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M E M O R A N D U M

December 12, 1975

To: John Glynn

From: Phil Williams

Subject: Ferndale Sewage Treatment Plant

On Monday, November 24, Darrel Anderson and myself conducted a walk-through inspection at the City of Ferndale sewage treatment plant. In addition, grab samples were taken of the influent and effluent and analyzed for BOD, COD, and solids. The effluent was also analyzed for nutrients and coliforms.

The plant suffers from very serious engineering and operational inadequacies. It was designed to accommodate a connected population of 3500 and is only serving 2885. Even though operating at under its design capacity the influent structure is not large enough to handle the flows during rainy periods. In a vain attempt to prevent the structure from overflowing the operator had chipped out all the cement surrounding the parshall flume and splitter box. This was not enough to stop the overflow, however, and visible evidence of raw sewage was present in an adjacent field. The inside of the structure was caked with solids.

At the time of the inspection, sludge was being pumped from one of the aerated lagoons. This operation was scheduled to take one week, according to the operator, but was in its second month. During this period the lagoon is not operating. This disruption of sewage treatment seems unnecessarily long.

Built in 1970, the lagoons lasted only five years before the sludge blanket had reached a level that was interfering with the treatment process although they were designed as 25 year lagoons. This is another indication of poor design.

All facilities were poorly maintained. Glassware, including BOD bottles were visibly dirty. There was standing water on the floor of the lab. A recent fire in a waste basket had not been cleaned up leaving a large pile of ashes in one corner and the side of the refrigerator blackened. The effluent standpipe structure did not have a

screen and was surrounded by scum. The contact chamber also contained large quantities of scum and other floatables. The float on the flow meter was stuck in the up position therefore giving erroneously high readings. None of the aerators were working at the time of inspection.

The lab results were relatively good considering the overall condition of the plant. BOD and suspended solids are both under 30 ppm, although the percent reductions of these two parameters were only 76 and 64, respectively, due to low values in the influent. Fecal coliform levels exceeded standards and total coliforms were greater than 40,000/100 mls.

PW:ee

STP Survey Report Form

Efficiency Study

City Ferndale Plant Type Lagoon Pop. Served 2800 Design Capacity 3500

Receiving Water Nooksack River Perennial X Intermittent ____

Date 11/24/75 Survey Period Grab Survey Personnel Phil Williams & Darrel Anderson

Comp. Sampling Frequency -- Sampling Alequot --

Weather Conditions (24 hr) Rainy Are facilities provided for complete by-pass of raw sewage? ____ Yes X No/Frequency of bypass --

Reason for bypass ____ -- Is bypass chlorinated? -- Yes -- No

Was DOE Notified? -- Discharge - Intermittent ____ Continuous --

Plant Operation

Total flow 1.2 MGD How measured Float-type flow meter

Maximum flow ____ Time of Max. ____

Minimum flow ____ Time of Min. ____

Pre Cl_2 ____ #/day Post Cl_2 20 #/day

Field Results

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

Laboratory Results on Composites

	Influent	Effluent	% Reduction
Laboratory No.	75-5444	75-5445	
5-Day BOD ppm	84	20	76
COD ppm	170	70	59
T.S. ppm	364	234	36
T.N.V.S. ppm	224	156	30
T.S.S. ppm	76	27	64
N.V.S.S. ppm	4	3	25
pH (Units)	7.1	7.1	
Conductivity (µmhos/cm^2)	450	370	
Turbidity (JTU's)	44	27	

Laboratory Bacteriological Results

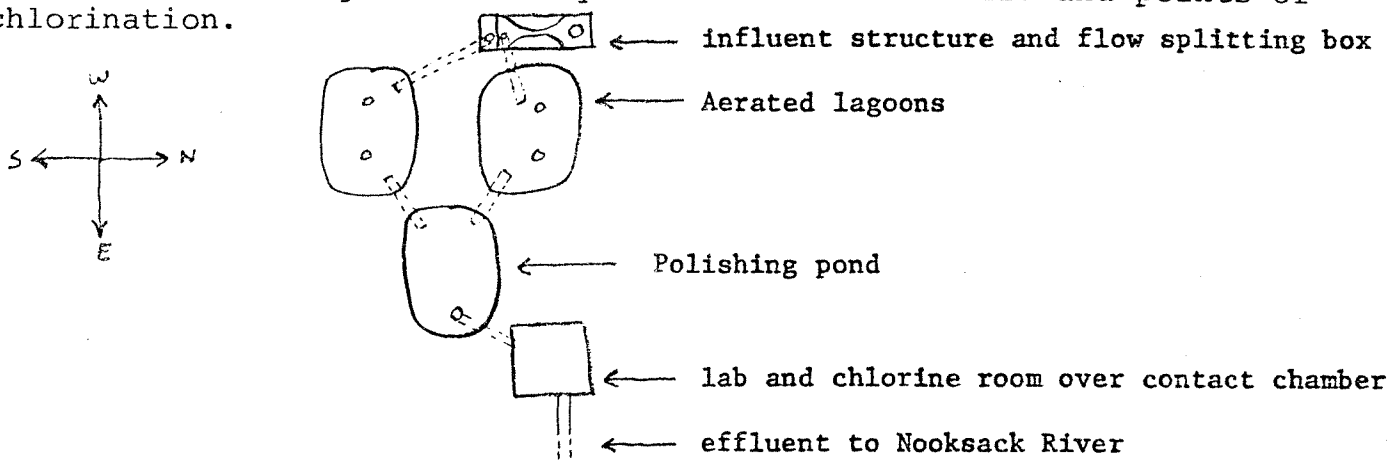
Lab No.	Sampling Time	Colonies/100 ml (MF) Total Coliform	Fecal Coliform	Fecal Strep	Cl_2 Residual
75-5446	12:10 pm	>40,000	420		.7

Additional Laboratory Results

NO_3-N ppm - .17	
NO_2-N ppm - .07	
NH_3-N ppm - 6.3	
T. Kjeldahl-N ppm - --	
O-PO_4-P ppm - 2.6	
T-PO_4-P ppm - 3.3	

Operator's Name Marten Nelson Phone No. _____

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



Type of Collection System

__ Combined X Separate __ Both

Estimate flow contributed by surface or ground water (infiltration)

significant

Plant Loading Information

Annual average daily flow rate(mgd)

Dry .5 MGD

Wet >1.5 MGD

Peak flow rate(mgd)

Dry _____

Wet >2.0 MGD

COMMENTS: poorly designed and maintained

STATE OF WASHINGTON

DEPARTMENT OF ECOLOGY

WATER QUALITY LABORATORY

ORIGINAL TO: PW

COPIES TO:

LAB FILES

DATA SUMMARY

Source Ferndale STP

Collected By P Williams

Date Collected 11-24-75

Log Number: 75-5444 45 46

Station:	inf	eff	@1210		% red							
pH	7.1	7.1										
Turbidity (JTU)	44.	27.			39							
Conductivity (umhos/cm)@25°C	450.	370.										
COD	170.	70.			59							
BOD (5 day)	84.	20.			76							
Total Coliform (Col./100ml)			>40,000									
Fecal Coliform (Col./100ml)			420.									
NO3-N (Filtered)		0.17										
NO2-N (Filtered)	.	0.07										
NH3-N (Unfiltered)		6.3										
T. Kjeldahl-N (Unfiltered)												
O-PO4-P (Filtered)		2.6										
Total Phos.-P (Unfiltered)		3.3										
Total Solids	364	234			36							
Total Non Vol. Solids	224	156			30							
Total Suspended Solids	76	27			64							
Total Sus. Non Vol. Solids	4	3			25							

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

Summary By Stephen P. Roll Date 12-5-75