

MEMORANDUM

December 15, 1975

To: Ron Pine

From: Douglas Houck

Subject: North End Sewage Treatment
Plant (Tacoma) Class II Survey

On November 4 Ron Robinson and I went to Tacoma's North End Sewage Treatment Plant where we met with Nick Fittante, the head operator. Composite samplers were set up to take 24 hour composites from both the influent and effluent. The influent sampling location was just before the comminutor. The effluent sampling location was at the end of the chlorine contact chamber. A 250 ml sample was taken every 30 minutes.

Ron and I returned the following day to pick up the composite samples and do the rest of the inspection. We met again with Nick Fittante and also Dave Hufford and Mike Minner. Two bacteriological grab samples were taken. pH and the chlorine residual were determined and the flow measuring devices checked. A sample of the plant's distilled water was also taken to be analyzed for copper and chlorides. It was determined that both the pH and chlorine residual met the NPDES permit requirements.

The sewage treatment plant measures both the flow entering and leaving. A 48.25 inch parshall flume measures the flow between the comminutor and the grit chamber. At the time of the inspection there was a slime and grease build-up along the wall surfaces. The measuring of the effluent flow is done with a sharp-crested weir at the end of the chlorine contact chamber. The weir is only partially contracted as the end contractions are only four inches from the side walls. To be fully contracted the distance from the sides of the weir to the sides of the approach channel should be no less than twice the depth of water above the crest and never less than 1 foot. It was difficult to check the parshall flume because the flow being pumped from a wet well was constantly fluctuating. The accuracy of the weir and flume was greater than 90 percent.

The 24 hour composites were split and analyzed by both DOE and the city of Tacoma. The table below gives the results along with the weekly average concentration of the NPDES permit.

	<u>DOE</u>		<u>Tacoma</u>		<u>Permit</u>
	<u>Influent</u>	<u>Effluent</u>	<u>Influent</u>	<u>Effluent</u>	<u>Effluent</u>
BOD ₅ (mg/l)	120	84	170	65	178
T.S.S. (mg/l)	122	41	129	41	140
Fecal Coliforms (colonies/100 ml)		35			1500

The fecal coliform concentrations was approximately 35 colonies per 100 ml.

The city of Tacoma is in compliance with every permit condition but S4-a. The operator presently in charge of the day-to-day operation of the plant is not a certified Class III operator but is under a one year stipulation to upgrade to a Class III. Although not stipulated in the permit, the 24 hour composite samples are not being refrigerated during the sampling period and improved operation and maintenance to keep slime growth and grease build-up from the sidewalls to a minimum is needed. The city of Tacoma said that these faults would be remedied in the near future. Overall the treatment plant is fairly well maintained and operated.

DH:ee

STP Survey Report Form

Efficiency Study

City Tacoma Plant Type Primary Pop. Served 50,000 Design 10 MGD
 Receiving Water Commencement Bay Perennial Intermittent
 Capacity
 Date 11-4/5-75 Survey Period 24 hr. Survey Personnel Houck, Robinson
 Comp. Sampling Frequency 30 min. Sampling Alequot 250 ml
 Weather Conditions (24 hr) 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 How measured
 Maximum flow Time of Max.
 Minimum flow Time of Min.
 Pre Cl₂ #/day Post Cl₂ #/day

Field Results

Influent

Effluent

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

Laboratory Results on Composites

	<u>Influent</u>	<u>Effluent</u>	<u>% Reduction</u>	<u>lbs/day</u>
Laboratory No.				
5-Day BOD ppm	<u>120</u>	<u>84</u>	<u>30.0%</u>	
COD ppm				
T.S. ppm				
T.N.V.S. ppm				
T.S.S. ppm	<u>122</u>	<u>41</u>	<u>66%</u>	
N.V.S.S. ppm				
pH (Units)				
Conductivity (µmhos/cm ²)				
Turbidity (JTU's)				

Laboratory Bacteriological Results

Lab No.	Sampling Time	Colonies/100 ml (MF)			Cl ₂ Residual
		Total Coliform	Fecal Coliform	Fecal Strep	
	1005		40		>0.5
	1120		30		>0.5

Additional Laboratory Results

NO ₃ -N ppm	-
NO ₂ -N ppm	-
NH ₃ -N ppm	-
T. Kjeldahl-N ppm	-
O-PO ₄ -P ppm	-
T-PO ₄ -P ppm	-

Operator's Name Nick Fittante Phone No. _____

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)

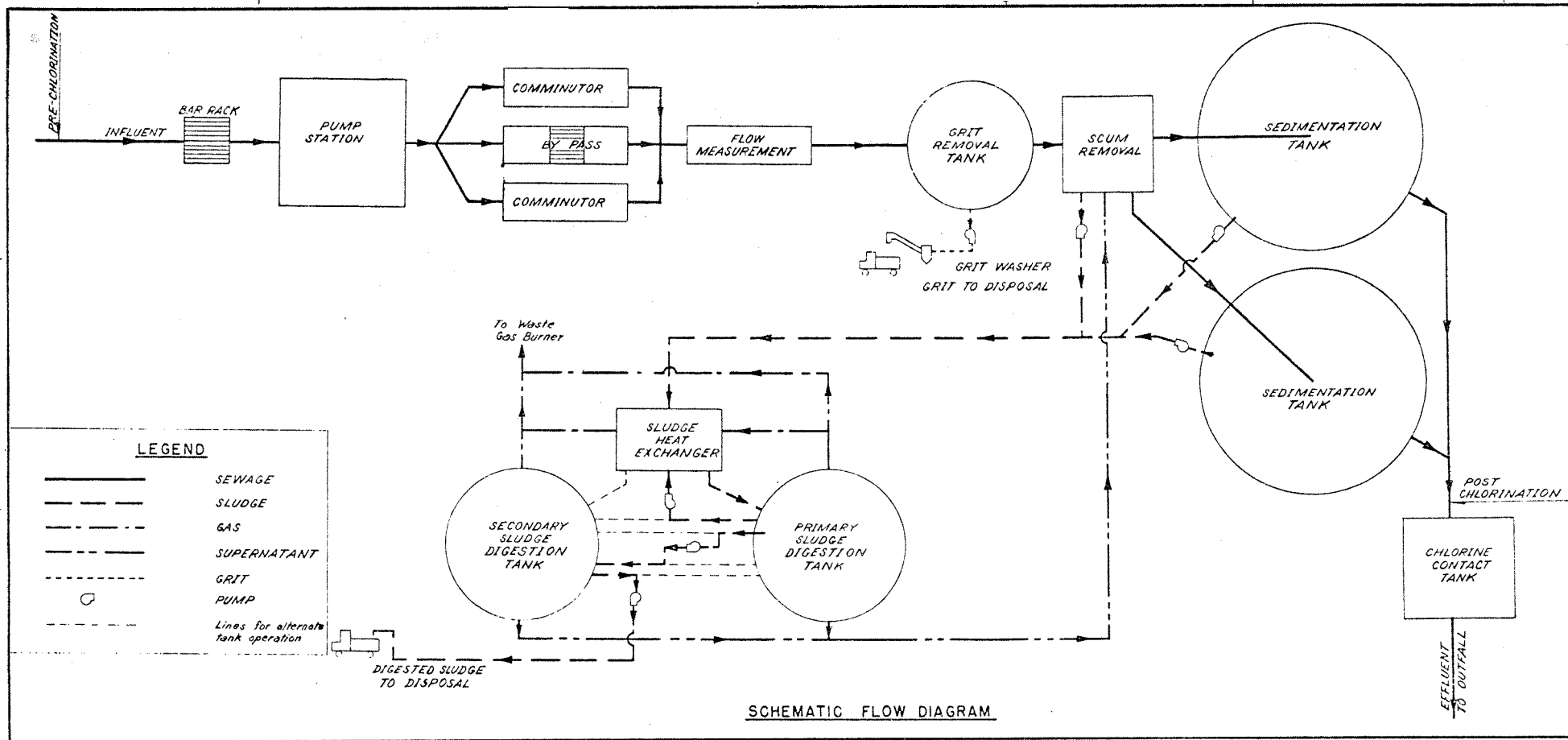
Dry _____

Dry _____

Wet _____

Wet _____

COMMENTS: _____



PROGRAM

9:30 A.M.

Remarks By:

JAMES BEHLKE, Executive Director, Washington State Water
Pollution Control Commission

A. L. RASMUSSEN, Mayor, City of Tacoma

DAVID D. ROWLANDS, City Manager

GILBERT SCHUSTER, Director of Public Works

OPERATION OF THE PLANT

Sewage is pre-chlorinated as it enters the plant in the upper left corner of the Schematic flow diagram above. It goes through a shredder (bar rack), flow measurement devices and then to the Grit Removal Tank where sand is settled out and removed. Sewage then passes into sedimentation tanks where floating materials are skimmed off by water jets. The settled sewage is then chlorinated and held in Chlorine contact tanks to kill bacteria after which it is pumped into outfall lines and discharged 700 feet out into the Bay at a depth of 90 feet. The settled solids (sludge) is pumped to primary digesters where bacteria breaks the sludge into liquids, solids and gases. The gas is piped off and burned to heat the digester and the plant itself. In the secondary tank, the digestion process is completed with the liquid being drawn off and the residue (digested sludge) removed from the tank and hauled away.

WASHINGTON STATE DEPARTMENT OF ECOLOGY
MUNICIPAL PERMIT
 COMPLIANCE EVALUATION CHECKLIST (CLASS II)

NAME OF FACILITY

Boston Way plant
City of Tacoma (Northend Plant #3)
4082 N. Waterview St.
Tacoma, WA.

Date: November 5, 1975

Inspector: Ben Robinson

Permit No: WA-003721-4

Region: SOUTHWEST

FACILITY REPRESENTATIVE Nick Fittante & Dave Hufford

I. TYPE OF INSPECTION (check one or more):

1. Annual Compliance Evaluation
2. Grant Compliance
3. Other (specify) _____

II. COMPLIANCE SCHEDULE

REQUIRED ACTION	SCHEDULED DATE	ON SCHEDULE	BEHIND SCHEDULE
-----------------	----------------	-------------	-----------------

<u>Satisfied Plan of Study</u>	<u> </u>	<u>OK</u>	<u> </u>
<u>Prepare Facilities Plan</u>	<u>30 days after grant offer</u>	<u> </u>	<u>no offer</u>

III. EVALUATION OF TREATMENT FACILITY

- | | |
|--|--|
| 1. Operation and Maintenance
O & M Manual Available S <input type="checkbox"/> U <input type="checkbox"/>
YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> <u>NOT one manual BUT info is on site</u> | 4. Alternate Power Source YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> |
| 2. Sludge Handling Practices S <input checked="" type="checkbox"/> U <input type="checkbox"/> | 5. Flow Measurement Device S <input checked="" type="checkbox"/> U <input type="checkbox"/> |
| 3. Chlorination Equipment S <input checked="" type="checkbox"/> U <input type="checkbox"/> | |

IV. SAMPLING AND LABORATORY PROCEDURES

- | | |
|---|--|
| 1. Sampling Locations S <input checked="" type="checkbox"/> U <input type="checkbox"/> | 3. Analytical Procedures S <input checked="" type="checkbox"/> U <input type="checkbox"/> |
| 2. Sampling Procedures S <input type="checkbox"/> U <input checked="" type="checkbox"/> <u>NOT cooling Comp. Samples</u> | 4. Record Keeping S <input checked="" type="checkbox"/> U <input type="checkbox"/> |

V. EFFLUENT CHARACTERISTICS

1. Samples Collected YES NO
Fecal-yes Grab; 24 Hrs. Composite; yes Split
2. Lab results attached YES NO
3. Effluent Appearance (check if visible)
 Oil and grease NO; suspended or settleable solids NO; floating solids or foam SOME; other (specify) _____

VI. EFFLUENT LIMITATIONS

Parameter	Permit Condition				Self-Monitoring Data			
	Monthly Average		Weekly Average		Monthly Average		Weekly Average	
	Conc.	lb./day	Conc.	lb./day	Conc.	lb./day	Conc.	lb./day
a. BOD ₅								
b. SS								
c. Flow								
d. pH								
e. Fecal Coliform								

Parameter	Survey Data			
	Permittee Results		D.O.E. Results	
	Conc.	lb./day	Conc.	lb./day
a. BOD ₅				
b. SS				
c. Flow				
d. pH				
e. Fecal Coliform				

VII. RECEIVING WATER VIOLATIONS: YES NO Unknown (attach lab results if sample taken)

Nature of Violation _____

VIII. SUMMARY OF EVALUATION

In compliance: YES NO

Items not in compliance:

_____ Effluent Limitations _____ Alternate Power
 _____ Compliance Schedule _____ Other _____

IX. RECOMMENDATIONS:

No Action _____ Revise Permit _____ Other Will send a copy of
 _____ Further Information _____ Follow-Up Letter This checklist to
 Improved O & M _____ Enforcement Action The entity & operator.

REMARKS:

This plant appears to be well operated and maintained. Some better housekeeping is needed to keep slime growth and grease buildup from the surface water level of the clarifiers and channels etc. There is also a floating layer of grease and floatable material where the effluent and chlorine are mixed. The composite samples have not been iced during the sampling period. I was assured that all of my findings would be done at once. The Lead Operator is new with only two weeks at this plant, he is just now setting the work sched.

Re: City of Tacoma Northend Treatment Plant #3
 From - Ron Robinson D.O.E.

Primary plant - Lead Operator Nick Fittante

Inspection of the entire facility was made in the company of Nick Fittante, Dave Hafford and Mike Mimer. During the inspection I made the following comments about the operation and maintenance of this facility.

1. The clarifier weirs are not level around the entire perimeter.
2. The channels, ~~and~~ clarifier, ~~and~~ contact chamber and skimming unit could use daily hosing down and scrubbing.
3. Bags and other material removed from the comminutor should be dumped into the garbage not left on the concrete walkway.
4. The laboratory looked clean and the chlorine application system was well maintained.
5. The chlorine contact chamber could use some kind of skimming device even though this plant design was approved by the Water Pollution Control Agency.

I feel the ~~major~~ problems at this plant will be taken care of right away but the lead operator has to have a little more time. My inspections have not been frequent enough ~~at~~ labels.

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

WATER QUALITY LABORATORY

DATA SUMMARY

ORIGINAL TO:
D.H.
 COPIES TO:

 LAB FILES

Source RUSTIN STP

Collected By D. Hoven

Date Collected 11-4/5-75

Log Number: 75-5117 18 19 20 21

Station:	INE	EFF	1005	1120	DIST. H ₂ O LAB								
pH													
Turbidity (JTU)													
Conductivity (umhos/cm)@25°C													
COD													
BOD (5 day)	120.	84.											
Total Coliform (Col./100ml)													
Fecal Coliform (Col./100ml)	-	-	EST 40	EST 30									
NO3-N (Filtered)													
NO2-N (Filtered)													
NH3-N (Unfiltered)													
T. Kjeldahl-N (Unfiltered)													
O-PO4-P (Filtered)													
Total Phos.-P (Unfiltered)													
Total Solids													
Total Non Vol. Solids													
Total Suspended Solids	122	41											
Total Sus. Non Vol. Solids													
Chlorides					<1.								
Copper					<.01								

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