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BIOKINETIC STUDY FOR SRC-I WASTEWATER

Final Technical Report

Work Performed Under Contract No. AC05-78OR03054

Catalytic, Inc.
Philadelphia, Pennsylvania

Technical Information Center
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I. SUMMARY

Biooxidation is an important part of the overall wastewater treatment system for the proposed SRC-I Demonstration Plant in Newman, Kentucky. After the completion of a Baseline Design for the plant in April 1982, various refinements were evaluated. One of these was the inclusion of a process for phenol recovery from four sour-water streams. As part of this evaluation, an extensive laboratory treatability study (1) was conducted on wastewaters both with and without this phenol recovery step. The purpose of the study was to compare the results of different treatment schemes on different wastewaters and did not include the development of the kinetic coefficients that govern the biooxidation process. As an extension to that study, additional treatability testing was performed and is documented herein. The purpose of this additional work is to establish the kinetic coefficients for biooxidation of the SRC-I wastewaters. This will provide a rational basis for any subsequent changes in design.

The wastewater feed used in this study was process recycle water from the Fort Lewis, Washington, pilot plant. Prior to biooxidation, it was pretreated by solvent extraction for removal of phenolics and by steam stripping for removal of ammonia and hydrogen sulfide. Two, 2-stage bench scale bioreactors were operated for approximately eight months, during which time they were stabilized at various steady-state conditions. Kinetic coefficients were evaluated according to the Lawrence and McCarty model, based on BOD, COD, and TOC. Nitrification, oxygen utilization, and solids settling velocities were also studied.

The results showed that BOD is a poor basis for the model mainly because almost all BOD_5 was removed at all steady-state conditions. Also, the model was more accurate for steady-state conditions of lower solids retention times. As was noted in the previous study, the bulk of both organic and ammonia reductions occurred in the first stage reactors.

II. INTRODUCTION

To reduce America's dependence on imported petroleum, the U.S. Department of Energy (DOE) initiated the Solvent-Refined Coal (SRC-I) Direct Coal Liquefaction Project to demonstrate the technical and economic feasibility of coal liquefaction. A prime factor in establishing this feasibility was the overall environmental acceptability of the process, including control of gaseous, liquid, and solid wastes. Under its prime contract (No. DE-AC05-78-OR0-3054) with DOE, the International Coal Refining Company (ICRC) completed the baseline design of a 6000-TPD demonstration plant in April 1982.

DOE has subsequently decided to indefinitely postpone construction of the demonstration plant. This postponement has provided an opportunity to upgrade the baseline design, and a major effort has since been made to generate additional design information for the wastewater treatment facilities. This post-baseline work included extensive laboratory treatability studies. The purposes were to evaluate alternate treatment schemes and to establish design criteria for individual unit processes. Two major focuses were the effects of phenol extraction as a pretreatment for SRC-I sour water and the use of reverse osmosis as a means of achieving zero discharge. This report is an extension of the phenol extraction study. Its relationship to that work is explained in the next section.

III. BACKGROUND

One primary objective of ICRC's post-baseline environmental program was to compare two alternative wastewater treatment schemes. One included phenol extraction before biological treatment, and the other did not. Under a previous work agreement, Catalytic, Inc., a subcontractor to International Coal Refining Company (ICRC), operated a number of biological reactors utilizing a strong SRC-I sour water, collected from the Fort Lewis, Washington, pilot plant. The impacts of phenol extraction on secondary (biooxidation) and tertiary (coagulation, filtration, carbon adsorption, and ozonation) treatment processes were assessed. Also under that work agreement, samples were produced for toxicological testing at SRI International. All results are documented in a report (1) issued in September 1983.

In that report, it was recommended that phenol extraction be employed. Phenol extraction has been incorporated in the current design of the waste treatment system, as specified in a document prepared by ICRC (2). Effluent limitations are also listed therein. The actual system design was by Catalytic and is documented in another report (3).

Because the primary objective in the previous study was to generate data for comparison of the two alternative treatment schemes, the bioreactors were operated primarily under a single set of conditions. Also, a necessity to produce large volumes of treated wastewater for the tertiary treatment studies and for toxicological testing precluded a systematic biokinetic study (i.e., varying steady-state conditions).

The purpose of this study is to evaluate bioreactor performance as a function of operating conditions. Two of the biological systems from the previous study will be utilized. Both of these are two-stage systems, treating dephenolated wastewater. (They had been maintained at the completion of that work.) These systems will be stabilized at various steady-state

conditions, thereby determining the biosystem performance over a range of operating conditions. The first stage reactors are primarily intended for removal of organics, and the second stages for nitrification. During the previous study work, however, it was found that both ammonia and carbonaceous BOD were removed in each reactor. It was also found that these removals occurred mostly in the first stage reactors. This will be investigated for each steady-state condition.

The purpose of this study is not to establish any optimum set of operating conditions, such as retention time, mixed liquor solids, or sludge age. There is no target concentration of BOD or COD that the bioreactor effluent must meet. Rather, this work will establish the basic relationships between operating conditions and system performance. It will then be possible to design the system for any given effluent limitations. Also, because this study has been designed to cover a range of conditions, it will serve to establish the limits of treatability that may be expected from a secondary system.

IV. SPECIFIC AREAS OF EVALUATION

The first stage biological reactors can be modeled mathematically, based on empirical relationships. There are many such models available. This report will use the Lawrence and McCarty method, which describes mean cell retention time (SRT) as the primary independent variable in system control. The model is based on the following equations:

$$1/\text{SRT} = Y(F/M) - k_d \quad (\text{Eqn. 1})$$

$$F/M = \frac{kS}{K_s + S} = \frac{Q}{V} \frac{(S_o - S)}{X} \quad (\text{Eqn. 2})$$

$$S = \frac{K_s [1 + k_d (\text{SRT})]}{\text{SRT} (Yk - k_d) - 1} \quad (\text{Eqn. 3})$$

Where

- SRT = Solids residence time, days
- Y = Yield Coefficient, lbs. biological solids produced/
lb. substrate removed
- k_d = Decay Constant, 1/days
- k = Maximum specific substrate utilization rate, lbs. removed per
day/lb. MLVSS
- S = Substrate concentration in the bioreactor
- S_o = Substrate concentration in the feed to the bioreactor
- K_s = Substrate concentration at removal rate of $k/2$
- Q = Volumetric flow rate to the reactor
- V = Volume of the reactor
- X = Mixed liquor volatile suspended solids (MLVSS) concentration
- F/M = Substrate to bio. mass ratio, lbs. removed per day/lb. MLVSS.

The Lawrence and McCarty procedure allows a graphical determination of k , K_s , k_d , and Y . Once the kinetic parameters are determined, Equation 3 can be used to predict system performance for selected values of SRT. In

addition, oxygen requirements can be calculated, based on measured oxygen uptake rates and mixed liquor solids.

As noted in the previous section, nitrification will also be evaluated. A nitrogen balance will be established for each bioreactor. Ammonia, cyanide, thiocyanate, nitrite, nitrate, and organic nitrogen levels will be monitored. In addition, the nitrification data will be applied to a first-order kinetic model, as follows:

$$C/C_o = C^{-k_n \theta X} \quad (\text{Eqn. 4})$$

Where C/C_o = Influent ammonia concentration, mg/l
 C = Effluent ammonia concentration, mg/l
 k_n = Rate coefficient, l/mg - day
 θ = Hydraulic retention time, days
 X = MLVSS, mg/l.

One final area of interest is system stability. The fluctuations of key parameters (COD, BOD, TOC, and NH_3) will be presented in the form of time-series plots. This will allow a subjective comparison between different steady-state conditions.

V. INVESTIGATIVE PROGRAM

FEED STORAGE AND PREPARATION

The raw wastewater used for this study was obtained from the DOE-owned, 50-TPD coal liquefaction pilot plant at Fort Lewis, Washington. Forty-five (45) 55-gallon drums of Process Recycle Water (PRW) were collected from August 12 through August 14, 1980, at which time the plant was running in the SRC-I mode. (The plant was designed to run primarily in the SRC-II mode.)

The Fort Lewis wastewater was thoroughly characterized in an earlier study (4), in which the wastewater was compared with samples obtained from another SRC pilot plant, located in Wilsonville, Alabama. The design of the Wilsonville plant more closely resembles the proposed SRC-I Demonstration Plant, but it is too small to produce the quantities of wastewater required for continuous treatability testing. However, a comparison of these two pilot plant waste streams shows that they have similar characteristics. The Fort Lewis samples are, therefore, representative of the wastewater anticipated from the demonstration plant and provide a valid basis for treatability testing.

The Fort Lewis facility does not include certain equipment and pretreatment steps that will be provided in the demonstration plant. Therefore, these pretreatment steps were simulated in the laboratory. As shown on Figure 1, this included phenol extraction, ammonia and sulfide stripping, concentration adjustment, and neutralization. Data was collected on these pretreatment steps in an earlier study (1). The laboratory equipment and procedures described below are based on that previous work.

Figure 1
Pretreatment Before Biooxidation

Phenol Extraction

Phenol extraction, which is the first pretreatment step, was provided by two different laboratories. Because the project was an extension of a previous study, the feed source from that study was continued. This water had been pretreated by a vendor (Chem Pro Corporation), using pilot scale equipment. Operated on a continuous flow basis, the pilot facilities provided phenol removal via solvent extraction, followed by steam stripping of sulfide and ammonia. When this wastewater was exhausted, additional feed was prepared in the Catalytic laboratory. The Chem Pro feed was simulated as closely as possible. For solvent extraction, this was accomplished in a two-stage, batch procedure. Measured quantities of solvent and raw wastewater were agitated in a glass vessel for 15 minutes, settled for 1 hour, and decanted. Fresh solvent was then added, and the steps repeated. The effluent phenolics ranged from 7 to 14 mg/l, versus 0.3 to 5 mg/l when treated by the continuous flow pilot facilities.

Ammonia and Sulfide Stripping

Steam stripping was used for removal of ammonia and sulfide. As noted in the preceding paragraph, the initial feed was pretreated by the Chem Pro Corporation in their pilot-scale facilities. In addition to removing phenolics, this pilot equipment also provided continuous steam stripping of both sulfide and ammonia. Sulfide was stripped at an initial wastewater pH of about 9-10. Caustic soda was then used to raise the pH for ammonia removal. A detailed description of the Chem Pro apparatus and procedures, for both extraction and stripping, is available in a previous report (4).

When the stripping was conducted in Catalytic's laboratory, it was accomplished in two passes through continuously operating, packed glass columns. The first pass, primarily for removal of hydrogen sulfide, was conducted without pH adjustment. (The pH was generally between 9 and 10.) Approximately 90% of the ammonia was also removed. For the second pass, caustic soda was used to raise the pH to 11.5. This allowed further removal of ammonia, producing an effluent concentration of approximately 200 mg/l.

Concentration Adjustment and Neutralization

Table 1 shows the targeted feed specifications. After the stripping steps, the wastewater was diluted and the pH adjusted to about 7, using concentrated (98%) sulfuric acid. Supplementary chemicals were added at this point, based on the demonstration plant material balance (3) and the refinements of earlier characterization and study work. Table 2 lists the measured parametric concentrations for each feed batch.

BIOREACTOR OPERATION

Two bench-scale, biological treatment systems were operated in parallel. Each system was comprised of two complete-mix, activated sludge reactors, connected in series. All reactors were equipped with internal baffles to prevent washout of suspended solids. The reactors in System 1 are designated as Units 1A and 1B; likewise, those in System 2 are 2A and 2B. The influent COD target concentration to each system was kept at 2000 mg/l throughout the study, and a 2-day hydraulic residence time was maintained in each stage. Sludge age (SRT) was varied to provide different rates of biomass growth and substrate utilization.

Equipment

All equipment in contact with wastewater and treated effluent was glass, Type 316 stainless steel or plastic having excellent resistance to adsorption and leaching. Each bioreactor was an independent physical unit consisting of feed pumps, an agitator, and feed/effluent handling containers.

Bioreactors. Two sizes were used, primarily to maintain the same hydraulic loading in both stages of the two-stage systems. System losses resulting from sampling and evaporation are not negligible for bench scale units. These effects result in a reduction in flow from the first to the second stage for each system. To compensate for these losses, the second stage reactors were smaller, thereby maintaining the specified 2-day hydraulic residence time. The large first stage reactor was constructed of stainless

Table 1
Feed Composition

<u>Component</u>	<u>Concentration (mg/l)</u>
COD	2,000 $\pm$ 200
PO ₄ ³⁻	75**
NH ₃ -N	200 $\pm$ 20**
SCN ⁻ (Sodium Form)	200 $\pm$ 20
CN ⁻	10 $\pm$ 2
*Ca ²⁺	600
Fe ³⁺	7
Mg ²⁺	14
*Phenolics	1 - 25
*TDS	4,000 - 6,000
*TOC	500 - 600
*Sodium	800 - 1,000

* These constituents are NOT adjusted. Values are the resultant expected range.

**Or a concentration for biological growth and reproduction, whichever is greater.

TABLE 2
DEPHENOLATED FEED CHARACTERISTICS
(ALL PARAMETERS IN mg/l EXCEPT pH)

FEED BATCH NUMBER	FEED START DATE	ORIGINAL VOLUME (LITER)	DILUTED VOLUME (LITER)	COD	BOD	TOD	pH	TSS	TDS	NH3-N	TOTAL P	CN	SCN	NO2-N	NO3-N	PHENOLIC	CALCIUM	IRON	MAGNESIUM	SODIUM
27*	24-JUL-83	94	176	2885	—	563	5.8	—	4888	194	68.2	—	54.1	0.25	5.5	1.59	635	6.17	17	888
28*	11-AUG-83	100	175	2836	—	577	10.0	—	4488	194	46.7	2.81	190	0.25	3.0	1.56	640	6.94	18	868
29*	27-AUG-83	101	170	2350	1470	594	9.7	—	4384	186	58.5	1.78	194	0.25	2.0	1.59	752	7.0	20	838
30*	12-SEP-83	101	170	2395	1410	697	9.7	—	4582	194	51.7	2.24	191	0.25	2.0	1.72	559	6.6	20	870
31*	28-SEP-83	100	175	2218	—	702	11.3	—	4645	199	73.3	1.88	192	11.25	11.25	0.37	632	5.85	21.3	598
32*	14-OCT-83	100	175	2123	—	681	11.1	—	4488	194	54.1	1.79	190	11.25	11.25	0.33	570	1.32	20.2	738
33*	04-NOV-83	105	175	2184	—	658	11.5	—	4855	178	57.7	0.97	174	0.82	11.25	5.1	510	1.82	4.98	810
34*	18-NOV-83	100	176	2998	1060	688	11.6	—	4198	182	1.1	11.1	162	0.61	11.25	0.55	378	2.0	1.32	848
35*	24-NOV-83	85	160	2262	1110	715	11.6	788	4380	192	69.2	12.4	170	0.33	11.25	0.33	632	5.5	19	870
36**	24-NOV-83	73	145	2242	840	665	11.5	874	3985	179	68.1	0.84	208	0.25	11.25	9.2	587	5.7	21.4	780
37**	24-DEC-83	78	170	2898	1040	664	9.6	676	3855	220	68.4	2.4	209	0.25	1.7	13.8	339	4.73	19.1	864
38**	08-JAN-84	73	167	2855	1060	562	10.6	744	4255	206	45.7	0.128	149	0.62	2.98	8.5	548	5.1	15.1	868
39**	25-JAN-84	76	143	2178	960	729	7.1	202	5860	192	8.95	4.45	199	0.25	11.25	9.97	551	7.1	15.5	918
40**	07-FEB-84	59.5	121.5	2248	980	750	8.2	86	5270	191	0.26	12.7	181	0.25	3.9	9.6	651	5.2	16.0	830
41**	17-FEB-84	71	150	1938	—	618	11.9	—	4858	188	—	11.1	175	0.35	3.4	7.5	565	4.1	17.5	880
42**	02-MAR-84	76	188	2888	—	615	12.0	—	4875	199	—	7.5	190	0.35	11.25	9.7	554	4.3	15.7	920

* - FEED FROM CHEMPRO PRETREATMENT

** - FEED FROM CATALYTIC PRETREATMENT (CHEMPRO BATCH NO. 35 AND CATALYTIC BATCH NO. 36 WERE COMBINED).

steel. Its total capacity was 12-L, and it was approximately 127 mm wide, 254 mm long, and 405 mm high (up to the outlet nozzle invert). The reactor was divided into two sections by a removable baffle: a 9.3-L aeration zone and a 2.7-L clarification zone. The baffle was adjustable for clearance between it and the sloped bottom in the clarifier section. The smaller reactor was constructed of polymethyl methacrylate. Its total volume was 8.6-L and it was approximately 114 mm wide, 240 mm long, and 340 mm high (to the overflow nozzle). The design was the same as the larger reactor, and it provided a 7.0-L aeration zone and 1.6-L clarification zone.

Pumps. Feed was pumped from individual glass bottles holding a 24-hour supply by a peristaltic pump with variable-speed drive. Silicone tubing, connected to teflon tubing on the suction and discharge ends, was used in the pump head. To achieve the low flow rates necessary, all pumps were electrically controlled by a timer, which ran for 20 seconds in a 2-minute cycle. Each pump had a separate speed controller for individual adjustment.

Agitators. Electrical drive agitators with two speed ranges and individual variable-speed controllers were used. These were equipped with standard three-blade stainless steel propellers.

System Operation

System monitoring was initiated on July 26, 1983 (reference point Day 0). All systems were operated continuously, 24 hours/day, 7 days/week. Monitoring was performed during one shift, 7 days/week. All systems were fed from a container holding a 24-hour feed supply. The feed to each second stage unit was the effluent from the corresponding first stage unit collected over the previous 24 hours. Both units in two-stage systems were operated at the same hydraulic retention time (HRT). As noted previously, the second stage reactors were chiefly intended for nitrification, which characteristically produces a small, slow-settling floc. Powdered activated carbon (PAC) was added to the second stage units in small amounts (nominally 500 mg/l) in order to improve solids settling.

Systems 1 and 2 were operated under the following specifications:

	<u>Unit 1A/2A</u> <u>(First Stage)</u>	<u>Unit 1B/2B</u> <u>(Second Stage)</u>
Aerated Volume (l)	9.3	7.0
SRT (days)	Varied	Varied
HRT (days)	2	2
F/M (g COD/g MLVSS)	< 0.5	< 0.2
Mixed Liquor PAC Conc. (mg/l)	0	500
pH (reactor)	6.75-8.0	7.0-8.5
Temperature (°C)	18-26	18-26
Dissolved Oxygen (mg/l)	> 2.0	> 2.0
Feed	Dephcnolated Pretreated PRW	Effluent from Unit 1A/2A

¹MLVSS, Mixed Liquor Volatile Suspended Solids, with correction for PAC.

Monitoring

Selected data were analyzed daily to monitor operational parameters and adjust the system. In addition to maintaining pH, Temperature, and D.O. specifications for each system, total suspended solids (TSS) in the basin and effluent were measured in order to calculate daily sludge wasting and, thus, to control SRT. Volatile (biological) suspended solids (VSS) were measured twice a week, and the daily value required for F/M calculations was calculated by applying the ratio (VSS/TSS) of the previous data set. All solids data for a system containing PAC were further adjusted to show concentrations without PAC.

Feed and effluent rates were established for each reactor by daily volumetric measurements. This data was required for SRT, HRT, F/M, and sludge wasting calculations.

Data were recorded in several documents, e.g., the operator's log book, laboratory notebooks, and analysis report forms. These were compiled into summary sheets which are included in the Appendix, Tables A-1 to A-4.

Sampling and Analysis

Other than pH, COD was the only effluent parameter analyzed on a daily basis. Other pollutant parameters were analyzed from composite samples in accordance with the schedules on Table 3.

Feeds and effluents were sampled daily and refrigerated. Composite samples were prepared by mixing equal portions of daily samples from the interval needed. For example, once-a-week analyses were performed on a sample containing equal volumes of daily samples collected during the preceding 7 days.

Table 3
Number of Weekly Analyses Required
Starting October 31, 1983

No. of Sample Pts. Parameter	First Stage			Second Stage	
	Feed	Basin	Eff.	Basin	Eff.
	1	2	2	2	2
COD	2	0	7	0	7
TOC	2	0	2	0	2
BOD	2	0	2	0	2
NH ₃	2	0	2	0	2
TKN	1/2*	0	1/2*	0	1/2*
CN ⁻	1/2	0	1/2	0	1/2
SCN ⁻	1/2	0	1/2	0	1/2
NO ₂ ⁻	0	0	1/2	0	1/2
NO ₃ ⁻	0	0	1/2	0	1/2
TSS	1	7**	7	7**	7
VSS	1	2**	2	2**	2
Temperature	0	7	0	1	0
pH	7	7	7	7	0
DO	0	7	0	7	0
O ₂ Uptake Rate	0	3	0	3	0
Color	1	0	1	0	1
Phenolics	1	0	1	0	1
Ortho-PO ₄	0	0	2	0	2
Settling Test	0	1/2	0	1/2	0
TDS	0	0	1	0	1

* 1/2 = Once in two weeks (every other week).

**Sample to be taken with the baffle removed.

Summary Description of System Operations

As noted previously, this report includes data collected during a time period prior to the formal initiation of this study. Systems' operations during that period were as described in the preceding section although the data collection was not always as extensive. The data presented in this report cover the period from July 26, 1983, (Day 0) to March 16, 1984 (Day 234). At Day 0, all four units were operating at a 30-day SRT and had been for about 1 year.

The overall effectiveness of Systems 1 and 2 is shown graphically on Figures 2 and 3. These plots show influent and effluent (both stages) COD concentrations from Day 0 to the completion of this study (Day 236). The plots show that system COD removals were generally stable, with efficiencies of about 90%. Figures 4 and 5 show the effluent COD levels in greater detail and also include the effluent TOC and first stage effluent BOD₅ concentrations. System 2, except for the initial 30-day SRT period, produced effluent COD concentrations from the first stage (Unit 2A) between 120 and 220 mg/l (Figure 5). For System 1, the first stage effluent COD was also generally between 120 and 220 mg/l when operating under a 30- or 15-day SRT. Shorter SRT periods of 12 and 9 days, however, caused an increase to about 250 mg/l.

TOC effluent concentrations generally followed the COD trends but to a lesser magnitude of variability and with no large isolated spikes. Effluent BOD₅ concentrations were usually very low (less than 10 mg/l), even at the lower sludge ages. Overall, the second stages removed relatively small additional quantities of COD and TOC. However, high concentrations, or spikes, from the first stage reactors were dampened considerably by the second stages.

The prime purpose of the second stage reactors was to achieve ammonia removal through nitrification. Figures 6 and 7 show influent and effluent ammonia concentrations during the study. Although not shown on the graphs, increased nitrite and nitrate production was observed to follow increased

FIGURE 2
SYSTEM 1
INF + EFF COD

FIGURE 3

SYSTEM 2

INF + EFF COD

FIGURE 4

SYSTEM 1

EFFLUENT ORGANIC PARAMETERS

FIGURE 5

SYSTEM 2

EFFLUENT ORGANIC PARAMETERS

FIGURE 6

SYSTEM 1 AMMONIA NITROGEN

FIGURE 7

SYSTEM 2 AMMONIA NITROGEN

ammonia removal, which is indicative of nitrification. It is evident that most of the nitrification occurred in the first stages. The second stages provided only minimal additional removals and were not more resistant to upset conditions. Note that effluent concentrations are sometimes higher than influent concentrations as a result of the biooxidation of thiocyanate (SCN). The breakdown of this compound in the bioreactors forms ammonia as a by-product. The nitrogen balance for the system will be discussed later.

The loss of nitrification beginning on Day 120 for System 1 (15-day SRT) and Day 140 for System 2 (50-day SRT) coincided with the change from Chem Pro-prepared feed to Catalytic-prepared feed. A feed batch consisting of one part Chem Pro-prepared feed and one part Catalytic-prepared feed was begun on Day 121 for both systems. Full strength Catalytic-prepared feed was started on Day 151. System 2 had a longer sludge age and, as would be expected, took longer to lose nitrification and recovered more quickly than System 1. This feed change produced no discernible ill effects on the removal of any other parameters.

Figures 8 and 9 show the oxygen uptake rates for Systems 1 and 2, respectively. They are generally in the 20-50 mg/l/hr. range in the first stage reactors, when nitrification is occurring, and drop to about 10 to 20 mg/l/hr. after nitrification is inhibited. The initial 30-day SRT periods show a greater variability than later operations.

Figures 10 and 11 show weekly averages of the mixed liquor volatile and suspended solids concentrations. The trends are consistent with the sludge ages imposed. Note the increase in the nonvolatile (primarily inorganic) fraction over the course of the study. (The SS/VSS ratio increased from 0.5 to 0.9). Previous to this study, nutrient phosphorus had been added during the feed preparation, resulting in the formation of a precipitate that was settled and removed prior to use of the feed. (For more details, see reference 1.) Direct application of that mode of operations would result in the generation of a separate sludge. This would require additional sludge

FIGURE 8
SYSTEM 1
OXYGEN UPTAKE RATE

FIGURE 9

SYSTEM 2 OXYGEN UPTAKE RATE

FIGURE 10

UNIT 1A WEEKLY AVERAGES

FIGURE 11
UNIT 2A
WEEKLY AVERAGES

handling equipment, not included in the current design. To more closely simulate the design conditions, the nutrient phosphate for this study was added directly to the aeration basin. This did not adversely affect the operation of the bioreactors but did form an inorganic precipitate that gradually increased the SS/VSS ratio, as shown.

VI. RESULTS AND DISCUSSION

The reactors were operated from July 26, 1983, to March 16, 1984. The feed and effluent streams to and from each reactor were analyzed daily. In addition, standard operating parameters were monitored to define the overall operating conditions. All of this data is included in the Appendix, Tables A-1 to A-4.

STEADY-STATE CONDITIONS

The first step in evaluating the treatability data is to determine the periods of operation that are considered steady-state. For this report, steady-state was defined as period of at least two weeks duration, during which the sludge age, mixed liquor volatile solids, and organic removal efficiencies were relatively constant. Figures 12 and 13 are time series plots of these parameters for the first stage reactors (1A and 2A). Based on the above criteria, eight steady-state periods were selected, as shown on Table 4.

Table 4
Steady-State Operating Period

<u>Reactor</u>	<u>SRT (Days)</u>	<u>Duration (Days)</u>	<u>MLVSS (mg/l)</u>	<u>COD Removal (%)</u>
1A	9	217-234	1,493	87.5
1A	12	174-195	2,100	90.6
1A	15	72-103	2,338	93.4
1A	15	124-161	2,229	91.5
2A	20	70-100	2,687	93.5
1A	30	1-45	3,026	91.7
2A	40	213-226	6,163	91.4
2A	50	169-189	6,354	94.6

FIGURE 12
UNIT 1A
STEADY STATE PARAMETERS

FIGURE 13

UNIT 2A STEADY STATE PARAMETERS

As shown on Table 4, there are two steady-state conditions listed for the 15-day SRT. The second one occurred after an upset in the reactor, and although stabilized, the unit did not achieve the performance levels of the earlier period. Complete treatability data for the steady-state periods are summarized in the Appendix, Table A-5.

APPLICABILITY OF KINETIC MODEL

Each bench-scale system consisted of two reactors, or units, connected in series. The first unit in each system provided the bulk of the organic removal. The data generated by these reactors (Units 1A and 2A) are the basis of the kinetic model.

The equations for the Lawrence and McCarty model are straightforward. However, one parameter, substrate, requires clarification. Substrate is the food (energy) source required to sustain the biochemical reactions in the bioreactors. It is classically measured by the BOD test, itself dependent on biological activity. Use of BOD₅ measurements can pose a problem because the difference between influent and effluent concentrations may not provide an accurate indication of the actual substrate utilization. As found in an earlier study on SRC-I wastewater (1), significant drops in COD can occur in a biological system without an apparent change in BOD because so-called refractory (non-biodegradable) compounds can be gradually broken down in the reactors, thereby reducing COD. This biodegradation does not occur in the BOD sample bottle, however, meaning the measured influent substrate level may be artificially low.

Use of COD or TOC in place of BOD also presents a problem. Some of the organics in the SRC-I wastewater are truly refractory and simply not amenable to biological treatment. As shown on Figure 14, a graph of F/M versus effluent COD for the steady-state periods does not pass through the origin. Rather, it intercepts the x-axis in the range of 60 to 130 mg/l. The

FIGURE 14

Refractory COD

intercept value represents the refractory organic concentration, in that this quantity remains even at the lowest possible loading. Similar effects have been noted by others (6). The Lawrence and McCarty model does not account for this and assumes the curve would pass through the origin.

In this study, the kinetic coefficients are developed in terms of BOD, COD, and TOC, in order to see which parameter best fits the model.

EVALUATION OF KINETIC COEFFICIENTS

The kinetic parameters to be evaluated are the following: yield coefficient Y , endogenous respiration coefficient k_d , maximum substrate removal k , and the substrate concentration K_s , corresponding to a removal rate of one-half the ultimate rate. For a given waste stream, these parameters are constants and can be used to define the performance of a biological treatment system.

To determine these constants, bench-scale reactors were operated over a range of SRT values. The feed streams to the reactors were held as nearly constant as practical throughout the study, and the SRT's were varied by controlled wastage of the mixed liquor solids. Values of Y and k_d are calculated from a straight line plot of $1/\text{SRT}$ versus F/M , as was presented in Equation 1 (Section IV). Values of k and K_s are defined by Equation 2. This equation can be linearized in the following form:

$$\frac{1}{F/M} = \frac{K_s}{k} \frac{1}{S} + \frac{1}{k} \quad (\text{Eqn. 5})$$

This shows a straight line relationship between the reciprocals of F/M and effluent substrate (S), with a slope of K_s/k and an intercept of $1/k$.

BOD Basis

Figure 15 is a graph of Equation 5 where the substrate (S) is the effluent BOD_5 concentration. Equilibrium BOD_5 values for all steady-state periods studied during this investigation were typically very low. Effluent concentrations for the 40- and 50-day SRT periods were too low to be quantified via the BOD test and are not included in Figure 15. From this graph, the maximum substrate removal rate, k , is 0.26 pounds BOD_5 per day per pound MLVSS, and the half-rate constant, K_s , is 0.5 mg/l BOD_5 .

A plot of Equation 1 for BOD_5 is shown on Figure 16. All eight steady-state periods fit the model reasonably well. However, the 40- and 50-day SRT periods were discounted from impacting the kinetic coefficients Y and k_d since these periods were not used to determine the other coefficients, k and K_s . The yield coefficient, as determined from Figure 16 (excluding 40- and 50-day SRT results), is 0.41 pounds biological solids produced per pound BOD_5 removed, and the decay constant is 0.01 days^{-1} .

COD Basis

Equation 5 for COD is presented as Figure 17. It is apparent that two data points, corresponding to the 40- and 50-day SRT periods, do not correlate to a linear fit. The reason these data points do not fit the model is unknown. However, the remaining six steady-state periods fit reasonably well and were used to evaluate the kinetic parameters. As determined from Figure 17, the maximum COD removal rate, k , is 0.56 pounds per day per pound MLVSS, and the half-rate constant, K_s , is 140 mg/l COD.

Figure 18 is a plot of Equation 1 for COD. Although all eight periods appear usable, the two data points corresponding to the 40- and 50-day SRT were discounted because of the discrepancy noted in Figure 17. Values for Y and k_d from Figure 18 are 0.37 pounds biological solids produced per pound COD removed and 0.05 days^{-1} , respectively.

FIGURE 15
Determination of K_s and k , BOD₅ Basis

FIGURE 16
Determination of Y and k_d , BOD₅ Basis

FIGURE 17
Determination of K_S and k , COD Basis

FIGURE 18
Determination of Y and k_d , COD Basis

TOC Basis

Graphs for TOC as the measured substrate are shown on Figures 19 and 20. In Figure 19, two data points which appear as obvious outliers again correspond to the 40- and 50-day SRT periods and were not considered in evaluating any of the kinetic parameters for TOC. The four kinetic constants, k , K_s , Y , and k_d , as determined from Figures 5 and 6 are, respectively, 0.15 pounds TOC per day per pound MLVSS, 27 mg/l TOC, 1.22 pounds biomass produced per pound TOC removed, and 0.06 days⁻¹.

COMPARISON OF KINETIC COEFFICIENTS

The kinetic constants developed by applying the Lawrence and McCarty model to BOD, COD, and TOC data are summarized in Table 5. These values can be utilized in Equation 3 (previously presented) to predict achievable effluent concentrations at any selected SRT. Figures 21, 22 and 23 show the relationship between SRT and effluent substrate concentrations under steady-state performance for BOD, COD, and TOC, respectively. In these figures, the data points plotted are the mean effluent values observed during each SRT period investigated. The lines in Figures 22 and 23 for COD and TOC represent the effluent values predicted by the model (Equation 3). The line for BOD could not be evaluated, as is discussed below.

Table 5

Summary of Lawrence and McCarty Kinetic Coefficients

<u>Basis</u>	<u>Yield Coeff.</u> <u>Y (lb./lb.)</u>	<u>Endogenous Respir. Rate</u> <u>k_d (day⁻¹)</u>	<u>Max. Rem. Rate</u> <u>k (lb./lb.-day)</u>	<u>S @ $k/2$</u> <u>K_s (mg/l)</u>
*COD	0.37	0.05	0.56	140
*BOD	0.41	0.01	0.26	0.5
*TOC	1.22	0.06	0.15	27

*Excluding 40- and 50-day SRT periods.

FIGURE 19
Determination of K_s and k , TOC Basis

FIGURE 20
Determination of Y and k_d , COD Basis

FIGURE 21
Effluent BOD₅ as a Function of SRT

FIGURE 22
Effluent COD as a Function of SRT

FIGURE 23
Effluent TOC as a Function of SRT

For all SRT's studied, the resulting effluent BOD values were very low. Reference to Figure 21 indicates that the maximum effluent mean observed was less than 4 mg/l and occurred during the 12-day SRT period. However, by applying the kinetic parameters developed for BOD in Equation 3, the resulting effluent values predicted are negative for any SRT less than 10 days. Since the kinetic parameters should be valid at all SRT's, the model is inappropriate for the BOD data derived from this study. Nevertheless, the actual data points on Figure 21 did exhibit the same pattern as shown in Figures 22 and 23 (i.e., the effluent substrate concentration increases with a decreasing SRT).

Alternately, COD and TOC data could be compared with values predicted by the model. In Figures 22 and 23, the model predicts rapidly improving effluent values as the SRT is increased from 10 to 20 days. Within this operating range, the measured effluent COD and TOC data were significantly better than predicted by the model at lower SRT's and agreed very well with predicted values as the SRT is increased to 20 days. Beyond 20-day SRT, the model predicted better performance than was observed for both COD and TOC. In this region, the predicted values for TOC fit the observed data better than COD.

OXYGEN UTILIZATION

Oxygen uptake rates were measured every few days for both systems. These uptake rates allow a graphical determination of the oxygen requirements for substrate utilization and cell maintenance. This method (6) requires a graph of F/M (lbs. COD removed/day per lb. MLVSS) versus oxygen used per unit weight of solids (lbs. O_2 consumed/day per lb. MLVSS). This data is plotted on Figure 24 for the eight steady-state periods. It should be noted that the values of F/M and MLVSS are not the average values summarized in Table A-5 in the Appendix. Rather, the ratios required for this plot were calculated separately for each day on which the oxygen uptake rate had been measured. All of the data for a given steady-state period were then averaged and plotted on Figure 22.

FIGURE 24
OXYGEN UTILIZATION COEFFICIENTS

The intercept of this graph is the oxygen required to maintain the cells, without any removal of COD. As shown on Figure 24, it is 0.1 pounds of oxygen per day per pound of volatile solids under aeration. The slope of the line shows the oxygen required for substrate utilization, which is 0.562 pounds of oxygen per pound of COD removed.

NITRIFICATION

Reduction of ammonia nitrogen was observed in both the first and second stage units, with the gross removal occurring in the initial stages. Figures 6 and 7 show influent and effluent nitrogen concentrations for Systems 1 and 2, respectively. For System 1, a relatively steady-state period was observed between days 44 and 97. In System 2, days 48 to 97 were selected as steady-state.

Kinetic coefficients were evaluated for both stages of each system by applying a first-order model previously defined as Equation 4. This model predicts that nitrification efficiency varies as an exponential function of the product of a rate constant, the MLVSS concentration, and the hydraulic retention time. For System 1, the rate constant was determined to be 7.37×10^{-4} for Unit 1A and 1.15×10^{-3} for second stage Unit 1B. For System 2, the first stage (Unit 2A) rate constant is 7.64×10^{-4} . For Unit 2B it is 7.43×10^{-4} . Values for the rate constant are summarized in Table 6.

Included in Table 6 is a mass balance for nitrogen for each steady-state period. All influent and effluent streams were analyzed for ammonia, nitrite, nitrate, cyanide, thiocyanate, and organic nitrogen. Also, wasted sludge was assumed to be 12 percent nitrogen on a dry-weight basis. As shown on the table, the influent and effluent nitrogen summations all balanced to within 10 percent. For the first stage reactors, where most of the ammonia removal occurred, the balance was even better (within approximately 4 percent).

Table 6
Kinetic Constant for Nitrification

	<u>Unit 1A</u>	<u>Unit 1B</u>	<u>Unit 2A</u>	<u>Unit 2B</u>
K_n	7.37×10^{-4}	1.15×10^{-3}	7.64×10^{-4}	7.43×10^{-4}
Nitrogen Balance (In/Out)	0.958	0.93	0.979	0.90

The range of kinetic data reported in Table 6 is from 7.37×10^{-4} to 1.15×10^{-3} . All values were consistent to within one-half order of magnitude. The mean K_n value determined using steady-state data is 8.48×10^{-4} . In an earlier study (1), the kinetic constant for nitrification was found to range from 5.3×10^{-4} to 8.7×10^{-4} . Although the range of values determined during this investigation was spread slightly, there is substantial agreement between the two studies, and the first-order model can be considered valid.

MIXED LIQUOR SETTLING CHARACTERISTICS

Batch settling tests were periodically run on samples of the mixed liquors from all reactors at each SRT studied. These were 60-minute tests in 1-liter graduated cylinders. Settling curves for the first stage reactors of Systems 1 and 2 are included in the Appendix, Figures A-1 to A-20. No data is included for the second stage reactors (Units 1B and 2B). There was limited microbiological growth in these units, and flocculant settling did not occur. This same problem was noted in the previous biooxidation study (1).

A summary of the zone settling velocity determined from each test appears in Table 7. Mean settling velocities ranged from 0.03 ft./min., corresponding to an average MLSS concentration of 10,500 mg/l for a 40-day SRT, to a maximum

mean value of 0.43 ft./min. for a 2,944 mg/l MLSS at a 15-day SRT. A general trend of decreasing zone settling velocity with increasing MLSS concentration was observed.

The settling velocities varied by more than an order of magnitude over the range of MLSS concentrations studied. However, the mean velocity varied by less than a factor of 2.5 for MLSS concentrations below 4,000 mg/l. Mixed liquor solids levels above this level corresponded to the 40- and 50-day SRT periods.

Table 7
Summation of Batch Settling Tests

<u>SRT (Days)</u>	<u>MLSS (mg/l)</u>	<u>Reactor</u>	<u>Zone Settling Velocity (Ft./Min.)</u>
50	5,875	2A	0.038
50	5,170	2A	0.056
50	4,335	2A	0.077
50	3,980	2A	0.085
40	11,880	2A	0.014
40	10,095	2A	0.017
40	9,525	2A	0.052
20	3,223	2A	0.187
20	2,910	2A	0.239
15	3,697	1A	0.525
15	3,470	1A	0.292
15	3,230	1A	0.262
15	3,045	1A	0.292
15	2,880	1A	0.328
15	2,735	1A	0.398
15	2,355	1A	0.656
15	2,133	1A	0.656
12	2,482	1A	0.875
9	4,002	1A	0.525
9	2,665	1A	0.375

VII. CONCLUSIONS

1. Kinetic parameters according the Lawrence and McCarty model were developed for gross organic reduction in terms of BOD, COD, and TOC. A summary of the rate constants is presented in the summary table, below. The kinetic coefficients evaluated in terms of TOC provided the best fit of the data derived from this study.

Summary of Lawrence and McCarty Kinetic Coefficients

<u>Basis</u>	<u>Yield Coeff. Y (lb./lb.)</u>	<u>Endogenous Respir. Rate k_d (day⁻¹)</u>	<u>Max. Rem. Rate k (lb./lb.-day)</u>	<u>S @ k/2 K_s (mg/l)</u>
COD	0.37	0.05	0.56	140
BOD	0.41	0.01	0.26	0.5
TOC	1.22	0.06	0.15	27

2. The treatability results expressed on a BOD basis do not fit the Lawrence and McCarty model. This is due to the very low average levels of effluent BOD (less than 4 mg/l) for all eight steady-state conditions.
3. A kinetic rate constant for a first-order relationship for nitrification was determined to be 8.48×10^{-4} liters per milligram-day. The range of values determined for each reactor of parallel two-stage systems was 7.37×10^{-4} to 1.15×10^{-3} l/mg-day. This range is consistent with values determined in a previous study (1).
4. Oxygen requirements for substrate utilization were determined to 0.562 pounds of oxygen per pound of COD removed. The respiration coefficient was 0.1 pounds of oxygen per day per pound of MLVSS. These coefficients include oxygen requirements for nitrification.

5. Zone settling velocities of the mixed liquor solids varied widely, ranging from 0.014 to 0.875 ft./min. for the first stage reactors. The lowest settling rates correspond to the highest mixed liquor concentrations, indicative of hindered settling. For mixed liquor concentrations less than 4,000 mg/l, the velocities were mostly in the range of 0.2 to 0.7 ft./min. Flocculant settling did not occur for the second stage mixed liquors, and zone settling velocities could not be determined.

VIII. REFERENCES

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APPENDIX A

TABLES AND FIGURES

VIII. REFERENCES

1. Mitchell, J. W., et al. 1983. Final Technical Report: Evaluation of Effects of Phenol Recovery on Biooxidation and Tertiary Treatment of SRC-I Wastewater. DOE/OR/03054-49. International Coal Refining Company, Allentown, PA.
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APPENDIX A

TABLES AND FIGURES

UNIT 1A TABLE A1

MONTH	JULY	JULY	JULY	JULY	JULY	JULY	AUGUST	AUGUST	AUGUST
DAY	26	27	28	29	30	31	1	2	3
DAY NO.	0	1	2	3	4	5	6	7	8
SYSTEM PARAMETERS									
*Sludge Age	30	30	30	30	30	30	30	30	30
*(F/M)COD	0.24	0.25	0.25	0.27	0.24	0.25	0.25	0.10	0.28
*HRT	2.2	1.9	2.2	1.9	2.1	1.9	1.9	5.2	1.9
FEED PARAMETERS (BATCH #) (BATCH #)	27	27	27	27	27	27	27	27	27
Volume (liters)	4.3	4.85	4.32	5	4.5	4.9	4.85	1.8	4.9
pH (std units)	9.7/10.2	9.8/10.9	9.8/10.3	9.7	9.7/10.1	9.7/10.1	10	9.8/10.3	9.8
COD (mg/l)	1840	1840	1840	1750	1750	1750	1750	1810	1810
NH3N (mg/l)	188	188	188	188	188	188	188	181	181
SS (mg/l)	24	24	24	24	24	24	24	44	44
VSS (mg/l)	24	24	24	24	24	24	24	44	44
CN (mg/l)	0.159	0.159	0.159	0.159	0.159	0.159	0.159	0.217	0.217
SCN (mg/l)	54.1	54.1	54.1	54.1	54.1	54.1	54.1	69.6	69.6
BOD 5-day (mg/l)									
TGC (mg/l)	584	584	584	584	584	584	584		
Phenolics (mg/l)									
PO4-P (mg/l)									
Org-N (mg/l)									
NO2 (mg/l)									
NO3 (mg/l)									
TDS (mg/l)									
Color (APHA Units)									
BASIN PARAMETERS									
Vol Wasted (ml)	366	332	336	341	357	375	351	390	354
D.O. (mg/l)	7.4	7.4	6.7	6.5	7.2	6.7	6.3	6.4	6.1
SS (mg/l)	3090	3280	2880	2860	2970	3130	2970	2980	2860
*SS (PAC corrected)									
Temp (C)	24	24	24.5	25	25	25	25	25	25
pH (std units)	6.6	6.7	7.5	7.1	6.9	7.2	7.4	7	7.3
OUR (mg/l/hr)			28				46		
VSS (mg/l)	2783	2954	2680	2661	2764	2913	2790	2799	2687
*VSS (PAC corrected)	2783	2954	2680	2661	2764	2913	2790	2799	2687
VSS/SS			0.93				0.94		
*PAC Added (mg)									
*Inventory (mg/l basin)									
EFFLUENT PARAMETERS									
Volume (liters)	3.75	4.27	3.85	4.45	4	4.4	4.31	0.9	4.35
COD (mg/l)	185	191	183	200	208	208	167	173	220
SS (mg/l)	28	52	48	38	32	18	34	34	30
*PAC corrected									
pH (std units)	6.9	7.1	7.5	7.2	7.1	7.2	7.4	7.5	7.4
VSS (mg/l)			48				34		
*PAC corrected									
NH3N (mg/l)	10	10	10	4	4	4	4	5.8	5.8
CN (mg/l)	8.4	8.4	8.4	8.4	8.4	8.4	8.4	1.32	1.32
SCN (mg/l)	10.1	10.1	10.1	10.1	10.1	10.1	10.1	10.3	10.3
NO2 (mg/l)	8.79	8.79	8.79	8.79	8.79	8.79	8.79	8.7	8.7
NO3 (mg/l)	240	240	240	240	240	240	240	150	150
Phenolics (mg/l)								0.025	0.025
PO4-P (mg/l)								1.3	1.3
Org-N (mg/l)				7	7	7			
TDS (mg/l)									
Color (APHA units)	250	250	250	250	250	250	250		
TGC (mg/l)	48	48	48	48	48	48	48		
BOD 5-day (mg/l)									

UNIT 1A TABLE A1

MONTH	AUGUST	AUGUST	AUGUST	AUGUST	AUGUST	AUGUST	AUGUST	AUGUST	AUGUST	AUGUST
DAY	4	5	6	7	8	9	10	11	12	13
DAY NO.	9	10	11	12	13	14	15	16	17	18
SYSTEM PARAMETERS										
*Sludge Age	30	30	30	30	30	30	30	30	30	30
*(F/M)COD	0.26	0.26	0.27	0.26	0.21	0.23	0.25	0.21	0.24	0.24
*HRT	1.9	2	1.9	1.9	2.1	2.1	2.4	2.4	2.3	2.4
FEED PARAMETERS (BATCH #)	27	27	27	27	27	27	27	28	28	28
Volume (liters)	4.93	4.7	4.85	4.9	4.5	4.40	3.85	3.93	4.00	3.95
pH (std units)	9.7/10.6	9.8/10.7	9.8	9.8	9.8	9.8	9.8	10/10.3	9.9/10.4	9.7/10.2
COD (mg/l)	1810	1745	1745	1745	1745	1858	1858	1858	2159	2159
NH3N (mg/l)	181	176	176	176	176	173	173	173	185	185
SS (mg/l)	44	44	44	44	44	100	100	100	100	100
VSS (mg/l)	44	44	44	44	44	32	32	32	32	32
CN (mg/l)	0.217	0.217	0.217	0.217	0.217	0.481	0.481	0.481	0.481	0.481
SCN (mg/l)	69.6	69.6	69.6	69.6	69.6	149	149	149	149	149
BOD 5-day (mg/l)										
TOC (mg/l)						632	632	632	632	632
Phenolics (mg/l)										
PO4-P (mg/l)										
Org-N (mg/l)										
NO2 (mg/l)										
NO3 (mg/l)										
TDS (mg/l)										
Color (APHA Units)										
BASIN PARAMETERS										
Vol Wasted (ml)	361	354	364	342	358	349	373	376	380	375
D.O. (mg/l)	6.7	7	6.8	7	6.1	6.0	6.6	6.8	6.3	7.0
SS (mg/l)	2950	2710	2720	2920	3480	3290	2610	2940	3120	3060
*SS (PAC corrected)						3290	2610	2940	3120	3060
Temp (C)	25.5	25.5	25	25	26	27	25	25	24	23
pH (std units)	6.9	7.3	7.3	7.3	7	6.8	6.8	6.6	6.8	7.0
OUR (mg/l/hr)	60				24			24		
VSS (mg/l)	2810	2581	2591	2781	3150	2978	2362	2870	3046	2987
*VSS (PAC corrected)	2810	2581	2591	2781	3150	2978	2362	2870	3046	2987
VSS/SS	0.95				0.91			0.98		
*PAC Added (mg)						0	0	0	0	0
*Inventory (mg/l basin)						0	0	0	0	0
EFFLUENT PARAMETERS										
Volume (liters)	4.41	4.14	4.13	4.45	3.85	3.80	3.25	3.25	3.45	3.50
COD (mg/l)	182	184	188	181	181	155	166	119	161	184
SS (mg/l)	26	30	24	38	38	44	22	22	18	22
*PAC corrected						44	22	22	18	22
pH (std units)	7.3	7.2	7.7	7.5	7.4	7.2	7.0	6.6	6.8	7.0
VSS (mg/l)	26				28			18		
*PAC corrected								18		
NH3N (mg/l)	5.8	3.5	3.5	3.5	3.5	6.3	6.3	6.3	9.4	9.4
CN (mg/l)	1.32	1.32	1.32	1.32	1.32	0.006	0.006	0.006	0.006	0.006
SCN (mg/l)	10.3	10.3	10.3	10.3	10.3	7.4	7.4	7.4	7.4	7.4
NO2 (mg/l)	8.7	8.7	8.7	8.7	8.7	17.6	17.6	17.6	17.6	17.6
NO3 (mg/l)	150	150	150	150	150	171	171	171	171	171
Phenolics (mg/l)	0.025	0.025	0.025	0.025	0.025					
PO4-P (mg/l)	1.3	1.3	1.3	1.3	1.3					
Org-N (mg/l)		8.9	8.9	8.9	8.9				5.7	5.7
TDS (mg/l)										
Color (APHA units)						250	250	250	250	250
TOC (mg/l)						52	52	52	52	52
BOD 5-day (mg/l)										

UNIT 1A TABLE A1

MONTH	AUGUST	AUGUST	AUGUST	AUGUST	AUGUST	AUGUST	AUGUST	AUGUST	AUGUST	AUGUST
DAY	14	15	16	17	18	19	20	21	22	23
DAY NO.	19	20	21	22	23	24	25	26	27	28
SYSTEM PARAMETERS										
*Sludge Age	30	30	30	30	30	30	30	30	30	30
*(F/M)COD	0.27	0.24	0.27	0.26	0.23	0.26	0.28	0.28	0.24	0.24
*HRT	2	2	1.9	1.9	1.9	1.9	1.9	1.9	2	1.9
FEED PARAMETERS (BATCH #)	28	28	28	28	28	28	28	28	28	28
Volume (liters)	4.70	4.57	4.95	4.86	4.80	5.00	5.00	5.00	4.71	4.90
pH (std units)	9.7	9.8	10	9.8	9.9	9.7	9.8	9.8	9.9/10.3	9.9/10.5
COD (mg/l)	2159	2159	2051	2051	2051	2105	2105	2105	2105	2185
NH3N (mg/l)	185	185	190	190	190	183	183	183	183	180
SS (mg/l)	100	100								40
VSS (mg/l)	32	32								10
CN (mg/l)	0.481	0.481								0.739
SCN (mg/l)	149	149								177
BOD 5-day (mg/l)										1290
TOC (mg/l)	632	632								645
Phenolics (mg/l)			1.56	1.56	1.56	1.56	1.56	1.56	1.56	
PO4-P (mg/l)										
Org-N (mg/l)										
NO2 (mg/l)										
NO3 (mg/l)										
TDS (mg/l)										
Color (APHA Units)										
BASIN PARAMETERS										
Vol Wasted (ml)	364	358	326	336	358	348	370	364	346	337
D.O. (mg/l)	6.9	6.9	7.0	7.3	6.8	7.2	7.0	7.1	6.8	7.3
SS (mg/l)	3220	3760	3490	3550	3700	3500	3270	3360	3650	3940
*SS (PAC corrected)	3220	3760	3490	3550	3700	3500	3270	3360	3650	3940
Temp (C)	22	22	23	24	25	24	25	24	24	24
pH (std units)	7.3	7.1	7.1	7.0	6.9	6.9	6.8	6.9	6.9	6.8
OUR (mg/l/hr)		32							48	
VSS (mg/l)	3143	3390	3147	3201	3500	3311	3093	3178	3390	3659
*VSS (PAC corrected)	3143	3390	3147	3201	3500	3311	3093	3178	3390	3659
VSS/SS		0.90			0.95				0.93	
*PAC Added (mg)	0	0	0	0	0	0	0	0	0	0
*Inventory (mg/l basin)	0	0	0	0	0	0	0	0	0	0
EFFLUENT PARAMETERS										
Volume (liters)	4.13	4.11	4.48	4.38	4.32	4.57	4.53	4.35	4.09	4.25
COD (mg/l)	213	212	240	227	212	200	201	195	194	206
SS (mg/l)	28	38	58	16	36	40	22	28	48	58
*PAC corrected	28	38	58	16	36	40	22	28	48	58
pH (std units)	7.2	7.3	7.1	7.9	7.2	7.0	7.0	7.1	7.1	6.9
VSS (mg/l)		26			28				32	
*PAC corrected		26			28				32	
NH3N (mg/l)	9.4	9.4	15.8	15.8	15.8	24.3	24.3	24.3	24.3	17.5
CN (mg/l)	0.006	0.006	3.02	3.02	3.02	3.02	3.02	3.02	3.02	1.88
SCN (mg/l)	7.4	7.4	6.3	6.3	6.3	6.3	6.3	6.3	6.3	5.8
NO2 (mg/l)	17.6	17.6	22.7	22.7	22.7	22.7	22.7	22.7	22.7	13.7
NO3 (mg/l)	171	171	167	167	167	167	167	167	167	171
Phenolics (mg/l)			0.025	0.025	0.025	0.025	0.025	0.025	0.025	
PO4-P (mg/l)			3.9	3.9	3.9	3.9	3.9	3.9	3.9	
Org-N (mg/l)	5.7	5.7				1.5	1.5	1.5	1.5	
TDS (mg/l)										
Color (APHA units)	250	250								500
TOC (mg/l)	52	52								63
BOD 5-day (mg/l)										

UNIT 1A TABLE A1

MONTH	AUGUST	AUGUST	AUGUST	AUGUST	AUGUST	AUGUST	AUGUST	AUGUST	SEPT	SEPT
DAY	24	25	26	27	28	29	30	31	1	2
DAY NO.	29	30	31	32	33	34	35	36	37	38
SYSTEM PARAMETERS										
*Sludge Age	30	30	30	30	30	30	30	30	30	30
*(F/M)COD	0.26	0.29	0.30	0.25	0.27	0.23	0.23	0.22	0.29	0.26
*HRT	1.9	1.9	1.9	1.9	1.9	2.2	2.2	2.4	1.9	1.9
FEED PARAMETERS (BATCH #)	28	28	28	28	29	29	29	29	29	29
Volume (liters)	4.85	5.00	5.00	4.85	4.85	4.28	4.15	3.90	5.00	4.90
pH (std units)	9.8/10.2	9.7/10.3	9.7/10.2	9.7	9.7/10.4	9.7/10.4	9.7/10.7	9.5/10.9	9.6	9.7
COD (mg/l)	2185	2185	2130	2130	2130	2130	2070	2070	2070	2022
NH3N (mg/l)	180	180	184	184	184	184	179	179	179	184
SS (mg/l)	40	40	40	40	40	40	26	26	26	26
VSS (mg/l)	10	10	10	10	10	10	14	14	14	14
CN (mg/l)	0.739	0.739	0.739	0.739	0.739	0.739	0.25	0.25	0.25	0.25
SCN (mg/l)	177	177	177	177	177	177	182	182	182	182
BOD 5-day (mg/l)	1290	1290	1290	1290	1470	1470	1470	1470	1470	1470
TOC (mg/l)	645	645	645	645	645	645				
Phenolics (mg/l)							1.48	1.48	1.48	1.48
PO4-P (mg/l)										
Org-N (mg/l)										
NO2 (mg/l)										
NO3 (mg/l)										
TDS (mg/l)										
Color (APHA Units)										
BASIN PARAMETERS										
Vol Wasted (ml)	355	394	364	367	343	389	396	377	389	354
D.O. (mg/l)	7.0	5.8	7.2	6.8	6.9	6.8	6.8	6.6	6.6	6.6
SS (mg/l)	3640	3500	3310	3930	3600	3510	3330	3180	3220	3380
*SS (PAC corrected)	3640	3500	3310	3930	3600	3510	3330	3180	3220	3380
Temp (C)	24	23.5	24	25	24	25	24	24	24	24
pH (std units)	7.0	7.0	7.2	7.2	7.1	6.9	7.0	6.9	7.4	7.0
OUR (mg/l/hr)						28			32	
VSS (mg/l)	3381	3120	2951	3503	3209	3310	3140	2999	3020	3170
*VSS (PAC corrected)	3381	3120	2951	3503	3209	3310	3140	2999	3020	3170
VSS/SS		0.89				0.84			0.77	
*PAC Added (mg)	0	0	0	0	0	0	0	0	0	0
*Inventory (mg/l basin)	0	0	0	0	0	0	0	0	0	0
EFFLUENT PARAMETERS										
Volume (liters)	4.26	4.78	4.50	4.30	4.30	3.70	3.60	3.35	4.56	4.80
COD (mg/l)	168	195	221	170	186	201	174	189	177	183
SS (mg/l)	38	4	26	30	48	10	4	22	8	32
*PAC corrected	38	4	26	30	48	10	4	22	8	32
pH (std units)	6.9	7.0	7.2	7.3	7.3	7.2	6.8	6.8	7.2	7.2
VSS (mg/l)		4				10			8	
*PAC corrected		4				10			8	
NH3N (mg/l)	17.5	17.5	9.5	9.5	9.5	9.5	11	11	11	12.5
CN (mg/l)	1.88	1.88	1.88	1.88	1.88	1.88	1.88	1.88	1.88	1.88
SCN (mg/l)	5.8	5.8	5.8	5.8	5.8	5.8	6.2	6.2	6.2	6.2
NO2 (mg/l)	13.7	13.7	13.7	13.7	13.7	13.7	10.2	10.2	10.2	10.2
NO3 (mg/l)	171	171	171	171	171	171	199	199	199	199
Phenolics (mg/l)							0.025	0.025	0.025	0.025
PO4-P (mg/l)							8.1	8.1	8.1	8.1
Org-N (mg/l)			2.8	2.8	2.8	2.8				1.8
TDS (mg/l)										
Color (APHA units)	500	500	500	500	500	500				
TOC (mg/l)	63	63	63	63	63	63				
BOD 5-day (mg/l)										

UNIT 1A TABLE A1

MONTH	SEPT	SEPT	SEPT	SEPT	SEPT	SEPT	SEPT	SEPT	SEPT	SEPT
DAY	3	4	5	6	7	8	9	10	11	12
DAY NO.	39	40	41	42	43	44	45	46	47	48
SYSTEM PARAMETERS										
*Sludge Age	30	30	30	30	30	30	30	25	25	25
*(F/M) COD	0.26	0.27	0.27	0.24	0.27	0.29	0.28	0.26	0.24	0.22
*HRT	1.9	1.9	1.9	2.0	1.9	1.9	2.0	2.0	2.0	2.1
FEED PARAMETERS (BATCH #)	29	29	29	29	29	29	29	29	29	30
Volume (liters)	4.79	4.83	4.90	4.60	5.00	4.90	4.70	4.70	4.70	4.47
pH (std units)	9.7/10.2	9.7/10.2	9.7/10.2	9.7	9.7/10.5	9.7	9.8	9.7/11.0	9.8/11.1	9.0/10.1
COD (mg/l)	2022	2022	2022	2033	2033	2033	2000	2000	2000	2000
NH3N (mg/l)	184	184	184	183	183	183	188	188	188	188
SS (mg/l)	26	26	26	106	106	106	106	106	106	106
VSS (mg/l)	14	14	14	44	44	44	44	44	44	44
CN (mg/l)	0.25	0.25	0.25	0.93	0.93	0.93	0.93	0.93	0.93	0.93
SCN (mg/l)	182	182	182	183	183	183	183	183	183	183
BOD 5-day (mg/l)	1470	1470	1470	1470	1470	1470	1470	1470	1470	1410
TOC (mg/l)				683	683	683	683	683	683	683
Phenolics (mg/l)	1.48	1.48	1.48							
PO4-P (mg/l)										
Org-N (mg/l)										
NO2 (mg/l)										
NO3 (mg/l)										
TDS (mg/l)										
Color (APHA Units)										
BASIN PARAMETERS										
Vol Wasted (ml)	349	348	389	365	343	394	257	298	320	316
D.O. (mg/l)	6.7	6.8	6.9	7.1	6.8	6.9	7.0	7.0	6.8	7.7
SS (mg/l)	3250	3170	3260	3440	3320	3050	3040	3200	3490	3820
*SS (PAC corrected)	3250	3170	3260	3440	3320	3050	3040	3200	3490	3820
Temp (C)	24	24	24	24	26	25	24	25	26	26.5
pH (std units)	6.9	7.0	6.9	7.0	6.7	7.0	6.8	6.7	7.2	7.2
OUR (mg/l/hr)			60			54				34
VSS (mg/l)	3048	2973	3080	3250	3137	2850	2841	2990	3261	3350
*VSS (PAC corrected)	3048	2973	3080	3250	3137	2850	2841	2990	3261	3350
VSS/SS			0.78			0.93				0.88
*PAC Added (mg)	0	0	0	0	0	0	0	0	0	0
*Inventory (mg/l basin)	0	0	0	0	0	0	0	0	0	0
EFFLUENT PARAMETERS										
Volume (liters)	4.35	4.32	4.45	4.00	4.33	4.17	4.18	4.16	4.22	4.11
COD (mg/l)	174	177	154	180	174	186	190	182	182	158
SS (mg/l)	38	38	8	30	44	4	104	140	132	152
*PAC corrected	38	38	8	30	44	4	104	140	132	152
pH (std units)	7.0	7.1	7.0	6.8	6.8	6.9	6.9	6.7	6.8	7.2
VSS (mg/l)			8			4				108
*PAC corrected			8			4				108
NH3N (mg/l)	12.5	12.5	12.5	13.3	13.3	13.3	9.8	9.8	9.8	9.8
CN (mg/l)	1.88	1.88	1.88	1.66	1.66	1.66	1.66	1.66	1.66	1.66
SCN (mg/l)	6.2	6.2	6.2	6.9	6.9	6.9	6.9	6.9	6.9	6.9
NO2 (mg/l)	10.2	10.2	10.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
NO3 (mg/l)	199	199	199	197	197	197	197	197	197	197
Phenolics (mg/l)	0.025	0.025	0.025							
PO4-P (mg/l)	8.1	8.1	8.1							
Org-N (mg/l)	1.8	1.8	1.8				2.3	2.3	2.3	2.3
TDS (mg/l)										
Color (APHA units)				875	875	875	875	875	875	875
TOC (mg/l)				63	63	63	63	63	63	63
BOD 5-day (mg/l)										

UNIT 1A TABLE A1

MONTH	SEPT	SEPT	SEPT	SEPT	SEPT	SEPT	SEPT	SEPT	SEPT	SEPT
DAY	13	14	15	16	17	18	19	20	21	22
DAY NO.	49	50	51	52	53	54	55	56	57	58
SYSTEM PARAMETERS										
*Sludge Age	20	20	20	20	20	20	20	15	15	15
*(F/M)COD	0.27	0.27	0.28	0.24	0.25	0.25	0.24	0.23	0.24	0.25
*HRT	1.9	2.0	1.9	2.0	1.9	1.9	2.0	1.9	1.9	1.9
FEED PARAMETERS (BATCH #)	30	30	30	30	30	30	30	30	30	30
Volume (liters)	5	4.75	5.00	4.70	5.00	5.00	4.70	4.80	5.00	4.90
pH (std units)	9.5/10.4	9.6	9.5/10.5	10/10.8	9.6	9.7	9.8/10.6	9.6/10.3	9.4/10.4	9.5/10.4
COD (mg/l)	2063	2063	2063	1846	1846	1846	1846	1802	1802	1802
NH3N (mg/l)	186	186	186	187	187	187	187	190	190	190
SS (mg/l)	66	66	66	66	66	66	66	126	126	126
VSS (mg/l)	32	32	32	32	32	32	32	46	46	46
CN (mg/l)	0.33	0.33	0.33	0.33	0.33	0.33	0.33			
SCN (mg/l)	193	193	193	193	193	193	193			
BOD 5-day (mg/l)	1410	1410	1410	1410	1410	1410	1410	1620	1620	1620
TOC (mg/l)								689	689	689
Phenolics (mg/l)	1.54	1.54	1.54	1.54	1.54	1.54	1.54			
PO4-P (mg/l)										
Org-N (mg/l)										
NO2 (mg/l)										
NO3 (mg/l)										
TDS (mg/l)										
Color (APHA Units)										
BASIN PARAMETERS										
Vol Wasted (ml)	434	426	478	577	580	560	560	778	758	752
D.O. (mg/l)	7.4	7.6	8.1	8.0	8.0	7.7	6.6	6.8	6.7	6.8
SS (mg/l)	3600	3410	3270	3190	3310	3310	3200	3320	3380	3190
*SS (PAC corrected)	3600	3410	3270	3190	3310	3310	3200	3320	3380	3190
Temp (C)	25	23	22	22	23	23	23	24	25	24
pH (std units)	6.8	7.0	6.5	7.1	7.4	6.8	6.5	6.6	6.6	6.5
OUR (mg/l/hr)			40				38			36
VSS (mg/l)	3157	2990	3060	2985	3097	3097	3010	3123	3179	2900
*VSS (PAC corrected)	3157	2990	3060	2985	3097	3097	3010	3123	3179	2900
VSS/SS			0.94				0.94			0.91
*PAC Added (mg)	0	0	0	0	0	0	0	0	0	0
*Inventory (mg/l basin)	0	0	0	0	0	0	0	0	0	0
EFFLUENT PARAMETERS										
Volume (liters)	4.46	4.13	4.25	4.00	4.60	4.10	4.90	4.50	4.70	4.50
COD (mg/l)	150	148	156	159	156	156	180	148	148	112
SS (mg/l)	134	144	94	18	14	32	26	16	30	34
*PAC corrected	134	144	94	18	14	32	26	16	30	34
pH (std units)	6.9	6.8	6.8	6.7	7.5	7.7	6.5	6.3	6.9	7.0
VSS (mg/l)			90				22			26
*PAC corrected			90				22			26
NH3N (mg/l)	0.9	0.9	0.9	1.7	1.7	1.7	1.7	1.7	1.7	1.7
CN (mg/l)	1.19	1.19	1.19	1.19	1.19	1.19	1.19			
SCN (mg/l)	5.1	5.1	5.1	5.1	5.1	5.1	5.1			
NO2 (mg/l)	4.04	4.04	4.04	4.04	4.04	4.04	4.04			
NO3 (mg/l)	195	195	195	195	195	195	195			
Phenolics (mg/l)	0.025	0.025	0.025	0.025	0.025	0.025	0.025			
PO4-P (mg/l)	11.1	11.1	11.1	11.1	11.1	11.1	11.1			
Org-N (mg/l)				2.9	2.9	2.9	2.9			
TDS (mg/l)										
Color (APHA units)								750	750	750
TOC (mg/l)								56	56	56
BOD 5-day (mg/l)								40	40	40

UNIT 1A TABLE A1

MONTH	SEPT	SEPT	SEPT	SEPT	SEPT	SEPT	SEPT	SEPT	OCT	OCT
DAY	23	24	25	26	27	28	29	30	1	2
DAY NO.	59	60	61	62	63	64	65	66	67	68
SYSTEM PARAMETERS										
*Sludge Age	15	15	15	15	15	15	15	15	15	15
*(F/M)COD	0.33	0.34	0.33	0.27	0.30	0.32	0.33	0.32	0.30	0.31
*HRT	1.9	1.9	1.9	2.2	2.1	1.9	1.9	1.9	2.0	1.9
FEED PARAMETERS (BATCH #)	30	30	30	30	30	31	31	31	31	31
Volume (liters)	5.00	5.00	5.00	4.10	4.4	4.70	4.80	5.00	4.60	4.80
pH (std units)	9.5	9.4	9.5/10.3	9.5/10.4	9.5/10.3	10.1	10.1	11.3	11.4	11.4
COD (mg/l)	2178	2178	2178	2178	2161	2161	2161	2028	2028	2028
NH3N (mg/l)	193	193	193	193	189	189	189	166	166	166
SS (mg/l)	126	126	126	126	244	244	244	244	244	244
VSS (mg/l)	46	46	46	46	60	60	60	60	60	60
CN (mg/l)										
SCN (mg/l)										
BOD 5-day (mg/l)	1620	1620	1620	1620	1470	1470	1470	1470	1470	1470
TOC (mg/l)	689	689	689	689	660	660	660	660	660	660
Phenolics (mg/l)					0.67	0.67	0.67	0.67	0.67	0.67
PO4-P (mg/l)										
Org-N (mg/l)										
NO2 (mg/l)										
NO3 (mg/l)										
TDS (mg/l)										
Color (APHA Units)										
BASIN PARAMETERS										
Vol Wasted (ml)	763	787	785	766	768	740	731	726	732	745
D.O. (mg/l)	7.0	7.0	7.0	7.4	7.6	7.5	7.6	7.6	7.6	7.2
SS (mg/l)	3020	2940	3055	2960	2890	2870	2980	2960	2970	2900
*SS (PAC corrected)	3020	2940	3055	2960	2890	2870	2980	2960	2970	2900
Temp (C)	23	21	21	21	21	22	21	21	21	21
pH (std units)	7.3	6.7	5.7	6.5	6.9	7.1	7.4	7.5	7.7	7.8
OUR (mg/l/hr)							48			
VSS (mg/l)	2745	2673	2777	2740	2675	2657	2640	2622	2631	2596
*VSS (PAC corrected)	2745	2673	2777	2740	2675	2657	2640	2622	2631	2596
VSS/SS				0.93			0.89			
*PAC Added (mg)	0	0	0	0	0	0	0	0	0	0
*Inventory (mg/l basin)	0	0	0	0	0	0	0	0	0	0
EFFLUENT PARAMETERS										
Volume (liters)	4.60	4.70	4.60	3.60	4.20	4.30	4.45	4.55	4.20	4.00
COD (mg/l)	112	179	166	181	174	168	187	201	188	171
SS (mg/l)	24	8	10	28	22	40	46	48	48	40
*PAC corrected	24	8	10	28	22	40	46	48	48	40
pH (std units)	7.2	7.1	6.2	6.7	6.8	6.9	7.4	7.1	7.6	7.8
VSS (mg/l)				16			40			
*PAC corrected				16			40			
NH3N (mg/l)	5.2	5.2	5.2	5.2	4.9	4.9	4.9	5.2	5.2	5.2
CN (mg/l)										
SCN (mg/l)										
NO2 (mg/l)										
NO3 (mg/l)										
Phenolics (mg/l)					0.025	0.025	0.025	0.025	0.025	0.025
PO4-P (mg/l)					12.3	12.3	12.3	12.3	12.3	12.3
Org-N (mg/l)										
TDS (mg/l)										
Color (APHA units)	750	750	750	750						
TOC (mg/l)	56	56	56	56	49	49	49	49	49	49
BOD 5-day (mg/l)	40	40	40	40	9	9	9	9	9	9

UNIT 1A TABLE A1

MONTH	OCT	OCT	OCT	OCT	OCT	OCT	OCT	OCT	OCT	OCT
DAY	3	4	5	6	7	8	9	10	11	12
DAY NO.	69	70	71	72	73	74	75	76	77	78
SYSTEM PARAMETERS										
*Sludge Age	15	15	15	15	15	15	15	15	15	15
*(F/M)COD	0.32	0.33	0.30	0.34	0.34	0.31	0.23	0.29	0.30	0.35
*HRT	2.0	2.1	2.3	2.0	2.0	2.0	2.6	2.2	2.3	2.0
FEED PARAMETERS (BATCH #)	31	31	31	31	31	31	31	31	31	31
Volume (liters)	4.60	4.45	4.00	4.60	4.75	4.55	3.55	4.18	4.1	4.63
pH (std units)	11.5	11.5/10.1	11.5/10	11.6	11.3	11.5/10.1	11.5	11.5	11.3	11.2
COD (mg/l)	2028	2085	2085	2085	2052	2052	2052	2052	2098	2098
NH3N (mg/l)	166	178	178	178	153	153	153	153	156	156
SS (mg/l)	244	436	436	436	436	436	436	436		
VSS (mg/l)	60	92	92	92	92	92	92	92		
CN (mg/l)										
SCN (mg/l)										
BOD 5-day (mg/l)	1470	1400	1400	1400	1400	1400	1400	1400	1360	1360
TOC (mg/l)	660	646	646	646	646	646	646	646	649	649
Phenolics (mg/l)	0.67									
PO4-P (mg/l)										
Org-N (mg/l)										
NO2 (mg/l)										
NO3 (mg/l)										
TDS (mg/l)										
Color (APHA Units)										
BASIN PARAMETERS										
Vol Wasted (ml)	759	772	753	732	758	730	700	723	753	756
D.O. (mg/l)	7.4	7.1	7.2	7.4	7.2	7.3	7.1	7.2	7.4	7.3
SS (mg/l)	2840	2670	2700	2590	2690	2755	2970	2780	2690	2600
*SS (PAC corrected)	2840	2670	2700	2590	2690	2755	2970	2780	2690	2600
Temp (C)	22	24	24	23	23	21	22	23	22	23
pH (std units)	7.9	8.0	7.9	7.8	7.8	8.0	7.9	7.8	8.1	7.9
OUR (mg/l/hr)				46				42		
VSS (mg/l)	2460	2313	2339	2330	2420	2478	2672	2440	2361	2282
*VSS (PAC corrected)	2460	2313	2339	2330	2420	2478	2672	2440	2361	2282
VSS/SS	0.87			0.90				0.88		
*PAC Added (mg)	0	0	0	0	0	0	0	0	0	0
*Inventory (mg/l basin)	0	0	0	0	0	0	0	0	0	0
EFFLUENT PARAMETERS										
Volume (liters)	4.85	4.10	3.70	4.35	4.40	4.20	2.55	4.45	3.75	4.45
COD (mg/l)	169	157	140	145	149	133	141	116	127	137
SS (mg/l)	24	18	34	40	26	46	116	48	34	26
*PAC corrected	24	18	34	40	26	46	116	48	34	26
pH (std units)	7.9	8.0	8.0	8.1	8.0	8.0	8	8.0	8.2	8.0
VSS (mg/l)	24			34				42		
*PAC corrected	24			34				42		
NH3N (mg/l)	5.2	1.8	1.8	1.8	2.9	2.9	2.9	2.9	3.5	3.5
CN (mg/l)										
SCN (mg/l)										
NO2 (mg/l)										
NO3 (mg/l)										
Phenolics (mg/l)	0.025									
PO4-P (mg/l)	12.3								1.3	1.3
Org-N (mg/l)										
TDS (mg/l)										
Color (APHA units)		625	625	625	625	625	625	625		
TOC (mg/l)	49	39	39	39	39	39	39	39	36	36
BOD 5-day (mg/l)	9	3.4	3.4	3.4	3.4	3.4	3.4	3.4	1.8	1.8

UNIT 1A TABLE A1

MONTH	OCT	OCT	OCT	OCT	OCT	OCT	OCT	OCT	OCT	OCT
DAY	13	14	15	16	17	18	19	20	21	22
DAY NO.	79	80	81	82	83	84	85	86	87	88
SYSTEM PARAMETERS										
*Sludge Age	15	15	15	15	15	15.00	15.01	15.03	15.00	15.00
*(F/M)COD	0.18	0.30	0.32	0.30	0.39	0.34	0.34	0.30	0.38	0.38
*HRT	4.1	2.1	2.1	2.0	2.1	1.86	1.86	1.86	1.86	1.86
FEED PARAMETERS (BATCH #)	31	31	31	31	31	32	32	32	32	32
Volume (liters)	2.25	4.35	4.40	4.62	5.00	5	5	5	5	5
pH (std units)	11.0	10.9	10.9	11.7	11.5/9.8	11.5	11.4	11.5	11.5	11.5
COD (mg/l)	2098	1983	1983	1983	1983	1925	1925	1925	1926	1926
NH3N (mg/l)	156	158	158	158	158	169	169	169	166	166
SS (mg/l)						140	140	140	140	140
VSS (mg/l)						46	46	46	46	46
CN (mg/l)										
SCN (mg/l)										
BOD 5-day (mg/l)	1360	1360	1360	1360	1360	1110	1110	1110	1110	1110
TOC (mg/l)	649	649	649	649	649	642	642	642	642	642
Phenolics (mg/l)										
PO4-P (mg/l)										
Org-N (mg/l)										
NO2 (mg/l)										
NO3 (mg/l)										
TDS (mg/l)										
Color (APHA Units)										
BASIN PARAMETERS										
Vol Wasted (ml)	761	703	714	718	748	708	719	720	466	722
D.O. (mg/l)	7.4	7.5	7.5	7.3	7.2	7.2	6.8	6.4	6.2	6.2
SS (mg/l)	2650	2820	2675	3000	2570	2580	2660	2590	2550	2510
*SS (PAC corrected)	2650	2820	2675	3000	2570	2580	2660	2590	2550	2510
Temp (C)	23	22	22	21	22	22	22	20	20	21
pH (std units)	8.2	7.9	8.0	8.0	8.0	7.9	7.7	8.1	8	7.8
OUR (mg/l/hr)	42				40			36		
VSS (mg/l)	2230	2373	2251	2525	2120	2330	2330	2110	2110	2110
*VSS (PAC corrected)	2230	2373	2251	2525	2120	2330	2330	2110	2110	2110
VSS/SS	0.84				0.82			0.81		
*PAC Added (mg)	0	0	0	0	0	0	0	0	0	0
*Inventory (mg/l basin)	0	0	0	0	0	0	0	0	0	0
EFFLUENT PARAMETERS										
Volume (liters)	2.05	4.02	4.80	4.26	4.72	4.75	4.71	4.73	4.73	4.75
COD (mg/l)	146	148	144	152	160	156	129	124	135	134
SS (mg/l)	50	68	48	58	28	50	46	44	180	42
*PAC corrected	50	68	48	58	28	50	46	44	180	42
pH (std units)	8.2	8.0	8.1	8.1	8.1	8.2	8.0	8.2	8.2	8.0
VSS (mg/l)	36				26	34	34	34	34	34
*PAC corrected	36				26	34	34	34	34	34
NH3N (mg/l)	3.5	8.7	8.7	8.7	8.7	8.9	8.9	8.9	3.8	3.8
CN (mg/l)										
SCN (mg/l)										
NO2 (mg/l)										
NO3 (mg/l)										
Phenolics (mg/l)										
PO4-P (mg/l)	1.3	1.3	1.3	1.3	1.3					
Org N (mg/l)										
TDS (mg/l)										
Color (APHA units)						500	500	500	500	500
TQC (mg/l)	36	36	36	36	36	37	37	37	37	37
BOD 5-day (mg/l)	1.8	1.8	1.8	1.8	1.8	1.5	1.5	1.5	1.5	1.5

UNIT 1A TABLE A1

MONTH	OCT	OCT	OCT	OCT	OCT	OCT	OCT	OCT	OCT	NOV
DAY	23	24	25	26	27	28	29	30	31	1
DAY NO.	89	90	91	92	93	94	95	96	97	98
SYSTEM PARAMETERS										
*Sludge Age	15.00	15.00	15.01	15.00	15.00	15.00	14.99	14.99	15.01	15.00
*(F/M)/COD	0.38	0.37	0.40	0.40	0.38	0.35	0.35	0.35	0.31	0.32
*HRT	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86
FEED PARAMETERS (BATCH #)	32	32	32	32	32	32	32	32	32	
Volume (liters)	5	5	5	5	5	5	5	5	5	5
pH (std units)	11.4	11.4	11.4	11.6	11.2	9.7	9.7	9.5	9.3	9.8
COD (mg/l)	1926	1926	2060	2060	2060	1880	1880	1880	1880	1935
NH3N (mg/l)	166	166	150	150	150	170	170	170	170	168
SS (mg/l)	140	140	312	312	312	312	312	312	312	204
VSS (mg/l)	46	46	82	82	82	82	82	82	82	62
CN (mg/l)										4.1
SCN (mg/l)										173
BOD 5-day (mg/l)	1110	1110	1160	1160	1160	1160	1160	1160	1160	1170
TOC (mg/l)	642	642	610	610	610	610	610	610	610	601
Phenolics (mg/l)			0.403	0.403	0.403	0.403	0.403	0.403	0.403	2.29
PO4-P (mg/l)										
Org-N (mg/l)										58
NO2 (mg/l)										
NO3 (mg/l)										
TDS (mg/l)										
Color (APHA Units)										1000
BASIN PARAMETERS										
Vol Wasted (ml)	734	501	731	756	724	725	739	745	761	760
D.O. (mg/l)	6	6.3	6.1	6.1	6.2	6.2	6.2	6.2	6	3.6
SS (mg/l)	2550	2560	2510	2610	2800	2970	2810	3045	3020	3070
*SS (PAC corrected)	2550	2560	2510	2610	2800	2970	2810	3045	3020	3070
Temp (C)	20	21	21	21	20	20	20.5	20	20	20
pH (std units)	7.9	7.8	7.9	7.5	7.7	7.9	7.6	7.7	7.1	7
OUR (mg/l/hr)		34			32				34	
VSS (mg/l)	2110	2160	2160	2160	2270	2270	2270	2270	2530	2530
*VSS (PAC corrected)	2110	2160	2160	2160	2270	2270	2270	2270	2530	2530
VSS/SS		0.84			0.81				0.84	0.84
*PAC Added (mg)	0	0	0	0	0	0	0	0	0	0
*Inventory (mg/l basin)	0	0	0	0	0	0	0	0	0	0
EFFLUENT PARAMETERS										
Volume (liters)	4.7	4.84	4.78	4.79	4.64	4.65	4.79	4.68	4.86	4.73
COD (mg/l)	126	120	122	113	122	121	128	140	145	144
SS (mg/l)	42	158	36	24	46	48	36	36	24	26
*PAC corrected	42	158	36	24	46	48	36	36	24	26
pH (std units)	7.9	8.0	8.0	8.0	8.2	8.2	8.0	7.7	7.4	7.2
VSS (mg/l)	34	134	134	134	34	34	34	34	22	22
*PAC corrected	34	134	134	134	34	34	34	34	22	22
NH3N (mg/l)	3.8	3.8	3.7	3.7	3.7	3.9	3.9	3.9	3.9	10.3
CN (mg/l)										2.25
SCN (mg/l)										6.3
NO2 (mg/l)										3.26
NO3 (mg/l)										146
Phenolics (mg/l)			0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025
PO4-P (mg/l)			3.5	3.5	3.5	3.5	3.5	3.5	3.5	29.9
Org-N (mg/l)										4
TDS (mg/l)										
Color (APHA units)	500	500								875
TOC (mg/l)	37	37	36	36	36	36	36	36	36	44
BOD 5-day (mg/l)	1.5	1.5	2.1	2.1	2.1	2.1	2.1	2.1	2.1	6.4

UNIT 1A TABLE A1

MONTH	NOV	NOV	NOV	NOV	NOV	NOV	NOV	NOV	NOV	NOV
DAY	2	3	4	5	6	7	8	9	10	11
DAY NO.	99	100	101	102	103	104	105	106	107	108
SYSTEM PARAMETERS										
*Sludge Age	15.00	14.99	11.07	14.99	15.01	15.00	14.99	15.09	15.12	15.01
*(F/M)/COD	0.32	0.32	0.34	0.34	0.33	0.34	0.37	0.34	0.31	0.38
*HRT	1.86	1.86	1.86	1.86	1.86	1.86	1.69	2.07	2.10	2.10
FEED PARAMETERS (BATCH #)										
Volume (liters)	5	5	5	5	5	5	5.5	4.5	4.42	4.42
pH (std units)	9.8	9.7	9.6	12.2	12.2	12.2	11.2	12.4	11.9	10.6
COD (mg/l)	1935	1935	2050	2050	2050	2050	2011	2011	2011	1992
NH3N (mg/l)	168	168	173	173	173	173	164	164	164	156
SS (mg/l)	204	204	204	204	204	204	338	338	338	338
VSS (mg/l)	62	62	62	62	62	62	90	90	90	90
CN (mg/l)	4.1	4.1	4.1	4.1	4.1	4.1				
SCN (mg/l)	173	173	173	173	173	173				
BOD 5-day (mg/l)	1170	1170	1330	1330	1330	1330	1210	1210	1210	1280
TOC (mg/l)	601	601	629	629	629	629	626	626	626	643
Phenolics (mg/l)	2.29	2.29	2.29	2.29	2.29	2.29	5.24	5.24	5.24	5.24
PO4-P (mg/l)										
Org-N (mg/l)	58	58	58	58	58	58				
NO2 (mg/l)										
NO3 (mg/l)										
TDS (mg/l)										
Color (APHA Units)	1000	1000	1000	1000	1000	1000	750	750	750	750
BASIN PARAMETERS										
Vol Wasted (ml)	757	748	10	753	685	733	700	725	746	765
D.O. (mg/l)	3.6	8.5	5	5.8	5.6	9	8.2	8.1	8.6	8.6
SS (mg/l)	2880	2860	2671	2810	3010	3260	3170	2860	2735	2180
*SS (PAC corrected)	2880	2860	2671	2810	3010	3260	3170	2860	2735	2180
Temp (C)	20	19.5	19.5	19	20	19	19	19.5	19.5	19
pH (std units)	6.4	6.6	6.4	6.3	8.4	9.4	8.6	7.9	7.9	7.2
OUR (mg/l/hr)		22	22			21			34	
VSS (mg/l)	2530	2490	2490	2490	2621	2530	2460	2220	2395	1909
*VSS (PAC corrected)	2530	2490	2490	2490	2621	2530	2460	2220	2395	1909
VSS/SS	0.84	0.87	0.87	0.87	0.87	0.78	0.78	0.78	0.88	0.88
*PAC Added (mg)	0	0	0	0	0	0	0	0	0	0
*Inventory (mg/l basin)	0	0	0	0	0	0	0	0	0	0
EFFLUENT PARAMETERS										
Volume (liters)	4.77	4.69	4.86	4.75	4.66	4.74	5.49	4.31	4.33	4.2
COD (mg/l)	142	144	150	171	167	233	248	284	308	257
SS (mg/l)	50	32	590	28	74	46	58	50	34	18
*PAC corrected	50	32	590	28	74	46	58	50	34	18
pH (std units)	7.3	6.9	6.8	6.7	8.2	8.8	8.5	8.8	8.0	7.6
VSS (mg/l)	22	24	24	24	24	38	38	38	38	38
*PAC corrected	22	24	24	24	24	38	38	38	38	38
NH3N (mg/l)	10.3	10.3	40.2	40.2	40.2	40.2	92.4	92.4	92.4	47.1
CN (mg/l)	2.25	2.25	2.25	2.25	2.25	2.25				
SCN (mg/l)	6.3	6.3	6.3	6.3	6.3	6.3				
NO2 (mg/l)	3.26	3.26	3.26	3.26	3.26	3.26				
NO3 (mg/l)	146	146	146	146	146	146				
Phenolics (mg/l)	0.025	0.025	0.025	0.025	0.025	0.025				
PO4-P (mg/l)	29.9	29.9	21.5	21.5	21.5	21.5	3.6	3.6	3.6	10.8
Org-N (mg/l)	4	4	4	4	4	4				
TDS (mg/l)										
Color (APHA units)	875	875	875	875	875	875	875	875	875	875
TOC (mg/l)	44	44	48	48	48	48	53	53	53	53
BOD 5-day (mg/l)	6.4	6.4	6.9	6.9	6.9	6.9	6.6	6.6	6.6	3.0

UNIT 1A TABLE A1

MONTH	NOV	NOV	NOV	NOV	NOV	NOV	NOV	NOV	NOV	NOV
DAY	12	13	14	15	16	17	18	19	20	21
DAY NO.	109	110	111	112	113	114	115	116	117	118
SYSTEM PARAMETERS										
*Sludge Age	15.00	15.00	15.07	15.00	15.02	15.00	15.07	14.21	14.99	15.16
*(F/M)COD	0.44	0.37	0.34	0.34	0.40	0.37	0.43	0.49	0.43	0.38
*HRT	1.90	2.10	1.96	2.07	2.09	2.00	2.16	1.85	2.24	1.96
FEED PARAMETERS (BATCH #)										
Volume (liters)	4.9	4.425	4.75	4.5	4.45	4.64	4.3	5.03	4.15	4.74
pH (std units)	11.8	11.7	11.8	11.9	12	11.8	11.2	11.8	11.8	11.9
COD (mg/l)	1992	1992	1992	2059	2059	2059	2059	2059	2059	2059
NH3N (mg/l)	156	156	156	135	135	135	134	134	134	134
SS (mg/l)	338	338	338	700	700	700	700	700	700	700
VSS (mg/l)	90	90	90	122	122	122	122	122	122	122
CN (mg/l)				3.99	3.99	3.99	3.99	3.99	3.99	3.99
SCN (mg/l)				173	173	173	173	173	173	173
BOD 5-day (mg/l)	1280	1280	1280	1050	1050	1050	1320	1320	1320	1320
TOC (mg/l)	643	643	643	637	637	637	653	653	653	653
Phenolics (mg/l)	5.24	5.24	5.24	3.33	3.33	3.33	3.33	3.33	3.33	3.33
PO4-P (mg/l)										
Org-N (mg/l)				60	60	60	60	60	60	60
NO2 (mg/l)										
NO3 (mg/l)										
TDS (mg/l)										
Color (APHA Units)	750	750	750	1250	1250	1250	1250	1250	1250	1250
BASIN PARAMETERS										
Vol Wasted (ml)	762	595	760	770	770	710	760	260	507	660
D.O. (mg/l)	8.6	8.2	8.6	8.2	6.8	8.6	8	8	7.9	8.2
SS (mg/l)	2110	2290	2590	2538	2135	2443	1983	1998	1905	2345
*SS (PAC corrected)	2110	2290	2590	2538	2135	2443	1983	1998	1905	2345
Temp (C)	19	19	18.5	18	19.5	19	18	19	19	19
pH (std units)	7.7	7.7	7.9	8	6.8	7.9	7.5	7.6	7.9	8.2
OUR (mg/l/hr)			56			25.2				44
VSS (mg/l)	1848	2005	2290	2244	1888	2133	1731	1744	1663	2113
*VSS (PAC corrected)	1848	2005	2290	2244	1888	2133	1731	1744	1663	2113
VSS/SS	0.88	0.88	0.88	0.88	0.88	0.87	0.87	0.87	0.87	0.90
*PAC Added (mg)	0	0	0	0	0	0	0	0	0	0
*Inventory (mg/l basin)	0	0	0	0	0	0	0	0	0	0
EFFLUENT PARAMETERS										
Volume (liters)	4.47	4.35	4.25	4.2	4.4	4.41	4.02	4.67	4.3	4.41
COD (mg/l)	238	209	226	201	184	195	179	181	183	233
SS (mg/l)	18	100	22	18	14	50	18	250	130	70
*PAC corrected	18	100	22							
pH (std units)	7.3	7.3	7.8	8.2	7.9	7.6	7.5	7.7	8.1	8.4
VSS (mg/l)	38	38	20			40				70
*PAC corrected	38	38	20							
NH3N (mg/l)	47.1	47.1	47.1	6.3	6.3	6.3	4.9	4.9	4.9	4.9
CN (mg/l)				1.52	1.52	1.52	1.52	1.52	1.52	1.52
SCN (mg/l)				4.2	4.2	4.2	4.2	4.2	4.2	4.2
NO2 (mg/l)				17.3	17.3	17.3	17.3	17.3	17.3	17.3
NO3 (mg/l)				148	148	148	148	148	148	148
Phenolics (mg/l)				0.025	0.025	0.025	0.025	0.025	0.025	0.025
PO4-P (mg/l)	10.8	10.8	10.8	5.4	5.4	5.4	4.5	4.5	4.5	4.5
Org-N (mg/l)				6	6	6	6	6	6	6
TDS (mg/l)										
Color (APHA units)	875	875	875	750	750	750	750	750	750	750
TOC (mg/l)	53	53	53	53	53	55	55	55	55	55
BOD 5-day (mg/l)	3.0	3.0	3.0	1.6	1.6	1.6	3.2	3.2	3.2	3.2

UNIT 1A TABLE A1

MONTH	NOV	NOV	NOV	NOV	NOV	NOV	NOV	NOV	NOV	DEC
DAY	22	23	24	25	26	27	28	29	30	1
DAY NO.	119	120	121	122	123	124	125	126	127	128
SYSTEM PARAMETERS										
*Sludge Age	15.07	15.21	15.01	14.93	14.99	15.00	15.00	15.00	15.00	15.00
*(F/M)COD	0.38	0.37	0.27	0.01	0.24	0.29	0.35	0.37	0.49	0.45
*HRT	2.04	2.12	1.89	*66.42857	2.69	2.43	2.48	2.33	1.80	1.94
FEED PARAMETERS (BATCH #)										
Volume (liters)	4.55	4.39	4.93	0.14	3.46	3.825	3.75	4	5.17	4.8
pH (std units)	11.9	11	12	10	12	11.5	11.9	11.8	11.8	11.7
COD (mg/l)	2059	2059	2059	2098	2098	2098	2098	2027	2027	2027
NH3N (mg/l)	134	134	134	147	147	147	147	147	147	147
SS (mg/l)	795	795	795	795	795	795	795	395	395	395
VSS (mg/l)	170	170	170	170	170	170	170	85	85	85
CN (mg/l)	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24
SCN (mg/l)	188	188	188	188	188	188	188	188	188	188
BOD 5-day (mg/l)	1240	1240	1240	1220	1220	1220	1220	1200	1200	1200
TOC (mg/l)	650	650	650	660	660	660	660	647	647	647
Phenolics (mg/l)	5.11	5.11	5.11	5.11	5.11	5.11	5.11	5.09	5.09	5.09
PO4-P (mg/l)										
Org-N (mg/l)	73	73	73	73	73	73	73	73	73	73
NO2 (mg/l)										
NO3 (mg/l)										
TDS (mg/l)										
Color (APHA Units)	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500
BASIN PARAMETERS										
Vol Wasted (ml)	680	720	640	710	169	525	470	531	502	647
D.O. (mg/l)	8.6	7.8	7.8	7.8	8	8	8	8	8	8
SS (mg/l)	2260	2285	3555	3108	2870	2663	2617	2545	2445	2425
*SS (PAC corrected)	2260	2285	3555	3108	2870	2663	2617	2545	2445	2425
Temp (C)	19	19	20	19	19	19	19	20	19	19
pH (std units)	8	7.6	8	7.9	8	7.8	8	8.2	8.3	8
OUR (mg/l/hr)							18			24
VSS (mg/l)	2036	2010	3127	2734	2525	2343	1895	1843	1770	1790
*VSS (PAC corrected)	2036	2010	3127	2734	2525	2343	1895	1843	1770	1790
VSS/SS	0.90	0.88	0.88	0.88	0.88	0.88	0.72	0.72	0.72	0.74
*PAC Added (mg)	0	0	0	0	0	0	0	0	0	0
*Inventory (mg/l basin)	0	0	0	0	0	0	0	0	0	0
EFFLUENT PARAMETERS										
Volume (liters)	4.38	4.16	4.64	0.29	3	3.7	3.375	3.6	4.73	4.32
COD (mg/l)	231	235	237	225	225	202	199	194	192	205
SS (mg/l)	60	38	122	1004	604	198	256	190	154	86
*PAC corrected										
pH (std units)	8.5	8.3	7.7	8.2	7.9	7.8	7.8	8.0	8.1	8.0
VSS (mg/l)			38				116			46
*PAC corrected										
NH3N (mg/l)	(4	(4	(4	(4	(4	(4	(4	7.1	7.1	7.1
CN (mg/l)								1.41	1.41	1.41
SCN (mg/l)								3.7	3.7	3.7
NO2 (mg/l)								15.5	15.5	15.5
NO3 (mg/l)								131	131	131
Phenolics (mg/l)	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025
PO4-P (mg/l)	3.6	3.6	3.6	4.4	4.4	4.4	4.4	3.6	3.6	3.6
Org-N (mg/l)								5.5	5.5	5.5
TDS (mg/l)								4780	4780	4780
Color (APHA units)	750	750	750	750	750	750	750	750	750	750
TOC (mg/l)	60	60	60	53	53	53	53	50	50	50
BOD 5-day (mg/l)	3.7	3.7	3.7	(3	(3	(3	(3	3.4	3.4	3.4

UNIT 1A TABLE A1

MONTH	DEC	DEC	DEC	DEC	DEC	DEC	DEC	DEC	DEC	DEC
DAY	2	3	4	5	6	7	8	9	10	11
DAY NO.	129	130	131	132	133	134	135	136	137	138
SYSTEM PARAMETERS										
*Sludge Age	14.99	15.01	15.01	15.01	15.00	14.96	15.00	15.00	14.98	15.01
*(F/M)COD	0.47	0.43	0.36	0.39	0.35	0.40	0.40	0.40	0.42	0.37
*HRT	1.86	1.69	2.07	1.88	2.27	1.82	1.88	1.90	1.69	2.04
FEED PARAMETERS (BATCH #)										
Volume (liters)	4.99	5.5	4.5	4.95	4.1	5.12	4.95	4.9	5.5	4.55
pH (std units)	11.7	11.7	11.6	11.5	11	11.6	11.8	11.8	11.8	11.5
COD (mg/l)	2046	2046	2046	2046	2060	2060	2060	2122	2122	2122
NH3N (mg/l)	142	142	142	142	131	131	131	140	140	140
SS (mg/l)	395	395	395	395	522	522	522	522	522	522
VSS (mg/l)	85	85	85	85	114	114	114	114	114	114
CN (mg/l)	1.24	1.24	1.24	1.24						
SCN (mg/l)	188	188	188	188						
BOD 5-day (mg/l)	1250	1250	1250	1250	1210	1210	1210	1260	1260	1260
TOC (mg/l)	638	638	638	638	637	637	637	664	664	664
Phenolics (mg/l)	5.09	5.09	5.09	5.09	5.61	5.61	5.61	5.61	5.61	5.61
PO4-P (mg/l)										
Org-N (mg/l)	73	73	73	73						
NO2 (mg/l)										
NO3 (mg/l)										
TDS (mg/l)										
Color (APHA Units)	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500
BASIN PARAMETERS										
Vol Wasted (ml)	698	680	709	729	600	740	627	694	690	559
D.O. (mg/l)	8	8	8.1	7.9	8	7.2	7.1	7	7	7
SS (mg/l)	2460	2965	2862	2895	2850	3198	3045	3138	3312	3167
*SS (PAC corrected)	2460	2965	2002	2075	2850	3198	3045	3138	3312	3167
Temp (C)	18	18	18	19	19	18.5	19	19	19	19
pH (std units)	8	8	8	7.9	8.2	8.3	8.2	8	7.8	7.8
OUR (mg/l/hr)					36					
VSS (mg/l)	1816	2189	2113	2140	1983	2225	2112	2177	2297	2197
*VSS (PAC corrected)	1816	2189	2113	2140	1983	2225	2112	2177	2297	2197
VSS/SS	0.74	0.74	0.74	0.74	0.70	0.70	0.69	0.69	0.69	0.69
*PAC Added (mg)	0	0	0	0	0	0	0	0	0	0
*Inventory (mg/l basin)	0	0	0	0	0	0	0	0	0	0
EFFLUENT PARAMETERS										
Volume (liters)	4.5	5.07	4.32	4.45	3.7	4.73	4.46	4.5	5.4	4.33
COD (mg/l)	197	205	203	196	180	180	217	180	184	186
SS (mg/l)	56	70	60	46	148	42	118	74	68	176
*PAC corrected										
pH (std units)	8.0	8.1	8.3	8.1	8.1	8.3	8.1	8.1	7.9	7.8
VSS (mg/l)				32	78		58			
*PAC corrected										
NH3N (mg/l)	38.6	38.6	38.6	38.6	41.4	41.4	41.4	28.8	28.8	28.8
CN (mg/l)	1.41	1.41	1.41	1.41						
SCN (mg/l)	3.7	3.7	3.7	3.7						
NO2 (mg/l)	15.5	15.5	15.5	15.5						
NO3 (mg/l)	131	131	131	131						
Phenolics (mg/l)	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025
PO4-P (mg/l)	3.6	3.6	3.6	3.6	4.6	4.6	4.6	6.1	6.1	6.1
Org-N (mg/l)	5.5	5.5	5.5	5.5						
TDS (mg/l)	4780	4780	4780	4780	4505	4505	4505	4505	4505	4505
Color (APHA units)	750	750	750	750	750	750	750	750	750	750
TOC (mg/l)	53	53	53	53	51	51	51	46	46	46
BOD 5-day (mg/l)	3	3	3	3	2	2	2	2	2	2

UNIT 1A TABLE A1

MONTH	DEC	DEC	DEC	DEC	DEC	DEC	DEC	DEC	DEC	DEC
DAY	12	13	14	15	16	17	18	19	20	21
DAY NO.	139	140	141	142	143	144	145	146	147	148
SYSTEM PARAMETERS										
*Sludge Age	14.99	14.99	15.00	15.01	14.99	15.01	14.99	15.00	15.00	14.99
*(F/M)COD	0.38	0.36	0.36	0.36	0.37	0.34	0.33	0.32	0.33	0.31
*HRT	1.88	1.86	1.86	1.81	1.72	1.86	1.92	2.07	2.27	2.16
FEED PARAMETERS (BATCH #)										
Volume (liters)	4.95	5	5	5.15	5.4	4.99	4.85	4.5	4.1	4.3
pH (std units)	11.5	11.6	11.5	11.6	11.5	11.5	11.6	11.3	10.5	9.8
COD (mg/l)	2122	2011	2011	2011	2016	2016	2016	2016	2037	2037
NH3N (mg/l)	140	136	136	136	136	136	136	136	123	123
SS (mg/l)	522	482	482	482	482	482	482	482	500	500
VSS (mg/l)	114	94	94	94	94	94	94	94	108	108
CN (mg/l)		1.08	1.08	1.08	1.08	1.08	1.08	1.08		
SCN (mg/l)		184	184	184	184	184	184	184		
BOD 5-day (mg/l)	1260	1200	1200	1200	1220	1220	1220	1220	1160	1160
TOC (mg/l)	664	640	640	640	651	651	651	651	650	650
Phenolics (mg/l)	5.61	5.43	5.43	5.43	5.43	5.43	5.43	5.43	6.96	6.96
PO4-P (mg/l)										
Org-N (mg/l)		78	78	78	78	78	78	78		
NO2 (mg/l)										
NO3 (mg/l)										
TDS (mg/l)										
Color (APHA Units)	1500	1500	1500	1500	1500	1500	1500	1500	2500	2500
BASIN PARAMETERS										
Vol Wasted (ml)	743	729	754	740	619	694	723	717	563	737
D.O. (mg/l)	7.2	7.2	7.2	7.1	7	7	7.2	7.2	7.2	7.2
SS (mg/l)	3230	3262	3267	3355	3415	3425	3440	3470	3157	3495
*SS (PAC corrected)	3230	3262	3267	3355	3415	3425	3440	3470	3157	3495
Temp (C)	19	19	19	19	19	18	18	19	19	18
pH (std units)	7.8	7.9	8	8	7.7	8.2	8.2	8.5	8.1	8
OUR (mg/l/hr)	24							24		
VSS (mg/l)	2292	2315	2318	2387	2430	2437	2447	2332	2122	2349
*VSS (PAC corrected)	2292	2315	2318	2387	2430	2437	2447	2332	2122	2349
VSS/SS	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.67	0.67	0.67
*PAC Added (mg)	0	0	0	0	0	0	0	0	0	0
*Inventory (mg/l basin)	0	0	0	0	0	0	0	0	0	0
EFFLUENT PARAMETERS										
Volume (liters)	4.63	4.65	4.7	4.75	5.25	4.64	4.75	4.35	3.6	3.95
COD (mg/l)	184	169	168	195	180	182	167	174	188	190
SS (mg/l)	40	50	32	42	118	78	56	66	208	56
*PAC corrected										
pH (std units)	7.9	7.9	8.0	8.0	7.8	8.2	8.3	8.5	8.3	8.2
VSS (mg/l)	32		26	34	96	63	45	40	126	34
*PAC corrected										
NH3N (mg/l)	28.8	42.8	42.8	42.8	67.6	67.6	67.6	67.6	88.2	88.2
CN (mg/l)		2.41	2.41	2.41	2.41	2.41	2.41	2.41		
SCN (mg/l)		3.9	3.9	3.9	3.9	3.9	3.9	3.9		
NO2 (mg/l)		9.05	9.05	9.05	9.05	9.05	9.05	9.05		
NO3 (mg/l)		95	95	95	95	95	95	95		
Phenolics (mg/l)	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025
PO4-P (mg/l)	6.1	4.3	4.3	4.3	3.4	3.4	3.4	6.2	6.2	6.2
Org-N (mg/l)		12	12	12	12	12	12	12		
TDS (mg/l)	4505	4345	4345	4345	4345	4345	4345	4345	4375	4375
Color (APHA units)	750	875	875	875	875	875	875	875	1000	1000
TOC (mg/l)	46	49	49	49	48	48	48	48	47	47
BOD 5-day (mg/l)	12	5.3	5.3	5.3	4	4	4	4	5	5

UNIT 1A TABLE A1

MONTH	DEC	DEC	DEC	DEC	DEC	DEC	DEC	DEC	DEC	DEC
DAY	22	23	24	25	26	27	28	29	30	31
DAY NO.	149	150	151	152	153	154	155	156	157	158
SYSTEM PARAMETERS										
*Sludge Age	14.99	15.00	13.20	15.00	15.02	14.99	15.01	14.99	15.00	15.00
*(F/M)COD	0.36	0.32	0.33	0.29	0.32	0.30	0.30	0.31	0.33	0.35
*HRT	1.84	2.07	1.85	2.00	2.01	2.27	2.11	2.02	2.04	1.81
FEED PARAMETERS (BATCH #)										
Volume (liters)	5.05	4.5	5.03	4.64	4.63	4.1	4.4	4.6	4.55	5.15
pH (std units)	10.9	10.1	10.2	10.3	10.2	10	9.9	10.3	10.3	10.05
COD (mg/l)	2037	1957	1957	1957	1957	1990	1990	1990	1960	1960
NH3N (mg/l)	123	165	165	165	165	209	209	209	187	187
SS (mg/l)	500	500	500	500	500	208	208	208	208	208
VSS (mg/l)	108	108	108	108	108	60	60	60	60	60
CN (mg/l)						1.99	1.99	1.99	1.99	1.99
SCN (mg/l)						207	207	207	207	207
BOD 5-day (mg/l)	1160	1030	1030	1030	1030	1035	1035	1035	1010	1010
TOC (mg/l)	650	598	598	598	598	535	535	535	573	573
Phenolics (mg/l)	6.96	6.96	6.96	6.96	6.96	11.03	11.03	11.03	11.03	11.03
PO4-P (mg/l)										
Org-N (mg/l)						76	76	76	76	76
NO2 (mg/l)										
NO3 (mg/l)										
TDS (mg/l)										
Color (APHA Units)	2500	2500	2500	2500	2500	3500	3500	3500	3500	3500
BASIN PARAMETERS										
Vol Wasted (ml)	763	760	760	774	323	752	600	729	724	735
D.O. (mg/l)	7	7.1	7.1	7	7	7	7	8	8.5	8.5
SS (mg/l)	3488	3302	3695	3785	3440	3382	3622	3697	3300	3523
*SS (PAC corrected)	3488	3302	3695	3785	3440	3382	3622	3697	3300	3523
Temp (C)	19	19	18	18	18	20	24	20	21	19.5
pH (std units)	8	7.9	7.9	7.9	8.4	8.4	8.4	8.1	8.2	7.75
OUR (mg/l/hr)	24				24			18		
VSS (mg/l)	2393	2265	2475	2597	2360	2265	2426	2495	2227	2378
*VSS (PAC corrected)	2393	2265	2475	2597	2360	2265	2426	2495	2227	2378
VSS/SS	0.69	0.69	0.67	0.69	0.69	0.67	0.67	0.67	0.67	0.67
*PAC Added (mg)	0	0	0	0	0	0	0	0	0	0
*Inventory (mg/l basin)	0	0	0	0	0	0	0	0	0	0
EFFLUENT PARAMETERS										
Volume (liters)	4.65	4.1	4.45	4.14	4.55	3.71	4.2	4.25	4.05	4.77
COD (mg/l)	176	176	159	159	174	167	212	197	191	168
SS (mg/l)	28	32	124	24	360	44	172	62	62	48
*PAC corrected										
pH (std units)	7.9	7.9	7.9	7.8	8.3	8.2	8.2	8.2	8.1	8.0
VSS (mg/l)	22	25	101	19	283	36	141	40	40	31
*PAC corrected										
NH3N (mg/l)	88.2	99.4	99.4	99.4	99.4	165	165	165	210	210
CN (mg/l)						0.447	0.447	0.447	0.447	0.447
SCN (mg/l)						4.9	4.9	4.9	4.9	4.9
NO2 (mg/l)						0.62	0.62	0.62	0.62	0.62
NO3 (mg/l)						2.98	2.98	2.98	2.98	2.98
Phenolics (mg/l)	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025
PO4-P (mg/l)	6.2	7.3	7.3	7.3	7.3	5.3	5.3	5.3	6.3	6.3
Org-N (mg/l)						11	11	11	11	11
TDS (mg/l)	4375	4375	4375	4375	4375	4390	4390	4390	4390	4390
Color (APHA units)	1000	1000	1000	1000	1000	1250	1250	1250	1250	1250
TOC (mg/l)	47	47	47	47	47	51	51	51	52	52
BOD 5-day (mg/l)	5	3	3	3	3	2	2	2	3	3

UNIT 1A TABLE A1

MONTH	JAN	JAN	JAN	JAN	JAN	JAN	JAN	JAN	JAN	JAN
DAY	1	2	3	4	5	6	7	8	9	10
DAY NO.	159	160	161	162	163	164	165	166	167	168
SYSTEM PARAMETERS										
*Sludge Age	15.00	15.00	15.01	12.00	12.00	12.00	12.00	12.00	12.01	12.00
*(F/M)COD	0.39	0.31	0.30	0.36	0.37	0.36	0.35	0.32	0.35	0.39
*HRT	1.75	2.19	2.27	1.92	1.92	2.00	1.78	1.96	2.04	2.02
FEED PARAMETERS (BATCH #)										
Volume (liters)	5.3	4.25	4.1	4.85	4.85	4.65	5.23	4.75	4.55	4.6
pH (std units)	10.5	10.6	10.5	11.5	9.8	11.4	11.5	10.5	10.2	10.3
COD (mg/l)	1960	1960	1780	1780	1780	1823	1823	1823	1823	1910
NH3N (mg/l)	187	187	185	185	185	176	176	176	176	195
SS (mg/l)	208	208	474	474	474	474	474	474	474	344
VSS (mg/l)	60	60	94	94	94	94	94	94	94	102
CN (mg/l)	1.99	1.99								0.203
SCN (mg/l)	207	207								155
BOD 5-day (mg/l)	1010	1010	1050	1050	1050	1030	1030	1030	1030	1020
TOC (mg/l)	573	573	560	560	560	560	560	560	560	603
Phenolics (mg/l)	11.03	11.03	10.3	10.3	10.3	10.3	10.3	10.3	10.3	9.3
PO4-P (mg/l)										
Org-N (mg/l)	76	76								66
NO2 (mg/l)										
NO3 (mg/l)										
TDS (mg/l)										
Color (APHA Units)	3500	3500	1750	1750	1750	1750	1750	1750	1750	2500
BASIN PARAMETERS										
Vol Wasted (ml)	756	691	719	931	678	930	981	963	810	865
D.O. (mg/l)	8.5	8.5	8.4	8.4	8	8	8	8	8	7.1
SS (mg/l)	3292	3350	2920	2862	2732	2735	3133	3118	2793	2635
*SS (PAC corrected)	3292	3350	2920	2862	2732	2735	3133	3118	2793	2635
Temp (C)	19	20	20	20	19	21	19	18	19	20
pH (std units)	7.7	8.45	8.4	8.5	8.4	8.3	7.8	7.5	7.5	7.8
DUR (mg/l/hr)			36		36				36	
VSS (mg/l)	2222	2261	2035	1995	1955	1957	2242	2231	1995	1882
*VSS (PAC corrected)	2222	2261	2035	1995	1955	1957	2242	2231	1995	1882
VSS/SS	0.67	0.67	0.70	0.70	0.72	0.72	0.72	0.72	0.71	0.71
*PAC Added (mg)	0	0	0	0	0	0	0	0	0	0
*Inventory (mg/l basin)	0	0	0	0	0	0	0	0	0	0
EFFLUENT PARAMETERS										
Volume (liters)	4.83	4.25	3.8	4.5	4.15	4.35	4.97	4.42	4.2	4.35
COD (mg/l)	162	197	197	217	188	177	166	168	135	125
SS (mg/l)	30	86	62	44	212	44	12	26	126	82
*PAC corrected										
pH (std units)	7.8	8.4	8.2	8.5	8.3	8.4	8.0	7.8	7.5	7.7
VSS (mg/l)	19	55	40	20	142	29	8	17	70	46
*PAC corrected										
NH3N (mg/l)	210	210	205	205	205	211	211	211	211	215
CN (mg/l)	0.447	0.447								0.616
SCN (mg/l)	4.9	4.9								4.9
NO2 (mg/l)	0.62	0.62								0.25
NO3 (mg/l)	2.98	2.98								2.5
Phenolics (mg/l)	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025
PO4-P (mg/l)	6.3	6.3	3.6	3.6	3.6	13.5	13.5	13.5	13.5	13.1
Org-N (mg/l)	11	11								5
TDS (mg/l)	4390	4390	4766	4766	4766	4766	4766	4766	4766	5128
Color (APHA units)	1250	1250	1000	1000	1000	1000	1000	1000	1000	750
TOC (mg/l)	52	52	61	61	61	45	45	45	45	43
BOD 5-day (mg/l)	3	3	2	2	2	3	3	3	3	3

UNIT 1A TABLE A1

MONTH	JAN	JAN	JAN	JAN	JAN	JAN	JAN	JAN	JAN	JAN
DAY	11	12	13	14	15	16	17	18	19	20
DAY NO.	169	170	171	172	173	174	175	176	177	178
SYSTEM PARAMETERS										
*Sludge Age	12.82	12.00	12.00	12.00	9.74	12.00	12.00	12.00	12.00	12.00
*(F/M)COD	0.39	0.42	0.44	0.37	0.45	0.37	0.41	0.42	0.43	0.40
*HRT	2.09	2.02	1.94	2.02	1.86	2.30	2.04	2.00	1.94	1.92
FEED PARAMETERS (BATCH #)										
Volume (liters)	4.45	4.6	4.8	4.6	5	4.05	4.55	4.65	4.8	4.85
pH (std units)	10.1	10.5	10.9	10.2	11	10.7	10.1	10.4	9.9	9.9
COD (mg/l)	1910	1910	2030	2030	2030	2030	1975	1975	1975	1936
NH3N (mg/l)	195	195	189	189	189	189	176	176	176	150
SS (mg/l)	344	344	344	344	344	344	684	684	684	684
VSS (mg/l)	102	102	102	102	102	102	148	148	148	148
CN (mg/l)	0.203	0.203	0.203	0.203	0.203	0.203				
SCN (mg/l)	155	155	155	155	155	155				
BOD 5-day (mg/l)	1020	1020	980	980	980	980	960	960	960	1120
TOC (mg/l)	603	603	587	587	587	587	606	606	606	608
Phenolics (mg/l)	9.3	9.3	9.3	9.3	9.3	9.3	9.59	9.59	9.59	9.59
PO4-P (mg/l)										
Org-N (mg/l)	66	66	66	66	66	66				
NO2 (mg/l)										
NO3 (mg/l)										
TDS (mg/l)										
Color (APHA Units)	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500
BASIN PARAMETERS										
Vol Wasted (ml)	800	800	717	807	800	785	818	827	805	833
D.O. (mg/l)	8	8	7.1	8	8	7.4	7.5	7.3	7	7
SS (mg/l)	2530	2442	2580	2955	2618	2590	2560	2512	2597	2725
*SS (PAC corrected)	2530	2442	2580	2955	2618	2590	2560	2512	2597	2725
Temp (C)	20	20	20	19	18	18	21	19	19	19
pH (std units)	7.7	8	8	8	8	8.3	8.3	8.3	8.1	8
OUR (mg/l/hr)						10			12	
VSS (mg/l)	1807	1744	1843	2111	1870	1855	1838	1804	1850	1941
*VSS (PAC corrected)	1807	1744	1843	2111	1870	1855	1838	1804	1850	1941
VSS/SS	0.71	0.71	0.71	0.71	0.71	0.72	0.72	0.72	0.71	0.71
*PAC Added (mg)	0	0	0	0	0	0	0	0	0	0
*Inventory (mg/l basin)	0	0	0	0	0	0	0	0	0	0
EFFLUENT PARAMETERS										
Volume (liters)	4.1	4.3	4.45	4.92	4.64	4.22	4.48	4.35	4.53	4.55
COD (mg/l)	180	185	202	198	232	204	206	184	209	211
SS (mg/l)	84	68	164	116	244	132	104	100	112	100
*PAC corrected										
pH (std units)	7.7	8.0	8.1	8.1	8.1	7.9	8.2	8.2	8.1	8.0
VSS (mg/l)	47	38	91	64	136	78	61	59	80	71
*PAC corrected										
NH3N (mg/l)	215	215	210	210	210	210	198	198	198	186
CN (mg/l)	0.616	0.616	0.616	0.616	0.616	0.616				
SCN (mg/l)	4.9	4.9	4.9	4.9	4.9	4.9				
NO2 (mg/l)	0.25	0.25	0.25	0.25	0.25	0.25				
NO3 (mg/l)	2.5	2.5	2.5	2.5	2.5	2.5				
Phenolics (mg/l)	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025
PO4-P (mg/l)	13.1	13.1	6.3	6.3	6.3	6.3	8.95	8.95	8.95	7.5
Org-N (mg/l)	5	5	5	5	5	5				
TDS (mg/l)	5128	5128	5128	5128	5128	5128	4915	4915	4915	4915
Color (APHA units)	750	750	750	750	750	750	750	750	750	750
TOC (mg/l)	43	43	49	49	49	49	51	51	51	56
BOD 5-day (mg/l)	3	3	3	3	3	3	3.5	3.5	3.5	4

UNIT 1A TABLE A1

MONTH	JAN	JAN	JAN	JAN	JAN	JAN	JAN	JAN	JAN	JAN
DAY	21	22	23	24	25	26	27	28	29	30
DAY NO.	179	180	181	182	183	184	185	186	187	188
SYSTEM PARAMETERS										
*Sludge Age	12.00	12.00	12.00	12.00	12.00	11.99	12.00	12.00	11.99	12.00
*(F/M)COD	0.34	0.34	0.35	0.46	0.37	0.39	0.38	0.42	0.41	0.39
*HRT	1.79	1.89	2.02	1.72	2.02	2.09	2.09	1.69	1.69	2.02
FEED PARAMETERS (BATCH #)										
Volume (liters)	5.2	4.93	4.6	5.4	4.6	4.45	4.45	5.5	5.5	4.6
pH (std units)	10.25	10.05	9.8	10.2	10.1	10.5	10.4	11.4	11.3	10.6
COD (mg/l)	1936	1936	1936	2056	2056	2056	2068	2068	2068	2068
NH3N (mg/l)	150	150	150	152	152	152	176	176	176	176
SS (mg/l)	684	684	684	480	480	480	480	480	480	480
VSS (mg/l)	148	148	148	154	154	154	154	154	154	154
CN (mg/l)				1.58	1.58	1.58	1.58	1.58	1.58	1.58
SCN (mg/l)				192	192	192	192	192	192	192
BOD 5-day (mg/l)	1120	1120	1120	1040	1040	1040	1060	1060	1060	1060
TOC (mg/l)	608	608	608	600	600	600	661	661	661	661
Phenolics (mg/l)	9.59	9.59	9.59	9.22	9.22	9.22	9.22	9.22	9.22	9.22
PO4-P (mg/l)										
Org-N (mg/l)				98	98	98	98	98	98	98
NO2 (mg/l)										
NO3 (mg/l)										
TDS (mg/l)										
Color (APHA Units)	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500
BASIN PARAMETERS										
Vol Wasted (ml)	895	660	729	805	755	750	885	886	844	937
D.O. (mg/l)	7	7	7	7.1	7	6.5	6.4	6.4	6.5	6.5
SS (mg/l)	3445	3275	3060	2888	3093	3048	3182	3553	3622	3458
*SS (PAC corrected)	3445	3275	3060	2888	3093	3048	3182	3553	3622	3458
Temp (C)	18	18	19	19	19	22	20	20	20	20
pH (std units)	8.1	8.05	8	8	8	8	8	8.1	8.1	8.1
OUR (mg/l/hr)			12			12				
VSS (mg/l)	2454	2333	2120	2001	2143	1948	2034	2271	2315	2058
*VSS (PAC corrected)	2454	2333	2120	2001	2143	1948	2034	2271	2315	2058
VSS/SS	0.71	0.71	0.69	0.69	0.69	0.64	0.64	0.64	0.64	0.60
*PAC Added (mg)	0	0	0	0	0	0	0	0	0	0
*Inventory (mg/l basin)	0	0	0	0	0	0	0	0	0	0
EFFLUENT PARAMETERS										
Volume (liters)	4.9	4.6	4.15	4.7	4.3	4.15	4.15	5.05	5.45	4.2
COD (mg/l)	215	217	205	196	200	181	178	190	196	188
SS (mg/l)	74	242	200	120	176	184	88	80	104	52
*PAC corrected										
pH (std units)	8.0	8.0	8.1	8.1	8.0	8.0	8.0	8.1	8.0	8.2
VSS (mg/l)	53	172	139	83	122	118	56	51	66	31
*PAC corrected										
NH3N (mg/l)	186	186	186	157	157	157	177	177	177	177
CN (mg/l)				0.447	0.447	0.447	0.447	0.447	0.447	0.447
SCN (mg/l)				5	5	5	5	5	5	5
NO2 (mg/l)				0.88	0.88	0.88	0.88	0.88	0.88	0.88
NO3 (mg/l)				2.2	2.2	2.2	2.2	2.2	2.2	2.2
Phenolics (mg/l)	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025
PO4-P (mg/l)	7.5	7.5	7.5	10.5	10.5	10.5	8	8	8	8
Org-N (mg/l)				37	37	37	37	37	37	37
TDS (mg/l)	4915	4915	4915	5458	5458	5458	5458	5458	5458	5458
Color (APHA units)	750	750	750	750	750	750	750	750	750	750
TOC (mg/l)	56	56	56	56	56	56	54	54	54	54
BOD 5-day (mg/l)	4	4	4	3	3	3	3	3	3	3

UNIT 1A TABLE A1

MONTH	JAN	FEB	FEB	FEB	FEB	FEB	FEB	FEB	FEB	FEB
DAY	31	1	2	3	4	5	6	7	8	9
DAY NO.	189	190	191	192	193	194	195	196	197	198
SYSTEM PARAMETERS										
*Sludge Age	12.00	12.00	12.00	11.99	12.00	12.00	12.00	12.01	12.00	12.00
*(F/M)COD	0.43	0.31	0.60	0.64	0.63	0.24	0.48	0.66	0.45	0.35
*HRT	2.14	1.69	1.69	1.72	1.69	1.87	1.79	1.69	1.69	2.02
FEED PARAMETERS (BATCH #)										
Volume (liters)	4.35	5.5	5.5	5.4	5.5	4.98	5.2	5.5	5.5	4.6
pH (std units)	10.3	10.4	11.3	11	10.9	10.9	11.5	11.5	11.2	10.4
COD (mg/l)	2137	2137	2137	2118	2118	2118	2118	2100	2100	2100
NH3N (mg/l)	154	154	154	163	163	163	163	182	182	182
SS (mg/l)	296	296	296	296	296	296	296	336	336	336
VSS (mg/l)	106	106	106	106	106	106	106	154	154	154
CN (mg/l)								9.59	9.59	9.59
SCN (mg/l)								184	184	184
BOD 5-day (mg/l)	1030	1030	1030	1060	1060	1060	1060	930	930	930
TOC (mg/l)	648	648	648	610	610	610	610	645	645	645
Phenolics (mg/l)	9.7	9.7	9.7	9.7	9.7	9.7	9.7	8.5	8.5	8.5
PO4-P (mg/l)										
Org-N (mg/l)								80	80	80
NO2 (mg/l)										
NO3 (mg/l)										
TDS (mg/l)										
Color (APHA Units)	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500
BASIN PARAMETERS										
Vol Wasted (ml)	965	946	886	918	859	942	912	906	913	804
D.O. (mg/l)	6.4	6.4	6.2	6.2	6.2	5.6	6.2	6.2	6.2	6.2
SS (mg/l)	3005	5295	2702	2482	2568	6235	3080	2335	3398	4070
*SG (PAC corrected)	3005	5295	2702	2482	2568	6235	3080	2335	3398	4070
Temp (C)	20	20	20	20	20	20	20	20	20	20
pH (std units)	8.3	8.3	8.4	8.3	8.4	8.3	8.2	8.7	8.5	8.5
OUR (mg/l/hr)			16				12			12
VSS (mg/l)	1788	3151	1620	1488	1540	3738	1920	1456	2118	2288
*VSS (PAC corrected)	1788	3151	1620	1488	1540	3738	1920	1456	2118	2288
VSS/SS	0.60	0.60	0.60	0.60	0.60	0.60	0.62	0.62	0.62	0.56
*PAC Added (mg)	0	0	0	0	0	0	0	0	0	0
*Inventory (mg/l basin)	0	0	0	0	0	0	0	0	0	0
EFFLUENT PARAMETERS										
Volume (liters)	4	5.26	5.5	4.65	5.5	5.15	4.85	5.2	5.1	4.25
COD (mg/l)	206	199	206	223	208	227	229	237	274	335
SS (mg/l)	26	54	56	44	66	70	56	42	58	188
*PAC corrected										
pH (std units)	8.3	8.3	8.4	8.4	8.4	8.3	8.4	8.6	8.5	8.5
VSS (mg/l)	15	32	34	26	40	42	35	26	36	106
*PAC corrected										
NH3N (mg/l)	180	180	180	161	161	161	161	154	154	154
CN (mg/l)								0.716	0.716	0.716
SCN (mg/l)								43.9	43.9	43.9
NO2 (mg/l)								0.92	0.92	0.92
NO3 (mg/l)								1.25	1.25	1.25
Phenolics (mg/l)	0.25	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025
PO4-P (mg/l)	3.3	3.3	3.3	1.9	1.9	1.9	1.9	3.6	3.6	3.6
Org-N (mg/l)								27	27	27
TDS (mg/l)	4592	4592	4592	4592	4592	4592	4592	4892	4892	4892
Color (APHA units)	1400	1400	1400	1400	1400	1400	1400	1500	1500	1500
TOC (mg/l)	59	59	59	56	56	56	56	78	78	78
BOD 5-day (mg/l)	3.5	3.5	3.5	5	5	5	5	6.5	6.5	6.5

UNIT 1A TABLE A1

MONTH	FEB	FEB	FEB	FEB	FEB	FEB	FEB	FEB	FEB	FEB
DAY	10	11	12	13	14	15	16	17	18	19
DAY NO.	199	200	201	202	203	204	205	206	207	208
SYSTEM PARAMETERS										
*Sludge Age	12.00	12.00	12.00	12.00	12.00	9.00	9.00	9.00	9.00	9.00
*(F/M) COD	0.37	0.34	0.40	0.41	0.32	0.36	0.32	0.32	0.31	0.35
*HRT	2.02	2.04	1.89	1.82	1.94	1.96	2.14	1.75	1.88	1.95
FEED PARAMETERS (BATCH #)										
Volume (liters)	4.6	4.55	4.92	5.1	4.8	4.75	4.35	5.3	4.94	4.78
pH (std units)	10.4	10.4	10	10	10.1	9.6	9.6	11.3	10.6	10.3
COD (mg/l)	2076	2076	2076	2076	2124	2124	2124	1649	1649	1649
NH3N (mg/l)	183	183	183	183	166	166	166	166	166	166
SS (mg/l)	336	336	336	336	254	254	254	254	254	254
VSS (mg/l)	154	154	154	154	124	124	124	124	124	124
CN (mg/l)	9.59	9.59	9.59	9.59						
SCN (mg/l)	184	184	184	184						
BOD 5-day (mg/l)	1130	1130	1130	1130	1080	1080	1080	1030	1030	1030
TOC (mg/l)	711	711	711	711	698	698	698	575	575	575
Phenolics (mg/l)	8.5	8.5	8.5	8.5	9.8	9.8	9.8	9.8	9.8	9.8
PO4-P (mg/l)										
Org-N (mg/l)	80	80	80	80						
NO2 (mg/l)										
NO3 (mg/l)										
TDS (mg/l)										
Color (APHA Units)	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500
BASIN PARAMETERS										
Vol Wasted (ml)	804	842	466	369	480	856	1041	978	1294	1230
D.O. (mg/l)	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2
SS (mg/l)	3855	4145	3760	3710	4580	4060	4055	3900	3700	3185
*SS (PAC corrected)	3855	4145	3760	3710	4580	4060	4055	3900	3700	3185
Temp (C)	19	20	20	20	20	20	20	20	19	19
pH (std units)	8.3	8.4	8.1	8.2	8	8.1	8.2	8.2	8.3	8.1
OUR (mg/l/hr)	12			12			24		24	24
VSS (mg/l)	2159	2330	2114	2128	2627	2329	2385	2294	2176	1873
*VSS (PAC corrected)	2159	2330	2114	2128	2627	2329	2385	2294	2176	1873
VSS/SS	0.56	0.56	0.56	0.57	0.57	0.57	0.59	0.59	0.59	0.59
*PAC Added (mg)	0	0	0	0	0	0	0	0	0	0
*Inventory (mg/l basin)	0	0	0	0	0	0	0	0	0	0
EFFLUENT PARAMETERS										
Volume (liters)	4.25	4.25	4.65	4.8	5.2	4.45	4.15	5.1	4.8	4.58
COD (mg/l)	365	365	338	359	265	259	262	262	256	240
SS (mg/l)	188	154	432	488	458	436	286	272	30	72
*PAC corrected										
pH (std units)	8.5	8.4	8.2	8.2	8.0	8.1	8.2	8.2	8.4	8.3
VSS (mg/l)	106	87	243	280	263	250	168	160	18	42
*PAC corrected										
NH3N (mg/l)	182	182	182	182	200	200	200	196	196	196
CN (mg/l)	0.716	0.716	0.716	0.716						
SCN (mg/l)	43.9	43.9	43.9	43.9						
NO2 (mg/l)	0.92	0.92	0.92	0.92						
NO3 (mg/l)	(1.25	(1.25	(1.25	(1.25						
Phenolics (mg/l)	(0.025	(0.025	(0.025	(0.025	(0.025	(0.025	(0.025	(0.025	(0.025	(0.025
PO4-P (mg/l)	2.9	2.9	2.9	2.9	3.9	3.9	3.9	3.7	3.7	3.7
Org-N (mg/l)	27	27	27	27						
TDS (mg/l)	4892	4892	4892	4892	5352	5352	5352	5352	5352	5352
Color (APHA units)	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500
TOC (mg/l)	94	94	94	94	76	76	76	73	73	73
BOD 3-day (mg/l)	6	6	6	6	3	3	3	2	2	2

UNIT 1A TABLE A1

MONTH	FEB	FEB	FEB	FEB	FEB	FEB	FEB	FEB	FEB	FEB
DAY	20	21	22	23	24	25	26	27	28	29
DAY NO.	209	210	211	212	213	214	215	216	217	218
SYSTEM PARAMETERS										
*Sludge Age	8.97	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00
*(F/M)COD	0.29	0.31	0.30	0.26	0.29	0.34	0.36	0.35	0.44	0.39
*HRT	2.72	1.79	1.86	1.86	1.88	1.80	1.80	2.14	1.82	2.11
FEED PARAMETERS (BATCH #)										
Volume (liters)	3.42	5.2	5	5	4.95	5.18	5.18	4.35	5.12	4.4
pH (std units)	11	11	10.6	11	10.3	11	10.7	9.8	10.8	9.9
COD (mg/l)	1649	1630	1630	1630	1766	1766	1766	1766	1795	1795
NH3N (mg/l)	166	176	176	176	174	174	174	174	149	149
SS (mg/l)	254								188	188
VSS (mg/l)	124								80	80
CN (mg/l)		2.55	2.55	2.55	2.55	2.55	2.55	2.55		
SCN (mg/l)		174	174	174	174	174	174	174		
BOD 5-day (mg/l)	1030	900	900	900	985	985	985	985	1090	1090
TOC (mg/l)	575	566	566	566	564	564	564	564	572	572
Phenolics (mg/l)	9.8	6.6	6.6	6.6	6.6	6.6	6.6	6.6		
PO4-P (mg/l)										
Org-N (mg/l)		71	71	71	71	71	71	71		
NO2 (mg/l)										
NO3 (mg/l)										
TDS (mg/l)										
Color (APHA Units)	2500	3000	3000	3000	3000	3000	3000	3000		
BASIN PARAMETERS										
Vol Wasted (ml)	1300	1304	1182	1178	1111	1276	1180	1294	662	1233
D.O. (mg/l)	6.4	6.2	6.2	6.2	6.2	6.2	6.2	8.7	8.7	8.7
SS (mg/l)	2768	4002	3968	3992	3835	3415	3165	2898	2765	2665
*SS (PAC corrected)	2768	4002	3968	3992	3835	3415	3165	2898	2765	2665
Temp (C)	18	19	20	19	19	19	19	18	19	19
pH (std units)	8.3	7.8	7.9	7.9	8	7.7	8	7.9	7.7	7.5
OUR (mg/l/hr)		12						10		
VSS (mg/l)	1598	2310	2291	2660	2555	2276	2109	1822	1738	1676
*VSS (PAC corrected)	1598	2310	2291	2660	2555	2276	2109	1822	1738	1676
VSS/SS	0.58	0.58	0.58	0.67	0.67	0.67	0.67	0.63	0.63	0.63
*PAC Added (mg)	0	0	0	0	0	0	0	0	0	0
*Inventory (mg/l basin)	0	0	0	0	0	0	0	0	0	0
EFFLUENT PARAMETERS										
Volume (liters)	3.5	4.95	4.68	4.63	4.95	5.4	4.85	4.43	5.1	4.6
COD (mg/l)	230	235	235	231	219	255	232	303	253	251
SS (mg/l)	30	24	128	134	172	36	100	26	364	58
*PAC corrected										
pH (std units)	8.2	8.0	8.1	8.0	8.1	7.9	8.0	7.7	8.0	7.7
VSS (mg/l)	17	14	74	09	115	24	87	16	229	36
*PAC corrected										
NH3N (mg/l)	196	196	196	196	188	188	188	188	179	179
CN (mg/l)		0.451	0.451	0.451	0.451	0.451	0.451	0.451		
SCN (mg/l)		5.3	5.3	5.3	5.3	5.3	5.3	5.3		
NO2 (mg/l)		0.36	0.36	0.36	0.36	0.36	0.36	0.36		
NO3 (mg/l)		4	4	4	4	4	4	4		
Phenolics (mg/l)	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025		
PO4-P (mg/l)	3.7	8.4	8.4	8.4	13.5	13.5	13.5	13.5		
Org-N (mg/l)		12	12	12	12	12	12	12		
TDS (mg/l)	5352	5714	5714	5714	5714	5714	5714	5714		
Color (APHA units)	1500	1500	1500	1500	1500	1500	1500	1500		
TOC (mg/l)	73	64.5	64.5	64.5	65.3	65.3	65.3	65.3	77.2	77.2
BOD 5-day (mg/l)	2	3	3	3	3	3	3	3	77.4	77.4

UNIT 1A TABLE A1

MONTH	MAR	MAR	MAR	MAR	MAR	MAR	MAR	MAR	MAR	MAR
DAY	1	2	3	4	5	6	7	8	9	10
DAY NO.	219	220	221	222	223	224	225	226	227	228
SYSTEM PARAMETERS										
*Sludge Age	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	8.83
*(F/M)COD	0.41	0.44	0.51	0.46	0.39	0.44	0.55	0.56	0.53	0.64
*HRT	1.91	2.02	1.69	1.81	2.22	2.00	1.71	1.82	1.86	1.74
FEED PARAMETERS (BATCH #)										
Volume (liters)	4.86	4.6	5.5	5.14	4.18	4.65	5.45	5.1	5	5.35
pH (std units)	10.5	12	11.7	11.8	11.8	11.7	11.7	11.8	11.7	11.8
COD (mg/l)	1795	1803	1803	1803	1803	1834	1834	1834	1828	1828
NH3N (mg/l)	149	177	177	177	177	162	162	162	186	186
SS (mg/l)	188	188	188	188	188				143	143
VSS (mg/l)	80	80	80	80	80				66	66
CN (mg/l)										
SCN (mg/l)										
BOD 5-day (mg/l)	1090	1090	1090	1090	1090	1200	1200	1200	1170	1170
TOC (mg/l)	572	569	569	569	569	570	570	570	578	578
Phenolics (mg/l)										
PO4-P (mg/l)										
Org-N (mg/l)										
NO2 (mg/l)										
NO3 (mg/l)										
TDS (mg/l)										
Color (APHA Units)										
BASIN PARAMETERS										
Vol Wasted (ml)	1131	1110	814	1238	1102	852	578	520	759	40
D.O. (mg/l)	8.7	8.7	8.6	8.6	8.4	8.3	7.8	8.2	8.2	8.1
SS (mg/l)	2718	2390	2515	2555	2460	2460	2323	2020	2090	1855
*SS (PAC corrected)	2718	2390	2515	2555	2460	2460	2323	2020	2090	1855
Temp (C)	19	18	18	19	18	19	19	18	18	18
pH (std units)	7.3	8.1	8	7.25	7.2	7.7	7.7	7.3	7.4	7.2
OUR (mg/l/hr)					7	7		30		
VSS (mg/l)	1768	1555	1636	1662	1600	1599	1511	1385	1433	1272
*VSS (PAC corrected)	1768	1555	1636	1662	1600	1599	1511	1385	1433	1272
VSS/SS	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.69	0.69	0.69
*PAC Added (mg)	0	0	0	0	0	0	0	0	0	0
*Inventory (mg/l basin)	0	0	0	0	0	0	0	0	0	0
EFFLUENT PARAMETERS										
Volume (liters)	4.75	4.6	5.4	4.85	3.9	4.45	5.1	4.95	4.88	5.1
COD (mg/l)	240	242	234	222	252	264	216	212	222	231
SS (mg/l)	116	116	242	50	146	146	344	332	246	480
*PAC corrected										
pH (std units)	7.6	7.9	8.0	7.9	7.6	7.3	7.7	7.6	7.5	7.3
VSS (mg/l)	75	75	157	33	95	95	224	228	169	329
*PAC corrected										
NH3N (mg/l)	179	173	173	173	173	216	216	216	218	218
CN (mg/l)										
SCN (mg/l)										
NO2 (mg/l)										
NO3 (mg/l)										
Phenolics (mg/l)										
PO4-P (mg/l)										
Org-N (mg/l)										
TDS (mg/l)										
Color (APHA units)										
TOC (mg/l)	77.2	68.6	68.6	68.6	68.6	61.6	61.6	61.6	64.7	64.7
BOD 5-day (mg/l)	7.4	3	3	3	3	3	3	3	5	5

UNIT 1A TABLE A1

MONTH	MAR	MAR	MAR	MAR	MAR	MAR
DAY	11	12	13	14	15	16
DAY NO.	229	230	231	232	233	234
SYSTEM PARAMETERS						
*Sludge Age	9.00	9.00	9.00	9.00	9.00	9.00
*(F/M)COD	0.59	0.44	0.30	0.00	0.00	0.00
*HRT	1.81	2.33	1.72	1.81	1.81	2.07
FEED PARAMETERS (BATCH #)						
Volume (liters)	5.15	4	5.4	5.15	5.15	4.5
pH (std units)	11.8	11.8	11.8	11.8	11.8	
COD (mg/l)	1828	1828				
NH3N (mg/l)	186	186				
SS (mg/l)	143	143	64	64	64	
VSS (mg/l)	66	66	48	48	48	
CN (mg/l)						
SCN (mg/l)						
BOD 5-day (mg/l)	1170	1170				
TOC (mg/l)	578	578	570	570	570	
Phenolics (mg/l)						
PO4-P (mg/l)						
Org-N (mg/l)						
NO2 (mg/l)						
NO3 (mg/l)						
TDS (mg/l)						
Color (APHA Units)						
BASIN PARAMETERS						
Vol Wasted (ml)	783	545	969	1100	324	200
D.O. (mg/l)	8	8.6	8.5	8.7	8.6	8
SS (mg/l)	1945	2040	1845	1845	1730	2085
*SS (PAC corrected)	1945	2040	1845	1845	1730	2085
Temp (C)	19	18	19	19	19	19
pH (std units)	7.4	7.6	6.9	6.7	7.7	7.6
OUR (mg/l/hr)		24			26	26
VSS (mg/l)	1334	1400	1266	1266	1255	1513
*VSS (PAC corrected)	1334	1400	1266	1266	1255	1513
VSS/SS	0.69	0.69	0.69	0.69	0.73	0.73
*PAC Added (mg)	0	0	0	0	0	0
*Inventory (mg/l basin)	0	0	0	0	0	0
EFFLUENT PARAMETERS						
Volume (liters)	5	3.35	5.25	4.9	4.85	4.25
COD (mg/l)	239	224	238	244	255	240
SS (mg/l)	214	480	128	88	360	114
*PAC corrected						
pH (std units)	7.5	7.5	7.0	6.9	7.5	7.9
VSS (mg/l)	147	329	88	60	261	83
*PAC corrected						
NH3N (mg/l)	218	218	208	208	208	208
CN (mg/l)						
SCN (mg/l)						
NO2 (mg/l)						
NO3 (mg/l)						
Phenolics (mg/l)						
PO4-P (mg/l)						
Org-N (mg/l)						
TDS (mg/l)						
Color (APHA units)						
TOC (mg/l)	64.7	64.7	71	71	71	71
BOD 5-day (mg/l)	5	5				

UNIT 1B TABLE A2

MONTH	JULY	JULY	JULY	JULY	JULY	JULY	AUG	AUG	AUG	AUG
DAY	26	27	28	29	30	31	1	2	3	4
DAY NO.	0	1	2	3	4	5	6	7	8	9
SYSTEM PARAMETERS										
*Sludge Age	30	30	30	30	30	30	30	30	30	30
*(F/M)COD	0.05	0.05	0.06	0.08	0.07	0.06	0.07	0.06	0.06	0.08
*HRT	2.2	2.1	2.2	2.2	2	2.2	2.1	2	2.2	2.2
FEED PARAMETERS (BATCH #)	27	27	27	27	27	27	27	27	27	27
Volume (liters)	3.22	3.41	3.2	3.15	3.45	3.23	3.27	3.46	3.2	3.14
pH (std units)	6.9/9.7	7.1/9.0	7.5	7.4	7.1/8.8	7.2/9.2	7.4	7.5	7.4	7.3
COD (mg/l)	217	185	191	183	200	208	208	167	173	220
NH3N (mg/l)	12	10	10	10	4	4	4	4	5.8	5.8
SS (mg/l)										
VSS (mg/l)										
CN (mg/l)	2.2	0.84	0.84	0.84	0.84	0.84	0.84	0.84	1.32	1.32
SCN (mg/l)	6.4	10.1	10.1	10.1	10.1	10.1	10.1	10.1	10.3	10.3
BOD 5-day (mg/l)										
TOC (mg/l)		48	48	48	48	48	48	48		
Phenolics (mg/l)	0.025								0.025	0.025
PO4-P (mg/l)	4.2								1.3	1.3
Org-N (mg/l)	8				7	7	7	7		
NO2 (mg/l)	59.8	8.79	8.79	8.79	8.79	8.79	8.79	8.79	8.7	8.7
NO3 (mg/l)	152	240	240	240	240	240	240	240	150	150
TDS (mg/l)										
Color (APHA Units)		250	250	250	250	250	250	250		
BASIN PARAMETERS										
Vol Wasted (ml)	189	63	138	175	188	227	180	222	182	157
D.O. (mg/l)	7.7	7.6	7.6	7.6	7.8	7.2	7.2	7.4	7.3	7.3
SS (mg/l)	2270	2150	2000	1660	1950	2190	1930	1930	1830	1660
*SS (PAC corrected)	1770	1650	1500	1160	1450	1690	1430	1430	1330	1160
Temp (C)	25	26	26	26	27	27	27	27	27	27
pH (std units)	7.5	8	8.1	7.7	7.6	8	8	7.9	7.8	7.5
OUR (mg/l/hr)			4				5			4
VSS (mg/l)	1903	1803	1500	1262	1482	1664	1520	1520	1441	1380
*VSS (PAC corrected)	1484	1383	1140	882	1102	1284	1126	1126	1047	964
VSS/SS			0.75				0.79			0.83
*PAC Added (mg)	143	143	143	143	143	143	143	143	144	143
*Inventory (mg/l basin)	500	500	500	500	500	500	500	500	500	500
EFFLUENT PARAMETERS										
Volume (liters)	2.85	3.00	2.80	2.80	3.00	2.85	2.85	3.10	2.83	2.75
COD (mg/l)	177	160	176	143	145	138	113	113	162	143
SS (mg/l)	78	160	106	66	64	46	72	40	68	78
*PAC corrected										
pH (std units)	7.30	7.80	8.10	7.80	7.60	7.90	7.90	8.00	7.90	7.70
VSS (mg/l)			74				48			60
*PAC corrected										
NH3N (mg/l)	2	2	2	0.2	0.2	0.2	0.2	2.3	2.3	2.3
CN (mg/l)	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.37	1.37	1.37
SCN (mg/l)	5.2	5.2	5.2	5.2	5.2	5.2	5.2	4	4	4
NO2 (mg/l)	5.7	5.7	5.7	5.7	5.7	5.7	5.7	3.4	3.4	3.4
NO3 (mg/l)	217	217	217	217	217	217	217	176	176	176
Phenolics (mg/l)								0.025	0.025	0.025
PO4-P (mg/l)								0.9	0.9	0.9
Org-N (mg/l)				3	3	3	3			
TDS (mg/l)										
Color (APHA units)	1000	1000	1000	1000	1000	1000	1000			
TOC (mg/l)	45	45	45	45	45	45	45			
BOD 5-day (mg/l)										

UNIT 1B TABLE A2

MONTH	AUG	AUG	AUG	AUG	AUG	AUG	AUG	AUG	AUG	AUG
DAY	5	6	7	8	9	10	11	12	13	14
DAY NO.	10	11	12	13	14	15	16	17	18	19
SYSTEM PARAMETERS										
*Sludge Age	30	30	30	30	30	30	30	30	30	30
*(F/M)COD	0.09	0.07	0.05	0.06	0.06	0.07	0.05	0.03	0.07	0.08
*HRT	2.2	2	2.2	2.2	2.4	2	2.4	2.4	2.3	2.3
FEED PARAMETERS (BATCH #)	27	27	27	27	27	27	27	28	28	28
Volume (liters)	3.2	3.5	3.2	3.25	2.95	3.55	2.95	2.95	3.10	3.10
pH (std units)	7.3/9.7	7.7	7.5	7.4	7.2	7.0	6.9/9.1	7.3/9.0	7.0	7.2
COD (mg/l)	182	184	188	181	181	155	166	119	161	184
NH3N (mg/l)	5.8	3.5	3.5	3.5	3.5	6.3	6.3	6.3	9.4	9.4
SS (mg/l)										
VSS (mg/l)										
CN (mg/l)	1.32	1.32	1.32	1.32	1.32	(.006	(.006	(.006	(.006	(.006
SCN (mg/l)	10.3	10.3	10.3	10.3	10.3	7.4	7.4	7.4	7.4	7.4
BOD 5-day (mg/l)										
TOC (mg/l)						52	52	52	52	52
Phenolics (mg/l)	(.025	(.025	(.025	(.025		(.025				
PO4-P (mg/l)	1.3	1.3	1.3	1.3		1.3				
Org-N (mg/l)			8.9	8.9		8.9			5.7	5.7
NO2 (mg/l)	8.7	8.7	8.7	8.7		8.7	17.6	17.6	17.6	17.6
NO3 (mg/l)	150	150	150	150		150	171	171	171	171
TDS (mg/l)										
Color (APHA Units)							250	250	250	250
BASIN PARAMETERS										
Vol Wasted (ml)	126	198	163	149	165	151	138	155	107	162
D.O. (mg/l)	7.5	7.3	7.3	7.4	7.2	7.7	8.2	7.5	8.0	8.0
SS (mg/l)	1450	1810	2120	1990	1780	1690	1930	2220	1530	1440
*SS (PAC corrected)	950	1310	1620	1490	1280	1190	1430	1720	1030	940
Temp (C)	27	27	26	27	28	27	26	25.5	25	24
pH (std units)	7.3	8	7.9	7.8	7.8	7.7	7.3	7.7	7.9	7.5
OUR (mg/l/hr)			6				2			
VSS (mg/l)	1205	1505	1762	1560	1395	1325	1630	1875	1202	1210
*VSS (PAC corrected)	790	1089	1347	1168	1003	933	1208	1453	870	794
VSS/SS				0.78			0.84			
*PAC Added (mg)	144	144	144	143	143	143	143	143	143	143
*Inventory (mg/l basin)	500	500	500	500	500	500	500	500	500	500
EFFLUENT PARAMETERS										
Volume (liters)	2.78	3.10	2.80	2.85	2.70	3.10	2.65	2.65	2.80	2.90
COD (mg/l)	132	134	126	126	90	112	90	103	116	135
SS (mg/l)	84	52	94	96	80	74	108	110	98	62
*PAC corrected										
pH (std units)	7.40	8.20	8.00	7.90	7.9	7.8	7.3	7.6	7.8	7.7
VSS (mg/l)				74			82			
*PAC corrected										
NH3N (mg/l)	1.2	1.2	1.2	1.2	0.6	0.6	0.6	0.9	0.9	0.9
CN (mg/l)	1.37	1.37	1.37	1.37	(.006	(.006	(.006	(.006	(.006	(.006
SCN (mg/l)	4	4	4	4	4.8	4.8	4.8	4.8	4.8	4.8
NO2 (mg/l)	3.4	3.4	3.4	3.4	1.9	1.9	1.9	1.9	1.9	1.9
NO3 (mg/l)	176	176	176	176	194	194	194	194	194	194
Phenolics (mg/l)	(.025	(.025	(.025	(.025						
PO4-P (mg/l)	0.9	0.9	0.9	0.9						
Org-N (mg/l)	3.9	3.9	3.9	3.9				3.1	3.1	3.1
TDS (mg/l)										
Color (APHA units)					1000	1000	1000	1000	1000	1000
TOC (mg/l)					46	46	46	46	46	46
BOD 5-day (mg/l)										

UNIT 1B TABLE A2

MONTH	AUG	AUG	AUG	AUG	AUG	AUG	AUG	AUG	AUG	AUG
DAY	15	16	17	18	19	20	21	22	23	24
DAY NO.	20	21	22	23	24	25	26	27	28	29
SYSTEM PARAMETERS										
*Sludge Age	30	30	30	30	30	30	30	30	30	30
*(F/M)COD	0.07	0.08	0.09	0.11	0.08	0.07	0.08	0.07	0.09	0.06
*HRT	2	1.9	2	2.1	1.9	1.9	1.9	2.1	2.0	2.1
FEED PARAMETERS (BATCH #)	28	28	28	28	28	28	28	28	28	28
Volume (liters)	3.59	3.65	3.46	3.36	3.70	3.70	3.70	3.33	3.52	3.40
pH (std units)	7.3/8.8	7.1	7.3	7.2	7.3	7.0	7.1	7.1/8.8	6.9/9.1	6.9/9.0
COD (mg/l)	213	212	240	227	212	200	201	195	194	206
NH3N (mg/l)	9.4	9.4	15.8	15.8	15.8	24.3	24.3	24.3	24.3	17.5
SS (mg/l)										
VSS (mg/l)										
CN (mg/l)	0.006	0.006	3.02	3.02	3.02	3.02	3.02	3.02	3.02	3.02
SCN (mg/l)	7.4	7.4	6.3	6.3	6.3	6.3	6.3	6.3	6.3	
BOD 5-day (mg/l)										
TOC (mg/l)	52	52								63
Phenolics (mg/l)			0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025
PO4-P (mg/l)			3.9	3.9	3.9	3.9	3.9	3.9	3.9	
Org-N (mg/l)	5.7	5.7				1.5	1.5	1.5	1.5	
NO2 (mg/l)	17.6	17.6							22.7	13.7
NO3 (mg/l)	171	171							167	171
TDS (mg/l)										
Color (APHA Units)	250	250								500
BASIN PARAMETERS										
Vol Wasted (ml)	117	113	91	145	166	195	223	168	144	215
D.O. (mg/l)	7.8	7.6	7.8	7.4	7.6	7.5	7.5	8.0	8.4	8.1
SS (mg/l)	2120	1850	1770	1400	1880	1840	1720	1750	1540	2150
*SS (PAC corrected)	1620	1350	1270	900	1300	1340	1220	1250	1040	1650
Temp (C)	24	25	25.5	26	25	26	25	25	25	24
pH (std units)	7.1	7.9	7.5	7.1	6.9	6.9	7.0	6.8	7.4	7.3
OUR (mg/l/hr)	3			3				2		
VSS (mg/l)	1710	1492	1428	1220	1638	1603	1499	1530	1346	1880
*VSS (PAC corrected)	1307	1089	1024	784	1203	1168	1063	1093	909	1443
VSS/SS	0.81			0.87				0.87		
*PAC Added (mg)	143	144	143	143	143	143	143	143	143	144
*Inventory (mg/l basin)	500	500	500	500	500	500	500	500	500	500
EFFLUENT PARAMETERS										
Volume (liters)	3.10	3.50	3.20	3.10	3.43	3.25	3.23	2.88	3.13	3.10
COD (mg/l)	139	140	155	148	145	151	152	152	154	111
SS (mg/l)	116	92	108	64	66	52	34	72	70	50
*PAC corrected										
pH (std units)	7.3	7.6	7.8	7.7	7.0	7.0	6.9	6.9	7.1	7.1
VSS (mg/l)	70			48				58		
*PAC corrected										
NH3N (mg/l)	0.9	1.5	1.5	1.5	7.6	7.6	7.6	7.6	8.9	8.9
CN (mg/l)	0.006	2.18	2.18	2.18	2.18	2.18	2.18	2.18	0.373	0.373
SCN (mg/l)	4.8								4.2	4.2
NO2 (mg/l)	1.9								1.2	1.2
NO3 (mg/l)	194								202	202
Phenolics (mg/l)		0.025	0.025	0.025	0.025	0.025	0.025	0.025		
PO4-P (mg/l)		4.2	4.2	4.2	4.2	4.2	4.2	4.2		
Org-N (mg/l)	3.1									
TDS (mg/l)										
Color (APHA units)	1000								750	750
TOC (mg/l)	46								52	52
BOD 5-day (mg/l)										

UNIT 1B TABLE A2

MONTH	AUG	AUG	AUG	AUG	AUG	AUG	AUG	SEPT	SEPT	SEPT
DAY	25	26	27	28	29	30	31	1	2	3
DAY NO.	30	31	32	33	34	35	36	37	38	39
SYSTEM PARAMETERS										
*Sludge Age	30	30	30	30	30	30.1	30	30	30.1	30
*(F/M)COD	0.05	0.06	0.06	0.05	0.07	0.05	0.04	0.05	0.06	0.05
*HRT	1.9	2.1	1.9	2.0	2.1	2.2	2.1	2.3	2.0	2.0
FEED PARAMETERS (BATCH #)	28	28	28	29	29	29	29	29	29	29
Volume (liters)	3.70	3.35	3.60	3.45	3.37	3.17	3.30	2.99	3.50	3.57
pH (std units)	7.6/9.4	7.2/8.8	7.3	7.3/9.1	7.2	7.5	7.6/10.0	7.3	7.2	7.0/8.7
COD (mg/l)	168	195	221	170	186	201	174	189	177	183
NH3N (mg/l)	17.5	17.5	9.5	9.5	9.5	9.5	11	11	11	12.5
SS (mg/l)										
VSS (mg/l)										
CN (mg/l)	3.02	3.02	3.02	3.02	3.02	1.88	1.88	1.88	1.88	1.88
SCN (mg/l)										
BOD 5-day (mg/l)										
TOC (mg/l)	63	63	63	63	63	63				
Phenolics (mg/l)	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025
PO4-P (mg/l)							8.1	8.1	8.1	8.1
Org-N (mg/l)			2.8	2.8	2.8	2.8				1.8
NO2 (mg/l)	13.7	13.7	13.7	13.7	13.7	13.7	10.2	10.2	10.2	10.2
NO3 (mg/l)	171	171	171	171	171	171	199	199	199	199
TDS (mg/l)										
Color (APHA Units)	500	500	500	500	500	500				
BASIN PARAMETERS										
Vol Wasted (ml)	187	104	116	130	190	198	108	178	124	180
D.O. (mg/l)	7.5	7.4	7.0	7.0	7.5	7.6	7.6	7.6	7.8	7.7
SS (mg/l)	2280	1940	2200	2200	1700	2200	2230	2080	1970	2270
*SS (PAC corrected)	1780	1440	1700	1700	1200	1700	1730	1580	1470	1770
Temp (C)	25	25.5	25	24	25	24	24	24.5	25.5	25
pH (std units)	7.2	8.0	7.9	7.5	8.0	7.4	6.9	7.9	7.4	7.3
OJR (mg/l/hr)	6				8			6		
VSS (mg/l)	1940	1651	1872	1872	1520	1967	1994	1850	1752	2019
*VSS (PAC corrected)	1515	1225	1446	1446	1073	1520	1547	1405	1307	1574
VSS/SS	0.85				0.89			0.89		
*PAC Added (mg)	143	144	143	143	143	143	143	143	143	144
*Inventory (mg/l basin)	500	500	500	500	500	500	500	500	500	500
EFFLUENT PARAMETERS										
Volume (liters)	3.45	2.95	3.19	3.25	3.05	2.85	2.85	2.75	3.33	3.20
COD (mg/l)	149	153	110	158	148	133	139	97	84	90
SS (mg/l)	66	120	118	106	54	68	140	82	96	76
*PAC corrected										
pH (std units)	7.1	7.7	7.9	7.7	7.8	7.4	7.1	7.5	7.6	7.5
VSS (mg/l)	52				50			80		
*PAC corrected										
NH3N (mg/l)	0.9	1.1	1.1	1.1	1.1	1.4	1.4	1.4	0.8	0.8
CN (mg/l)	0.373	0.373	0.373	0.373	0.373	0.489	0.489	0.489	0.489	0.489
SCN (mg/l)	4.2	4.2	4.2	4.2	4.2	3.1	3.1	3.1	3.1	3.1
NO2 (mg/l)	1.2	1.2	1.2	1.2	1.2	0.41	0.41	0.41	0.41	0.41
NO3 (mg/l)	202	202	202	202	202	227	227	227	227	227
Phenolics (mg/l)						0.025	0.025	0.025	0.025	0.025
PO4-P (mg/l)						5.3	5.3	5.3	5.3	5.3
Org-N (mg/l)		0.9	0.9	0.9	0.9				6.4	6.4
TDS (mg/l)										
Color (APHA units)	750	750	750	750	750					
TOC (mg/l)	52	52	52	52	52					
BOD 5-day (mg/l)										

UNIT 19 TABLE A2

MONTH	SEPT	SEPT	SEPT	SEPT	SEPT	SEPT	SEPT	SEPT	SEPT	SEPT
DAY	4	5	6	7	8	9	10	11	12	13
DAY NO.	40	41	42	43	44	45	46	47	48	49
SYSTEM PARAMETERS										
*Sludge Age	30	30	30	30	30.1	19.6	26.8	17.2	42.5	44.1
*(F/M)COD	0.05	0.07	0.04	0.06	0.07	0.08	0.07	0.09	0.07	0.07
*HRT	2.0	2.0	2.2	1.9	2.0	2.0	2.1	2.0	2.0	1.9
FEED PARAMETERS (BATCH #)	29	29	29	29	29	29	29	29	29	30
Volume (liters)	3.48	3.45	3.25	3.62	3.56	3.49	3.38	3.44	3.44	3.7
pH (std units)	7.1/8.9	7.0/9.0	6.8/7.8	7.9	7.3	7.8	6.7/9.6	6.8/8.8	7.2/8.5	7.5
COD (mg/l)	174	177	154	180	174	186	190	182	182	158
NH3N (mg/l)	12.5	12.5	12.5	13.3	13.3	13.3	9.8	9.8	9.8	9.8
SS (mg/l)			8							
VSS (mg/l)			8							
CN (mg/l)	1.88	1.88	1.88	1.66	1.66	1.66	1.66	1.66	1.66	1.66
SCN (mg/l)			6.2							
BOD 5-day (mg/l)										
TOC (mg/l)			63	63	63	63	63	63	63	63
Phenolics (mg/l)	0.025	0.025	0.025							
PO4-P (mg/l)	8.1	8.1	8.1							
Org-N (mg/l)	1.8	1.8	1.8				2.3	2.3	2.3	2.3
NO2 (mg/l)	10.2	10.2	10.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
NO3 (mg/l)	199	199	199	197	197	197	197	197	197	197
TDS (mg/l)										
Color (APHA Units)				875	875	875	875	875	875	875
BASIN PARAMETERS										
Vol Wasted (ml)	161	231	284	55	155	10	10	10	20	10
D.O. (mg/l)	7.7	7.3	7.4	7.2	7.4	7.4	7.7	7.3	8.0	8.0
SS (mg/l)	2220	1780	2090	2070	1690	1550	1700	1460	1880	1790
*SS (PAC corrected)	1720	1280	1590	1570	1190	1050	1200	960	1380	1290
Temp (C)	25	24	24	26	25	24	26	27	27	25
pH (std units)	7.4	7.7	7.4	8.3	7.8	7.4	7.1	8.1	8.0	7.8
OUR (mg/l/hr)		4			6				8	
VSS (mg/l)	1975	1470	1726	1709	1460	1339	1469	1261	1510	1438
*VSS (PAC corrected)	1530	1057	1313	1279	1028	907	1037	829	1108	1036
VSS/SS		0.83			0.86				0.80	
*PAC Added (mg)	143	144	143	143	143	220	160	251	101	97
*Inventory (mg/l basin)	500	500	500	500	500	500	500	500	500	500
EFFLUENT PARAMETERS										
Volume (liters)	3.10	3.12	2.85	3.15	3.08	3.00	2.90	3.35	3.30	3.52
COD (mg/l)	84	90	118	120	127	138	132	129	112	108
SS (mg/l)	90	32	2	152	72	222	182	214	104	94
*PAC corrected										
pH (std units)	7.5	7.6	7.4	8.0	8.3	7.7	7.3	7.7	8.0	7.9
VSS (mg/l)		16			60				62	
*PAC corrected										
NH3N (mg/l)	0.8	0.8	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.1
CN (mg/l)	0.489	0.489	1.42	1.42	1.42	1.42	1.42	1.42	1.42	0.81
SCN (mg/l)	3.1	3.1	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.3
NO2 (mg/l)	0.41	0.41	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.65
NO3 (mg/l)	227	227	235	235	235	235	235	235	235	219
Phenolics (mg/l)	0.025	0.025								0.025
PO4-P (mg/l)	5.3	5.3								7.4
Org-N (mg/l)	6.4	6.4				3	3	3	3	
TDS (mg/l)										
Color (APHA units)			1250	1250	1250	1250	1250	1250	1250	1250
TOC (mg/l)			48	48	48	48	48	48	48	48
BOD 5-day (mg/l)										

UNIT 1B TABLE A2

MONTH	SEPT	SEPT	SEPT	SEPT	SEPT	SEPT	SEPT	SEPT	SEPT	SEPT
DAY	14	15	16	17	18	19	20	21	22	23
DAY NO.	50	51	52	53	54	55	56	57	58	59
SYSTEM PARAMETERS										
*Sludge Age	30.1	17.5	30	30	30	30	30	30	30	30
*(F/M) COD	0.05	0.06	0.06	0.06	0.06	0.07	0.08	0.09	0.06	0.06
*HRT	1.9	1.9	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9
FEED PARAMETERS (BATCH #)	30	30	30	30	30	30	30	30	30	30
Volume (liters)	3.70	3.70	3.50	3.70	3.70	3.70	3.70	3.70	3.70	3.70
pH (std units)	7.4	6.9/8.8	6.7/9.3	7.7	7.7	6.8	6.5	6.9	7.1/8.8	7.3
COD (mg/l)	150	148	156	159	156	156	188	148	148	112
NH3N (mg/l)	0.9	0.9	0.9	1.7	1.7	1.7	1.7	1.7	1.7	1.7
SS (mg/l)							26			
VSS (mg/l)							22			
CN (mg/l)	1.19	1.19	1.19	1.19	1.19	1.19	1.19			
SCN (mg/l)	5.1	5.1	5.1	5.1	5.1	5.1	5.1			
BOD 5-day (mg/l)							40	40	40	40
TOC (mg/l)							56	56	56	56
Phenolics (mg/l)	>0.025	>0.025	>0.025	>0.025	>0.025	>0.025	<0.025			
PO4-P (mg/l)	11.1	11.1	11.1	11.1	11.1	11.1	11.1			
Org-N (mg/l)				2.9	2.9	2.9	2.9			
NO2 (mg/l)	4.04	4.04	4.04	4.04	4.04	4.04	4.04			
NO3 (mg/l)	195	195	195	195	195	195	195			
TDS (mg/l)										
Color (APHA Units)								750	750	750
BASIN PARAMETERS										
Vol Wasted (ml)	107	10	146	119	61	54	163	132	241	207
D.O. (mg/l)	8.2	8.8	8.7	8.6	8.1	7.5	7.6	7.6	7.8	7.8
SS (mg/l)	2070	1710	1680	1820	1770	1580	1730	1330	1840	1420
*SS (PAC corrected)	1570	1210	1180	1320	1270	1080	1230	830	1340	920
Temp (C)	23	22	23	23	24	23	24	25	24	23
pH (std units)	7.7	7.4	8.0	8.3	8.1	7.8	7.4	7.2	7.1	8.1
OUR (mg/l/hr)		6				2			2	
VSS (mg/l)	1663	1470	1444	1565	1522	1360	1489	1145	1520	1173
*VSS (PAC corrected)	1261	1040	1014	1135	1092	930	1059	714	1107	760
VSS/SS		0.86							0.83	
*PAC Added (mg)	143	246	143	143	143	143	143	143	144	143
*Inventory (mg/l basin)	500	500	500	500	500	500	500	500	500	500
EFFLUENT PARAMETERS										
Volume (liters)	3.50	3.49	3.30	3.60	3.70	3.60	3.50	3.60	3.50	3.60
COD (mg/l)	112	115	120	120	113	143	97	100	90	92
SS (mg/l)	106	236	72	86	108	102	62	50	24	32
*PAC corrected										
pH (std units)	7.7	7.5	7.7	8.1	8.1	8.0	7.4	7.4	7.2	7.5
VSS (mg/l)		196				88			16	
*PAC corrected										
NH3N (mg/l)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	1.2	1.2	1.2	1.4
CN (mg/l)	0.81	0.81	0.81	0.81	0.81	0.81				
SCN (mg/l)	3.3	3.3	3.3	3.3	3.3	3.3				
NO2 (mg/l)	0.65	0.65	0.65	0.65	0.65	0.65				
NO3 (mg/l)	219	219	219	219	219	219				
Phenolics (mg/l)	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025				
PO4-P (mg/l)	7.4	7.4	7.4	7.4	7.4	7.4				
Org-N (mg/l)			4.3	4.3	4.3	4.3				
TDS (mg/l)										
Color (APHA units)							1000	1000	1000	1000
TOC (mg/l)							50	50	50	50
BOD 5-day (mg/l)							<10	<10	<10	<10

UNIT 18 TABLE A2

MONTH	SEPT	SEPT	SEPT	SEPT	SEPT	SEPT	SEPT	OCT	OCT	OCT
DAY	24	25	26	27	28	29	30	1	2	3
DAY NO.	60	61	62	63	64	65	66	67	68	69
SYSTEM PARAMETERS										
*Sludge Age	30	30	30	30	30	30	30	30	30	30
*(F/M)COD	ERR	0.14	0.20	0.10	0.29	0.12	0.14	0.12	0.11	0.10
*HRT	1.9	1.9	2.2	1.9	1.9	1.9	1.9	1.9	1.9	1.9
FEED PARAMETERS (BATCH #)	30	30	30	30	31	31	31	31	31	31
Volume (liters)	3.70	3.70	3.26	3.7	3.7	3.7	3.7	3.7	3.7	3.7
pH (std units)	7.5	6.3	7.0	7.1/8.9	7.1	7.5	7.7	7.7	7.8	8.0
COD (mg/l)	112	179	166	181	174	168	187	201	188	171
NH3N (mg/l)	5.2	5.2	5.2	5.2						
SS (mg/l)				28						
VSS (mg/l)				16						
CN (mg/l)										
SCN (mg/l)										
BOD 5-day (mg/l)	40	40	40	40						
TOC (mg/l)	56	56	56	56						
Phenolics (mg/l)										
PO4-P (mg/l)										
Org-N (mg/l)										
NO2 (mg/l)										
NO3 (mg/l)										
TDS (mg/l)										
Color (APHA Units)	750	750	750	750						
BASIN PARAMETERS										
Vol Wasted (ml)	10	238	186	246	190	216	96	88	143	198
D.O. (mg/l)	7.8	7.8	8.1	8.6	8.4	8.6	8.8	8.8	8.1	8.3
SS (mg/l)		1170	890	1410	810	1200	1160	1310	1350	1350
*SS (PAC corrected)		670	390	910	310	700	660	810	850	850
Temp (C)	21	21	21	21	22	21	21	21	20	22
pH (std units)	7.7	7.4	7.4	6.9	7.8	7.5	7.5	7.6	7.8	8.0
OUR (mg/l/hr)						2				2
VSS (mg/l)		967	730	1157	664	1040	1005	1135	1170	1150
*VSS (PAC corrected)		553	320	746	254	607	572	702	737	724
VSS/SS			0.82			0.87				0.85
*PAC Added (mg)	143	143	143	143	144	143	143	143	143	143
*Inventory (mg/l basin)	500	500	500	500	500	500	500	500	500	500
EFFLUENT PARAMETERS										
Volume (liters)	3.60	3.60	2.98	3.20	3.55	3.55	3.45	3.40	3.35	3.30
COD (mg/l)	151	153	164	153	148	153	155	152	150	153
SS (mg/l)	12	16	30	18	22	24	64	76	58	36
*PAC corrected										
pH (std units)	7.8	7.6	7.4	7.2	7.4	7.7	7.4	7.4	7.7	7.8
VSS (mg/l)			14			22				34
*PAC corrected										
NH3N (mg/l)	1.4	1.4	1.4	2.4	2.4	2.4	1.8	1.8	1.8	1.8
CN (mg/l)										
SCN (mg/l)										
NO2 (mg/l)										
NO3 (mg/l)										
Phenolics (mg/l)				<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
PO4-P (mg/l)				12.9	12.9	12.9	12.9	12.9	12.9	12.9
Org-N (mg/l)										
TDS (mg/l)										
Color (APHA units)	1000	1000	1000							
TOC (mg/l)	50	50	50	49	49	49	49	49	49	49
BOD 5-day (mg/l)	<10	<10	<10	5.4	5.4	5.4	5.4	5.4	5.4	5.4

UNIT 1B TABLE A2

MONTH	OCT	OCT	OCT	OCT	OCT	OCT	OCT	OCT	OCT	OCT
DAY	4	5	6	7	8	9	10	11	12	13
DAY NO.	70	71	72	73	74	75	76	77	78	79
SYSTEM PARAMETERS										
*Sludge Age	30	30	30	30	30	30	30	30	30	30
*(F/M)COD	0.14	0.17	0.17	0.09	0.07	0.08	0.09	0.07	0.07	0.13
*HRT	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
FEED PARAMETERS (BATCH #)	31	31	31	31	31	31	31	31	31	31
Volume (liters)	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.7	3.7	3.7
pH (std units)	8.2/7.4	8.2/6.4	8.2	7.8	8.1/6.7	8.0	8.2	8.3	8.0	8.3
COD (mg/l)	169	157	140	145	149	133	141	116	127	137
NH3N (mg/l)	5.2	1.8	1.8	1.8	2.9	2.9	2.9	2.9	3.5	3.5
SS (mg/l)	24			40				48		
VSS (mg/l)	24			34				42		
CN (mg/l)										
SCN (mg/l)										
BOD 5-day (mg/l)	9	(3.4	(3.4	(3.4	(3.4	(3.4	(3.4	(3.4	1.8	1.8
TOC (mg/l)	49	39	39	39	39	39	39	39	36	36
Phenolics (mg/l)	(0.025									
PO4-P (mg/l)	12.3									
Org-N (mg/l)										
NO2 (mg/l)										
NO3 (mg/l)										
TDS (mg/l)										
Color (APHA Units)		625	625	625	625	625	625	625		
BASIN PARAMETERS										
Vol Wasted (ml)	113	146	179	234	209	140	226	226	248	183
D.O. (mg/l)	8.0	8.0	8.1	8.0	7.8	7.8	8.0	8.2	8.0	8.0
SS (mg/l)	1130	960	920	1330	1620	1330	1350	1390	1470	1060
*SS (PAC corrected)	630	460	420	830	1120	830	850	890	970	560
Temp (C)	24	24	23	22	20	22	21	22	23	23
pH (std units)	8.2	8.2	8.0	7.9	8.1	8.0	8.2	8.2	8.2	8.3
OUR (mg/l/hr)			2				2			2
VSS (mg/l)	963	818	780	1128	1373	1128	1110	1143	1209	850
*VSS (PAC corrected)	537	392	356	704	950	704	699	732	798	449
VSS/SS			0.85				0.82			0.80
*PAC Added (mg)	143	143	144	143	143	143	143	143	143	143
*Inventory (mg/l basin)	500	500	500	500	500	500	500	500	500	500
EFFLUENT PARAMETERS										
Volume (liters)	3.50	3.55	3.50	3.50	3.50	3.25	3.73	3.50	3.54	3.65
COD (mg/l)	144	134	130	124	131	131	120	118	123	128
SS (mg/l)	56	38	28	20	36	60	22	24	16	30
*PAC corrected										
pH (std units)	8.1	8.1	8.0	8.0	8.0	8.0	8.2	8.2	8.2	8.3
VSS (mg/l)			26				20			28
*PAC corrected										
NH3N (mg/l)	1.5	1.5	1.5	1.3	1.3	1.3	1.3	0.9	0.9	0.9
CN (mg/l)										
SCN (mg/l)										
NO2 (mg/l)										
NO3 (mg/l)										
Phenolics (mg/l)										
PO4-P (mg/l)								1.9	1.9	1.9
Org-N (mg/l)										
TDS (mg/l)										
Color (APHA units)	750	750	750	750	750	750	750			
TOC (mg/l)	37	37	37	37	37	37	37	31	31	31
BOD 5-day (mg/l)	(2.6	(2.6	(2.6	(2.6	(2.6	(2.6	(2.6	(1.8	(1.8	(1.8

UNIT 1B TABLE A2

MONTH	OCT	OCT	OCT	OCT	OCT	OCT	OCT	OCT	OCT	OCT
DAY	14	15	16	17	18	19	20	21	22	23
DAY NO.	80	81	82	83	84	85	86	87	88	89
SYSTEM PARAMETERS										
*Sludge Age	30	30	30	30	30.04	30.00	26.55	30.00	30.00	30.00
*(F/M) COD	0.07	0.11	0.06	0.09	0.00	0.10	0.08	0.07	0.07	0.09
*HRT	1.9	1.9	2.2	1.9	1.89	1.98	1.89	1.89	1.89	1.95
FEED PARAMETERS (BATCH #)	31	31	31	31						
Volume (liters)	3.7	3.7	3.2	3.7	3.7	3.53	3.7	3.7	3.7	3.59
pH (std units)	8.0	8.1	8.3	8.4/5.8	8.3	8.1	8.3	8.3	8.2	7.9
COD (mg/l)	146	148	144	152		156	129	124	135	134
NH3N (mg/l)	3.5	8.7	8.7	8.7		8.9	8.9	8.9	3.8	3.8
SS (mg/l)				28		50	46	44	180	42
VSS (mg/l)				26		34	34	34	34	34
CN (mg/l)										
SCN (mg/l)										
BOD 5-day (mg/l)	1.8	1.8	1.8	1.8						
TOC (mg/l)	36	36	36	36						
Phenolics (mg/l)										
PO4-P (mg/l)										
Org-N (mg/l)										
NO2 (mg/l)										
NO3 (mg/l)										
TDS (mg/l)										
Color (APHA Units)										
BASIN PARAMETERS										
Vol Wasted (ml)	252	245	225	255	246	262	225	199	109	42
D.O. (mg/l)	8.2	8.2	8.0	8.0	8	8.3	8.5	8.4	8.4	8.2
SS (mg/l)	1570	1240	1660	1350	1430	1360	1430	1500	1610	1420
*SS (PAC corrected)	1070	740	1160	850	930	860	930	1002	1112	922
Temp (C)	22	21	21	22	22	22	20	20	18	20
pH (std units)	8.3	8.3	8.3	8.4	8.2	8.1	8.3	8.4	8.1	7.8
CUR (mg/l/hr)				2			4			
VSS (mg/l)	1259	994	1331	1130	1212	1153	1160	1217	1306	1152
*VSS (PAC corrected)	858	593	930	711	1212	653	660	719	808	654
VSS/SS				0.84	0.85	0.85	0.81	0.81	0.81	0.81
*PAC Added (mg)	143	143	143	143	143	143	143	143	143	143
*Inventory (mg/l basin)	500	500	500	500	500	500	500	498	498	498
EFFLUENT PARAMETERS										
Volume (liters)	3.45	3.68	3.00	3.59	3.6	3.35	3.69	3.45	3.4	3.4
COD (mg/l)	130	138	134	134	124	120	122	116	120	109
SS (mg/l)	16	14	34	12	16	10	24	38	84	102
*PAC corrected										
pH (std units)	8.3	8.4	8.3	8.3	8.3	8.2	8.3	8.4	8.2	8
VSS (mg/l)				10	26	26	18	18	18	18
*PAC corrected										
NH3N (mg/l)	1.2	1.2	1.2	1.2	3.4	3.4	3.4	0.6	0.6	0.6
CN (mg/l)										
SCN (mg/l)										
NO2 (mg/l)										
NO3 (mg/l)										
Phenolics (mg/l)										
PO4-P (mg/l)	1.9	1.9	1.9	1.9						
Org-N (mg/l)										
TDS (mg/l)										
Color (APHA units)					500	500	500	500	500	500
TOC (mg/l)	31	31	31	31	34	34	34	34	34	34
BOD 5-day (mg/l)	(1.8	(1.8	(1.8	(1.8	0.9	0.9	0.9	0.9	0.9	0.9

UNIT 18 TABLE A2

MONTH	OCT	OCT	OCT	OCT	OCT	OCT	OCT	OCT	NOV	NOV
DAY	24	25	26	27	28	29	30	31	1	2
DAY NO.	90	91	92	93	94	95	96	97	98	99
SYSTEM PARAMETERS										
*Sludge Age	30.00	29.99	29.97	29.96	29.96	29.99	29.95	29.98	30.67	29.95
*(F/M)COD	0.07	0.05	0.08	0.05	0.12	0.10	0.05	0.07	0.07	0.07
*HRT	1.89	1.89	1.89	1.89	1.89	1.89	1.99	1.89	1.95	1.89
FEED PARAMETERS (BATCH #)										
Volume (liters)	3.7	3.7	3.7	3.7	3.7	3.7	3.51	3.7	3.59	3.7
pH (std units)	8.1	8.1	8	8.3	8.3	8	8	7.6	7.5	7.3
COD (mg/l)	126	120	122	113	122	121	128	140	145	144
NH3N (mg/l)	3.8	3.8	3.7	3.7	3.7	3.9	3.9	3.9		10.3
SS (mg/l)	42	158	36	24	46	48	36	36		26
VSS (mg/l)	34	134	134	134	34	34	34	34		22
CN (mg/l)										2.25
SCN (mg/l)										6.3
BOD 5-day (mg/l)										6.4
TOC (mg/l)		610	610	610	610	610	610	610		44
Phenolics (mg/l)		0.403	0.403	0.403	0.403	0.403	0.403	0.403		(0.025
PO4-P (mg/l)										29.9
Org-N (mg/l)										(4
NO2 (mg/l)										3.26
NO3 (mg/l)										146
TDS (mg/l)										
Color (APHA Units)										875
BASIN PARAMETERS										
Vol Wasted (ml)	125	177	142	189	105	145	189	231	186	105
D.O. (mg/l)	8.6	8.6	8.6	8.8	8.8	8.8	8.8	8.7	8.2	9.1
SS (mg/l)	1540	1760	1420	1750	1160	1240	1880	1630	1560	850
*SS (PAC corrected)	1042	1262	922	1252	662	742	1382	1132	1062	352
Temp (C)	19	19	18	18	18	17	18	18	18	18
pH (std units)	8.3	8.4	8.2	8.3	8.3	8.3	8.4	8.1	8.1	7.8
OUR (mg/l/hr)	4			2				2		
VSS (mg/l)	1260	1440	1162	1430	948	1013	1536	1380	1380	1380
*VSS (PAC corrected)	762	942	664	932	450	515	1038	882	882	882
VSS/SS	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.85	0.85	0.85
*PAC Added (mg)	143	143	143	143	143	143	143	143	143	143
*Inventory (mg/l basin)	498	498	498	498	498	498	498	498	498	498
EFFLUENT PARAMETERS										
Volume (liters)	3.45	3.45	3.43	3.3	3.52	3.38	3.15	3.5	3.56	3.5
COD (mg/l)	111	113	117	113	109	111	113	113	123	115
SS (mg/l)	72	56	60	52	60	52	58	26	44	48
*PAC corrected										
pH (std units)	8.1	8.5	8.25	8.4	8.4	8.3	8.3	8.2	8.1	8.0
VSS (mg/l)	46	46	46	34	34	34	34	24	24	24
*PAC corrected										
NH3N (mg/l)	0.6	0.3	0.3	0.3	0.3	0.3	0.3	0.3	(4.0	(4.0
CN (mg/l)									0.65	0.65
SCN (mg/l)									2.7	2.7
NO2 (mg/l)									0.19	0.19
NO3 (mg/l)									179	179
Phenolics (mg/l)		(0.025	(0.025	(0.025	(0.025	(0.025	(0.025	(0.025	(0.025	(0.025
PO4-P (mg/l)		2.5	2.5	2.5	2.5	2.5	2.5	2.5	8.46	8.46
Org-N (mg/l)									(4.0	(4.0
TDS (mg/l)										
Color (APHA units)	500								750	750
TOC (mg/l)	34	31	31	31	31	31	31	31	35	35
BOD 5-day (mg/l)	0.9	0.8	0.8	0.8	0.8	0.8	0.8	0.8	2.5	2.5

UNIT 18 TABLE A2

MONTH	NOV	NOV	NOV	NOV	NOV	NOV	NOV	NOV	NOV	NOV
DAY	3	4	5	6	7	8	9	10	11	12
DAY NO.	100	101	102	103	104	105	106	107	108	109
SYSTEM PARAMETERS										
*Sludge Age	30.00	23.76	29.96	29.98	30.02	29.95	30.36	29.96	29.95	30.01
*(F/M)COD	0.43	0.44	0.44	0.09	0.08	0.11	0.10	0.19	0.32	0.16
*HRT	1.89	1.89	1.89	1.89	1.89	1.89	2.00	2.03	2.06	1.92
FEED PARAMETERS (BATCH #)										
Volume (liters)	3.7	3.7	3.7	3.7	3.7	3.7	3.5	3.45	3.4	3.64
pH (std units)	6.9	6.8	6.8	8.2	8.2	8.5	8.8	8	7.5	7.5
COD (mg/l)	142	144	150	171	167	233	248	284	308	257
NH3N (mg/l)	10.3	10.3	40.2	40.2	40.2	40.2	92.4	92.4	92.4	47.1
SS (mg/l)	50	32	590	28	74	46	58	50	34	18
VSS (mg/l)	22	24	24	24	24	38	38	38	38	38
CN (mg/l)	2.25	2.25	2.25	2.25	2.25	2.25				
SCN (mg/l)	6.3	6.3	6.3	6.3	6.3	6.3				
BOD 5-day (mg/l)	6.4	6.4	6.9	6.9	6.9	6.9	6.6	6.6	6.6	3.0
TOC (mg/l)	44	44	48	48	48	48	53	53	53	53
Phenolics (mg/l)	(0.025	(0.025	(0.025	(0.025	(0.025	(0.025				
PO4-P (mg/l)	29.9	29.9	21.5	21.5	21.5	21.5	3.6	3.6	3.6	10.8
Org-N (mg/l)	(4	(4	(4	(4	(4	(4				
NO2 (mg/l)	3.26	3.26	3.26	3.26	3.26	3.26				
NO3 (mg/l)	146	146	146	146	146	146				
TDS (mg/l)										
Color (APHA Units)	875	875	875	875	875	875	875	875	875	875
BASIN PARAMETERS										
Vol Wasted (ml)	100	10	225	65	180	216	223	220	200	223
D.O. (mg/l)	8.8	9.1	9.2	8.3	9.6	9.5	9.4	9.2	9.2	9.2
SS (mg/l)	750	540	1780	1540	1620	1630	1800	1260	1000	1370
*SS (PAC corrected)	252	42	1286	1046	1126	1136	1305	765	505	875
Temp (C)	18.5	18.5	18	18	17.5	18	18	18.5	18	18
pH (std units)	8	7.4	6.7	6.6	8.1	8.4	7.9	7.9	7	6.8
OUR (mg/l/hr)	0.25	0.25			3.4			4.8		
VSS (mg/l)	640	640	640	1314	1370	1378	1522	1100	873	1196
*VSS (PAC corrected)	142	142	146	820	876	884	1028	605	378	701
VSS/SS	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.87	0.87	0.87
*PAC Added (mg)	143	143	143	143	143	143	143	143	143	143
*Inventory (mg/l basin)	498	498	494	494	494	494	495	495	495	495
EFFLUENT PARAMETERS										
Volume (liters)	3.35	3.52	3.45	3.35	3.45	3.41	3.35	3.25	3.35	3.35
COD (mg/l)	115	111	121	142	130	155	170	192	170	180
SS (mg/l)	40	54	32	102	50	34	34	26	26	26
*PAC corrected										
pH (std units)	7.7	7.3	6.9	6.6	7.0	8.0	8.1	7.7	7.4	6.7
VSS (mg/l)	26	26	26	26	32	32	32	32	32	32
*PAC corrected										
NH3N (mg/l)	(4.0	4.4	4.4	4.4	4.4	38.2	38.2	38.2	50.5	50.5
CN (mg/l)	0.65	0.65	0.65	0.65	0.65					
SCN (mg/l)	2.7	2.7	2.7	2.7	2.7					
NO2 (mg/l)	0.19	0.19	0.19	0.19	0.19					
NO3 (mg/l)	179	179	179	179	179					
Phenolics (mg/l)	(0.025	(0.025	(0.025	(0.025	(0.025					
PO4-P (mg/l)	8.46	26.8	26.8	26.8	26.8	11.3	11.3	11.3	14.3	14.3
Org-N (mg/l)	(4.0	(4.0	(4.0	(4.0	(4.0					
TDS (mg/l)										
Color (APHA units)	750	750	750	750	750	875	875	875	875	875
TOC (mg/l)	35	39	39	39	39	46	46	46	46	46
BOD 5-day (mg/l)	2.5	1.1	1.1	1.1	1.1	1.6	1.6	1.6	2.8	2.8

UNIT 18 TABLE A2

MONTH	NOV	NOV	NOV	NOV	NOV	NOV	NOV	NOV	NOV	NOV
DAY	13	14	15	16	17	18	19	20	21	22
DAY NO.	110	111	112	113	114	115	116	117	118	119
SYSTEM PARAMETERS										
*Sludge Age	30.02	30.38	30.25	30.35	30.43	29.95	25.66	30.00	29.89	29.70
*(F/M) COD	0.12	0.09	0.10	0.08	0.09	0.11	0.14	ERR	0.11	0.21
*HRT	2.01	2.14	2.03	1.99	1.96	2.10	1.79	2.09	2.01	1.97
FEED PARAMETERS (BATCH #)										
Volume (liters)	3.48	3.27	3.45	3.51	3.58	3.33	3.91	3.355	3.475	3.55
pH (std units)	7.3	7.8	8.2	7.9	7.6	7.5	7.8	8.1	8.4	8.5
COD (mg/l)	238	209	226	201	184	195	179	181	183	233
NH3N (mg/l)	47.1	47.1	47.1	6.3	6.3	6.3	4.9	4.9	4.9	4.9
SS (mg/l)	18	108	22	18	14	50	18	250	130	70
VSS (mg/l)	38	38	20			40				70
CN (mg/l)			1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52
SCN (mg/l)			4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2
BOD 5-day (mg/l)	3.0	3.0	3	1.6	1.6	1.6	3.2	3.2	3.2	3.2
TOC (mg/l)	53	53	53	53	53	55	55	55	55	55
Phenolics (mg/l)			0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025
PO4-P (mg/l)	10.8	10.8	10.8	5.4	5.4	5.4	4.5	4.5	4.5	4.5
Org-N (mg/l)			6	6	6	6	6	6	6	6
NO2 (mg/l)			17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
NO3 (mg/l)			148	148	148	148	148	148	148	148
TDS (mg/l)										
Color (APHA Units)	875	875	875	750	750	750	750	750	750	750
BASIN PARAMETERS										
Vol Wasted (ml)	222	190	160	190	220	230	140	23	170	110
D.O. (mg/l)	8.9	9.6	9.8	9.6	9.6	9.6	9.6	9.2	9.6	9.5
SS (mg/l)	1520	1556	1596	1768	1582	1432	1308	454	1325	1098
*SS (PAC corrected)	1025	1061	1101	1273	1086	936	812		832	604
Temp (C)	17.5	17	17	18	17.5	17	18	18	18	18
pH (std units)	6.7	7	7	7.2	7.6	7.3	7.4	8	8	8.2
OUR (mg/l/hr)		3.5			3.6				2.1	
VSS (mg/l)	1327	1385	1421	1574	1328	1202	1098	381	1145	949
*VSS (PAC corrected)	832	890	926	1078	832	706	602		652	455
VSS/SS	0.87	0.89	0.89	0.89	0.84	0.84	0.84	0.84	0.86	0.86
*PAC Added (mg)	143	143	143	143	143	143	143	143	143	143
*Inventory (mg/l basin)	495	495	495	495	496	496	496	493	493	494
EFFLUENT PARAMETERS										
Volume (liters)	3.5	3.15	3.1	3.3	3.3	3.15	3.45	3.15	3.25	3.4
CUU (mg/l)	182	207	163	165	158	167	164	156	165	161
SS (mg/l)	28	46	64	50	30	26	74	38	48	58
*PAC corrected			44	36	21	17	46		30	32
pH (std units)	6.6	6.3	6.7	6.8	7.2	7.3	7.4	8	8	8.3
VSS (mg/l)	32	42			22				46	
*PAC corrected					17				36	
NH3N (mg/l)	50.5	50.5	20.4	20.4	20.4	0.0	0.0	0.0	0.0	0.0
CN (mg/l)			1.23	1.23	1.23	1.23	1.23	1.23	1.23	
SCN (mg/l)			4	4	4	4	4	4	4	
NO2 (mg/l)			0.71	0.71	0.71	0.71	0.71	0.71	0.71	
NO3 (mg/l)			174	174	174	174	174	174	174	
Phenolics (mg/l)			0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025
PO4-P (mg/l)	14.3	14.3	10.7	10.7	10.7	7.7	7.7	7.7	7.7	3.9
Org-N (mg/l)			0.0	0.0	0.0	0.0	0.0	0.0	0.0	
TDS (mg/l)										
Color (APHA units)	875	875	750	750	750	750	750	750	750	750
TOC (mg/l)	46	46	48	48	48	47	47	47	47	48
BOD 5-day (mg/l)	2.8	2.8	1.3	1.3	1.3	1.2	1.2	1.2	1.2	1.8

UNIT 1B TABLE A2

MONTH	NOV	NOV	NOV	NOV	NOV	NOV	NOV	NOV	DEC	DEC
DAY	23	24	25	26	27	28	29	30	1	2
DAY NO.	120	121	122	123	124	125	126	127	128	129
SYSTEM PARAMETERS										
*Sludge Age	30.58	29.53	29.71	30.06	11.83	14.74	13.68	18.42	13.44	30.05
*(F/M)COD	0.18	0.15	0.44	0.18	0.51	0.76	1.58	0.23	0.46	0.12
*HRT	2.06	1.94	1.90	2.18	1.88	2.23	2.45	2.30	1.94	2.46
FEED PARAMETERS (BATCH #)										
Volume (liters)	3.39	3.6	3.68	3.21	3.73	3.14	2.86	3.05	3.6	2.85
pH (std units)	8.3	7.8	7.8	7.8	7.8	7.8	8	8.1	8	8
COD (mg/l)	231	235	237	225	225	202	199	194	192	205
NH3N (mg/l)	(4	(4	(4	(4	(4	(4	(4	7.1	7.1	7.1
SS (mg/l)	60	38	122	1004	604	198	256	190	154	86
VSS (mg/l)			38				116			46
CN (mg/l)							1.41	1.41	1.41	1.41
SCN (mg/l)							3.7	3.7	3.7	3.7
BOD 5-day (mg/l)	3.7	3.7	3.7	(3	(3	(3	(3	3.4	3.4	3.4
TOC (mg/l)	60	60	60	53	53	53	53	50	50	50
Phenolics (mg/l)	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025
PO4-P (mg/l)	3.6	3.6	3.6	4.4	4.4	4.4	4.4	3.6	3.6	3.6
Org-N (mg/l)							5.3	5.3	5.3	5.3
NO2 (mg/l)							15.5	15.5	15.5	15.5
NO3 (mg/l)							131	131	131	131
TDS (mg/l)								4780	4780	4780
Color (APHA Units)	750	750	750	750	750	750	750	750	750	750
BASIN PARAMETERS										
Vol Wasted (ml)	60	110	40	194	50	50	50	50	50	104
D.O. (mg/l)	9.4	9.4	9.4	9.4	9.3	9.1	9.1	9.1	9	9
SS (mg/l)	1205	1405	870	1144	824	774	678	1012	772	1256
*SS (PAC corrected)	711	911	376	650	330	305	224	575	342	841
Temp (C)	18	19	18.5	18	18	19	19	18	18	17
pH (std units)	8.2	8	7.85	7.8	7.8	8	8	8.3	8	8.2
OUR (mg/l/hr)						1.2			1.2	
VSS (mg/l)	1005	1172	726	954	687	566	496	740	606	986
*VSS (PAC corrected)	511	678	232	460	193	97	42	303	176	571
VSS/SS	0.83	0.83	0.83	0.83	0.83	0.73	0.73	0.73	0.78	0.78
*PAC Added (mg)	143	143	143	143	143	143	143	143	143	143
*Inventory (mg/l basin)	494	494	494	494	494	469	454	437	430	415
EFFLUENT PARAMETERS										
Volume (liters)	3.1	3.35	3.5	3.1	3.4	2.95	2.65	2.85	3.3	2.6
COD (mg/l)	157	170	178	182	185	181	169	167	174	174
SS (mg/l)	86	76	62	34	164	140	148	148	138	88
*PAC corrected	51	49	27	19	66	55	49	84	61	59
pH (std units)	8.3	8	7.95	7.7	7.8	8	8.1	8.1	8.2	8.2
VSS (mg/l)	80					52			54	
*PAC corrected	58					17			28	
NH3N (mg/l)	(4.0	(4.0	(4.0	(4.0	(4.0	(4.0	(4.0	(4.0	(4.0	5.7
CN (mg/l)							1.35	1.35	1.35	1.35
SCN (mg/l)							3.2	3.2	3.2	3.2
NO2 (mg/l)							2.7	2.7	2.7	2.7
NO3 (mg/l)							186	186	186	186
Phenolics (mg/l)	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025
PO4-P (mg/l)	3.9	3.9	8.5	8.5	8.5	8.5	5.9	5.9	5.9	4.9
Org-N (mg/l)							4	4	4	4
TDS (mg/l)							5070	5070	5070	5070
Color (APHA units)	750	750	750	750	750	750	875	875	875	875
TOC (mg/l)	48	48	52	52	52	52	49	49	49	47
BOD 5-day (mg/l)	1.8	1.8	(2	(2	(2	(2	2.7	2.7	2.7	2

UNIT 1B TABLE A2

MONTH	DEC	DEC	DEC	DEC	DEC	DEC	DEC	DEC	DEC	DEC
DAY	3	4	5	6	7	8	9	10	11	12
DAY NO.	130	131	132	133	134	135	136	137	138	139
SYSTEM PARAMETERS										
*Sludge Age	31.89	36.28	38.42	5.99	30.27	28.74	53.80	23.64	33.73	57.14
*(F/M)COD	0.10	0.11	0.10	ERR	0.14	0.08	0.09	0.26	0.15	0.12
*HRT	1.73	1.80	1.83	2.04	1.82	1.84	1.82	1.75	1.89	1.79
FEED PARAMETERS (BATCH #)										
Volume (liters)	4.05	3.89	3.83	3.43	3.85	3.8	3.85	4	3.7	3.9
pH (std units)	8.1	8.3	8.1	8.1	8.3	8.1	8.1	7.9	7.8	7.9
COD (mg/l)	197	205	203	196	180	180	217	180	184	186
NH3N (mg/l)	38.6	38.6	38.6	38.6	41.4	41.4	41.4	28.8	28.8	28.8
SS (mg/l)	56	70	60	46	148	42	118	74	68	176
VSS (mg/l)				32	78		58			
CN (mg/l)	1.41	1.41	1.41	1.41						
SCN (mg/l)	3.7	3.7	3.7	3.7						
BOD 5-day (mg/l)	3	3	3	3	2	2	2	(2	(2	(2
TOC (mg/l)	53	53	53	53	51	51	51	46	46	46
Phenolics (mg/l)	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025
PN4-P (mg/l)	3.6	3.6	3.6	3.6	4.6	4.6	4.6	6.1	6.1	6.1
Org-N (mg/l)	5.3	5.3	5.3	5.3						
NO2 (mg/l)	15.5	15.5	15.5	15.5						
NO3 (mg/l)	131	131	131	131						
TDS (mg/l)	4780	4780	4780	4780	4505	4505	4505	4505	4505	4505
Color (APHA Units)	750	750	750	750	750	750	750	750	750	750
BASIN PARAMETERS										
Vol Wasted (ml)	0	50	50	50	150	100	50	50	50	50
D.O. (mg/l)	9	9	8.4	9	8.5	8.8	8.8	8.8	8.4	8.6
SS (mg/l)	1770	1600	1624	636	1435	1638	1784	872	1144	1380
*SS (PAC corrected)	1352	1179	1198	204	1059	1257	1400	479	751	982
Temp (C)	19	18	18	18	17.5	18	18	18	18	18
pH (std units)	8.2	8.4	7.8	8.1	7.8	8	7.9	7.5	7.6	7.6
OUR (mg/l/hr)				1.2						6
VSS (mg/l)	1389	1256	1300	422	952	1338	1457	712	934	1128
*VSS (PAC corrected)	972	835	874		576	957	1073	319	541	730
VSS/SS	0.78	0.78	0.80	0.66	0.66	0.82	0.82	0.82	0.82	0.82
*PAC Added (mg)	143	143	143	143	143	143	143	143	143	143
*Inventory (mg/l basin)	418	421	426	432	376	381	384	393	393	398
EFFLUENT PARAMETERS										
Volume (liters)	3.85	3.65	3.62	2.9	3.7	3.4	3.5	3.8	3.35	3.65
COD (mg/l)	167	165	167	163	171	165	165	158	153	135
SS (mg/l)	124	82	78	304	52	96	56	72	70	38
*PAC corrected	95	60	58	98	38	74	44	40	46	27
pH (std units)	8.2	8.1	8	7.8	7.6	7.8	7.9	7.6	7.5	7.6
VSS (mg/l)			52	186		66				28
*PAC corrected			38			50				21
NH3N (mg/l)	5.7	5.7	5.7	18.3	18.3	18.3	12.2	12.2	12.2	12.2
CN (mg/l)	1.35	1.35	1.35							
SCN (mg/l)	3.2	3.2	3.2							
NO2 (mg/l)	2.7	2.7	2.7							
NO3 (mg/l)	186	186	186							
Phenolics (mg/l)	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025
PO4-P (mg/l)	4.9	4.9	4.9	7.9	7.9	7.9	8.6	8.6	8.6	8.6
Org-N (mg/l)	4	4	4							
TDS (mg/l)	5070	5070	5070	4855	4855	4855	4855	4855	4855	4855
Color (APHA units)	875	875	875	1000	1000	1000	1000	1000	1000	1000
TOC (mg/l)	47	47	47	44	44	44	45	45	45	45
BOD 5-day (mg/l)	2	2	2	3	3	3	2.3	2.3	2.3	2.3

UNIT 1B TABLE A2

MONTH	DEC	DEC	DEC	DEC	DEC	DEC	DEC	DEC	DEC	DEC
DAY	13	14	15	16	17	18	19	20	21	22
DAY NO.	140	141	142	143	144	145	146	147	148	149
SYSTEM PARAMETERS										
*Sludge Age	24.57	47.50	28.48	55.23	82.61	39.76	46.91	31.39	22.66	43.68
*(F/M)COD	0.21	0.20	0.62	0.75	0.42	-1.65	0.15	0.22	0.43	0.18
*HRT	1.92	1.79	1.79	1.83	1.52	1.78	1.94	1.79	1.77	1.84
FEED PARAMETERS (BATCH #)										
Volume (liters)	3.65	3.9	3.9	3.82	4.6	3.93	3.61	3.9	3.95	3.8
pH (std units)	7.9	8	8	7.8	8.2	8.3	8.5	8.3	8.2	7.9
COD (mg/l)	184	169	168	195	180	182	167	174	180	190
NH3N (mg/l)	28.8	42.8	42.8	42.8	67.6	67.6	67.6	67.6	88.2	88.2
SS (mg/l)	40	50	32	42	118	78	56	66	208	56
VSS (mg/l)	32	0	26	34	96	63	45	40	126	34
CN (mg/l)	0	2.41	2.41	2.41	2.41	2.41	2.41	2.41	0	0
SCN (mg/l)	0	3.9	3.9	3.9	3.9	3.9	3.9	3.9	0	0
BOD 5-day (mg/l)	42	5.3	5.3	5.3	4	4	4	4	5	5
TOC (mg/l)	46	49	49	49	48	48	48	48	47	47
Phenolics (mg/l)	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025
PO4-P (mg/l)	6.1	4.3	4.3	4.3	3.4	3.4	3.4	0	0	0
Org-N (mg/l)										
NO2 (mg/l)	0	9.05	9.05	9.05	9.05	9.05	9.05	9.05	0	0
NO3 (mg/l)	0	95	95	95	95	95	95	95	0	0
TDS (mg/l)	4505	4345	4345	4345	4345	4345	4345	4345	0	0
Color (APHA Units)	750	875	875	875	875	875	875	875	1000	1000
BASIN PARAMETERS										
Vol Wasted (ml)	50	50	50	50	50	50	50	50	50	50
D.O. (mg/l)	8.6	8.8	8.8	8.4	8.4	8.6	8.5	8.6	8.6	8.4
SS (mg/l)	950	960	1200	1190	1460	866	1188	1038	842	1096
*SS (PAC corrected)	542	552	784	772	1033	427	744	587	388	646
Temp (C)	18	18	18	19	17	17	18	18	18	18
pH (std units)	8.1	7.7	7.6	7.5	7.8	8	8.3	7.9	7.7	7
OUR (mg/l/hr)							6			6
VSS (mg/l)	777	785	538	534	655	388	926	809	656	912
*VSS (PAC corrected)	368	377	122	115	227	-50	482	358	203	462
VSS/SS	0.82	0.82	0.45	0.45	0.45	0.45	0.78	0.78	0.78	0.83
*PAC Added (mg)	143	143	143	143	143	143	143	143	143	143
*Inventory (mg/l basin)	408	408	416	418	427	439	444	451	454	458
EFFLUENT PARAMETERS										
Volume (liters)	3.75	3.7	3.6	3.7	3.95	3.6	3.3	3.75	3.65	3.5
COD (mg/l)	147	148	140	159	140	150	159	156	157	157
SS (mg/l)	76	34	84	34	20	40	48	62	76	46
*PAC corrected	43									
pH (std units)	7.6	7.6	7.6	7.5	7.9	8.1	8.2	8.1	7.6	7.2
VSS (mg/l)		25	48	19	11	23	32	41	51	44
*PAC corrected	0									
NH3N (mg/l)	6	6	6	17.7	17.7	17.7	17.7	34.8	34.8	34.8
CN (mg/l)	1.81	1.81	1.81	1.81	1.81	1.81	1.81			
SCN (mg/l)	3.3	3.3	3.3	3.3	3.3	3.3	3.3			
NO2 (mg/l)	2.26	2.26	2.26	2.26	2.26	2.26	2.26			
NO3 (mg/l)	158	158	158	158	158	158	158			
Phenolics (mg/l)	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025
PO4-P (mg/l)	8.7	8.7	8.7	5.4	5.4	5.4	5.4			
Org-N (mg/l)										
TDS (mg/l)	4655	4655	4655	4655	4655	4655	4655			
Color (APHA units)	875	875	875	875	875	875	875	875	875	875
TOC (mg/l)	42	42	42	45	45	45	45	44	44	44
BOD 5-day (mg/l)	2.8	2.8	2.8	4	4	4	4	4	4	4

UNIT 1B TABLE A2

MONTH	DEC	DEC	DEC	DEC	DEC	DEC	DEC	DEC	DEC	JAN
DAY	23	24	25	26	27	28	29	30	31	1
DAY NO.	150	151	152	153	154	155	156	157	158	159
SYSTEM PARAMETERS										
*Sludge Age	47.46	42.12	88.52	35.56	135.31	31.45	30.86	30.86	23.85	30.09
*(F/M)COD	0.23	0.71	0.05	0.16	0.02	0.05	0.16	0.07	0.11	0.08
*HRT	1.77	1.75	1.75	1.95	1.96	1.75	1.75	1.89	1.75	1.64
FEED PARAMETERS (BATCH #)										
Volume (liters)	3.95	4	4	3.59	3.57	4	4	3.7	4	4.28
pH (std units)	7.9	7.9	7.9	8.3	8.2	8.2	8.2	8	8	7.8
COD (mg/l)	176	176	159	159	174	167	212	197	191	168
NH3N (mg/l)	88.2	99.4	99.4	99.4	99.4	165	165	165	210	210
SS (mg/l)	28	32	124	24	360	44	172	62	62	48
VSS (mg/l)	22	25	101	19	283	36	141	40	40	31
CN (mg/l)	0	0	0	0	0	0.447	0.447	0.447	0.447	0.447
SCN (mg/l)	0	0	0	0	0	4.9	4.9	4.9	4.9	4.9
BOD 5-day (mg/l)	5	3	3	3	3	2	2	2	3	3
TOC (mg/l)	47	47	47	47	47	51	51	51	52	52
Phenolics (mg/l)	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025
PO4-P (mg/l)	0	0	0	0	7.3	5.3	5.3	5.3	6.3	6.3
Org-N (mg/l)	0	0	0	0	0	11	11	11	11	11
NO2 (mg/l)	0	0	0	0	0	0.62	0.62	0.62	0.62	0.62
NO3 (mg/l)	0	0	0	0	0	2.98	2.98	2.98	2.98	2.98
TDS (mg/l)	0	0	0	0	4375	4390	4390	4390	4390	4390
Color (APHA Units)	1000	1000	1000	1000	1000	1250	1250	1250	1250	1250
BASIN PARAMETERS										
Vol Wasted (ml)	50	50	50	50	50	50	50	50	50	50
D.O. (mg/l)	8.5	8.5	8.5	8.5	8.4	0.5	0.2	7	7	7
SS (mg/l)	974	720	2322	978	6040	2284	1412	2142	1620	2040
*SS (PAC corrected)	517	256	1853	497	5546	1789	917	1646	1128	1548
Temp (C)	18	17	17	17	18	25	22	22	22	22
pH (std units)	7	6.65	6.9	7	7	6.9	6.6	6.5	6.2	6.7
OUR (mg/l/hr)				6			6			
VSS (mg/l)	810	500	1932	814	4862	1839	976	1481	1120	1410
*VSS (PAC corrected)	354	116	1463	414	4465	1440	634	1138	780	1070
VSS/SS	0.83	0.80	0.83	0.83	0.80	0.80	0.69	0.69	0.69	0.69
*PAC Added (mg)	143	143	143	143	143	143	143	143	143	143
*Inventory (mg/l basin)	457	464	469	481	494	495	495	496	492	492
EFFLUENT PARAMETERS										
Volume (liters)	3.55	3.7	3.65	3.35	3.15	4.05	3.75	3.45	3.7	3.7
COD (mg/l)	161	144	151	157	153	184	184	178	142	130
SS (mg/l)	36	30	30	56	26	126	126	142	136	130
*PAC corrected				28	24	99	82	109	95	99
pH (std units)	6.9	6.7	7	7	7	6.8	6.8	6.9	6.6	6.9
VSS (mg/l)	34	25	29	54	18	87	62	70	82	80
*PAC corrected				45	14	70	43	48	57	55
NH3N (mg/l)	50.3	50.3	50.3	50.3	81.0	81.0	81.0	131	131	131
CN (mg/l)					1.0	1.0	1.0	1.0	1.0	1.0
SCN (mg/l)					3.6	3.6	3.6	3.6	3.6	3.6
NO2 (mg/l)					1.2	1.2	1.2	1.2	1.2	1.2
NO3 (mg/l)					21	21	21	21	21	21
Phenolics (mg/l)	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025
PO4-P (mg/l)				11.6	11.9	11.9	11.9	9.5	9.5	9.5
Org-N (mg/l)					4	4	4	4	4	4
TDS (mg/l)				4800	4620	4620	4620	4620	4620	4620
Color (APHA units)	875	875	875	875	1000	1000	1000	1000	1000	1000
TOC (mg/l)	45	45	45	45	49	49	49	42	42	42
BOD 5-day (mg/l)	12	12	12	12	3	3	3	2	2	2

UNIT 1B TABLE A2

MONTH	JAN	JAN	JAN	JAN	JAN	JAN	JAN	JAN	JAN	JAN
DAY	2	3	4	5	6	7	8	9	10	11
DAY NO.	160	161	162	163	164	165	166	167	168	169
SYSTEM PARAMETERS										
*Sludge Age	23.28	35.75	19.11	19.71	25.88	22.49	38.37	28.10	20.06	27.82
*(F/M)COD	0.10	0.07	0.08	0.12	0.08	0.11	0.09	0.08	0.06	0.05
*HRT	1.70	1.94	1.75	1.75	1.75	1.84	1.79	1.73	1.89	1.75
FEED PARAMETERS (BATCH #)										
Volume (liters)	4.12	3.61	4	4	4	3.8	3.91	4.04	3.7	4
pH (std units)	8.3	8.2	8.5	8.3	8.4	8	7.8	7.5	7.7	7.7
COD (mg/l)	162	197	197	217	188	177	166	168	135	125
NH3N (mg/l)	210	210	205	205	205	211	211	211	211	215
SS (mg/l)	30	86	62	44	212	44	12	26	126	82
VSS (mg/l)	19	55	40	28	142	29	8	17	70	46
CN (mg/l)	0.447	0.447	0	0	0	0	0	0	0	0.616
SCN (mg/l)	4.9	4.9	0	0	0	0	0	0	0	4.9
BOD 5-day (mg/l)	3	3	2	2	2	3	3	3	3	3
TOC (mg/l)	52	52	61	61	61	45	45	45	45	43
Phenolics (mg/l)	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025
PO4-P (mg/l)	6.3	6.3	3.6	3.6	3.6	13.5	13.5	13.5	13.5	13.1
Org-N (mg/l)	11	11	0	0	0	0	0	0	0	0
NO2 (mg/l)	0.62	0.62	0	0	0	0	0	0	(0.25	(0.25
NO3 (mg/l)	2.98	2.98	0	0	0	0	0	0	(2.5	(2.5
TDS (mg/l)	4390	4390	4766	4766	4766	4766	4766	4766	4766	0
Color (APHA Units)	1250	1250	1000	1000	1000	1000	1000	1000	1000	750
BASIN PARAMETERS										
Vol Wasted (ml)	50	50	50	50	50	20	20	50	50	50
D.O. (mg/l)	7	7	6.5	7	6.9	6.9	6.9	6.9	7.8	7
SS (mg/l)	1570	2028	1886	1590	1896	1430	1595	1728	1594	1856
*SS (PAC corrected)	1083	1538	1405	1116	1424	963	1123	1256	1129	1391
Temp (C)	22	22	21	20	23	21	20	20	21	21
pH (std units)	7.4	7.7	8	7.9	8.1	7.4	6.2	6.9	6.3	7.2
OUR (mg/l/hr)		6		6				6		
VSS (mg/l)	1085	1568	1458	1230	1467	1106	1234	1374	1267	1476
*VSS (PAC corrected)	748	1189	1086	864	1102	745	869	999	898	1106
VSS/SS	0.69	0.77	0.77	0.77	0.77	0.77	0.77	0.80	0.80	0.80
*PAC Added (mg)	143	143	143	143	143	143	143	143	143	143
*Inventory (mg/l basin)	487	498	481	474	472	467	472	472	465	465
EFFLUENT PARAMETERS										
Volume (liters)	3.8	3.45	3.85	3.7	3.77	3.55	3.7	3.75	3.55	3.7
COD (mg/l)	142	130	202	154	162	160	156	149	133	125
SS (mg/l)	132	112	196	166	142	146	88	118	170	130
*PAC corrected	91	85	146	117	107	98	62	86	120	97
pH (std units)	7.7	7.7	8.1	8	8.1	7.7	7.3	6.7	6.7	7
VSS (mg/l)	80	78	138	118	100	100	62	84	120	94
*PAC corrected	55	60	107	91	77	77	48	67	95	75
NH3N (mg/l)	131	179	179	179	197	197	197	197	210	210
CN (mg/l)	1.0								0.876	0.876
SCN (mg/l)	3.6								3.2	3.2
NO2 (mg/l)	1.2								(0.25	(0.25
NO3 (mg/l)	21								7.2	7.2
Phenolics (mg/l)	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025
PO4-P (mg/l)	9.5	7.0	7.0	7.0	9.6	9.6	9.6	9.6	16.5	16.5
Org-N (mg/l)	(4									
TDS (mg/l)	4620	4770	4770	4770	4770	4770	4770	4770		
Color (APHA units)	1000	1000	1000	1000	1000	1000	1000	1000	750	750
TOC (mg/l)	42	44	44	44	40	40	40	40	40	40
BOD 5-day (mg/l)	2	3	3	3	3	3	3	3	(2	(2

UNIT 1B TABLE A2

MONTH	JAN	JAN	JAN	JAN	JAN	JAN	JAN	JAN	JAN	JAN
DAY	12	13	14	15	16	17	18	19	20	21
DAY NO.	170	171	172	173	174	175	176	177	178	179
SYSTEM PARAMETERS										
*Sludge Age	46.56	23.73	33.95	30.66	49.98	23.59	30.77	35.08	20.83	23.68
*(F/M)COD	0.08	0.09	0.14	0.15	0.06	0.08	0.08	0.08	0.12	0.20
*HRT	1.75	1.75	1.79	1.75	1.84	1.77	1.80	1.77	1.75	1.77
FEED PARAMETERS (BATCH #)										
Volume (liters)	4	4	3.9	4	3.81	3.95	3.89	3.95	4	3.95
pH (std units)	8	8	8.1	8.1	7.9	8.2	8.2	8.1	8	8
COD (mg/l)	180	185	202	198	232	204	206	184	209	211
NH3N (mg/l)	215	215	210	210	210	210	198	198	198	186
SS (mg/l)	84	68	164	116	244	132	104	100	112	100
VSS (mg/l)	47	38	91	64	136	78	61	59	80	71
CN (mg/l)	0.616	0.616	0.616	0.616	0.616	0.616	0	0	0	0
SCN (mg/l)	4.9	4.9	4.9	4.9	4.9	4.9	0	0	0	0
BOD 5-day (mg/l)	3	3	3	3	3	3	3.5	3.5	3.5	4
TOC (mg/l)	43	43	43	43	43	49	51	51	51	56
Phenolics (mg/l)	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025
PO4-P (mg/l)	13.1	13.1	0	0	0	6.3	8.95	8.95	8.95	7.5
Org-N (mg/l)	0	0	0	0	0	5	0	0	0	0
NO2 (mg/l)	(0.25	(0.25	(0.25	(0.25	(0.25	0	0	0	0	0
NO3 (mg/l)	(2.5	(2.5	(2.5	(2.5	(2.5	0	0	0	0	0
TDS (mg/l)	0	0	0	0	0	5128	4915	4915	4915	4915
Color (APHA Units)	750	750	750	750	750	750	750	750	750	750
BASIN PARAMETERS										
Vol Wasted (ml)	50	50	20	50	62	50	50	50	50	20
D.O. (mg/l)	7	7.8	7	7	7.4	7.4	7.4	7.5	7.5	7.5
SS (mg/l)	1862	1654	1320	1220	2696	1934	1870	1736	1508	1085
*SS (PAC corrected)	1391	1186	849	748	2217	1458	1393	1256	1034	615
Temp (C)	21	21	19	18	18	20	19	19	19	19
pH (std units)	7.7	7.2	7.9	8	8	8	7.8	7.9	7.7	7.6
OUR (mg/l/hr)					2			2		
VSS (mg/l)	1481	1315	1050	970	2130	1528	1477	1396	1213	873
*VSS (PAC corrected)	1106	943	675	595	1751	1152	1101	1010	832	494
VSS/SS	0.80	0.80	0.80	0.80	0.79	0.79	0.79	0.80	0.80	0.80
*PAC Added (mg)	143	143	143	143	143	143	143	143	143	143
*Inventory (mg/l basin)	471	468	471	472	479	476	477	480	474	470
EFFLUENT PARAMETERS										
Volume (liters)	3.8	3.4	3.5	3.7	3.45	3.85	3.7	3.85	3.8	3.8
COD (mg/l)	178	174	183	213	202	166	175	173	190	179
SS (mg/l)	66	152	88	76	86	158	116	88	144	88
*PAC corrected	49	109	57	47	71	119	86	64	99	50
pH (std units)	7.6	7.4	7.9	7.9	7.9	8.1	7.8	7.8	7.6	7.7
VSS (mg/l)	46	106	60	60	62	120	52	52	60	38
*PAC corrected	37	84	48	48	49	95	41	42	48	31
NH3N (mg/l)	210	212	212	212	212	195	195	195	187	187
CN (mg/l)	0.876	0.876	0.876	0.876	0.876					
SCN (mg/l)	3.2	3.2	3.2	3.2	3.2					
NO2 (mg/l)	(0.25	(0.25	(0.25	(0.25	(0.25					
NO3 (mg/l)	7.2	7.2	7.2	7.2	7.2					
Phenolics (mg/l)	(.025	(.025	(.025	(.025	(.025	(0.25	(0.25	(0.25	(0.25	(0.25
PO4-P (mg/l)	16.5					8.79	8.79	8.79	9.19	9.19
Org-N (mg/l)										
TDS (mg/l)						5215	5215	5215	5215	5215
Color (APHA units)	750	750	750	750	750	875	875	875	875	875
TOC (mg/l)	40	39	39	39	39	39	39	39	42	42
BOD 5-day (mg/l)	(2	3	3	3	3	3	3	3	3	3

UNIT 1B TABLE A2

MONTH	JAN	JAN	JAN	JAN	JAN	JAN	JAN	JAN	JAN	JAN
DAY	22	23	24	25	26	27	28	29	30	31
DAY NO.	180	181	182	183	184	185	186	187	188	189
SYSTEM PARAMETERS										
*Sludge Age	25.32	20.94	18.19	24.10	30.08	18.30	16.77	28.90	24.83	29.35
*(F/M)COD	0.16	0.20	0.13	0.10	0.12	0.08	0.11	0.09	0.10	0.13
*HRT	1.77	1.82	1.90	1.77	1.77	1.79	1.77	1.77	1.80	1.77
FEED PARAMETERS (BATCH #)										
Volume (liters)	3.95	3.85	3.68	3.95	3.95	3.92	3.95	3.95	3.89	3.95
pH (std units)	7.95	8.1	8.1	8	8	8	8.1	8	8.2	8.2
COD (mg/l)	215	217	205	196	200	181	178	190	196	188
NH3N (mg/l)	186	186	186	157	157	157	177	177	177	177
SS (mg/l)	74	242	200	120	176	184	88	80	104	52
VSS (mg/l)	53	172	139	83	122	118	56	51	66	31
CN (mg/l)	0	0	0	0.447	0.447	0.447	0.447	0.447	0.447	0.447
SCN (mg/l)	0	0	0	5	5	5	5	5	5	5
BOD 5-day (mg/l)	4	4	4	3	3	3	3	3	3	3
TOC (mg/l)	56	56	56	56	56	56	54	54	54	54
Phenolics (mg/l)	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025
PO4-P (mg/l)	7.5	7.5	7.5	10.5	10.5	10.5	8	8	8	8
Org-N (mg/l)	0	0	0	37	37	37	37	37	37	37
NO2 (mg/l)	0	0	0	0.88	0.88	0.88	0.88	0.88	0.88	0.88
NO3 (mg/l)	0	0	0	2.2	2.2	2.2	2.2	2.2	2.2	2.2
TDS (mg/l)	4915	4915	4915	5458	5458	5458	5458	5458	5458	5458
Color (APHA Units)	750	750	750	750	750	750	750	750	750	750
BASIN PARAMETERS										
Vol Wasted (ml)	20	50	50	50	50	50	50	50	50	50
D.O. (mg/l)	7.5	7.4	7.4	7.4	6.2	6.8	6.8	6.8	6.7	6.8
SS (mg/l)	1260	1058	1312	1556	1450	1744	1330	1596	1560	1282
*SS (PAC corrected)	792	595	858	1104	997	1299	895	1159	1124	845
Temp (C)	19	19	19	19	22	21	20	20	20	20
pH (std units)	7.6	7.9	8	7.9	7.8	7.9	7.2	7.6	7.8	7.7
OUR (mg/l/hr)		2			2					
VSS (mg/l)	1013	854	1059	1256	1156	1390	1060	1272	1206	991
*VSS (PAC corrected)	637	481	693	892	795	1036	713	924	869	653
VSS/SS	0.80	0.81	0.81	0.81	0.80	0.80	0.80	0.80	0.77	0.77
*PAC Added (mg)	143	143	143	143	143	143	143	143	143	143
*Inventory (mg/l basin)	468	463	454	452	453	445	435	437	436	437
EFFLUENT PARAMETERS										
Volume (liters)	3.8	3.6	3.65	3.85	3.8	3.7	3.8	3.8	3.67	3.8
COD (mg/l)	188	169	164	164	162	178	182	182	180	192
SS (mg/l)	106	106	152	124	90	198	162	104	126	82
*PAC corrected	67	60	99	88	62	147	109	76	91	54
pH (std units)	7.75	7.9	8	8	7.8	7.9	7.4	7.6	7.5	7.7
VSS (mg/l)	78	86	123	100	72	158	129	83	97	63
*PAC corrected	63	69	99	81	57	126	103	66	75	49
NH3N (mg/l)	187	187	161	161	161	150	150	150	150	150
CN (mg/l)			0.799	0.799	0.799	0.799	0.799	0.799	0.799	
SCN (mg/l)			3.3	3.3	3.3	3.3	3.3	3.3	3.3	
NO2 (mg/l)			7.4	7.4	7.4	7.4	7.4	7.4	7.4	
NO3 (mg/l)			14.4	14.4	14.4	14.4	14.4	14.4	14.4	
Phenolics (mg/l)	(0.25	(0.25	(0.25	(0.25	(0.25	(0.25	(0.25	(0.25	(0.25	(0.25
PO4-P (mg/l)	9.19	9.19	8.6	8.6	8.6	13	13	13	13	8.7
Org-N (mg/l)			72	72	72	72	72	72	72	
TDS (mg/l)	5215	5215	5418	5418	5418	5418	5418	5418	5418	3960
Color (APHA units)	875	875	1000	1000	1000	1000	1000	1000	1000	1000
TOC (mg/l)	42	42	44	44	44	46	46	46	46	45
BOD 5-day (mg/l)	3	3	2	2	2	2	2	2	2	3.6

UNIT 1B TABLE A2

MONTH	FEB	FEB	FEB	FEB	FEB	FEB	FEB	FEB	FEB	FEB
DAY	1	2	3	4	5	6	7	8	9	10
DAY NO.	190	191	192	193	194	195	196	197	198	199
SYSTEM PARAMETERS										
*Sludge Age	18.15	40.77	57.19	20.02	22.67	53.06	38.50	31.85	47.59	47.59
*(F/M)COD	0.30	0.12	0.07	0.10	0.11	0.11	0.10	0.15	0.15	0.19
*HRT	1.89	1.65	1.83	1.85	1.86	2.00	1.79	1.77	1.79	1.79
FEED PARAMETERS (BATCH #)										
Volume (liters)	3.7	4.25	3.83	3.79	3.77	3.5	3.9	3.95	3.9	3.9
pH (std units)	8.3	8.4	8.4	8.4	8.4	8.4	8.6	8.5	8.5	8.5
COD (mg/l)	206	199	206	223	208	227	229	237	274	335
NH3N (mg/l)	180	180	180	161	161	161	161	154	154	154
SS (mg/l)	26	54	56	44	66	70	56	42	58	188
VSS (mg/l)	15	32	34	26	40	42	35	26	36	106
CN (mg/l)	0	0	0	0	0	0	0	0.716	0.716	0.716
SCN (mg/l)	0	0	0	0	0	0	0	43.9	43.9	43.9
BOD 5-day (mg/l)	3.5	3.5	3.5	5	5	5	5	16.5	16.5	16.5
TOC (mg/l)	59	59	59	56	56	56	56	78	78	78
Phenolics (mg/l)	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025
PO4-P (mg/l)	3.3	3.3	3.3	1.9	1.9	1.9	1.9	3.6	3.6	3.6
Org-N (mg/l)	0	0	0	0	0	0	0	27	27	27
NO2 (mg/l)	0	0	0	0	0	0	0	0.92	0.92	0.92
NO3 (mg/l)	0	0	0	0	0	0	0	(1.25	(1.25	(1.25
TDS (mg/l)	4592	4592	4592	4592	4592	4592	4592	4892	4892	4892
Color (APHA Units)	1400	1400	1400	1400	1400	1400	1400	1500	1500	1500
BASIN PARAMETERS										
Vol Wasted (ml)	50	50	50	50	50	50	50	50	50	50
D.O. (mg/l)	6.6	6.7	6.8	6.8	6.6	6.8	6.8	6.8	6.8	6.8
SS (mg/l)	814	1454	2092	1686	1472	1590	1794	1446	1508	1508
*SS (PAC corrected)	384	1018	1647	1246	1029	1139	1338	988	1043	1036
Temp (C)	21	20	20	20	20	20	21	20	20	20
pH (std units)	7.5	8	8	7.5	7.6	8.1	8.2	8.5	8.5	8.5
OUR (mg/l/hr)		2				2			2	2
VSS (mg/l)	629	1128	1623	1308	1142	1204	1358	1095	1168	1168
*VSS (PAC corrected)	297	790	1270	967	798	862	1013	748	808	803
VSS/SS	0.77	0.70	0.78	0.78	0.78	0.76	0.76	0.76	0.77	0.77
*PAC Added (mg)	143	143	143	143	143	143	143	143	143	143
*Inventory (mg/l basin)	430	436	445	440	443	451	456	458	465	472
EFFLUENT PARAMETERS										
Volume (liters)	3.45	3.9	3.5	3.95	3.6	3.3	3.7	3.7	3.65	3.65
COD (mg/l)	166	196	208	192	215	200	213	214	243	263
SS (mg/l)	100	60	60	162	84	54	90	86	54	54
*PAC corrected	47	42	47	120	59	39	67	59	37	37
pH (std units)	7.5	8	7.9	7.4	7.7	8.2	8.3	8.5	8.5	8.5
VSS (mg/l)	77	47	47	126	65	41	68	65	42	42
*PAC corrected	60	36	36	97	51	31	52	49	32	32
NH3N (mg/l)	150	150	143	143	143	143	137	137	137	150
CN (mg/l)							1.83	1.83	1.83	1.83
SCN (mg/l)							4.4	4.4	4.4	4.4
NO2 (mg/l)							14.5	14.5	14.5	14.5
NO3 (mg/l)							6.7	6.7	6.7	6.7
Phenolics (mg/l)	(0.025	(0.025	(0.025	(0.025	(0.025	(0.025	(0.025	(0.025	(0.025	(0.025
PO4-P (mg/l)	8.7	8.7	4.1	4.1	4.1	4.1	2.5	2.5	2.5	5.8
Org-N (mg/l)							17	17	17	17
TDS (mg/l)	3960	3960	3960	3960	3960	3960	5000	5000	5000	5000
Color (APHA units)	1000	1000	1000	1000	1000	1000	1500	1500	1500	1500
TOC (mg/l)	45	45	43	43	43	43	55	55	55	65
BOD 5-day (mg/l)	3.6	3.6	3	3	3	3	3	3	3	4

UNIT 1B TABLE A2

MONTH	FEB	FEB	FEB	FEB	FEB	FEB	FEB	FEB	FEB	FEB
DAY	11	12	13	14	15	16	17	18	19	20
DAY NO.	200	201	202	203	204	205	206	207	208	209
SYSTEM PARAMETERS										
*Sludge Age	27.91	20.91	11.97	23.88	22.95	55.76	24.53	8.26	17.19	25.27
*(F/M)COD	0.29	0.28	0.20	0.22	0.15	0.23	0.25	0.36	0.32	0.29
*HRT	1.82	1.75	1.75	1.79	1.87	1.93	1.81	1.75	1.75	1.90
FEED PARAMETERS (BATCH #)										
Volume (liters)	3.85	4	4	3.9	3.75	3.63	3.87	4	4	3.68
pH (std units)	8.4	8.2	8.2	8	8.1	8.2	8.2	8.4	8.3	8.2
COD (mg/l)	365	365	338	359	265	259	262	262	256	240
NH3N (mg/l)	182	182	182	182	200	200	200	196	196	196
SS (mg/l)	188	154	432	488	458	436	286	272	30	72
VSS (mg/l)	106	87	243	280	263	250	168	160	18	42
CN (mg/l)	0.716	0.716	0.716	0.716	0	0	0	0	0	0
SCN (mg/l)	43.9	43.9	43.9	43.9	0	0	0	0	0	0
BOD 5-day (mg/l)	6	6	6	6	3	3	3	2	2	2
TOC (mg/l)	94	94	94	94	76	76	76	73	73	73
Phenolics (mg/l)	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025
PO4-P (mg/l)	2.9	2.9	2.9	2.9	3.9	3.9	3.9	3.7	3.7	3.7
Org-N (mg/l)	27	27	27	27						
NO2 (mg/l)	0.92	0.92	0.92	0.92						
NO3 (mg/l)	(1.25	(1.25	(1.25	(1.25						
TDS (mg/l)	4892	4892	4892	4892	5352	5352	5352	5352	5352	5352
Color (APHA Units)	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500
BASIN PARAMETERS										
Vol Wasted (ml)	50	50	50	50	50	50	50	50	50	50
D.O. (mg/l)	6.9	6.9	6.8	6.8	6.8	6.9	6.9	6.9	6.9	7
SS (mg/l)	1204	1240	1460	1370	1386	1042	1034	828	866	832
*SS (PAC corrected)	732	774	1017	929	947	594	588	419	465	430
Temp (C)	20	20	20	20	20	20	20	19	19	19
pH (std units)	8.3	7.7	8.1	8	8	8.2	8.2	8	8.1	8
OUR (mg/l/hr)			2			4		4	4	
VSS (mg/l)	933	960	1152	1081	1094	830	824	660	690	674
*VSS (PAC corrected)	567	600	802	733	747	473	468	334	370	348
VSS/SS	0.77	0.77	0.79	0.79	0.79	0.80	0.80	0.80	0.80	0.81
*PAC Added (mg)	143	143	143	143	143	143	143	143	143	143
*Inventory (mg/l basin)	472	466	443	441	439	448	446	409	401	402
EFFLUENT PARAMETERS										
Volume (liters)	3.7	4	4	3.6	3.75	3.62	3.7	3.8	3.9	3.45
COD (mg/l)	269	270	249	240	253	231	232	232	246	215
SS (mg/l)	84	112	244	118	120	30	84	216	100	70
*PAC corrected	51	70	170	80	82	17	48	109	54	36
pH (std units)	8.3	7.8	8.1	8	8.1	8.2	8.2	8	8.2	7.9
VSS (mg/l)	65	87	193	93	95	24	67	172	80	57
*PAC corrected	50	67	152	73	75	19	53	137	63	46
NH3N (mg/l)	150	150	150	172	172	172	185	185	185	185
CN (mg/l)	1.83	1.83	1.83							
SCN (mg/l)	4.4	4.4	4.4							
NO2 (mg/l)	14.5	14.5	14.5							
NO3 (mg/l)	6.7	6.7	6.7							
Phenolics (mg/l)	(0.025	(0.025	(0.025	(0.025	(0.025	(0.025	(0.025	(0.025	(0.025	(0.025
PO4-P (mg/l)	5.8	5.8	5.8	5	5	5	3.6	3.6	3.6	3.6
Org-N (mg/l)	17	17	17							
TDS (mg/l)	5000	5000	5000	5648	5648	5648	5648	5648	5648	5648
Color (APHA units)	1500	1500	1500	1250	1250	1250	1250	1250	1250	1250
TOC (mg/l)	65	65	65	66	66	66	66	66	66	66
BOD 5-day (mg/l)	4	4	4	3	3	3	3	3	3	3

UNIT 18 TABLE A2

MONTH	FEB	FEB	FEB	FEB	FEB	FEB	FEB	FEB	FEB	MAR
DAY	21	22	23	24	25	26	27	28	29	1
DAY NO.	210	211	212	213	214	215	216	217	218	219
SYSTEM PARAMETERS										
*Sludge Age	45.40	33.61	18.82	27.40	39.67	24.98	47.48	29.68	42.88	26.14
*(F/M)COD	0.17	0.18	0.11	0.16	0.27	0.21	0.12	0.26	0.19	0.21
*HRT	1.87	1.82	1.90	1.82	1.75	1.83	2.05	1.75	2.00	1.85
FEED PARAMETERS (BATCH #)										
Volume (liters)	3.75	3.85	3.68	3.85	4	3.83	3.42	4	3.5	3.79
pH (std units)	8	8.1	8	8.1	7.9	8	7.7	8	7.8	7.6
COD (mg/l)	230	235	235	231	219	255	232	303	253	251
NH3N (mg/l)	196	196	196	196	188	188	188	188	179	179
SS (mg/l)	30	24	128	134	172	36	100	26	364	58
VSS (mg/l)	17	14	74	89	115	24	67	16	229	36
CN (mg/l)		0.451	0.451	0.451	0.451	0.451	0.451	0.451		
SCN (mg/l)		5.3	5.3	5.3	5.3	5.3	5.3	5.3		
BOD 5-day (mg/l)	2	3	3	3	3	3	3	3		
TOC (mg/l)	73	64.5	64.5	64.5	65.3	65.3	65.3	65.3	77.2	77.2
Phenolics (mg/l)	(.025	(.025	(.025	(.025	(.025	(.025	(.025			
PO4-P (mg/l)	3.7	8.4	8.4	8.4	13.5	13.5	13.5	13.5		
Org-N (mg/l)		12	12	12	12	12	12	12		
NO2 (mg/l)		0.36	0.36	0.36	0.36	0.36	0.36	0.36		
NO3 (mg/l)		4	4	4	4	4	4	4		
TDS (mg/l)	5352	5714	5714	5714	5714	5714	5714	5714		
Color (APHA Units)	1500	1500	1500	1500	1500	1500	1500	1500		
BASIN PARAMETERS										
Vol Wasted (ml)	50	50	50	50	50	50	50	50	50	50
D.O. (mg/l)	6.8	6.4	6.4	6.4	6.4	6.4	9.1	9	9	9
SS (mg/l)	1136	1138	1634	1228	900	1110	1388	1092	1096	1058
*SS (PAC corrected)	726	724	1225	817	483	693	963	665	662	624
Temp (C)	19	20	19	19	19	19	19	19	19	18
pH (std units)	8.2	8	7.7	7.8	7.4	7.8	7.1	7.3	7.5	7.4
OUR (mg/l/hr)	2						2			
VSS (mg/l)	920	922	1270	954	700	863	1150	905	908	888
*VSS (PAC corrected)	588	586	952	635	375	539	798	551	549	524
VSS/SS	0.81	0.81	0.78	0.78	0.78	0.78	0.83	0.83	0.83	0.84
*PAC Added (mg)	143	143	143	143	143	143	143	143	143	143
*Inventory (mg/l basin)	410	414	409	411	417	417	425	427	434	434
EFFLUENT PARAMETERS										
Volume (liters)	3.6	3.55	3.5	3.6	3.95	3.55	3.25	3.85	3.3	3.6
COD (mg/l)	235	233	192	261	219	215	219	203	224	187
SS (mg/l)	44	66	190	90	38	92	56	68	50	82
*PAC corrected	28	42	142	60	20	57	39	41	30	48
pH (std units)	8.2	8.3	8	8	7.8	7.9	7	7.5	7.5	7.5
VSS (mg/l)	36	53	148	70	30	72	46	56	41	69
*PAC corrected	29	43	115	54	23	56	38	47	34	58
NH3N (mg/l)	181	181	181	181	181	181	181	176	176	176
CN (mg/l)	1.12	1.12	1.12	1.12	1.12	1.12	1.12			
SCN (mg/l)	3.6	3.6	3.6	3.6	3.6	3.6	3.6			
NO2 (mg/l)	5.42	5.42	5.42	5.42	5.42	5.42	5.42			
NO3 (mg/l)	5.6	5.6	5.6	5.6	5.6	5.6	5.6			
Phenolics (mg/l)	(0.025	(0.025	(0.025	(0.025	(0.025	(0.025	(0.025			
PO4-P (mg/l)	5.2	5.2	5.2	12.4	12.4	12.4	12.4			
Org-N (mg/l)	11	11	11	11	11	11	11			
TDS (mg/l)	5472	5472	5472	5472	5472	5472	5472			
Color (APHA units)										
TOC (mg/l)	59.1	59.1	59.1	54.6	54.6	54.6	54.6	60.4	60.4	60.4
BOD 5-day (mg/l)	6	6	6	4	4	4	4			

UNIT 1B TABLE A2

MONTH	MAR	MAR	MAR	MAR	MAR	MAR	MAR	MAR	MAR	MAR
DAY	2	3	4	5	6	7	8	9	10	11
DAY NO.	220	221	222	223	224	225	226	227	228	229
SYSTEM PARAMETERS										
*Sludge Age	27.09	4.12	25.29	48.88	7.36	25.45	18.04	15.89	23.17	13.74
*(F/M)COD	0.24	0.27	0.18	0.08	0.20	0.30	0.18	0.27	0.21	0.21
*HRT	1.91	1.75	1.86	2.28	2.04	1.77	1.86	1.89	1.79	1.83
FEED PARAMETERS (BATCH #)										
Volume (liters)	3.67	4	3.77	3.07	3.43	3.95	3.77	3.7	3.9	3.82
pH (std units)	7.9	7.9	7.8	7.4	7.8	7.8	7.6	7.5	7.3	7.5
COD (mg/l)	240	242	234	222	252	264	216	212	222	231
NH3N (mg/l)	179	173	173	173	173	216	216	216	218	218
SS (mg/l)	116	116	242	50	146	146	344	332	246	480
VSS (mg/l)	75	75	157	33	95	95	224	228	169	329
CN (mg/l)										
SCN (mg/l)										
BOD 5-day (mg/l)		3	3	3	3	3	3	3	5	5
TOC (mg/l)	77.2	68.6	68.6	68.6	68.6	61.6	61.6	61.6	64.7	64.7
Phenolics (mg/l)										
PO4-P (mg/l)										
Org-N (mg/l)										
NO2 (mg/l)										
NO3 (mg/l)										
TDS (mg/l)										
Color (APHA Units)										
BASIN PARAMETERS										
Vol Wasted (ml)	50	50	50	50	50	50	50	50	50	50
D.O. (mg/l)	9	9.2	9.2	9	8.8	8.7	8.7	8.6	8.5	8.6
SS (mg/l)	942	836	1028	1780	1038	936	1048	784	970	976
*SS (PAC corrected)	508	490	679	1422	712	606	720	460	643	656
Temp (C)	18	18	19	18	19	19	18	18	18	19
pH (std units)	7.7	7.7	7.7	7.9	8	7.9	7.9	7.9	7.7	7.5
OUR (mg/l/hr)				2			4			
VSS (mg/l)	791	702	863	1204	716	633	774	579	716	721
*VSS (PAC corrected)	426	412	570	962	491	410	532	340	475	485
VSS/SS	0.84	0.84	0.84	0.68	0.68	0.68	0.74	0.74	0.74	0.74
*PAC Added (mg)	143	143	143	143	143	143	143	143	143	143
*Inventory (mg/l basin)	434	346	349	358	326	330	328	324	327	320
EFFLUENT PARAMETERS										
Volume (liters)	3.5	4	3.55	2.95	3.35	3.85	3.55	3.5	3.8	3.65
COD (mg/l)	183	214	199	247	243	194	190	201	190	192
SS (mg/l)	72	426	84	76	138	70	126	110	82	154
*PAC corrected	39	250	56	61	95	45	87	65	54	104
pH (std units)	7.8	7.6	7.95	7.6	8	7.9	7.9	7.9	7.8	7.6
VSS (mg/l)	60	358	71	51	61	47	93	81	61	114
*PAC corrected	51	300	59	35	42	32	69	60	45	84
NH3N (mg/l)	112	112	112	112	198	198	198	159	159	159
CN (mg/l)										
SCN (mg/l)										
NO2 (mg/l)										
NO3 (mg/l)										
Phenolics (mg/l)										
PO4-P (mg/l)										
Org-N (mg/l)										
TDS (mg/l)										
Color (APHA units)										
TOC (mg/l)	55.4	55.4	55.4	55.4	56.2	56.2	56.2	48.5	48.5	48.5
BOD 5-day (mg/l)										

UNIT 1B TABLE A2

MONTH	MAR	MAR	MAR	MAR	MAR
DAY	12	13	14	15	16
DAY NO.	230	231	232	233	234
SYSTEM PARAMETERS					
*Sludge Age	16.15	16.65	17.54	17.65	13.73
*(F/M)COD	0.22	0.25	0.23	0.23	0.23
*HRT	1.82	1.77	1.89	1.77	1.94
FEED PARAMETERS (BATCH #)					
Volume (liters)	3.84	3.95	3.7	3.95	3.6
pH (std units)	7.7	7	6.9	7.5	7.9
COD (mg/l)	239	224	238	244	255
NH3N (mg/l)	218	218	208	208	208
SS (mg/l)	214	480	128	88	360
VSS (mg/l)	147	329	88	60	261
CN (mg/l)					
SCN (mg/l)					
BOD 5-day (mg/l)	5	5	0	0	0
TOC (mg/l)	64.7	64.7	71	71	71
Phenolics (mg/l)					
PO4-P (mg/l)					
Org-N (mg/l)					
NO2 (mg/l)					
NO3 (mg/l)					
TDS (mg/l)					
Color (APHA Units)					
BASIN PARAMETERS					
Vol Wasted (ml)	50	50	50	50	50
D.O. (mg/l)	8.9	8.7	8.8	8.8	8.1
SS (mg/l)	1026	912	954	986	970
*SS (PAC corrected)	710	598	641	674	664
Temp (C)	18	19	19	19	19
pH (std units)	7.5	7.4	7.3	7.3	7
OUR (mg/l/hr)	3			3	
VSS (mg/l)	708	629	658	702	691
*VSS (PAC corrected)	490	413	442	480	473
VSS/SS	0.69	0.69	0.69	0.71	0.71
*PAC Added (mg)	143	143	143	143	143
*Inventory (mg/l basin)	316	314	313	312	306
EFFLUENT PARAMETERS					
Volume (liters)	3.75	3.8	3.5	3.85	3.45
COD (mg/l)	207	209	212	207	203
SS (mg/l)	132	112	120	112	162
*PAC corrected	91	73	81	77	111
pH (std units)	7.5	7.5	7.6	7.5	7.6
VSS (mg/l)	91	77	83	80	115
*PAC corrected	63	53	57	57	82
NH3N (mg/l)	159	213	213	213	213
CN (mg/l)					
SCN (mg/l)					
NO2 (mg/l)					
NO3 (mg/l)					
Phenolics (mg/l)					
PO4-P (mg/l)					
Org-N (mg/l)					
TDS (mg/l)					
Color (APHA units)					
TOC (mg/l)	48.5	60	60	60	60
BOD 5-day (mg/l)					

UNIT 2A TABLE A3

MONTH	JULY	JULY	JULY	JULY	JULY	JULY	AUG	AUG	AUG	AUG
DAY	26	27	28	29	30	31	1	2	3	4
DAY NO.	0	1	2	3	4	5	6	7	8	9
SYSTEM PARAMETERS										
*Sludge Age	30	30	30	30	30	30	30	30	30	30
*(F/M) COD	0.27	0.30	0.25	0.27	0.28	0.25	0.26	0.24	0.27	0.22
*HRT	1.9	1.9	2.0	1.9	1.9	1.9	1.9	1.9	1.9	2.2
FEED PARAMETERS (BATCH #)	27	27	27	27	27	27	27	27	27	27
Volume (liters)	4.87	4.90	4.57	5.00	4.95	4.95	4.95	4.90	4.95	4.25
pH (std units)	9.7/10.1	9.8/10.8	9.8	9.7	9.7/10.1	9.7/10.1	10	9.8/10.3	9.8	9.7/10.7
COD (mg/l)	1840	1840	1840	1750	1750	1750	1750	1810	1810	1810
NH3N (mg/l)	188	188	188	188	188	188	188	181	181	181
SS (mg/l)	24	24	24	24	24	24	24	44	44	44
VSS (mg/l)	24	24	24	24	24	24	24	28	28	28
CN (mg/l)	0.0159	0.0159	0.0159	0.0159	0.0159	0.0159	0.0159	0.217	0.217	0.217
SCN (mg/l)	54.1	54.1	54.1	54.1	54.1	54.1	54.1	69.6	69.6	69.6
BOD 5-day (mg/l)										
TOC (mg/l)	584	584	584	584	584	584	584			
Phenolics (mg/l)								1.16	1.16	1.16
PO4-P (mg/l)										
Org-N (mg/l)										
NO2 (mg/l)										
NO3 (mg/l)										
TDS (mg/l)										
Color (APHA Units)										
BASIN PARAMETERS										
Vol Wasted (ml)	323	354	332	342	345	360	333	360	359	343
D.O. (mg/l)	7.7	7.7	7.6	7.6	7.2	7.2	6.8	6.9	6.9	7
SS (mg/l)	3430	3120	3230	3140	3000	3370	3110	3430	3110	3190
*SS (PAC corrected)	3430	3120	3230	3140	3000	3370	3110	3430	3110	3190
Temp (C)	24	24	24	25	25	26	26	25.5	26	26
pH (std units)	7.4	7.3	7.6	7.2	7.0	7.2	7.4	7.1	7.6	7.0
OUR (mg/l/hr)			24				28			27
VSS (mg/l)	2766	2516	2750	2673	2554	2869	2800	3088	2800	2880
*VSS (PAC corrected)	2766	2516	2750	2673	2554	2869	2800	3088	2800	2880
VSS/SS			0.85				0.90			0.90
*PAC Added (mg)	0	0	0	0	0	0	0	0	0	0
*Inventory (mg/l basin)	0	0	0	0	0	0	0	0	0	0
EFFLUENT PARAMETERS										
Volume (liters)	4.26	4.50	4.05	4.48	4.37	4.50	4.51	4.60	4.50	3.75
COD (mg/l)	323	308	303	290	301	293	251	262	212	272
SS (mg/l)	62	32	54	40	38	30	46	30	28	48
*PAC corrected										
pH (std units)	7.5	7.4	7.5	7.3	7.1	7.3	7.4	7.4	7.6	7.5
VSS (mg/l)			30				22			42
*PAC corrected										
NH3N (mg/l)	15	15	15	8	8	8	8	12.8	12.8	12.8
CN (mg/l)	1.38	1.38	1.38	1.38	1.38	1.38	1.38	2.23	2.23	2.23
SCN (mg/l)	6.1	6.1	6.1	6.1	6.1	6.1	6.1	7	7	7
NO2 (mg/l)	101	101	101	101	101	101	101	67.4	67.4	67.4
NO3 (mg/l)	73	73	73	73	73	73	73	96.6	96.6	96.6
Phenolics (mg/l)								0.025	0.025	0.025
PO4-P (mg/l)								2.5	2.5	2.5
Org-N (mg/l)				11	11	11	11			
TDS (mg/l)										
Color (APHA units)	500	500	500	500	500	500	500			
TOC (mg/l)	58	58	58	58	58	58	58			
BOD 5-day (mg/l)										

UNIT 2A TABLE A3

MONTH	AUG	AUG	AUG	AUG	AUG	AUG	AUG	AUG	AUG	AUG
DAY	5	6	7	8	9	10	11	12	13	14
DAY NO.	10	11	12	13	14	15	16	17	18	19
SYSTEM PARAMETERS										
*Sludge Age	30	30	30	30	30	30	30	30	30	30
*(F/M)COD	0.22	0.24	0.20	0.23	0.22	0.25	0.23	0.25	0.26	0.28
*HRT	2.2	2.0	2.1	2.0	2.3	2.1	2.0	2.1	2.2	1.9
FEED PARAMETERS (BATCH #)	27	27	27	27	27	27	28	28	28	28
Volume (liters)	4.23	4.62	4.47	4.70	4.00	4.45	4.60	4.35	4.30	4.90
pH (std units)	9.8/10.8	9.8	9.8	9.8	9.8	9.8	10/10.3	9.9/10.4	9.7	9.7
COD (mg/l)	1745	1745	1745	1745	1858	1858	1858	2159	2159	2159
NH3N (mg/l)	176	176	176	176	173	173	173	185	185	185
SS (mg/l)	44	44	44	44	100	100	100	100	100	100
VSS (mg/l)	28	28	28	28	32	32	32	32	32	32
CN (mg/l)	0.217	0.217	0.217	0.217	0.481	0.481	0.481	0.481	0.481	0.481
SCN (mg/l)	69.6	69.6	69.6	69.6	149	149	149	149	149	149
BOD 5-day (mg/l)										
TOC (mg/l)					632	632	632	632	632	632
Phenolics (mg/l)	1.16	1.16	1.16	1.16						
PO4-P (mg/l)										
Org-N (mg/l)										
NO2 (mg/l)										
NO3 (mg/l)										
TDS (mg/l)										
Color (APHA Units)										
BASIN PARAMETERS										
Vol Wasted (ml)	352	330	353	350	363	374	370	384	367	355
D.O. (mg/l)	7.1	7.3	7.2	7.2	6.9	7.6	7.5	7.4	7.8	7.8
SS (mg/l)	3160	3140	3600	3370	3180	3040	3390	3460	3300	3430
*SS (PAC corrected)	3160	3140	3600	3370	3180	3040	3390	3460	3300	3430
Temp (C)	26	26	26	27	27	25	25	24	23	22
pH (std units)	7.2	7.3	7.4	7.0	7.0	7.7	7.0	7.4	7.5	7.5
OUR (mg/l/hr)				22			20			
VSS (mg/l)	2853	2835	3250	3000	2831	2706	3070	3133	2988	3106
*VSS (PAC corrected)	2853	2835	3250	3000	2831	2706	3070	3133	2988	3106
VSS/SS				0.89			0.91			
*PAC Added (mg)	0	0	0	0	0	0	0	0	0	0
*Inventory (mg/l basin)	0	0	0	0	0	0	0	0	0	0
EFFLUENT PARAMETERS										
Volume (liters)	3.78	4.05	4.00	3.80	3.65	3.95	3.90	3.90	3.85	4.27
COD (mg/l)	272	272	228	220	223	223	284	190	239	250
SS (mg/l)	40	54	42	44	32	20	26	14	28	36
*PAC corrected					44	22	22	18	22	28
pH (std units)	7.2	7.6	7.5	7.2	7.2	7.0	7.1	7.3	7.5	7.6
VSS (mg/l)				40			16			
*PAC corrected							18			
NH3N (mg/l)	5.9	5.9	5.9	5.9	9.7	9.7	9.7	18.8	18.8	18.8
CN (mg/l)	2.23	2.23	2.23	2.23	0.006	0.006	0.006	0.006	0.006	0.006
SCN (mg/l)	7	7	7	7	7.5	7.5	7.5	7.5	7.5	7.5
NO2 (mg/l)	67.4	67.4	67.4	67.4	43.8	43.8	43.8	43.8	43.8	43.8
NO3 (mg/l)	96.6	96.6	96.6	96.6	116	116	116	116	116	116
Phenolics (mg/l)	0.025	0.025	0.025	0.025						
PO4-P (mg/l)	2.5	2.5	2.5	2.5						
Org-N (mg/l)	14.4	14.4	14.4	14.4				18.7	18.7	18.7
TDS (mg/l)										
Color (APHA units)					500	500	500	500	500	500
TOC (mg/l)					58	58	58	58	58	58
BOD 5-day (mg/l)										

UNIT 2A TABLE A3

MONTH	AUG	AUG	AUG	AUG	AUG	AUG	AUG	AUG	AUG	AUG
DAY	15	16	17	18	19	20	21	22	23	24
DAY NO.	20	21	22	23	24	25	26	27	28	29
SYSTEM PARAMETERS										
*Sludge Age	30	30	30	30	30	30	30	30	30	30
*(F/M)COD	0.26	0.29	0.27	0.23	0.27	0.28	0.29	0.24	0.26	0.28
*HRT	2.0	1.9	1.9	1.9	1.9	1.9	1.9	2.0	1.9	2.1
FEED PARAMETERS (BATCH #)	28	28	28	28	28	28	28	28	28	28
Volume (liters)	4.55	4.95	4.93	4.80	5.00	5.00	5.00	4.70	4.90	4.40
pH (std units)	9.8	10	9.8	9.9	9.7	9.8	9.8	9.9/10.39	9.9/10.2	9.8/10.2
COD (mg/l)	2159	2051	2051	2051	2105	2105	2105	2105	2185	2185
NH3N (mg/l)	185	190	190	190	183	183	183	183	180	180
SS (mg/l)	100	18	18	18	18	18	18	18	40	40
VSS (mg/l)	32	18	18	18	18	18	18	18	10	10
CN (mg/l)	0.481	0.559	0.559	0.559	0.559	0.559	0.559	0.559	0.739	0.739
SCN (mg/l)	149	174	174	174	174	174	174	174	177	177
BOD 5-day (mg/l)									1290	1290
TOC (mg/l)	632								645	645
Phenolics (mg/l)		1.56	1.56	1.56	1.56	1.56	1.56	1.56		
PO4-P (mg/l)										
Org-N (mg/l)										
NO2 (mg/l)										
NO3 (mg/l)										
TDS (mg/l)										
Color (APHA Units)										
BASIN PARAMETERS										
Vol Wasted (ml)	367	366	380	355	374	373	363	354	302	328
D.O. (mg/l)	7.8	7.7	7.9	7.3	7.6	7.4	7.5	6.7	7.1	7.3
SS (mg/l)	3490	3220	3440	3840	3490	3300	3270	3790	3780	3230
*SS (PAC corrected)	3490	3220	3440	3840	3490	3300	3270	3790	3780	3230
Temp (C)	22	23	23.5	25	24	25	25	24	25	24
pH (std units)	7.6	7.7	7.8	7.6	7.5	7.4	7.6	7.4	7.1	7.1
OUR (mg/l/hr)	24			32				36		
VSS (mg/l)	3110	2869	3065	3610	3281	3102	3074	3400	3391	2898
*VSS (PAC corrected)	3110	2869	3065	3610	3281	3102	3074	3400	3391	2898
VSS/SS	0.89			0.94				0.90		
*PAC Added (mg)	0	0	0	0	0	0	0	0	0	0
*Inventory (mg/l basin)	0	0	0	0	0	0	0	0	0	0
EFFLUENT PARAMETERS										
Volume (liters)	4.10	4.58	4.38	4.28	4.52	4.46	4.30	4.12	4.42	4.00
COD (mg/l)	265	276	258	287	290	290	289	303	320	329
SS (mg/l)	28	24	16	40	20	20	28	42	84	58
*PAC corrected	38	58	16	36	40	22	28	48	58	38
pH (std units)	7.5	7.8	7.9	7.7	7.6	7.7	7.6	7.5	7.3	7.4
VSS (mg/l)	16			34				30		
*PAC corrected	26			28				32		
NH3N (mg/l)	18.8	34.8	34.8	34.8	32.2	32.2	32.2	32.2	34.2	34.2
CN (mg/l)	(0.006	3.28	3.28	3.28	3.28	3.28	3.28	3.28	2.37	2.37
SCN (mg/l)	7.5	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.1	4.1
NO2 (mg/l)	43.8	85.1	85.1	85.1	85.1	85.1	85.1	85.1	97.1	97.1
NO3 (mg/l)	116	96.9	96.9	96.9	96.9	96.9	96.9	96.9	83	83
Phenolics (mg/l)		(0.025	(0.025	(0.025	(0.025	(0.025	(0.025	(0.025		
PO4-P (mg/l)		4.2	4.2	4.2	4.2	4.2	4.2	4.2		
Org-N (mg/l)	10.7				17.2	17.2	17.2	17.2		
TDS (mg/l)										
Color (APHA units)	500								750	750
TOC (mg/l)	50								69.6	69.6
BOD 5-day (mg/l)										

UNIT 2A TABLE A3

MONTH	AUG	AUG	AUG	AUG	AUG	AUG	AUG	SEPT	SEPT	SEPT
DAY	25	26	27	28	29	30	31	1	2	3
DAY NO.	30	31	32	33	34	35	36	37	38	39
SYSTEM PARAMETERS										
*Sludge Age	30	30	30	30	30	30	30	30	30	30
*(F/M)COD	0.32	0.28	0.27	0.30	0.26	0.05	0.30	0.28	0.25	0.27
*HRT	1.9	1.9	1.9	1.9	2.0	10.9	1.9	2.0	2.0	1.9
FEED PARAMETERS (BATCH #)	28	28	28	29	29	29	29	29	29	29
Volume (liters)	5.00	4.83	4.85	4.88	4.56	0.85	4.83	4.62	4.70	4.80
pH (std units)	9.7/10.4	9.7/10.2	9.7	9.7/10.4	9.7/10.4	9.8/10.4	9.5/10.2	9.5	9.7	9.7/10.2
COD (mg/l)	2185	2130	2130	2130	2130	2070	2070	2070	2022	2022
NH3N (mg/l)	180	184	184	184	184	179	179	179	184	184
SS (mg/l)	40	40	40	40	40	26	26	26	26	26
VSS (mg/l)	10	10	10	10	10	14	14	14	14	14
CN (mg/l)	0.739	0.739	0.739	0.739	0.739	0.25	0.25	0.25	0.25	0.25
SCN (mg/l)	177	177	177	177	177	182	182	182	182	182
BOD 5-day (mg/l)	1290	1290	1290	1470	1470	1470	1470	1470	1470	1470
TOC (mg/l)	645	645	645	645	645					
Phenolics (mg/l)						1.48	1.48	1.48	1.48	1.48
PO4-P (mg/l)										
Org-N (mg/l)										
NO2 (mg/l)										
NO3 (mg/l)										
TDS (mg/l)										
Color (APHA Units)										
BASIN PARAMETERS										
Vol Wasted (ml)	362	326	352	353	395	399	390	398	369	368
D.O. (mg/l)	6.4	7.2	7.0	7.0	7.0	7.2	7.4	7.2	6.9	6.8
SS (mg/l)	3260	3420	3570	3290	3350	3070	3000	3020	3320	3160
*SS (PAC corrected)	3260	3420	3570	3290	3350	3070	3000	3020	3320	3160
Temp (C)	24	24.5	25	24	25	24	24	24	24	24
pH (std units)	6.9	7.3	7.4	6.9	7.1	7.2	7.2	7.4	7.1	7.3
OUR (mg/l/hr)	36				36			38		
VSS (mg/l)	2880	3021	3154	2907	3120	2859	2794	2870	3155	3003
*VSS (PAC corrected)	2000	3021	3154	2907	3120	2859	2794	2870	3155	3003
VSS/SS	0.88				0.93			0.95		
*PAC Added (mg)	0	0	0	0	0	0	0	0	0	0
*Inventory (mg/l basin)	0	0	0	0	0	0	0	0	0	0
EFFLUENT PARAMETERS										
Volume (liters)	4.73	4.34	4.32	4.33	4.10	0.63	3.90	4.22	4.62	4.27
COD (mg/l)	316	322	279	291	260	281	213	170	193	186
SS (mg/l)	26	58	40	36	4	2	8	2	22	24
*PAC corrected	4	26	30	48	10	4	22	8	32	38
pH (std units)	7.2	7.4	7.5	7.2	7.3	7.2	7.2	7.4	7.4	7.4
VSS (mg/l)	22				4			2		
*PAC corrected	4				10			8		
NH3N (mg/l)	34.2	21.6	21.6	21.6	21.6	9.9	9.9	9.9	9.2	9.2
CN (mg/l)	2.37	2.37	2.37	2.37	2.37	1.96	1.96	1.96	1.96	1.96
SCN (mg/l)	4.1	4.1	4.1	4.1	4.1	5.9	5.9	5.9	5.9	5.9
NO2 (mg/l)	97.1	97.1	97.1	97.1	97.1	22.9	22.9	22.9	22.9	22.9
NO3 (mg/l)	83	83	83	83	83	182	182	182	182	182
Phenolics (mg/l)						0.025	0.025	0.025	0.025	0.025
PO4-P (mg/l)						3.9	3.9	3.9	3.9	3.9
Org-N (mg/l)		10.7	10.7	10.7	10.7				3.5	3.5
TDS (mg/l)										
Color (APHA units)	750	750	750	750	750					
TOC (mg/l)	69.6	69.6	69.6	69.6	69.6					
BOD 5-day (mg/l)										

UNIT 2A TABLE A3

MONTH	SEPT	SEPT	SEPT	SEPT	SEPT	SEPT	SEPT	SEPT	SEPT	SEPT
DAY	4	5	6	7	8	9	10	11	12	13
DAY NO.	40	41	42	43	44	45	46	47	48	49
SYSTEM PARAMETERS										
*Sludge Age	30	30	30	30	30.1	30	25	25	25	25
*(F/M)COD	0.28	0.29	0.25	0.29	0.31	0.33	0.24	0.29	0.27	0.28
*HRT	1.9	1.9	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9
FEED PARAMETERS (BATCH #)	29	29	29	29	29	29	29	29	30	30
Volume (liters)	4.82	4.95	4.55	5.00	5.00	5.00	4.87	4.80	4.80	5
pH (std units)	9.7/10.2	9.7/10.2	9.7	9.7	9.7	9.8	9.7/11.0	9.8/11.1	9.0/10.1	9.5/10.4
COD (mg/l)	2022	2022	2033	2033	2033	2000	2000	2000	2000	2063
NH3N (mg/l)	184	184	183	183	183	188	188	188	188	186
SS (mg/l)	26	26	106	106	106	106	106	106	106	66
VSS (mg/l)	14	14	44	44	44	44	44	44	44	32
CN (mg/l)	0.25	0.25	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.33
SCN (mg/l)	182	182	183	183	183	183	183	183	183	193
BOD 5-day (mg/l)	1470	1470	1470	1470	1470	1470	1470	1470	1410	1410
TOC (mg/l)			683	683	683	683	683	683	683	
Phenolics (mg/l)	1.48	1.48								1.54
PO4-P (mg/l)										
Org-N (mg/l)										
NO2 (mg/l)										
NO3 (mg/l)										
TDS (mg/l)										
Color (APHA Units)										
BASIN PARAMETERS										
Vol Wasted (ml)	386	345	240	385	387	374	443	441	453	458
D.O. (mg/l)	6.8	6.8	6.8	6.6	6.8	6.8	6.9	6.8	7.2	7.2
SS (mg/l)	3070	3020	3270	3070	2850	2700	3550	2900	3360	3490
*SS (PAC corrected)	3070	3020	3270	3070	2850	2700	3550	2900	3360	3490
Temp (C)	24	24	24	26	25	24	25	25	25	25
pH (std units)	7.3	7.2	7.3	7.3	7.2	7.1	6.9	7.1	7.5	6.9
OUR (mg/l/hr)		36			4.2				36	
VSS (mg/l)	2918	2850	3086	2897	2690	2548	3351	2737	2990	3106
*VSS (PAC corrected)	2918	2850	3086	2897	2690	2548	3351	2737	2990	3106
VSS/SS		0.94			0.94				0.89	
*PAC Added (mg)	0	0	0	0	0	0	0	0	0	0
*Inventory (mg/l basin)	0	0	0	0	0	0	0	0	0	0
EFFLUENT PARAMETERS										
Volume (liters)	4.28	4.40	4.10	4.58	4.36	4.42	4.35	4.35	4.11	4.25
COD (mg/l)	177	183	180	178	199	211	206	211	188	183
SS (mg/l)	10	38	128	10	8	16	30	26	22	18
*PAC corrected	38	8	30	44	4	104	140	132	152	134
pH (std units)	7.3	7.3	7.4	8.0	8.3	7.7	7.3	7.7	8.0	7.9
VSS (mg/l)		22			60				62	
*PAC corrected		8			4				100	
NH3N (mg/l)	9.2	9.2	13.3	13.3	13.3	16.7	16.7	16.7	16.7	5.5
CN (mg/l)	1.96	1.96	2.02	2.02	2.02	2.02	2.02	2.02	2.02	1.62
SCN (mg/l)	5.9	5.9	7.1	7.1	7.1	7.1	7.1	7.1	7.1	6.5
NO2 (mg/l)	22.9	22.9	9.95	9.95	9.95	9.95	9.95	9.95	9.95	4.7
NO3 (mg/l)	182	182	180	180	180	180	180	180	180	196
Phenolics (mg/l)	0.025	0.025								0.025
PO4-P (mg/l)	3.9	3.9								4.3
Org-N (mg/l)	3.5	3.5				1.2	1.2	1.2	1.2	
TDS (mg/l)										
Color (APHA units)			625	625	625	625	625	625	625	
TOC (mg/l)			64	64	64	64	64	64	64	
BOD 5-day (mg/l)										

UNIT 2A TABLE A3

MONTH	SEPT	SEPT	SEPT	SEPT	SEPT	SEPT	SEPT	SEPT	SEPT	SEPT
DAY	14	15	16	17	18	19	20	21	22	23
DAY NO.	50	51	52	53	54	55	56	57	58	59
SYSTEM PARAMETERS										
*Sludge Age	25	25	25	25	25	25	20	20	14.2	20
*(F/M) COD	0.32	0.31	0.26	0.28	0.26	0.27	0.26	0.25	0.30	0.34
*HRT	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
FEED PARAMETERS (BATCH #)	30	30	30	30	30	30	30	30	30	30
Volume (liters)	5.00	5.00	4.80	5.00	5.00	5.00	5.00	5.00	5.00	5.00
pH (std units)	9.6	9.5/10.4	10/10.7	9.6	9.7	9.8/10.6	9.6/10.3	9.4/10.4	9.5/10.4	9.5
COD (mg/l)	2063	2063	1846	1846	1846	1846	1802	1802	1802	2178
NH3N (mg/l)	186	186	187	187	187	187	190	190	190	193
SS (mg/l)	66	66	66	66	66	66	125	125	125	125
VSS (mg/l)	32	32	32	32	32	32	46	46	46	46
CN (mg/l)	0.33	0.33	0.33	0.33	0.33	0.33				
SCN (mg/l)	193	193	193	193	193	193				
BOD 5-day (mg/l)	1410	1410	1410	1410	1410	1410	1620	1620	1620	1620
TOC (mg/l)							689	689	689	689
Phenolics (mg/l)	1.54	1.54	1.54	1.54	1.54	1.54				
PO4-P (mg/l)										
Org-N (mg/l)										
NO2 (mg/l)										
NO3 (mg/l)										
TDS (mg/l)										
Color (APHA Units)										
BASIN PARAMETERS										
Vol Wasted (ml)	438	171	321	421	403	429	543	523	10	215
D.O. (mg/l)	7.4	8.0	7.9	7.8	7.5	6.7	6.6	6.6	6.8	7.0
SS (mg/l)	3060	2960	3030	3010	3260	3120	3110	3240	2810	2920
*SS (PAC corrected)	3060	2960	3030	3010	3260	3120	3110	3240	2810	2920
Temp (C)	23	22	22	23	23	23	24	25	24	23
pH (std units)	7.2	6.7	7.3	7.3	7.0	6.9	7.1	6.9	6.7	7.2
QIR (mg/l/hr)		28				30			34	
VSS (mg/l)	2723	2730	2795	2776	3007	2880	2871	2991	2540	2639
*VSS (PAC corrected)	2723	2730	2795	2776	3007	2880	2871	2991	2540	2639
VSS/SS		0.92				0.92			0.90	
*PAC Added (mg)	0	0	0	0	0	0	0	0	0	0
*Inventory (mg/l basin)	0	0	0	0	0	0	0	0	0	0
EFFLUENT PARAMETERS										
Volume (liters)	4.31	4.35	4.30	4.70	4.30	4.90	4.50	4.70	4.60	4.70
COD (mg/l)	179	180	179	179	174	171	148	151	119	122
SS (mg/l)	30	210	112	38	58	32	38	54	506	234
*PAC corrected	144	94	18	14	32	26	16	30	34	24
pH (std units)	7.7	7.5	7.7	8.1	8.1	8.0	6.8	7.1	7.1	7.2
VSS (mg/l)		196				88			460	
*PAC corrected		90				22			26	
NH3N (mg/l)	5.5	5.5	5.5	5.5	5.5	5.5	4.3	4.3	4.3	6.1
CN (mg/l)	1.62	1.62	1.62	1.62	1.62	1.62				
SCN (mg/l)	6.5	6.5	6.5	6.5	6.5	6.5	(10)	(10)	(10)	(10)
NO2 (mg/l)	4.7	4.7	4.7	4.7	4.7	4.7				
NO3 (mg/l)	196	196	196	196	196	196				
Phenolics (mg/l)	(0.025)	(0.025)	(0.025)	(0.025)	(0.025)	(0.025)				
PO4-P (mg/l)	4.3	4.3	4.3	4.3	4.3	4.3				
Org-N (mg/l)			2.6	2.6	2.6	2.6				
TDS (mg/l)										
Color (APHA units)							500	500	500	500
TOC (mg/l)							58	58	58	58
BOD 5-day (mg/l)							(10)	(10)	(10)	(10)

UNIT 2A TABLE A3

MONTH	SEPT	SEPT	SEPT	SEPT	SEPT	SEPT	SEPT	OCT	OCT	OCT
DAY	24	25	26	27	28	29	30	1	2	3
DAY NO.	60	61	62	63	64	65	66	67	68	69
SYSTEM PARAMETERS										
*Sludge Age	20	20	20	16.9	20	20	20	20	20	18.7
*(F/M)COD	0.33	0.36	0.30	0.35	0.28	0.30	0.29	0.28	0.22	0.29
*HRT	1.9	1.9	2.0	1.9	1.9	1.9	1.9	1.9	2.4	2.2
FEED PARAMETERS (BATCH #)	30	30	30	30	31	31	31	31	31	31
Volume (liters)	5.00	5.00	4.60	5.00	5.00	5.00	5.00	5.00	3.85	4.30
pH (std units)	9.4	9.5/10.3	9.5/10.4	9.5/10.3	10.1	10.1	11.3	11.4	11.4	11.5
COD (mg/l)	2178	2178	2178	2161	2161	2161	2028	2028	2028	2028
NH3N (mg/l)	193	193	193	189	189	189	166	166	166	166
SS (mg/l)	126	126	126	244	244	244	244	244	244	244
VSS (mg/l)	46	46	46	60	60	60	60	60	60	60
CN (mg/l)										
SCN (mg/l)										
BOD 5-day (mg/l)	1620	1620	1620	1470	1470	1470	1470	1470	1470	1470
TOC (mg/l)	689	689	689	660	660	660	660	660	660	660
Phenolics (mg/l)				0.67	0.67	0.67	0.67	0.67	0.67	0.67
PO4-P (mg/l)										
Org-N (mg/l)										
NO2 (mg/l)										
NO3 (mg/l)										
TDS (mg/l)										
Color (APHA Units)										
BASIN PARAMETERS										
Vol Wasted (ml)	469	398	188	10	508	493	518	528	512	10
D.O. (mg/l)	7.0	7.0	7.3	7.4	7.4	7.6	7.7	7.8	7.2	7.6
SS (mg/l)	3030	2790	3030	2840	3540	3440	3300	3460	3440	2890
*SS (PAC corrected)	3030	2790	3030	2840	3540	3440	3300	3460	3440	2890
Temp (C)	21	21	21	21	22	21	21	21	21	22
pH (std units)	6.9	6.2	6.7	7.4	7.2	7.3	7.3	7.6	7.8	7.9
OUR (mg/l/hr)						42				38
VSS (mg/l)	2739	2522	2760	2587	3225	2990	2868	3007	2990	2520
*VSS (PAC corrected)	2739	2522	2760	2587	3225	2990	2868	3007	2990	2520
VSS/SS			0.91			0.87				0.87
*PAC Added (mg)	0	0	0	0	0	0	0	0	0	0
*Inventory (mg/l basin)	0	0	0	0	0	0	0	0	0	0
EFFLUENT PARAMETERS										
Volume (liters)	4.80	4.60	4.25	4.70	5.00	4.60	4.50	4.60	3.15	4.20
COD (mg/l)	176	176	162	172	176	177	188	172	180	178
SS (mg/l)	86	124	294	422	66	80	60	54	96	450
*PAC corrected	8	10	28	22	40	46	48	48	40	24
pH (std units)	7.4	6.7	4.4	7.0	7.2	7.3	7.4	7.6	7.8	7.9
VSS (mg/l)			290			52				308
*PAC corrected			16			40				24
NH3N (mg/l)	6.1	6.1	6.1	4.9	4.9	4.9	3.1	3.1	3.1	3.1
CN (mg/l)										
SCN (mg/l)	<10	<10	<10							
NO2 (mg/l)										
NO3 (mg/l)				<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
Phenolics (mg/l)				<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
PO4-P (mg/l)				12.3	12.3	12.3	15.3	15.3	15.3	15.3
Org-N (mg/l)										
TDS (mg/l)										
Color (APHA units)	500	500	500							
TOC (mg/l)	58	58	58	48	48	48	48	48	48	48
BOD 5-day (mg/l)	<10	<10	<10	5.7	5.7	5.7	5.7	5.7	5.7	5.7

UNIT 2A TABLE A3

MONTH	OCT	OCT	OCT	OCT	OCT	OCT	OCT	OCT	OCT	OCT
DAY	4	5	6	7	8	9	10	11	12	13
DAY NO.	70	71	72	73	74	75	76	77	78	79
SYSTEM PARAMETERS										
*Sludge Age	20	20	20	20	20	20	20	20	20	20
*(F/M) COD	0.29	0.29	0.27	0.25	0.19	0.23	0.29	0.32	0.32	0.32
*HRT	2.0	1.9	2.2	2.3	3.0	2.4	2.3	2.1	2.1	2.0
FEED PARAMETERS (BATCH #)	31	31	31	31	31	31	31	31	31	31
Volume (liters)	4.80	4.85	4.25	4.10	3.15	3.85	3.98	4.49	4.50	4.60
pH (std units)	11.5/10.1	11.5/10.2	11.6	11.3	11.5/9.8	11.5	11.5	11.3	11.2	11.0
COD (mg/l)	2085	2085	2085	2052	2052	2052	2052	2098	2098	2098
NH3N (mg/l)	178	178	178	153	153	153	153	156	156	156
SS (mg/l)	436	436	436	436	436	436	436			
VSS (mg/l)	92	92	92	92	92	92	92			
CN (mg/l)										
SCN (mg/l)										
BOD 5-day (mg/l)	1400	1400	1400	1400	1400	1400	1400	1360	1360	1360
TOC (mg/l)	646	646	646	646	646	646	646	649	649	649
Phenolics (mg/l)										
PO4-P (mg/l)										
Org-N (mg/l)										
NO2 (mg/l)										
NO3 (mg/l)										
TDS (mg/l)										
Color (APHA Units)										
BASIN PARAMETERS										
Vol Wasted (ml)	554	544	542	556	559	515	10	527	563	536
D.O. (mg/l)	7.2	7.2	7.3	7.0	7.0	7.2	7.2	7.2	7.4	7.4
SS (mg/l)	3270	3390	3130	3230	3270	3290	2700	2910	2810	2880
*SS (PAC corrected)	3270	3390	3130	3230	3270	3290	2700	2810	2810	2880
Temp (C)	23	24	23	22	20	22	22	22	23	23
pH (std units)	8.0	7.9	7.8	7.9	8.0	8.0	7.9	7.9	7.9	8.2
OUR (mg/l/hr)			42				40			40
VSS (mg/l)	2851	2956	2710	2797	2831	2849	2340	2435	2435	2500
*VSS (PAC corrected)	2851	2956	2710	2797	2831	2849	2340	2435	2435	2500
VSS/SS			0.87				0.87			0.87
*PAC Added (mg)	0	0	0	0	0	0	0	0	0	0
*Inventory (mg/l basin)	0	0	0	0	0	0	0	0	0	0
EFFLUENT PARAMETERS										
Volume (liters)	4.70	4.55	3.95	3.70	3.30	3.40	4.20	4.47	4.32	4.35
COD (mg/l)	138	130	132	126	133	127	125	123	135	146
SS (mg/l)	32	42	46	38	40	82	1696	46	24	42
*PAC corrected	18	34	40	26	46	116	48	34	26	50
pH (std units)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.1	8.3	8.1
VSS (mg/l)			38				1458			32
*PAC corrected			34				42			36
NH3N (mg/l)	1.5	1.5	1.5	1.8	1.8	1.8	1.8	1.4	1.4	1.4
CN (mg/l)										
SCN (mg/l)										
NO2 (mg/l)										
NO3 (mg/l)										
Phenolics (mg/l)										
PO4-P (mg/l)								2.2	2.2	2.2
Org-N (mg/l)										
TDS (mg/l)										
Color (APHA units)	625	625	625	625	625	625	625			
TOC (mg/l)	38	38	38	38	38	38	38	37	37	37
BOD 5-day (mg/l)	(3.4	(3.4	(3.4	(3.4	(3.4	(3.4	(3.4	1.8	1.8	1.8

UNIT 2A TABLE A3

MONTH	OCT	OCT	OCT	OCT	OCT	OCT	OCT	OCT	OCT	OCT
DAY	14	15	16	17	18	19	20	21	22	23
DAY NO.	80	81	82	83	84	85	86	87	88	89
SYSTEM PARAMETERS										
*Sludge Age	20	20	20	20	19.98	19.99	14.27	20.00	20.00	20.00
*(F/M)COD	0.26	0.26	0.25	0.32	0.30	0.30	0.30	0.30	0.30	0.30
*HRT	1.9	1.9	2.0	1.9	1.86	1.86	1.86	1.86	1.86	1.86
FEED PARAMETERS (BATCH #)	31	31	31	31	32	32	32	32	32	32
Volume (liters)	5.00	5.00	4.55	5.00	5	5	5	5	5	5
pH (std units)	10.9	10.9	11.7	11.5/9.8	11.5	11.4	11.5	11.5	11.5	11.4
COD (mg/l)	1983	1983	1983	1983	1925	1925	1925	1926	1926	1925
NH3N (mg/l)	158	158	158	158	169	169	169	166	166	166
SS (mg/l)					140	140	140	140	140	140
VSS (mg/l)					46	46	46	46	46	46
CN (mg/l)										
SCN (mg/l)										
BOD 5-day (mg/l)	1360	1360	1360	1360	1110	1110	1110	1110	1110	1110
TOC (mg/l)	649	649	649	649	642	642	642	642	642	642
Phenolics (mg/l)										
PO4-P (mg/l)										
Org-N (mg/l)										
NO2 (mg/l)										
NO3 (mg/l)										
TDS (mg/l)										
Color (APHA Units)										
BASIN PARAMETERS										
Vol Wasted (ml)	490	358	433	507	510	550	309	516	515	496
D.O. (mg/l)	7.6	7.6	7.6	7.4	7.4	7	7.2	7	7	7
SS (mg/l)	3600	3630	3520	3390	3360	3390	3460	3470	3420	3540
*SS (PAC corrected)	3600	3630	3520	3390	3360	3390	3460	3470	3420	3540
Temp (C)	22	21.5	22	22	22	22	20	20	18	20
pH (std units)	7.9	8.0	8.0	8.0	7.9	7.8	8.1	8.2	7.9	7.9
OUR (mg/l/hr)				36			34			
VSS (mg/l)	3125	3151	3056	2550	2710	2710	2700	2700	2700	2700
*VSS (PAC corrected)	3125	3151	3056	2550	2710	2710	2700	2700	2700	2700
VSS/SS				0.75	0.87	0.87	0.78	0.78	0.78	0.78
*PAC Added (mg)	0	0	0	0	0	0	0	0	0	0
*Inventory (mg/l basin)	0	0	0	0	0	0	0	0	0	0
EFFLUENT PARAMETERS										
Volume (liters)	4.93	4.58	4.45	4.77	4.75	4.75	4.7	4.57	4.52	4.5
COD (mg/l)	146	136	142	150	131	141	126	114	138	134
SS (mg/l)	80	192	123	66	64	36	214	64	64	82
*PAC corrected	68	48	58	28	50	46	44	180	42	42
pH (std units)	8.2	8.2	7.9	8.1	8.1	8	8.2	8.3	8.1	8.1
VSS (mg/l)			42	26	38	38	128	128	128	128
*PAC corrected				26	34	34	34	34	34	34
NH3N (mg/l)	1.2	1.2	1.2	8.7	1.4	1.4	1.4	2	2	2
CN (mg/l)										
SCN (mg/l)										
NO2 (mg/l)										
NO3 (mg/l)										
Phenolics (mg/l)										
PO4-P (mg/l)	2.2	2.2	2.2	2.2						
Org-N (mg/l)										
TDS (mg/l)										
Color (APHA units)					625	625	625	625	625	625
TOC (mg/l)	37	37	37	37	40	40	40	40	40	40
BOD 5-day (mg/l)	1.8	1.8	1.8	1.8	0.9	0.9	0.9	0.9	0.9	0.9

UNIT 2A TABLE A3

MONTH	OCT	OCT	OCT	OCT	OCT	OCT	OCT	OCT	NOV	NOV
DAY	24	25	26	27	28	29	30	31	1	2
DAY NO.	90	91	92	93	94	95	96	97	98	99
SYSTEM PARAMETERS										
*Sludge Age	14.08	19.98	20.01	19.99	20.00	20.01	19.99	20.02	19.98	20.00
*(F/M)COD	0.32	0.35	0.35	0.33	0.30	0.30	0.30	0.29	0.30	0.30
*HRT	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86
FEED PARAMETERS (BATCH #)	32	32	32	32	32	32	32	32		
Volume (liters)	5	5	5	5	5	5	5	5	5	5
pH (std units)	11.4	11.4	11.6	11.2	9.7	9.65	9.5	9.3	9.8	9.8
COD (mg/l)	1926	2060	2060	2060	1880	1880	1880	1880	1935	1935
NH3N (mg/l)	166	150	150	150	170	170	170	170	168	168
SS (mg/l)	140	312	312	312	312	312	312	312	204	204
VSS (mg/l)	46	82	82	82	82	82	82	82	62	62
CN (mg/l)									4.1	4.1
SCN (mg/l)									173	173
BOD 5-day (mg/l)	1110	1160	1160	1160	1160	1160	1160	1160	1170	1170
TOC (mg/l)	642	610	610	610	610	610	610	610	601	601
Phenolics (mg/l)		0.403	0.403	0.403	0.403	0.403	0.403	0.403	2.29	2.29
PO4-P (mg/l)										
Org-N (mg/l)									58	58
NO2 (mg/l)										
NO3 (mg/l)										
TDS (mg/l)										
Color (APHA Units)									1000	1000
BASIN PARAMETERS										
Vol Wasted (ml)	10	551	493	507	526	511	494	550	519	518
D.O. (mg/l)	6.2	6	6	6	6.2	6.2	6.2	6.3	3.8	3.6
SS (mg/l)	3120	3060	3360	3280	3320	3350	2610	3250	3250	3190
*SS (PAC corrected)	3120	3060	3360	3280	3320	3350	2610	3250	3250	3190
Temp (C)	20	20	21	20	20	21	20	20	20	20.5
pH (std units)	7.9	7.8	7.75	7.7	7.6	7.6	7.3	6.9	7	6.4
OUR (mg/l/hr)	36			38				38		
VSS (mg/l)	2470	2470	2470	2600	2600	2600	2600	2670	2670	2670
*VSS (PAC corrected)	2470	2470	2470	2600	2600	2600	2600	2670	2670	2670
VSS/SS	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.82	0.82	0.82
*PAC Added (mg)	0	0	0	0	0	0	0	0	0	0
*Inventory (mg/l basin)	0	0	0	0	0	0	0	0	0	0
EFFLUENT PARAMETERS										
Volume (liters)	4.28	4.95	4.72	4.78	4.73	4.79	4.79	5.03	4.85	4.85
COD (mg/l)	138	139	142	130	132	130	140	134	140	144
SS (mg/l)	614	30	76	64	52	62	58	32	54	52
*PAC corrected	158	36	24	46	48	36	36	24	26	50
pH (std units)	8.1	8.1	8	8.1	8	7.9	7.8	7.3	7.2	7.1
VSS (mg/l)	440	440	440	50	50	50	50	30	30	30
*PAC corrected	134	134	134	34	34	34	34	22	22	22
NH3N (mg/l)	2	2.3	2.3	2.3	3.0	3.0	3.0	3.0	10.0	10.0
CN (mg/l)									1.51	1.51
SCN (mg/l)									3.1	3.1
NO2 (mg/l)									3.81	3.81
NO3 (mg/l)									148	148
Phenolics (mg/l)		<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
PO4-P (mg/l)		3.5	4.9	4.9	4.9	4.9	4.9	4.9	34.6	34.6
Org-N (mg/l)									<4.0	<4.0
TDS (mg/l)										
Color (APHA units)	625								875	875
TOC (mg/l)	40	36	40	40	40	40	40	40	45	45
BOD 5-day (mg/l)	0.9	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.9	1.9

UNIT 2A TABLE A3

MONTH	NOV	NOV	NOV	NOV	NOV	NOV	NOV	NOV	NOV	NOV
DAY	3	4	5	6	7	8	9	10	11	12
DAY NO.	100	101	102	103	104	105	106	107	108	109
SYSTEM PARAMETERS										
*Sludge Age	19.99	19.96	20.02	20.01	20.54	19.98	20.21	19.95	20.01	20.01
*(F/M)COD	0.30	0.32	0.32	0.27	0.31	0.31	0.31	0.24	0.24	0.26
*HRT	1.86	1.86	1.86	1.86	1.86	1.69	2.14	2.16	2.21	1.98
FEED PARAMETERS (BATCH #)										
Volume (liters)	5	5	5	5	5	5.5	4.35	4.3	4.2	4.7
pH (std units)	9.8	9.6	12.2	12.2	12.2	11.2	12.4	12	10.6	11.8
COD (mg/l)	1935	2050	2050	2050	2050	2011	2011	2011	1992	1992
NH3N (mg/l)	168	173	173	173	173	164	164	164	156	156
SS (mg/l)	204	204	204	204	204	338	338	338	338	338
VSS (mg/l)	62	62	62	62	62	90	90	90	90	90
CN (mg/l)	4.1	4.1	4.1	4.1	4.1					
SCN (mg/l)	173	173	173	173	173					
BOD 5-day (mg/l)	1170	1330	1330	1330	1330	1210	1210	1210	1280	1280
TOC (mg/l)	601	629	629	629	629	626	626	626	643	643
Phenolics (mg/l)	2.29	2.29	2.29	2.29	2.29	5.24	5.24	5.24	5.24	5.24
PO4-P (mg/l)										
Org-N (mg/l)	58	58	58	58	58					
NO2 (mg/l)										
NO3 (mg/l)										
TDS (mg/l)										
Color (APHA Units)	1000	1000	1000	1000	1000	750	750	750	750	750
BASIN PARAMETERS										
Vol Wasted (ml)	227	549	505	448	527	519	506	538	566	566
D.O. (mg/l)	8	7.6	7.4	7.2	5	5.2	4.8	5	5.8	5.8
SS (mg/l)	3160	2380	3410	3760	3390	3730	2910	3420	3410	3460
*SS (PAC corrected)	3160	2380	3410	3760	3390	3730	2910	3420	3410	3460
Temp (C)	20	19.5	19	20	19	19	19	19	19	19
pH (std units)	6.7	6.3	6.2	8.2	9	7.6	6.4	6.8	6.9	7.4
OUR (mg/l/hr)	24	24			29			24		
VSS (mg/l)	2680	2680	2680	3189	2740	3015	2352	2970	2961	3005
*VSS (PAC corrected)	2680	2680	2680	3189	2740	3015	2352	2970	2961	3005
VSS/SS	0.85	0.85	0.85	0.85	0.81	0.81	0.81	0.87	0.87	0.87
*PAC Added (mg)	0	0	0	0	0	0	0	0	0	0
*Inventory (mg/l basin)	0	0	0	0	0	0	0	0	0	0
EFFLUENT PARAMETERS										
Volume (liters)	4.68	5.08	4.65	4.6	4	5.24	4.26	4.05	4.11	4.18
COD (mg/l)	152	163	163	163	197	273	237	226	205	190
SS (mg/l)	252	24	70	124	62	58	64	52	28	28
*PAC corrected	32	590	28	74	46	58	50	34	18	18
pH (std units)	6.9	6.6	6.5	8.3	8.6	8.1	7.4	7.1	7	7.2
VSS (mg/l)	206	206	206	206	40	40	40	40	40	40
*PAC corrected	24	24	24	24	38	38	38	38	38	38
NH3N (mg/l)	10.0	37.5	37.5	37.5	37.5	34.2	34.2	34.2	15.8	15.8
CN (mg/l)	1.51	1.51	1.51	1.51	1.51					
SCN (mg/l)	3.1	3.1	3.1	3.1	3.1					
NO2 (mg/l)	3.81	3.81	3.81	3.81	3.81					
NO3 (mg/l)	148	148	148	148	148					
Phenolics (mg/l)	(0.025	(0.025	(0.025	(0.025	(0.025					
PO4-P (mg/l)	34.6	23.3	23.3	23.3	23.3	12.9	12.9	12.9	8.3	8.3
Org-N (mg/l)	(4.0	(4.0	(4.0	(4.0	(4.0					
TDS (mg/l)										
Color (APHA units)	875	875	875	875	875	875	875	875	875	875
TOC (mg/l)	45	47	47	47	47	51	51	51	53	53
BOD 5-day (mg/l)	1.9	2.3	2.3	2.3	2.3	1.6	1.6	1.6	3.3	3.3

UNIT 2A TABLE A3

MONTH	NOV	NOV	NOV	NOV	NOV	NOV	NOV	NOV	NOV	NOV
DAY	13	14	15	16	17	18	19	20	21	22
DAY NO.	110	111	112	113	114	115	116	117	118	119
SYSTEM PARAMETERS										
*Sludge Age	19.99	20.17	19.94	20.18	20.13	20.12	19.22	19.99	19.94	20.05
*(F/M) COD	0.26	0.25	0.25	0.27	0.30	0.31	0.38	0.29	0.32	0.23
*HRT	2.27	2.13	2.24	2.09	2.02	2.21	1.79	2.42	2.02	2.10
FEED PARAMETERS (BATCH #)										
Volume (liters)	4.1	4.37	4.15	4.45	4.6	4.2	5.2	3.85	4.6	4.42
pH (std units)	11.7	11.8	11.9	12	11.7	11.1	11.8	11.8	11.9	11.9
COD (mg/l)	1992	1992	2059	2059	2059	2059	2059	2059	2059	2059
NH3N (mg/l)	156	156	135	135	135	134	134	134	134	134
SS (mg/l)	338	338	700	700	700	700	700	700	700	795
VSS (mg/l)	90	90	122	122	122	122	122	122	122	170
CN (mg/l)			3.99	3.99	3.99	3.99	3.99	3.99	3.99	1.24
SCN (mg/l)			173	173	173	173	173	173	173	188
BOD 5-day (mg/l)	1280	1280	1050	1050	1050	1320	1320	1320	1320	1240
TOC (mg/l)	643	643	637	637	637	653	653	653	653	650
Phenolics (mg/l)	5.24	5.24	3.33	3.33	3.33	3.33	3.33	3.33	3.33	5.11
PO4-P (mg/l)										
Org-N (mg/l)			60	60	60	60	60	60	60	73
NO2 (mg/l)										
NO3 (mg/l)										
TDS (mg/l)										
Color (APHA Units)	750	750	1250	1250	1250	1250	1250	1250	1250	1500
BASIN PARAMETERS										
Vol Wasted (ml)	487	550	530	530	530	530	410	552	520	550
D.O. (mg/l)	6.1	4.5	8.2	7.4	8.7	8.2	8.2	8.1	8.4	8.6
SS (mg/l)	3000	3330	3223	3295	3030	2730	2725	2690	2755	3645
*SS (PAC corrected)	3000	3330	3223	3295	3030	2730	2725	2690	2755	3645
Temp (C)	19	18.5	18	19.5	19.5	18	19	19	20	19
pH (std units)	7.6	7.8	7.8	7.7	7.8	7.2	7.5	7.9	8	7.8
OUR (mg/l/hr)		28			20.4				27	
VSS (mg/l)	2605	2890	2797	2860	2590	2334	2329	2299	2440	3228
*VSS (PAC corrected)	2605	2890	2797	2860	2590	2334	2329	2299	2440	3228
VSS/gg	0.87	0.87	0.87	0.87	0.85	0.85	0.85	0.85	0.89	0.89
*PAC Added (mg)	0	0	0	0	0	0	0	0	0	0
*Inventory (mg/l basin)	0	0	0	0	0	0	0	0	0	0
EFFLUENT PARAMETERS										
Volume (liters)	4.05	3.95	3.85	4.26	4.35	3.95	4.49	4.05	4.18	3.85
COD (mg/l)	192	193	170	170	183	197	193	204	208	188
SS (mg/l)	84	38	60	50	46	46	130	32	54	46
*PAC corrected	108	22								
pH (std units)	7.3	7.9	8.1	8.1	8.1	7.4	7.6	8	8.4	8.3
VSS (mg/l)	40	38			46				54	
*PAC corrected	38	20								
NH3N (mg/l)	15.8	15.8	4.3	4.3	4.3	4.0	4.0	4.0	4.0	4.0
CN (mg/l)			1.01	1.01	1.01	1.01	1.01	1.01	1.01	
SCN (mg/l)			4.1	4.1	4.1	4.1	4.1	4.1	4.1	
NO2 (mg/l)			4.39	4.39	4.39	4.39	4.39	4.39	4.39	
NO3 (mg/l)			177	177	177	177	177	177	177	
Phenolics (mg/l)			0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025
PO4-P (mg/l)	8.3	8.3	2.3	2.3	2.3	3.5	3.5	3.5	3.5	4.4
Org-N (mg/l)			4.8	4.8	4.8	4.8	4.8	4.8	4.8	
TDS (mg/l)										
Color (APHA units)	875	875	750	750	750	750	750	750	750	750
TOC (mg/l)	53	53	56	56	56	56	56	56	56	53
BOD 5-day (mg/l)	3.3	3.3	2.3	2.3	2.3	2.8	2.8	2.8	2.8	1.6

UNIT 2A TABLE A3

MONTH	NOV	NOV	NOV	NOV	NOV	NOV	NOV	NOV	DEC	DEC
DAY	23	24	25	26	27	28	29	30	1	2
DAY NO.	120	121	122	123	124	125	126	127	128	129
SYSTEM PARAMETERS										
*Sludge Age	20.11	20.01	20.00	19.99	19.99	20.01	19.99	19.98	20.01	20.00
*(F/M)COD	0.31	0.25	0.28	0.25	0.29	0.29	0.30	0.29	0.23	0.31
*HRT	2.20	1.92	2.10	2.27	1.99	2.13	2.04	2.16	2.58	2.02
FEED PARAMETERS (BATCH #)										
Volume (liters)	4.23	4.85	4.43	4.1	4.675	4.36	4.55	4.3	3.6	4.6
pH (std units)	11	12	11.85	12	11.9	11.9	11.9	11.8	11.2	11.7
COD (mg/l)	2059	2059	2098	2098	2098	2098	2027	2027	2027	2046
NH3N (mg/l)	134	134	147	147	147	147	147	147	147	142
SS (mg/l)	795	795	795	795	795	795	395	395	395	395
VSS (mg/l)	170	170	170	170	170	170	85	85	85	85
CN (mg/l)	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24
SCN (mg/l)	188	188	188	188	188	188	188	188	188	188
BOD 5-day (mg/l)	1240	1240	1220	1220	1220	1220	1200	1200	1200	1250
TOC (mg/l)	650	650	660	660	660	660	647	647	647	638
Phenolics (mg/l)	5.11	5.11	5.11	5.11	5.11	5.11	5.09	5.09	5.09	5.09
PO4-P (mg/l)										
Org-N (mg/l)	73	73	73	73	73	73	73	73	73	73
NO2 (mg/l)										
NO3 (mg/l)										
TDS (mg/l)										
Color (APHA Units)	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500
BASIN PARAMETERS										
Vol Wasted (ml)	520	470	-230	239	328	478	415	485	511	516
D.O. (mg/l)	7.4	7.8	7.8	6.4	6.6	6.5	6.7	6.7	6.8	7
SS (mg/l)	2695	3730	3160	3215	3170	3205	3200	3145	3220	3190
*SS (PAC corrected)	2695	3730	3160	3215	3170	3205	3200	3145	3220	3190
Temp (C)	20	20	20	19	20	20	20	20	19	18
pH (std units)	7.4	7.7	7.55	7.8	7.1	7.8	8	8.1	7.6	7.6
OUR (mg/l/hr)						24			24	
VSS (mg/l)	2375	3287	2785	2833	2794	2585	2581	2537	2595	2571
*VSS (PAC corrected)	2375	3287	2785	2833	2794	2585	2581	2537	2595	2571
VSS/SS	0.88	0.88	0.88	0.88	0.88	0.81	0.81	0.81	0.81	0.81
*PAC Added (mg)	0	0	0	0	0	0	0	0	0	0
*Inventory (mg/l basin)	0	0	0	0	0	0	0	0	0	0
EFFLUENT PARAMETERS										
Volume (liters)	4.14	4.48	4.57	3.95	4.59	3.9	4.12	3.95	3.1	4.18
COD (mg/l)	176	187	185	168	153	157	146	142	143	137
SS (mg/l)	50	108	574	294	188	100	144	92	92	64
*PAC corrected										
pH (std units)	8.1	7.7	7.8	7.8	7.6	7.7	8	8	7.9	7.8
VSS (mg/l)	44	38				58			60	
*PAC corrected										
NH3N (mg/l)	(4.0	(4.0	(4.0	(4.0	(4.0	(4.0	(4.0	(4.0	(4.0	(4.0
CN (mg/l)							1.33	1.33	1.33	1.33
SCN (mg/l)							2.8	2.8	2.8	2.8
NO2 (mg/l)							2.0	2.0	2.0	2.0
NO3 (mg/l)							170	170	170	170
Phenolics (mg/l)	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025
PO4-P (mg/l)	4.4	4.4	8.4	8.4	8.4	8.4	5.4	5.4	5.4	8.4
Org-N (mg/l)							(4	(4	(4	(4
TDS (mg/l)							4660	4660	4660	4660
Color (APHA units)	750	750	750	750	750	750	750	750	750	750
TOC (mg/l)	53	53	42	42	42	42	38	38	38	43
BOD 5-day (mg/l)	1.6	1.6	(2	(2	(2	(2	1.5	1.5	1.5	(2

UNIT 2A TABLE A3

MONTH	DEC	DEC	DEC	DEC	DEC	DEC	DEC	DEC	DEC	DEC
DAY	3	4	5	6	7	8	9	10	11	12
DAY NO.	130	131	132	133	134	135	136	137	138	139
SYSTEM PARAMETERS										
*Sludge Age	20.00	20.01	20.00	29.98	51.49	49.92	50.05	50.01	50.09	50.08
*(F/M)COD	0.32	0.26	0.29	0.25	0.28	0.25	0.27	0.29	0.24	0.24
*HRT	1.80	2.21	2.04	2.42	1.96	2.16	1.96	1.81	2.21	2.02
FEED PARAMETERS (BATCH #)										
Volume (liters)	5.18	4.2	4.55	3.85	4.74	4.3	4.75	5.15	4.2	4.6
pH (std units)	11.7	11.8	11.5	10.5	11.6	11.6	11.7	11.8	11.4	11.5
COD (mg/l)	2046	2046	2046	2060	2060	2060	2122	2122	2122	2122
NH3N (mg/l)	142	142	142	131	131	131	140	140	140	140
SS (mg/l)	395	395	395	522	522	522	522	522	522	522
VSS (mg/l)	85	85	85	114	114	114	114	114	114	114
CN (mg/l)	1.24	1.24	1.24							
SCN (mg/l)	188	188	188							
BOD 5-day (mg/l)	1250	1250	1250	1210	1210	1210	1260	1260	1260	1260
TOC (mg/l)	638	638	638	637	637	637	664	664	664	664
Phenolics (mg/l)	5.09	5.09	5.09	5.61	5.61	5.61	5.61	5.61	5.61	5.61
PO4-P (mg/l)										
Org-N (mg/l)	73	73	73							
NO2 (mg/l)										
NO3 (mg/l)										
TDS (mg/l)										
Color (APHA Units)	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500
BASIN PARAMETERS										
Vol Wasted (ml)	550	437	545	348	190	102	165	170	187	208
D.O. (mg/l)	7	6.8	6.8	6.9	8.8	8.8	8.5	8.4	8.4	8.4
SS (mg/l)	3415	3395	3430	3355	3655	3805	3980	4065	4055	4250
*SS (PAC corrected)	3415	3395	3430	3355	3655	3805	3980	4065	4055	4250
Temp (C)	19	19	19	19	18	18	19	19	18	19
pH (std units)	7.4	7.8	7.5	7.7	7.2	8.1	8	7.8	7.7	7.4
OUR (mg/l/hr)				36						24
VSS (mg/l)	2752	2736	2683	2690	2931	2955	3091	3157	3149	3380
*VSS (PAC corrected)	2752	2736	2683	2690	2931	2955	3091	3157	3149	3380
VSS/SS	0.81	0.81	0.78	0.80	0.80	0.78	0.78	0.78	0.78	0.80
*PAC Added (mg)	0	0	0	0	0	0	0	0	0	0
*Inventory (mg/l basin)	0	0	0	0	0	0	0	0	0	0
EFFLUENT PARAMETERS										
Volume (liters)	4.74	4	4.1	3.25	4.14	4.05	4.25	4.74	4.1	4.2
COD (mg/l)	154	157	155	146	144	155	161	156	154	153
SS (mg/l)	36	138	46	54	38	130	70	60	52	32
*PAC corrected										
pH (std units)	7.6	7.9	7.8	8	8	7.9	7.9	7.8	7.8	7.7
VSS (mg/l)			34	24		78				22
*PAC corrected										
NH3N (mg/l)	(4.0	(4.0	(4.0	(2	(2	(2	2	2	2	2
CN (mg/l)	1.33	1.33	1.33							
SCN (mg/l)	2.8	2.8	2.8							
NO2 (mg/l)	2.0	2.0	2.0							
NO3 (mg/l)	170	170	170							
Phenolics (mg/l)	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025
PO4-P (mg/l)	8.4	8.4	8.4	8.8	8.8	8.8	6.5	6.5	6.5	6.5
Org-N (mg/l)	(4	(4	(4							
TDS (mg/l)	4660	4660	4660	4605	4605	4605	4605	4605	4605	4605
Color (APHA units)	750	750	750	750	750	750	750	750	750	750
TOC (mg/l)	43	43	43	45	45	45	41	41	41	41
BOD 5-day (mg/l)	(2	(2	(2	2	2	2	2	2	2	2

UNIT 2A TABLE A3

MONTH	DEC	DEC	DEC	DEC	DEC	DEC	DEC	DEC	DEC	DEC
DAY	13	14	15	16	17	18	19	20	21	22
DAY NO.	140	141	142	143	144	145	146	147	148	149
SYSTEM PARAMETERS										
*Sludge Age	49.91	25.00	50.09	49.93	49.99	49.89	50.02	49.90	50.03	49.91
*(F/M)COD	0.26	0.22	0.20	0.23	0.22	0.20	0.17	0.23	0.22	0.22
*HRT	1.79	2.02	2.04	1.90	1.75	2.09	2.29	1.94	1.90	1.79
FEED PARAMETERS (BATCH #)										
Volume (liters)	5.2	4.6	4.55	4.9	5.31	4.45	4.07	4.8	4.9	5.2
pH (std units)	11.6	11.5	11.5	11.3	11.6	11.6	10.9	11.3	10.9	11.2
COD (mg/l)	2011	2011	2011	2016	2016	2016	2016	2037	2037	2037
NH3N (mg/l)	136	136	136	136	136	136	136	123	123	123
SS (mg/l)	482	482	482	482	482	482	482	0	0	0
VSS (mg/l)	94	94	94	94	94	94	94	0	0	0
CN (mg/l)	1.08	1.08	1.08	1.08	1.08	1.08	1.08	0	0	0
SCN (mg/l)	184	184	184	184	184	184	184	0	0	0
BOD 5-day (mg/l)	1200	1200	1200	1220	1220	1220	1220	1160	1160	1160
TOC (mg/l)	640	640	640	651	651	651	651	650	650	650
Phenolics (mg/l)	5.43	5.43	5.43	5.43	5.43	5.43	5.43	6.96	6.96	6.96
PO4-P (mg/l)										
Org-N (mg/l)	78	78	78	78	78	78	78			
NO2 (mg/l)										
NO3 (mg/l)										
TDS (mg/l)										
Color (APHA Units)	1500	1500	1500	1500	1500	1500	1500	2500	2500	2500
BASIN PARAMETERS										
Vol Wasted (ml)	190	20	176	187	234	188	202	197	213	207
D.O. (mg/l)	8.2	8.4	8.5	8.6	8.6	8.8	8.8	8.4	8.4	8.4
SS (mg/l)	4275	4335	4645	4365	4960	4625	5405	4655	5025	5170
*SS (PAC corrected)	4275	4335	4645	4365	4960	4625	5405	4655	5025	5170
Temp (C)	19	19	19	19	17	18	18	18	17	18
pH (std units)	7.4	7.6	7.5	7.5	8	8	8.1	8	8	7.8
OUR (mg/l/hr)							24			24
VSS (mg/l)	3400	3448	3740	3515	3994	3724	4115	3544	3826	3980
*VSS (PAC corrected)	3400	3448	3740	3515	3994	3724	4115	3544	3826	3980
VSS/SS	0.80	0.80	0.81	0.81	0.81	0.81	0.76	0.76	0.76	0.77
*PAC Added (mg)	0	0	0	0	0	0	0	0	0	0
*Inventory (mg/l basin)	0	0	0	0	0	0	0	0	0	0
EFFLUENT PARAMETERS										
Volume (liters)	4.9	4.35	4.1	4.85	4.99	4.5	4.1	4.4	4.5	4.8
COD (mg/l)	158	150	150	224	161	163	163	171	148	168
SS (mg/l)	44	440	72	48	6	54	50	46	30	36
*PAC corrected										
pH (std units)	7.6	7.6	7.6	7.4	8	8	8	8.1	7.9	7.8
VSS (mg/l)		303	42	28	4	32	26	24	16	26
*PAC corrected										
NH3N (mg/l)	4.8	4.8	4.8	27.4	27.4	27.4	27.4	47.1	47.1	47.1
CN (mg/l)	0.814	0.814	0.814	0.814	0.814	0.814	0.814			
SCN (mg/l)	3.7	3.7	3.7	3.7	3.7	3.7	3.7			
NO2 (mg/l)	0.66	0.66	0.66	0.66	0.66	0.66	0.66			
NO3 (mg/l)	126	126	126	126	126	126	126			
Phenolics (mg/l)	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025
PO4-P (mg/l)	8.3	8.3	8.3	8.7	8.7	8.7	8.7	6.2	6.2	6.2
Org-N (mg/l)	12	12	12	12	12	12	12			
TDS (mg/l)	4495	4495	4495	4495	4495	4495	4495	4375	4375	4375
Color (APHA units)	875	875	875	875	875	875	875	875	875	875
TOC (mg/l)	46	46	46	46	46	46	46	46	46	46
BOD 5-day (mg/l)	2.2	2.2	2.2	2	2	2	2	4	4	4

UNIT 2A TABLE A3

MONTH	DEC	DEC	DEC	DEC	DEC	DEC	DEC	DEC	DEC	JAN
DAY	23	24	25	26	27	28	29	30	31	1
DAY NO.	150	151	152	153	154	155	156	157	158	159
SYSTEM PARAMETERS										
*Sludge Age	50.06	53.43	50.07	50.02	49.90	49.97	49.99	49.99	50.09	49.93
*(F/M)COD	0.19	0.19	0.10	0.15	0.14	0.15	0.16	0.15	0.16	0.18
*HRT	2.20	1.71	3.21	2.30	2.53	2.35	2.24	2.24	1.84	1.77
FEED PARAMETERS (BATCH #)										
Volume (liters)	4.65	5.45	2.9	4.05	3.67	3.95	4.15	4.15	5.05	5.24
pH (std units)	10.4	10.2	10.3	10.2	190	9.7	10.1	9.5	10.4	10.5
COD (mg/l)	1957	1957	1957	1957	1990	1990	1990	1960	1960	1960
NH3N (mg/l)	165	165	165	165	209	209	209	187	187	187
SS (mg/l)	0	0	0	500	208	208	208	208	208	208
VSS (mg/l)	0	0	0	108	60	60	60	60	60	60
CN (mg/l)	0	0	0	0	1.99	1.99	1.99	1.99	1.99	1.99
SCN (mg/l)	0	0	0	0	207	207	207	207	207	207
BOD 5-day (mg/l)	1030	1030	1030	1030	1035	1035	1035	1035	1035	1035
TOC (mg/l)	598	598	598	598	535	535	535	535	535	535
Phenolics (mg/l)	6.96	6.96	6.96	6.96	11.03	11.03	11.03	11.03	11.03	11.03
PO4-P (mg/l)										
Org-N (mg/l)					76	76	76	76	76	76
NO2 (mg/l)										
NO3 (mg/l)										
TDS (mg/l)										
Color (APHA Units)	2500	2500	2500	2500	3500	3500	3500	3500	3500	3500
BASIN PARAMETERS										
Vol Wasted (ml)	204	204	221	183	145	156	187	165	196	181
D.O. (mg/l)	8.8	8.8	9	8.6	8.6	8	8	8.5	8.5	8.5
SS (mg/l)	5235	6250	5970	5835	5655	5870	5820	5875	6615	6375
*SS (PAC corrected)	5235	6250	5970	5835	5655	5870	5820	5875	6615	6375
Temp (C)	19	17	17	17	18	23	20	20	19	19
pH (std units)	7.6	7.7	7.5	7.8	7.5	8	7.9	7.7	7.9	7.7
OUR (mg/l/hr)				24			12			
VSS (mg/l)	4030	4681	4596	4492	4235	4396	4415	4457	5018	4836
*VSS (PAC corrected)	4030	4681	4596	4492	4235	4396	4415	4457	5018	4836
VSS/SS	0.77	0.75	0.77	0.77	0.75	0.75	0.76	0.76	0.76	0.76
*PAC Added (mg)	0	0	0	0	0	0	0	0	0	0
*Inventory (mg/l basin)	0	0	0	0	0	0	0	0	0	0
EFFLUENT PARAMETERS										
Volume (liters)	4.25	4.95	2.65	4.05	3.34	3.8	3.75	3.8	4.65	4.85
COD (mg/l)	159	150	157	167	165	189	189	180	136	140
SS (mg/l)	44	26	42	82	160	130	62	116	62	78
*PAC corrected										
pH (std units)	7.8	7.7	7.5	7.6	7.5	8	8	7.7	7.8	7.9
VSS (mg/l)	32	11	30	59	120	98	40	88	47	59
*PAC corrected										
NH3N (mg/l)	48.8	48.8	48.8	48.8	101	101	101	190	190	190
CN (mg/l)					0.544	0.544	0.544	0.544	0.544	0.544
SCN (mg/l)					3.2	3.2	3.2	3.2	3.2	3.2
NO2 (mg/l)					0.62	0.62	0.62	0.62	0.62	0.62
NO3 (mg/l)					90.7	90.7	90.7	90.7	90.7	90.7
Phenolics (mg/l)	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025
PO4-P (mg/l)	7.3	7.3	7.3	13.2	10.2	10.2	10.2	10.0	10.0	10.0
Org-N (mg/l)					5.0	5.0	5.0	5.0	5.0	5.0
TDS (mg/l)	4375	4375	4375	4510	4375	4375	4375	4375	4375	4375
Color (APHA units)	875	875	875	875	1000	1000	1000	1000	1000	1000
TOC (mg/l)	43	43	43	43	46	46	46	38	38	38
BOD 5-day (mg/l)	02	02	02	02	02	02	02	02	02	02

UNIT 2A TABLE A3

MONTH	JAN	JAN	JAN	JAN	JAN	JAN	JAN	JAN	JAN	JAN
DAY	2	3	4	5	6	7	8	9	10	11
DAY NO.	160	161	162	163	164	165	166	167	168	169
SYSTEM PARAMETERS										
*Sludge Age	49.95	49.95	50.09	49.93	50.06	49.96	49.93	49.91	50.07	75.31
*(F/M) COD	0.14	0.13	0.14	0.16	0.13	0.14	0.12	0.09	0.16	0.13
*HRT	2.16	2.24	1.88	1.90	1.97	1.79	1.95	1.98	1.96	1.92
FEED PARAMETERS (BATCH #)										
Volume (liters)	4.3	4.15	4.95	4.5	4.72	5.19	4.78	4.7	4.75	4.84
pH (std units)	10.6	10.5	11.5	10.8	11.3	11.5	10.5	10.3	10.7	11.3
COD (mg/l)	1960	1780	1780	1780	1823	1823	1823	1823	1910	1910
NH3N (mg/l)	187	185	185	185	176	176	176	176	195	195
SS (mg/l)	208	474	474	474	474	474	474	474	344	344
VSS (mg/l)	60	94	94	94	94	94	94	94	102	102
CN (mg/l)	1.99								0.203	0.203
SCN (mg/l)	207								155	155
BOD 5-day (mg/l)	1035	1050	1050	1050	1030	1030	1030	1030	1020	1020
TOC (mg/l)	535	560	560	560	560	560	560	560	603	603
Phenolics (mg/l)	11.03	10.3	10.3	10.3	10.3	10.3	10.3	10.3	9.3	9.3
PO4-P (mg/l)										
Org-N (mg/l)	76								66	66
NO2 (mg/l)										
NO3 (mg/l)										
TDS (mg/l)										
Color (APHA Units)	3500	1750	1750	1750	1750	1750	1750	1750	2500	2500
BASIN PARAMETERS										
Vol Wasted (ml)	127	129	90	70	165	190	211	218	225	231
D.O. (mg/l)	8.5	8.5	8	8	8	8	8	7.1	7.2	7.8
SS (mg/l)	6560	5945	6815	5945	7205	7660	8150	11810	7275	9455
*SS (PAC corrected)	6560	5945	6815	5945	7205	7660	8150	11810	7275	9455
Temp (C)	19	20	20	18	20	18	17	18	20	20
pH (std units)	8.4	8.3	8.2	8.2	8	8	7.6	7.8	7.8	7.8
OUR (mg/l/hr)		24		36				24		
VSS (mg/l)	4976	4565	5233	4475	5423	5766	6135	7520	4632	6020
*VSS (PAC corrected)	4976	4565	5233	4475	5423	5766	6135	7520	4632	6020
VSS/SS	0.76	0.77	0.77	0.75	0.75	0.75	0.75	0.64	0.64	0.64
*PAC Added (mg)	0	0	0	0	0	0	0	0	0	0
*Inventory (mg/l basin)	0	0	0	0	0	0	0	0	0	0
EFFLUENT PARAMETERS										
Volume (liters)	4.22	3.8	4.55	3.05	4.34	4.93	4.43	4.27	4.45	4.42
COD (mg/l)	142	151	188	150	129	162	158	106	71	105
SS (mg/l)	176	174	224	332	124	78	54	62	24	20
*PAC corrected										
pH (std units)	8.3	8.1	8.3	8.2	8.1	8.1	8	7.7	7.6	7.7
VSS (mg/l)	134	134	172	250	93	59	41	56	15	13
*PAC corrected										
NH3N (mg/l)	190	202	202	202	211	211	211	211	210	210
CN (mg/l)	0.544								0.521	0.521
SCN (mg/l)	3.2								1.3	1.3
NO2 (mg/l)	0.62								0.25	0.25
NO3 (mg/l)	90.7								1.25	1.25
Phenolics (mg/l)	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025
PO4-P (mg/l)	10.0	4.1	4.1	4.1	7.9	7.9	7.9	7.9	7.4	7.4
Org-N (mg/l)	5.0								76	76
TDS (mg/l)	4375	5072	5072	5072	5072	5072	5072	5072	5280	5280
Color (APHA units)	1000	750	750	750	750	750	750	750	250	250
TOC (mg/l)	38	40	40	40	27	27	27	27	18	18
BOD 5-day (mg/l)	12	12	12	12	12	12	12	12	12	12

UNIT 2A TABLE A3

MONTH	JAN	JAN	JAN	JAN	JAN	JAN	JAN	JAN	JAN	JAN
DAY	12	13	14	15	16	17	18	19	20	21
DAY NO.	170	171	172	173	174	175	176	177	178	179
SYSTEM PARAMETERS										
*Sludge Age	50.03	50.09	49.98	49.95	30.49	49.90	50.04	49.94	49.96	49.98
*(F/M)COD	0.17	0.19	0.15	0.19	0.15	0.15	0.15	0.14	0.14	0.13
*HRT	1.92	1.83	1.82	1.79	2.07	1.94	1.92	1.84	1.82	1.72
FEED PARAMETERS (BATCH #)										
Volume (liters)	4.85	5.07	5.12	5.2	4.5	4.8	4.85	5.05	5.1	5.42
pH (std units)	10.6	10.7	10.8	11	10.7	10.1	10.3	10.2	10.1	10.45
COD (mg/l)	1910	2030	2030	2030	2030	1975	1975	1975	1936	1936
NH3N (mg/l)	195	189	189	189	189	176	176	176	150	150
SS (mg/l)	344	344	344	344	344	684	684	684	684	684
VSS (mg/l)	102	102	102	102	102	148	148	148	148	148
CN (mg/l)	0.203	0.203	0.203	0.203	0.203	0	0	0	0	0
SCN (mg/l)	155	155	155	155	155	0	0	0	0	0
BOD 5-day (mg/l)	1020	980	980	980	980	960	960	960	1120	1120
TOC (mg/l)	603	587	587	587	587	606	606	606	608	608
Phenolics (mg/l)	9.3	9.3	9.3	9.3	9.3	9.59	9.59	9.59	9.59	9.59
PO4-P (mg/l)										
Org-N (mg/l)	66	66	66	66	66					
NO2 (mg/l)										
NO3 (mg/l)										
TDS (mg/l)										
Color (APHA Units)	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500
BASIN PARAMETERS										
Vol Wasted (ml)	226	229	233	195	226	235	220	208	219	237
D.O. (mg/l)	7.5	7.2	7.5	7.5	6.4	6.9	7	6.8	6.7	6.7
SS (mg/l)	7145	6940	9065	7430	7980	8460	8175	8700	8870	9930
*SS (PAC corrected)	7145	6940	9065	7430	7980	8460	8175	8700	8870	9930
Temp (C)	20	19	18.5	18	17	20	18	19	19	18
pH (std units)	7.8	8.1	7.8	7.9	8.1	8	7.8	7.9	7.9	6.7
OUR (mg/l/hr)					10			12		
VSS (mg/l)	4550	4419	5772	4731	5030	5333	5153	5905	6020	6740
*VSS (PAC corrected)	4550	4419	5772	4731	5030	5333	5153	5905	6020	6740
VSS/SS	0.64	0.64	0.64	0.64	0.63	0.63	0.63	0.68	0.68	0.68
*PAC Added (mg)	0	0	0	0	0	0	0	0	0	0
*Inventory (mg/l basin)	0	0	0	0	0	0	0	0	0	0
EFFLUENT PARAMETERS										
Volume (liters)	4.45	4.58	5.35	4.8	4.5	4.65	4.5	4.68	4.7	5.1
COD (mg/l)	91	142	146	149	121	98	106	104	108	110
SS (mg/l)	22	16	12	70	24	10	36	60	40	6
*PAC corrected										
pH (std units)	8	8.1	8.1	8	7.8	7.9	7.9	7.9	7.8	8
VSS (mg/l)	14	10	8	45	15	6	23	41	27	4
*PAC corrected										
NH3N (mg/l)	210	201	201	201	201	197	197	197	184	184
CN (mg/l)	0.521	0.521	0.521	0.521	0.521					
SCN (mg/l)	1.3	1.3	1.3	1.3	1.3					
NO2 (mg/l)	0.25	0.25	0.25	0.25	0.25					
NO3 (mg/l)	0.25	0.25	0.25	0.25	0.25					
Phenolics (mg/l)	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025
PO4-P (mg/l)	7.4	4.5	4.5	4.5	4.5	5	5	5	6.7	6.7
Org-N (mg/l)	76	76	76	76	76					
TDS (mg/l)	5280	5280	5280	5280	5280	4925	4925	4925	4925	4925
Color (APHA units)	250	250	250	250	250	250	250	250	250	250
TOC (mg/l)	18	16	16	16	16	17	17	17	22	22
BOD 5-day (mg/l)	02	02	02	02	02	02	02	02	02	02

UNIT 2A TABLE A3

MONTH	JAN	JAN	JAN	JAN	JAN	JAN	JAN	JAN	JAN	JAN
DAY	22	23	24	25	26	27	28	29	30	31
DAY NO.	180	181	182	183	184	185	186	187	188	189
SYSTEM PARAMETERS										
*Sludge Age	50.00	49.96	49.97	49.96	50.07	50.07	50.02	50.00	50.07	50.11
*(F/M)COD	0.11	0.14	0.13	0.11	0.15	0.13	0.11	0.11	0.07	0.12
*HRT	1.88	2.00	1.96	1.86	1.79	1.94	1.96	1.98	1.92	1.90
FEED PARAMETERS (BATCH #)										
Volume (liters)	4.96	4.65	4.75	5	5.2	4.8	5	4.7	4.85	4.9
pH (std units)	10.1	9.8	9.8	10.3	10.9	10.2	11.4	10.3	10.7	10.9
COD (mg/l)	1936	1936	2056	2056	2056	2068	2068	2068	2068	2137
NH3N (mg/l)	150	150	152	152	152	176	176	176	176	154
SS (mg/l)	684	684	480	480	480	480	480	480	480	296
VSS (mg/l)	148	148	154	154	154	154	154	154	154	106
CN (mg/l)	0	0	1.58	1.58	1.58	1.58	1.58	1.58	1.58	0
SCN (mg/l)	0	0	192	192	192	192	192	192	192	0
BOD 5-day (mg/l)	1120	1120	1040	1040	1040	1060	1060	1060	1060	1030
TOC (mg/l)	608	608	600	600	600	661	661	661	661	648
Phenolics (mg/l)	9.59	9.59	9.22	9.22	9.22	9.22	9.22	9.22	9.22	9.7
PO4-P (mg/l)										
Org-N (mg/l)			98	98	98	98	98	98	98	
NO2 (mg/l)										
NO3 (mg/l)										
TDS (mg/l)										
Color (APHA Units)	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500
BASIN PARAMETERS										
Vol Wasted (ml)	229	175	194	207	174	186	220	232	236	238
D.O. (mg/l)	6.7	6.9	6.9	7.1	6.4	6.8	6.8	6.7	6.7	6.7
SS (mg/l)	10890	8180	9920	12170	9605	10275	13270	11755	19870	12050
*SS (PAC corrected)	10890	8180	9920	12170	9605	10275	13270	11755	19870	12050
Temp (C)	17.5	19	19	19	22	20	20	20	20	20
pH (std units)	7.9	7.9	7.8	7.9	7.8	7.9	8	7.9	7.9	8
OUR (mg/l/hr)		12			12					
VSS (mg/l)	7391	5190	6294	7722	5910	6322	8165	7233	12165	7377
*VSS (PAC corrected)	7391	5190	6294	7722	5910	6322	8165	7233	12165	7377
VSS/SS	0.68	0.63	0.63	0.63	0.62	0.62	0.62	0.62	0.61	0.61
*PAC Added (mg)	0	0	0	0	0	0	0	0	0	0
*Inventory (mg/l basin)	0	0	0	0	0	0	0	0	0	0
EFFLUENT PARAMETERS										
Volume (liters)	4.6	4.3	4.4	4.7	4.85	4.52	4.55	4.7	4.55	4.4
COD (mg/l)	127	116	95	111	107	117	109	121	127	135
SS (mg/l)	26	124	104	86	130	122	58	20	16	4
*PAC corrected										
pH (std units)	8	7.8	7.9	7.9	7.8	7.9	8	8	8	8
VSS (mg/l)	18	79	66	55	80	75	36	12	10	2
*PAC corrected										
NH3N (mg/l)	184	184	153	153	153	170	170	170	170	186
CN (mg/l)			0.4	0.4	0.4	0.4	0.4	0.4	0.4	
SCN (mg/l)			2.2	2.2	2.2	2.2	2.2	2.2	2.2	
NO2 (mg/l)			0.25	0.25	0.25	0.25	0.25	0.25	0.25	
NO3 (mg/l)			7.9	7.9	7.9	7.9	7.9	7.9	7.9	
Phenolics (mg/l)	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
PO4-P (mg/l)	6.7	6.7	7.1	7.1	7.1	8.4	8.4	8.4	8.4	3
Org-N (mg/l)			120	120	120	120	120	120	120	
TDS (mg/l)	4925	4925	5774	5774	5774	5774	5774	5774	5774	4592
Color (APHA units)	250	250	500	500	500	500	500	500	500	750
TOC (mg/l)	22	22	26	26	26	30	30	30	30	32
BOD 5-day (mg/l)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	1.8

UNIT 2A TABLE A3

MONTH	FEB	FEB	FEB	FEB	FEB	FEB	FEB	FEB	FEB	FEB
DAY	1	2	3	4	5	6	7	8	9	10
DAY NO.	190	191	192	193	194	195	196	197	198	199
SYSTEM PARAMETERS										
*Sludge Age	40.06	39.94	39.94	40.04	39.96	39.97	40.01	39.98	39.95	39.95
*(F/M)COD	0.11	0.13	0.13	0.12	0.09	0.13	0.14	0.13	0.12	0.11
*HRT	1.93	1.86	1.84	1.86	2.27	1.78	1.69	1.69	2.19	2.19
FEED PARAMETERS (BATCH #)										
Volume (liters)	4.83	5	5.05	4.99	4.1	5.22	5.5	5.5	4.25	4.25
pH (std units)	10.4	10.6	10.7	10.9	10.9	11.5	11.5	11.2	10.4	10.4
COD (mg/l)	2137	2137	2118	2118	2118	2118	2100	2100	2100	2076
NH3N (mg/l)	154	154	163	163	163	163	182	182	182	183
SS (mg/l)	296	296	296	296	296	296	336	336	336	336
VSS (mg/l)	106	106	106	106	106	106	154	154	154	154
CN (mg/l)	0						9.59	9.59	9.59	9.59
SCN (mg/l)	0						184	184	184	184
BOD 5-day (mg/l)	1030	1030	1060	1060	1060	1060	930	930	930	1130
TOC (mg/l)	648	648	610	610	610	610	645	645	645	711
Phenolics (mg/l)	9.7	9.7	9.7	9.7	9.7	9.7	8.5	8.5	8.5	8.5
PD4-P (mg/l)										
Org-N (mg/l)							80	80	80	80
NO2 (mg/l)										
NO3 (mg/l)										
TDS (mg/l)										
Color (APHA Units)	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500
BASIN PARAMETERS										
Vol Wasted (ml)	284	269	278	270	259	259	266	227	242	242
D.O. (mg/l)	6.8	6.8	6.4	6.4	6	6.9	6.8	7	7	6.7
SS (mg/l)	12300	11770	11880	12035	13210	11620	11880	12230	12025	12020
*SS (PAC corrected)	12300	11770	11880	12035	13210	11620	11880	12230	12025	12020
Temp (C)	20	20	20	20	20	20	20	20	20	20
pH (std units)	8	8.2	8	8.1	8.1	8.1	8.2	8.3	8.2	8.2
OUR (mg/l/hr)		12				12			12	12
VSS (mg/l)	7530	6985	7050	7142	7840	6840	6993	7199	6420	6420
*VSS (PAC corrected)	7530	6985	7050	7142	7840	6840	6993	7199	6420	6420
VSS/SS	0.61	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.53	0.53
*PAC Added (mg)	0	0	0	0	0	0	0	0	0	0
*Inventory (mg/l basin)	0	0	0	0	0	0	0	0	0	0
EFFLUENT PARAMETERS										
Volume (liters)	4.35	5	4.3	4.83	4.55	4.7	5.3	5.2	3.9	3.9
COD (mg/l)	162	164	161	165	165	187	210	151	173	228
SS (mg/l)	44	74	62	74	120	102	76	172	180	212
*PAC corrected										
pH (std units)	8.1	8.2	8.1	8.3	8.3	8.3	8.3	8.3	8.4	8.4
VSS (mg/l)	27	44	37	44	71	60	45	101	96	112
*PAC corrected										
NH3N (mg/l)	186	186	174	174	174	174	164	164	164	158
CN (mg/l)							1.14	1.14	1.14	1.14
SCN (mg/l)							3.2	3.2	3.2	3.2
NO2 (mg/l)							6.41	6.41	6.41	6.41
NO3 (mg/l)							25.9	25.9	25.9	25.9
Phenolics (mg/l)	(0.025	(0.025	(0.025	(0.025	(0.025	(0.025	(0.025	(0.025	(0.025	(0.025
PD4-P (mg/l)	3	3	2.5	2.5	2.5	2.5	2.2	2.2	2.2	2.8
Org-N (mg/l)							(4	(4	(4	(4
TDS (mg/l)	5822	5822	5822	5822	5822	5822	4800	4800	4800	4800
Color (APHA units)	750	750	750	750	750	750	1000	1000	1000	1000
TOC (mg/l)	32	32	34	34	34	34	39	39	39	47
BOD 5-day (mg/l)	1.8	1.8	2	2	2	2	(2	(2	(2	3

UNIT 2A TABLE A3

MONTH	FEB	FEB	FEB	FEB	FEB	FEB	FEB	FEB	FEB	FEB
DAY	11	12	13	14	15	16	17	18	19	20
DAY NO.	200	201	202	203	204	205	206	207	208	209
SYSTEM PARAMETERS										
*Sludge Age	40.02	39.99	35.59	39.84	40.04	40.00	40.02	40.01	39.96	39.97
*(F/M)COD	0.13	0.15	0.13	0.13	0.14	0.12	0.08	0.10	0.11	0.09
*HRT	1.88	1.69	1.86	1.98	1.94	2.00	1.94	1.83	1.76	2.25
FEED PARAMETERS (BATCH #)										
Volume (liters)	4.95	5.5	5	4.7	4.8	4.65	4.8	5.08	5.27	4.14
pH (std units)	10.4	10.8	10.3	9.7	9.7	9.6	11.3	11.2	11	11
COD (mg/l)	2076	2076	2076	2124	2124	2124	1649	1649	1649	1649
NH3N (mg/l)	183	183	183	166	166	166	166	166	166	166
SS (mg/l)	336	336	336	254	254	254	254	254	254	254
VSS (mg/l)	154	154	154	124	124	124	124	124	124	124
CN (mg/l)	9.59	9.59	9.59							
SCN (mg/l)	184	184	184							
BOD 5-day (mg/l)	1130	1130	1130	1080	1080	1080	1030	1030	1030	1030
TOC (mg/l)	711	711	711	698	698	698	575	575	575	575
Phenolics (mg/l)	8.5	8.5	8.5	9.8	9.8	9.8	9.8	9.8	9.8	9.8
PO4-P (mg/l)										
Org-N (mg/l)	80	80	80							
NO2 (mg/l)										
NO3 (mg/l)										
TDS (mg/l)										
Color (APHA Units)	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500
BASIN PARAMETERS										
Vol Wasted (ml)	242	126	20	189	231	252	218	222	160	237
D.O. (mg/l)	6.7	6.7	6.9	6.9	6.7	6.8	6.8	6.8	6.8	6.8
SS (mg/l)	11890	12010	11685	11760	11110	10760	12680	10670	10690	10300
*SS (PAC corrected)	11890	12010	11685	11760	11110	10760	12680	10670	10690	10300
Temp (C)	20	20	20	20	20	20	20	19	19	19
pH (std units)	8.2	8.1	7.9	7.9	7.6	7.3	6.8	6.6	7	6.8
OUR (mg/l/hr)			12			12		12		
VSS (mg/l)	6348	6412	6535	6577	6213	6815	8031	6758	6771	6485
*VSS (PAC corrected)	6348	6412	6535	6577	6213	6815	8031	6758	6771	6485
VSS/SS	0.53	0.53	0.56	0.56	0.56	0.63	0.63	0.63	0.63	0.63
*PAC Added (mg)	0	0	0	0	0	0	0	0	0	0
*Inventory (mg/l basin)	0	0	0	0	0	0	0	0	0	0
EFFLUENT PARAMETERS										
Volume (liters)	4.65	5.1	5.05	4.55	4.6	4.45	4.55	4.95	5	4.4
COD (mg/l)	218	222	214	203	209	201	199	197	184	180
SS (mg/l)	148	410	734	290	166	116	228	168	300	148
*PAC corrected										
pH (std units)	8.3	8.2	8	7.9	7.6	7.1	6.6	7.1	7.4	6.9
VSS (mg/l)	79	219	410	162	93	73	144	106	190	93
*PAC corrected										
NH3N (mg/l)	158	158	158	107	107	107	11	11	11	11
CN (mg/l)	1.14	1.14	1.14							
SCN (mg/l)	3.2	3.2	3.2							
NO2 (mg/l)	6.41	6.41	6.41							
NO3 (mg/l)	25.9	25.9	25.9							
Phenolics (mg/l)	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
PO4-P (mg/l)	2.8	2.8	2.8	10.9	10.9	10.9	47.2	47.2	47.2	47.2
Org-N (mg/l)	4	4	4							
TDS (mg/l)	4800	4800	4800	5644	5644	5644	5644	5644	5644	5644
Color (APHA units)	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
TOC (mg/l)	47	47	47	51	51	51	55	55	55	55
BOD 5-day (mg/l)	3	3	3	2	2	2	2	2	2	2

UNIT 2A TABLE A3

MONTH	FEB	FEB	FEB	FEB	FEB	FEB	FEB	FEB	FEB	MAR
DAY	21	22	23	24	25	26	27	28	29	1
DAY NO.	210	211	212	213	214	215	216	217	218	219
SYSTEM PARAMETERS										
*Sludge Age	40.03	39.96	39.98	40.05	40.00	39.98	40.04	39.98	39.97	34.37
*(F/M)COD	0.10	0.10	0.10	0.11	0.12	0.11	0.10	0.12	0.10	0.11
*HRT	1.98	2.02	2.11	2.04	1.82	1.89	2.21	1.83	2.11	2.11
FEED PARAMETERS (BATCH #)										
Volume (liters)	4.7	4.6	4.4	4.56	5.1	4.93	4.2	5.08	4.4	4.4
pH (std units)	11.3	11	11	10.7	11.2	10.5	10.6	11.1	10.6	10.3
COD (mg/l)	1630	1630	1630	1766	1766	1766	1766	1803	1803	1803
NH3N (mg/l)	176	176	176	174	174	174	174	149	149	149
SS (mg/l)								188	188	188
VSS (mg/l)								80	80	80
CN (mg/l)	2.55	2.55	2.55	2.55	2.55	2.55	2.55			
SCN (mg/l)	174	174	174	174	174	174	174			
BOD 5-day (mg/l)	900	900	900	985	985	985	985	1090	1090	1090
TOC (mg/l)	566	566	566	564	564	564	564	569	569	569
Phenolics (mg/l)	6.6	6.6	6.6	6.6	6.6	6.6	6.6			
PO4-P (mg/l)										
Org-N (mg/l)										
NO2 (mg/l)										
NO3 (mg/l)										
TDS (mg/l)										
Color (APHA Units)	3000	3000	3000	3000	3000	3000	3000			
BASIN PARAMETERS										
Vol Wasted (ml)	236	277	283	288	300	257	127	35	24	24
D.O. (mg/l)	6.9	6.8	6.8	6.8	6.8	6.8	6	6	6	6
SS (mg/l)	10160	10095	9805	9572	9975	10760	9075	9655	9525	9135
*SS (PAC corrected)	10160	10095	9805	9572	9975	10760	9075	9655	9525	9135
Temp (C)	19	20	19	19	19	19	18	19	19	19
pH (std units)	7.2	7.5	7.4	7.5	7.3	6.7	6.8	7.3	6.9	7.1
OUR (mg/l/hr)	36						39			
VSS (mg/l)	6397	6356	6165	6018	6272	6765	6000	6383	6298	6073
*VSS (PAC corrected)	6397	6356	6165	6018	6272	6765	6000	6383	6298	6073
VSS/SS	0.63	0.63	0.63	0.63	0.63	0.63	0.66	0.66	0.66	0.67
*PAC Added (mg)	0	0	0	0	0	0	0	0	0	0
*Inventory (mg/l basin)	0	0	0	0	0	0	0	0	0	0
EFFLUENT PARAMETERS										
Volume (liters)	4.38	4.35	4	4.65	5.25	4.55	4.33	5	4.4	4.79
COD (mg/l)	210	128	233	124	138	140	153	155	167	148
SS (mg/l)	148	54	42	24	0	102	362	512	598	620
*PAC corrected										
pH (std units)	7.2	7.3	7.6	7.8	7.5	7	7.2	7.8	7.1	7.1
VSS (mg/l)	93	34	26	15	0	64	239	339	395	412
*PAC corrected										
NH3N (mg/l)	0.8	0.8	0.8	0.2	0.2	0.2	0.2	2.8	2.8	2.8
CN (mg/l)	0.489	0.489	0.489	0.489	0.489	0.489	0.489			
SCN (mg/l)	2.9	2.9	2.9	2.9	2.9	2.9	2.9			
NO2 (mg/l)	1.5	1.5	1.5	1.5	1.5	1.5	1.5			
NO3 (mg/l)	178	178	178	178	178	178	178			
Phenolics (mg/l)	0.025	0.025	0.025	0.025	0.025	0.025	0.025			
PO4-P (mg/l)	15.6	15.6	15.6	25.1	25.1	25.1	25.1			
Org-N (mg/l)	0.8	0.8	0.8	0.8	0.8	0.8	0.8			
TDS (mg/l)	4964	4964	4964	4964	4964	4964	4964			
Color (APHA units)	1000	1000	1000	1000	1000	1000	1000			
TOC (mg/l)	45	45	45	45.2	45.2	45.2	45.2	53.2	53.2	53.2
BOD 5-day (mg/l)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2

UNIT 2A TABLE A3

MONTH	MAR	MAR	MAR	MAR	MAR	MAR	MAR	MAR	MAR	MAR
DAY	2	3	4	5	6	7	8	9	10	11
DAY NO.	220	221	222	223	224	225	226	227	228	229
SYSTEM PARAMETERS										
*Sludge Age	19.58	39.96	37.10	47.14	45.53	45.49	51.59	82.15	106.70	84.89
*(F/M)COD	0.12	0.13	0.14	0.10	0.13	0.14	0.14	0.12	0.13	0.13
*HRT	2.00	1.69	1.73	2.14	1.88	1.71	1.71	1.96	1.84	1.91
FEED PARAMETERS (BATCH #)										
Volume (liters)	4.66	5.5	5.38	4.35	4.95	5.45	5.45	4.75	5.05	4.87
pH (std units)	11.8	11.7	12.25	11.3	11.7	11.7	11.8	11.7	11.8	11.8
COD (mg/l)	1803	1803	1803	1803	1834	1834	1834	1828	1828	1828
NH3N (mg/l)	177	177	177	177	162	162	162	186	186	186
SS (mg/l)	188	188	188	188				143	143	143
VSS (mg/l)	80	80	80	80				66	66	66
CN (mg/l)										
SCN (mg/l)										
BOD 5-day (mg/l)	1090	1090	1090	1090	1200	1200	1200	1170	1170	1170
TOC (mg/l)	569	569	569	569	570	570	570	578	578	578
Phenolics (mg/l)										
PO4-P (mg/l)										
Org-N (mg/l)										
NO2 (mg/l)										
NO3 (mg/l)										
TDS (mg/l)										
Color (APHA Units)										
BASIN PARAMETERS										
Vol Wasted (ml)	20	267	20	20	20	25	40	40	20	40
D.O. (mg/l)	6	6.1	6.1	6.1	5	6.7	6.8	6.4	6.5	6.4
SS (mg/l)	8910	9910	8895	8775	8385	8710	8613	8520	8425	8260
*SS (PAC corrected)	8910	9910	8895	8775	8385	8710	8613	8520	8425	8260
Temp (C)	18	18	19	19	19	18.5	18	18	18	19
pH (std units)	7.3	7.2	7.1	7.1	6.4	6.7	7	7.1	7.2	7.2
OUR (mg/l/hr)				56			48			
VSS (mg/l)	5925	6590	5915	6250	5857	5944	5988	5923	5857	5743
*VSS (PAC corrected)	5925	6590	5915	6250	5857	5944	5988	5923	5857	5743
VSS/SS	0.67	0.67	0.67	0.71	0.71	0.68	0.70	0.70	0.70	0.70
*PAC Added (mg)	0	0	0	0	0	0	0	0	0	0
*Inventory (mg/l basin)	0	0	0	0	0	0	0	0	0	0
EFFLUENT PARAMETERS										
Volume (liters)	4.65	5.5	4.98	4.15	4.75	5.2	5.25	4.43	4.75	4.55
COD (mg/l)	148	158	160	168	176	181	183	150	185	175
SS (mg/l)	1136	60	542	496	430	400	316	204	164	184
*PAC corrected										
pH (std units)	7.5	7	7.35	6.3	7.4	6.6	6.9	7.1	7.4	7.3
VSS (mg/l)	755	40	360	353	305	273	220	142	114	128
*PAC corrected										
NH3N (mg/l)	2.1	2.1	2.1	2.1	1.4	1.4	1.4	1	1	1
CN (mg/l)										
SCN (mg/l)										
NO2 (mg/l)										
NO3 (mg/l)										
Phenolics (mg/l)										
PO4-P (mg/l)										
Org-N (mg/l)										
TDS (mg/l)										
Color (APHA units)										
TOC (mg/l)	54.3	54.3	54.3	54.3	51.2	51.2	51.2	49.6	49.6	49.6
BOD 5-day (mg/l)	(2	(2	(2	(2	(2	(2	(2	(2	(2	(2

UNIT 2A TABLE A3

MONTH	MAR	MAR	MAR	MAR	MAR
DAY	12	13	14	15	16
DAY NO.	230	231	232	233	234
SYSTEM PARAMETERS					
*Sludge Age	102.88	92.85	135.88	96.52	113.32
*(F/M)COD	0.13	0.00	0.00	0.00	0.00
*HRT	1.89	1.81	2.27	1.71	1.93
FEED PARAMETERS (BATCH #)					
Volume (liters)	4.92	5.15	4.1	5.45	5.08
pH (std units)	11.8	11.8	11.8	11.8	
COD (mg/l)	1828				
NH3N (mg/l)	186				
SS (mg/l)	143	64	64	64	
VSS (mg/l)	66	48	48	48	
CN (mg/l)					
SCN (mg/l)					
BOD 5-day (mg/l)	1170				
TOC (mg/l)	578	570	570	570	
Phenolics (mg/l)					
PO4-P (mg/l)					
Org-N (mg/l)					
NO2 (mg/l)					
NO3 (mg/l)					
TDS (mg/l)					
Color (APHA Units)					
BASIN PARAMETERS					
Vol Wasted (ml)	40	23	23	40	40
D.O. (mg/l)	6.4	6.4	6.1	6.4	6.4
SS (mg/l)	8340	8400	8525	8548	8538
*SS (PAC corrected)	8340	8400	8525	8548	8538
Temp (C)	18	19	19	19	19
pH (std units)	7.2	7.2	7.2	7.4	7.1
OUR (mg/l/hr)	48			48	
VSS (mg/l)	5905	5947	6036	6040	6033
*VSS (PAC corrected)	5905	5947	6036	6040	6033
VSS/SS	0.71	0.71	0.71	0.71	0.71
*PAC Added (mg)	0	0	0	0	0
*Inventory (mg/l basin)	0	0	0	0	0
EFFLUENT PARAMETERS					
Volume (liters)	4.7	4.85	4.35	5.3	4.85
COD (mg/l)	187	152	160	171	173
SS (mg/l)	136	184	128	136	116
*PAC corrected					
pH (std units)	7.2	7.2	7.2	7.2	7.3
VSS (mg/l)	96	130	91	96	82
*PAC corrected					
NH3N (mg/l)	1	(1	(1	(1	(1
CN (mg/l)					
SCN (mg/l)					
NO2 (mg/l)					
NO3 (mg/l)					
Phenolics (mg/l)					
PO4-P (mg/l)					
Org-N (mg/l)					
TDS (mg/l)					
Color (APHA units)					
TOC (mg/l)	49.6	52	52	52	52
BOD 5-day (mg/l)	(2				

UNIT 2B TABLE A4

MONTH	JULY	JULY	JULY	JULY	JULY	JULY	AUG	AUG	AUG	AUG
DAY	26	27	28	29	30	31	1	2	3	4
DAY NO.	0	1	2	3	4	5	6	7	8	9
SYSTEM PARAMETERS										
*Sludge Age	32.6	30	30	30	30	30	30	30	30	30
*(F/M)COD	0.08	0.10	0.10	0.25	0.11	0.06	0.09	0.08	0.09	0.18
*HRT	2.0	2.5	2.0	1.9	2.0	2.1	2.0	2.0	2.1	2.0
FEED PARAMETERS (BATCH #)	27	27	27	27	27	27	27	27	27	27
Volume (liters)	3.48	2.85	3.52	3.70	3.55	3.39	3.54	3.55	3.30	3.50
pH (std units)	7.5/9.6	7.4/8.8	7.5	7.4	7.0/8.8	7.3/9.2	7.4	7.4	7.6	7.4
COD (mg/l)	329	323	308	303	290	301	293	251	262	212
NH3N (mg/l)	24	15	15	15	8	8	8	8	12.8	12.8
SS (mg/l)										
VSS (mg/l)										
CN (mg/l)	2.6	6.1	6.1	6.1	6.1	6.1	6.1	6.1	2.23	2.23
SCN (mg/l)	6.4	1.38	1.38	1.38	1.38	1.38	1.38	1.38	7.0	7.0
BOD 5-day (mg/l)										
TOC (mg/l)		58	58	58	58	58	58	58		
Phenolics (mg/l)	(.025								(.025	(.025
PO4-P (mg/l)	4.7								2.5	2.5
Org-N (mg/l)	21				11	11	11	11		
NO2 (mg/l)	137	101	101	101	101	101	101	101	67.4	67.4
NO3 (mg/l)	48	73	73	73	73	73	73	73	96.6	96.6
TDS (mg/l)										
Color (APHA Units)		500	500	500	500	500	500	500		
BASIN PARAMETERS										
Vol Wasted (ml)	84	115	122	93	117	237	220	227	234	152
D.O. (mg/l)	8.1	8.1	8.0	8.0	8.1	7.4	7.4	7.7	7.2	7.6
SS (mg/l)	2640	1970	2060	1220	1950	2780	2170	2240	1910	1060
*SS (PAC corrected)	2140	1470	1560	720	1450	2280	1670	1740	1410	560
Temp (C)	25	25.5	26	26	26	26	26	26	25.5	26
pH (std units)	7.1	7.7	7.8	7.3	7.3	7.9	7.9	7.9	7.8	7.4
OUR (mg/l/hr)			4				4			3
VSS (mg/l)	2101	1568	1730	1025	1638	2335	1820	1879	1602	980
*VSS (PAC corrected)	1601	1068	1230	525	1138	1835	1320	1379	1102	480
VSS/SS			0.84				0.84			0.92
*PAC Added (mg)	132	143	143	143	143	144	143	143	143	143
*Inventory (mg/l basin)	500	500	500	500	500	500	500	500	500	500
EFFLUENT PARAMETERS										
Volume (liters)	3.30	2.38	3.20	3.38	3.18	3.03	3.00	3.05	2.80	2.98
COD (mg/l)	297	289	299	275	278	270	214	193	184	188
SS (mg/l)	144	142	106	70	104	46	48	44	36	48
*PAC corrected										
pH (std units)	7.2	7.6	7.8	7.4	7.2	7.6	7.8	8.0	7.8	7.6
VSS (mg/l)			80				38			40
*PAC corrected										
NH3N (mg/l)	8	8	8	3	3	3	3	3.5	3.5	3.5
CN (mg/l)	1.38	1.38	1.38	1.38	1.38	1.38	1.38	2.08	2.08	2.08
SCN (mg/l)	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.7	6.7	6.7
NO2 (mg/l)	107	107	107	107	107	107	107	28	28	28
NO3 (mg/l)	91	91	91	91	91	91	91	160	160	160
Phenolics (mg/l)								(.025	(.025	(.025
PO4-P (mg/l)								3	3	3
Org-N (mg/l)				9	9	9	9			
TDS (mg/l)										
Color (APHA units)	750	750	750	750	750	750	750			
TOC (mg/l)	46	46	46	46	46	46	46			
BOD 5-day (mg/l)										

UNIT 2B TABLE A4

MONTH	AUG	AUG	AUG	AUG	AUG	AUG	AUG	AUG	AUG	AUG
DAY	5	6	7	8	9	10	11	12	13	14
DAY NO.	10	11	12	13	14	15	16	17	18	19
SYSTEM PARAMETERS										
*Sludge Age	30	30	30	30	30	30	13.8	38.5	37.1	30
*(F/M)COD	0.18	0.09	0.07	0.08	0.08	0.06	0.21	0.72	0.07	0.07
*HRT	2.1	2.1	1.9	2.0	2.1	2.1	2.0	2.1	2.1	2.0
FEED PARAMETERS (BATCH #)	27	27	27	27	27	27	27	28	28	28
Volume (liters)	3.40	3.35	3.60	3.45	3.38	3.40	3.45	3.39	3.40	3.48
pH (std units)	7.2	7.6	7.5	7.2	7.2	7.0	7.3/8.8	7.5/9.0	7.5	7.6
COD (mg/l)	272	272	272	228	220	223	223	184	190	239
NH3N (mg/l)	12.8	5.9	5.9	5.9	5.9	9.7	9.7	9.7	18.8	18.8
SS (mg/l)										
VSS (mg/l)										
CN (mg/l)	2.23	2.23	2.23	2.23	2.23	1.006	1.006	1.006	1.006	1.006
SCN (mg/l)	7.0	7.0	7.0	7.0	7	7.5	7.5	7.5	7.5	7.5
BOD 5-day (mg/l)										
TOC (mg/l)						58	58	58	58	58
Phenolics (mg/l)	1.025	1.025	1.025	1.025	1.025					
PO4-P (mg/l)	2.5	2.5	2.5	2.5	2.5					
Org-N (mg/l)		14.4	14.4	14.4	14.4				18.7	18.7
NO2 (mg/l)	67.4	67.4	67.4	67.4	67.4	43.8	43.8	43.8	43.8	43.8
NO3 (mg/l)	96.6	96.6	96.6	96.6	96.6	116	116	116	116	116
TDS (mg/l)										
Color (APHA Units)						500	500	500	500	500
BASIN PARAMETERS										
Vol Wasted (ml)	142	248	206	191	205	287	10	10	163	230
D.O. (mg/l)	7.6	7.5	7.0	7.5	7.5	7.8	8.2	7.9	8.4	8.6
SS (mg/l)	1200	1840	2340	1940	1830	2230	1000	620	1870	2120
*BSE (PAC corrected)	700	1340	1840	1440	1330	1730	500	120	1370	1620
Temp (C)	26	26	26	27	28	26	25	25	24	23
pH (std units)	7.1	7.9	7.9	7.8	7.7	7.5	7.1	7.7	8.0	7.8
OUR (mg/l/nH)				4			2			
VSS (mg/l)	1109	1701	2163	1660	1566	1908	840	521	1571	1781
*VSS (PAC corrected)	609	1201	1663	1160	1138	1480	420	101	1151	1361
VSS/SS				0.86			0.84			
*PAC Added (mg)	143	144	143	143	143	143	312	112	114	143
*Inventory (mg/l basin)	500	500	500	500	500	500	500	500	500	500
EFFLUENT PARAMETERS										
Volume (liters)	3.00	3.00	3.15	3.00	3.00	3.05	2.65	3.15	3.20	3.14
COD (mg/l)	190	197	170	170	177	122	125	140	171	179
SS (mg/l)	58	24	60	62	50	58	232	42	38	38
*PAC corrected										
pH (std units)	7.2	7.8	7.8	7.8	7.8	7.4	7.1	7.5	7.8	7.8
VSS (mg/l)				52			182			
*PAC corrected										
NH3N (mg/l)	2.4	2.4	2.4	2.4	2	2	2	6	6	6
CN (mg/l)	2.08	2.08	2.08	2.08	1.19	1.19	1.19	1.19	1.19	1.19
SCN (mg/l)	6.7	6.7	6.7	6.7	5.2	5.2	5.2	5.2	5.2	5.2
NO2 (mg/l)	28	28	28	28	13.5	13.5	13.5	13.5	13.5	13.5
NO3 (mg/l)	160	160	160	160	174	174	174	174	174	174
Phenolics (mg/l)	1.025	1.025	1.025	1.025						
PO4-P (mg/l)	3	3	3	3						
Org-N (mg/l)	5.5	5.5	5.5	5.5				7.4	7.4	7.4
TDS (mg/l)										
Color (APHA units)					1000	1000	1000	1000	1000	1000
TOC (mg/l)					53	53	53	53	53	53
BOD 5-day (mg/l)										

UNIT 2B TABLE A4

MONTH	AUG	AUG	AUG	AUG	AUG	AUG	AUG	AUG	AUG	AUG
DAY	15	16	17	18	19	20	21	22	23	24
DAY NO.	20	21	22	23	24	25	26	27	28	29
SYSTEM PARAMETERS										
*Sludge Age	30	30	30	30	35.4	30	30	30	30	30
*(F/M)COD	0.07	0.09	0.13	0.12	0.80	0.13	0.16	0.20	0.17	0.18
*HRT	2.1	2.0	2.1	2.1	1.9	1.9	1.9	2.1	2.0	2.1
FEED PARAMETERS (BATCH #)										
Volume (liters)	28	28	28	28	28	28	28	28	28	28
pH (std units)	3.29	3.57	3.37	3.37	3.70	3.70	3.70	3.39	3.50	3.40
COD (mg/l)	7.5	7.8	7.9	7.7	7.7	7.7	7.6	7.5/8.9	7.3/9.0	7.4/8.9
NH3N (mg/l)	250	265	276	258	287	290	290	289	303	320
SS (mg/l)	18.8	18.8	34.8	34.8	34.8	32.2	32.2	32.2	32.2	34.2
VSS (mg/l)										
CN (mg/l)	(.006	(.006	3.28	3.28	3.28	3.28	3.28	3.28	3.28	2.37
SCN (mg/l)	7.5	7.5	4.9	4.9	4.9	4.9	4.9	4.9	4.9	
BOD 5-day (mg/l)										
TOC (mg/l)	58	58								69.6
Phenolics (mg/l)			(.025	(.025	(.025	(.025	(.025	(.025	(.025	
PO4-P (mg/l)			4.2	4.2	4.2	4.2	4.2	4.2	4.2	
Org-N (mg/l)	18.7	18.7				17.2	17.2	17.2	17.2	
NO2 (mg/l)	43.8	43.8	85.1	85.1	85.1	85.1	85.1	85.1	85.1	97.1
NO3 (mg/l)	116	116	96.9	96.9	96.9	96.9	96.9	96.9	96.9	83
TDS (mg/l)										
Color (APHA Units)	500	500								750
BASIN PARAMETERS										
Vol Wasted (ml)	206	196	228	175	10	229	123	185	200	158
D.O. (mg/l)	8.4	8.3	8.4	7.8	8.0	7.8	7.7	8.1	8.2	8.0
SS (mg/l)	2410	2180	1640	1750	730	1920	1680	1290	1510	1470
*SS (PAC corrected)	1910	1680	1140	1250	230	1420	1180	790	1010	970
Temp (C)	23	24	23.5	25	24	25	25	24	25	24
pH (std units)	7.6	7.6	7.8	7.8	7.6	7.7	7.6	7.5	7.7	7.7
OUR (mg/l/hr)	2			4				3		
VSS (mg/l)	1770	1601	1204	1180	492	1295	1133	920	1077	1048
*VSS (PAC corrected)	1403	1234	837	843	155	957	796	563	720	592
VSS/SS	0.73			0.67				0.71		
*PAC Added (mg)	143	144	143	143	121	143	143	143	143	143
*Inventory (mg/l basin)	500	500	500	500	500	500	500	500	500	500
EFFLUENT PARAMETERS										
Volume (liters)	2.85	3.20	3.20	3.05	3.40	3.45	3.20	2.98	3.12	2.95
COD (mg/l)	183	198	212	216	227	244	240	271	271	262
SS (mg/l)	68	62	30	64	50	32	86	44	42	64
*PAC corrected										
pH (std units)	7.6	7.6	7.8	7.8	7.6	7.6	7.6	7.5	7.5	7.6
VSS (mg/l)	38				48			28		
*PAC corrected										
NH3N (mg/l)	6	15.2	15.2	15.2	21.9	21.9	21.9	21.9	19.8	19.8
CN (mg/l)	1.19	2.58	2.58	2.58	2.58	2.58	2.58	2.58	1.11	1.11
SCN (mg/l)	5.2	5.1	5.1	5.1	5.1	5.1	5.1	5.1	3.7	3.7
NO2 (mg/l)	13.5	73.7	73.7	73.7	73.7	73.7	73.7	73.7	96.1	96.1
NO3 (mg/l)	174	94.3	94.3	94.3	94.3	94.3	94.3	94.3	98.9	98.9
Phenolics (mg/l)		(.025	(.025	(.025	(.025	(.025	(.025	(.025		
PO4-P (mg/l)		2.4	2.4	2.4	2.4	2.4	2.4	2.4		
Org-N (mg/l)	7.4				18.3	18.3	18.3	18.3		
TDS (mg/l)										
Color (APHA units)	1000								750	750
TOC (mg/l)	53								59.6	59.6
BOD 5-day (mg/l)										

UNIT 2B TABLE A4

MONTH	AUG	AUG	AUG	AUG	AUG	AUG	AUG	SEPT	SEPT	SEPT
DAY	25	26	27	28	29	30	31	1	2	3
DAY NO.	30	31	32	33	34	35	36	37	38	39
SYSTEM PARAMETERS										
*Sludge Age	30	30.1	30	24.5	30.1	30	30	30.1	30	30
*(F/M)COD	0.10	0.09	0.12	0.08	0.25	0.06	0.08	0.05	0.05	0.06
*HRT	1.9	2.1	1.9	2.0	2.0	1.9	2.0	1.9	2.0	2.0
FEED PARAMETERS (BATCH #)	28	28	28	29	29	29	29	29	29	29
Volume (liters)	3.66	3.40	3.60	3.56	3.44	3.7	3.50	3.60	3.54	3.55
pH (std units)	7.4/9.3	7.4/8.9	7.5	7.2/9.0	7.3	8.4	7.5/9.5	7.5	7.4	7.4/8.9
COD (mg/l)	329	316	322	279	291	260	281	213	170	193
NH3N (mg/l)	34.2	34.2	21.6	21.6	21.6	21.6	9.9	9.9	9.9	9.2
SS (mg/l)										
VSS (mg/l)										
CN (mg/l)	2.37	2.37	2.37	2.37	2.37	2.37	1.96	1.96	1.96	1.96
SCN (mg/l)										
BOD 5-day (mg/l)										
TOC (mg/l)	69.6	69.6	69.6	69.6	69.6	69.6				
Phenolics (mg/l)							0.025	0.025	0.025	0.025
PO4-P (mg/l)							3.9	3.9	3.9	3.9
Org-N (mg/l)			10.7	10.7	10.7	10.7	3.5	3.5	3.5	3.5
NO2 (mg/l)	97.1	97.1	97.1	97.1	97.1	97.1	22.9	22.9	22.9	22.9
NO3 (mg/l)	83	83	83	83	83	83	182	182	182	182
TDS (mg/l)										
Color (APHA Units)	750	750	750	750	750	750				
BASIN PARAMETERS										
Vol Wasted (ml)	201	185	152	264	206	225	209	218	206	216
D.O. (mg/l)	8.0	7.8	7.4	7.3	7.8	8.0	8.0	8.0	8.3	8.1
SS (mg/l)	2340	2350	1950	2340	1020	2640	2050	2710	2240	2170
*SS (PAC corrected)	1840	1850	1450	1840	520	2140	1550	2210	1740	1670
Temp (C)	23	24	25	24	25	24	24	23.5	24	25
pH (std units)	7.3	7.9	7.7	7.2	7.7	7.5	7.4	7.5	7.3	7.4
OUR (mg/l/hr)	5				4			4		
VSS (mg/l)	1750	1757	1458	1750	920	2381	1849	2120	1752	1698
*VSS (PAC corrected)	1376	1384	1004	1376	489	1930	1398	1729	1361	1306
VSS/SS	0.75				0.90			0.78		
*PAC Added (mg)	143	143	143	176	143	144	143	143	143	143
*Inventory (mg/l basin)	500	500	500	500	500	500	500	500	500	500
EFFLUENT PARAMETERS										
Volume (liters)	3.34	2.90	3.20	3.00	2.92	3.25	2.95	3.42	3.10	3.20
COD (mg/l)	280	283	264	234	243	228	219	167	145	138
SS (mg/l)	60	82	82	68	28	26	54	54	58	48
*PAC corrected										
pH (std units)	7.3	7.6	7.7	7.5	7.5	7.2	7.4	7.1	7.4	7.4
VSS (mg/l)	52				26			48		
*PAC corrected										
NH3N (mg/l)	19.8	6.2	6.2	6.2	6.2	12.1	12.1	12.1	0.8	0.8
CN (mg/l)	1.11	1.11	1.11	1.11	1.11	1.91	1.91	1.91	1.91	1.91
SCN (mg/l)	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
NO2 (mg/l)	96.1	96.1	96.1	96.1	96.1	49.2	49.2	49.2	49.2	49.2
NO3 (mg/l)	98.9	98.9	98.9	98.9	98.9	170	170	170	170	170
Phenolics (mg/l)						0.025	0.025	0.025	0.025	0.025
PO4-P (mg/l)						4.2	4.2	4.2	4.2	4.2
Org-N (mg/l)		10.4	10.4	10.4	10.4				0.1	0.1
TDS (mg/l)										
Color (APHA units)	750	750	750	750	750					
TOC (mg/l)	59.6	59.6	59.6	59.6	59.6					
BOD 5-day (mg/l)										

UNIT 2B TABLE A4

MONTH	SEPT	SEPT	SEPT	SEPT	SEPT	SEPT	SEPT	SEPT	SEPT	SEPT
DAY	4	5	6	7	8	9	10	11	12	13
DAY NO.	40	41	42	43	44	45	46	47	48	49
SYSTEM PARAMETERS										
*Sludge Age	30	30	30	30	30	30	30	30	30	30
*(F/M)COD	0.06	0.08	0.04	0.08	0.09	0.34	0.05	0.07	0.15	0.08
*HRT	2.1	2.0	2.0	1.9	2.0	2.0	2.0	2.0	2.0	2.0
FEED PARAMETERS (BATCH #)	29	29	29	29	29	29	29	29	29	30
Volume (liters)	3.27	3.50	3.46	3.70	3.57	3.50	3.44	3.44	3.44	3.52
pH (std units)	7.3/8.9	7.3/9.0	7.3	7.5	7.4	7.2	7.1/9.5	7.1/8.9	7.5/9.1	7.4
COD (mg/l)	186	177	183	180	178	199	211	206	211	188
NH3N (mg/l)	9.2	9.2	9.2	13.3	13.3	13.3	16.7	16.7	16.7	16.7
SS (mg/l)			38							
VSS (mg/l)			22							
CN (mg/l)	1.96	1.96	1.96	2.02	2.02	2.02	2.02	2.02	2.02	2.02
SCN (mg/l)			5.9	7.1	7.1	7.1	7.1	7.1	7.1	7.1
BOD 5-day (mg/l)										
TOC (mg/l)				64	64	64	64	64	64	64
Phenolics (mg/l)	0.025	0.025	0.025							
PO4-P (mg/l)	3.9	3.9	3.9							
Org-N (mg/l)	3.5	3.5	3.5				1.2	1.2	1.2	1.2
NO2 (mg/l)	22.9	22.9	22.9	9.95	9.95	9.95	9.95	9.95	9.95	9.95
NO3 (mg/l)	182	182	182	180	180	180	180	180	180	180
TDS (mg/l)										
Color (APHA Units)				625	625	625	625	625	625	625
BASIN PARAMETERS										
Vol Wasted (ml)	212	232	254	241	244	166	244	207	228	266
D.O. (mg/l)	8.0	7.7	7.7	7.5	7.6	7.6	8.0	7.6	8.2	8.2
SS (mg/l)	2140	1650	2680	1810	1540	810	2670	2010	1260	1770
*SS (PAC corrected)	1640	1150	2180	1310	1040	310	2170	1510	760	1270
Temp (C)	24	24	24	26	25	24	25	25	25	25
pH (std units)	7.5	7.8	7.9	7.5	7.1	6.9	6.6	7.9	7.9	7.9
OUR (mg/l/hr)		3			6				4	
VSS (mg/l)	1674	1240	2014	1360	1170	615	2029	1527	930	1306
*VSS (PAC corrected)	1283	864	1638	984	790	236	1649	1147	561	937
VSS/SS		0.75			0.76				0.74	
*PAC Added (mg)	143	144	144	143	143	143	143	143	143	143
*Inventory (mg/l basin)	500	500	500	500	500	500	500	500	500	500
EFFLUENT PARAMETERS										
Volume (liters)	2.95	3.25	2.95	3.20	2.96	3.05	3.00	2.95	2.85	3.05
COD (mg/l)	141	125	134	133	189	150	164	156	131	128
SS (mg/l)	54	28	30	26	22	32	38	54	26	12
*PAC corrected										
pH (std units)	7.5	7.5	7.7	7.6	7.4	7.1	6.8	7.4	7.8	7.9
VSS (mg/l)		14			22				2	
*PAC corrected										
NH3N (mg/l)	0.8	0.8	0.6	0.6	0.6	1.7	1.7	1.7	1.7	0.6
CN (mg/l)	1.91	1.91	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.09
SCN (mg/l)	3.7	3.7	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.3
NO2 (mg/l)	49.2	49.2	4.5	4.5	4.5	4.5	4.5	4.5	4.5	0.59
NO3 (mg/l)	170	170	216	216	216	216	216	216	216	226
Phenolics (mg/l)	0.025	0.025								0.025
PO4-P (mg/l)	4.2	4.2								3.4
Org-N (mg/l)	0.1	0.1				0.5	0.5	0.5	0.5	
TDS (mg/l)										
Color (APHA units)			875	875	875	875	875	875	875	
TOC (mg/l)			54	54	54	54	54	54	54	
BOD 5-day (mg/l)										

UNIT 2B TABLE A4

MONTH	SEPT	SEPT	SEPT	SEPT	SEPT	SEPT	SEPT	SEPT	SEPT	SEPT
DAY	14	15	16	17	18	19	20	21	22	23
DAY NO.	50	51	52	53	54	55	56	57	58	59
SYSTEM PARAMETERS										
*Sludge Age	30	30	30	30	30	30	30	30	30	30
*(F/M)COD	0.07	0.06	0.08	0.05	0.05	0.08	0.04	0.05	0.03	0.03
*HRT	2.0	2.3	2.1	2.1	2.0	2.4	2.0	2.0	2.1	2.1
FEED PARAMETERS (BATCH #)	30	30	30	30	30	30	30	30	30	30
Volume (liters)	3.57	3.10	3.40	3.30	3.50	2.90	3.60	3.60	3.40	3.30
pH (std units)	7.4	6.9/8.9	7.2/9.6	7.4	7.4	7.0	6.9	7.0	7.1/8.8	7.3
COD (mg/l)	183	179	180	179	179	174	171	148	151	119
NH3N (mg/l)	5.5	5.5	5.5	5.5	5.5	5.5	5.5	4.3	4.3	4.3
SS (mg/l)							32			
VSS (mg/l)							26			
CN (mg/l)							1.62			
SCN (mg/l)							6.5	(10	(10	(10
BOD 5-day (mg/l)										
TOC (mg/l)								58	58	58
Phenolics (mg/l)							(0.025			
PO4-P (mg/l)							4.3			
Org-N (mg/l)							2.6			
NO2 (mg/l)							4.7			
NO3 (mg/l)							196			
TDS (mg/l)										
Color (APHA Units)								500	500	500
BASIN PARAMETERS										
Vol Wasted (ml)	243	163	234	244	237	192	218	188	238	246
D.O. (mg/l)	8.2	9.0	8.9	8.8	8.4	7.9	8.0	7.8	8.0	8.0
SS (mg/l)	1890	1840	1680	2130	2580	1480	2770	2100	3080	2550
*SS (PAC corrected)	1390	1340	1180	1630	2080	900	2270	1600	2350	2050
Temp (C)	23	21	21	22	22	22	23	24	23	22
pH (std units)	7.9	7.5	8.1	8.2	8.2	8.0	7.6	7.2	7.1	7.8
OUR (mg/l/hr)		4				2			2	
VSS (mg/l)	1395	1420	1297	1644	1991	1150	2152	1632	2090	1730
*VSS (PAC corrected)	1026	1034	911	1258	1605	761	1764	1243	1751	1391
VSS/SS		0.77				0.78			0.68	
*PAC Added (mg)	143	143	143	143	143	143	143	143	144	143
*Inventory (mg/l basin)	500	500	500	500	500	500	500	500	500	500
EFFLUENT PARAMETERS										
Volume (liters)	2.97	3.15	2.90	3.10	2.90	3.50	3.30	3.40	3.20	3.00
COD (mg/l)	126	133	145	142	140	143	104	106	97	96
SS (mg/l)	28	72	30	30	44	40	58	62	48	34
*PAC corrected										
pH (std units)	8.1	7.6	7.8	8.1	8.1	8.1	7.6	7.4	7.1	7.4
VSS (mg/l)		62				32			42	
*PAC corrected										
NH3N (mg/l)	0.6	0.6	(0.1	(0.1	(0.1	(0.1	1.2	1.2	1.2	1.2
CN (mg/l)	1.09	1.09	1.09	1.09	1.09	1.09				
SCN (mg/l)	4.3	4.3	4.3	4.3	4.3	4.3				
NO2 (mg/l)	0.59	0.59	0.57	0.59	0.59	0.59				
NO3 (mg/l)	226	226	226	226	226	226				
Phenolics (mg/l)	(0.025	(0.025	(0.025	(0.025	(0.025	(0.025				
PO4-P (mg/l)	3.4	3.4	3.4	3.4	3.4	3.4				
Org-N (mg/l)			(1	(1	(1	(1				
TDS (mg/l)										
Color (APHA units)							1000	1000	1000	1000
TOC (mg/l)							52	52	52	52
BOD 5-day (mg/l)							(10	(10	(10	(10

UNIT 2B TABLE A4

MONTH	SEPT	SEPT	SEPT	SEPT	SEPT	SEPT	SEPT	OCT	OCT	OCT
DAY	24	25	26	27	28	29	30	1	2	3
DAY NO.	60	61	62	63	64	65	66	67	68	69
SYSTEM PARAMETERS										
*Sludge Age	30	30	30	30	30	30	30	30	30	30
*(F/M) COD	ERR	0.17	0.04	0.08	0.05	0.06	0.19	0.07	0.05	0.08
*HRT	2.1	1.9	2.2	1.9	1.9	1.9	1.9	1.9	1.9	1.9
FEED PARAMETERS (BATCH #)	30	30	30	30	31	31	31	31	31	31
Volume (liters)	3.40	3.70	3.20	3.4	3.7	3.6	3.7	3.1	3.7	3.7
pH (std units)	7.4	6.7	7.2	7.0/8.9	7.4	7.3	7.4	7.5	7.8	7.8
COD (mg/l)	122	176	176	162	172	176	177	188	172	180
NH3N (mg/l)	6.1	6.1	6.1	6.1	4.9	4.9	4.9			
SS (mg/l)				294						
VSS (mg/l)				290						
CN (mg/l)										
SCN (mg/l)	(10	(10	(10	(10						
BOD 5-day (mg/l)										
TOC (mg/l)	58	58	58	58						
Phenolics (mg/l)										
PO4-P (mg/l)										
Org-N (mg/l)										
NO2 (mg/l)										
NO3 (mg/l)										
TDS (mg/l)										
Color (APHA Units)	500	500	500	500						
BASIN PARAMETERS										
Vol Wasted (ml)	10	168	235	200	244	227	108	209	222	176
D.O. (mg/l)	8.0	8.0	8.2	8.8	8.6	8.9	8.9	9.0	8.5	8.6
SS (mg/l)		1160	2440	1630	2490	2400	1060	1920	2550	1930
*SS (PAC corrected)		660	1940	1130	1990	1900	560	1420	2050	1430
Temp (C)	21	20	20	20	21	20	20	20	21	21
pH (std units)	7.8	7.4	7.1	7.0	7.6	7.5	7.4	7.5	7.6	7.9
OUR (mg/l/hr)						2				2
VSS (mg/l)		787	1840	1229	1878	1690	746	1352	1796	1340
*VSS (PAC corrected)		448	1463	852	1501	1338	394	1000	1440	993
VSS/SS			0.75			0.70				0.69
*PAC Added (mg)	143	143	143	143	143	143	143	143	143	143
*Inventory (mg/l basin)	500	500	500	500	500	500	500	500	500	500
EFFLUENT PARAMETERS										
Volume (liters)	3.10	3.50	2.85	3.20	3.35	3.42	3.50	3.40	3.40	3.00
COD (mg/l)	150	153	155	146	150	155	153	150	152	152
SS (mg/l)	58	40	44	44	32	42	54	44	48	72
*PAC corrected										
pH (std units)	7.7	7.5	7.3	6.9	7.2	7.5	7.4	7.3	7.4	7.7
VSS (mg/l)			30			38				52
*PAC corrected										
NH3N (mg/l)	1.2	1.2	1.2	0.3	0.3	0.3	1.5	1.5	1.5	1.5
CN (mg/l)										
SCN (mg/l)										
NO2 (mg/l)										
NO3 (mg/l)										
Phenolics (mg/l)				(0.025	(0.025	(0.025	(0.025	(0.025	(0.025	(0.025
PO4-P (mg/l)				14.6	14.6	14.6	14.6	14.6	14.6	14.6
Org-N (mg/l)										
TDS (mg/l)										
Color (APHA units)	1000	1000	1000							
TOC (mg/l)	52	52	52	46	46	46	46	46	46	46
BOD 5-day (mg/l)	(10	(10	(10	(5.4	(5.4	(5.4	(5.4	(5.4	(5.4	(5.4

UNIT 2B TABLE A4

MONTH	OCT	OCT	OCT	OCT	OCT	OCT	OCT	OCT	OCT	OCT
DAY	4	5	6	7	8	9	10	11	12	13
DAY NO.	70	71	72	73	74	75	76	77	78	79
SYSTEM PARAMETERS										
*Sludge Age	30	15	30	30.1	30	30	30	30	30	30
*(F/M)COD	0.05	0.07	0.06	0.04	0.03	0.06	0.05	0.09	0.05	0.05
*HRT	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
FEED PARAMETERS (BATCH #)	31	31	31	31	31	31	31	31	31	31
Volume (liters)	3.70	3.70	3.70	3.70	3.70	3.60	3.70	3.7	3.7	3.7
pH (std units)	8.0/7.0	8.3/5.6	8.1	7.8	8.0/4.8	8.1	8.1	8.1	8.2	8.1
COD (mg/l)	170	138	130	132	126	133	127	125	123	135
NH3N (mg/l)	3.1	1.5	1.5	1.5	1.8	1.8	1.8	1.8	1.4	1.4
SS (mg/l)										
VSS (mg/l)										
CN (mg/l)										
SCN (mg/l)										
BOD 5-day (mg/l)	5.7	(3.4	(3.4	(3.4	(3.4	(3.4	(3.4	(3.4	(1.8	(1.8
TOC (mg/l)	40	30	30	30	30	30	30	30	37	37
Phenolics (mg/l)	(.025									
PO4-P (mg/l)	15.3									
Org-N (mg/l)										
NO2 (mg/l)										
NO3 (mg/l)										
TDS (mg/l)										
Color (APHA Units)		625	625	625	625	625	625	625		
BASIN PARAMETERS										
Vol Wasted (ml)	229	10	196	220	231	177	234	212	246	221
D.O. (mg/l)	8.2	8.2	8.3	8.0	7.8	8.0	8.1	8.2	8.0	8.0
SS (mg/l)	2040	1770	1720	2390	2750	1660	2120	1340	2070	2220
*SS (PAC corrected)	2340	1270	1220	1890	2250	1160	1620	840	1570	1720
Temp (C)	23	23	22	6	20	22	21	21	22	22
pH (std units)	8.1	8.2	8.0	7.8	8.0	7.8	8.1	8.2	8.3	8.3
OUR (mg/l/hr)			2				2			2
VSS (mg/l)	1972	1229	1300	1806	2078	1255	1560	986	1523	1660
*VSS (PAC corrected)	1625	882	922	1424	1701	877	1192	610	1155	1286
VSS/SS			0.76				0.74			0.75
*PAC Added (mg)	143	286	143	143	144	143	143	143	143	143
*Inventory (mg/l basin)	500	500	500	500	500	500	500	500	500	500
EFFLUENT PARAMETERS										
Volume (liters)	3.40	3.55	3.50	3.50	3.45	3.15	3.12	3.32	3.50	3.62
COD (mg/l)	134	125	117	115	125	120	118	127	116	118
SS (mg/l)	48	280	44	40	44	58	36	30	24	40
*PAC corrected										
pH (std units)	7.9	8.2	7.9	7.9	8.0	7.9	8.1	8.1	8.2	8.3
VSS (mg/l)			38				34			28
*PAC corrected										
NH3N (mg/l)	(1	(1	(1	1.3	1.3	1.3	1.3	0.6	0.6	0.6
CN (mg/l)										
SCN (mg/l)										
NO2 (mg/l)										
NO3 (mg/l)										
Phenolics (mg/l)										
PO4-P (mg/l)								2.4	2.4	2.4
Org-N (mg/l)										
TDS (mg/l)										
Color (APHA units)	750	750	750	750	750	750	750			
TOC (mg/l)	33	33	33	33	33	33	33	31	31	31
BOD 5-day (mg/l)	(2.6	(2.6	(2.6	(2.6	(2.6	(2.6	(2.6	1.8	1.8	1.8

UNIT 2B TABLE A4

MONTH	OCT	OCT	OCT	OCT	OCT	OCT	OCT	OCT	OCT	OCT
DAY	14	15	16	17	18	19	20	21	22	23
DAY NO.	80	81	82	83	84	85	86	87	88	89
SYSTEM PARAMETERS										
*Sludge Age	30	30	30	30	30.01	29.98	32.96	30.00	30.00	30.00
*(F/M) COD	0.05	0.04	0.03	0.05	0.00	0.07	0.05	0.05	0.04	0.05
*HRT	1.9	1.9	2.2	2.0	2.21	1.98	1.89	1.89	1.89	1.89
FEED PARAMETERS (BATCH #)										
Volume (liters)	31	31	31	31						
pH (std units)	3.7	3.7	3.25	3.45	3.17	3.53	3.7	3.7	3.7	3.7
COD (mg/l)	8.1	8.1	8.2	8.4/5.6	8.3	8	8.1	8.4	8.1	8.1
NH3N (mg/l)	146	146	136	142		131	141	126	114	138
SS (mg/l)	1.4	1.2	1.2	1.2		1.4	1.4	1.4	2	2
VSS (mg/l)						64	36			
CN (mg/l)										
SCN (mg/l)										
BOD 5-day (mg/l)										
TOC (mg/l)	1.8	1.8	1.8	1.8		0.9	0.9	0.9	0.9	0.9
Phenolics (mg/l)	37	37	37	37		40	40	40	40	40
PO4-P (mg/l)										
Org-N (mg/l)										
NO2 (mg/l)										
NO3 (mg/l)										
TDS (mg/l)										
Color (APHA Units)						625	625	625	625	625
BASIN PARAMETERS										
Vol Wasted (ml)	249	241	238	218	206	222	248	184	175	159
D.O. (mg/l)	8.2	8.2	8.0	8.0	8	8.4	8.6	8.6	8.6	8.5
SS (mg/l)	2030	2530	2860	1910	2010	1420	2200	2130	2630	2660
*SS (PAC corrected)	1530	2030	2360	1410	1510	920	1700	1629	2129	2159
Temp (C)	21	21	21	21	21	21	19	19	19	20
pH (std units)	8.4	8.4	8.4	8.4	8.3	8.2	8.3	8.4	8.2	7.8
OUR (mg/l/hr)				2			2			
VSS (mg/l)	1518	1892	2139	1410	1300	1300	1690	1690	1690	1690
*VSS (PAC corrected)	1144	1518	1765	1041	800	800	1190	1189	1189	1189
VSS/SS				0.74	0.76	0.76	0.77	0.77	0.77	0.77
*PAC Added (mg)	143	143	143	143	143	143	143	143	143	143
*Inventory (mg/l basin)	500	500	500	500	500	500	500	501	501	501
EFFLUENT PARAMETERS										
Volume (liters)	3.44	3.60	3.00	3.30	3	3.29	3.57	3.43	3.4	3.6
COD (mg/l)	130	132	130	124	120	114	110	108	107	99
SS (mg/l)	22	32	46	40	54	28	24	64	86	94
*PAC corrected										
pH (std units)	8.3	8.4	8.1	8.2	8.3	8.1	8.3	8.4	8.2	8
VSS (mg/l)				26	38	38	20	20	20	20
*PAC corrected										
NH3N (mg/l)	0.6	0.6	0.6	0.6	1.1	1.1	1.1	0.9	0.9	0.9
CN (mg/l)										
SCN (mg/l)										
NO2 (mg/l)										
NO3 (mg/l)										
Phenolics (mg/l)										
PO4-P (mg/l)	2.4	2.4	2.4	2.4						
Org-N (mg/l)										
TDS (mg/l)										
Color (APHA units)					500	500	500	500	500	500
TOC (mg/l)	31	31	31	31	32	32	32	32	32	32
BOD 5-day (mg/l)	1.8	1.8	1.8	1.8	0.9	0.9	0.9	0.9	0.9	0.9

UNIT 2B TABLE A4

MONTH	OCT	OCT	OCT	OCT	OCT	OCT	OCT	OCT	NOV	NOV
DAY	24	25	26	27	28	29	30	31	1	2
DAY NO.	90	91	92	93	94	95	96	97	98	99
SYSTEM PARAMETERS										
*Sludge Age	30.00	30.01	30.01	30.03	30.03	29.96	29.97	29.97	30.25	30.04
*(F/M)COD	0.05	0.06	0.06	0.03	0.04	0.04	0.03	0.05	0.05	0.05
*HRT	1.89	1.89	1.89	2.69	2.33	1.89	2.35	1.94	2.02	1.89
FEED PARAMETERS (BATCH #)										
Volume (liters)	3.7	3.7	3.7	2.6	3.01	3.7	2.98	3.6	3.47	3.7
pH (std units)	8.2	8.1	8	8.2	8.3	7.9	8.2	7.4	7.2	7.1
COD (mg/l)	134	138	139	142	130	132	130	140	134	148
NH3N (mg/l)	2	2	2.3	2.3	2.3	3	3	3		10.0
SS (mg/l)										54
VSS (mg/l)										30
CN (mg/l)										1.51
SCN (mg/l)										3.1
BOD 5-day (mg/l)	0.9	0.9	0.9	1.7	1.7	1.7	1.7	1.7		1.9
TOC (mg/l)	40	40	40	40	40	40	40	40		45
Phenolics (mg/l)			(.025	(.025	(.025	(.025	(.025	(.025		(0.025
PO4-P (mg/l)										34.6
Org-N (mg/l)										(4.0
NO2 (mg/l)										3.81
NO3 (mg/l)										148
TDS (mg/l)										
Color (APHA Units)	625	625								875
BASIN PARAMETERS										
Vol Wasted (ml)	160	215	171	236	216	178	225	246	172	141
D.O. (mg/l)	8.6	8.6	8.6	8.8	8.8	8.8	8.8	8.9	8.4	8.8
SS (mg/l)	2120	2530	2030	2410	2180	2160	2500	2160	1960	1520
*SS (PAC corrected)	1619	2029	1529	1909	1679	1659	2099	1659	1459	1019
Temp (C)	19	19	18.5	18	18	18.5	18	18	18	18
pH (std units)	8.2	8.5	8.2	8.3	8.2	8.3	8.3	8	8.1	7.8
OUR (mg/l/hr)	4			2				2		
VSS (mg/l)	1550	1550	1550	1790	1790	1790	1790	1670	1670	1670
*VSS (PAC corrected)	1049	1049	1049	1289	1289	1289	1289	1169	1169	1169
VSS/SS	0.73	0.73	0.73	0.74	0.74	0.74	0.74	0.77	0.77	0.77
*PAC Added (mg)	143	143	143	143	143	143	143	143	143	143
*Inventory (mg/l basin)	501	501	501	501	501	501	501	501	501	501
EFFLUENT PARAMETERS										
Volume (liters)	3.45	3.48	3.45	2.25	2.74	3.1	2.6	3.4	3.5	3.45
COD (mg/l)	113	115	115	111	111	117	107	105	110	131
SS (mg/l)	78	52	68	54	56	76	62	26	64	62
*PAC corrected										
pH (std units)	8.2	8.6	8.2	8.4	8.2	8.2	8.2	8.2	8.1	7.9
VSS (mg/l)	54	54	54	38	38	38	38	24	24	24
*PAC corrected										
NH3N (mg/l)	0.9	0.3	0.3	0.3	0.6	0.6	0.6	0.6	(4.0	(4.0
CN (mg/l)									1.14	1.14
SCN (mg/l)									2.3	2.3
NO2 (mg/l)									2.2	2.2
NO3 (mg/l)									200	200
Phenolics (mg/l)		(0.025	(0.025	(0.025	(0.025	(0.025	(0.025	(0.025	(0.025	(0.025
PO4-P (mg/l)		2.8	2.8	2.8	2.8	2.8	2.8	2.8	12.2	12.2
Org-N (mg/l)									(4.0	(4.0
TDS (mg/l)										
Color (APHA units)	500								625	625
TOC (mg/l)	32	31	31	31	31	31	31	31	33	33
BOD 5-day (mg/l)	(0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	1.1	1.1

UNIT 2B TABLE A4

MONTH	NOV	NOV	NOV	NOV	NOV	NOV	NOV	NOV	NOV	NOV
DAY	3	4	5	6	7	8	9	10	11	12
DAY NO.	100	101	102	103	104	105	106	107	108	109
SYSTEM PARAMETERS										
*Sludge Age	29.97	29.89	30.02	30.03	29.98	30.02	29.90	30.35	30.01	29.97
*(F/M)COD	0.10	0.11	0.11	0.07	0.05	0.07	0.07	0.06	0.05	0.09
*HRT	1.89	1.89	1.89	1.89	1.89	1.75	2.06	2.13	2.14	2.02
FEED PARAMETERS (BATCH #)										
Volume (liters)	3.7	3.7	3.7	3.7	3.7	4	3.39	3.29	3.27	3.46
pH (std units)	6.9	6.6	6.7	8.3	8.3	8.1	7.4	7.1	7.3	7.5
COD (mg/l)	144	152	163	163	163	197	273	237	226	205
NH3N (mg/l)	10.0	10.0	37.5	37.5	37.5	37.5	34.2	34.2	34.2	15.8
SS (mg/l)	52	252	24	70	124	62	58	64	52	28
VSS (mg/l)	30	206	206	206	206	40	40	40	40	40
CN (mg/l)	1.51	1.51	1.51	1.51	1.51	1.51				
SCN (mg/l)	3.1	3.1	3.1	3.1	3.1	3.1				
BOD 5-day (mg/l)	1.9	1.9	2.3	2.3	2.3	2.3	1.6	1.6	1.6	3.3
TOC (mg/l)	45	45	47	47	47	47	51	51	51	53
Phenolics (mg/l)	(0.025	(0.025	(0.025	(0.025	(0.025	(0.025				
PO4-P (mg/l)	34.6	34.6	23.3	23.3	23.3	23.3	12.9	12.9	12.9	8.3
Org-N (mg/l)	(4.0	(4.0	(4.0	(4.0	(4.0	(4.0				
NO2 (mg/l)	3.81	3.81	3.81	3.81	3.81	3.81				
NO3 (mg/l)	148	148	148	148	148	148				
TDS (mg/l)										
Color (APHA Units)	875	875	875	875	875	875	875	875	875	875
BASIN PARAMETERS										
Vol Wasted (ml)	186	189	203	181	215	218	219	173	257	238
D.O. (mg/l)	8.4	9.4	9.2	8.9	9.7	9.5	9.5	9.3	9.2	9.2
SS (mg/l)	1500	1290	1760	2030	2630	2500	2660	2680	2890	1800
*SS (PAC corrected)	999	789	1259	1529	2129	1999	2159	2180	2389	1299
Temp (C)	18.5	18	18	18	17.5	17.5	18	18	18	18
pH (std units)	7.6	7	6.7	6.9	7.8	8.3	8	7.9	7.1	6.7
OUR (mg/l/hr)	0.25	0.25			5			3.6		
VSS (mg/l)	1120	1120	1120	1516	1950	1854	1972	2060	2221	1384
*VSS (PAC corrected)	619	619	619	1015	1449	1353	1472	1560	1721	883
VSS/SS	0.75	0.75	0.75	0.75	0.74	0.74	0.74	0.77	0.77	0.77
*PAC Added (mg)	143	143	143	143	143	143	143	143	143	143
*Inventory (mg/l basin)	501	501	501	501	501	501	501	500	501	501
EFFLUENT PARAMETERS										
Volume (liters)	3.44	3.5	3.5	3.45	3.5	3.72	3.1	3.1	3.05	3.15
COD (mg/l)	115	115	125	134	153	140	163	174	163	161
SS (mg/l)	44	36	42	62	54	46	58	98	28	28
*PAC corrected										
pH (std units)	7.6	7.3	6.9	6.6	7.3	7.9	8.4	7.4	7.5	6.7
VSS (mg/l)	28	28	28	28	44	44	44	44	44	44
*PAC corrected										
NH3N (mg/l)	(4.0	4.7	4.7	4.7	4.7	16.1	16.1	16.1	13.5	13.5
CN (mg/l)	1.14	1.14	1.14	1.14	1.14					
SCN (mg/l)	2.3	2.3	2.3	2.3	2.3					
NO2 (mg/l)	2.2	2.2	2.2	2.2	2.2					
NO3 (mg/l)	200	200	200	200	200					
Phenolics (mg/l)	(0.025	(0.025	(0.025	(0.025	(0.025					
PO4-P (mg/l)	12.2	24.6	24.6	24.6	24.6	11.4	11.4	11.4	17.7	17.7
Org-N (mg/l)	(4.0	(4.0	(4.0	(4.0	(4.0					
TDS (mg/l)										
Color (APHA units)	625	625	625	625	625	1000	1000	1000	1000	1000
TOC (mg/l)	33	37	37	37	37	40	40	40	44	44
BOD 5-day (mg/l)	1.1	2.1	2.1	2.1	2.1	2.8	2.8	2.8	3.0	3.0

UNIT 2B TABLE A4

MONTH	NOV	NOV	NOV	NOV	NOV	NOV	NOV	NOV	NOV	NOV
DAY	13	14	15	16	17	18	19	20	21	22
DAY NO.	110	111	112	113	114	115	116	117	118	119
SYSTEM PARAMETERS										
*Sludge Age	29.99	30.02	30.07	30.68	30.46	29.52	25.47	29.96	30.71	30.32
*(F/M)COD	0.07	0.06	0.05	0.04	0.07	0.07	0.07	0.08	0.06	0.07
*HRT	2.10	1.81	2.10	2.06	2.02	2.17	1.94	2.17	2.22	2.03
FEED PARAMETERS (BATCH #)										
Volume (liters)	3.33	3.86	3.34	3.4	3.47	3.22	3.61	3.23	3.15	3.44
pH (std units)	7.3	7.9	8.1	8.1	8.1	7.4	7.8	8	8.4	8.3
COD (mg/l)	190	192	196	178	170	183	197	193	204	208
NH3N (mg/l)	15.8	15.8	15.8	4.3	4.3	4.3	(4	(4	(4	(4
SS (mg/l)	28	84	38	60	50	46	46	130	32	54
VSS (mg/l)	40	40	38			46				54
CN (mg/l)			1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
SCN (mg/l)			4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
BOD 5-day (mg/l)	3.3	3.3	3.3	2.3	2.3	2.3	2.8	2.8	2.8	2.0
TOC (mg/l)	53	53	53	56	56	56	56	56	56	56
Phenolics (mg/l)			(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025
PO4-P (mg/l)	8.3	8.3	8.3	2.3	2.3	2.3	3.5	3.5	3.5	3.5
Org-N (mg/l)			4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
NO2 (mg/l)			4.39	4.39	4.39	4.39	4.39	4.39	4.39	4.39
NO3 (mg/l)			177	177	177	177	177	177	177	177
TDS (mg/l)										
Color (APHA Units)	875	875	875	750	750	750	750	750	750	750
BASIN PARAMETERS										
Vol Wasted (ml)	198	245	100	120	160	230	280	222	220	210
D.O. (mg/l)	9	3.5	8.6	9.6	9.7	9.6	9.6	9.5	9.7	9.5
SS (mg/l)	2110	2540	2506	2676	2060	2138	2290	1970	2415	2395
*SS (PAC corrected)	1610	2040	2005	2175	1559	1637	1789	1472	1917	1897
Temp (C)	18	17.5	17.5	19	18.5	17	18	19	19	19
pH (std units)	6.7	7.1	7.5	7.8	8.3	7.6	7.8	7.7	8	8.2
OUR (mg/l/hr)					1.8				2.4	
VSS (mg/l)	1622	2000	1973	2107	1446	1501	1607	1383	1740	1726
*VSS (PAC corrected)	1121	1500	1472	1606	945	999	1106	805	1242	1227
VSS/SS	0.77	0.79	0.79	0.79	0.70	0.70	0.70	0.70	0.72	0.72
*PAC Added (mg)	143	143	143	143	143	143	143	143	143	143
*Inventory (mg/l basin)	500	500	501	501	501	501	501	498	498	498
EFFLUENT PARAMETERS										
Volume (liters)	3.12	3.1	2.95	3.25	2.8	2.98	3.3	3.05	3.15	3.15
COD (mg/l)	155	163	157	140	148	160	167	162	152	150
SS (mg/l)	60	34	158	132	90	44	40	42	46	56
*PAC corrected			126	107	68	34	31	31	37	44
pH (std units)	6.6	6.9	7.3	7.6	8	7.4	7.8	7.8	8.1	8.3
VSS (mg/l)	44	32			74				46	
*PAC corrected					45				30	
NH3N (mg/l)	13.5	13.5	(4.0	(4.0	(4.0	(4.0	(4.0	(4.0	(4.0	(4.0
CN (mg/l)			0.619	0.619	0.619	0.619	0.619	0.619	0.619	
SCN (mg/l)			3.3	3.3	3.3	3.3	3.3	3.3	3.3	
NO2 (mg/l)			4.12	4.12	4.12	4.12	4.12	4.12	4.12	
NO3 (mg/l)			206	206	206	206	206	206	206	
Phenolics (mg/l)			(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025
PO4-P (mg/l)	17.7	17.7	8.9	8.9	8.9	4.8	4.8	4.8	4.8	3
Org-N (mg/l)			(4.0	(4.0	(4.0	(4.0	(4.0	(4.0	(4.0	
TDS (mg/l)										
Color (APHA units)	1000	1000	1000	1000	1000	1000	1000	1000	1000	875
TOC (mg/l)	44	44	47	47	47	45	45	45	45	44
BOD 5-day (mg/l)	3.0	3.0	5	5	5	3.1	3.1	3.1	3.1	2.1

UNIT 2B TABLE A4

MONTH	NOV	NOV	NOV	NOV	NOV	NOV	NOV	NOV	DEC	DEC
DAY	23	24	25	26	27	28	29	30	1	2
DAY NO.	120	121	122	123	124	125	126	127	128	129
SYSTEM PARAMETERS										
*Sludge Age	30.27	30.15	29.92	30.04	21.71	29.95	30.00	30.03	29.95	29.98
*(F/M)COD	0.03	0.06	0.08	0.07	0.09	0.05	0.03	0.06	0.05	0.05
*HRT	3.85	1.97	1.95	2.23	1.93	2.11	1.99	1.98	1.79	2.00
FEED PARAMETERS (BATCH #)										
Volume (liters)	1.82	3.55	3.59	3.14	3.63	3.32	3.52	3.53	3.92	3.5
pH (std units)	8.1	7.7	7.8	7.7	7.6	7.8	8	8	7.9	7.8
COD (mg/l)	188	176	187	185	168	153	157	146	142	143
NH3N (mg/l)	(4	(4	(4	(4	(4	(4	(4	(4	(4	(4
SS (mg/l)	46	50	108	574	294	188	100	144	92	92
VSS (mg/l)		44					58			60
CN (mg/l)							1.33	1.33	1.33	1.33
SCN (mg/l)							2.8	2.8	2.8	2.8
BOD 5-day (mg/l)	1.6	1.6	1.6	(2	(2	(2	(2	1.5	1.5	1.5
TOC (mg/l)	53	53	53	42	42	42	42	38	38	38
Phenolics (mg/l)	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025
PO4-P (mg/l)	4.4	4.4	4.4	8.4	8.4	8.4	8.4	5.4	5.4	5.4
Org-N (mg/l)							(4	(4	(4	(4
NO2 (mg/l)							2	2	2	2
NO3 (mg/l)							170	170	170	170
TDS (mg/l)								4660	4660	4660
Color (APHA Units)	750	750	750	750	750	750	750	750	750	750
BASIN PARAMETERS										
Vol Wasted (ml)	250	230	220	65	50	165	197	148	60	184
D.O. (mg/l)	9.2	9.2	9.2	9.4	9.1	9	9	8.9	8.8	8.8
SS (mg/l)	2380	2550	2095	2088	1878	2252	3682	1932	2564	2472
*SS (PAC corrected)	1881	2051	1596	1589	1379	1759	3189	1439	2071	1978
Temp (C)	19	19	20	18	20	20	20	19	19	18
pH (std units)	8.2	8	7.7	7.7	7.8	7.6	8	8.1	8	8
OUR (mg/l/hr)						1.2			1.2	
VSS (mg/l)	1675	1795	1474	1469	1322	1674	2737	1436	1796	1732
*VSS (PAC corrected)	1176	1296	976	971	823	1181	2244	943	1303	1238
VSS/SS	0.70	0.70	0.70	0.70	0.70	0.74	0.74	0.74	0.70	0.70
*PAC Added (mg)	143	143	143	143	143	143	143	143	143	143
*Inventory (mg/l basin)	499	499	499	499	499	493	493	493	493	494
EFFLUENT PARAMETERS										
Volume (liters)	1.45	3.2	3.72	3	3.25	3.125	3.3	3.26	3.2	3.1
COD (mg/l)	151	149	153	151	149	151	132	125	132	126
SS (mg/l)	56	44	38	154	200	88	100	82	182	82
*PAC corrected	44	35	29	117	147	69	87	61	147	66
pH (std units)	8.3	8	7.9	7.6	7.6	7.8	7.8	7.9	8	8
VSS (mg/l)	42					66			92	
*PAC corrected	26					44			58	
NH3N (mg/l)	(4.0	(4.0	(4.0	(4.0	(4.0	(4.0	(4.0	(4.0	(4.0	(4.0
CN (mg/l)							0.905	0.905	0.905	0.905
SCN (mg/l)							2.4	2.4	2.4	2.4
NO2 (mg/l)							0.53	0.53	0.53	0.53
NO3 (mg/l)							178	178	178	178
Phenolics (mg/l)	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025
PO4-P (mg/l)	3	3	9.4	9.4	9.4	9.4	7.1	7.1	7.1	5.5
Org-N (mg/l)							(4.0	(4.0	(4.0	(4.0
TDS (mg/l)							4970	4970	4970	4970
Color (APHA units)	875	875	875	875	875	875	625	625	625	625
TOC (mg/l)	44	44	42	42	42	42	36	36	36	35
BOD 5-day (mg/l)	2.1	2.1	(3	(3	(3	(3	1.8	1.8	1.8	(2

UNIT 2B TABLE A4

MONTH	DEC	DEC	DEC	DEC	DEC	DEC	DEC	DEC	DEC	DEC
DAY	3	4	5	6	7	8	9	10	11	12
DAY NO.	130	131	132	133	134	135	136	137	138	139
SYSTEM PARAMETERS										
*Sludge Age	29.96	29.95	29.97	30.03	30.02	30.04	30.04	29.70	29.98	29.99
*(F/M)COD	0.05	0.04	0.07	0.06	0.07	0.08	0.05	0.05	0.07	0.05
*HRT	1.92	1.92	1.71	2.03	1.84	1.94	1.97	1.89	2.05	2.06
FEED PARAMETERS (BATCH-#)										
Volume (liters)	3.65	3.64	4.1	3.45	3.8	3.6	3.55	3.7	3.42	3.4
pH (std units)	7.6	7.9	7.8	8.1	8	7.9	7.9	7.9	7.8	7.7
COD (mg/l)	137	154	157	155	146	144	155	161	156	154
NH3N (mg/l)	(4	(4	(4	(4	(2	(2	(2	(2	(2	(2
SS (mg/l)	64	36	138	46	54	38	130	70	60	52
VSS (mg/l)				34	24		78			
CN (mg/l)	1.33	1.33	1.33	1.33						
SCN (mg/l)	2.8	2.8	2.8	2.8						
BOD 5-day (mg/l)	(2	(2	(2	(2	2	2	2	2	2	2
TOC (mg/l)	43	43	43	43	45	45	45	41	41	41
Phenolics (mg/l)	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025
PO4-P (mg/l)	8.4	8.4	8.4	8.4	8.8	8.8	8.8	6.5	6.5	6.5
Org-N (mg/l)	(4	(4	(4	(4						
NO2 (mg/l)	2	2	2	2						
NO3 (mg/l)	170	170	170	170						
TDS (mg/l)	4660	4660	4660	4660	4605	4605	4605	4605	4605	4605
Color (APHA Units)	750	750	750	750	750	750	750	750	750	750
BASIN PARAMETERS										
Vol Wasted (ml)	137	197	164	133	100	3	134	170	161	215
D.O. (mg/l)	9	9	8.8	8.8	9.2	9	9.1	9	8.8	8.8
SS (mg/l)	2456	3034	2164	2136	2010	1762	2518	2772	1872	2614
*SS (PAC corrected)	1962	2540	1670	1642	1516	1267	2023	2277	1377	2119
Temp (C)	19	19	19	19	18.5	17	18	18	18	18
pH (std units)	8.2	7.9	8	8.2	8.4	6.9	7.6	7.7	7.9	8
OUR (mg/l/hr)				1.2						1.2
VSS (mg/l)	1720	2125	1514	1452	1366	1256	1795	1976	1334	1688
*VSS (PAC corrected)	1227	1631	1020	950	872	761	1300	1481	840	1193
VSS/SS	0.70	0.70	0.70	0.68	0.68	0.71	0.71	0.71	0.71	0.65
*PAC Added (mg)	143	143	143	143	143	143	143	143	143	143
*Inventory (mg/l basin)	494	494	494	494	494	495	495	495	495	495
EFFLUENT PARAMETERS										
Volume (liters)	3.35	3.6	3.5	2.6	3.5	3.2	3.25	3.25	3.1	3.35
COD (mg/l)	121	127	132	130	120	132	147	135	129	133
SS (mg/l)	110	76	76	126	106	156	118	102	76	56
*PAC corrected	88	64	59	97	80	112	95	84	56	45
pH (std units)	8.1	7.9	7.9	8.1	8	7.4	7.2	7.4	7.9	8
VSS (mg/l)			56	68		106				44
*PAC corrected			34	40						25
NH3N (mg/l)	(4.0	(4.0	(4.0	(2	(2	(2	(2	(2	(2	(2
CN (mg/l)	0.905	0.905	0.905							
SCN (mg/l)	2.4	2.4	2.4							
NO2 (mg/l)	0.53	0.53	0.53							
NO3 (mg/l)	178	178	178							
Phenolics (mg/l)	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025
PO4-P (mg/l)	5.5	5.5	5.5	8.2	8.2	8.2	9.5	9.5	9.5	9.5
Org-N (mg/l)	(4.0	(4.0	(4.0							
TDS (mg/l)	4970	4970	4970	4890	4890	4890	4890	4890	4890	4890
Color (APHA units)	625	625	625	750	750	750	750	750	750	750
TOC (mg/l)	35	35	35	38	38	38	40	40	40	40
BOD 5-day (mg/l)	(2	(2	(2	4	4	4	2.4	2.4	2.4	2.4

UNIT 2B TABLE A4

MONTH	DEC	DEC	DEC	DEC	DEC	DEC	DEC	DEC	DEC	DEC
DAY	13	14	15	16	17	18	19	20	21	22
DAY NO.	140	141	142	143	144	145	146	147	148	149
SYSTEM PARAMETERS										
*Sludge Age	30.00	25.01	25.04	24.98	24.99	25.04	25.00	25.00	25.00	25.02
*(F/M)COD	0.05	0.07	0.05	0.06	0.10	0.32	0.06	0.10	0.09	0.10
*HRT	1.92	1.94	2.05	1.88	1.75	1.90	2.09	1.91	1.87	1.77
FEED PARAMETERS (BATCH #)										
Volume (liters)	3.64	3.61	3.42	3.73	4	3.69	3.35	3.67	3.75	3.96
pH (std units)	7.7	7.6	7.6	7.4	8	8	8	8.1	7.9	7.8
COD (mg/l)	153	158	150	150	224	161	163	163	171	148
NH3N (mg/l)	(2	4.8	4.8	4.8	27.4	27.4	27.4	27.4	47.1	47.1
SS (mg/l)	32	44	440	72	48	6	54	50	46	30
VSS (mg/l)	22	0	303	42	28	4	32	26	24	16
CN (mg/l)	0	0.814	0.814	0.814	0.814	0.814	0.814	0.814	0	0
SCN (mg/l)	0	3.7	3.7	3.7	3.7	3.7	3.7	3.7	0	0
BOD 5-day (mg/l)	2	2.2	2.2	2.2	2	2	2	2	4	4
TOC (mg/l)	41	46	46	46	46	46	46	46	46	46
Phenolics (mg/l)	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025
PO4-P (mg/l)	6.5	8.3	8.3	8.3	8.7	8.7	8.7	8.7	0	0
Org-N (mg/l)										
NO2 (mg/l)	0	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0	0
NO3 (mg/l)	0	126	126	126	126	126	126	126	0	0
TDS (mg/l)	4605	4495	4495	4495	4495	4495	4495	4495	0	0
Color (APHA Units)	750	875	875	875	875	875	875	875	875	875
BASIN PARAMETERS										
Vol Wasted (ml)	196	292	153	269	140	156	208	188	224	218
D.O. (mg/l)	9	9	9	8.8	8.8	9	9	9	8.7	8.8
SS (mg/l)	2808	2194	2608	2358	2462	1098	2410	1846	2040	1742
*SS (PAC corrected)	2313	1699	2116	1869	1976	615	1929	1368	1564	1269
Temp (C)	19	19	19	19	18	17	18	18	18	18
pH (std units)	7.8	8	7.8	7.7	7.6	7.6	7.9	7.9	7.7	7.8
OUR (mg/l/hr)							2.4			6
VSS (mg/l)	1813	1417	1666	1506	1573	701	1562	1196	1322	1156
*VSS (PAC corrected)	1318	922	1174	1017	1087	218	1081	718	847	683
VSS/SS	0.65	0.65	0.64	0.64	0.64	0.64	0.65	0.65	0.65	0.66
*PAC Added (mg)	143	143	143	143	143	143	143	143	143	143
*Inventory (mg/l basin)	495	495	492	489	486	483	481	478	476	473
EFFLUENT PARAMETERS										
Volume (liters)	3.35	3.35	3.45	3.55	3.75	3.32	3.15	3.35	3.4	3.65
COD (mg/l)	137	141	133	140	133	140	138	137	142	153
SS (mg/l)	76	34	144	50	134	62	104	86	72	60
*PAC corrected	63									
pH (std units)	8	8	7.9	7.8	7.8	7.7	7.9	8.1	7.9	7.6
VSS (mg/l)		27	86	30	80	37	60	50	42	48
*PAC corrected										
NH3N (mg/l)	(2	(2	(2	2.8	2.8	2.8	2.8	13.4	13.4	13.4
CN (mg/l)	3.17	3.17	3.17	3.17	3.17	3.17	3.17			
SCN (mg/l)	2.8	2.8	2.8	2.8	2.8	2.8	2.8			
NO2 (mg/l)	1.5	1.5	1.5	1.5	1.5	1.5	1.5			
NO3 (mg/l)	163	163	163	163	163	163	163			
Phenolics (mg/l)	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025
PO4-P (mg/l)	6.5	6.5	6.5	7.7	7.7	7.7	7.7			
Org-N (mg/l)										
TDS (mg/l)	4730	4730	4730	4730	4730	4730	4730			
Color (APHA units)	875	875	875	875	875	875	875	875	875	875
TOC (mg/l)	40	40	40	42	42	42	42	40	40	40
BOD 5-day (mg/l)	2.3	2.3	2.3	(2	(2	(2	(2	2.5	2.5	2.5

UNIT 2B TABLE A4

MONTH	DEC	DEC	DEC	DEC	DEC	DEC	DEC	DEC	DEC	JAN
DAY	23	24	25	26	27	28	29	30	31	1
DAY NO.	150	151	152	153	154	155	156	157	158	159
SYSTEM PARAMETERS										
*Sludge Age	24.98	14.65	24.99	25.03	24.98	25.01	24.98	24.97	24.97	25.03
*(F/M)COD	0.09	-0.36	0.05	0.32	0.01	0.03	0.07	0.11	0.08	0.07
*HRT	1.92	1.72	1.81	1.89	2.10	1.87	1.88	1.88	1.85	1.63
FEED PARAMETERS (BATCH #)										
Volume (liters)	3.64	4.08	3.87	3.7	3.33	3.75	3.73	3.73	3.79	4.3
pH (std units)	7.8	7.7	7.4	7.6	7.5	8	7.9	7.7	7.8	7.9
COD (mg/l)	168	159	150	157	167	165	189	189	180	136
NH3N (mg/l)	47.1	48.8	48.8	48.8	48.8	101	101	101	190	190
SS (mg/l)	36	44	26	42	82	160	130	62	116	62
VSS (mg/l)	26	32	11	30	59	120	98	40	88	47
CN (mg/l)	0	0	0	0	0	0.544	0.544	0.544	0.544	0.544
SCN (mg/l)	0	0	0	0	0	3.2	3.2	3.2	3.2	3.2
BOD 5-day (mg/l)	4	(2	(2	(2	(2	(2	(2	(2	(2	(2
TOC (mg/l)	46	43	43	43	43	46	46	46	38	38
Phenolics (mg/l)	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025
PO4-P (mg/l)	0	0	0	0	13.2	10.2	10.2	10.2	10	10
Org-N (mg/l)					0	5	5	5	5	5
NO2 (mg/l)	0	0	0	0	0	0.62	0.62	0.62	0.62	0.62
NO3 (mg/l)	0	0	0	0	0	90.7	90.7	90.7	90.7	90.7
TDS (mg/l)	0	0	0	0	4510	4375	4375	4375	4375	4375
Color (APHA Units)	875	875	875	875	875	1000	1000	1000	1000	1000
BASIN PARAMETERS										
Vol Wasted (ml)	261	261	298	199	338	273	192	174	174	189
D.O. (mg/l)	9	9	9	8.8	8.8	3	3.8	1.2	1.2	1.2
SS (mg/l)	1878	450	2544	1002	14020	4574	1840	1376	1625	1720
*SS (PAC corrected)	1407	-19	2091	550	13570	4125	1392	930	1180	1276
Temp (C)	19	17	17	17	17	24	20	20	20	20
pH (std units)	7.7	7.55	7.5	7.3	7.3	7	7	7	6.7	6.3
OUR (mg/l/hr)				6			6			
VSS (mg/l)	1246	256	1688	665	7980	2603	1508	1128	1332	1410
*VSS (PAC corrected)	775	-212	1235	213	7724	2348	1141	762	967	1046
VSS/SS	0.66	0.57	0.66	0.66	0.57	0.57	0.82	0.82	0.82	0.82
*PAC Added (mg)	143	143	143	143	143	143	143	143	143	143
*Inventory (mg/l basin)	471	469	453	452	450	449	448	446	445	444
EFFLUENT PARAMETERS										
Volume (liters)	3.4	3.67	3.45	3.45	2.94	3.45	3.4	3.45	3.55	3.8
COD (mg/l)	161	140	142	140	153	165	165	161	142	136
SS (mg/l)	46	40	34	42	30	94	68	78	70	70
*PAC corrected					29	85	51	53	51	52
pH (std units)	7.6	7.5	7.4	7.2	7.3	6.9	7	7	7	6.5
VSS (mg/l)	37	35	27	34	26	81	58	56	64	57
*PAC corrected					15	46	48	46	52	47
NH3N (mg/l)	14.8	14.8	14.8	14.8	21	21	21	69.3	69.3	69.3
CN (mg/l)					1.22	1.22	1.22	1.22	1.22	1.22
SCN (mg/l)					3.4	3.4	3.4	3.4	3.4	3.4
NO2 (mg/l)					0.46	0.46	0.46	0.46	0.46	0.46
NO3 (mg/l)					58	58	58	58	58	58
Phenolics (mg/l)	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025
PO4-P (mg/l)				12.0	21.4	21.4	21.4	44.5	44.5	44.5
Org-N (mg/l)					(4	(4	(4	(4	(4	(4
TDS (mg/l)				4770	4805	4805	4805	4805	4805	4805
Color (APHA units)	875	875	875	875	1000	1000	1000	1000	1000	1000
TOC (mg/l)	43	43	43	43	44	44	44	40	40	40
BOD 5-day (mg/l)	2	2	2	2	3	3	3	(2	(2	(2

UNIT 2B TABLE A4

MONTH	JAN	JAN	JAN	JAN	JAN	JAN	JAN	JAN	JAN	JAN
DAY	2	3	4	5	6	7	8	9	10	11
DAY NO.	160	161	162	163	164	165	166	167	168	169
SYSTEM PARAMETERS										
*Sludge Age	25.02	25.00	17.76	18.40	19.01	14.43	25.00	20.68	25.01	33.80
*(F/M)COD	0.10	0.05	0.21	0.20	0.19	0.11	0.09	0.18	0.08	0.03
*HRT	1.87	2.12	1.77	1.79	2.33	1.82	1.84	1.89	1.89	1.89
FEED PARAMETERS (BATCH #)										
Volume (liters)	3.75	3.3	3.96	3.91	3	3.85	3.8	3.7	3.7	3.7
pH (std units)	8.2	8.1	8.3	8.2	8.1	8.1	8	7.7	7.6	7.7
COD (mg/l)	140	142	151	188	150	129	162	158	106	71
NH3N (mg/l)	190	190	202	202	202	211	211	211	211	210
SS (mg/l)	78	176	174	224	332	124	78	54	62	24
VSS (mg/l)	59	134	134	172	250	93	59	41	56	15
CN (mg/l)	0.544	0.544	0	0	0	0	0	0	0	0.521
SCN (mg/l)	3.2	3.2	0	0	0	0	0	0	0	1.3
BOD 5-day (mg/l)	(2	(2	(2	(2	(2	(2	(2	(2	(2	(2
TOC (mg/l)	38	38	40	40	40	27	27	27	27	18
Phenolics (mg/l)	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025
PO4-P (mg/l)	10	10	4.1	4.1	4.1	7.9	7.9	7.9	7.9	7.4
Org-N (mg/l)	5	5	0	0	0	0	0	0	0	76
NO2 (mg/l)	0.62	0.62	0	0	0	0	0	0	(0.25	(0.25
NO3 (mg/l)	90.7	90.7	0	0	0	0	0	0	(1.25	(1.25
TDS (mg/l)	4375	4375	5072	5072	5072	5072	5072	5072	5072	5200
Color (APHA Units)	1000	1000	750	750	750	750	750	750	750	250
BASIN PARAMETERS										
Vol Wasted (ml)	140	208	50	50	50	20	84	50	94	50
D.O. (mg/l)	1.2	3.2	3	3.2	3.2	3.2	3.2	2.9	6.8	6.9
SS (mg/l)	1185	1946	920	962	764	1100	1420	892	1108	1702
*SS (PAC corrected)	742	1504	487	535	343	692	1012	487	702	1291
Temp (C)	20	20	20	19	21	19	18	18	20	20
pH (std units)	7.1	7.9	7.9	7.8	7.8	7.8	7.5	7.5	7.1	7.1
OUR (mg/l/hr)		6		6				3		
VSS (mg/l)	971	1346	636	758	602	867	1119	696	865	1328
*VSS (PAC corrected)	608	1041	337	422	271	545	797	380	548	1008
VSS/SS	0.82	0.69	0.69	0.79	0.79	0.79	0.79	0.78	0.78	0.78
*PAC Added (mg)	143	143	143	143	143	143	143	143	143	143
*Inventory (mg/l basin)	443	442	433	427	421	408	408	405	406	411
EFFLUENT PARAMETERS										
Volume (liters)	3.55	3.15	3.7	3.65	2.9	3.6	3.55	3.4	3.55	3.55
COD (mg/l)	132	130	145	143	154	139	152	106	93	82
SS (mg/l)	68	84	108	110	106	176	104	96	78	98
*PAC corrected	43	65	57	61	48	111	74	52	49	74
pH (std units)	6.9	7.3	7.9	7.7	7.8	7.9	7.7	7.5	7.3	7.1
VSS (mg/l)	56	60	77	70	68	120	71	84	68	85
*PAC corrected	46	42	53	55	54	95	56	66	53	66
NH3N (mg/l)	69.3	147	147	147	188	188	188	188	201	201
CN (mg/l)	1.22								0.787	0.787
SCN (mg/l)	3.4								1.6	1.6
NO2 (mg/l)	0.46								0.49	0.49
NO3 (mg/l)	58								21	21
Phenolics (mg/l)	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025
PO4-P (mg/l)	44.5	16	16	16	15	15	15	15	16	16
Org-N (mg/l)	(4								(4	(4
TDS (mg/l)	4805	4946	4946	4946	4946	4946	4946	4946	5814	5814
Color (APHA units)	1000	875	875	875	875	875	875	875	350	350
TOC (mg/l)	40	37	37	37	29	29	29	29	24	24
BOD 5-day (mg/l)	(2	(2	(2	(2	(2	(2	(2	(2	(2	(2

UNIT 2B TABLE A4

MONTH	JAN	JAN	JAN	JAN	JAN	JAN	JAN	JAN	JAN	JAN
DAY	12	13	14	15	16	17	18	19	20	21
DAY NO.	170	171	172	173	174	175	176	177	178	179
SYSTEM PARAMETERS										
*Sludge Age	17.82	50.70	51.76	39.85	24.98	25.00	24.99	24.97	25.00	11.81
*(F/M)COD	0.07	0.02	0.05	0.07	0.08	0.05	0.05	0.06	0.05	-0.44
*HRT	1.84	1.59	1.74	1.74	1.77	1.77	1.87	1.79	1.79	1.75
FEED PARAMETERS (BATCH #)										
Volume (liters)	3.8	4.4	4.03	4.03	3.95	3.95	3.75	3.92	3.91	4
pH (std units)	8	8.1	8.1	8	7.7	7.9	7.9	7.9	7.8	8
COD (mg/l)	105	91	142	146	149	121	98	106	104	108
NH3N (mg/l)	210	210	201	201	201	201	197	197	197	184
SS (mg/l)	20	22	16	12	70	24	10	36	60	40
VSS (mg/l)	13	14	10	8	45	15	6	23	41	27
CN (mg/l)	0.521	0.521	0.521	0.521	0.521	0.521	0	0	0	0
SCN (mg/l)	1.3	1.3	1.3	1.3	1.3	1.3	0	0	0	0
BOD 5-day (mg/l)	(2	(2	(2	(2	(2	(2	(2	(2	(2	(2
TOC (mg/l)	18	18	16	16	16	16	17	17	17	22
Phenolics (mg/l)	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025
PO4-P (mg/l)	7.4	7.4	4.5	4.5	4.5	4.5	5	5	5	6.7
Org-N (mg/l)	76	76	76	76	76	76	0	0	0	0
NO2 (mg/l)	(0.25	(0.25	(0.25	(0.25	(0.25	0	0	0	0	0
NO3 (mg/l)	(1.25	(1.25	(1.25	(1.25	(1.25	0	0	0	0	0
TDS (mg/l)	5280	5280	5280	5280	5280	5280	4925	4925	4925	4925
Color (APHA Units)	250	250	250	250	250	250	250	250	250	250
BASIN PARAMETERS										
Vol Wasted (ml)	50	224	20	50	116	294	207	169	215	20
D.O. (mg/l)	6.4	6.8	6.4	6.4	7.9	7.5	7.5	7.4	7.2	7.2
SS (mg/l)	1280	2990	2270	1696	1736	2158	1760	1706	1954	236
*SS (PAC corrected)	876	2577	1848	1268	1309	1731	1334	1280	1529	-170
Temp (C)	20	20	19.5	18	18	20	18	19	19	18
pH (std units)	7.3	7.4	7.2	7.6	7.6	7.8	7.7	7.7	7.8	7.2
OUR (mg/l/hr)					2			2		
VSS (mg/l)	999	2333	1771	1323	1180	1467	1196	1134	1299	157
*VSS (PAC corrected)	683	2011	1442	990	890	1177	907	851	1016	-113
VSS/SS	0.78	0.78	0.78	0.78	0.68	0.68	0.68	0.66	0.66	0.66
*PAC Added (mg)	143	143	143	143	143	143	143	143	143	143
*Inventory (mg/l basin)	404	413	422	428	427	427	426	426	425	406
EFFLUENT PARAMETERS										
Volume (liters)	3.55	3.65	3.95	3.8	3.67	3.6	3.55	3.65	3.6	3.8
COD (mg/l)	89	127	136	102	123	100	120	97	108	112
SS (mg/l)	96	98	84	74	108	30	68	82	70	44
*PAC corrected	66	84	68	55	81	24	52	62	55	-32
pH (std units)	7.1	7.6	7.3	7.7	7.6	7.6	7.6	7.7	7.8	7.9
VSS (mg/l)	82	85	72	68	74	20	46	55	47	29
*PAC corrected	64	66	56	53	50	14	31	37	31	19
NH3N (mg/l)	201	192	192	192	192	183	183	183	172	172
CN (mg/l)	0.787	0.787	0.787	0.787	0.787					
SCN (mg/l)	1.6	1.6	1.6	1.6	1.6					
NO2 (mg/l)	0.49	0.49	0.49	0.49	0.49					
NO3 (mg/l)	21	21	21	21	21					
Phenolics (mg/l)	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025
PO4-P (mg/l)	16	9.76	9.76	9.76	9.76	6.2	6.2	6.2	11.7	11.7
Org-N (mg/l)	(4	(4	(4	(4	(4					
TDS (mg/l)	5814	5814	5814	5814	5814	4585	4585	4585	4585	4585
Color (APHA units)	350	350	350	350	350	300	300	300	300	300
TOC (mg/l)	24	18	18	18	18	16	16	16	16	16
BOD 5-day (mg/l)	(2	(2	(2	(2	(2	(2	(2	(2	6	6

UNIT 2B TABLE A4

MONTH	JAN	JAN	JAN	JAN	JAN	JAN	JAN	JAN	JAN	JAN
DAY	22	23	24	25	26	27	28	29	30	31
DAY NO.	180	181	182	183	184	185	186	187	188	189
SYSTEM PARAMETERS										
*Sludge Age	24.96	24.96	24.99	24.99	24.96	25.02	24.98	25.03	25.02	24.98
*(F/M)COD	0.09	0.11	0.05	0.05	0.06	0.06	0.10	0.09	0.08	0.10
*HRT	1.76	1.92	1.89	1.79	1.77	1.84	1.75	1.75	1.83	1.75
FEED PARAMETERS (BATCH #)										
Volume (liters)	3.98	3.65	3.7	3.9	3.95	3.8	4	4	3.83	4
pH (std units)	8	7.8	7.9	7.9	7.8	7.9	8	8	8	8
COD (mg/l)	110	127	116	95	111	107	117	109	121	127
NH3N (mg/l)	184	184	184	153	153	153	170	170	170	170
SS (mg/l)	6	26	124	104	86	130	122	58	20	16
VSS (mg/l)	4	18	79	66	55	80	75	36	12	10
CN (mg/l)	0	0	0	0.4	0.4	0.4	0.4	0.4	0.4	0.4
SCN (mg/l)	0	0	0	2.2	2.2	2.2	2.2	2.2	2.2	2.2
BOD 5-day (mg/l)	(2	(2	(2	(2	(2	(2	(2	(2	(2	(2
TOC (mg/l)	22	22	22	26	26	26	30	30	30	30
Phenolics (mg/l)	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025
PO4-P (mg/l)	6.7	6.7	6.7	7.1	7.1	7.1	8.4	8.4	8.4	8.4
Org-N (mg/l)	0	0	0	120	120	120	120	120	120	120
NO2 (mg/l)	0	0	0	(0.25	(0.25	(0.25	(0.25	(0.25	(0.25	(0.25
NO3 (mg/l)	0	0	0	7.9	7.9	7.9	7.9	7.9	7.9	7.9
TDS (mg/l)	4925	4925	4925	5774	5774	5774	5774	5774	5774	5774
Color (APHA Units)	250	250	250	500	500	500	500	500	500	500
BASIN PARAMETERS										
Vol Wasted (ml)	216	222	227	275	273	255	74	247	243	219
D.O. (mg/l)	7.2	7.1	6.9	7	6.2	6.5	6.5	6.3	6.3	6.2
SS (mg/l)	1225	1094	1844	1606	1782	1578	1252	1320	1430	1264
*SS (PAC corrected)	819	687	1437	1199	1374	1170	844	911	1021	855
Temp (C)	18	19	18	19	21	20	20	20	20	20
pH (std units)	7.75	7.7	7.6	7.6	7.2	7	7.1	7.2	6.9	7.2
OUR (mg/l/hr)		2			2					
VSS (mg/l)	814	784	1321	1151	1140	1009	801	844	960	849
*VSS (PAC corrected)	544	493	1030	859	879	748	540	583	685	574
VSS/SS	0.66	0.72	0.72	0.72	0.64	0.64	0.64	0.64	0.67	0.67
*PAC Added (mg)	143	143	143	143	143	143	143	143	143	143
*Inventory (mg/l basin)	406	407	407	407	408	408	408	409	409	409
EFFLUENT PARAMETERS										
Volume (liters)	3.72	3.35	3.6	3.7	3.75	3.5	3.6	3.75	3.6	3.6
COD (mg/l)	99	96	80	89	76	86	96	102	100	108
SS (mg/l)	42	40	60	30	34	40	94	34	40	44
*PAC corrected	28	25	47	22	26	30	63	23	29	30
pH (std units)	7.85	7.6	7.5	7.3	7	6.9	7.5	6.7	6.6	6.7
VSS (mg/l)	28	29	43	21	22	26	60	22	27	30
*PAC corrected	19	21	31	15	14	16	38	14	18	20
NH3N (mg/l)	172	172	153	153	153	123	123	123	123	119
CN (mg/l)			0.486	0.486	0.486	0.486	0.486	0.486	0.486	
SCN (mg/l)			1.9	1.9	1.9	1.9	1.9	1.9	1.9	
NO2 (mg/l)			2.3	2.3	2.3	2.3	2.3	2.3	2.3	
NO3 (mg/l)			29.7	29.7	29.7	29.7	29.7	29.7	29.7	
Phenolics (mg/l)	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025
PO4-P (mg/l)	11.7	11.7	7.5	7.5	7.5	9.8	9.8	9.8	9.8	10.8
Org-N (mg/l)			60	60	60	60	60	60	60	
TDS (mg/l)	4585	4585	5184	5184	5184	5184	5184	5184	5184	
Color (APHA units)	300	300	350	350	350	350	350	350	350	600
TOC (mg/l)	16	16	20	20	20	24	24	24	24	29
BOD 5-day (mg/l)	6	6	4	4	4	(2	(2	(2	(2	(2.7

UNIT 2B TABLE A4

MONTH	FEB	FEB	FEB	FEB	FEB	FEB	FEB	FEB	FEB	FEB
DAY	1	2	3	4	5	6	7	8	9	10
DAY NO.	190	191	192	193	194	195	196	197	198	199
SYSTEM PARAMETERS										
*Sludge Age	21.47	24.97	25.02	10.11	25.01	25.00	24.99	21.49	19.23	19.23
*(F/M)COD	0.13	0.12	0.15	0.16	0.15	0.12	0.19	0.21	0.18	0.18
*HRT	1.85	1.71	1.79	1.80	1.86	1.97	1.77	1.73	1.75	1.75
FEED PARAMETERS (BATCH #)										
Volume (liters)	3.78	4.09	3.92	3.88	3.77	3.55	3.96	4.04	4	4
pH (std units)	8.2	8.2	8.1	8.3	8.3	8.3	8.3	8.3	8.4	8.4
COD (mg/l)	135	162	164	161	165	165	187	210	151	173
NH3N (mg/l)	186	186	186	174	174	174	174	164	164	164
SS (mg/l)	4	44	74	62	74	120	102	76	172	180
VSS (mg/l)	2	27	44	37	44	71	60	45	101	96
CN (mg/l)	0	0	0	0	0	0	0	1.14	1.14	1.14
SCN (mg/l)	0	0	0	0	0	0	0	3.2	3.2	3.2
BOD 5-day (mg/l)	1.8	1.8	1.8	2	2	2	2	(2	(2	(2
TOD (mg/l)	32	32	32	34	34	34	34	39	39	39
Phenolics (mg/l)	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025
PO4-P (mg/l)	3	3	3	2.5	2.5	2.5	2.5	2.2	2.2	2.2
Org-N (mg/l)	0	3	3	2.5	2.5	2.5	2.5	2.2	2.2	2.2
NO2 (mg/l)								6.41	6.41	6.41
NO3 (mg/l)								25.9	25.9	25.9
TDS (mg/l)	0	5822	5822	5822	5822	5822	5822	4800	4800	4800
Color (APHA Units)	750	750	750	750	750	750	750	1000	1000	1000
BASIN PARAMETERS										
Vol Wasted (ml)	50	259	12	50	114	250	116	50	50	50
D.O. (mg/l)	6.2	6.6	6.8	6.8	6.8	6.6	6.6	6.3	6.7	6.4
SS (mg/l)	1098	1386	1160	1052	1096	1254	1052	1092	950	1090
*SS (PAC corrected)	691	979	753	668	711	868	665	706	567	711
Temp (C)	20	20	20	20	20	20	20	20	20	19
pH (std units)	6.7	6.7	6.8	6.5	6.6	6.7	6.9	7.1	7.3	7
OUR (mg/l/hr)		2				2			2	
VSS (mg/l)	737	928	777	704	734	834	700	726	670	670
*VSS (PAC corrected)	464	655	504	447	476	577	442	470	400	437
VSS/SS	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.71	0.71
*PAC Added (mg)	143	143	143	143	143	143	143	143	143	143
*Inventory (mg/l basin)	407	407	407	384	385	386	387	386	383	379
EFFLUENT PARAMETERS										
Volume (liters)	3.5	3.7	3.7	3.9	3.6	3.1	3.75	3.75	3.7	3.7
COD (mg/l)	155	111	159	150	156	166	173	131	159	170
SS (mg/l)	110	32	104	216	70	38	64	102	102	44
*PAC corrected	69	23	67	137	45	26	40	66	61	29
pH (std units)	6.8	6	6.5	6.7	6.8	6.3	6.1	6.6	7.1	6.7
VSS (mg/l)	74	21	70	145	47	25	43	68	72	72
*PAC corrected	50	14	47	97	31	17	28	45	51	44
NH3N (mg/l)	119	119	110	110	110	110	86	86	86	66.2
CN (mg/l)							1.31	1.31	1.31	1.31
SCN (mg/l)							3.1	3.1	3.1	3.1
NO2 (mg/l)							22.3	22.3	22.3	22.3
NO3 (mg/l)							92.7	92.7	92.7	92.7
Phenolics (mg/l)	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025
PO4-P (mg/l)	10.8	10.8	7.1	7.1	7.1	7.1	5.6	5.6	5.6	8
Org-N (mg/l)							(4	(4	(4	(4
TDS (mg/l)	5164	5164	5164	5164	5164	5164	7524	7524	7524	7524
Color (APHA units)	600	600	600	600	600	600	625	625	625	625
TOD (mg/l)	29	29	29	29	29	29	34	34	34	43
BOD 5-day (mg/l)	(2.7	(2.7	(2	(2	(2	(2	(2	(2	(2	3

UNIT 28 TABLE A4

MONTH	FEB	FEB	FEB	FEB	FEB	FEB	FEB	FEB	FEB	FEB
DAY	11	12	13	14	15	16	17	18	19	20
DAY NO.	200	201	202	203	204	205	206	207	208	209
SYSTEM PARAMETERS										
*Sludge Age	25.01	14.14	13.51	15.10	9.35	14.84	21.73	12.02	8.81	25.00
*(F/M)COD	0.21	0.26	0.20	0.16	0.20	0.20	0.13	0.07	0.21	0.04
*HRT	1.82	1.75	1.75	2.06	1.65	1.75	2.50	1.75	1.75	6.36
FEED PARAMETERS (BATCH #)										
Volume (liters)	3.85	4	4	3.4	4.25	4	2.8	4	4	1.1
pH (std units)	8.3	8.2	8	7.9	7.6	7.1	7.8	7.1	7.4	7
COD (mg/l)	228	218	222	214	203	209	201	199	197	184
NH3N (mg/l)	158	158	158	158	107	107	107	11	11	11
SS (mg/l)	212	148	410	734	290	166	116	228	168	300
VSS (mg/l)	112	79	219	410	162	93	73	144	106	190
CN (mg/l)	1.14	1.14	1.14	1.14	0	0	0	0	0	0
SCN (mg/l)	3.2	3.2	3.2	3.2	0	0	0	0	0	0
BOD 5-day (mg/l)	3	3	3	3	2	2	2	2	2	2
TSC (mg/l)	47	47	47	47	51	51	51	55	55	55
Phenolics (mg/l)	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025
PO4-P (mg/l)	2.8	2.8	2.8	2.8	10.9	10.9	10.9	47.2	47.2	47.2
Org-N (mg/l)	2.8	2.8	2.8	2.8	10.9	10.9	10.9	47.2	47.2	47.2
NO2 (mg/l)	6.41	6.41	6.41	6.41						
NO3 (mg/l)	25.9	25.9	25.9	25.9						
TDS (mg/l)	4800	4800	4800	4800	5644	5644	5644	5644	5644	5644
Color (APHA Units)	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
BASIN PARAMETERS										
Vol Wasted (ml)	117	50	50	50	50	50	50	50	50	203
D.O. (mg/l)	6.7	6.7	6.4	6.4	6.3	6.4	6.4	6.4	6.4	6.6
SS (mg/l)	1062	920	1116	1120	1062	1018	1066	914	918	1044
*SS (PAC corrected)	681	550	756	768	731	692	739	597	621	742
Temp (C)	20	20	20	20	20	20	20	19	19	19
pH (std units)	7	7.3	7.3	7.3	7	6.2	6.5	7	6.1	6.6
CUR (mg/l/hr)			2			2		2		
VSS (mg/l)	749	649	758	761	721	720	754	2176	649	766
*VSS (PAC corrected)	480	388	514	521	496	490	522	1422	439	544
VSS/SS	0.71	0.71	0.68	0.68	0.68	0.71	0.71	0.71	0.71	0.73
*PAC Added (mg)	143	143	143	143	143	143	143	143	143	143
*Inventory (mg/l basin)	381	370	360	352	331	326	327	317	297	302
EFFLUENT PARAMETERS										
Volume (liters)	3.65	3.95	3.85	3	4.05	3.85	2.75	4.0	3.9	0.8
COD (mg/l)	209	205	201	181	166	184	188	184	160	166
SS (mg/l)	66	130	170	194	228	140	134	160	218	184
*PAC corrected	42	78	115	133	157	95	93	105	147	131
pH (std units)	6.1	7.4	7.2	7.2	6.9	6	6.4	7.2	6.5	5.8
VSS (mg/l)	47	92	115	132	155	99	95	18	154	135
*PAC corrected	33	65	78	89	105	70	67	42	109	99
NH3N (mg/l)	66.2	66.2	66.2	65	65	65	59	59	59	59
CN (mg/l)	1.31	1.31	1.31							
SCN (mg/l)	3.1	3.1	3.1							
NO2 (mg/l)	22.3	22.3	22.3							
NO3 (mg/l)	92.7	92.7	92.7							
Phenolics (mg/l)	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025
PO4-P (mg/l)	8	8	8	12.1	12.1	12.1	29.2	29.2	29.2	29.2
Org-N (mg/l)	(4	(4	(4							
TDS (mg/l)	7524	7524	7524	5900	5900	5900	5900	5900	5900	5900
Color (APHA units)	625	625	625	875	875	875	875	875	875	875
TSC (mg/l)	43	43	43	49	49	49	51	51	51	51
BOD 5-day (mg/l)	3	3	3	(2	(2	(2	2	2	2	2

UNIT 28 TABLE A4

MONTH	FEB	FEB	FEB	FEB	FEB	FEB	FEB	FEB	FEB	MAR
DAY	21	22	23	24	25	26	27	28	29	1
DAY NO.	210	211	212	213	214	215	216	217	218	219
SYSTEM PARAMETERS										
*Sludge Age	13.01	11.29	12.25	13.98	18.47	28.82	23.80	15.23	24.56	12.41
*F/M(COD	0.13	0.17	0.10	0.16	0.11	0.12	0.12	0.11	0.10	0.11
*HRT	1.75	1.75	1.85	1.75	1.75	1.91	1.98	1.75	1.97	1.83
FEED PARAMETERS (BATCH #)										
Volume (liters)	4	4	3.79	4	4	3.66	3.53	4	3.56	3.83
pH (std units)	7.2	7.3	7.6	7.8	7.5	7	7.2	7	7.1	7.1
COD (mg/l)	180	210	128	233	124	138	140	153	155	167
NH3N (mg/l)	11	(8	(8	(8	(2	(2	(2	(2	2.8	2.8
SS (mg/l)	148	148	54	42	24	0	102	362	512	598
VSS (mg/l)	93	93	34	26	15	0	64	239	339	395
CN (mg/l)	0	0.489	0.489	0.489	0.489	0.489	0.489	0.489		
SCN (mg/l)	0	2.9	2.9	2.9	2.9	2.9	2.9	2.9		
BOD 5-day (mg/l)	2	(2	(2	(2	(2	(2	(2	(2	(2	(2
TOC (mg/l)	55	45	45	45	45.2	45.2	45.2	45.2	53.2	53.2
Phenolics (mg/l)	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025	(.025	
PO4-P (mg/l)	47.2	15.6	15.6	15.6	25.1	25.1	25.1	25.1		
Org-N (mg/l)	47.2	15.6	15.6	15.6	25.1	25.1	25.1	25.1		
NO2 (mg/l)		1.5	1.5	1.5	1.5	1.5	1.5	1.5		
NO3 (mg/l)		178	178	178	178	178	178	178		
TDS (mg/l)	5644	4964	4964	4964	4964	4964	4964	4964		
Color (APHA Units)	1000	1000	1000	1000	1000	1000	1000	1000		
BASIN PARAMETERS										
Vol Wasted (ml)	50	50	50	50	50	50	50	50	50	50
D.O. (mg/l)	6.3	6.5	6.5	6.5	6.5	6.5	9.2	7	9	9
SS (mg/l)	1182	1054	1058	1208	1020	950	954	1182	1178	1324
*SS (PAC corrected)	886	768	783	936	746	673	672	902	893	1045
Temp (C)	19	19	19	19	19	19	18	19	19	19
pH (std units)	6.5	6.4	6.4	6.8	7.3	7.5	7.2	6.8	6.9	7.2
COR (mg/l/hr)	2						2			
VSS (mg/l)	887	773	750	856	723	673	684	851	848	884
*VSS (PAC corrected)	650	563	555	664	529	477	482	649	643	698
VSS/SS	0.73	0.73	0.71	0.71	0.71	0.71	0.72	0.72	0.72	0.67
*PAC Added (mg)	143	143	143	143	143	143	143	143	143	143
*Inventory (mg/l basin)	296	286	275	272	274	277	282	280	285	279
EFFLUENT PARAMETERS										
Volume (liters)	3.8	3.75	3.6	3.75	4	3.45	3.3	5.1	3.4	3.7
COD (mg/l)	157	150	123	142	132	126	124	121	130	122
SS (mg/l)	190	200	232	182	106	100	90	156	104	230
*PAC corrected	142	146	172	141	78	71	63	119	79	182
pH (std units)	5.7	5.8	6.6	7	7.1	7.7	7.7	7.2	7.1	7.3
VSS (mg/l)	139	147	164	129	75	71	80	229	75	154
*PAC corrected	102	108	117	91	53	50	57	165	54	103
NH3N (mg/l)	15	15	15	(4	(4	(4	(4	0.36	0.36	0.36
CN (mg/l)	0.872	0.872	0.872	0.872	0.872	0.872	0.872			
SCN (mg/l)	3.4	3.4	3.4	3.4	3.4	3.4	3.4			
NO2 (mg/l)	(0.25	(0.25	(0.25	(0.25	(0.25	(0.25	(0.25			
NO3 (mg/l)	202	202	202	202	202	202	202			
Phenolics (mg/l)	(0.025	(0.025	(0.025	(0.025	(0.025	(0.025	(0.025			
PO4-P (mg/l)	43.5	43.5	43.5	21.3	21.3	21.3	21.3			
Org-N (mg/l)	(8	(8	(8	(8	(8	(8	(8			
TDS (mg/l)	5449	5449	5449	5449	5449	5449	5449			
Color (APHA units)	750	750	750	750	750	750	750			
TOC (mg/l)	47.5	47.5	47.5	41.9	41.9	41.9	41.9	43.7	43.7	43.7
BOD 5-day (mg/l)	(2	(2	(2	(2	(2	(2	(2			

UNIT 2B TABLE A4

MONTH	MAR	MAR	MAR	MAR	MAR	MAR	MAR	MAR	MAR	MAR
DAY	2	3	4	5	6	7	8	9	10	11
DAY NO.	220	221	222	223	224	225	226	227	228	229
SYSTEM PARAMETERS										
*Sludge Age	5.72	25.01	9.33	10.06	8.65	9.19	11.92	13.91	11.61	8.58
*(F/M) COD	0.22	0.05	0.12	0.10	0.11	0.12	0.13	0.11	0.11	0.14
*HRT	1.84	4.12	1.82	2.15	1.92	1.82	1.93	1.98	1.86	1.96
FEED PARAMETERS (BATCH #)										
Volume (liters)	3.81	1.7	3.84	3.25	3.65	3.85	3.62	3.53	3.77	3.58
pH (std units)	7.5	7.2	7.4	6.6	6.5	6.7	6.9	7.1	7.4	7.3
COD (mg/l)	148	148	158	160	168	176	181	183	150	185
NH3N (mg/l)	2.8	2.1	2.1	2.1	2.1	1.4	1.4	1.4	1	1
SS (mg/l)	620	1136	60	542	436	430	400	316	204	164
VSS (mg/l)	412	755	40	360	353	305	273	220	142	114
CN (mg/l)										
SCN (mg/l)										
BOD 5-day (mg/l)	(2	(2	(2	(2	(2	(2	(2	(2	(2	(2
TCC (mg/l)	53.2	54.3	54.3	54.3	54.3	51.2	51.2	51.2	49.6	49.6
Phenolics (mg/l)										
PO4-P (mg/l)										
Org-N (mg/l)										
NO2 (mg/l)										
NO3 (mg/l)										
TDS (mg/l)										
Color (APHA Units)										
BASIN PARAMETERS										
Vol Wasted (ml)	50	251	50	50	50	50	50	50	50	50
D.O. (mg/l)	9	9.2	9.2	9.2	8.5	8.6	8.8	8.8	8.8	8.6
SS (mg/l)	698	1138	1128	1182	1184	1236	1088	1192	1100	1042
*SS (PAC corrected)	451	884	888	949	962	1021	875	977	887	837
Temp (C)	18	18	18.5	18.5	19	18	18	18	18	19
pH (std units)	7.4	6.9	6.95	6.95	7.1	7.1	7.5	7.8	7.9	7.8
OUR (mg/l/hr)				2			5			
VSS (mg/l)	466	760	753	782	781	818	730	800	738	699
*VSS (PAC corrected)	301	590	593	628	634	676	587	656	595	562
VSS/SS	0.67	0.67	0.67	0.66	0.66	0.66	0.67	0.67	0.67	0.67
*PAC Added (mg)	143	143	143	143	143	143	143	143	143	143
*Inventory (mg/l basin)	247	254	240	233	222	215	213	215	213	205
EFFLUENT PARAMETERS										
Volume (liters)	3.55	1.6	3.62	3.05	3.45	3.75	3.35	3.32	3.55	3.4
COD (mg/l)	175	136	141	152	163	143	152	124	132	140
SS (mg/l)	286	66	306	312	324	292	218	204	214	292
*PAC corrected	185	51	241	251	263	241	175	167	173	235
pH (std units)	7.5	6.9	7.05	6.7	7.1	7.1	7.3	7.6	7.7	7.9
VSS (mg/l)	191	44	204	206	214	193	146	137	144	196
*PAC corrected	127	29	136	137	141	128	98	92	96	131
NH3N (mg/l)	0.29	0.29	0.29	0.29	(1	(1	(1	54.6	54.6	54.6
CN (mg/l)										
SCN (mg/l)										
NO2 (mg/l)										
NO3 (mg/l)										
Phenolics (mg/l)										
PO4-P (mg/l)										
Org-N (mg/l)										
TDS (mg/l)										
Color (APHA units)										
TCC (mg/l)	46.9	46.9	46.9	46.9	45.8	45.8	45.8	40.9	40.9	40.9
BOD 5-day (mg/l)										

UNIT 2B TABLE A4

MONTH	MAR	MAR	MAR	MAR	MAR
DAY	12	13	14	15	16
DAY NO.	230	231	232	233	234
SYSTEM PARAMETERS					
*Sludge Age	17.90	13.20	15.66	10.76	11.80
*(F/M)COD	0.12	0.15	0.10	0.12	0.12
*HRT	1.90	1.85	2.05	1.86	2.10
FEED PARAMETERS (BATCH #)					
Volume (liters)	3.69	3.78	3.42	3.77	3.34
pH (std units)	7.2	7.1	7.2	7.2	
COD (mg/l)	175	187	152	160	171
NH3N (mg/l)	1	1	(1	(1	(1
SS (mg/l)	134	136	184	128	136
VSS (mg/l)	128	96	130	91	96
CN (mg/l)					
SCN (mg/l)					
BOD 5-day (mg/l)	(2	(2	(2		
TOD (mg/l)	49.6	49.6	52	52	52
Phenolics (mg/l)					
PO4-P (mg/l)					
Org-N (mg/l)					
NO2 (mg/l)					
NO3 (mg/l)					
TDS (mg/l)					
Color (APHA Units)					
BASIN PARAMETERS					
Vol Wasted (ml)	50	50	50	50	50
D.O. (mg/l)	8.8	8.8	8.8	8.8	8.5
SS (mg/l)	1138	1022	1074	1038	1018
*SS (PAC corrected)	928	812	860	828	809
Temp (C)	18	19	19	19	19
pH (std units)	7.7	7.5	7.5	7.4	7.4
CUR (mg/l/hr)	3			3	
VSS (mg/l)	768	690	725	724	710
*VSS (PAC corrected)	626	548	581	577	564
VSS/SS	0.67	0.67	0.67	0.70	0.70
*PAC Added (mg)	143	143	143	143	143
*Inventory (mg/l basin)	210	210	214	210	209
EFFLUENT PARAMETERS					
Volume (liters)	3.45	3.55	3.27	3.6	3.2
COD (mg/l)	138	121	109	158	127
SS (mg/l)	142	176	164	216	216
*PAC corrected	116	140	131	172	172
pH (std units)	7.7	7.7	7.7	7.5	7.5
VSS (mg/l)	96	119	111	151	151
*PAC corrected	65	80	75	105	105
NH3N (mg/l)	54.6	(1	(1	(1	(1
CN (mg/l)					
SCN (mg/l)					
NO2 (mg/l)					
NO3 (mg/l)					
Phenolics (mg/l)					
PO4-P (mg/l)					
Org-N (mg/l)					
TDS (mg/l)					
Color (APHA units)					
TCE (mg/l)	40.9	38	38	38	38
BOD 5-day (mg/l)					

TABLE A-5

	1	2	3	4	5	6	7	8
	AVERAGE	AVERAGE	AVERAGE	AVERAGE	AVERAGE	AVERAGE	AVERAGE	AVERAGE
	SRT 20	SRT 50	SRT 40	30DAYSRT	15DAYSRT	15DAYSRT	12DAYSRT	09DAYSRT
	DAY70-100DY	169-189DY	213-226DY	1-45	DAY72-103DY	124-161DY	174-195DY	217-234
*Sludge Age	19.62	50.28	40.06	30.00	14.88	14.95	12.00	8.99
*(F/M)COD -APPLIED	0.29	0.14	0.12	0.25	0.34	0.36	0.42	0.38
*HRT	1.98	1.89	1.92	2.08	2.03	1.99	1.90	1.90
FEED PARAMETERS								
Volume (liters)	4.75	4.93	4.89	4.62	4.72	4.71	4.93	4.93
pH (std units)	9.51	10.51	11.23	4.68	10.28	11.08	10.54	11.54
COD (mg/l)	1989	2009	1799	1982	1989	2020	2046	1788
NH3N (mg/l)	162.94	170.86	166.93	182.83	162.94	152.55	163.23	170.36
SS (mg/l)	273	500	188	53	263	442	480	149
VSS (mg/l)	68	135	80	27	69	96	134	69
CN (mg/l)	4.10	0.58	2.55	0.43	4.10	1.42	1.41	
SCN (mg/l)	173	188	174	132	173	193	187	
BOD 5-day (mg/l)	1249	1034	1084	1420	1247	1158	1047	1136
TOC (mg/l)	633	614	568	630	632	624	621	572
Phenolics (mg/l)	0.97	9.39	6.60	1.52	1.27	6.83	9.49	
Org-N (mg/l)	58.00	83.23			58.00	75.43	94.00	
Color (APHA Units)	1000	2500	3000		1000	2059	2500	
BASIN PARAMETERS								
Vol Wasted (ml)	468	217	105	359	696	671	847	776
D.O. (mg/l)	6.8	6.9	6.2	6.8	6.5	7.5	6.7	8.4
SS (mg/l)	3242	10006	9278	3398	2746	3182	3226	2239
*SS (PAC corrected)	3242	10006	9278	3579	2746	3182	3226	2239
Temp (C)	21.2	19.2	18.7	24.4	21.0	19.1	19.6	18.6
pH (std units)	7.7	7.8	7.0	7.0	7.7	8.1	8.2	7.5
OUR (mg/l/hr)	15.6	2.2	11.9	46.3	23.3	6.5	3.4	10.0
VSS (mg/l)	2687	6354	6163	3026	2338	2229	2100	1493
*VSS (PAC corrected)	2687	6354	6163	3026	2338	2229	2100	1493
VSS/SS	0.81	0.64	0.67	0.89	0.85	0.70	0.66	0.67
*PAC Added (mg)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
*Inventory (mg/l basin)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EFFLUENT PARAMETERS								
Volume (liters)	4.51	4.63	4.82	4.08	4.46	4.37	4.67	4.74
COD (mg/l)	136	116	157	188	138	186	204	238
SS (mg/l)	143	48	400	32	69	95	102	224
*PAC corrected				30.88	68.75			
pH (std units)	7.9	7.9	7.2	7.1	7.9	8.1	8.2	7.6
VSS (mg/l)	189	30	269	21	43	45	67	151
*PAC corrected				15.33	43.42			
NH3N (mg/l)	2.7	184.6	1.5	10.9	8.7	79.4	177.8	198.9
CN (mg/l)	1.51	0.46	0.49	2.66	2.25	1.30	0.47	
SCN (mg/l)	3.10	1.78	2.90	7.62	6.30	3.80	4.99	
NO2 (mg/l)	3.81	0.00	1.50	12.62	3.26	7.66	0.77	
NO3 (mg/l)	148.0	4.3	178.0	184.2	146.0	69.7	1.9	
Phenolics (mg/l)	0	0	0	0	0	0	0	
PO4-P (mg/l)	9.3	6.3	25.1	4.4	9.4	5.1	6.6	
Org-N (mg/l)	0.00	99.69	0.00	4.42	0.00	8.67	33.00	
TDS (mg/l)		5329	4964			4487	4995	
Color (APHA units)	669	357	1000	420	660	918	957	
TOC (mg/l)	39	22	51	56	39	50	55	69
BOD 5-day (mg/l)	1.2	0.1	0.0		2.4	2.8	3.7	2.9

FIGURE A-1
UNIT #1A
MIXED LIQUOR SETTLING TEST

FIGURE A-2

UNIT #1A
MIXED LIQUOR SETTLING TEST

FIGURE A-3
UNIT #1A
MIXED LIQUOR SETTLING TEST

FIGURE A-4
UNIT #1A
MIXED LIQUOR SETTLING TEST

FIGURE A-5

UNIT #1A

MIXED LIQUOR SETTLING TEST

FIGURE A-6

UNIT #1A

MIXED LIQUOR SETTLING TEST

FIGURE A-7

FIGURE A-8

FIGURE A-9

UNIT #1A

MIXED LIQUOR SETTLING TEST

FIGURE A-10

UNIT #1A

MIXED LIQUOR SETTLING TEST

FIGURE A-11

UNIT #1A

MIXED LIQUOR SETTLING TEST

FIGURE A-12

FIGURE A-13

FIGURE A-14

UNIT #2A

MIXED LIQUOR SETTLING TEST

FIGURE A-15

UNIT #2A

MIXED LIQUOR SETTLING TEST

FIGURE A-16 UNIT #2A

MIXED LIQUOR SETTLING TEST

FIGURE A-17

UNIT #2A

MIXED LIQUOR SETTLING TEST

FIGURE A-18
UNIT #2A
MIXED LIQUOR SETTLING TEST

FIGURE A-19
UNIT #2A
MIXED LIQUOR SETTLING TEST

FIGURE A-20 UNIT #2A

MIXED LIQUOR SETTLING TEST

APPENDIX B

ANALYTICAL METHODS

APPENDIX B

ANALYTICAL METHODS

QUALITY CONTROL PROCEDURES

The routine quality control procedures described in Quality Assurance Program for Environmental Systems Division Laboratory Facility, Catalytic, Inc., were strictly followed. To monitor "accuracy" of analyses, that program requires spike recovery determination on distilled water and samples. For distilled water spiking, the following equation is used to calculate the recovery:

$$P = 100(C/T) \quad (1)$$

where P is percent recovery of a standard, C is the measured concentration, and T is the true concentration. For each analysis, P must fall within the acceptable range for that analysis to be considered "in control."

For sample spiking, the percent recovery P is:

$$P = 100(dC/\text{spike added}) \quad (2)$$

where dC is the difference between the concentrations measured for the spiked and unspiked samples. Spike added is the concentration increase of the analyte if the recovery were 100%. Again, P must fall within the acceptable range for a given analyte to be considered "in control."

The quality assurance program also monitored "precision" of the analyses. Precision was controlled by analysis of replicate pairs; the difference between the two analyses was compared to the expected precision of

the method. This is expressed mathematically as:

$$R = |A - B| \quad (3)$$

where A and B are observed concentrations of the replicate analyses, and R is the absolute value of the difference. R must fall within the acceptable range for each analytical procedure to be considered "in control" and is concentration dependent.

A frequency of 10% of sample load was used for analyzing sample spikes or water spikes. Also, 10% of the sample load was used for replicate sample analysis. Where replicates were run, the average value was reported.

Figure B-1 shows the reporting form for quality control data collected under this program. In addition to spiked-sample, distilled-water spike, and replicate sample data, the analyst was required to report the standard curve. In this way, the analyst could tell if the standard curve had changed. By comparing spike and replication data to previous QC data obtained with the method, the analyst could detect out-of-control situations.

Gas chromatography/mass spectrometry (GC/MS) analyses of SRC wastewaters were performed by Mead CompuChem, Research Triangle Park, North Carolina, or Radiation Management Corporation, Phoenixville, Pennsylvania. These laboratories used the following methods to analyze the wastewaters: Purgeable Halocarbons, Method 624 (EPA, 1982), and Base/Neutral and Acid Compounds, Method 625 (EPA, 1982).

These analyses are designed to detect, identify, and quantitate EPA organic priority pollutants. Other compounds present in the wastewater are not reported by these methods.

FIGURE B-1

Laboratory Analysis Quality Control Data

Test for: _____ Method: _____ Date Completed: _____

Laboratory Nos. Analyzed: _____ Total No. of Samples: _____

Type Container: _____ Preservative: _____

Standard Curve: _____

STANDARD CURVE:

SECTION 1	Standard Concentration ()		Standard Concentration ()	

Lab. Notebook No. _____

Stock Solution Ref. No. _____

Analyst _____

Reviewer _____

ACCURACY CHECK (Standards):

SECTION 2	Standard Concentration ()		Calculated Concentration ()	% Recovery

PRECISION CHECK (Duplicate Samples):

SECTION 3	Sample Number	Duplicate Number	Concentrations ()		Range ()
			Sample	Dupl.	

ACCURACY CHECK (Spiked Samples):

SECTION 4	Sample Numbers		Concentrations ()		Conc. Diff.	Spike Conc. Added ()	% Recovery
	Unspiked	Spiked	Unspiked	Spiked			

Quality control measures included with these GC/MS methods included daily calibration of the GC/MS with decafluorotriphenylphosphine (DFTPP) or parafluorobromobenzene (PFBB), depending upon whether base/neutrals/acids or volatiles are being run, respectively. In addition, method water blanks were run to ensure that the system was interference-free. Where possible, internal standards were used to calibrate the method. Otherwise, calibration curves were prepared using the external standard method.

Those quality control procedures that are specific to the analytical method are presented with the following method descriptions.

TOTAL CYANIDE

Total cyanide was stripped from the samples by distillation and digestion according to EPA Method 335.2 (1979). The distillates were treated with approximately 0.2 g of cadmium carbonate to precipitate sulfide, according to the procedure proposed by Barton et al. (1978), to remove interferences from thiocyanate breakdown during distillation.

The cyanide trapped in the distillates was measured by the pyridine/barbituric acid method (EPA Method 335.2), with either a 1 or 5 cm cell on a Spectronic 710 spectrophotometer. For a 500 ml sample distilled for total cyanide, limits of detection of 0.02 and 0.004 mg/l were estimated for the 1 and 5 cm cells, respectively.

Quality control procedures included analyzing spiked distilled water solutions to check recovery of cyanide in the distillation/digestion step, analyzing spiked samples, and analyzing in replicate. Several of the sample types showed low recoveries of sodium cyanide spikes, due to reactions of the cyanide with sample components. The nature of these reactions was not investigated. Both distilled water and sample spikes were tabulated to indicate the method's performance. Replicate analyses were recorded on precision control tables.

THIOCYANATE

Thiocyanate (SCN^-) was determined with a color blank/standard additions procedure to correct for sample color and response variations due to sample type. The samples were diluted into four 50 ml volumetric flasks (minimum dilution 40/50 ml), and then acidified to pH 5-7 with 1 + 1 HNO_3 . To one of the four volumetric flasks in each set was added 5 ml of 2.5% (v/v) nitric acid only, to act as a color blank while the other flasks were treated with 5 ml of color reagent containing iron and nitric acid, as specified in Standard Methods (1981), Method 412-K. One of the flasks in each set was spiked with 2 mg/l and another with 4 mg/l of thiocyanate from a 100 mg/l standard solution. The concentration of thiocyanate in the unspiked sample was found by the method of standard additions, using readings made on a Spectronic 710 spectrophotometer (1 cm cell), after subtracting the color blank absorbance reading from that of each of the other sample dilutions in each set.

With a sample dilution of 40/50 ml and a 1 cm spectrophotometer cell, the detection limit of the method was estimated to be 0.25 mg/l.

Quality control steps included titration of the standard stock thiocyanate solution by the Volhard methods, using a silver/sulfide (Orion Model 94-16) electrode to indicate the end point, as described by Burroughs and Attia (1968). To 75 ml of water was added 10 ml of 0.0142 N AgNO_3 , followed by 10 ml of 20% (w/v) $\text{Fe}(\text{NO}_3)_3 \cdot 9\text{H}_2\text{O}$ solution and 5 ml of 1 + 1 HNO_3 (boiled to remove NO_2). The solution was then titrated with the thiocyanate solution to the electrode inflection end point. The stock thiocyanate solution used to make standard addition spikes was checked daily by developing a standard curve in distilled water with the referenced method (Standard Methods, 1981), and by checking the response of the spectrophotometer (absorbance/concentration ratio). Replicate analyses carried through the entire standard addition method were performed and recorded on precision control tables.

CHEMICAL OXYGEN DEMAND (COD)

COD was determined on unfiltered samples by EPA Method 410.4 (1979), using sealed-ampule digestion in an oven with subsequent colorimetric analysis on a Spectronic 710 spectrophotometer. Prefilled ampules containing digestion reagents were purchased from Oceanographics International Corporation. A volume of 2.5 ml sample was added to each ampule.

Interferences in this procedure, due mainly to chlorides, were overcome by sample dilution and by the complexation of chloride by mercury ion present in the catalyst solution.

The lower limit of detection for this method was approximately 9 mg/l.

Quality control measurements were made on accuracy check standards and sample spikes, as well as on replicate samples. Standards were prepared with potassium acid phthalate.

NITRATE-NITROGEN

Nitrate-N was determined on filtered samples, using the cadmium reduction method, EPA Method 353.3 (1979), to determine (nitrate + nitrite)-N. Nitrate-N was then calculated by subtracting the nitrite-N concentration.

Because of low recovery in the cadmium reduction step, a minimum dilution of 2 ml/100 ml of water followed by 10 ml/25 ml of water and then dilution of this 25 ml of solution to 100 ml with ammonium chloride buffer was required. The nitrate plus nitrite color following cadmium reduction was read on a Spectronic 710 spectrophotometer with a 1 cm cell.

With a sample dilution of 2 ml/100 ml and then 10 ml/25 ml, the lower limit of detection for the method was 1.25 mg/l.

Quality control analysis included determination of the cadmium column efficiency before each use and analysis of accuracy check standards or spiked samples, as well as replicate analyses.

NITRITE-NITROGEN

Nitrite-N was determined on filtered samples, also with EPA Method 353.3 (1979). The recoveries were poor unless the samples were diluted prior to analysis. The samples were first diluted 1 ml/25 ml with water, and then diluted again by 25/100 with ammonium chloride buffer before colorimetric analysis on a Spectronic 710 spectrophotometer with a 1 cm cell. Interferences due to colored organic matter were avoided or reduced by dilution or by running color blanks made up with color reagent that did not contain N-1-(1-naphthyl)ethylenediamine reagent.

With a 1/25 dilution and the method as practiced, a lower limit of detection of 0.25 mg/l was estimated.

Quality control for this method consisted of frequent standardization of the stock nitrite solution with standardized (vs. primary standard grade sodium oxalate) potassium permanganate. Sample spikes and sample replicates were also run.

TOTAL ORGANIC CARBON (TOC)

TOC was determined on a DC-80 (Dohrmann) TOC analyzer. The liquid samples were first acidified with concentrated phosphoric acid and sparged with oxygen to remove inorganic carbon. The treated solutions were then injected into a reactor containing potassium persulfate, phosphoric acid, and an ultraviolet lamp. The carbon dioxide released by the oxidation reactions was detected with an infrared detector. Interferences with this instrument, mainly due to high chloride concentrations, were not a problem with the bio-unit effluent or feed samples.

The estimated limit of detection for the liquid samples was 0.1 mg/l.

Quality control measurements included reinjection of a potassium acid phthalate quality control standard to verify the instrument calibration and replicate injections to check method precision.

BIOCHEMICAL OXYGEN DEMAND (BOD)

BOD was determined on unfiltered, unpreserved samples, using Method 507 in Standard Methods. Nitrification was inhibited by adding 2-chloro-6-trichloromethylpyridine for all determinations. Seed was derived from bench-scale biological reactor mixed liquor, composited from reactors 1A and 1B and 2A and 2B. A lower limit of detection of 2 mg/l was expected for a 300 ml sample volume, assuming a depletion of 2 mg/l dissolved oxygen and a zero blank value.

Quality control procedures for BOD included replicate sample analyses, seed curves for each sample set, dilution water checks, and a glucose/glutamic acid standard with an expected value of 200 ± 37 mg/l.

PHENOLICS (COLORIMETRIC)

Phenolics were determined on unfiltered samples. These samples were distilled and analyzed with or without solvent extraction, using the 4-aminoantipyrine colorimetric procedure of EPA Method 420.1 (EPA, 1979). A 1 cm cell was used with the Spectronic 760 spectrophotometer.

No interferences were found with this procedure, although the feed samples required extra dilution (usually 2 ml/100 ml) in order to obtain a sample response within the calibrated scale of phenol concentrations in the colorimetric step of the procedure.

Using the extraction procedure, the detection limit with a 100 ml effluent sample was 25 µg/l. For a 10 ml sample (used for analysis of feed samples) analyzed without extraction, a detection limit of 2.5 mg/l was estimated.

Quality control analysis included sample replicates and analyses of a standard carried through the distillation procedure. In addition, sample spikes were processed.

TOTAL DISSOLVED SOLIDS (TDS)

TDS was measured by filtering unpreserved samples and evaporating the filtrates in an oven set at 180°C, according to EPA Method 160.1. The practical range of the determination is 10 to 20,000 mg/l; the method's lower detection limit practiced with a sample volume of 50 ml was estimated to be 20 mg/l.

Quality control measures involved prewashing the glass fiber filters used to separate solids from the samples, as well as performing replicate analyses.

TOTAL SUSPENDED SOLIDS (TSS) AND VOLATILE SUSPENDED SOLIDS (VSS)

TSS and VSS in unpreserved samples were measured according to Methods 209.D and 209.E in Standard Methods (1981). In these procedures, the residue on the filter from the TDS determination is dried first at 103-105°C and then at 550°C to find the TSS and VSS components of the wastewater.

The detection limit for a 50 ml sample volume was estimated to be 20 mg/l, for either TSS or VSS.

Quality control measures involved prewashing the glass fiber filters and passing distilled water rather than sample through the filters as a check. The weight change was recorded on quality control sheets. Sample replicate data were also recorded for TSS. The results of the TSS showed a high variability (low precision) for samples with very high suspended solids levels, due to the difficulty of sampling these suspensions.

pH

pH was measured with a combination glass electrode standardized against commercially available buffer solutions, as referenced in EPA Method 150.1. Temperature compensation, if required, was provided by manually adjusting the meter control, after measuring the sample temperature.

PHOSPHATE (ORTHO)

Ortho phosphate was determined by EPA Method 365.2 (ascorbic acid, single reagent colorimetric method). The lower detection limit of this method was approximately 0.01 mg/l. Generally, sample dilutions were required to remain within the range of 0-0.5 mg/l for the colorimetric step. A Spectronic 710 spectrophotometer with a 1 cm cell was used for this analysis.

Quality control procedures included spiked samples and replicate sample analyses, and analyses of an accuracy check standard.

COLOR

Color was measured in 50 ml Nessler tubes by visual comparison against a standard made up with potassium chloroplatinate, as described in Standard Methods, Method 204A. The samples were diluted if necessary to bring the color into the range of 0-70 color units.

The practical detection limit is 5 color units.

AMMONIA

Ammonia-N analyses were performed on unfiltered samples using EPA Method 350.2 (1979), which employed distillation and titrimetric analysis of the ammonia trapped in boric acid, using 0.02 N sulfuric acid. With a 400 ml sample taken for distillation, the estimated limit of detection was 1 mg/l.

Any volatile amines present interfered with the method, by titrating as ammonia in the boric acid collection medium. Such interferences could not be eliminated.

Quality control measures included analysis of distilled water and sample spikes and an accuracy check standard. Replicate analyses were also run to check the method's precision. The sulfuric acid used for titration was standardized, via standard NaOH solution, with a potassium acid phthalate acidimetric standard.

ORGANIC NITROGEN

Organic-N was analyzed on unfiltered samples using EPA Method 351.3 (1979) for total Kjeldahl-N (TKN). Organic-N was found by subtracting ammonia-N from TKN. As in the ammonia analysis, the boric acid solutions of distilled ammonia were titrated with 0.02 N sulfuric acid. The estimated limit of detection for this method with a 500 ml sample was 1 mg/l.

Quality control measures included analysis of an ammonium chloride accuracy check standard and replicate sample analyses. The same standardized sulfuric acid (via potassium acid phthalate) was used for both TKN and ammonia-N analyses.

METALS (IRON, CALCIUM, SODIUM, MAGNESIUM)

All metals analyses were performed on unfiltered samples. The samples were digested according to the EPA Manual's nitric acid digestion procedure in the Metals Section of the Manual, Paragraph 4.1.3. The digested samples were diluted to volume with water and analyzed by aspiration into the air/acetylene flame of an Instrumentation Laboratories Model 457 atomic absorption spectrophotometer. Background correction with a deuterium lamp was used for analytical wavelengths below 300 nm.

Quality control steps included measuring at least four standards and a blank with each analysis, plus a digestion blank containing those reagents used for the digestion. Spikes were added to samples before and after digestion, and replicate samples were processed through the digestion and analysis steps.