Publication No. 75-e27

MEMORANDUM

July 14, 1975

To: Gerry Calkins

From: Grover Scott Jeane II

Subject: Vancouver Westside STP Class II Survey

May 27 and 28 Shirley Prescott and I completed a 24-hour effluent sampling program at the City of Vancouver's Westside STP. The study was to comply with the sampling requirements of a Class II Inspection. The plant facilities are shown in the attached labeled photographs.

The following items were noted during the course of the survey.

1) The headbox for gravity feeding the plant (see photograph) and the secondary clarifiers (see photograph) needed cleaning.

2) Sludge was observed rising in the chlorine contact basin.

3) All washdown water and water sprayed over the aeration basin is pumped from the contact chamber. This procedure increases the incidence of operator contamination by disease, virus and other pathogens from direct and airborne contact.

4) An experimental garden plot was being installed adjacent to the sludge incinerator facility. The plot was fertilized by dewatered sterilized sludge (see photograph).

No measurement was made to verify the flow meter due to lack of a suitable site to measure flow. The plant uses a Sparling conical propeller and is in the process of verifying the flow meter by draining the contact basin and using the basin to measure an accurate volume.

The average flow during the survey was 7.1 mgd. The range extended from a minimum flow of 4.0 mgd at 0400 hrs. on the 28th to 9.0 mgd at 1100 hrs. the same day. Maximum permit flow is 12 mgd.

The permit conditions and survey composite values for BOD and T.S.S. are shown below:

	Permit Conditions		DOE Survey	
	mg/L	lbs/day	mg/L	#lbs./day
BOD	114	6,747	25	1,481
T.S.S.	186	11,017	18	1,066

Fecal coliform samples were collected at four different times and all analyses were less than 10 colonies per 100 ml. Permit condition is 200 colonies per 100 ml. Chlorine residuals ranged between 0.5 and 1.0 for 15 seconds and 1.2 and 2.0 ppm for 3 minutes. The effluent from the chlorine contact chamber seemed to be higher in suspended solids than the secondary clarifier effluent. This could possibly be from the sludge buildup in the chamber.

The composite effluent pH was 7.5 which is within the range allowed by the permit.

Nutrient analysis indicate that the plant discharged 11.6 mg/L (687 lbs. per day) of NH_3 and 6.0 mg/L (355 lbs. per day) of total PO_4, Total Nitrogen (Kjeldahl) daily loading was 924 lbs. per day or 15.6 mg/L.

Composite samples were split with their laboratory but were accidentally discarded by their personnel. No evaluation of their test techniques are available.

The plant's effluent meets all permit criteria at the date of the survey.

GSJ:ee

STP Survey Report Form

Efficiency Study

City Vancouver West Side Plant Type Ex. Air Pop. Served _____ Design Capacity _____

Receiving Water Columbia River Perennial X Intermittent _____

Date 5-28-75 Survey Period 24 hr. Survey Personnel Grover Scott Jeane II & Shirley Prescott

Comp. Sampling Frequency every other hour Sampling Alequot flow proportional

Weather Conditions (24 hr) dry 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

Avg. flow 7.1 MGD How measured Sparling conical propeller

Maximum flow 9.0 MGD Time of Max. 1100 hr. 5-28-75

Minimum flow 4.0 MGD Time of Min. 0400 hr. 5-28-75

Pre Cl_2 _____ #/day Post Cl_2 _____ #/day

Field Results

Determinations	Influent Max.	Influent Min.	Influent Mean	Influent Median	Effluent Max.	Effluent Min.	Effluent Mean	Effluent Median
Temp °C	21.5	20.0		21.0	22.5	21.5		22
pH (Units)	8.8	8.2		8.5	7.6	7.0		7.2
Conductivity (µmhos/cm²)	800	700		750	780	625		760
Settleable Solids (mls/l)	12	11	11.5		Trace	Trace	Trace	

Laboratory Results on Composites

	Influent	Primary Effluent	Effluent	% Reduction	lbs/day
Laboratory No.	_____		_____		
5-Day BOD ppm	415	>415	25	94	1,481
COD ppm	546	556	92		
T.S. ppm	741	707	436		
T.N.V.S. ppm	335	343	297		
T.S.S. ppm	197	138	18	91	1,066
N.V.S.S. ppm	22	19	0		
pH (Units)	7.5	6.8	7.5		
Conductivity (µmhos/cm²)	710	760	690		
Turbidity (JTU's)	70	53	11		

Laboratory Bacteriological Results

Lab No.	Sampling Time	Colonies/100 ml (MF) Total Coliform	Fecal Coliform	Fecal Strep	Cl_2 Residual ppm 15 sec.	3 min.
75-2055	1000	40 estimated	< 10		0.5	1.2
2056	1100	< 20	< 10		1.0	2.0
2057	1330	280 est.	< 10		0.5	1.2
2058	1500	< 20	< 10			

Additional Laboratory Results

NO_3-N ppm -	0.52
NO_2-N ppm -	None detected
NH_3-N ppm -	11.6
T. Kjeldahl-N ppm -	15.6
O-PO_4-P ppm -	4.3
T-PO_4-P ppm -	6.0

Operator's Name Lloyd Davie Phone No. 696-8265

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

(see photographs)

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)

Dry _____

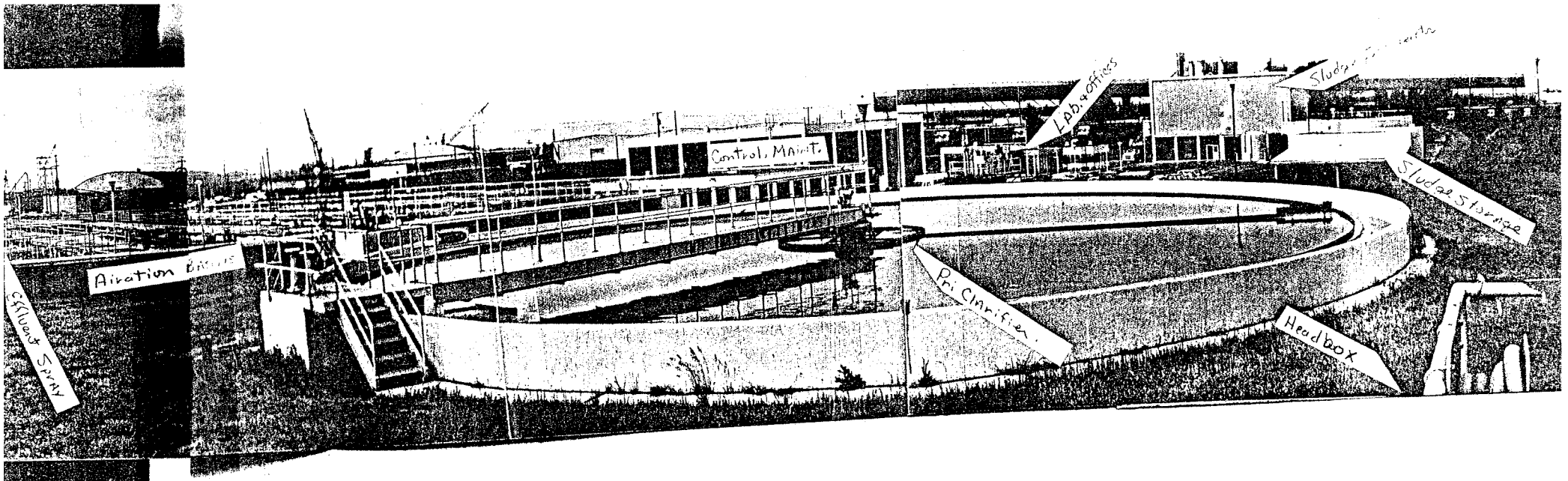
Wet _____

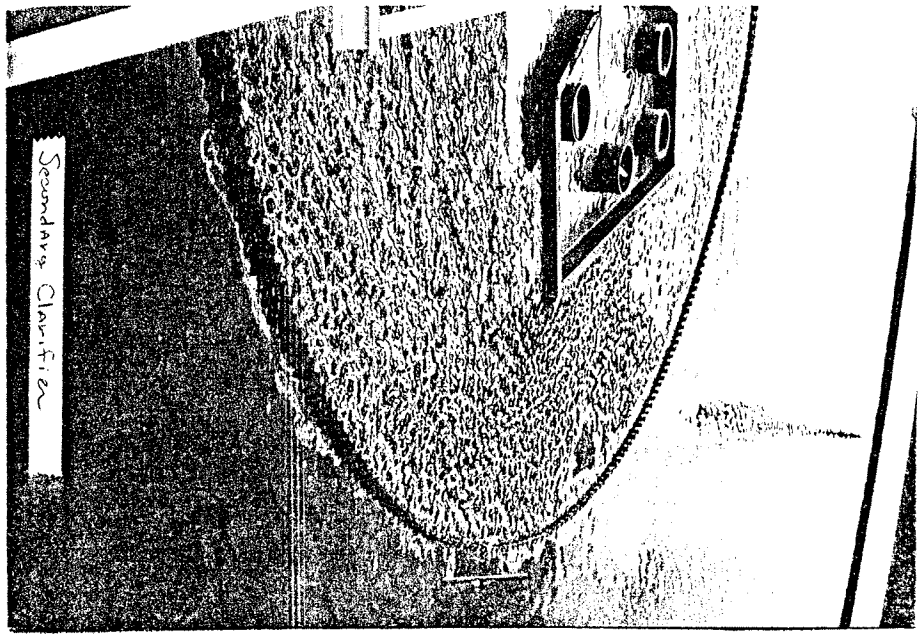
Peak flow rate(mgd)

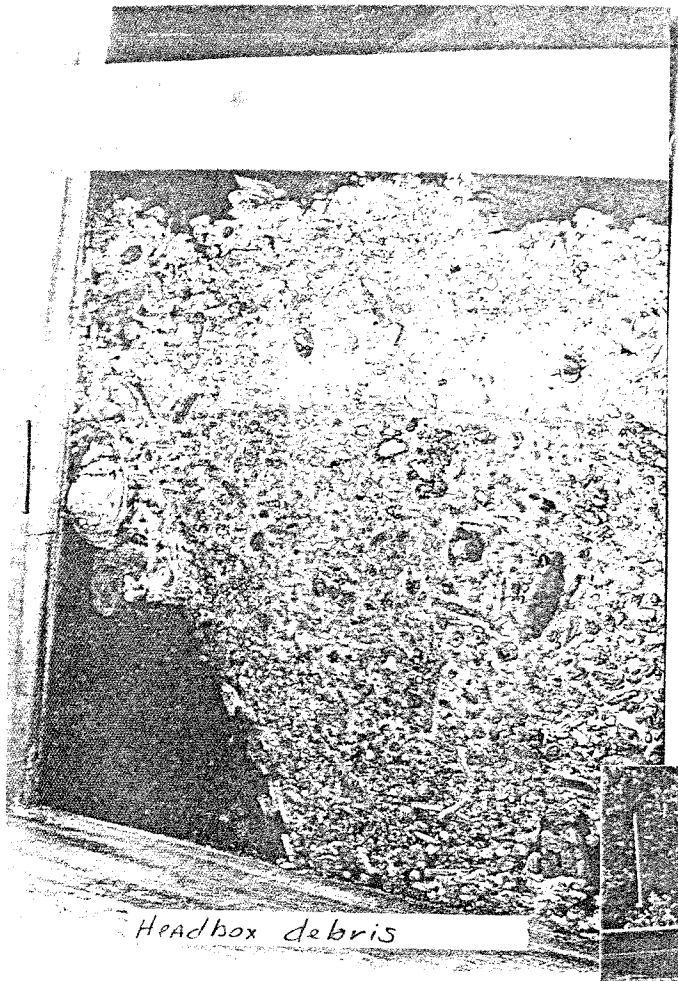
Dry _____

Wet _____

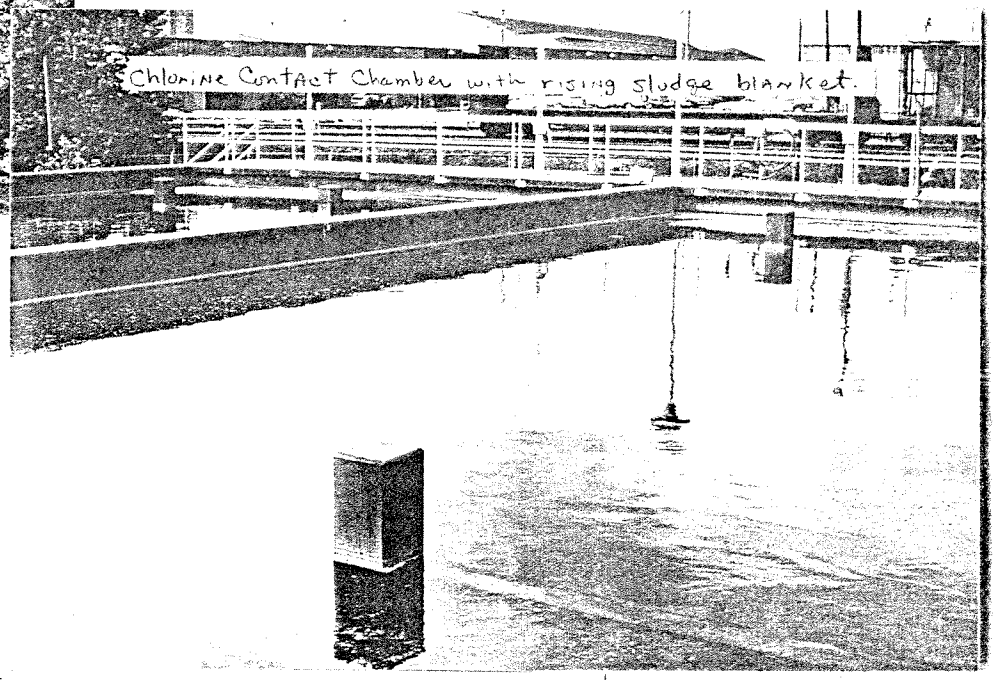
COMMENTS: _____


Control, Maint.
Lab. & offices
Sludge Dewatering
Sludge Storage
Aeration Basins
Pri. Clarifier
Effluent Spray
Headbox

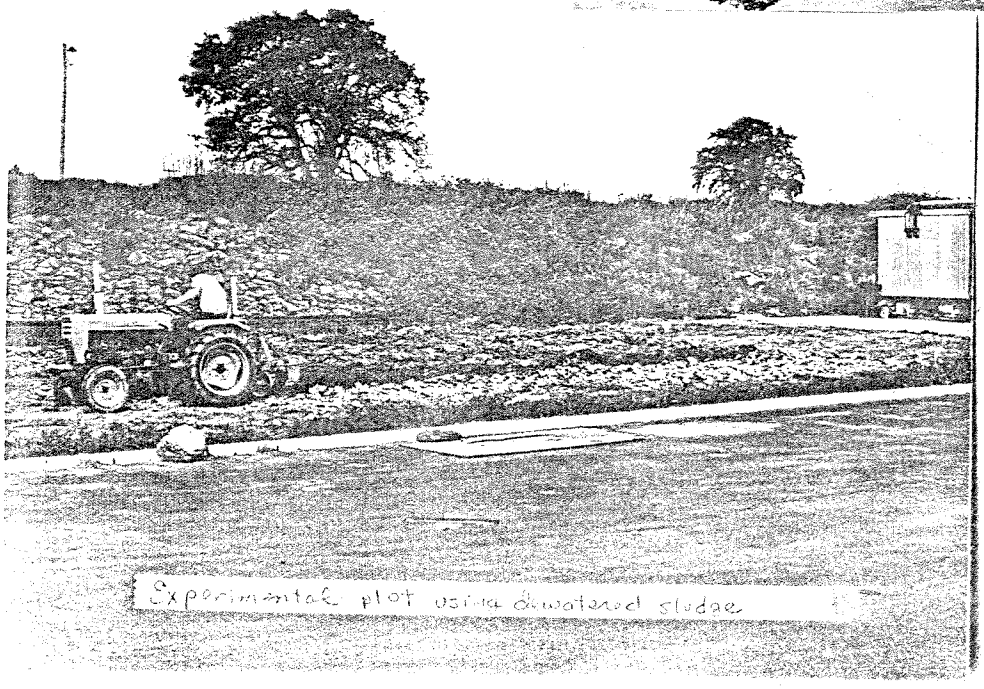

Secondary Clarifier



Headbox debris



Chlorine Contact Chamber with rising sludge blanket.



Experimental plot using dewatered sludge

MEMORANDUM

CHECK
INFORMATON ____
FOR ACTION ____
PERMIT ____
OTHER ____

TO: Howard, Vern, Scott Jeane, Shirley Prescott and Ron Pine

FROM: Gerry Calkins

SUBJECT: Class II Compliance Inspection - Vancouver, West Side STP

State of Washington Department of Ecology

DATE: May 28, 1975

On May 28, 1975, Jim Hileman, EPA, Shirley, Scott and I made the Compliance Inspection of the Vancouver West Side STP. The cooperation and assistance received from Shirley and Scott was appreciated very much.

Jim Hileman and I met with Tom Kolby, Chief Operator in charge of operations, Lyman Golden, Chief Operator in charge of Maintenance and Pat McKee, Process Analyst. I proceeded to go over permit condition by condition with Vancouver staff.

S1.a. Checked DM Reports and monthly report forms of plant.
c. No problem as of this evaluation. Reminded them of study that will be due with application for new permit.

S2.a. Not able to verify flow meter due to lack of proper wiers ~~in~~ on pipe area due to same.
TOC will be accomplished within two weeks. Equipment has been just installed.
BOD needs to be done on hourly 24 hr. composite. This is not being done now. We discussed each test as they are listed in permit.

b. Reports are being submitted on regular basis.
c. Record retention is being accomplished
d. Recording of results kept in several files but being done.
e. meets permit
f. Using standard methods.

S3. Schedule of Compliance. City engineering staff now working on I/I and will be on schedule.

S4.a. Group II operator on plant site daily and shift operators in charge as Group II. They have a staff of 25 and will be adding 4 more on staff this summer. Operation and maintenance is satisfactory to fair. Grounds need more attention. Use of chlorinated effluent not a good practice and use of this for spraying aeration basin poses a health hazard from drifting spray on operator. No inventory of spare parts. Money is budgeted and they have ordered parts - not delivered yet. Lubrication and maintenance records are being set up. They have a complete record in daily log that will be transferred to master file. Golden stated that there is a lack of help for maintenance.
b. Solid Waste Disposal - will meet July 15, 1975 plan submittal for approval.

S5.a and b. Will be dealt with in I/I study
c. Discussed and informed Vancouver that the option for their take over permit program.
d. In compliance.
e. Will submit report with I/I study.

General Conditions: All general conditions were discussed. Conditions G2.,3., 4., and 5. were discussed in depth so that personnel understood same.

We toured plant and inspected sampling points. Checked effluent visually (see check list attached). Checked records kept by Chief of Operation. Very complete file kept on operation and monthly reports. They were neat and orderly. They have good system.

We spent time in-lab with chemist Ayman Aboulezz and Pat McKee. I did not go over each test with Ayman as I know he has the knowledge and capability to meet the testing requirements of the waste discharge permit. I checked the records that Ayman is presently keeping and this system will meet the requirements of the permit.

The following items were discussed with Tom and Pat.

1. Proper utilization of plant personnel.
2. Eliminate use of chlorinated effluent for hosing and spraying down. - HEALTH HAZARD.
3. Better process control and utilization of personnel.
4. 24 hour composite hourly on the hour. This will be in new permit.
5. More help on operation and maintenance.
6. Have flow meter verified for proper plant operation.
7. Keep chlorine contact chamber cleaner (sludge removal).
8. Alternate power source.
9. Record keeping.
10. Sampling points.

There were many more points discussed, but these are the main ones.

I received the fullest cooperation from the Vancouver staff.I found them to be very courteousand helpfulX on the 27th and 28th of May. This has always been the pattern at the Vancouver plant.

I found the evaluation that I conducted to be meaningfulX and interesting. However, the audit performed by Jim Hileman will determine my effectiveness.

GPC:ks

WASHINGTON STATE DEPARTMENT OF ECOLOGY

INDUSTRIAL PERMIT
COMPLIANCE EVALUATION CHECKLIST (Class II)

NAME OF FACILITY

CITY OF VANCOUVER - WEST SIDE PLANT
1800 WEST DEL MONTE WAY
VANCOUVER, WA. 98668

Date: MAY 28, 1975
Inspector: GERRY CALKINS
Permit No: WA-002435-0
Region: S.W. REGION

FACILITY REPRESENTATIVE TOM KOLBY - PAT McKEE

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

1. ____ Annual Compliance Evaluation
2. ✓ Other (specify) CLASS II COMPLIANCE EVALUATION

II. COMPLIANCE SCHEDULE

REQUIRED ACTION	SCHEDULED DATE	ON SCHEDULE	BEHIND SCHEDULE
NONE REQUIRED			

III. EVALUATION OF TREATMENT FACILITY

1. Operation and Maintenance — S ____ U ____
2. Sludge Handling Practices — S ✓ U ____
3. Alternate Power Source — YES ____ NO ✓
4. Flow Measurement Device — S ✓ U ____ not able to verify - see memo

IV. SAMPLING AND LABORATORY PROCEDURES

1. Sampling Locations — S ✓ U ____
2. Sampling Procedures — S ____ U ____
3. Analytical Procedures — S ✓ U ____
4. Record Keeping — S ✓ U ____

V. EFFLUENT CHARACTERISTICS

1. Samples Collected — YES ✓ NO ____
   ____ Grab; ____ Hrs. Composite; ____ Split
2. Lab results attached — YES ✓ NO ____
3. Effluent Appearance (check if visible)
   - ____ Oil or grease
   - ✓ Floating solids or foam
   - ✓ Suspended or settleable solids
   - ✓ Other (specify) SOLIDS SETTLING IN CONTACT CHAMBER

VI. EFFLUENT LIMITATIONS

1. Permit Conditions

Parameter	MTHLY Daily Average	WEEKLY Daily Maximum
a. BOD	114 mg/L	171 mg/L
b. S.S.	186 mg/L	279 mg/L
c. Fecal coliform	200/100 ml	400/100 ml
d. pH	RANGE 6.5 TO 8.5	
e. Flow	12.0 MGD	

2. Self-Monitoring Data

Daily Average	Daily Maximum	Report Date

3. Survey Data

Parameter	Daily Average	Daily Maximum
a. Lab. SHEETS ATTACHED		
b.		
c.		
d.		
e.		

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 ____

____ Further Information ✓ Follow-Up Letter

✓ Improved O & M ____ Enforcement Action

REMARKS:

SEE ATTACHED MEMO's