505					
Station:	@10:50	@14:30	INF	CHLOR. EFF.	UNCHLOR. EFF					
pH										
Turbidity (NTU)										
Sp. Conductivity (umhos/cm)										
COD			260	200	180					
BOD (5 day)			(166) 120	84	(157) 100	(157) - Inf (124) - Eff Unchl				
Total Coliform (Col./100ml)										
Fecal Coliform (Col./100ml)	>4000	>4000								
NO3-N (Filtered)				0.32	0.07					
NO2-N (Filtered)				0.01	0.02					
NH3-N (Unfiltered)				17.	19.					
T. Kjeldahl-N (Unfiltered)										
O-PO4-P (Filtered)				4.7	4.7					
Total Phos.-P (Unfiltered)				7.2	7.8					
Total Solids			331	283	274					
Total Non. Vol. Solids			166	159	158					
Total Suspended Solids			138	38	60					
Total Sus. Non Vol. Solids			24	17	17					

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

ECY 040-2-32

Summary By Stephen P. Bell Date 5-25-76