

M E M O R A N D U M

October 7, 1976

To: Ron Robinson

From: Mike Morhous

Re: Sequim STP Class II Inspection

On July 27, 1976, Ward Andrews and myself arrived at the Sequim STP to conduct the above mentioned inspection.

Composite samplers were installed at the influent, pre-chlorinated effluent and post-chlorinated effluent. The influent sampler was located immediately above the Parshall flume. The pre-chlorinated effluent sampler was located at the clarifier outfall. The post-chlorinated sampler was located at the first manhole in the effluent discharge line. All three composite samplers were set to take a 250 ml aliquot every thirty minutes.

At 0930 a total chlorine residual analysis was conducted at the first manhole in the effluent discharge line using the LaMotte DPD Chlorine Test Kit. The chlorine residual was less than 0.1 ppm. One of the plant operators checked the chlorinator and said it had been turned down to 1 pound per day. At 1005, a second total chlorine residual analysis was conducted at the same location and the chlorine residual was 2.0 ppm.

The Parshall flume and stilling well were observed and appeared to be well maintained. In view of the January 1976, accuracy check of the flume-recorder, an additional check was not conducted at this time.

Richard Parker, Utilities Superintendent, explained that the plant was not pumping sludge from the clarifier because the truck used for hauling sludge had broken down a few days early. The clarifier sludge scraper was also not in operation because the scraper motor had burnt out and was being replaced at the time of this inspection.

During the inspection, laboratory techniques were reviewed and appeared to be in order. However it should be noted that the Sequim STP utilizes the Hach Manometer for analysis of BOD<sub>5</sub>.

On July 28, Ward and myself returned to pick up the composite samplers and split the influent and pre-chlorinated effluent samples with the STP. Simultaneous chlorine residuals and fecal coliform grab samples were also taken.

The following table lists the results of the DOE and the Sequim STP analyses together with the NPDES permit limitations.

	DOE			Sequim		NPDES
	Inf.	Unchl. Eff.	Chl. Eff 1st manhole	Chl. Eff 2nd manhole	Unchl. Eff.	(Monthly average)
BOD <sub>5</sub> (mg/l)	158	46	<40		210	30
TSS (mg/l)	175	12	14		30	30
Fecal Coliforms (col./100 mls)						200
7/28 @ 0905				>4,000		
7/28 @ 1005				Est. 28		
* Chlorine Resid. (ppm)						>0.5
7/28 @ 0905				<0.1		
7/28 @ 0930			4.0			
7/28 @ 1005				2.5 - 3.0		
Total flow (mgd)	.23					

"<" is "less than" and ">" is "greater than"  
 \* field analysis

The total suspended solids analysis was not run by the Sequim STP. However, if requested, this particular analysis may be compared at a later date by splitting a grab sample with the STP and DOE.

It should be noted in reference to the 0905 fecal coliform - chlorine residual correlation in the table that the chlorinator was checked and registered 18 pounds of chlorine per day. At the time, plant operators had no explanation for the discrepancy. However, subsequent to this inspection a chlorinator malfunction was discovered and repaired according to Bill Meyers, Assistant Plant Operator.

The BOD<sub>5</sub> comparison in the table is a correlation of the Hach Method - Sequim STP and Standard Methods technique - DOE Laboratory. It is suggested that additional consideration be given to the possibility of implementing Standard Methods BOD<sub>5</sub> technique since the Hach method is not recognized as an approved technique.

In summary, the plant personnel appeared to be conscientious operators and with the exception of the previously mentioned mechanical problems the plant appeared to be operating satisfactorily.

MM:ee

cc: Dick Cunningham  
 Central Files  
 Doug Houck

Efficiency Study

City Sequim Plant Type act. sludge Pop. Served \_\_\_\_\_ Design \_\_\_\_\_  
 oxid. ditch Capacity \_\_\_\_\_  
 Receiving Water Sequim Bay Perennial X Intermittent \_\_\_\_\_  
 Date 7/27-28/76 Survey Period 24 hrs. Survey Personnel Morhous/ Andrews  
 Comp. Sampling Frequency 30 min. Sampling Alequot 250 mls  
 Weather Conditions (24 hr) sunny Are facilities provided for complete by-  
 pass of raw sewage? Yes No/Frequency of bypass \_\_\_\_\_  
 Reason for bypass \_\_\_\_\_ Is bypass chlorinated? Yes No  
 Was DOE Notified? \_\_\_\_\_ Discharge - Intermittent \_\_\_\_\_ Continuous \_\_\_\_\_

Plant Operation

Total flow .23 mgd How measured 6" Parshall flume  
 Maximum flow \_\_\_\_\_ Time of Max. \_\_\_\_\_  
 Minimum flow \_\_\_\_\_ Time of Min. \_\_\_\_\_  
 Pre Cl<sub>2</sub> none #/day \_\_\_\_\_ Post Cl<sub>2</sub> avg. 11-12 lbs #/day \_\_\_\_\_

Field Results

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

Laboratory Results on Composites

	Influent	Effluent Cl <sub>2</sub>	% Reduction	lbs/day
Laboratory No.	<u>76-2674</u>	<u>2676</u>		
5-Day BOD ppm	<u>158</u>	<u>&lt;40</u>	<u>&gt;75</u>	
COO ppm	<u>340</u>	<u>71</u>		
F.S. ppm	<u>392</u>	<u>272</u>		
F.N.V.S. ppm	<u>186</u>	<u>194</u>		
F.S.S. ppm	<u>175</u>	<u>14</u>	<u>92</u>	
I.V.S.S. ppm	<u>24</u>	<u>4</u>		
pH (Units)				
Conductivity (µmhos/cm <sup>2</sup> )				
Acidity (JTG's)				

Lab No.	Sampling Time	Colonies/100 ml		Location	Cl <sub>2</sub> Residual
		Total Coliform	Fecal Coliform		
7/27	field	0930		1st manhole	< 0.1 ppm
	field	1005		1st manhole	2.0 ppm
'28	76-2680	0905	> 4,000	2nd manhole	< 0.1 ppm
	field	0930		1st manhole	4.0 ppm
	76-2679	0955	1,750	1st manhole	None taken
	76-2681	1005	Est. 28	2nd manhole	2.5 - 3.0 ppm

Additional Laboratory Results

24 hour composite	Inf	Cl <sub>2</sub> Eff.
NO <sub>3</sub> -N ppm -	< 0.02	< 0.02
NO <sub>2</sub> -N ppm -	0.01	0.06
NH <sub>3</sub> -N ppm -	22.0	14.0
T. Kjeldahl-N ppm -		
O-PO <sub>4</sub> -P ppm -	6.3	5.7
T-PO <sub>4</sub> -P ppm -	8.7	6.4

Russ Robinson Assistant Lab Man

Operator's Name Bill Meyers (Lab man) Phone No. 683-3883 STP

Richard Parker, Superintendent, Water 683-4908 City Hall

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

Type of Collection System

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 250,000

Dry \_\_\_\_\_

Wet 400,000

Wet \_\_\_\_\_

COMMENTS: Clarifier - Plant was not pumping sludge from clarifier - sludge truck broke down.  
Clarifier sludge scraper not in operation during portion of composite - motor being replaced at  
the time.

STATE OF WASHINGTON  
DEPARTMENT OF ECOLOGY

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OLYMPIA LABORATORY

DATA SUMMARY

Source Sequim STP

Collected By Morhous & WARD

Date Collected 7-27/28-76

Log Number: 76-2674    75    76    27    78    79    80    81

Station:	INF. COMP.	UNCHLOR. EFF. COMP.	CHLOR. EFF. 1st Maxoid	INF. 0945 7-28	UNCHLOR. EFF. 0740 7-28	CHLOR. EFF. 1st Maxoid 0955	CHLOR. EFF. 2nd Maxoid 0905	→ 1055		
pH	7.3	7.4	7.3							
Turbidity (NTU)										
Sp. Conductivity (umhos/cm)										
COD	340.	67.	71.							
BOD (5 day)	158.	46.	<40							
Total Coliform (Col./100ml)										
Fecal Coliform (Col./100ml)						1750	>4000	EST 28		
NO3-N (Filtered)	<0.02	<0.02	<0.02	0.03	<0.02	<0.02				
NO2-N (Filtered)	0.01	0.12	0.06	0.04	0.01	0.04				
NH3-N (Unfiltered)	22.	14.	14.	19.	14.	14.				
T. Kjeldahl-N (Unfiltered)										
O-PO4-P (Filtered)	6.3	5.7	5.7	5.2	5.4	5.0				
Total Phos.-P (Unfiltered)	8.7	6.4	6.4	11.	6.0	5.4				
Total Solids	392	274	272							
Total Non. Vol. Solids	186	196	194							
Total Suspended Solids	175	12	14							
Total Sus. Non Vol. Solids	24	4	4							

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