

MEMORANDUM

January 13, 1976

To: John Glynn

From: Allen Moore

Subject: Sultan STP Efficiency Study

On November 16, 1975 an efficiency study of the Sultan oxidation ditch plant was conducted. The plant was well maintained and neat. The plant was turning out a high quality effluent with a 93% reduction in both BOD and T.S.S. A fairly high level of nitrification was accomplished with a  $\text{NH}_3\text{-N}$ , effluent concentration of 0.12 ppm. Apparently the chlorine proportionator was not working well because of chlorine residuals ranging from .75 to less than .05 and the fecal coliform numbers ranging from less than 50 to 4015 respectively. The effluent pH values were low but this may be partially explained by the naturally low pH of the water (river water) in the area. The flow totalizer was suspect and should be checked.

AWM:ee

STP Survey Report Form

Efficiency Study

City Sultan Plant Type Oxidation /ditch Pop. Served 1000 Design Capacity \_\_\_\_\_  
 Receiving Water Sultan River Perennial X Intermittent \_\_\_\_\_  
 Date 16 Nov 75 Survey Period 1000 - 1600 Survey Personnel Allen Moore  
 Comp. Sampling Frequency hourly Sampling Alequot 1000 ml  
 Weather Conditions (24 hr) Snow Are facilities provided for complete by-pass of raw sewage? X Yes \_\_\_\_\_ No/Frequency of bypass \_\_\_\_\_  
 Reason for bypass \_\_\_\_\_ Is bypass chlorinated? \_\_\_\_\_ Yes \_\_\_\_\_ No  
 Was DOE Notified? \_\_\_\_\_ Discharge - Intermittent \_\_\_\_\_ Continuous \_\_\_\_\_

Plant Operation

Total flow 110,000 gal or .44 MGD How measured Totalizer  
 Maximum flow \_\_\_\_\_ Time of Max. \_\_\_\_\_  
 Minimum flow \_\_\_\_\_ Time of Min. \_\_\_\_\_  
 Pre Cl<sub>2</sub> No #/day \_\_\_\_\_ Post Cl<sub>2</sub> 4.5 #/day \_\_\_\_\_

Field Results

Influent

Effluent

Determinations	Max.	Min.	Mean	Median	Max.	Min.	Mean	Median
Temp °C	16.0	9.5		12.0	10.0	9.0		9.5
pH (Units)	8.8	6.3		6.5	6.7	5.9		6.2
Conductivity (µmhos/cm <sup>2</sup> )	700	200		300	200	185		200
Settleable Solids (mls/l)	4.0	3.0	3.3	3.0	0.0	0.0	0.0	0.0

Laboratory Results on Composites

Laboratory No.	Influent	Effluent	% Reduction	lbs/day
	<u>75-5306</u>	<u>75-5307</u>		
5-Day BOD ppm	<u>114</u>	<u>8</u>	<u>93</u>	<u>29.4</u>
COD ppm	<u>188</u>	<u>25</u>	<u>87</u>	
F.S. ppm	<u>295</u>	<u>126</u>	<u>57</u>	
F.N.V.S. ppm	<u>156</u>	<u>75</u>	<u>52</u>	
F.S.S. ppm	<u>86</u>	<u>6</u>	<u>93</u>	<u>22.0</u>
N.V.S.S. ppm	<u>34</u>	<u>3</u>	<u>91</u>	
pH (Units)	<u>7.2</u>	<u>6.7</u>		
Conductivity (µmhos/cm <sup>2</sup> )	<u>180</u>	<u>290</u>		
Turbidity (JTU's)	<u>43</u>	<u>5</u>		

Laboratory Bacteriological Results

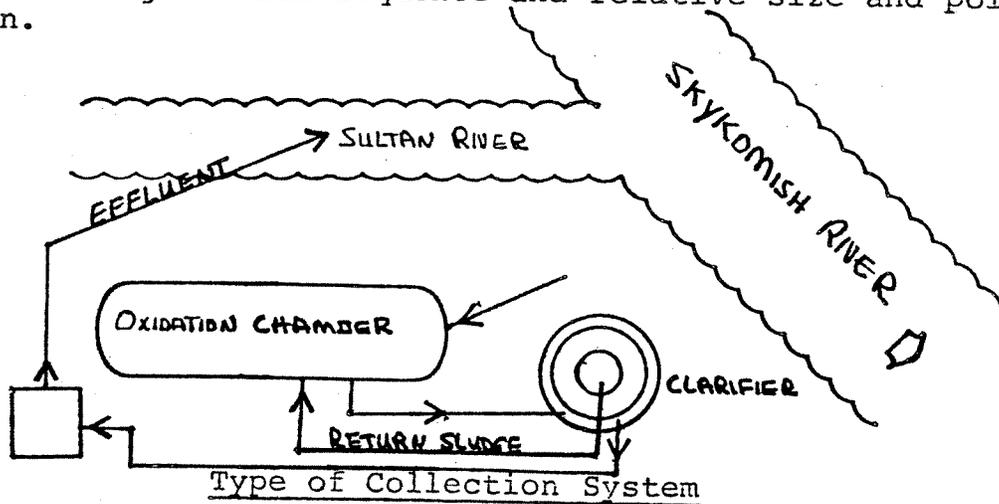
Lab No.	Sampling Time	Colonies/100 ml (MF)			Cl <sub>2</sub> Residual
		Total Coliform	Fecal Coliform	Fecal Strep	
75-150	1000		< 50		.75
75-146	1200		2160		.10
75-151	1600		4015		< .05

Additional Laboratory Results

NO <sub>3</sub> -N ppm -	5.8	
NO <sub>2</sub> -N ppm -	0.30	
NH <sub>3</sub> -N ppm -	0.12	
T. Kjeldahl-N ppm -	1.6	
O-PO <sub>4</sub> -P ppm -	2.1	
T-PO <sub>4</sub> -P ppm -	3.0	

Operator's Name \_\_\_\_\_ Phone No. \_\_\_\_\_

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



Combined  Separate  Both

Estimate flow contributed by surface or ground water (infiltration)

\_\_\_\_\_ MGD

Plant Loading Information

Annual average daily flow rate (mgd)

Peak flow rate (mgd)

Dry \_\_\_\_\_

Dry \_\_\_\_\_

Wet .6 MGD

Wet \_\_\_\_\_

COMMENTS: \_\_\_\_\_

STATE OF WASHINGTON  
DEPARTMENT OF ECOLOGY

WATER QUALITY LABORATORY

DATA SUMMARY

ORIGINAL TO: ..A.W.M.....  
COPIES TO: .....  
.....  
LAB FILES .....

Source SULTAN STP

Collected By A. Moore

Date Collected 11-17-75

Log Number: 75-5306 07 08 09

Station:	INF	EFF	UPSTR.	DOWNSTR.										
pH	7.2	6.7												
Turbidity (JTU)	43.	5.												
Conductivity (umhos/cm)@25°C	180.	290.												
COD	188.	25.												
BOD (5 day)	114.	8.												
Total Coliform (Col./100ml)														
Fecal Coliform (Col./100ml)														
NO3-N (Filtered)	-	5.8	0.10	1.5										
NO2-N (Filtered)	-	0.30	0.06	ND										
NH3-N (Unfiltered)	-	0.12	ND	ND										
T. Kjeldahl-N (Unfiltered)	-	1.6	0.14	0.12										
O-PO4-P (Filtered)	-	2.1	0.02	ND										
Total Phos.-P (Unfiltered)	-	3.0	0.06	0.04										
Total Solids	295	126												
Total Non Vol. Solids	156	75												
Total Suspended Solids	86	6												
Total Sus. Non Vol. Solids	34	3												

Note: All results are in PPM unless otherwise specified. ND is "None Detected"

Summary By Stephen P. Bell Date 11-25-75