ENVIRONMENTAL PROTECTION AGENCY

OFFICE OF ENFORCEMENT

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An Overview Of Pilot Compliance Monitoring

NATIONAL ENFORCEMENT INVESTIGATIONS CENTER

DENVER, COLORADO

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Environmental Protection Agency
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AN OVERVIEW OF PILOT COMPLIANCE MONITORING

January 1978

National Enforcement Investigations Center

Denver, Colorado

CONTENTS

I. INTRODUCTION

Section 402 of the Federal Water Pollution Control Act Amendments of 1972 required the establishment of a National Pollutant Discharge Elimination System (NPDES) permit program. The permit program is carried out by EPA or by individual States under EPA auspices. The permits, which are issued to industrial and municipal point source dischargers of pollutants, require the permittee to monitor effluents to verify compliance with the permit's effluent parameters. The self-monitoring Discharge Monitoring Reports (DMR's) are submitted to the appropriate regulatory agency, either EPA or the State with NPDES permit issuing authority. Based on these reports, the regulatory authority can determine the degree of compliance or non-compliance of individual permittees.

The EPA has conducted a wide variety of compliance inspections, ranging from simple "walk-throughs" to resource-intensive "sampling inspections" which have extended over 30 days with 24-hour compositing of up to 20 outfalls. As a rule, neither the walk-through nor extensive sampling inspections thoroughly evaluate the permittee's self-monitoring procedures. Either the permittee is not monitoring while EPA inspectors are on-site, or sampling inspector workloads preclude this additional evaluation.

Pilot compliance monitoring (PCM) inspections could be considered a compromise between walk-throughs and sampling inspections. The primary objective of PCM inspections was to assess the quality of self-monitoring data reported by individual permittees. In addition, process control and operation-and-maintenance procedures were evaluated. Quality control for both field operations and analytical procedures was reviewed and adherence to construction compliance schedules was determined.

In 1976, a cooperative endeavor was initiated between the National Enforcement Investigations Center (NEIC) and the Water Enforcement Division - Headquarters Office of Water Enforcement. From January 1976 through October 1977, the NEIC conducted 106 PCM inspections in EPA Regions I, II, III, V and IX.

This report outlines the procedures followed in the PCM inspections and summarizes the results and findings.

II. SUMMARY AND CONCLUSIONS

1. A PCM inspection assesses the quality of self-monitoring data as well as the permittee's quality control for both field operations and analytical procedures. Traditionally, these areas of permittee responsibility are not thoroughly evaluated during normal walk-through or compliance-sampling inspections.

2. The average time required to conduct a PCM inspection, including clerical work and preliminary preparation, ranged between 9 and 17 work-days with an average of 12 work-days. Of the total, approximately 75 percent was professional time. The range is occasioned by the complexity of limitations in the permit and the adequacy of the permittee's self-monitoring program. By comparison, a walk-through inspection requires about half this time, 4 work-days, and possibly less if the subsequent report is brief; while a full sampling inspection requires an extensive resource commitment of 25-42 work-days with an average of 32 work-days. Based on the reliability of the information obtained and the advantage of conducting an on-site quality control examination, it is concluded that the PCM approach is a more cost effective use of manpower than either the walk-through or full-scale sampling inspection for purposes of verifying self-monitoring data and identifying potential violators in a more expeditious manner for follow-up with full-scale sampling.

3. Based on PCM inspections conducted by NEIC, the self-monitoring practices of a majority of NPDES sources are significantly deficient. Most of the sources had major deficiencies in one or more of the general areas of flow monitoring, sampling techniques and analytical techniques. Agency use of these data for tracking permit compliance varies from questionable to unreliable.

4. At sources where previous inspections had been performed and self-monitoring deficiencies had been noted, the PCM inspections indicated that these were continuing in number and degree.

5. A major difficulty in completing PCM inspections was the inability of obtaining, in a timely manner, the results from the permittee of self-monitoring and performance samples of known value provided to the permittee for analysis during the investigation. In some instances, up to three months and numerous phone calls were required to obtain the data. This in turn had an adverse effect on trying to expedite responsive reports. The original objective of a turn-around time of four weeks or less for report transmittal to the Regions was seldom met for this reason.

6. A field team highly experienced and knowledgeable in the areas of municipal and industrial process control, sampling, flow monitoring, treatment technology, operation and maintenance procedures, and analytical procedures was required to conduct a PCM inspection. This should be a relatively long-term assignment so that the team can establish the necessary working relationships. Implementation of this system would shift skills necessary in Regional S&A Divisions away from the non-professional sampler technicians to higher graded professionals and thus may require a long lead-in period.

7. Larger and more complex sources tend to be better prepared to participate in PCM inspections. These sources also provide more rapid and technically complete responses with which to complete reports. However, the smaller, less complex sources can benefit from PCM since they generally have less exposure to training in proper procedures.

8. Once the ancillary objective of the PCM inspection is understood by the permittee, i.e., to improve the accuracy of their procedures and results, most of them welcome the personal attention and instruction which accompanies the PCM approach.

9. PCM findings can be used for enforcement purposes, although the extent of utilization must be made on a case by case basis. Discrepancies in self-monitoring procedures and techniques certainly justify the issuance of Administrative Orders to enforce corrective action. Follow-up inspections could then result in judicial referrals for demonstrated bad faith or failure to comply with the Order. Referrals could be made initially in cases of discovered Compliance Schedule violations or unpermitted discharges.

10. Although PCM inspections cannot completely replace full-scale compliance sampling inspections from an enforcement standpoint, they serve as a cost-effective method of assessing self-monitoring practices and, therefore, the quality of Discharge Monitoring Reports. Through application of the PCM method and diligent follow-up inspections to assure use of prescribed techniques, self-monitoring data should be capable of yielding a reliable assessment of those sources which need follow-up enforcement studies and actions.

III. STUDY METHODS

EPA presently conducts two types of NPDES inspections, viz, a simple walk-through, and a full-scale resource-intensive compliance sampling inspection. The former generally does not include actual observations of procedures and techniques used by the permittee. The latter concentrates on the collection of sampling data by EPA personnel with concomitant high manpower utilization.

The PCM technique relies heavily upon the ability of the EPA observers to qualitatively evaluate compliance with required procedures and self-monitoring practices employed by the permittee. Hence, relatively sophisticated and highly experienced field teams are required. A team generally consists of a senior engineer, an experienced chemist and, occasionally, a biologist, microbiologist or senior technician.

The procedures NEIC followed in conducting the PCM inspections were as follows:

1. Collect background information and files from the EPA Regional Office and State on specific permittees.

2. Require by 308 letter* the permittee to conduct his NPDES self-monitoring sampling and analyses on a predetermined date to coincide with the inspection team's visit. The permittee is also advised at this time that verification/performance samples would be provided for chemical analysis.

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* *See Appendix A for sample 308 letter.*

3. Observe self-monitoring practices including sampling, flow monitoring and analytical procedure practices as they were performed by the permittee. Operation and maintenance procedures were also evaluated. The permittee is requested to transmit results of self-monitoring verification samples to NEIC as soon as possible.

4. Advise permittee in the field of self-monitoring discrepancies after the PCM inspection is completed. The inspection team also advises the permittee of the proper procedures and techniques to be followed.

5. Follow-up with the permittee after the inspection with regard to self-monitoring data and verification /performance samples for the dates of the inspection.

6. Report of evaluation and findings from NEIC to the EPA Regional Office.

IV. STUDY FINDINGS

A. MONITORING DEFICIENCIES

Ninety-nine percent (99%) of the 106 sources evaluated under the PCM had at least one major self-monitoring deficiency. A major deficiency is one which could result in questionable or unreliable DMR results.

The majority of deficiencies noted were in the areas of inadequate flow monitoring and accuracy verification, compositing, sample preservation, sample holding times and analytical techniques. Figure I shows the frequency of deficiencies noted at the 106 permittees visited. The following is a narrative summary of the major deficiencies noted during the PCM inspections.

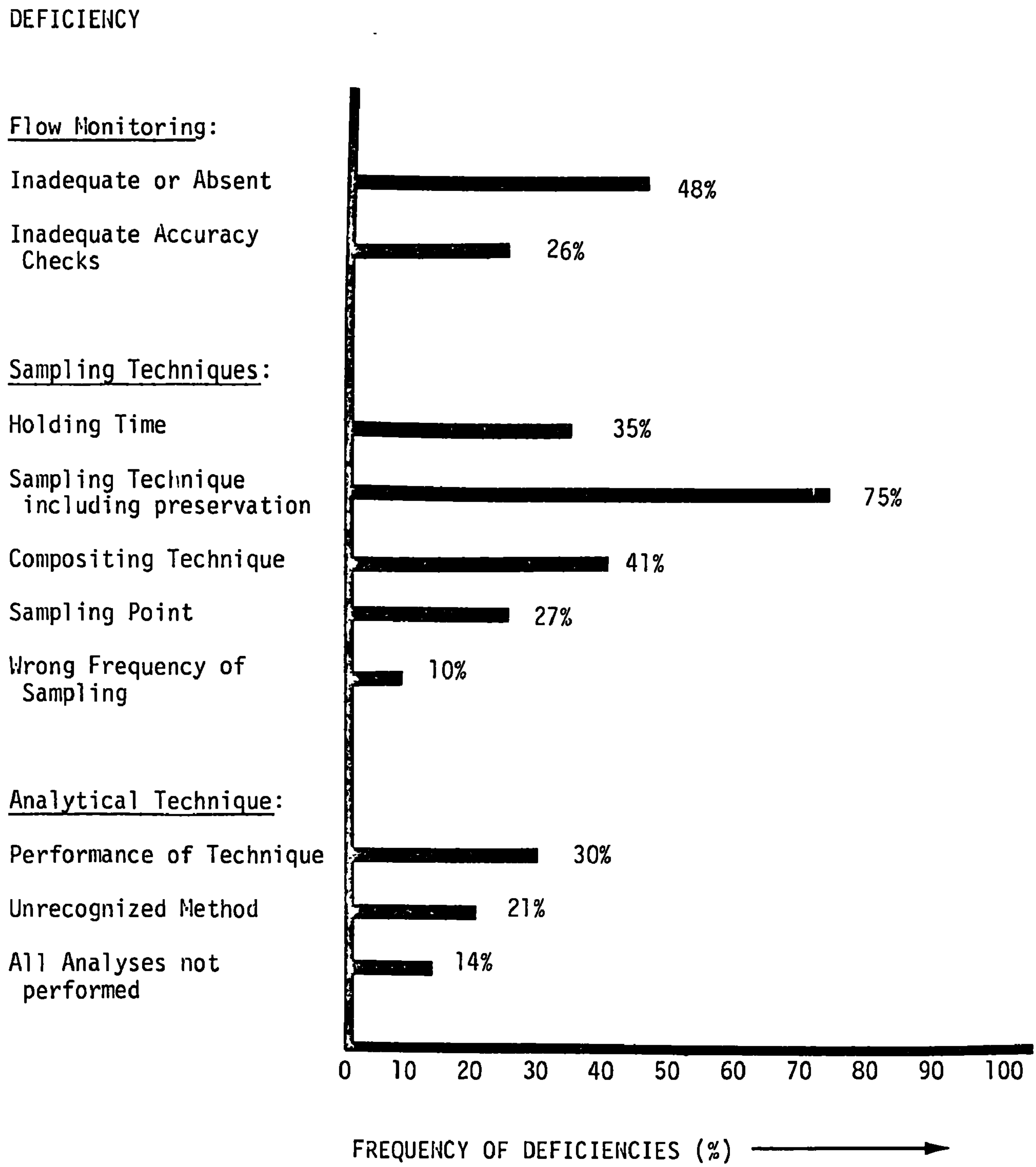
Flow Monitoring

Flow monitoring ranks very high on the list of problems noted at the various sources inspected. Below are some of the recurring problems.

1. Flow-monitoring device improperly installed - The major problem encountered was that insufficient upstream and downstream pipe/channel distance had been provided for location of the sensing device, resulting in excessive turbulence.

FIGURE I

FREQUENCY OF DEFICIENCIES
BASED ON 106 PERMITTEES VISITED
(1976 - 1977)



2. Inappropriate selection of monitoring device type and/or size - At several installations, the flow-monitoring device was oversized and unable to provide an accurate flow signal under existing wastewater flow rate extremes.

3. Improper or inadequate calibration - The primary flow-monitoring device was often not properly calibrated and hence resulted in an erroneous flow rate signal. Even if the primary device was accurately installed and calibrated, the flow recorders and/or totalizers had often been inaccurately calibrated or had drifted out of calibration. In general, the frequency of calibration of flow-monitoring devices was inadequate.

4. Poor Maintenance - The accuracy of the flow-monitoring equipment was directly affected by the device's maintenance. These devices were often found clogged with debris, sensor elements were coated with grease, etc.

5. No flow-monitoring devices installed on the wastewater streams - The frequency with which this problem was encountered appears to be directly related to the emphasis that the appropriate control agency placed upon accurate flow readings. In states where permit concentration requirements are the primary target of enforcement, very little emphasis was placed on flow-monitoring. As a result, numerous flow-monitoring problems were noted in these States during PCM inspections.

Sampling Techniques

Problems related to wastewater sampling techniques were another major area of deficiency noted during PCM inspections. The following are some of the problems noted.

1. Sampling locations - Problems with sampling locations have included sampling at a point where there has been insufficient upstream mixing of waste streams to ensure representative samples, sampling an effluent line at a point upstream of additional contributions to the effluent, and sampling the influent to the treatment process downstream of points where plant recycle streams enter the influent line.

2. Inadequate sampling containers - Repeated problems had been noted with the use of plastic containers to obtain oil and grease samples and non-sterilized samplers to obtain the bacteriological samples.

3. Inadequate sample compositing equipment - In several instances where automatic 24-hour compositing devices had been in use, the sampling flow rate was judged insufficient to guarantee representative suspended solids sampling. On occasions, time-proportional samples were collected where flow-proportional composites had been specified.

Sample Preservation and Holding Times

Inadequate emphasis had been placed upon proper sample preservation and adherence to proper sample holding times. Common problems were: metals samples not properly acidified; thio-sulfate not placed in the bacteriological sample bottles; BOD_5 samples not properly refrigerated during the sample compositing period and/or during the sample holding and transport periods; oil and grease samples not acidified, bacteriological and BOD_5 samples not analyzed within the appropriate sample holding period, and sulfite samples not preserved.

Analytical Deficiencies

In general, NPDES permittees and/or their contract laboratories used analytical procedures approved by the EPA. This fact alone, however, did not assure that correct analytical procedures were performed. Almost without exception, quality control programs at the various laboratories were found to be non-existent. Replicate samples were seldom performed and the use of standard additions (spiked samples) was rarely encountered. This situation might be anticipated at the smaller non-commercial laboratories but should never be encountered at the larger contract laboratories that are employed to provide accurate data.

Recurring problems had been noted with the use of the orthotolidine techqniue for chlorine residual and the use of various kit techniques for metals. Liberties were routinely taken with the BOD_5 techniques, including improper preparation and incubation of dilution water, improper seeding and improper calculations.

Permit Deficiencies

A significant number of permit deficiencies were discovered during the PCM inspections.

Permit does not address all of the existing outfalls at the facility - Outfalls may have been overlooked during the permit preparation and/or piping changes made subsequent to the date of the permit issuance.

Permit does not address all pertinent parameters for the wastewaters being discharged - Industrial facilities change their manufacturing processes and often fail to inform the regulatory agency that these changes have affected their wastewaters. Also, in the preparation of NPDES permits, certain parameters may have been overlooked for a given facility. In some cases, however, an excessive number of parameters and/or frequency of monitoring was included in the permit.

Inappropriate sampling frequency - It was often apparent during the PCM Inspections that the NPDES permit for a facility stipulated wastewater monitoring requirements or other factors which did not accurately define the variability of the various manufacturing processes contributory to the waste stream discharged. For example, single monthly grab samples are often stipulated for a manufacturing process which can change significantly, not only throughout the month, but daily.

B. ADDITIONAL INFORMATION OBTAINED FROM PCM INSPECTIONS

The PCM inspections yielded valuable information regarding the quality of generated DMR data. However, additional side benefits were realized from auxiliary information obtained during these inspections, which may in the long run be of equal importance to the Agency. Some of the auxiliary data which were obtained during the inspection are discussed below.

Evaluation of Facilities' O&M Practices

By talking with the facility personnel and doing a thorough walk-through of the treatment processes (plus manufacturing operations, where applicable), it was possible on a one-day inspection to obtain a relatively thorough evaluation of potential O&M problems which may adversely affect the quality of the self-monitoring data. Facility personnel, particularly those directly involved in the operation of the treatment processes, were generally willing to discuss such problems. The NEIC inspectors were often able to glean from these discussions information related to such problems as infiltration and inflow, industrial waste loads, coordination between the treatment plant personnel and the manufacturing personnel, etc., as well as to formulate an opinion as to the general competence of the operating personnel. From such information, it is often possible to predict whether the reported DMR data accurately reflected the actual wastewater effluent characteristics. Also, during the plant walk-through the inspector was able to evaluate maintenance practices at the facility and predict whether the treatment processes are susceptible to periodic mechanical upset.

Evaluation of Facilities' Treatment Plant Design

Some NEIC inspectors spent a considerable amount of time during each of the PCM inspections evaluating the overall design of the waste treatment facilities. Design problems ranged in magnitude from the relatively simplistic (e.g., lack of redundancy on pumping systems, chemical feed systems, instrumentation loops) to the very significant problems of over-designed or underdesigned facilities. At one facility investigated, the current wastewater flow rate was only 12% of the actual installed design capacity. As a result, the operator had no operating flexibility. Accurate flow measurements could not be obtained because the flow devices were much too large for the existing flows. The activated sludge system could not be run in any of the conventional modes due to the low organic load to the facility. In effect, a multi-million dollar facility was being operated as an extended aeration lagoon, the lagoon being, in this case, one of the concrete aeration basins provided.

Sludge Handling and Disposal

Another area of concern which was noted repeatedly was that of sludge handling and ultimate sludge disposal. Several of the installations visited were designed and constructed with sludge incineration systems. To date, these sludge incinerators have not been operated due to the energy shortage. Instead, dewatered raw sludge which was chemically treated with lime was landfilled.

Evaluation of Contract Laboratorites and Sampling Services

Whenever the PCM inspection teams encountered a situation where a facility was using a contract laboratory and/or sampling service for the collection and/or analysis of their self-monitoring samples, the team chemist and biologist made an inspection of these contract services. Some of the laboratories were extremely conscientious and were found to be using EPA-approved analytical techniques with no apparent problems. At other laboratories, a complete disregard of approved analytical procedures was observed.

State certification of the contract laboratories did not appear to guarantee the quality of the data being generated. Rather, the quality of the data appeared to be directly tied to the management orientation of the laboratory. In general, data originating at contract laboratories was as questionable and unreliable as permittee self-monitoring data.

C. MANPOWER REQUIREMENTS

The following table summarizes the Personnel Investment for the various types of EPA evaluations. One should note that the PCM inspections require more manpower than the simple walk-through, but substantially less than the resource-intensive compliance sampling inspections. This personnel investment includes review of permit files, Regional Office and State contacts, the inspection itself and the preparation of correspondence and reports (including typing). Only direct costs have been included.

Pilot Compliance Monitoring Work Days Required/Inspection

Inspection Type	Number of Inspections	(Average)	(Range)
		Work days per Inspection *	
Walk-Through Inspections	--	4**	--
NEIC PCM Inspections	106	12	9-17
NEIC Compliance Sampling Inspections (Typical Examples)	16	32	25-42

* *Direct costs only*
** *Region IX estimate*

V. LEGAL CONSIDERATIONS

The primary objective of the PCM program was to determine the quality of self-monitoring data submitted by permittees under the NPDES program. The authority to require complete and effective monitoring is well established in the Federal Water Pollution Control Act Amendments of 1972 (FWPCA) (33 USC 1151 et seq) and its legislative history.*

Section 308(a) of the FWPCA conveys broad authority to the EPA Administator to require whatever actions are reasonably necessary to assure compliance with effluent limitations. Section 402(a)(2) authorizes the Administrator to "prescribe conditions for such permits.... including conditions on data and information collection, reporting, and such other requirements as he deems appropriate".

The authority for the Administrator to take reasonable steps to assure the reliability of compliance and self-monitoring methods used by the discharger is firm. An actual PCM inspection, as well as requring a permittee through a Section 308 request to perform his self-monitoring, is well within the Administrator's authority. This authority extends to requiring permittees to analyze performance/verification samples for quality assurance of monitoring techniques and procedures.

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* *A Legislative History of the Water Pollution Control Act Amendments of 1972 (Committee Print), p. 800 +.*

One must evaluate situations on a case by case basis to determine the use of PCM data for enforcement purposes. The severity of the permit violations, as well as the past recalcitrance of the permittee, must be considered. PCM inspectors found that discrepancies were generally due to ignorance rather than bad faith attitudes. In these cases, every effort was made by the inspectors to instruct the permittee in the proper procedures to follow. Even in those cases where good faith was demonstrated, a Notice of Violation and Order may be justified requiring compliance in an expeditious manner. This approach has previously been used by Regional Offices based on NEIC PCM results. The Order not only required compliance with certain permit conditions but "certification of compliance" as well. Certified self-monitoring data has been used as the basis for a referral to the U.S. Attorney.

Notice of Violations and Administrative Orders are not the only enforcement tools which can be used to follow up on PCM inspections. Other findings, such as unpermitted discharges or violation of construction compliance schedules, could easily justify immediate referrals. In summary, PCM inspections can be used to pursue a wide variety of enforcement options or identify areas for in-depth studies. At a minimum, follow-up evaluations may provide fruitful enforcement alternatives.

APPENDIX A

SAMPLE 308 LETTER

APPENDIX A

Date

ABC Company

Pursuant to the authority contained in Section 308 of the Federal Water Pollution Control Act (33 U.S.C. 1318), representatives of the Environmental Protection Agency (EPA), specifically of the National Enforcement Investigations Center, or Region V, may conduct an inspection of your company's manufacturing operations, together with associated waste treatment and discharge facilities, within the next six months. The inspection is designed to carry out EPA's responsibilities under Section 308. The persons who will be conducting the inspections will be authorized representatives of the Environmental Protection Administration as referred to in Section 308 and will present appropriate credentials. They will observe your process operations, inspect and evaluate your monitoring and field and laboratory equipment and methods, examine monitoring and calibration records and other appropriate records, and will be concerned with related matters.

The EPA visit will focus on procedures and, accordingly, it is requested that company monitoring be conducted under usual practices and procedures. On-the-spot observations shall be made of sample collecting, field preservation of samples, handling and transport of samples and field and analytical equipment used in the actual conduct of analytical/laboratory procedures. If analyses are conducted by an outside contractor, EPA personnel will also evaluate analytical tests and methods as they are being performed. Please inform the inspectors if any tests are conducted other than at your main manufacturing location.

It is requested that plant process flow diagrams, waste treatment plant flow diagrams, and treatment plant design data be made available to the inspectors during the first day of their inspection. Also, the inspectors will desire splits from the company obtained NPDES compliance monitoring samples. EPA will supply its own sample containers and preservation, as required.

The EPA inspectors will also provide verification samples for analytical evaluation by the company for certain pollutant parameters. The results of these tests, as well as the results of the compliance monitoring sampling taken during the inspection, should be transmitted to the EPA's National Enforcement Investigations Center, Denver Federal Center, P.O. Box 25227, Denver, Colorado 80225, within two weeks after the EPA inspection.

Please inform the appropriate plant personnel to expect such an inspection to insure a rapid plant entry and to insure that these surveys are conducted without unncessary delay.

We will appreciate your full cooperation in this matter.

Sincerely yours,

APPENDIX B

TYPICAL PILOT COMPLIANCE MONITORING INSPECTION REPORT

APPENDIX B

Environmental Protection Agency

Office of Enforcement

COMPLIANCE MONITORING EVALUATION

October 27, 1977

National Enforcement Investigations Center
Denver, Colorado

INTRODUCTION

On October 27, 1977 personnel from the National Enforcement Investigations Center (NEIC) conducted an NPDES pilot compliance monitoring inspection at the The main purposes of this inspection were to ascertain the quality of the self-monitoring data reported monthly by the Company to the and ultimately to Region USEPA, and to determine whether the facility was in compliance with the conditions of its NPDES permit. As part of this inspection, the design adequacy of the Company's wastewater treatment facilities and related operation and maintenance practices were evaluated to determine what impact they might have on the self-monitoring data.

A letter sent to the Company by the United States Attorney, dated September 26, 1977 (copy attached) announced the intention of the USEPA to conduct this inspection within the next six months. However, no advanced notice of the specific date of the inspection was given to the Company.

The inspection consisted of five basic steps: 1) observation of the sample collection, preservation and transport techniques, 2) visual evaluation and verification of the wastewater flow monitoring techniques, 3) critical overview of procedures used in analyzing the samples, 4) a walk-through inspection of the manufacturing operations and wastewater treatment facilities, and 5) review of record-keeping procedures, maintenance files, and engineering design data.

NEIC personnel left a standard sample for total suspended solids (TSS) with the Company's laboratory personnel and requested that the sample be analyzed and the data results returned to the NEIC within two weeks. The Company uses the contract laboratory services of Laboratories in for analysis of their 5-day Biochemical Oxygen Demand (BOD_5) samples. To check on the adequacy of company's sample preservation procedures and to evaluate the accuracy of analytical techniques, NEIC personnel spiked a portion of the October 26th daily composite sample with a known BOD_5 sample and requested that both the spiked and unspiked samples be analyzed by . NEIC personnel also visited Laboratories on November 9th and evaluated their laboratory techniques. In addition, NEIC personnel split with the Company personnel the daily wastewater composite sample obtained by the Company at Outfall 001 for October 27, 1977. The split sample was returned to the NEIC laboratories and analyzed for TSS. The door to the Company's sampling station at Outfall 001 was secu'ed with an NEIC padlock during the entire time that the October 27th sample was being collected to insure the integrity of this sample.

Based on the observations made during this inspection, the data obtained, and the information reviewed, the inspection form presented later in this report was completed and conclusions and recommendations were prepared.

SUMMARY AND CONCLUSIONS

On October 27, 1977 personnel from the National Enforcement Investigations Center (NEIC) conducted an NPDES pilot compliance monitoring inspection at the Wastewater flow monitoring, sampling, and analyzing procedures were observed and the wastewater treatment facility design, operation, and maintenance were evaluated. The findings and conclusions from this inspection are discussed below.

Flow Monitoring

The Company has an 18-inch, standard rectangular weir with end contractions and a Foxboro Model 40 continuous flow recorder with float level sensor at Outfall 001. The weir is not sharp-crested, but rather appears to be constructed of angle iron stock. The Company had no documentation to prove that the weir and flow recorder installation had been installed and calibrated as a broad crested weir.

Field measurements of depth of flow over the weir (H) were made by NEIC personnel. Using tabulated data for standard sharpcrested rectangular weirs and the H values obtained, instantaneous flow rate values were determined. These values were compared against the flow recorder values for the same times. The Company data was approximately 11% lower than the calculated data at high flow rates and about 36% lower at an average flow rate. The differences in flow rates may be attributed to the fact that the field calculations were made assuming the weir was sharp-crested (a best available assumption since broad-crested weirs must be individually calibrated).

Alternatively, the Company's weir/flow recorder installation may not be accurate, and the data being generated may not be within the ± 10% accuracy range required by the EPA.

Sampling Techniques

The Company obtains daily composite samples of the Outfall 001 effluent with a De Zurik piston type automatic sampler. Due to the physical construction of this unit, it is not certain whether accurate suspended solids samples can be obtained through the strainer-type slits of its inlet. Also, the De Zurik sampler is configured to obtain a flow proportioned sample based on the depth of flow in the wastewater channel. The Company's sampler was designed to be used with a sharp-crested rectangular weir and may not be obtaining a true flow proportioned sample with the existing broad-crested weir.

The sample obtained by the De Zurik sampler is not stored under refrigerated conditions during the compositing period. It is collected in a metal pot which is exposed to the ambient temperature of the sampling shed. This deviation from EPA standard procedures could significantly affect the BOD_5 and TSS data obtained from these samples. At elevated temperatures the samples would tend to degrade and the sample data would be lower than if proper refrigeration techniques were employed.

Analytical Techniques

A major deficiency noted in the Company's analytical techniques is that the BOD_5 samples are not set-up for incubation within the 6-hour time period recommended by the EPA. The Company uses the contract laboratory services of for the BOD_5 analyses. The daily composite BOD_5 samples are acidified and stored in a refrigerator at the mill. On Mondays and Thursdays they are sent via commercial parcel delivery service in unrefrigerated containers to . The Company could not produce any corroborative study data to indicate that these deviations from standard holding times and preservation procedures do not adversely affect the quality of the BOD_5 data generated. Also, nc or EPA approval of these deviations could be produced.

Company personnel do not analyze replicate or blank samples during the TSS tests. They also do not routinely participate in EPA or State quality assurance programs. Results supplied by Company personnel for the TSS check sample left with them by the NEIC inspectors were within acceptable limits. The results of the TSS analyses conducted by both the Company and the NEIC on the splits of the Company's daily composite sample for October 27, 197/ were essentially identical. Both the check sample and split sample results indicate that the Company personnel are accurately performing the TSS analyses.

Analytical procedures used by Laboratories for the BOD_5 analyses were judged to be acceptable by the NEIC inspectors. A portion of the October 26, 1977 effluent composite sample was spiked by the NEIC inspector with a quantity of a quality control check sample, and sent along with the unspiked sample to for analysis. The data results returned from the laboratory indicated a 94% recovery of the calculated spiked value, an acceptable result.

Operation and Maintenance

It did not appear during this inspection that the wastewater treatment operations were being optimized, i.e. the visual quality of the effluent being produced was below that normally anticipated from a comparable treatment system. Several factors may contribute to this lack of optimization. Company personnel have had less than six months experience operating the biological secondary system. There are only three individuals involved with the operation of the facility and these individuals must also perform quality control functions for the paper mill. Maintenance of the weir in the primary clarifier was found to be sorely lacking. Debris accumulated on the weir and misalignment of the unit contribute to short circuiting in the clarifier unit and additional solids loading on the secondary unit. Lastly, certain design decisions (e.g. final settling tank weir configurations, lack of scum removal from the secondary plant, return of sludge dewatering centrate directly to the secondary plant, etc.) appear to present a physical ceiling on the quality of effluent which can be produced.

NPDES Permit Compliance

The Company's self-monitoring data indicate that since July 1, 1977 when the new permit limitations went into effect there have been no violations of the average or maximum daily limitations for the permitted effluent parameters. Daily average values for quantities of total suspended solids and BOD_5 discharged have been 38% to 88% and 11 to 65%, respectively, of the quantities allowed under the permit. The higher values were associated with the biological plant start-up period. The plant appears to be stabilizing with time.

As discussed above under Flow Monitoring, Sampling Techniques, and Analytical Procedures, several deficiencies were noted during this inspection which can adversely affect the quality of the self-monitoring data being generated by the Company. Although the Company's self-monitoring data indicates that the effluent being discharged at Outfall 001 is well within the permit limitations, the accuracy of this data is suspect and it is therefore not possible to determine the Company's degree of compliance with the NPDES permit requirements.

The Company does appear to have met all of the compliance dates stipulated in the permit.

RECOMMENDATIONS

The following measures are recommended to correct the deficiencies noted during this inspection:

1. The design and installation of the rectangular weir unit and flow recording device located at Outfall 001 should be evaluated. The weir unit as it is currently installed is not sharp-crested. If it is found that the flow recorder and composite sampling device being used at this location were designed to be used with a sharp-crested weir, a new sharp-crested weir unit should be installed and the flow monitoring and sampling devices accurately adjusted for the new weir.

2. Once item 1 above is accomplished, a series of tests should be run to prove that the existing De Zurik sampling device can accurately collect total suspended solids samples from the wastewater channel. Corroborative grab sampling at the weir discharge could be used for this purpose.

3. The sample collection container should be refrigerated or iced so that the sample is held at 4°C during the compositing period.

4. The BOD_5 sample holding/preservation procedures should be revised to ensure that the samples are held at 4°C during the time period between when the samples are collected and when they are set up for incubation. The samples should also be set up for incubation within 6 hours after they are collected. These requirements may dictate that the BOD_5 analyses be conducted on-site. Alternatively, tests should be conducted to prove that the current BOD_5 sample holding/preservation procedures yield accurate data.

It should be noted that the Company personnel stated during this inspection that the has given their approval to the non-refrigerated sample collection technique and the current methods of holding/preserving the BOD_5 samples prior to analyses referred to in items 3 and 4 above. However, no documentation could be produced to substantiate this claim.

Although not specifically required by the NPDES permit, it is further recommended that a laboratory quality control program be implemented including the analysis of replicate total suspended solids samples and the use of blanks in these analyses. Routine participation in EPA and/or State check sample programs is also recommended.

COMPLIANCE MONITORING EVALUATION REPORT		Date: 10/27/77 Time 7:15 am Region
FACILITY NAME	LOCATION	
COUNTY	MUNICIPALITY	STATE
Responsible Official	Title	Telephone No.
NPDES Permit No.	Permit Expiration Date	Receiving Stream

Inspection Attendees	Affiliation
William Abbott	USEPA-NEIC
David Brooman	USEPA-NEIC

Type of Facility and General Process Description

The Company manufactures about tons/day of paper napkins from reclaimed fiber. There are paper machines at this mill, one a ton/day machine and the other a ton/day unit. Only the ton/day unit was operating during this inspection. The larger machine was down for scheduled maintenance.

The majority of the pulp used at this mill is manufactured by deinking printed broke. Pulp produced from the broke undergoes several washing, screening, and bleaching operations before being used as feed to the paper machines. Polyethylene fiber material removed in the broke/pulp deinking and screening processes are used as supplemental fuels in the Company's boilers.

The Company has instituted an extensive water recycle/reuse program at the mill to decrease the volume of wastewaters being discharged from the facility. The reuse program is discussed elsewhere in this report.

FACILITY EVALUATION	1 = Satisfactory 2 = Unsatisfactory	3 = N.A. 4 = Undetermined
(1) 1. Records and Reports	(4) 4. Flow Measurements	(1) 8. Unathorized Discharge
(2) 2. Operations and Maintenance	(2) 5. Laboratory Procedures	(3) 9. Other
(4) 3. Sampling Procedures	(4) 6. Sludge Disposal Practices	
	(1) 7. Alternate Power	

NPDES Permit Monitoring Requirements (Effective)

Outfall No.	Source of Wastewater	Parameter	Limitations: Quantity Avg. Day kg/day (lb/day)	Limitations: Quantity Max. Day kg/day (lb/day)	Limitations: Concentration Avg. Day mg/l	Monitoring Frequency	Sample Type
001	Effluent from wastewater treatment facility serving paper making operations	BOD_5	250(550)	500(1100)	--	Daily	24 hr.Composi
		TSS	300(660)	600(1320)	--	Daily	24 hr.Composi
		pH	--	--	(6.0 to 9.0 units range)	Daily	Grab
		Flow	--	--	--	--*	--*

* - The permit does not specify a monitoring frequency or procedure for flow after However, the permit conditions prior to this date were for continuous flow monitoring. Apparently, this discrepancy was due to a typographical error. The company does have contiuous flow monitoring equipment.

Description of Wastewater Treatment Facilities:

Since the early 1970's the Company has been involved in a program designed to maximize recycle/reuse of wastewaters generated in the deinking, pulp preparation and paper machine operations, and thus reduce the amount of wastewaters which are ultimately discharged from the mill. Initial stages of this program concerned the segregation of the deinking and paper mill wastewaters. Additional screening equipment was installed to allow the segregated deinking wastewaters to be chemically treated, settled in a 70 ft. diameter clarifier, and essentially totally recycled in the process. White water from the paper machines are re-used extensively as dilution waters for the broke pulp, in the paper machine showers, and as make-up water elsewhere in the processes. The Company has been successful in significantly reducing the wastewaters discharged from the mill. Currently, only 60-70% of the pre-closeup wastewater volume is being discnarged.

Excessive white water produced at the paper machines which cannot be recycled and other miscellaneous wastewaters produced in the processes are discharged to the Company's wastewater treatment facility which is shown schematically in Figure 1.

The wastewaters are pumped from the mill and first enter a 40 ft. diameter primary treatment clarifier unit. Polyelectrolyte is added to the wastewater at the influent well of this clarifier to aid in the precipitation of solid materials. Sludge accumulated in the clarifier can be handled in two alternate manners. It can be pumped directly to the 70 ft. diameter clarifier mentioned above, collected and thickened in this unit and then pumped along with the 70 ft. clarifier sludge to the sludge dewatering facilities discussed later. This is the normal operating mode. In the alternate mode, sludges from the 40 ft. and 70 ft. clarifiers are pumped directly to the sludge dewatering facilities.

Effluent from the 40 ft. clarifier is routed to the first stage of a two-stage activated sludge system. The wastewater is combined with the first stage return sludge and aerated in an 8000 gallon aeration tank for approximately 1.4 hours. Nutrients in the form of gaseous ammonia and phosphoric acid are added to the primary clarifier effluent to maintain a BOD:N:P ratio of 100:3.0:0.5. The first stage unit's aeration system is operated so as to maintain a dissolved oxygen concentration in the mixed liquor of 0.5 to 1.0 mg/l and, hence, promote the growth of bacteria in this stage.

The mixed liquor from the first stage aeration enters a 163,000 gallon capacity, rectangular settling tank through a common-wall diffuser. Sludge is removed from the tank by siphon pipes supported on a bridge mechanism which traverses the length of the tank. The sludge is transported by a channel to a sump. From here it is recycled by airlift pumps to the first stage aeration basin (return sludge) or wasted and combined with sludge from the 70 ft. diameter clarifier for final sludge dewatering. Scum which accumulates in the settling tank is skimmed by mechanisms on the traveling bridge, collected and introduced back into the return sludge channel mentioned above. There is no discrete scum collection/disposal system.

Effluent from the first stage settling tank is collected in two sets of double in-board weirs which traverse the length of the tank parallel to the direction of flow. The first stage effluent is fed to the second stage biological unit. This stage is essentially identical in design to the first stage with the only minor differences being in unit volumes and the following operational parameters. The dissolved oxygen concentration in this stage is maintained at 2.0-3.0 mg/l. The higher dissolved oxygen level plus a reduced BOD_5 loading rate promotes the growth of protozoa in this stage. Sludge wasted from the second stage is returned to the first stage aeration unit.

The effluent collection weirs on the second stage settling tank are identical to those of the first stage. The weir design appears to encourage short circuiting of solids to the tank effluent. This short circuiting is less critical in the first stage since it is followed by the second stage units. However, any solids lost due to short circuiting in the second stage are discharged directly to the receiving waters.

The effluent from the second stage settling tank flows by gravity to the Company's effluent sampling and flow monitoring station at Outfall 001 and then a short distance later is discharged directly into . Backwash water from the Company's process water filtration plant is combined with the treated wastewater just prior to the sampling station.

Sludge dewatering equipment at the facility consists of two centrifuges operated in parallel. Feed to the centrifuges can be combined sludges from the 70 ft. and 40 ft. clarifiers plus waste activated sludge from the biological systems (normal mode) or separated sludges from the 70 ft. and 40 ft. clarifiers plus the waste activated sludges (alternate mode). In the normal mode, the centrate from the centrifuges is routed to the effluent launder of the 40 ft. clarifier and then directly to the unit. In the alternate mode the centrate is routed to the influent well of the 40 ft. clarifier and receives primary treatment. Sludge cake produced by the centrifuges is hauled to a Company owned landfill where it is buried.

The Company is currently reworking an existing earthen basin located between the mill and . The reworked basin will have an impervious clay liner and will be used as an emergency spill basin. The mill proper has no back-up electrical power system; hence, the pumps which transport wastewater to the treatment plant and recycle much of the process water would be inoperable during a mill power outage. In this event, wastewaters resulting from basement flooding would be diverted by gravity to the emergency spill basin. The contents of the 70 ft. clarifier would also be diverted to this basin whenever the clarifier is taken out of service for major maintenance. There will be no direct discharge from the emergency basin to The basin contents will be pumped to the head of the treatment system's primary unit using portable pumping equipment.

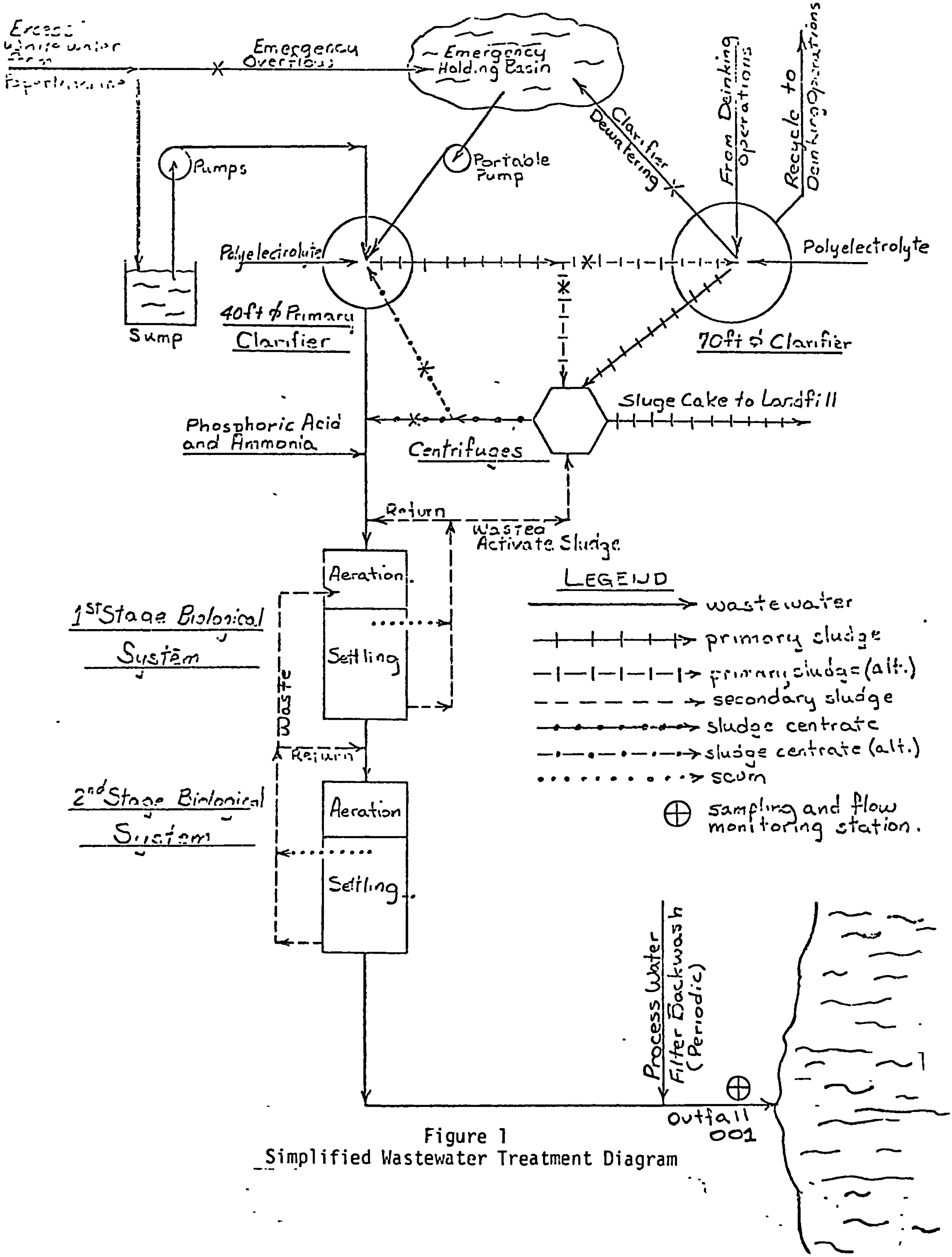

Figure 1
Simplified Wastewater Treatment Diagram

Average Treated Wastewater Flow of Facility? Approximately 1.0 MGD

Average Design Flow of Wastewater Treatment Facility: 1.0 MGD

Alternate Electric Power Source /XX/ Dual Feed /_/ Generator /_/ None

/_/ Other (Explain):

Adequate Alarm System for Power or Equipment Failures? /X/ Yes /_/ No

If no, explain:

Observed Appearance of Effluent, Receiving Stream or Drainage Way:

The effluent at Outfall 001 was milky white, quite turbid and ocassionally had large paper solids in it.

The effluent plume discolored the receiving waters for a considerable distance.

Consulting Engineer Retained or Available for Consultation on Operating and Maintenance Problems? /X/ Yes /_/ No

If yes, who?

Are lagoons Used in Treatment Process? /X/ Yes /_/ No

If yes, what is treatment function? The Company has an emergency holding lagoon which can be used to collect excessive spills in the mill basement, used for clean-out of treatment facility units, etc.

Are lagoons lined? /X/ Yes /_/ No If yes, what material?

The lagoon will be clay lined

Condition of lining? The lagoon was still under construction

Condition of dikes? Still under construction.

Any seepage evident? /_/ Yes /X/ No

NOTATIONS BY EVALUATOR

OPERATION AND MAINTENANCE PROBLEMS/DEFICIENCIES

CHECK EACH OF THE FOLLOWING ITEMS IN TERMS OF THEIR ESTIMATED ADVERSE AFFECT ON THE PERFORMANCE OF THE PLANT

ITEM	MAJOR	MINOR	NONE	ITEM	MAJOR	MINOR	NONE
STAFF COMPLEMENT	X			OVERLOADS (type)	X		
PERSONNEL TRAINING			X	HYDRAULIC	X		
OPERATING BUDGET			X	PERIODIC			X
LABORATORY / CONTROL	X			CONTINUOUS	X		
INSTRUMENTATION	X			ORGANIC			X
INDUSTRIAL WASTE N.A.				PERIODIC			X
PLANT OBSOLESENCE			X	CONTINUOUS			X
EQUIPMENT FAILURE			X	OVERLOAD CAUSE(S)			
TREATMENT PROCESSES			X	Unit underdesigned	X		
SLUDGE HANDLING AND PROCESSING			X	and/or mill water recycle program has not been			
EQUIPMENT MAINTENANCE	X			maximized			
SPARE PARTS INVENTORY			X				
POWER FAILURE			X				
				OTHER			
				Treatment Plant Design	X		

DESCRIBE BRIEFLY THE MAJOR PROBLEMS INDICATED ABOVE

1. Staff Complement: The wastewater treatment staff is also responsible for product quality control functions in the mill. It did not appear during this inspection that the existing 3 man staff can adequately perform both functions.

2. Laboratory Control: Problems were noted with the Company's sample preservation and handling procedures as discussed elsewhere in this report.

3. Instrumentation: Problems were noted with the weir installation at Outfall 001 as discussed elsewhere in this report.

4. Equipment Maintenance: Problems were noted with maintenance of the primary clarifier unit as discussed later in this report.

5. Hydraulic Overloads: The primary clarifier is underdesigned for the existing flow rates.

6. Treatment Plant Design: The weirs on the final clarifiers of the biological system encourage unit short circuiting due to their orientation and location. Also, there is no way to physically remove scum from the biological system. Scum which is collected from the final clarifiers is returned to the aeration system in the return sludge stream.

SELF-MONITORING PROGRAM

On the following items, code 1 = yes, 2 = no, 3 = undetermined,

4 = not applicable.

RECORDS AND REPORTS

/1/ 1. Properly maintained records of date, exact place and time of sampling.

/1/ 2. Properly maintained records of the dates samples were analyzed.

/4/ 3. Properly maintained records of who performed the analyses.

/1/ 4. Properly maintained records of the analytical techniques and methods used.

/1/ 5. Properly maintained records of the results of analyses.

/1/ 6. Records maintained for a minimum of three years including all original strip chart recordings (continuous monitoring instrumentation calibration, maintenance records).

/1/ 7. Plant operating records kept including operating logs of each treatment unit.

/1/ 8. Results of sample analyses correctly calculated and recorded.

/1/ 9. Self-monitoring frequency and parameters conform to permit requirements.

/1/ 10. Laboratory records consistent with DMR data.

/4/ 11. Records maintained of major contributing industries using publicly owned treatment works.

/4/ 12. Records maintained of major contributing industries' compliance/non-compliance status.

/1/ 13. Quality assurance records kept including spiked samples, laboratory equipment calibration, etc.

Other Comments on Records and Reports:

FLOW MEASUREMENT NOTE: 1=Yes, 2=No, 3=Undetermined, 4=Not applicable

/3 1. Primary measuring device (weir, parshall flume, magmeter, etc.) properly installed.
Type of device See note below

1 2. Calibration frequency adequate.
Date of last calibration Monthly

1 3. Flow measurement records properly maintained.
Method (automatic, manual, etc.) Automatic

/3 4. Primary flow measurement device properly operated and maintained.

/1 5. Secondary instruments (totalizers, records, etc.) properly operated and maintained.

/3 6. Flow measurement equipment adequate to handle expected ranges of flow rates.

Other Comments on Flow Measurement:

The Company monitors effluent flow at Outfall 001 with an 18" standard suppressed rectangular weir installation. Depth of flow over the weir is measured by a float in a stilling well connected to a Foxboro Model 40 flow recorder. The problems with the installation are that the weir is not sharp crested and the approach velocity in the weir channel appears to be excessive. The weir plate appeared to be constructed out of angle iron stock. The weir crest measured approximately 2". The Company had no documentation to indicate that the weir had been installed and calibrated as a broad crested unit.

Field measurements made by the NEIC inspection team indicated that the flow recorder unit read approximately 11% low at about 1200gpm and 36% low at about 500gpm. These flow rates were the maximum and average values respectively experienced on this day. The field calculations were made assuming the weir was sharp crested.

SAMPLING

/1 1. Locations adequate for representative samples.

/1 2. Parameters and frequency agree with permit.

/1 3. Method of sample collection: Manual / /
Automatic /X/

/3 4. Sample collection method is adequate. See note 1 on next page.

/4 5. Water intake sampled and analyzed, if required by permit.

/1 6. Additional monitoring and analyses being performed more frequently than required by permit.

1 = Yes, 2 = No, 3 = Undetermined, 4 = Not applicable

_2_ 7. When answer to No. 6 is yes, results are being reported in permittee's Discharge Monitoring Form (EPA No. 3320-1).

_2_ 8. When necessary during compositing, samples are properly iced.

_2_ 9. Proper preservation techniques used. See Note 2 below

_3_ 10. Flow proportioned samples obtained where required by permit. See Note 1 below.

_2_ 11. Sample holding times prior to analyses in conformance with 40 CFR 136.3 regulations. See note 3 below.

Other Comments on Sampling Techniques:
1)The Company uses a DeZurik Automatic Sampler and Flow Meter, Model SN34460, to obtain a 24-hour composite sample from behind the weir at Outfall 001. The sampler has a series of vertical slits immersed in the wastewater stream through which the sample enters the unit. These slits may act as a strainer thus preventing the unit from obtaining a representative TSS sample. The DeZurik sampler has a physical configuration which permits it to obtain a flow proportioned sample, based on the depth of flow in the wastewater channel. The Company's unit was designed to be used with a sharp-crested rectangular weir and may not be obtaining a true flow proportioned sample with the broad-crested weir actually installed at Outfall 001. 2)The composite sample is not refrigerated during the compositing period. It is stored at the ambient temperature of the sampling shed. 3)The BOD_5 samples which are sent to a contract laboratory for analysis are not analyzed within the 6-hour holding time recommended by the EPA.

LABORATORY PROCEDURES:

/2/ 1. EPA approved analytical testing procedures used (40 CFR 136.3).

/2/ 2. If alternate analytical procedures are used, proper approval has been obtained.

/1/ 3. Parameters other than those required by the permit are analyzed.

/1/ 4. Commercial laboratory utilized.
(For BOD_5 analysis only) Name____ Address_

/3/ 5. Commercial laboratory State certified.

/1/ 6. Satisfactory calibration and maintenance of instruments and equipment.

/2/ 7. Quality control procedures used. See note 1 on next page

/2/ 8. Duplicate samples are analyzed. ______________% of time. See Note 1.

1 = Yes, 2 = No, 3 = Undetermined, 4 = Not applicable

/2 9. Spiked samples are used. ____________% of time.

/1 10. Laboratory records properly maintained.

1 11. Laboratory employees qualified.

General Comments on Laboratory Procedures:

1. Company personnel do not run duplicate and blank TSS analyses. These quality control procedures should be implemented.
2. If the Company opts to run BOD_5 analyses at the plant rather than send them to a contract laboratory, a quality control program should be established for these analyses also.
3. All analytical procedures observed at the Laboratories appeared to be satisfactory.

Results of NEIC Quality Control Check Samples Analyzed by Laboratory

The company reported a value of 42 mg/l TSS (true value 51 mg/l) on a check sample supplied by inspection team. The value obtained is acceptable.

A portion of the effluent composite dated 10/26/77 was spiked with 10ml of a quality control check sample (5840 mg/l as a concentrate) and delivered to Labs along with the unspiked composite. Results yielded 94% recovery, which is acceptable.

Results of Company-EPA NEIC Split Sample Analyses:

The effluent composite of 10/27/77 was split and analyzed for TSS by both EPA and Company personnel. The EPA result was 40 mg/l; the Company value was 42mg/l. These values are essentially identical.

1 = Yes, 2 = No, 3 = Undetermined, 4 = Not applicable

OPERATION AND MAINTENANCE

4 1. Standby power or other equivalent provisions provided.

1 2. Adequate alarm system for power or equipment failures available.

3 3. Reports on alternate source of power sent to EPA/State as required by permit.

3 4. Sludges and solids adequately disposed. Sludge disposal site was not observed.

2 5. Any non-permitted discharges.

2 6. Any by-passing since last inspection.

4 7. Regulatory agency notified of by-passing.
Dates ______________, ______________________

2 8. Any effluent limitations violations experienced.

1 9. All treatment units in service.

2 10. Any hydraulic and/or organic overloads experienced.

2 11. Treatment facility properly operated and maintained. See notes below

1 12. Consulting engineer retained or available for consultation on operation and maintenance problems.

1 13. Preventive maintenance records files kept.

1 14. Qualified operating staff provided.

2 15. Established procedures available for training new operators.

1 16. Files maintained on spare parts inventory, major equipment specifications, and parts and equipment suppliers.

1 17. Instructions files kept for operation and maintenance of each item of major equipment.

Other Comments on Operation and Maintenance

It was apparent during this inspection that the wastewater treatment system was not being operated in an optimal mode and that proper maintenance was not being administered to the treatment equipment. These judgements are based on the observed quality of the effluent being produced as well as visual observations of the treatment processes and general housekeeping in the treatment plant area. Specific points noted include: 1) The 40 ft. diameter primary clarifier's effluent was very turbid and appeared to contribute an inordinate TSS load to the secondary treatment units. The primary clarifier unit is

1 = Yes, 2 = No, 3 = Undetermined, 4 = Not applicable

obviously hydraulically overloaded. However, the effluent weirs were badly out of level and clogged with debris and obviously contributed to short circuiting in the clarifier. 2) Although the Company is reportedly using polyelectrolytes to improve the solids removal in the primary clarifier, there was no evidence that jar tests are routinely run to optimize polyelectrolyte addition rate. Also, the polyelectrolyte is added directly to the influent well of the clarifier. It is doubtful whether optimum mixing of the polyelectrolyte and wastewater occurs at this location. 3) The centrate from the sludge dewatering processes are introduced directly into the primary clarifier effluent launder. Any solids contained in this centrate are therefore passed on directly to the secondary treatment units. 4) General housekeeping at the treatment facility was poor. Of particular note were the sludge dewatering and sludge handling facilities.

It appears as though the majority of the operations and maintenance problems noted are directly related to an inadequately sized wastewater treatment staff as discussed elsewhere in this report.

PERMIT VERIFICATION

1 1. Correct name and mailing address of permittee.

4 2. Facility as described in permit.

1 3. Principal product or products, and production rates conform with those set forth in permit application.

3 4. Treatment processes as described in permit application.

3 5. Notification given to EPA/State of new, different or increased discharges.

4 6. Accurate records of raw water volume and correct intake location.

1 7. Number and location of discharge points as described in permit.

1 8. Correct name and location of receiving waters.

[illegible]

UNITED STATES ATTORNEY

September 26, 1977

Dear Mr.

Pursuant to the authority contained in Section 308 of the Federal Water Pollution Control Act (33 U.S.C. §1318), representatives of the Environmental Protection Agency (EPA), specifically of the National Enforcement Investigation Center, or Region , may conduct an inspection of your company's manufacturing operations together with associated waste treatment and discharge facilities within the next six months. The inspection is designed to carry out EPA's responsibilities under Section 308. The persons who will be conducting the inspections will be authorized representatives of the Environmental Protection Agency as referred to in Section 308 and will present appropriate credentials. They will observe your process operations, inspect and evaluate your monitoring and field and laboratory equipment and methods, examine monitoring and calibration records and other appropriate records and will be concerned with related matters.

The EPA visit will focus on procedures and, accordingly, it is requested that company monitoring be conducted under usual practices and procedures. Among other things, on-the-spot observations shall be made of sample collecting, field preservation of samples, handling and transport of samples, and field and analytical equipment used in the actual conduct of analytical/laboratory procedures. If analyses are conducted by an outside contractor, EPA personnel will also evaluate analytical tests and methods as they are being performed. Please inform the inspectors if any tests are conducted other than at your main manufacturing location.

Month Oct 77 Year

Day of Sample	Time Sampled	Flow x10³ MGD: Chart	Flow x10³ MGD: Samples Depth, in	Flow x10³ MGD: Samples Flow	Temp F°: Fresh Water	Temp F°: Discharged Water (1)	pH (2): Composite Sample	pH (2): Grab Sample #1	pH (2): Grab Sample #2	Suspended Solids (3): Suspended Solids ppm	Suspended Solids (3): Suspended Solids lbs/day	BOD$_5$* (4): BOD$_5$, ppm	BOD$_5$* (4): BOD$_5$, lbs/day	Analyst	Remarks
1	9am	.770	3 3/4		[illegible]	10	7.1	7.4	7.5	64	475	6	44		
2	9am	1.0[illegible]	4		9	1[illegible]	7.2	7.3	7.5	37	333	4	34		
3	9am	.7[illegible]	2 1/2		11	15	7.5	7.1	7.1	14	93	3	22		
4	9am	[illegible]	3 3/4		12	14	7.2	7.4	7.6	16	125	2	11		
5	9am	.352	3 1/2		12	12	7.2	7.4	7.6	16	118	3	22		Pumping pond
6	9am	.153	3 [illegible]		13	12	7.0	7.2	7.3	17	121	3	21		
7	9am	1.[illegible]	[illegible]		12	12	7.2	7.1	7.3	26	232	4	36		
8	[illegible]	1.0[illegible]	1			14	7.1	7.1	7.2	26	222	4	34		
9	9am	.957	3 3/4			17	7.2	7.0	7.2	19	156	3	41		
10	9am	.949	3 1/2		10	16	7.2	7.3	7.4	22	174	9	71		
11	9am	.961	3 1/2		8	14	7.1	7.2	7.3	41	329	17	126		Flow meter Calibrate
12	9am	.972	3 3/4		8	13	7.2	7.2	7.2	46	373	13	104		
13	9am	1.02[illegible]	3 3/4		8	16	7.2	7.0	7.2	[illegible]	375	13	111		Pumping pond [illegible]
14	9am	1.391	5		10	10	7.5	7.1	7.1	24	278	7	93		
15	9am	1.039	3 3/4			10	7.2	7.3	7.5	30	259	13	111		
16	9am	.956	3 1/2			16	7.2	7.2	7.3	75	617	33	271		
17	9am	.965	3 3/4		8	18	6.8	6.9	7.1	46	370				Pumping pond
18	9am	.999	3 1/2		9	16	6.8	6.7	7.1	73	591				
19	9am	1.341	5		7	14	6.7	6.7	6.8	42	470				[illegible] control valve
20	9am	1.014	4		10	10	6.7	6.6	6.7	35	296				not working
21	9am	1.172	4 1/2		8	16	6.8	6.6	7.7	24	235				
22	11am	1.173	3 3/4		8	12	6.9	6.6	7.8	36	277				
23	9am	.9[illegible]	3 3/4		8	14	6.7	6.9	7.0	18	136				
24	11am	1.777	5		8	15	6.7	6.7	6.9						
25	9am	.975	3 1/2		8	12	6.6	6.5	7.0						
26	9am	1.032	4		8	10	7.4	6.2	6.6						
27					10	12		7.5							
28															
29															
30															
31															

Weekly Averages

Week	Time Sampled	Chart	Samples Depth	Samples Flow	Fresh Water	Discharged Water	Composite Sample	Grab Sample #1 (min)	Grab Sample #2 (max)	Suspended Solids ppm	Suspended Solids lbs/day	BOD$_5$, ppm	BOD$_5$, lbs/day	Analyst	Remarks
1-7	9am	.936			11	12	7.2	7.1	7.6	26	201	4	29		
8-14	9am	1.045			9	14	7.2	7.0	7.4	32	278	9	71		
15-21	9am	1.05[illegible]			9	14	6.9	6.[illegible]	7.7	47	425				
22-28															
29-															

(1) Temp of grab sample at time of sampling
(2) Glass Electrode method
(3) Glass Fiber Filtration procedure
(4) Dilution method
* Performed by

Month Sept - 77 Year

Day of Sample	Time Sampled	Flow x10³ MGD Chart	Samples Depth, in.	Samples Flow	Temp F° Fresh Water	Discharged Water (1)	pH (2) Composite Sample	Grab Sample #1	Grab Sample #2	Suspended Solids (3) Suspended Solids ppm	Suspended Solids lbs/day	BOD5* (4) BOD_5, ppm	BOD_5, lbs/day	Analyst	Remarks
1	9am	1,130	4		16	29	7.5	7.2	7.2	23	217	23	217		
2	9am	1,035	3¾		11	22	7.6	7.3	7.5	25	214	25	214		
3	9am	1,089	3¾		14	22	7.4	7.4	7.5	[illegible]	337	24	[illegible]		
4	[illegible]	1,409	5		14	22	[illegible]	7.1	7.5	24	205	15	176		
5															Labor Day Shut-Down
6	9am	1,177	4½		14	17	7.5	[illegible]	7.0	19	136	11	108		[illegible]
7	9am	766	3¾		16	16	7.4	7.0	7.3	19	105	14	113		
8	9am	336	3¾		15	20	7.7	7.7	7.7	21	124	13	131		
9	1pm	1,121	3¾		15	20	7.3	7.7	[illegible]	27	216	13	121		
10	9am	1,014	4			27	7.3	7.4	7.4	27	228	15	127		Power outage
11	9am	911	3½			27	7.3	7.1	7.1	37	291	12	94		
12	"	157	[illegible]		15	17	7.7	[illegible]	7.5	19	152	10	86		
13	9am	1,017	4		12	1	7.1	7.5	7.0	22	[illegible]	11	97		[illegible]
14	9am	800	3¾		12	14	7.4	7.0	7.2	64	530	14	111		[illegible]
15	9am	1,456	5		13	17	7.1	7.7	7.8	25	351	6	84		" " "
16	[illegible]	[illegible]	[illegible]		12	[illegible]	[illegible]	7.3	7.4	30	255	14	131	X	Flow meter Calibrated
17	9am	858	2		13	[illegible]	7.7	[illegible]	7.4	20	143	13	93		
18	9am	902	3½		13	19	7.4	[illegible]	[illegible]	22	182	15	124		
19	"	1,055	4½		15	25	7.7	[illegible]	7.3	27	229	19	[illegible]		[illegible]
20	9am	1,017	3¾		12	25	7.4	7.3	7.6	21	262	12	151		
21	[illegible]	1,160	[illegible]		11	13	7.6	7.5	7.3	21	250	7	[illegible]		"
22	9am	1,343	"		12	25	7.1	[illegible]	7.4	[illegible]	156	6	52		" "
23	"	"	"		12	[illegible]	[illegible]	[illegible]	[illegible]	24	1511	13	79		" "
24	"	"	"				[illegible]	7.4	[illegible]	34	229	12	102		[illegible]
25	9am	1,276	3½			21	7.1	[illegible]	7.3	112	430	22	199		
26	9am	609	3¾		12	8	6.9	6.9	7.1	25	208	6	56		Pumping [illegible]
27	9am	795	3¾		12	1	6.9	6.9	[illegible]	24	170	8	66		" "
28	9am	1,027	4		10	8	7.5	6.8	7.5	[illegible]	222	6	51		Pump [illegible]
29	9am	1,053	4		10	10	7.2	7.2	7.5	21	154	6	53		
30	9am	939	3¾		13	10	7.3	7.2	7.3	10	445	10	24		
31	"														
		30,177 1.611			13	19	7.3	6.8 min	8.2 max.	29	252	13	115		

Weekly Averages

-7	9am	1119			15	21	7.4	7.2	7.5	25	234	20	156		
-14	9am	975			14	21	7.6	[illegible]	7.2	33	267	13	122		
-21	9am	1,022			12	21	7.4	7.0	7.7	27	[illegible]	12	107		
-28	9am	1,012			12	17	7.7	6.5	7.5	27	231	10	88		
-	9am	.971			10	10	7.2	7.2	7.5	40	314	8	63		

(1) Temp of grab sample at time of sampling
(2) Glass Electrode method
(3) Glass Fiber Filtration procedure
(4) Dilution method
* Performed by

Month *August, 77* Year

Day of Sample	Time Sampled	Flow x10³ MGD: Chart	Flow: Samples Depth, in.	Flow: Samples Flow	Temp. F°: Fresh Water	Temp. F°: Discharged Water (1)	pH (2): Composite Sample	pH: Grab Sample #1	pH: Grab Sample #2	Suspended Solids (3): Suspended Solids ppm	Suspended Solids lbs/day	BOD$_5$* (4): BOD$_5$, ppm	BOD$_5$, lbs/day	Analyst	Remarks
1	9 [illegible]	.937	3 3/4		17	32	7.4	7.2	7.3	25	193	16	124		
2	[illegible]	1.221	4 [illegible]		17	31	7.5	7.4	7.8	18	195	[illegible]	[illegible]		
3	[illegible]	.965	3 5/8		17	26	7.6	7.5	7.7	20	161	12	93		
4	[illegible]	1.012	3 7/8		17	31	7.7	7.7	7.8	15	127	6	51		[illegible]
5	[illegible]	1.017	4		18	31	7.4	[illegible]	7.9	16	136	6	51		
6	7 [illegible]	1.001	3 7/8		19	32	7.6	7.4	7.9	20	167	14	117		
7	9 [illegible]	1.025	4		16	33	7.6	7.5	7.6	27	233	[illegible]	[illegible]		
8	9 [illegible]	.980	3 7/8		18	33	7.6	7.6	7.6	25	204	[illegible]	212		
9	[illegible]	[illegible]	[illegible]		19	32	7.7	7.4	7.6	32	[illegible]	[illegible]	171		[illegible]
10	7 [illegible]	1.3[illegible]	5		15	33	7.5	7.4	7.6	102	1131	[illegible]	45[illegible]		
11	7 [illegible]	.952	3 1/2		16	31	7.6	7.5	7.7	25	193	28	222		
12	[illegible]	.9[illegible]	[illegible]		17	32	[illegible]	7.2	7.5	22	[illegible]	32	262		
13	[illegible]	[illegible]	3 [illegible]		18	32	7.2	7.3	7.5	26	215	[illegible]	[illegible]		[illegible]
14	[illegible]	1.05[illegible]	4 1/2		19	32	7.4	7.1	7.2	68	509	[illegible]	701		[illegible]
15	[illegible]	1.1[illegible]	4 3/4		16	32	7.5	7.4	7.6	63	[illegible]	62	572		[illegible]
16	7 [illegible]	1.014	4		16	32	7.4	7.2	7.2	76	643	131	1[illegible]		[illegible]
17	9 [illegible]	1.[illegible]14	3		16	31	7.6	6.5	7.1	38	321	110	92[illegible]		
18	9 [illegible]	1.171	4 3/8		15	35	7.7	7.6	7.6	44	420	[illegible]	334		
19	[illegible]	1.473	5 [illegible]		16	31	7.7	7.5	7.1	35	43[illegible]	14	1[illegible]		[illegible]
20	9 [illegible]	1.096	4 [illegible]		18	30	7.3	7.5	7.5	52	471	56	507		[illegible]
21	[illegible]	1.063	4		17	32	7.2	7.1	7.2	115	991	69	6[illegible]		
22	9 [illegible]	1.010	4		18	31	7.1	6.9	7.3	65	548	61	514		
23	9 [illegible]	1.14	3 [illegible]		16	32	6.8	6.8	7.1	[illegible]	491	[illegible]	306		
24	[illegible]	.[illegible]8	[illegible]		16	32	7.3	6.7	7.0	26	210	45	363		
25	9 [illegible]	[illegible]	3 [illegible]		17	26	7.5	7.1	7.3	20	145	27	195		
26	[illegible]	.9[illegible]	3 [illegible]		13	42	7.5	7.[illegible]	7.4	12	92	27	208		
27	[illegible]	.941	3 1/2		17	26	6.9	7.3	7.4	21	165	32	252		
28	7 [illegible]	1.[illegible]	[illegible]		16	24	7.1	7.1	7.3	15	125	35	299		
29	[illegible]	.958	3 [illegible]		16	22	7.4	7.1	7.2	15	120	24	192		
30	[illegible]	1.1[illegible]	3 3/4		16	22	7.[illegible]	6.9	7.3	29	2[illegible]	21	1[illegible]		[illegible]
31	7.3 m	[illegible]	[illegible]		16	24	7.1	7.2	7.3	54	4[illegible]9	38	316		
		32.[illegible]	[illegible]												
		1034			17	30	7.4	6.9	7.9	38	334	39	338		

Weekly Averages

1-7	[illegible]	1.039			17	31	7.5	7.2	7.7	20	1[illegible]2	[illegible]	1[illegible]		
8-14	9 [illegible]	1.024			18	32	7.5	7.1	7.7	[illegible]	[illegible]	47	3[illegible]6		
15-21	[illegible]	1.136			16	32	7.5	6.8	7.6	60	537	63	[illegible]		
22-28	[illegible]	.95[illegible]			17	32	7.2	6.9	7.4	32	254	40	321		
29-	9 [illegible]	1.039			16	23	7.2	6.9	7.3	33	281	23	235		

(1) Temp. of grab sample at time of sampling
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* Performed by