GEORGIA INSTITUTE OF TECHNOLOGY
OFFICE OF CONTRACT ADMINISTRATION
SPONSORED PROJECT INITIATION

Date: 2/6/80

Project Title: A Program to Develop a Model User Charge/Industrial Cost Recovery System for a Small Community

Project No: B-541

Project Director: B. W. Riall

Sponsor: Department of Community Affairs, State of GA

Agreement Period: From 10/5/79 Until 11/30/80

Type Agreement: Letter dated 12/14/79 (under NSF Prime Grant # ISP 79-08955)

Amount: $9,577
4,790 (Cost-sharing E-122-204)
$14,367

Reports Required: Quarterly Rpt.

Sponsor Contact Person(s):

Technical Matters
Mr. Henry M. Huckaby
Commissioner
Department of Community Affairs
7 Martin Luther King, Jr. Drive, S. W.
Atlanta, GA 30334

Contractual Matters (thru OCA)

Defense Priority Rating:

Assigned to: ED/ARD (School/Laboratory)

COPIES TO:

Project Director
Division Chief (EES)
School/Laboratory Director
Dean/ Director—EES
Accounting Office
Procurement Office
Security Coordinator (OCA)
Reports Coordinator (OCA)

Library, Technical Reports Section
EES Information Office
EES Reports & Procedures
Project File (OCA)
Project Code (GTRI)
Other
GEORGIA INSTITUTE OF TECHNOLOGY
OFFICE OF CONTRACT ADMINISTRATION

SPONSORED PROJECT TERMINATION

Date: 2/23/81

Project Title: A Program to Develop a Model User Charge/Industrial Cost Recovery System for a Small Community

Project No: B-541

Project Director: B.W. Riall

Sponsor: Department of Community Affairs, State of GA

Effective Termination Date: 11/30/80

Clearance of Accounting Charges: 11/30/80

Grant/Contract Closeout Actions Remaining:

- Final Invoice
- Final Fiscal Report
- Final Report of Inventions
- Govt. Property Inventory & Related Certificate
- Classified Material Certificate
- Other

Assigned to: EDL/ARD (School/Laboratory)

COPIES TO:

- Project Director
- Division Chief (EES)
- School/Laboratory Director
- Dean/Director—EES
- Accounting Office
- Procurement Office
- Security Coordinator (OCA)
- Reports Coordinator (OCA)

Library, Technical Reports Section
EES Information Office
Project File (OCA)
Project Code (GTRI)
Other Project Code (OCA)
March Quarterly Report for the Project
"A PROGRAM TO DEVELOP A MODEL USER CHARGE/INDUSTRIAL COST RECOVERY SYSTEM FOR A SMALL COMMUNITY"

The following actions and reports have been done to date on this project:

1. A conference was held with the City Council of the City of Loganville on October 31, 1979 to discuss the requirements of the user charge/industrial cost recovery (UC/ICR) program under their EPA wastewater treatment plant grant from EPA. The conference was attended by the Mayor, the members of the City Council and a representative from Miller, Stevenson & Steinichen, Inc.

2. An in-depth interview with city administrative officials was conducted to review city accounting, collection and disbursement procedures of funds related to wastewater treatment. Additionally, changes to this system made necessary by the UC/ICR requirements were discussed and implementation procedures were developed.

3. Cost data for operations, maintenance and replacement for the new treatment plant were prepared in cooperation with Loganville's Engineering Consultants Miller, Stevenson & Steinichen, Inc.

4. Utilizing the prepared cost data and input from City officials, the User Charge (UC) system was prepared and transmitted to the City for review on November 13, 1979. (A copy of the prepared document is enclosed.)

5. The City approved the document and transmitted the UC system to State regulatory officials (Georgia Environmental Protection Division - DNR) for approval. The approval was granted on February 15.

6. The draft ICR system was prepared and submitted to regulatory officials for comments (copy attached).

7. An Advisory Committee was established to include the following members:

   Michael Akins, Georgia Environmental Protection Division
   John Hurlebaus, Environmental Protection Agency - Region IV
   C. Robert Timmerman, Miller, Stevenson & Steinichen, Inc.
   James Caldwell, Georgia Department of Community Affairs
Don Clark, Georgia Municipal Association
Lynn Curry, City of College Park

The first meeting of the committee was held March 4, 1980 to discuss the work done to date and the course of future action.

8. The generalized methodology for the preparation of small community UC/ICR systems is now in progress. Another meeting of the advisory committee will commence following the completion of the first draft.
GUIDANCE PACKAGES FOR DEVELOPING
EPA USER CHARGE SYSTEMS AND INDUSTRIAL
COST RECOVERY SYSTEMS FOR SMALL COMMUNITIES
UTILIZING THE CITY OF LOGANVILLE AS AN
EXAMPLE

Prepared for
The Georgia Department of Community Affairs
Inter-University Task Force

Under Partial Funding Provided by
The National Science Foundation

by
B. William Riall, Jr.
Project Director

In Cooperation With
Miller, Stevenson, & Steinichen, Inc.

GEORGIA INSTITUTE OF TECHNOLOGY
Engineering Experiment Station
Economic Development Laboratory
Applied Research Division

Atlanta, Georgia 30332
October, 1980
INTRODUCTION

This project was conducted in two phases with each phase composed of two separate tasks. The four reports thus generated are essentially separate entities and retain their integrity in this composite report.

The first phase includes the two reports specific to the City of Loganville wherein the User Charge and the Industrial Cost Recovery Systems are developed. The second phase includes the two reports developed as general guidance for the preparation of User Charge and Industrial Cost Recovery Systems for municipalities of sizes and level of complexity similar to that of Loganville.

The four reports are indexed and entitled as follows:

A. Phase I, Task 1: User Charge System for the City of Loganville
B. Phase I, Task 2: Industrial Cost Recovery System for the City of Loganville
C. Phase II, Task 1: Guidance for Developing EPA User Charge Systems for Small Communities
D. Phase II, Task 2: Guidance for Developing an EPA Industrial Cost Recovery Systems for a Small Municipality
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* * *

Table a. Initial Year Cost Estimates by Plant Component with Breakdown by Wastewater Parameter 7
The EPA wastewater treatment plant grant requires some very specific things of the City in its rate setting procedures. The USER CHARGE (UC) system requirements are listed in the regulations under 40 CFR 35.925-11 dated September 27, 1978. The requirements relate to the operation, maintenance, and replacement (OM&R) costs, which the City incurs on a more or less continuous basis, and how the City will collect the funds necessary to meet these expenses. The requirements do include administrative costs such as billing and meter reading but do not include debt service charges or other non-operating expenses.

The regulations require the City to prepare the UC system and obtain approval by EPD before the step 3 grant can be offered. Also, the preparation of the ordinance, including first-year rate estimates, is mandatory, but implementation is not required until immediately prior to beginning treatment system operation. In addition, the regulations require the City to keep adequate documentation of any changes to the system. Because the system has to be prepared so far in advance of implementation, the regulations allow minor changes to be made before the system is operational. For example, the initial year rates contained in the ordinance should certainly be reviewed. Also, your accountant may recommend changes to account headings for recording wastewater treatment system costs. These kinds of changes are allowable as long as the ordinance is changed appropriately and all changes are documented.

After the plant is in operation, the City must maintain records sufficient to show that the UC requirements are being satisfied. Failure to do so could be considered grounds for revocation of grant funds. It should also be noted that during the final audit of the project, City record keeping procedures may be checked.
USER CHARGE SYSTEM

Basic Requirements

The basic idea behind the user charge system is that each user pays according to his contribution to OM&R costs. To implement this basic idea, EPA regulations state that the City must do the following:

- Maintain the proportionate distribution of costs among users,
- Generate sufficient revenue to pay the total costs necessary to operate the facility,
- Charge persons discharging toxic pollutants any increase in treatment or disposal costs,
- Distribute costs of extraneous flows equitably,
- Review the charges at least biennially,
- Notify users at least once each year of the rates that apply,
- Preclude inconsistent agreements, and
- Apply excess revenue appropriately.

It should be noted that EPA does not require debt service charges or hook-up charges to be a part of this system. The City may collect these in any manner it chooses. The EPA user charge is therefore only one component in the total rate charged to customers. This report only addresses those charges that are required by EPA.

The requirements listed above are described and explained individually in the following sections.

Maintaining Proportionate Distribution of Costs

All similar users must pay the same unit charges; thus, there can be no discounts for large users of the wastewater facility. Proportionate distribution is normally accomplished by having a set administrative fee (per meter) plus some per gallon charge for water used. EPA further requires that the per gallon charge start from zero. For example, a flat rate for the first 3,000 gallons used would not be acceptable. There is flexibility, however, in determining the relative sizes of the administrative versus the per-gallon charge.
In addition, EPA requires that a system for determining rates be established. It is not sufficient to simply set a rate for the first year of operation.

The costs to be distributed fall into three general categories: administrative, operating, and replacement costs. The first consists of those costs associated with such functions as billing and meter reading. The administrative costs are not based on the flow or strength of the water discharged but rather on the number of customers on the system. Since it costs the same to read a meter for a business discharging 100,000 gallons of high-strength waste as it does to read the meter of a household, it is appropriate to charge both the same administrative rate. It is in the second and third cost components (the operating cost and the replacement cost) that quantity and quality of wastewater become important. To distribute these variable costs, users are divided into two groups:

1. Those which can be considered to have domestic-strength wastes or wastes of less than domestic strength, and

2. All others.

The first group would be subject to an average per gallon cost which reflects the cost of treating domestic-strength wastes. Users in the second group are subject to surcharges; i.e., a higher charge to reflect the greater costs of treating higher strength wastes. To calculate the surcharge rates, it is necessary to break down the cost of treatment into its major components and estimate the per-unit costs of treating BOD and SS. The calculation steps for the surcharges are shown in a later section. One unfortunate fact about surcharges is that it is difficult to predict accurately what their contribution to the total required revenue will be. It is therefore recommended that they not be relied upon during the first year of operation. Any surcharges collected would be deducted from the estimated revenue required for the next rate period.

The rates for domestic-strength users can be calculated very easily. Because the wastewater characteristics are the same for all, it is not necessary to break down the rates into strength factors. Rather, the net required revenue, i.e., the total required revenue minus collected surcharges, can be divided by the estimated water usage rates. (This method is consistent
with Model 1 in the regulations.) This would yield a per-gallon charge which would be an accurate proxy for the contribution to cost.

A description of the steps for calculating rates is given under "User Charge System Rate Calculation." Article 1 of Section 2 in the ordinance addresses these requirements.

**Generating Sufficient Revenue**

The UC system for determining rates must be shown to generate enough revenue to operate and maintain the facility in good working order. This includes having funds available to repair equipment which may break down. The system for calculating rates which will generate sufficient revenue can be broken down into three steps:

1. Estimating revenue needs to meet administrative costs, operating costs, and replacement costs.
2. Estimating wastewater system utilization in terms of flow and number of customers, and
3. Calculating per unit costs for domestic wastes, administration, and over-strength surcharges.

**Estimating Revenue Needs.** The first step is to estimate the annual revenue the City will need to meet the costs. Again, the costs fall into three general categories, the first being administrative costs. The entry for this category includes the following headings in the wastewater system ledger:

   City Clerk Salary,
   Meter Reader Salary,
   Postage, and
   Miscellaneous Billing Expenses.
The second area of cost pertains to operating costs and consists of the following headings in the wastewater system ledger:

Utilities,
Chemical Supplies,
Repairs (Truck and Tractor),
Pump Repairs,
Fuel, and
Pipe and Fitting Supplies.

The third area, replacement costs, consists of those irregular costs which will be incurred but at unpredictable times. In order to meet these costs, the City should establish a fund based on the depreciation schedules for those pieces of equipment which will require replacement over the life of the system. The City's accountant must establish those depreciation schedules from the bid costs and, utilizing appropriate assumptions regarding interest earned versus projected inflation, calculate the per year contribution which must be made to the replacement fund. This will insure adequate availability of monies to meet these irregular costs. Expenditures from the replacement fund cover any major equipment repair costs with minor equipment repairs taken from the operating budget. Any questions about whether a certain expense is major or minor should be referred to your accountant.

Estimating Wastewater System Utilization. Two things must be estimated here: the number of customers contributing to administrative costs and the amount of water they will use. The simplest method for estimating these is to use the number of customers on the system when the rates are reviewed as an estimate of the number for the next rate period. Any additional customers tying into the system during the year will therefore be included in the next rate revision.

The estimate of water used for the sewer customer is calculated by multiplying the number of sewer customers times the average water used per meter in the city; i.e.,

\[
\text{Total Water Used} \times \frac{\text{# of Sewer Customers}}{\text{Total # of Water Customers}} = \text{Expected Water Usage by Sewer Customers}
\]
Calculation of Rates. There are three rates which are calculated; i.e., the administrative fee, the operation and replacement fee, and the surcharge rates. The latter do not have to be calculated until the City has industry that discharges over-strength wastes.

1. Monthly Administrative Fee
   
   This is calculated by dividing the monthly administrative costs by the number of sewer customers.
   
   \[
   \frac{\text{Total Annual Administration Costs}}{12} \div \frac{\text{Total # of Sewer Customers}}{12} = \text{Fixed Fee}
   \]

2. Operating and Replacement Fund Fee
   
   This is calculated by dividing the total operating and replacement fund costs by the total water usage estimate.
   
   \[
   \frac{\text{Total Annual Operating + Total Replacement Fund}}{\text{Total Water Used by Sewer Customers} \times \text{Charge}} = \text{Per Thousand Gallon Charge (in 1,000 gallons)}
   \]

3. Surcharge Rates
   
   Because the City does not now have or expect to have such industries, the following method which is used to calculate surcharge rates is included for informational purposes only.
   
   It is first necessary to calculate the per pound cost of treating BOD. The average percentage of total operating and replacement fund derived on Table I is 27%. Also, the total pounds of BOD treated per month based on a 250 mg/L domestic strength assumption is as follows:
   
   \[
   \frac{(.6 \text{ MGD}) \times 30.44 \text{ days}}{\text{month}} \times \frac{(250 \text{ mg/L}) \times (8.4 \text{ lbs. per million gallons per mg/L})}{\text{}} = 38,351 \text{ lbs. per month}
   \]
   
   Therefore, the cost per pound of BOD is given below:
   
   \[
   (.27) \times \frac{\text{(Total Annual Operating + Replacement Cost)}}{12} = \text{Cost per lb. BOD}
   \]

   \[
   \frac{38,351}{38,351}
   \]
<table>
<thead>
<tr>
<th>Total Cost Per Year</th>
<th>Operating Costs</th>
<th>Administrative Costs</th>
<th>Flow</th>
<th>BOD</th>
<th>SS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Influent Pumping</td>
<td>2,930</td>
<td>2,520</td>
<td>410</td>
<td>100</td>
<td>2,520</td>
</tr>
<tr>
<td>Preliminary Treatment</td>
<td>2,600</td>
<td>2,236</td>
<td>364</td>
<td>50</td>
<td>1,118</td>
</tr>
<tr>
<td>Emergency Holding Pond</td>
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<td>1,634</td>
<td>266</td>
<td>100</td>
<td>1,634</td>
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<tr>
<td>Aeration Basin</td>
<td>2,000</td>
<td>1,720</td>
<td>280</td>
<td>50</td>
<td>860</td>
</tr>
<tr>
<td>Aeration</td>
<td>15,650</td>
<td>13,459</td>
<td>2,191</td>
<td>50</td>
<td>6,730</td>
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<td>Secondary Sedimentation</td>
<td>4,800</td>
<td>4,128</td>
<td>672</td>
<td>50</td>
<td>2,064</td>
</tr>
<tr>
<td>Recirculation Pumping</td>
<td>1,970</td>
<td>1,694</td>
<td>276</td>
<td>50</td>
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<td>Aerobic Digester</td>
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<td>50</td>
<td>1,505</td>
</tr>
<tr>
<td>Chlorination</td>
<td>3,110</td>
<td>2,675</td>
<td>435</td>
<td>100</td>
<td>2,675</td>
</tr>
<tr>
<td>Alum Addition</td>
<td>6,250</td>
<td>5,375</td>
<td>875</td>
<td>25</td>
<td>1,344</td>
</tr>
<tr>
<td>Sludge Drying Beds</td>
<td>2,350</td>
<td>2,021</td>
<td>329</td>
<td>100</td>
<td>2,021</td>
</tr>
<tr>
<td>Control Building</td>
<td>7,200</td>
<td>6,192</td>
<td>1,008</td>
<td>33 1/3</td>
<td>2,064</td>
</tr>
<tr>
<td>Yard Piping, Site Work</td>
<td>9,600</td>
<td>8,256</td>
<td>1,344</td>
<td>33 1/3</td>
<td>2,752</td>
</tr>
<tr>
<td>Sewer System</td>
<td>14,360</td>
<td>12,350</td>
<td>2,010</td>
<td>100</td>
<td>12,350</td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td>78,220</td>
<td>67,270</td>
<td>10,950</td>
<td>52</td>
<td>34,767</td>
</tr>
</tbody>
</table>

* 86% of the Total Cost Per Year
** 14% of the Operating Costs
The surcharge to a particular industry is the following:

\[ \text{(Industry BOD-250 Mg/L)(Industry flow in 1,000 gal.)(.0084)(Cost/lb. BOD)} \]

Similarly, for suspended solids (SS), which have a percentage of cost equal to 21%, the cost per pound of SS is calculated as shown below:

\[ (.21) \frac{(\text{Total Annual Operating + Replacement})}{12} = \text{Cost/lb. SS} \]

The surcharge formula for SS is as follows:

\[ \text{(Industry SS-250Mg/L)(Industry Flow in 1,000 gal.)(.0084)(Cost/lb.SS)} \]

These requirements are addressed in Article 1 and Article 3 of Section 2 in the ordinance.

**Toxic Pollutants**

A clause must be included in the rate ordinance specifying that any person discharging wastes which increase the costs of disposal must be assessed those charges. For example, if an industry discharges a heavy metal which concentrates in the sludge, special disposal methods for the sludge may be required. The industry that discharged the metal is required under this clause to pay for the additional cost of these special procedures. This requirement is addressed in Article 2 of Section 2 in the ordinance.

**Distributing Costs of Extraneous Flows**

There are many ways of assuring the equitable distribution of the costs of treating extraneous flows. The simplest method is to use water used as a measure of wastewater contributed, thus distributing the cost of treating the actual wastewater plus the extraneous flows over the water consumed by the users of the system. The cost factors derived therefore include the costs for treating extraneous flows. These requirements are satisfied implicitly in the rate calculation methodology. No explicit clause in the ordinance is required.

**Notification of Users**

At least once each year, every user must be notified of the effective rates. For domestic users, this consists of the fixed charge and the per gallon charge. For industrial users subject to surcharges, the surcharge rates have to be included.
EPA has ruled that it is not sufficient to publish these rates in the newspaper; each must be notified individually. The easiest way to accomplish this is to print or stamp the applicable rates onto the bills before they are mailed. An alternative is to conduct a special mailing to each user describing the rates in effect. This requirement is addressed in Article 3 of Section 2 of the ordinance.

Inconsistent Agreements

The stipulations of the User Charge System must be followed for all users. The City is not allowed to contract or develop agreements with particular users for rates lower than those produced by the User Charge System. For example, if an industry is considering locating in Loganville, the City cannot legally offer to treat the industry's waste at a lower rate as an incentive to them. The only exception to this would be a situation in which the industry would locate close enough to the wastewater treatment plant that they would not contribute to the conveyance costs. In this case, the industry's rates could be reduced by the amount of conveyance cost (i.e., maintaining the sewer line) not contributed to by the industry. The important point is that any difference in user charges must be justified on the basis of cost-contribution differentials. Furthermore, the ordinance must be modified to allow for any such differential in rates. This requirement is addressed in Article 5 of Section 2 of the ordinance.

Excess Revenues

The regulations require that any funds collected from a class of users over and above those needed to meet the costs attributable to that user class must be used to reduce the rates in the next rate period of that particular class. Because the City has only one class of users, the implementation of this requirement (accomplished by a clause in the ordinance) is very simple. Whenever the City over-collects, that money is to be used to reduce future rates. This also means that the City can begin raising rates prior to the system's construction completion to build up a fund which can be used to reduce the rates of the initial year, thus smoothing out the rate increases necessary to support the new system. This requirement is addressed in Article 3 of Section 2 of the ordinance.
USER CHARGE SYSTEM EXAMPLE
FIRST YEAR RATE CALCULATION

Estimating Revenue Needs

Because there are no operating records which can be used as a basis for the first-year costs, they must be estimated. The basic costs were developed by Miller, Stevenson, and Steinichen based on a review of the EPA publication MCD-39 entitled "Analysis of Operations and Maintenance Costs for Municipal Wastewater Treatment Systems" and other sources. These data are listed on Table I under the column "Total Cost Per Year" for each major treatment system component. Because these costs represented operating as well as administrative costs, the next step in the estimation procedure was to disaggregate the two. The above referenced EPA publication gave the percentage of average operating cost to total cost for different plant sizes and treatment types (page 4-20). For the Loganville system, that percentage was 86%. Utilizing this percentage yielded the estimates for "Operating Costs" and "Administrative Costs" on Table I.

The EPA publication did not address replacement costs. As stated previously, the City's accountant will calculate the per year contribution which must be made to the replacement fund from revenues received. For the purpose of this example, the key items subject to replacement costs, i.e., influent pumping, aerobic digestor aerators, aerators and recirculation pumping having initial construction costs estimated to be $45,000, $40,000, $110,000, and $40,000 respectively, were assumed to require complete replacement over the 30-year life of the system to give a total replacement cost as follows:

\[
(45,000 + 40,000 + 110,000 - 40,000) = $235,000
\]

Utilizing a straight line depreciation with the implicit assumption that interest earned on invested funds equals the rate of inflation yields an estimate of the annual contribution to the replacement fund as shown below:

\[
\frac{235,000}{30} = $7,833
\]

The three estimates of annual revenue needs necessary are therefore

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Administrative</td>
<td>10,950</td>
</tr>
<tr>
<td>Operating</td>
<td>67,270</td>
</tr>
<tr>
<td>Replacement</td>
<td>7,833</td>
</tr>
</tbody>
</table>

-10-
### Estimating System Utilization

The expansion to the sewer system planned will serve virtually all of the City. The first year of operation should therefore serve approximately 588 households utilizing approximately 9.4 thousand gallons of water per month or a total annual usage of 66,326.4 thousand gallons.

### Calculating Rates

The administrative monthly charge would be

\[ \frac{$10,950}{588} \times 12 = $1.55 \]

The operating and replacement cost charge would be

\[ \frac{(7,833 + 67,270)}{66,326.4} = 1.13 \text{ per thousand gallons} \]

The total EPA User Charge rate would therefore be

- $1.55 per meter, and
- $1.13 per thousand gallons of water used.

### Surcharge Rate Calculation

Even though the City does not at this time have any dischargers which would be required to pay surcharges, the following example provides estimates of what those rates would be if any industry does consider locating in Loganville.

**BOD.** For a total annual projected operating and replacement cost of $75,103 and a BOD % of total cost of 27%, the cost per pound of BOD per month would be

\[ (.27) \left( \frac{75,103}{12} \right) = $.0441 \]

The BOD surcharge formula would be

\[ \text{(Industry BOD-250) (Monthly Flow in 1,000 gal.) (.0084) (.0041)} \]

Similarly, for SS, which has percentage of total cost of 21%, the cost per pound of SS per month would be

\[ (.21) \left( \frac{75,103}{12} \right) = $.0343 \]

The SS surcharge formula would be

\[ \text{(Industry SS-250) (Monthly Flow in 1,000 gal.) (.0084) (.0343)} \]
A rate calculation worksheet was prepared to assist the City in reviewing its rates on a regular basis. The worksheet is structured according to the discussion in that there are three basic steps to the procedure; i.e., calculating a revenue needs estimate (I), estimating system utilization (II), and calculating rates (III).

In actual practice, the Revenue Needs Estimate section would be filled in directly from information contained in your accounting system. The worksheet assumes that a separate Wastewater System Ledger has been set up. The entries contained in the example are consistent with the overall cost estimate provided by Miller, Stevenson, and Steinichen, Inc. The individual entries were prepared to add up to the overall estimates and are provided only to show how the worksheet would operate. The only other data besides the accounting system information that would have to be known before the worksheet could be completed would be the total number of sewer customers, the total number of water customers, and the total water sold by the City to its water customers. These data would be filled in under II on the worksheet.

The letters in parentheses following the blanks indicate the data that will be used in a later calculation step. Where that datum is used again, its respective reference is given above the worded description in the formula. For example, the $10,950 Total Administrative Revenue Needed -- Upcoming Year (A) is used later in calculating the Administrative Fee under III, Rate Calculation.
Rate Calculation Worksheet

I. Revenue Needs Estimate

A. Administrative Costs - Past Year

Wastewater System Ledger Sheet Headings:

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>City Clerk Salary</td>
<td>$ 5,000</td>
</tr>
<tr>
<td>Meter Reader Salary</td>
<td>$ 3,900</td>
</tr>
<tr>
<td>Postage</td>
<td>$ 2,000</td>
</tr>
<tr>
<td>Miscellaneous Billing Costs</td>
<td>$ 50</td>
</tr>
</tbody>
</table>

Total Past Year Administrative Costs $10,950

Additional Expected Costs $0

Total Administrative Revenue Needed -- Upcoming Year $10,950 (A)

B. Operating Costs - Past Year

Wastewater System Ledger Sheet Headings:

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operator Salary</td>
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<tr>
<td>Utilities</td>
<td>$35,000</td>
</tr>
<tr>
<td>Chemicals</td>
<td>$9,360</td>
</tr>
<tr>
<td>Pump Repair - Minor</td>
<td>$5,910</td>
</tr>
<tr>
<td>Truck and Tractor Repair - Minor</td>
<td>$1,000</td>
</tr>
<tr>
<td>Fuel</td>
<td>$1,000</td>
</tr>
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</table>

Total Past Year Operating Costs $67,270

Additional Expected Costs $0

Deduct Surcharges Collected $0

Total Operating Revenue Needed -- Upcoming Year $67,270 (B)

C. Replacement Cost

Replacement Fund Annual Contribution $7,833 (C)

Total Operating and Replacement Cost (B+C) $75,103 (D)
II. System Utilization Estimate

A. Number of Customers -- Previous Year  
   (E) 588

B. Water Usage by Sewer Customers
   \[
   \text{Total City Water Billed (1,000 gal.)} \times \# \text{ of Sewer Customers} = \\
   \frac{69,823.2 \times 588}{619} = 66,326.4
   \]

III. Rate Calculation

A. Administrative Fee
   \[
   \text{(A)} \quad \frac{\text{Total Administrative Revenue Needed}}{12 \times \text{Total Estimated Customers}} = \frac{10,950}{12 \times 588} = \$ \ 1.55
   \]

B. Operating and Replacement Fee
   \[
   \text{(D)} \quad \frac{\text{Total Annual Operating & Replacement Revenue Needed}}{\text{Total Annual Water Usage by Sewer Customers}} = \frac{\$ 75,103}{66,326.4} = \$ \ 1.13
   \]

C. Surcharge Calculation

1. BOD
   \[
   \text{BOD Surcharge per unit cost} \quad \text{(D)}
   \]
   \[
   \text{Total Annual Projected} \times \frac{\text{Operating & Replacement Cost}}{459,900} = \frac{.25 \times \$ 75,103}{459,900} = .0408 \quad \text{(G)}
   \]
   BOD Surcharge Formula:

   \[
   \text{(Industry BOD - 250) (flow) (Per Unit Cost) = Industry BOD Surcharge}
   \]

-14-
2. Suspended Solids (SS)

SS Surcharge per unit cost

\[(D)\]

\[
\text{Total Annual Projected} = \frac{.21 \times \text{Operating & Replacement Cost}}{38,325 \times 12} = \frac{.21 \times 75,103}{459,900} = .0343 \quad \text{(H)}
\]

SS Surcharge Formula:

\[(H)\]

\[
(\text{Industry SS} - 250) \times \text{(flow)} \times (\text{Cost per lb. SS})
\]
Rate Calculation Worksheet

I. Revenue Needs Estimate

A. Administrative Costs - Past Year

Wastewater System Ledger Sheet Headings:

- City Clerk Salary $________
- Meter Reader Salary $________
- Postage $________
- Miscellaneous Billing Costs $________

Total Past Year Administrative Costs $________

Additional Expected Costs $________

Total Administrative Revenue Needed -- Upcoming Year $________ (A)

B. Operating Costs - Past Year

Wastewater System Ledger Sheet Headings:

- Operator Salary $________
- Utilities $________
- Chemicals $________
- Pump Repair - Minor $________
- Truck and Tractor Repair - Minor $________
- Fuel $________

Total Past Year Operating Costs $________

Additional Expected Costs $________

Deduct Surcharges Collected $________

Total Operating Revenue Needed -- Upcoming Year $________ (B)

C. Replacement Cost

Replacement Fund Annual Contribution $________ (C)

Total Operating and Replacement Cost (B+C) $________ (D)
II. System Utilization Estimate

A. Number of Customers -- Previous Year  

B. Water Usage by Sewer Customers

\[
\text{Total City Water Billed (1,000 gal.)} \times \# \text{ of Sewer Customers} = \text{Total # of Water Customers}
\]

III. Rate Calculation

A. Administrative Fee

\[
\frac{\text{Total Administrative Revenue Needed}}{12 \times \text{Total Estimated Customers}} = \frac{\$}{12 \times} \quad (E)
\]

B. Operating and Replacement Fee

\[
\frac{\text{Total Annual Operating & Replacement Revenue Needed}}{\text{Total Annual Water Usage by Sewer Customers}} = \frac{\$}{=} \quad (F)
\]

C. Surcharge Calculation

1. BOD

\[
\text{BOD Surcharge per unit cost}
\]

\[
\frac{\text{Total Annual Projected}}{\text{Operating & Replacement Cost}} = \frac{.25 \times \$}{459,900}
\]

\[
\text{BOD Surcharge Formula:}
\]

\[
(\text{Industry BOD} - 250) \quad \text{(flow)} \quad \text{(Per Unit Cost)} = \text{Industry BOD Surcharge}
\]
2. Suspended Solids (SS)  

SS Surcharge per unit cost

\[
(D) \quad \text{Total Annual Projected} \quad 0.21 \times \frac{\text{Operating & Replacement Cost}}{38,325 \times 12} = \frac{459,900}{H}
\]

SS Surcharge Formula:

\[
(H) \quad \text{(Industry SS - 250) (flow) (Cost per lb. SS)}
\]
ORDINANCE IMPLEMENTING
USER CHARGE SYSTEM

An ordinance establishing procedures for the implementation of the EPA User Charge for services rendered by the Water Pollution Control facilities, hereinafter called the "Treatment Works," of the City of Loganville.

WHEREAS, the City of Loganville, hereinafter called the "City," has undertaken to construct and operate Treatment Works consisting of a .6 mgd secondary wastewater treatment plant, sewers, and appurtenances to provide adequate and proper treatment of sewage and wastewater generated from all properties within the corporate limits of the City, and,

WHEREAS, the City will utilize federal funds under PL 92-500, as amended, in the construction of said Treatment Works, and,

WHEREAS, the aforementioned grant requires the implementation of a User Charge System to provide for the equitable collection of all necessary operation, maintenance, and replacement costs as described in 40 CFR, part 35, dated September 27, 1978.

Considering the foregoing, the following definitions and sewerage rate system is established.

SECTION 1 - DEFINITIONS

ACT: The federal Water Pollution Control Act, also known as PL 92-500, as amended.

EPA User Charge: That portion of the total sewer bill which is attributable to the implementation of the EPA User Charge System. Said rates include collection of operation, maintenance, and replacement expenses as defined hereinafter.

Operation, Maintenance, and Replacement Costs: This term shall mean the Treatment Works in good repair and at design specifications. This includes labor, supplies, utilities, chemicals, billing, administration, and general expenses including installation and/or repair of equipment, accessories, or appurtenances necessary during the service life of the Treatment Works.
Domestic Strength Wastes: This term shall mean any wastes which have an average daily concentration not exceeding 250 mg/L BOD or 250 mg/L of SS.

BOD (Biochemical Oxygen Demand): "BOD" shall mean the quantity of oxygen utilized in the biochemical oxidation of organic matter under standard laboratory procedures in five (5) days at twenty degrees celsius (20°C), expressed in milligrams per liter (mg/L).

SS (Suspended Solids): "SS" shall mean solids that either float on the surface of or are in suspension in water, sewage, or other liquids and which are removable by laboratory filtering.

Over-Strength Wastes: This term shall mean any wastewater discharged into the Treatment Works which exceeds a BOD of 250 mg/L or a SS of 250 mg/L.

Toxic Pollutant: This term shall mean any discharge into the Treatment Works which interferes with the normal biological process of the Treatment Works or in some other way reduces the efficiency of the Treatment Works or causes special procedures to be necessary to properly dispose of either effluent or sludge produced by the Treatment Works so that the cost of said disposal is increased.

Wastewater Customer: This term shall mean any residence, business, industry, school, or other building tied into and receiving services from the Treatment Works and receiving periodic billings thereof.

User: This term shall mean any person, business, corporation, or other entity which discharges wastes into the Treatment Works either continuously or occasionally. A wastewater customer is a user, but a user does not necessarily have to be a wastewater customer.

SECTION 2 - EPA USER CHARGE SYSTEM

ARTICLE 1. The EPA User Charge System shall result in the calculation of three unit charges:

a. An Administrative Charge to be calculated based on the administration costs and the number of wastewater customers to be assessed on a per meter basis,
b. An operation, maintenance, and replacement fee calculated based on the volume of water used by wastewater customers and the total operation, maintenance, and replacement costs incurred by the City to be assessed on a per thousand gallons of water used basis, and,

c. A surcharge rate to be applied to all over-strength wastes to be based on the strength and volume of such wastes and the costs of treatment.

The calculation procedures for these charges are more particularly described in a report entitled "EPA User Charge System for the City of Loganville," dated November 1978, and prepared by the Georgia Institute of Technology Engineering Experiment Station in cooperation with Miller, Stevenson, and Steinichen, Inc.

ARTICLE 2. Toxic Pollutants. Any user which discharges any toxic pollutants which cause an increase in the cost of managing the effluent or the sludge of the aforementioned Treatment Works shall be required to pay for such increased cost.

ARTICLE 3. Biennial Review. The City shall review not less often than two years the wastewater contribution of users, the total costs of operation and maintenance of the Treatment Works, and the approved user charge system. The City shall revise the charges for users to accomplish the following:

1. Maintain the proportionate distribution of operation and maintenance costs among users,

2. Generate sufficient revenue to pay the total operation and maintenance costs necessary to proper operation and maintenance (including minor replacement) of the treatment works, and

3. Apply excess revenues collected to adjust future rates accordingly.

ARTICLE 4. Notification. The City will notify each user at least annually in conjunction with a regular bill or other mailing, of the rate attributable to the user charge.
ARTICLE 5. The User Charge System shall take precedence over any terms or conditions of agreements or contracts between the City and users which are inconsistent with the requirements of Section 204 (b) (1) (A) of the ACT and 40 CFR, part 35, dated September 27, 1978.

SECTION 3 - EPA USER CHARGE UNIT RATES

The EPA User Charge, which includes charges for operations, maintenance, and replacement expenses, will be assessed for all contributors to the Treatment Works on the following basis:

a. Customer: $1.55 per bill
b. Volume: $1.13 per thousand gallons of water used
INDUSTRIAL COST RECOVERY SYSTEM
FOR THE CITY OF LOGANVILLE

Prepared for
The Georgia Department of Community Affairs
Inter-University Task Force

Under Partial Funding Provided by
The National Science Foundation

by

B. William Riall, Jr.
Project Director

In Cooperation With
Miller, Stevenson, & Steinichen, Inc.

GEORGIA INSTITUTE OF TECHNOLOGY
Engineering Experiment Station
Economic Development Laboratory
Applied Research Division

Atlanta, Georgia 30332
April 1980
INTRODUCTION

When Congress passed legislation enabling EPA to make grants to assist municipalities in meeting the requirements of the Federal Water Pollution Control Act, stipulations were included to insure industrial contribution to the construction cost of water pollution control. These stipulations, known as the Industrial Cost Recovery (ICR) requirements, require municipalities receiving EPA grants to install a system to recover grant funds from industries benefitting from the construction according to their proportional use. If a municipality does not have industries at the time of construction, the requirements can be met by enacting a promise to install an appropriate ICR system should industries begin to utilize the wastewater system.

The requirements of the ICR system are complex. The ICR system must provide a system of calculating industrial charges that can be used in a large number of situations, the method for handling the collected monies is complex, and the documentation necessary to satisfy both industries and EPA is extensive. The central idea of ICR, however, is simple: any industry receiving beneficial use of a wastewater treatment system must pay the cost of providing those benefits.

The various regulations for satisfying the ICR requirements are found in 40CFR, part 35 dated September, 27, 1978. In particular, those sections dealing specifically with ICR are 35.905, 35.918, 35.925-11, 35.928, 35.929, 35.935-13 and 35.935-15.

The timing for the submittal of ICR documents is uncomfortably early in the grants process. An ICR system must be approved prior to the step 3 grant. The rates included are not implemented, however, because the construction costs (which are the primary data for the system) are not final at this early stage.
The rates will have to be reworked after the final construction cost is known, i.e., near the end of actual construction. Those reworked rates must then be included in an ordinance and submitted to the regulatory agencies for approval. Another requirement related to ICR which must be satisfied prior to award of the step 3 grant is the submittal of "letters of intent" from all "significant industrial users" of the system. A "significant user" is defined as any industry expected to utilize 10% or more of the capacity of the new plant. The letter of intent must include statements from the industry indicating that they will pay their allocable cost, and the estimated quantity and period of expected usage. Further, the municipality must state that they will require the industry to pay.

Implementation and maintenance of the ICR system becomes a condition of the step 3 grant.

BASIC REQUIREMENTS

The ICR system must:

1. Specify the frequency of payment and the ICR period.
2. Describe procedures for handling reserve capacity, discontinuance of use, upgrading and expansion of the wastewater treatment system.
3. Establish the cost basis for ICR rate calculation.
4. Develop the ICR payments formulas.
5. Specify the monitoring procedures.
6. Specify the appeals procedures.
7. Describe record keeping systems.
8. Describe the funds management procedures.
9. Develop the implementing ordinance.

It should be noted that ICR calculations are based only on the grant amount. If the city wishes to collect for their own contribution to construction costs, a separate system would be advisable.
The requirements listed above are described and explained individually in the following sections. These requirements are then incorporated into the draft ordinance where necessary.

1. Frequency of payment and ICR Period

The regulations require payments for ICR charges to be made no less often than annually. The normal procedure is to assess charges on a monthly basis and to incorporate the billing in the regular utility billing process. It is also allowable for a firm to pay the entire assessment in one lump sum, but this would normally not be financially advantageous to the firm. The rate calculations for this ICR system are based on total flow from the industry. Therefore, the billing cycle could be monthly, quarterly or annually.

The ICR period is the period over which the payments may be spread. It is financially advantageous for industries to stretch the payment period out as long as possible due to the fact that there are no interest charges to the firm for ICR payments. The regulations allow a maximum of 30 years or the estimated useful life of the facility, whichever is less. For most PL 92-500 grants, the planning efforts are so extensive that it is almost a certainty that some parts of the facilities will be used at the end of a thirty-year period unless it is known that they will be abandoned. Any changes to the wastewater plant made during the thirty-year period can be incorporated into the ICR system thereby retaining its integrity. It is, therefore, reasonable that the thirty-year period allowable in the regulations will be the ICR period. The savings to an industry by using a thirty-year period rather than a lump-sum payment in the first year of operation are substantial. For example, every $30.00 of payment, i.e., for every $1.00
paid each year for thirty years, is the equivalent of about $8.00 of present
cost to a firm assuming a discount rate of 12%. This requirement is handled
by Section IV of the sample ordinance.

2. Reserve capacity, discontinuance of use, upgrading and expansion.
   a. Reserve capacity

      The regulations specify that any firm which contracts or otherwise
      obligates the city to reserve a certain capacity for the industry's sole use
      must pay the grant amount associated with that capacity even if less is
      actually used. Of course, if more than the reserved capacity is used, then
      ICR would apply to the larger amount.

   b. Discontinuance of use

      Any firm discontinuing use of a funded facility is no longer required
to pay ICR charges.

   c. Upgrading and expansion

      If the wastewater treatment plant is upgraded or expanded with
      subsequent grants from PL 92-500 the charges for ICR must be adjusted
      proportionately. The only exception to the rule is for a firm which has
      reserved capacity. In this case, any expansion of the system would not
      change such a firm's ICR charges until they exceed their reserved capacity.
      At such time, the firm would be charged at the new (post-expansion) rate for
      anything above the usage levels originally reserved.

      These requirements (a,b & c above) are handled by Section VI of the
      Sample Ordinance.

3. Cost basis for ICR rate calculations.

   The cost basis for ICR rates is the total of step 1, step 2 and step 3
   grant amounts of the project with the following exclusions:

   1. Grant amounts relating to infiltration/inflow (I/I) correction or
treatment including any I/I analysis, sewer system evaluation studies, or rehabilitation work, are excluded from the cost basis.

2. Grant costs for correction of combined sewer overflows and collection or treatment of stormwaters are similarly excluded.

In addition to the above exclusions, it is optional that non-process i.e., domestic waste flows, from industrial users may also be excluded. This analysis assumes that domestic water will be excluded for all eligible industries at a rate of 40 gallons per employee per eight hour shift or, equivalently, 5 gallons per employee-hour.

4. ICR payment formulas

ICR payments must reflect the proportional contribution to the grant portion of construction cost. All factors contributing to construction cost must be considered including volume, flow rate characteristics (if applicable) and strength factors such as biochemical oxygen demand (BOD) and suspended solids (SS). A particular firm's ICR payment would be calculated by multiplying the appropriate waste parameter for the firm by the unit cost of providing treatment for that parameter. The first step is, therefore, to calculate the unit costs by parameter.

The procedure to calculate the unit costs is as follows:

a. Apportion the grant costs of constructing each major wastewater system component by wastewater parameter. This would be done by first estimating the percentage of cost attributable to the parameter and then multiplying that percentage by the grant cost of that particular component. These data are contained on Table I. It should be noted that several cost components cannot be broken down by parameter, such as the control building and site work as well as the step 1 and step 2 costs. The percentage used
for those cost components was the overall average for those components which could reasonably be disaggregated. The overall cost percentages are 77% for flow, 13% for BOD and 10% for SS. Summing the costs attributable to each parameter over all components yields $1,052,052 for flow, $179,838 for BOD and $133,072 for SS. These costs represent the preliminary cost basis for the ICR system. The cost basis is considered preliminary because the construction costs can only be considered estimates at this point. When construction is near completion, the costs will be known and adjustments must be made. A procedure for making those adjustments is described later in this section.

The total costs for the parameters are converted to monthly costs over the 30-year life of the project by dividing by 360. The monthly costs are, therefore, $2,922 for flow, $500 for BOD and $370 for SS.

b. The second step in developing the ICR rate formulas is to calculate the capacity loadings of the plant. Based on an assumption of .6 MGD containing 250 mg/L BOD and 250 mg/L SS yields the following monthly capacities:

- **Flow**: 18,264 thousand gallons
- **BOD**: 38,400 lbs.
- **SS**: 38,400 lbs.

c. The data from a. and b. above are combined to determine rate formulas for Flow, BOD and SS.

**Flow formula**

flow charge = \( \frac{(\text{flow}) \times (\text{MONTHLY FLOW COST})}{\text{TOTAL MONTHLY CAPACITY}} \)

\[ = \frac{(\text{flow}) \times (2922)}{18624} \]

\[ = (\text{flow}) \times (.1569) \]

The flow cost factor is thereby .1569.
The strength formulas are slightly more complicated due to the fact that the typical units of measurement of wastewater strength is mg/L, while the cost data are in pounds. The easiest method of calculating the BOD and SS cost factors is to assume a hypothetical industry which utilizes the entire capacity and, therefore, would pay the entire BOD and SS costs. The functional relationship of BOD for example would be:

\[(\text{flow}_1) (\text{BOD}_1) (\text{BOD Cost Factor}) = \text{TOTAL BOD ICR MONTHLY COST}\]

Substituting the known capacity and cost data yields:

\[(18,264 \text{ thousand gal.}) (250 \text{ mg/L}) (\text{BOD Cost Factor}) = $500\]

The only unknown in the above equation is the cost factor. Solving the equation for the cost factor yields:

\[
\text{BOD COST FACTOR} = \frac{500}{(18,264) (250)} = .00010951
\]

This cost factor holds for all flows and BOD concentrations due to the proportional nature of the cost contribution relationships.

Similarly, for SS the cost factor is:

\[(\text{flow}_1) (\text{SS}_1) (\text{SS Cost Factor}) = \text{TOTAL MONTHLY SS COST}\]

\[(18,264) (250 \text{ mg/L}) (\text{SS Cost Factor}) = $370\]

\[
\text{SS COST FACTOR} = .00008103
\]

The total monthly charge to a particular industry would be the sum of flow, BOD and SS charges. To summarize, the ICR charge formulas are:

\[
\text{flow} \quad (\text{flow}_1) (.1569) = \text{flow charge}
\]

\[
\text{BOD} \quad (\text{flow}_1) (\text{BOD}_1) (.0010951) = \text{BOD charge}
\]

\[
\text{SS} \quad (\text{flow}_1) (\text{SS}_1) (.00008103) = \text{SS charge}
\]
<table>
<thead>
<tr>
<th>Process</th>
<th>Total Cost</th>
<th>Grant Amount</th>
<th>Flow %</th>
<th>BOD Cost %</th>
<th>SS Cost %</th>
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<td>1,364,962</td>
<td>1,052,052</td>
<td>179,838</td>
<td>133,072</td>
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</tbody>
</table>
TOTAL CHARGE

\[
\text{total charge} = \text{flow charge} + \text{BOD charge} + \text{SS charge}
\]

where:

\[
.1569 = \text{flow cost factor}
\]

\[
.00010951 = \text{BOD cost factor}
\]

\[
.00008103 = \text{SS cost factor}
\]

\[
\text{flow}_I = \text{industry flow in thousand gallons}
\]

\[
\text{BOD}_I = \text{industry BOD in mg/L}
\]

\[
\text{SS}_I = \text{industry SS in mg/L}
\]

This requirement is handled by Section II of the Sample Ordinance. Please note that the Sample Ordinance contains blanks in the spaces for specific cost factors. They are to be filled in only after the final construction costs are known and all adjustments to the ICR rates have been made.

Procedures for Adjusting Formulas Following Final Determination of Grant Amount.

The actual, final construction costs will almost certainly be different from the estimates used in developing the ICR rates contained herein. If cost increases (or decreases) can be attributed to specific components of the construction project then the ICR rate determination process must be re-done with the new figures. If, as is more likely, the change to costs is a general change which applies, more or less, to all components equally then a simple method of proportions can be used to adjust the ICR charges to conform to the new construction costs. The procedure would be to total all actual, final grant amounts for step 1, step 2 and step 3 (excluding all costs relating to infiltration/inflow) and then divide that total by the estimate of those costs employed in this study to yield an adjustment factor, i.e.

\[
\text{Adjustment Factor} = \frac{\text{Total final grant costs}}{\text{Estimate of Costs}} = \frac{1,964,962}{1,364,962}
\]

The adjustment factor would then be multiplied by the cost factors for each parameter to yield the final cost factor. These cost factors would then
be inserted into the implementing ordinance and submitted to the regulatory agency for approval if and when industries use the sewage system prior to system operation start.

It is important to note that this adjustment process should not be conducted until the final construction costs are known, i.e., very near the end of actual construction. When final rates are thus established they must be inserted into the appropriate blanks in Section II of the ordinance and then the ordinance must be submitted to the regulatory agency.

If the cost difference between the estimate and the actual are not attributable to a general, overall cost change, then the process of adjusting rates is much more complex. The specific components which have experienced cost changes must be cranked into the rate structure by re-calculating Table I to reflect the new cost figures. Revised rates would then be calculated by inserting these new results into the rate calculation formulas.

5. Monitoring procedures

A trade-off exists between accuracy of quantifying a given firm's wastewater and the cost of that information. It is generally acceptable for industries ruled subject to ICR to be placed into two categories:

1. Large industries with flows or strengths likely to vary from month to month.

2. All others.

For all industries in group 1, a monthly sampling program is recommended, consisting of a 24-hour composite sample. The group 2 industries would require only annual sampling or less. ICR industries must be so classified prior to implementation of the system. This requirement is handled by Section III in the Sample Ordinance.
6. Appeals procedure

Industries must have recourse should they disagree with the payments they are assessed. Procedures for dealing with, for example, disagreement of waste flows or strengths, should include both technical and administrative steps to resolve disputes. This requirement is handled by Section VIII in the Sample Ordinance.

7. Record keeping

City records must contain the following information:

a. documentation of final grant amount
b. copy of originally approved ICR system plus any subsequent revision
c. list of industries and their loading
d. total loading on system
e. notification to EPA of implementation of system
f. approvals of the use of retained funds
g. payments made to EPA
h. record of funds retained.

This requirement is handled by Section IX in the Sample Ordinance.

8. Funds management

The ICR system and ordinance must specify a funds management system that reflects the regulatory restriction on the use of collected funds. These restrictions include:

1. Fifty percent of all collected funds must be returned to the U. S. Treasury.

2. Of the 50% retained, any increased costs of administration due to the ICR system can be deducted if these costs are segregated and identified.

3. Eighty percent of the remainder can be used only to expand or
upgrade the facilities. Any expenditures of this sort must be approved by
the EPA Regional Administrator or his designated representative.

4. The other 20% of funds not returned to the Treasury can be used
for anything except rebates to industries or installation of industrial
pretreatment equipment.

5. All retained funds can only be invested in U. S. government
securities or securities that are fully collateralized. This requirement is
handled by Section V in the Sample Ordinance.

9. Implementing ordinance

The ordinance implementing the ICR system must address all of the previ-
ously mentioned requirements either explicitly or by reference to other
documents. Additionally, it must be approved by the EPA Regional Administra-
tor or his designated representative prior to placing the treatment works in
operation. The final ICR rates must be included in the ordinance.
SECTION I
INDUSTRIAL COST RECOVERY

(A) The intent of this section is to implement an industrial cost recovery (ICR) program wherein the City of Loganville, Georgia, shall have the authority to collect from eligible industrial users of the city's sewage system, all or any part of the construction costs of such wastewater transport and treatment system reasonably attributed to such industrial user's waste. The apportionment of such costs shall be as provided herein and such costs shall be collected monthly or by special agreement but not less often than annually.

(B) An eligible user is defined as any non-governmental, non-residential user of the treatment works which discharges, after deduction for domestic wastes or discharges from sanitary convenience, more than 25,000 gallons per day of flow, or 52.25 pounds per day BOD or 52.25 pounds per day suspended solids and which is identified in the Standard Industrial Classification Manual, 1972, Office of Management and Budget, as amended and supplemented, under one of the following divisions:

Division A. Agriculture, Forestry and Fishing.
Division B. Mining
Division D. Manufacturing
Division E. Transportation, Communication, Electric, Gas and Sanitary Service
Division I. Services

Additionally, any non-governmental user which discharges wastewater which contains toxic pollutants in sufficient quantity to interfere with or injure the normal treatment process either singly or in interaction with other
wastes shall be classified as an eligible industry for ICR purposes regardless of flow quantity or strength of the discharge.

SECTION II
PAYMENT CALCULATION

The payment formulas as presented below are calculated in accordance with the report entitled "ICR System for the City of Loganville" prepared by the Georgia Institute of Technology, Engineering Experiment Station. The total payment is the sum of these charges applicable to flow, BOD and SS as follows:

Flow:

\[
\text{Flow charge} = (\text{flow}_I) (\text{Flow cost factor}) \\
= (\text{flow}_I) ( )
\]

BOD:

\[
\text{BOD charge} = (\text{flow}_I) (\text{BOD}_I) (\text{BOD cost factor}) \\
= (\text{flow}_I) (\text{BOD}_I) ( )
\]

SS:

\[
\text{SS charge} = (\text{flow}_I) (\text{SS}_I) (\text{SS cost factor}) \\
= (\text{flow}_I) (\text{SS}_I) ( )
\]

TOTAL CHARGE:

\[
\text{Total charge} = \text{flow charge} + \text{BOD charge} + \text{SS charge}
\]

Where:

\[
\text{flow}_I = \text{individual industry flow in thousands of gallons.} \\
\text{BOD}_I = \text{industry 5-day biochemical oxygen demand in mg/L.} \\
\text{SS}_I = \text{industry suspended solids in mg/L.}
\]

Industry flow shall be measured water usage less estimated domestic usage. Domestic usage shall be estimated to be 5 gallons per employee hour. Further deductions shall be considered as per the APPEALS PROCEDURES described herein.
SECTION III
MONITORING

Industries shall be divided into two groups for monitoring purposes. Group I industries are those eligible for ICR charges characterized by variable waste strengths; industries in this group shall be monitored monthly. Group II ICR eligible industries are all those industries not classified as Group I; Group II industries will be sampled initially to determine the basis for ICR charges and sampled periodically thereafter as necessary to verify the original results.

SECTION IV
COST RECOVERY PERIOD

A cost recovery period of 30 years is hereby established. Payments will be collected no less frequently than annually.

SECTION V
FUNDS MANAGEMENT PROCEDURE

Funds collected under the ICR program shall be deposited into the following accounts as follows:

1. Fifty percent (50%) shall be deposited into the "ICR Federal Reimbursement" account. Such funds are to be returned to the Federal Treasury annually.

2. Forty percent (40%) shall be deposited into the "Future Wastewater Needs" account. Such funds shall be expended only after the applicable regulatory agency has approved the disbursement.

3. Ten percent (10%) shall be deposited into the water and sewer operating account.

Pending use, the amounts retained in the "ICR Federal Reimbursement" and
"Future Wastewater Needs" accounts shall be invested in:

1. Obligations of the U. S. Government; or

2. Obligation guaranteed as to principal and interest by the U. S. Government or any agency thereof; or

3. shall be deposited in accounts fully collateralized by obligations of the U. S. Government or by obligation fully guaranteed as to principal and interest by the U. S. Government or any agency thereof.

SECTION VI
REQUIRE CAPACITY, DISCONTINUANCE OF USE, EXPANSION AND UPGRADING

A. Reserve Capacity

Any industry entering into an agreement with the city to reserve any portion of the treatment works for the use of that industry shall be assessed ICR charges on the amount reserved if actual flow is less than that amount. If the actual flow is larger than the reserved amount, ICR charges shall be assessed on the actual amount.

B. Discontinuance of Use

Any industry discontinuing use of the facility will cease to be charged ICR charges at the time of discontinuance provided written notice is received by the city.

C. Upgrading and Expansion

All ICR charges will be adjusted proportionally in the event that additional grants requiring ICR are secured by the city to upgrade or expand the wastewater treatment facilities except that industries with reserve capacity agreements who are not exceeding their reserve will not be assessed additional ICR charges in the event of an expansion.

SECTION VII
NOTIFICATION

All industries shall be notified of their particular ICR charges.
Included in such notification will be the monitoring results, the applicable ICR wastewater parameter rates and, the charges resulting from the monitoring results and rates specified.

SECTION VIII
APPEALS PROCEDURE

Any industry which disagrees with the ICR rates assessed to them shall follow these procedures to resolve the issue.

1. Informal appeal may be made either orally or in writing to the Major or his designated representative to review the rate calculation procedure and verify the accuracy of the assessed rates. Copies of the ICR system will be made available on request.

2. If the industry wishes to provide additional monitoring data, these must be accompanied by a detailed written description of the monitoring procedures including time and place and certification that analyses were conducted in accordance with Standard Methods for the Examinations of Water and Wastewater, 14th ed. Test results not in accordance with recommended sampling or analysis procedures may be disqualified. It is therefore, strongly recommended that sampling procedures be approved prior to initiation of sampling programs.

3. If the industry wishes further deduction from measured water use to calculate wastewater discharge the industry may so petition the mayor or his appointed representative either on the basis of actual flow monitoring results or by describing in writing the quantity and uses of water not returned to the wastewater system.

4. If the questions regarding ICR assessment of charges cannot be resolved satisfactorily by informal discussion, a written petition will be
accepted for full Council consideration at the first regularly scheduled meeting that does not have a full agenda. The City Council will consider all issues raised in the petition and, with any necessary consultation, rule on the petition within 30 days from the date of its consideration by Council.

5. If the industry chooses not to accept the final judgement by the City Council, additional recourse may be pursued through the court system.

SECTION IX
RECORD KEEPING

The city shall maintain records as described in the previously referenced report entitled "ICR System for the City of Loganville". These records shall be available for inspection upon written notice.
GUIDANCE FOR DEVELOPING EPA
USER CHARGE SYSTEMS FOR SMALL MUNICIPALITIES

Prepared for
The Georgia Department of Community Affairs
Inter-University Task Force

Under Partial Funding Provided by
The National Science Foundation

by
B. William Riall, Jr.
Project Director

In Cooperation With
Miller, Stevenson, & Steinichen, Inc.

GEORGIA INSTITUTE OF TECHNOLOGY
Engineering Experiment Station
Economic Development Laboratory
Applied Research Division

Atlanta, Georgia 30332
August 1980
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Introduction to this Guidance

Many municipalities have experienced great difficulty in complying with the User Charge requirements of PL 92-500. One reason for this difficulty is the fact that the EPA regulations and guidance were prepared to handle every possible contingency. Unfortunately, the increased generality attained thereby also increased the complexity to the extent that it is very difficult to see how the regulations are satisfied for a simple situation. The purpose of this guidance is to provide a method of meeting the requirements as they apply to a simple situation typically faced by smaller municipalities, though larger municipalities may also find it useful. The situation this guidance was designed for would include the following characteristics:

1. One treatment plant.
2. Little or no industrial wastes.
3. One political jurisdiction.
4. Secondary or advanced secondary treatment levels.

If the situation you are facing is more complex than the characteristics listed above, there is a good chance that this guidance may be too simplified for direct application but it may still be helpful in explaining the overall User Charge framework.

The first step taken in preparing this guidance was to complete the User Charge System for the City or Loganville and secure its approval by the Georgia Environmental Protection Division (EPD). The City of Loganville was chosen as being typical of the small-city situation. This guidance then takes Loganville to be the basis of a 'show-by-example' approach with fill-in the blank forms provided wherever possible.

The basic organization of this guidance is first to describe the requirements and then to show you how to meet those requirements, including answers to the most common questions municipalities have. Of course, it would be impossible to answer all of everybody's questions but it is hoped that this guidance answers most of them. There are many ways to accomplish the objectives of a User Charge System - this guidance attempts to use only the methods that would be the simplest for most cities. This guidance also standardizes the methods so that regulatory review is facilitated.

The regulations which apply to User Charge are found in 40CFR part 35 sections 35.925-11, 35.935-13 and Appendix B.
PART I - THE BASICS

What The User Charge System Is and
What It Is Supposed To Do

The purpose of the User Charge (UC) requirements is to insure that all cities that receive EPA grants operate and maintain the funded facilities at their optimum operating efficiency. To accomplish this, EPA requires cities to develop a system of collecting money that will result in sufficient funds being available to meet all of the operation, maintenance and replacement (OM&R) costs of a wastewater treatment system. The principle behind EPA's policy is that users pay according to services received. That is, every user pays the costs of treating the wastewater they discharge into the plant. These requirements will undoubtedly require most cities to change the way sewer charges are currently collected. Note that the quantity discounts frequently offered on wastewater service are not allowed. Also, it is not sufficient to simply establish a rate consistent with the UC requirements. Rather a system of arriving at those rates must also be developed and used by the city for all subsequent rate revisions.
PART II -
HOW TO DEVELOP AN APPROVABLE EPA
USER CHARGE SYSTEM IN FOUR EASY STEPS -
WHAT NEEDS TO BE SENT TO WHOM AND WHEN

This section of the guidance package is a sort of road map to satisfying the User Charge (UC) requirements. In the steps listed, page numbers are provided which tell where more detailed information for that step can be found in later sections of the guidance.

The UC system requirements are satisfied in two phases. The first deals with what you must do to get the Step 3 grant. The second phase is what to do after construction is completed.

To get the Step 3 grant you must:

Step 1. Complete Applicable Worksheets

A. Worksheet #1 (page 5) must be filled out for all UC systems. (See pages 18-20)

B. The supplement to worksheet #1 (page 6) must be filled out if you are not using EPA's method of estimating costs found in MCD-39. (See pages 18 and 21)

C. Worksheet #2 (pages 7-9) must be completed only if you have industries requiring surcharges. (See pages 22-35)

Step 2. Develop Implementing Ordinance

The sample ordinance provided (starting on page 10) includes all the clauses necessary to satisfy this requirement of the U.C. system. For a more detailed description of these requirements and how they are satisfied by the sample ordinance, see pages 14-17. What you need to do to the sample ordinance is:

A. Review it for consistency with city format.

B. Fill in the blanks in the ordinance where provided. Besides the city name and wastewater treatment plant description (size and type) in the introduction, you must provide the strength parameters defining domestic and over strength wastes and the rates calculated in the worksheets. Note: if you had to complete Worksheet #2, the surcharge rates should also be included in the ordinance right after Section 3.

Note: You do not pass the ordinance at this time. Also, these steps should be done early enough so that EPD receives these documents no later than the submittal date for plans and specs.

Step 3. Send the completed worksheets and the drafted ordinance to EPD. A sample letter to do this is attached (Page 13). Be sure to keep copies of these documents in your files.
Step 4. When the construction is completed, review the rates calculated in the worksheets and make any changes you feel necessary to insure you are collecting sufficient revenue. Extra worksheets are included in the Appendix. If the rates have changed, put them into the ordinance and then pass the ordinance. A more detailed description of how to keep revenues at the correct level is given in pages 26-28.

Your files must contain all revisions made to the rates. EPA has the power to audit your compliance with the UC provision contained in the ordinance and you must be able to document compliance.

Answers to the same common question and problem areas are included in pages 29 to 33.
WORKSHEET #1

1. Are you using the EPA Publication. MCD-39?
   __ yes  __ no

   If no, you must complete the "basis of estimation" sheet attached.

2. Administrative Fee Calculation:
   A. Number of sewer customers: ________

   B. Annual Administrative Cost: ________

   \[ \frac{(B)}{12} = \frac{( \quad )}{12} = \quad \text{per meter per month} \]

3. Flow Fee Calculation
   A. Replacement Cost
      (Plant components
      needing replacement
      or major repair
      During Plant Life)

      | Total | Annual (= Total Cost/30) |
      |-------|--------------------------|
      |   |                           |
      |   |                           |
      |   |                           |
      |   |                           |
      |   |                           |
      |   |                           |
      |   |                           |
      |   |                           |

      Total: $ __________

   B. Annual Operating Cost: $ __________

   C. Total of Annual Total Replacement Cost and
      Operating Cost: $ __________

   D. Average monthly water usage per sewer customer:
      __________________ thousand gallons

   E. Total annual water usage by sewer customers:
      Number of sewer customers x average monthly water use
      \[ = (2A)(3D)(12) = ( \quad ) ( \quad ) (12) = \quad \text{thousand gallons} \]

   F. Flow Fee = \( \frac{(3C)}{(3E)} \)

      \[ = \quad \text{per thousand gallons} \]
**Basis of Estimation**

(to be completed if MCD-39 is not used)

<table>
<thead>
<tr>
<th>A. General or Specific Administrative Accounts</th>
<th>Estimated Cost</th>
<th>Percent to Sewage</th>
<th>Net Sewer Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>$</td>
<td></td>
<td></td>
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<tr>
<td>2.</td>
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<td>3.</td>
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<td>4.</td>
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<tr>
<td>5.</td>
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<td>6.</td>
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<td>7.</td>
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<td>8.</td>
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<td>9.</td>
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<td></td>
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<tr>
<td>10.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>B. General or Specific Operations Accounts</th>
<th>Estimated Cost</th>
<th>Percent to Sewage</th>
<th>Net Sewer Sewage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
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<td>2.</td>
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<td>3.</td>
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<tr>
<td>4.</td>
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<td>6.</td>
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<tr>
<td>10.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Percent to sewage is required only for accounts shared with other services.*
### WORKSHEET #2 Surcharge Calculation Table

<table>
<thead>
<tr>
<th>PLANT COMPONENT</th>
<th>Annual Operating Cost</th>
<th>Annual Replacement Cost Contribution</th>
<th>Total Annual Cost</th>
<th>Flow % of Cost</th>
<th>BOD % of Cost</th>
<th>SS % of Cost</th>
<th>Other % of Cost</th>
<th>Other % of Cost</th>
</tr>
</thead>
</table>

**TOTALS**
SURCHARGE RATE CALCULATION STEPS

I. BOD Surcharge Calculation

1. BOD, Cost % (from Table): _________ %

2. Total Annual Operating and Replacement Cost (from Table): _________

3. Total lbs. BOD Plant Capacity (NOTE: Subscript "D" indicates domestic as defined in the Sewer Use ordinance):
   
   $$(\text{Plant MGD}) (\text{BOD}_D) (256) = (\text{______})(\text{______})(256) = \text{______} \text{ lbs. per month}$$

4. Cost Per lb. BOD

   $$\left(\frac{\% \text{ BOD Cost} \times 100}{100}\right) \left(\frac{\text{Total Operating and Replacement Cost}}{12}\right) = \frac{\text{cost per lb. BOD}}{\text{Total lbs. BOD Plant Capacity}}$$

   $$= \left(\frac{\text{______} \%}{100}\right) \left(\frac{\$ \text{______}}{12}\right) = \frac{\$ \text{______}}{\text{______} \text{ lbs.}}$$

5. BOD Surcharge Formula

   $$(\text{BOD}_I - \text{BOD}_D) (\text{flow}_I \text{ in 1000 gal.})(\text{cost per lb. BOD})(.0084) = (\text{BOD}_I - \text{______})(\text{flow}_I \text{ in 1000 gal.})(\text{______})(.0084)$$

II. SS Surcharge Calculation

1. SS Cost % (from Table): _________ %

2. Total annual operating and replacement cost (from Table): _________

3. Total lbs. SS Plant capacity:
   
   $$(\text{Plant MGD}) (\text{SS}_D) (256) = (\text{______})(\text{______})(256) = \text{______} \text{ lbs. per month}$$

4. Cost per lb. SS

   $$\left(\frac{\% \text{ SS Cost} \times 100}{100}\right) \left(\frac{\text{Total Annual Operating and Replacement Cost}}{12}\right) = \frac{\text{cost per lb. SS}}{\text{Total lbs. SS Plant Capacity}}$$

   $$= \left(\frac{\text{______} \%}{100}\right) \left(\frac{\$ \text{______}}{12}\right) = \frac{\$ \text{______}}{\text{______} \text{ lbs.}}$$

5. SS Surcharge Formula

   $$(\text{SS}_I - \text{SS}_D) (\text{flow}_I \text{ in 1000 gal.})(\text{Cost per lb. SS})(.0084) = (\text{SS}_I - \text{______})(\text{flow}_I)(\text{______})(.0084)$$
III. Surcharge Calculation - Other Component: (specify)

1. Cost %: __________ %

2. Total Annual Operating and Replacement Cost: $_________

3. Total lbs. Plant Capacity:

(Plant MGD) (Domestic strength for this component)(256)

= (__________) (__________ mg/l)(256) = _______ lbs.

4. Cost Per lb.

(% Cost / 100)(Total Annual Operating and Replacement Cost / 12)

Total lbs. Plant Capacity

= (__________% /100)($_________/12) = $________ per lb.

(__________ lbs.)

5. Surcharge Formula

(Industry mg/l - Domestic mg/l)(flow)(Cost per lb.)(.0084)

*= (Industry mg/l - __________)(flow)(________)(.0084)

*NOTE - for components that have no reasonable domestic strength, a different approach to the surcharge rates must be taken. First, your consultant must supply plant capacity to handle this component based on design criteria. Second, the Surcharge Formula would not contain the deduction for domestic strength. That is, the formula would be if the form:

= (Industry mg/l)(flow)(Cost per lb.)(.0084)

= (Industry mg/l)(flow)(________)(.0084)

The reason for this is that for BOD and SS, the industry is already paying for domestic strengths when it pays the regular flow charge. The surcharges are for all above domestic strength. If there are no normal domestic strengths established, then the industry is not paying any of the cost for treating that component when he pays the flow charge.
SAMPLE ORDINANCE IMPLEMENTING USER CHARGE SYSTEM

An ordinance establishing procedures for the implementation of the EPA User Charge for services rendered by the Water Pollution Control facilities, hereinafter called the "Treatment Works," of the City.

WHEREAS, the City, hereinafter called the "City," has undertaken to construct and operate Treatment Works consisting of _________, sewers, and appurtenances to provide adequate and proper treatment of sewage and wastewater generated from all properties within the corporate limits of the City, and,

WHEREAS, the City will utilize federal funds under PL 92-500, as amended, in the construction of said Treatment Works, and,

WHEREAS, the aforementioned grant requires the implementation of a User Charge System to provide for the equitable collection of all necessary operation, maintenance, and replacement costs as described in 40 CFR, part 35, dated September 27, 1978.

Considering the foregoing, the following definitions and sewerage rate system is established.

SECTION I

Act: The federal Water Pollution Control Act, also known as PL 92-500, as amended.

EPA User Charge: That portion of the total sewer bill which is attributable to the implementation of the EPA User Charge System. Said rates include collection of operation, maintenance, and replacement expenses as defined hereinafter.

Operation, Maintenance, and Replacement Costs: This term shall mean the Treatment Works in good repair and at design specifications. This includes labor, supplies, utilities, chemicals, billing, administration, and general expenses including installation and/or repair of equipment, accessories, or appurtenances necessary during the service life of the Treatment Works.

Domestic Strength Wastes: This term shall mean any wastes which have an average daily concentration not exceeding ___ mg/L BOD or ___ mg/L of SS.

BOD (Biochemical Oxygen Demand): "BOD" shall mean the quantity of oxygen utilized in the biochemical oxidation of organic matter under standard laboratory procedures in five (5) days at twenty degrees celsius (20⁰ C), expressed in milligrams per liter (mg/L).

SS (Suspended Solids): "SS" shall mean solids that either float on the surface of or are in suspension in water, sewage, or other liquids and which are removable by laboratory filtering.
Over-Strength Wastes: This term shall mean any wastewater discharged into the Treatment Works which exceeds a BOD of ______ mg/L or a SS of ______ mg/L.

Toxic Pollutant: This term shall mean any discharge into the Treatment Works which interferes with the normal biological process of the Treatment Works or in some way reduces the efficiency of the Treatment Works or causes special procedures to be necessary to properly dispose of either effluent or sludge produced by the Treatment Works so that the cost of said disposal is increased.

Wastewater Customer: This term shall mean any residence, business, industry, school, or other building tied into and receiving services from the Treatment Works and receiving periodic billings thereof.

User: This term shall mean any person, business, corporation, or other entity which discharges wastes into the Treatment Works with continuously or occasionally. A wastewater customer is a user, but a user does not necessarily have to be a wastewater customer.

SECTION 2 - EPA USER CHARGE SYSTEM

ARTICLE 1. The EPA User Charge System shall result in the calculation of three unit charges:

a. An Administrative Charge to be calculated based on the administration costs and the number of wastewater customers to be assessed on a per meter basis,

b. An operation, maintenance, and replacement fee calculated based on the volume of water used by wastewater customers and the total operation, maintenance, and replacement costs incurred by the City to be assessed on a per thousand gallons of water used basis, and,

c. A surcharge rate to be applied to all over-strength wastes to be based on the strength and volume of such wastes and the costs of treatment.

The calculation procedures for these charges are more particularly described in Guidance For Developing "EPA User Charge Systems For Small Municipalities" prepared by the Georgia Institute of Technology Engineering Experiment Station, dated May 1980.

ARTICLE 2. Toxic Pollutants. Any user which discharges any toxic pollutants which cause an increase in the cost of managing the effluent or the sludge of the aforementioned Treatment Works shall be required to pay for such increased cost.

ARTICLE 3. Biennial Review. The City shall review not less often than every two years the wastewater contribution of users, the total costs of operation and maintenance of the Treatment Works, and the approved user
charge system. The City shall revise the charges for users to accomplish the following:

1. Maintain the proportionate distribution of operation and maintenance costs among users,

2. Generate sufficient revenue to pay the total operation and maintenance costs necessary to proper operation and maintenance (including minor replacement) of the treatment works, and

3. Apply excess revenues collected to adjust future rates accordingly.

ARTICLE 4. Notification. The City will notify each user at least annually in conjunction with a regular bill or other mailing, of the rate attributable to the user charge.

ARTICLE 5. The User Charge System shall take precedence over any terms or conditions of agreements or contracts between the City and users which are inconsistent with the requirements of Section 204 (b) (1) (A) of the ACT and 40 CPR, part 35, dated September 27, 1978.

SECTION 3 - EPA USER CHARGE UNIT RATES

The EPA User Charge, which includes charges for operations, maintenance, and replacement expenses, will be assessed for all contributors to the Treatment Works on the following basis:

a. Customer: ______ per bill

b. Volume: ______ per thousand gallons of water used
Georgia Environmental Protection Division  
Municipal Grants Program  
270 Washington St., S.W.  
Atlanta, GA 30334

ATTENTION: Mr. Michael Akins

RE: City of  
User Charge System  
C130

Dear Mr. Akins:

Please find enclosed two copies of the documents satisfying the User Charge requirements of the referenced grant for your review and approval. These documents were prepared in accordance with the guidance entitled "User Charge Systems for Small Communities". We recognize that implementation of the User Charge System is a condition of the grant though we reserve the right to modify the actual rates implemented in accordance with the User Charge System should subsequent data require it.

Your prompt attention to the review of these documents is greatly appreciated. If you have any questions please do not hesitate to call or write myself or my consultant, (name of consulting firm).

Sincerely,

Mayor

cc: Consultant
The basic idea behind the user charge system is that each user pays according to his contribution to OM&R costs. To implement this basic idea, EPA regulations state that cities must do the following:

- Maintain the proportionate distribution of costs among users,
- Generate sufficient revenue to pay the total costs necessary to operate the facility,
- Charge persons discharging toxic pollutants any increase in treatment or disposal costs,
- Distribute costs of extraneous flows equitably,
- Review the charges at least biennially,
- Notify users at least once each year of the rates that apply,
- Preclude inconsistent agreements, and
- Apply excess revenue appropriately.

It should be noted that EPA does not require debt service charges or hook-up charges to be a part of this system. The city may collect these in any manner it chooses. The EPA User Charge is therefore only one component in the total rate charged to customers. This report only addresses those charges that are required by EPA.

The requirements listed above are described and explained individually in the following sections.

**Maintaining Proportionate Distribution of Costs**

All similar users must pay the same unit charges; thus, there can be no discounts for large users of the wastewater facility. Proportionate distribution is normally accomplished by having a set administrative fee (per meter) plus some per thousand gallon charge for water used. EPA further requires that the per gallon charge start from zero. For example, a flat rate for the first 3,000 gallons used would not be acceptable. There is flexibility, however, in determining the relative sizes of the administrative versus the per thousand gallon charge.

In addition, EPA requires that a system for determining rates be established. It is not sufficient to simply set a rate for the first year of operation.

The costs to be distributed fall into three general categories: administrative costs, operating costs, and replacement costs. The administrative
costs consist of those costs associated with such functions as billing and meter reading. These costs are not based on the flow or strength of the water discharged but rather on the number of customers on the system. Since it costs the same to read a meter for a business discharging 100,000 gallons of high-strength waste as it does to read the meter of a household, it is appropriate to charge both the same administrative rate.

It is in the second and third cost components (the operating cost and the replacement cost) that quantity and quality of wastewater become important. Operating costs are those regular costs such as operator salaries, electric power and chemicals. Replacement costs are those irregular costs such as aerator impeller replacement and pump overhauls. It does not mean that the city must establish a sinking fund to replace the entire plant but it does mean that some method of collecting money regularly must be derived to have funds available to meet these irregular costs. To distribute the operating and replacement costs, users are divided into two groups:

1. Those which can be considered to have domestic-strength wastes or wastes of less than domestic strength, and

2. All others.

The first group would be subject to an average per gallon cost which reflects the cost of treating domestic-strength wastes. Users in the second group are subject to surcharges; i.e., a higher charge to reflect the additional costs of treating higher strength wastes. To calculate the surcharge rates, it is necessary to break down the cost of treatment into its major components and estimate, for instance, the per-pound costs of treating biochemical oxygen demand (BOD) and suspended solids (SS). It is not necessary to conduct such a complicated exercise if all of your users are discharging domestic strength wastes.

This means that the rates for domestic-strength users can be calculated very easily because the wastewater characteristics are the same for all. The net required revenue, i.e., the total required revenue minus collected surcharges, can be divided by the estimated water usage rates. (This method is consistent with Model 1 in the regulations.) This would yield a per-gallon charge which would be an accurate proxy for the contribution to cost.

A description of the steps for calculating rates is given in Part III. Article 1 of Section 2 in the example ordinance addresses these requirements.

Generating Sufficient Revenue

The UC system for determining rates must be shown to generate enough revenue to operate and maintain the facility in good working order. This includes having funds available to repair equipment which may break down. The system for calculating rates which will generate sufficient revenue over the long-run can be broken down into three steps:
1. Estimating revenue needs to meet administrative costs, operating costs, and replacement costs.

2. Estimating wastewater system utilization in terms of flow and number of customers, and

3. Calculating per unit costs for domestic wastes, administration, and over-strength surcharges.

A more complete discussion of how this could be accomplished is contained in a later section entitled "How to Prepare the User Charge System." These requirements are also addressed in Article 1 and Article 3 of Section 2 in the example ordinance.

Toxic Pollutants

A clause must be included in the rate ordinance specifying that any person discharging wastes which increase the costs of wastewater treatment must be assessed those charges. For example, if an industry discharges a heavy metal which concentrates in the sludge, special disposal methods for the sludge may be required. The industry that discharged the metal is required under this clause to pay for the additional cost of these special procedures. This requirement is addressed in Article 2 of Section 2 in the example ordinance.

Distributing Costs of Extraneous Flows

There are many ways of assuring the equitable distribution of the costs of treating extraneous flows. The simplest method is to use water used as a measure of wastewater contributed, thus distributing the cost of treating the actual wastewater plus the extraneous flows over the water consumed by the users of the system. The cost factors derived therefore include the costs for treating extraneous flows. These requirements are satisfied implicitly in the method of rate calculation given here. No explicit clause in the ordinance is required.

Notification of Users

At least once each year, every user must be notified of the effective rates in effect, and the portion of user charges attributable to wastewater treatment services. For domestic users, this consists of the fixed charge and the per thousand gallon charge as well as a dollar amount if charges for operation, maintenance and replacement are not broken out separately. For industrial users subject to surcharges, the surcharge rates also have to be included.

EPA has ruled that it is not sufficient to publish these rates in the newspaper; each user must be notified individually. The easiest way to accomplish this is to print or stamp the applicable rates onto the bills before they are mailed. An alternative is to conduct a special mailing to each user describing the rates in effect. This requirement is addressed in
Article 3 of Section 2 of the example ordinance.

Inconsistent Agreements

The stipulations of the User Charge System must be followed for all users and will have legal precedence over any other agreement to which the city is a party. For example, the city is not allowed to contract or develop agreements with particular users for rates lower than those produced by the User Charge System. This requirement is addressed in Article 5 of Section 2 of the example ordinance.

Excess Revenues

The regulations require that any funds collected from a class of users over and above those needed to meet the OM&R costs attributable to that user class must be used to reduce the rates in the next rate period of that particular class. If the city has only one class of users, the implementation of this requirement (accomplished by a clause in the ordinance) is very simple. It is important to understand what the regulations mean when they say "class of users" in this provision. They do not mean industrial or commercial vs. domestic users. Rather, "class" in the present sense applies to a group of users paying different rates. If the same unit rates apply to all users equally, then any overage collected may simply be used to reduce the OM&R expenses necessary to be collected over the next rate period. This also means that the city may begin raising rates, prior to completion of the system's construction, to build up a fund which can be used to reduce the rates of the initial year, thus smoothing out the rate increases necessary to support the new system. This requirement is addressed in Article 3 of Section 2 of the example ordinance.
FIRST YEAR RATE CALCULATION - The User Charge System in the short-run

THE SIMPLE CASE - NO OVERSTRENGTH WASTES

Because there are no operating records which can be used as a basis for first-year costs, they must be estimated. Two approaches are available to do this. The first is to use EPA publication MCD-39, entitled "Analysis of Operation and Maintenance Costs for Municipal Wastewater Treatment Systems", which gives national averages for costs of operating different types and sizes of plants. This publication gives costs and percentage of total costs for administration. It does not give total replacement costs. The second method is to directly estimate the costs based on the size and type of treatment system to be constructed.

If there are no over-strength wastes, the detail required is much less and only worksheet #1 is required which develops costs for three areas: administration, operation, and replacement. If you are using EPA publication MCD-39, then the total O&M cost can be separated into administrative and operating components by the percentage given in the publication (page 4-20). For example, for the city of Loganville plant size and type, that percentage is 86% operating and 14% administrative. The estimate of total cost (not including replacement) using MCD-39 was $78,220. Therefore, the estimate of the administrative cost component was $10,950 and the operating cost component was $67,270. If you are not using MCD-39, then the basis of estimation must be supplied by completing the "Basis of Estimation" attachment to worksheet #1.

ADMINISTRATIVE FEE - worksheet 1 section 2

The administrative fee would simply be the annual administrative cost estimate divided by 12 months divided by the estimated number of sewer customers. For Loganville, the estimated number of sewer customers was 588. Therefore, the administrative monthly fee would be:

\[
\frac{10,950}{12} \div 588 = $1.55 \text{ per month per customer}
\]

FLOW CHARGE - worksheet #1 section 3

The first step in developing the flow charge is to estimate the annual replacement cost. The replacement cost component is estimated by analyzing those pieces of equipment that will need replacing over their lives. The simple method for doing this (employed for Loganville) is provided on worksheet #1 and is used as follows. The components needing major repair are listed in Section 3-A along with their estimated construction cost. For Loganville, this list consisted of the following (as seen on the Example
Worksheet #1):

<table>
<thead>
<tr>
<th>Component</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Influent Pumping</td>
<td>$ 45,000</td>
</tr>
<tr>
<td>Aerobic Digestor Aerator</td>
<td>40,000</td>
</tr>
<tr>
<td>Aerators</td>
<td>110,000</td>
</tr>
<tr>
<td>Recirculation Pumping</td>
<td>40,000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$235,000</strong></td>
</tr>
</tbody>
</table>

This provides a total needed over the 30 year life of the plant, which for Loganville was $235,000. The annual replacement fund contribution for Loganville would therefore be 1/30th of the total.

\[
\frac{235,000}{30} = \$7,833 \text{ per year}
\]

Note: The worksheet provides space for calculating the annual cost for each component. These data are necessary only if you are calculating surcharges. Otherwise, dividing the total cost by 30 is sufficient.

Adding this to the Annual Operating Cost estimate (inserted in 3-B of the worksheet) yields the total annual cost (inserted in 3-C of the worksheet).

The next step is to estimate the sewer system utilization level. This is based on the average monthly water used per sewer customer (3-C) and the total number of sewer customers (2-A). Section 3-E provides spaces for calculating annual usage by multiplying number of customers by monthly usage times 12.

Section 3-F calculates the flow fee using the cost data from 3-C and the system utilization level calculated in 3-E.

For Loganville, the water usage by the average sewer customers was 9.4 thousand gallons per month for an annual total usage for all 588 customers of 66,326.4 thousand gallons (Section 3-E of Worksheet #1). The flow charge would therefore be:

\[
\frac{67,270 + 7,833}{66326.4} = \frac{75103}{66326.4} = \$1.13 \text{ per thousand gallons}
\]

(Section 3-F of Example Worksheet #1)

Once these final figures i.e., the administrative fee and the flow charge, have been calculated they must be inserted into the ordinance (Article 1 and Article 3 of Section 2) prior to submittal to the regulatory agencies.
WORKSHEET #1 LOGANVILLE EXAMPLE

1. Are you using the EPA Publication, MGD-39?
   \[ \checkmark \text{yes} \quad \text{no} \]
   If no, you must complete the "basis of estimation" sheet attached.

2. Administrative Fee Calculation:
   A. Number of sewer customers: 588
   B. Annual Administrative Cost: $10,950
   \[ \frac{(B)/12}{A} = \frac{(10,950)/12}{588} = $1.55 \text{ per meter per month} \]

3. Flow Fee Calculation
   A. Replacement Cost
      (Plant components needing replacement or major repair during plant life)
      \begin{align*}
      \text{Influent pumping} & \quad $45,000 \quad $1,500 \\
      \text{Aerobic Digestor Aerators} & \quad 40,000 \quad 1,333 \\
      \text{Aerators} & \quad 110,000 \quad 3,667 \\
      \text{Recirculation pumps} & \quad 40,000 \quad 1,333 \\
      \end{align*}
      \text{Total: $7,833}
   B. Annual Operating Cost: $67,720
   C. Total of Annual Total Replacement Cost and Operating Cost: $75,103
   D. Average monthly water usage per sewer customer: 9.4 thousand gallons
   E. Total annual water usage by sewer customers:
      \[ \text{Number of sewer customers} \times \text{average monthly water use} = (2A) \times (3D) \times (12) = (588) \times (9.4) \times (12) = 66,326 \text{ thousand gallons} \]
   F. Flow Fee = \[ \frac{(3C)}{(3E)} = \frac{(75,103)}{(66,326)} = $1.13 \text{ per thousand gallons} \]

-20-
### A. General or Specific Administrative Accounts

<table>
<thead>
<tr>
<th>Account</th>
<th>Estimated Cost</th>
<th>Percent to Sewage</th>
<th>Net Sewer Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>City Clerk Salary</td>
<td>$5000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meter Reader</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Postage</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Misc. Billing Costs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>$10,950</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Percent to sewage is required only for accounts shared with other services.

### B. General or Specific Operations Accounts

<table>
<thead>
<tr>
<th>Account</th>
<th>Estimated Cost</th>
<th>Percent to Sewage</th>
<th>Net Sewer Cost</th>
</tr>
</thead>
<tbody>
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<td>Operator Salary</td>
<td></td>
<td></td>
<td>15,000</td>
</tr>
<tr>
<td>Utilities</td>
<td></td>
<td></td>
<td>35,000</td>
</tr>
<tr>
<td>Chemicals</td>
<td></td>
<td></td>
<td>9,360</td>
</tr>
<tr>
<td>Pump Repair - minor</td>
<td></td>
<td></td>
<td>5,910</td>
</tr>
<tr>
<td>Truck Repair - minor</td>
<td></td>
<td></td>
<td>1,000</td>
</tr>
<tr>
<td>Fuel</td>
<td></td>
<td></td>
<td>1,000</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>$67,270</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Percent to sewage is required only for accounts shared with other services.*
THE COMPLEX CASE - SURCHARGE FOR HIGH-STRENGTH WASTES

If you have industries which discharge high strength wastes, you must calculate the surcharges that would apply to those types of wastes as well as calculating domestic rates. This is done by completing worksheet #2. NOTE - this is in addition to worksheet #1. It is important to note that these surcharges are part of normal operation. If you have an industry which occasionally discharges toxic wastes which upset the plant, then they would be assessed the full cost of the problems they cause. Their charge would be more like a damage assessment or penalty - not a surcharge - and would have to be assessed on a case-by-case basis, not as a part of regular monthly billings.

To develop the surcharge rates, it is first necessary to estimate the operating and replacement cost of each major plant component and the percentage of cost attributable to flow, BOD, SS. If the plant contains advanced treatment components, then perhaps phosphorus or nitrate may have to be included. Your consultant should specify the relevant parameters. The "Surcharge Calculation Table" is provided with Worksheet #2 to facilitate these calculations. After the percentages have been assigned for each parameter for each component, they are multiplied by the Total Annual Operating and Replacement Cost listed by each parameter to yield the cost for each parameter by component. It should be noted that some components may apply equally to all parameters, such as the control building. The simplest way to handle these components is to divide the costs up equally. An alternative, slightly more complex method would be to first calculate the total costs not including those components and then distribute the costs by the same percentage. The Loganville example given uses the simple method. In the example from Loganville the three basic parameters of flow, BOD and SS were sufficient. The percentages given on Example Table I to break down the O&M&R costs are the estimates used for Loganville. Some of the percentages are obvious such as "influent pumping" cost being attributed 100% to flow. Other components are not obvious, such as aerators. The percentages used for Loganville for aerators were 50% flow and 50% BOD, but it could just as well have been 60% to 40% or even 75% to 25%. The percentages you use should be whatever you and your consultant thinks reasonable.

The costs on EXAMPLE Table I were based on the EPA publication, MCD-39, but the publication did not break the costs down by plant component. The breakdown had to be estimated separately. From those estimates the administrative cost (14% from page 4-20 of MCD-39) was subtracted prior to completing the table and then the annual replacement costs were added in. That total cost, multiplied by the percentages gives a cost for each component. The cost attributable to each parameter is then summed (to yield in the example, $38,100 to flow, $21,289 to BOD and $15,714 to SS), and the parameter percentage to total operating and replacement cost is calculated. In the example these percentages are 51% to flow ($38,100/75,103) 28% to BOD and 21% to SS. These percentages are the heart of the surcharge formula. Once calculated on the estimated costs, they can be used whenever rates are reviewed and/or revised in the future.

The next step is to calculate the surcharge formulas for each parameter.
The following is an explanation of how this is done for BOD. The other wastewater parameters would be calculated similarly.

The first calculation step is to determine total pounds. Plant capacity (3 under BOD on worksheet #2-rate calculation). For those parameters which have domestic strength definitions the formula is simply the plant capacity in million gallons per day (MGD) times that domestic strength definition (in mg/1) times a conversion factor of 256. (For those parameters which do not have a definition of domestic strength, the capacity must be estimated from the plant design criteria.) For Loganville with a plant of .6 MGD and a domestic strength waste defined in the sewer ordinance of 250 mg/1 of both BOD and SS, the total capacity was:

\[(256) (.6 \text{ MGD}) (250 \text{ mg/1}) = 38,400 \text{ lbs. per month}\]

The next calculation step is to provide a cost per lb. of BOD. The formula given in #4 of the worksheet uses the data from (3) as well as the data from the table inserted in numbers 1 and 2. For Loganville this was $.044 per lb. (see example).

The final step is to use the "cost per lb." and the domestic strength definition for BOD to fill in the BOD surcharge formula in number 5.

After the surcharge formulas are calculated they are to be inserted into the Ordinance in section prior to submittal to the regulatory agencies.
Worksheet # 2: Surcharge Calculation
Table - LOGANVILLE EXAMPLE

<table>
<thead>
<tr>
<th>Influent Costs*</th>
<th>Annual</th>
<th>Annual</th>
<th>Total</th>
<th>Flow</th>
<th>BOD</th>
<th>SS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Operating</td>
<td>Replacement</td>
<td>Operating &amp; Replacement</td>
<td>%</td>
<td>Cost</td>
<td>Cost</td>
</tr>
<tr>
<td>Pumping</td>
<td>2520</td>
<td>1500</td>
<td>4020</td>
<td>100</td>
<td>4020</td>
<td></td>
</tr>
<tr>
<td>Preliminary</td>
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<td>2236</td>
<td>1118</td>
<td>50</td>
<td>1118</td>
<td></td>
</tr>
<tr>
<td>Treatment</td>
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<tr>
<td>Emergency</td>
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<td>1634</td>
<td>1634</td>
<td>100</td>
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<tr>
<td>Holding Pond</td>
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<td></td>
</tr>
<tr>
<td>Aeration Basin</td>
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<td>1720</td>
<td>860</td>
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<tr>
<td>Aerators</td>
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<td>3667</td>
<td>50</td>
<td>8563</td>
<td>50</td>
<td></td>
</tr>
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<td>Secondary</td>
<td>4128</td>
<td>4128</td>
<td>2064</td>
<td>50</td>
<td>2064</td>
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<tr>
<td>Sedimentation</td>
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<tr>
<td>Recirculation</td>
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<td>3027</td>
<td>50</td>
<td>1514</td>
<td></td>
</tr>
<tr>
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</tr>
<tr>
<td>Aerobic</td>
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<td>1333</td>
<td>2343</td>
<td>50</td>
<td>2171</td>
<td></td>
</tr>
<tr>
<td>Digestor</td>
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</tr>
<tr>
<td>Chlorination</td>
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<tr>
<td>Alum Addition</td>
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<td>75</td>
<td>4031</td>
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<tr>
<td>Sludge</td>
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<td>2021</td>
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<td></td>
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<tr>
<td>Drying Beds</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>Sewer System</td>
<td>12350</td>
<td>12350</td>
<td>100</td>
<td>12350</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control Building</td>
<td>6192</td>
<td>6192</td>
<td>33 1/3</td>
<td>2064</td>
<td>33 1/3</td>
<td>2064</td>
</tr>
<tr>
<td>Yard Piping,</td>
<td>8256</td>
<td>8256</td>
<td>33 1/3</td>
<td>2752</td>
<td>33 1/3</td>
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<tr>
<td>Site Work</td>
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<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>TOTALS</td>
<td>67270</td>
<td>7873</td>
<td>75103</td>
<td>51</td>
<td>38100</td>
<td></td>
</tr>
</tbody>
</table>

Administrative Costs = $10,950**

* 86% of the Total Cost Per Year
** 14% of the Operating Costs
Surcharge Rate Calculation Steps

I. BOD Surcharge Calculation

LOGANVILLE EXAMPLE

1. BOD, Cost % (from Table): 28 %

2. Total Annual Operating and Replacement Cost (from Table): 75,103

3. Total lbs. BOD Plant Capacity (NOTE: Subscript "D" indicates domestic as defined in the Sewer Use ordinance):

\[
\text{(Plant MGD)} (\text{BOD}_D)(256) = (0.6)(250)(256) = 38,400 \text{ lbs. per month}
\]

4. Cost Per lb. BOD

\[
\frac{\% \text{ BOD Cost} \times \text{Total Annual Operating and Replacement Cost} \times \text{12}}{\text{Total lbs. BOD Plant Capacity}} = \frac{28\% / 100 \times (75,103 / 12)}{38,400 \text{ lbs.}} = \frac{0.0456}{\text{per lb.}}
\]

5. BOD Surcharge Formula

\[
(BOD_I - BOD_D)(\text{flow}_I \text{ in 1000 gal.})(\text{cost per lb. BOD})(\text{0.0084})
\]

II. SS Surcharge Calculation

1. SS Cost % (from Table): 21 %

2. Total annual operating and replacement cost (from Table): 75,103

3. Total lbs. SS Plant capacity:

\[
\text{(Plant MGD)} (\text{SS}_D)(256) = (0.6)(250)(256) = 38,400 \text{ lbs. per month}
\]

4. Cost per lb. SS

\[
\frac{\% \text{ SS Cost / 100} \times \text{Total Annual Operating and Replacement Cost / 12}}{\text{Total lbs. SS Plant Capacity}} = \frac{21\% / 100 \times 75,103 / 12}{38,400 \text{ lbs.}} = \frac{0.0342}{\text{per lb.}}
\]

5. SS Surcharge Formula

\[
(\text{SS}_I - \text{SS}_D)(\text{flow}_I \text{ in 1000 gal.})(\text{Cost per lb. SS})(\text{0.0084})
\]
GENERATING SUFFICIENT REVENUE - The User Charge System in the long run

The rate calculations to meet the U.C. requirements for getting the step 3 grant is only the first step to meeting the "generating sufficient revenue" requirements of the user charge regulation. To adequately meet these requirements you must employ the User Charge System to develop rates for the remainder of the useful life of the wastewater treatment plant. A necessary preliminary step to accomplish this is to develop an accounting system to accumulate the data for the cost categories.

Unfortunately most municipal accounting systems do not accumulate costs for just the wastewater system. If your accounting system does, then your task will be somewhat easier. For the cities which do not have a clear set of accounts that accumulate all of the costs for just the wastewater system, a method of doing this must be devised. Your CPA should be consulted on the best way to easily do this. It is strongly advised that a completely separate set of accounts for the wastewater system be established. The following assumes that some method of isolating just the wastewater treatment system costs has been devised.

ESTIMATING REVENUE NEEDS ON A YEAR-TO-YEAR BASIS

The first step to calculating revenue needs for any year is to divide the account headings into two basic categories to arrive at administrative cost and operating cost.

The entries for administrative cost would include the following headings in a typical wastewater system ledger:

- City Clerk Salary,
- Meter Reader Salary,
- Postage, and
- Miscellaneous Billing Expenses.

Your particular accounting system may contain other accounts which may be classified as 'administrative'. If so, they should be included in the administrative cost pool.

The second area of cost pertains to operating costs and would consist of the following headings in a typical wastewater system ledger:

- Utilities,
- Chemical Supplies,
- Minor Repairs,
- Fuel,
- Pipe and Fitting Supplies.

The third area, replacement costs, consists of those irregular costs which will be incurred but at unpredictable times. In order to meet these costs, the city should establish a fund based on the depreciation schedules
for those pieces of equipment which will require replacement over the life of
the system. The city's accountant must establish those depreciation sched-
ules from the bid costs and, utilizing appropriate assumptions regarding
interest earned versus projected inflation, calculate the per year contribu-
tion which must be made to the replacement fund. This will insure adequate
availability of monies to meet these irregular costs. Expenditures from the
replacement fund cover any major equipment repair costs with minor equipment
repairs taken from the operating budget. Any questions about whether a
certain expense is major or minor should be referred to your accountant. The
ability of the fund to meet expected future needs should be reviewed period-
ically.

Estimating Wastewater System Utilization. Two things must be estimated
here: the number of customers contributing to administrative costs and the
amount of water they will discharge to the system. The simplest method for
estimating these is to use the number of customers on the system when the
rates are reviewed as an estimate of the number for the next rate period.
Any additional customers tying into the system during the year will therefore
be included in the next rate revision.

The estimate of water used by the sewer customers is generally used as a
proxy for wastewater contributions and is calculated just as described
previously by multiplying the number of sewer customers times the average
water used per meter in the city; i.e.,

\[
\frac{\text{Total Water Used}}{\text{Total # of Water Customers}} \times \# \text{ of Sewer Customers} = \text{Expected Water Usage by Sewer Customers}
\]

Calculation of Rates. There are three rates which are calculated; i.e.,
the administrative fee, the operation and replacement fee, and the surcharge
rates. The surcharge rates do not have to be calculated until the city has
industry that discharges over-strength wastes. These calculations are
exactly the same as those done in completing the worksheets. The worksheets
can therefore be used to assist you whenever rates are reviewed.

1. Monthly Administrative Fee

This is calculated by dividing the monthly administrative costs the
the number of sewer customers.

\[
\frac{\text{Total Annual Administration Costs}}{12} = \text{Fixed Fee}
\]

\[
\frac{\text{Total # of Sewer Customers}}{\text{Total # of Water Customers}}
\]

2. Operating and Replacement Fund Fee

This is calculated by dividing the total operating and replacement fund
costs by the total water usage estimate.

\[
\frac{\text{Total Annual Operating + Total Replacement Fund}}{\text{Total Water Used by Sewer Customers}} = \text{Per Thousand}
\]

\[
\frac{\text{Gallon Charge}}{\text{in 1,000 gallons}}
\]
3. Surcharge Rates

Surcharge rates should be re-calculated as per worksheet #2 explained in the section of this guidance entitled "The Complex Case" every time rates are reviewed.
PART V
QUESTIONS AND ANSWERS

How Does The User Charge System Relate To The Total Sewer Bill?

The "EPA User Charge" is that portion of the total sewer bill the city is required to collect as a condition of accepting the EPA grant. The EPA User Charge does not include the funds the city may want to collect to pay the debt service on new bonds associated with this construction or any old bonds associated with previous construction. Any contribution to debt service must be collected by charges over and above the OM&R (operation, maintenance and replacement) costs collected under the EPA User Charge System. Funds collected to pay the current OM&R costs must not be used to pay off bonded indebtedness.

It is important to note that the requirements on proportionality, etc., that apply to the EPA User Charge do not apply to the city's collection of debt service charges. As far as EPA is concerned, the city may collect those charges any way the city chooses. It is in the area of debt service collection that differentials in rates often appear. For example, when cities serve customers outside the corporate limits they often charge higher rates for city services because the people served outside the city limits do not pay ad valorem taxes to the city. This kind of rate differential is allowable on the total bill as long as the funds collected are for debt service. Differential sewer rates for the EPA User Charge portion of the total bill are not allowed unless justified by cost of service differentials clearly spelled out.

It should be clear from the above that the city must do additional work to incorporate the EPA User Charge System into the total sewer bill assessments. The sewer ordinance must be amended to include both the EPA User Charge and debt service. Consult your accountant for determination of the debt service charge and how to incorporate it and the User Charge.

How Should Industry Be Handled?

The important thing to recognize is that industries should be contacted early. Their wastewater flow should be characterized by strength and quantity and if their wastes are above domestic strength they should be notified that surcharges will be applied. The industrial inventory thus compiled would serve a dual purpose - not only would early determination of surcharges be possible but the city would have data that could be used to track down discharges that could upset the plant. Once identified, problem discharges could be put on notice that they may be liable for damage assessments if they persist in discharging water incompatible with the treatment process.

The city should also be aware of the possibility that industries may reduce wastewater discharges when actually faced with higher rates, thus reducing revenues to the city. On some occasion it may even be economical for the industry to eliminate its waste flows completely from the system. If you have large industry that contributes substantially to the revenue base of the wastewater treatment system, you may want to investigate the possibility of securing a contractual agreement with the industry prior to final design.
A form letter and questionnaire which could be used both to notify industry of your plans and to secure the necessary data to construct an industrial inventory is attached.
SAMPLE LETTER REQUESTING WASTEWATER DISCHARGE INFORMATION FROM INDUSTRIES

Dear ____________:

The City is now engaged in preliminary design of expansion and improvement of our wastewater treatment system funded partially by a grant from the Environmental Protection Agency. To assure that the needs of our industrial customers are being met we are constructing an inventory of industrial users including a characterization of their wastewater. This information is vital to our design criteria and is also required for us to meet our obligation in accepting the EDA grant. Please fill out the enclosed form and return it to us. If you have any questions please do not hesitate to call.

Sincerely,

Mayor
SAMPLE QUESTIONNAIRE TO INDUSTRIAL USERS

Date _____________________________ Contact Persons

Company Name ______________________________ Title ________________

Address __________________________________ Name ____________________

City ___________________________ ZIP __________ Title ________________

Telephone ____________ SIC Code _______ Name ____________________

Water Use Information

Average Water Use (1,000 gallon per month)______________________________

No. of Employess ________________

Average No. of hours worked per week per employee ______________________

Production Information

Raw Materials ________________________________

Products ________________________________

Process: _____ Continuous _____ Batch Clean Up Times ____________

Waste Water Information

% of water used discharged to sewer ________________

Are any of these involved?

caustic ___ oils, grease ___ acid ___ flammable solvent ___

chlorine ___ nickel ___ tin ___ cadmium ___ copper ___

food or animal material ___ chromium ___ silver ___ zinc ___

cyanide ___ phenol ___ other organic chemicals: specify _____________

Where does water used go which is not discharged to sewer? (include % estimates)

____________________________________________________________________

For wastewater discharged to sewer, estimate % source and frequency:

Wash down water ___% ______ times per ______

Cooling water blow-down ___% ______ times per ______

Boiler blow down ___% ______ times per ______

Process wastewater ___% ______ times per ______

Sanitary conveniences ___% ______ times per ______

Please provide any data or description of the composition (chemical and physical) of your wastewater that you know: __________________________________________________________

____________________________________________________________________

____________________________________________________________________

Do you have any pre-treatment facilities? ______ planned? ________________
A great deal of confusion has been expressed over the relationship of the User Charge (UC) system requirements and the industrial cost recovery (ICR) system requirements. Both systems result in charges for the use of federally funded wastewater treatment plants and both use some common data in their development, but there the similarity ends. The UC system collects O&M&R costs; the ICR system collects construction costs. Funds collected under the UC system insure that the wastewater treatment systems are kept up while the funds collected from industry under ICR pay back to the U. S. Treasury and the city a portion of the grant which built the facility. An industry will pay both user charges and industrial cost recovery. The city utilizes the funds thus collected in completely different ways.

Both systems use the data on wastewater quantity and strength in their calculation procedures - but those procedures are completely different. The UC system uses the strength data to calculate surcharges. The ICR system uses the data to calculate the portion of construction costs attributable to each industry. Once the construction cost is known, and as long as the industry wastewater flow does not change, his ICR charge would not change. The UC charge will change whenever the costs to the city of treating the wastes changes even if his wastewater characteristics do not change. Neither the UC system nor the ICR system in any way address the collection of funds for the retirement of city bonded indebtedness.
APPENDIX I

Worksheets
WORKSHEET #1

1. Are you using the EPA Publication. MCD-39?
   
   ___ yes  ___ no

   If no, you must complete the "basis of estimation" sheet attached.

2. Administrative Fee Calculation:
   A. Number of sewer customers: ________
   B. Annual Administrative Cost: ________

   \[
   \frac{(B)}{12} = \left( \frac{\text{_______}}{\text{_______}} \right) \times \text{per meter per month}
   \]

3. Flow Fee Calculation
   A. Replacement Cost
      (Plant components needing replacement or major repair During Plant Life)

<table>
<thead>
<tr>
<th>Plant Components</th>
<th>Total Cost</th>
<th>Annual Cost (= Total Cost/30)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
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</tbody>
</table>

   Total: $ __________

   B. Annual Operating Cost: $ __________

   C. Total of Annual Total Replacement Cost and Operating Cost: $ __________

   D. Average monthly water usage per sewer customer: ________ thousand gallons

   E. Total annual water usage by sewer customers:

   \[
   \text{Number of sewer customers} \times \text{average monthly water use} = (2A)(3D)(12) = (\text{_______})(\text{_______})(12) = \text{_______} \text{thousand gallons}
   \]

   F. Flow Fee = (3C) = (_______)

   \[
   = \left( \frac{\text{_______}}{\text{_______}} \right) \text{per thousand gallons}
   \]
Worksheet #1 - Supplement

BASIS OF ESTIMATION
(to be completed if MCD-39 is not used)

A. General or Specific Administrative Accounts

<table>
<thead>
<tr>
<th></th>
<th>Estimated Cost</th>
<th>Percent to Sewage</th>
<th>Net Sewer Cost</th>
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<tbody>
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<td>Total</td>
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</table>

B. General or Specific Operations Accounts

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<tr>
<th></th>
<th>Estimated Cost</th>
<th>Percent to Sewage</th>
<th>Net Sewer Sewage</th>
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*Percent to sewage is required only for accounts shared with other services.
# SURCHARGE CALCULATION TABLE

<table>
<thead>
<tr>
<th>PLANT COMPONENT</th>
<th>Annual Operating Cost</th>
<th>Annual Replacement Cost</th>
<th>Total Cost</th>
<th>Flow % of Cost</th>
<th>BOD % of Cost</th>
<th>SS % of Cost</th>
<th>Other % of Cost</th>
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SURCHARGE RATE CALCULATION STEPS

I. BOD Surcharge Calculation

1. BOD, Cost % (from Table): __________%

2. Total Annual Operating and Replacement Cost (from Table): __________

3. Total lbs. BOD Plant Capacity (NOTE: Subscript "D" indicates domestic as defined in the Sewer Use ordinance):
   
   
   (Plant MGD) (BOD_D) (256)

   = (__________) (__________) (256) = __________ lbs. per month

4. Cost Per lb. BOD
   
   (% BOD Cost / 100) (Total Operating and Replacement Cost / 12) = cost per lb. BOD

   = (_______ %/100) ($___________/12) = $___________ per lb.

   (________ lbs.)

5. BOD Surcharge Formula
   
   (BOD_I - BOD_D) (flow_I in 1000 gal.) (cost per lb. BOD)(.0084)

   = (BOD_I - _________) (flow_I in 1000 gal.) (__________) (.0084)

   __________________________

II. SS Surcharge Calculation

1. SS Cost % (from Table): __________%

2. Total annual operating and replacement cost (from Table) $__________

3. Total lbs. SS Plant capacity:
   
   (Plant MGD) (SS_D) (256)

   = (__________) (__________) (256) = __________ lbs. per month

4. Cost per lb. SS
   
   (% SS Cost/100)(Total Annual Operating and Replacement Cost/12) Total lbs. SS Plant Capacity

   = (________ %/100) ($___________/12) = $___________ per lb.

   (________ lbs.)

5. SS Surcharge Formula
   
   (SS_I - SS_D) (Flow_I in 1000 gal.) (Cost per lb. SS)(.0084)

   = (SS_I - _________) (flow_I) (__________) (.0084)

   __________________________
III. Surcharge Calculation - Other Component: (specify)

1. Cost %: __________%

2. Total Annual Operating and Replacement Cost: $__________

3. Total lbs. Plant Capacity:
   
   (Plant MGD) (Domestic strength for this component) (256)
   
   = (___________)(___________ mg/1)(256) = __________ lbs.

4. Cost Per lb.
   
   (% Cost / 100)(Total Annual Operating and Replacement Cost / 12)
   
   Total lbs. Plant Capacity
   
   = (___________ %/100)($___________ /12) = $___________ per lb.
   
   (___________ lbs.)

5. Surcharge Formula
   
   (Industry mg/1 - Domestic mg/1)(flow)(Cost per lb.)(.0084)

   * 

   = (Industry mg/1 - __________)(flow)(___________)(.0084)

   *NOTE - for components that have no reasonable domestic strength, a different approach to the surcharge rates must be taken. First, your consultant must supply plant capacity to handle this component based on design criteria. Second, the Surcharge Formula would not contain the deduction for domestic strength. That is, the formula would be if the form:

   = (Industry mg/1)(flow)(Cost per lb.)(.0084)

   = (Industry mg/1)(flow)(___________)(.0084)

   The reason for this is that for BOD and SS, the industry is already paying for domestic strengths when it pays the regular flow charge. The surcharges are for all above domestic strengths. If there are no normal domestic strengths established, then the industry is not paying any of the cost for treating that component when he pays the flow charge.
APPENDIX II
Sample Ordinance Implementing
User Charge System
SAMPLE ORDINANCE IMPLEMENTING USER CHARGE SYSTEM

An ordinance establishing procedures for the implementation of the EPA User Charge for services rendered by the Water Pollution Control facilities, hereinafter called the "Treatment Works," of the City

WHEREAS, the City, hereinafter called the "City," has undertaken to construct and operate Treatment Works consisting of sewers, and appurtenances to provide adequate and proper treatment of sewage and wastewater generated from all properties within the corporate limits of the City, and,

WHEREAS, the City will utilize federal funds under PL 92-500, as amended, in the construction of said Treatment Works, and,

WHEREAS, the aforementioned grant requires the implementation of a User Charge System to provide for the equitable collection of all necessary operation, maintenance, and replacement costs as described in 40 CFR, part 35, dated September 27, 1978.

Considering the foregoing, the following definitions and sewerage rate system is established.

SECTION I

Act: The federal Water Pollution Control Act, also known as PL 92-500, as amended.

EPA User Charge: That portion of the total sewer bill which is attributable to the implementation of the EPA User Charge System. Said rates include collection of operation, maintenance, and replacement expenses as defined hereinafter.

Operation, Maintenance, and Replacement Costs: This term shall mean the Treatment Works in good repair and at design specifications. This includes labor, supplies, utilities, chemicals, billing, administration, and general expenses including installation and/or repair of equipment, accessories, or appurtenances necessary during the service life of the Treatment Works.

Domestic Strength Wastes: This term shall mean any wastes which have an average daily concentration not exceeding ___ mg/L BOD or ___ mg/L of SS.

BOD (Biochemical Oxygen Demand): "BOD" shall mean the quantity of oxygen utilized in the biochemical oxidation of organic matter under standard laboratory procedures in five (5) days at twenty degrees celsius (20°C), expressed in milligrams per liter (mg/L).

SS (Suspended Solids): "SS" shall mean solids that either float on the surface of or are in suspension in water, sewage, or other liquids and which are removable by laboratory filtering.
Over-Strength Wastes: This term shall mean any wastewater discharged into the Treatment Works which exceeds a BOD of ______ mg/L or a SS of ______ mg/L.

Toxic Pollutant: This term shall mean any discharge into the Treatment Works which interferes with the normal biological process of the Treatment Works or in some way reduces the efficiency of the Treatment Works or causes special procedures to be necessary to properly dispose of either effluent or sludge produced by the Treatment Works so that the cost of said disposal is increased.

Wastewater Customer: This term shall mean any residence, business, industry, school, or other building tied into and receiving services from the Treatment Works and receiving periodic billings thereof.

User: This term shall mean any person, business, corporation, or other entity which discharges wastes into the Treatment Works with continuous or occasionally. A wastewater customer is a user, but a user does not necessarily have to be a wastewater customer.

SECTION 2 - EPA USER CHARGE SYSTEM

ARTICLE 1. The EPA User Charge System shall result in the calculation of three unit charges:

a. An Administrative Charge to be calculated based on the administration costs and the number of wastewater customers to be assessed on a per meter basis,

b. An operation, maintenance, and replacement fee calculated based on the volume of water used by wastewater customers and the total operation, maintenance, and replacement costs incurred by the City to be assessed on a per thousand gallons of water used basis, and,

c. A surcharge rate to be applied to all over-strength wastes to be based on the strength and volume of such wastes and the costs of treatment.

The calculation procedures for these charges are more particularly described in Guidance For Developing "EPA User Charge Systems For Small Municipalities" prepared by the Georgia Institute of Technology Engineering Experiment Station, dated May 1980.

ARTICLE 2. Toxic Pollutants. Any user which discharges any toxic pollutants which cause an increase in the cost of managing the effluent or the sludge of the aforementioned Treatment Works shall be required to pay for such increased cost.

ARTICLE 3. Biennial Review. The City shall review not less often than every two years the wastewater contribution of users, the total costs of operation and maintenance of the Treatment Works, and the approved user charge system. The City shall revise the charges for users to accomplish the
Over-Strength Wastes: This term shall mean any wastewater discharged into the Treatment Works which exceeds a BOD of _____ mg/L or a SS of _____ mg/L.

Toxic Pollutant: This term shall mean any discharge into the Treatment Works which interferes with the normal biological process of the Treatment Works or in some way reduces the efficiency of the Treatment Works or causes special procedures to be necessary to properly dispose of either effluent or sludge produced by the Treatment Works so that the cost of said disposal is increased.

Wastewater Customer: This term shall mean any residence, business, industry, school, or other building tied into and receiving services from the Treatment Works and receiving periodic billings thereof.

User: This term shall mean any person, business, corporation, or other entity which discharges wastes into the Treatment Works with continuously or occasionally. A wastewater customer is a user, but a user does not neces-

2. Generate sufficient revenue to pay the total operation and maintenance costs necessary to proper operation and maintenance (including minor replacement) of the treatment works, and

3. Apply excess revenues collected to adjust future rates accordingly.

ARTICLE 4. Notification. The City will notify each user at least annually in conjunction with a regular bill or other mailing, of the rate attributable to the user charge.

ARTICLE 5. The User Charge System shall take precedence over any terms or conditions of agreements or contracts between the City and users which are inconsistent with the requirements of Section 204 (b) (1) (A) of the ACT and 40 CPR, part 35, dated September 27, 1978.

SECTION 3 - EPA USER CHARGE UNIT RATES

The EPA User Charge, which includes charges for operations, maintenance, and replacement expenses, will be assessed for all contributors to the Treatment Works on the following basis:

a. Customer: _____ per bill

b. Volume: _____ per thousand gallons of water used
GUIDANCE FOR DEVELOPING AN EPA INDUSTRIAL COST RECOVERY SYSTEM FOR A SMALL MUNICIPALITY

Prepared for

The Georgia Department of Community Affairs
Inter-University Task Force

Under Partial Funding Provided by
The National Science Foundation

by

B. William Riall, Jr.
Project Director

In Cooperation With
Miller, Stevenson, & Steinichen, Inc.

GEORGIA INSTITUTE OF TECHNOLOGY
Engineering Experiment Station
Economic Development Laboratory
Applied Research Division

Atlanta, Georgia 30332
April 1980
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INTRODUCTION TO INDUSTRIAL COST RECOVERY

When Congress passed legislation enabling EPA to make grants to assist municipalities in meeting the requirements of the Federal Water Pollution Control Act, stipulations were included to insure industrial contribution to the construction cost of water pollution control. These stipulations, known as the Industrial Cost Recovery (ICR) requirements, require municipalities receiving EPA grants to install a system to recover grant funds from industries benefitting from the construction according to their proportional use. If a municipality does not have industries at the time of construction, the requirements can be met by enacting a promise to install an appropriate ICR system should industries begin to utilize the wastewater system. A sample resolution and transmittal letter are given in Appendix I to accomplish this.

The requirements of the ICR system are complex. The ICR system must provide a system of calculating industrial charges that can be used in a large number of situations, the method for handling the collected monies is complex, and the documentation necessary to satisfy both industries and EPA is extensive. The central idea of ICR, however, is simple. Any industry receiving beneficial use of a wastewater treatment system must pay the cost of providing those benefits.

The timing for the submittal of ICR documents is uncomfortably early in the grants process. An ICR system must be approved prior to the step 3 grant. The rates included are not implemented, however, because the construction costs (which are the primary data for the system) are not final at this early stage. The rates will have to be reworked after the final construction cost is known, i.e., near the end of actual construction. Those reworked rates must then be included in an ordinance and submitted to the
regulatory agencies for approval. Another requirement related to ICR which must be satisfied prior to award of the step 3 grant is the submittal of "letters of intent" from all "significant industrial users" of the system. A "significant user" is defined as any industry expected to utilize 10% or more of the capacity of the new plant. The letter of intent must include statements from the industry indicating that they will pay their allocable cost, and the estimated quantity and period of expected usage. Further, the municipality must state that they will require the industry to pay.

Implementation and maintenance of the ICR system becomes a condition of the step 3 grant.
BASIC REQUIREMENTS

The ICR system must:

1. Specify the frequency of payment and the ICR period.
2. Describe procedures for handling reserve capacity, discontinuance of use, upgrading and expansion of the wastewater treatment system.
3. Establish the cost basis for ICR rate calculation.
4. Develop the ICR payments formulas.
5. Specify the monitoring procedures.
6. Specify the appeals procedures.
7. Describe record keeping systems.
8. Describe the funds management procedures.
9. Implement the system.

It should be noted that ICR calculations are based only on the grant amount. If the city wishes to collect for their own contribution to construction costs, a separate system would be advisable.

The requirements listed above are described and explained individually in the following sections. These requirements are then incorporated into the draft ordinance where necessary and worksheets with examples are given as needed.

1. **Frequency of Payment and ICR Period**

   The regulations require payments for ICR charges to be made no less often than annually. The normal procedure is to assess charges on a monthly basis and incorporate the billing in the regular utility billing process. It is also allowable for a firm to pay the entire assessment in one lump sum, but this would normally not be financially advantageous to the firm. The rate calculations for this ICR system are based on total flow from the

-4-
industry. Therefore, the billing cycle could be either monthly, quarterly or annually.

The **ICR period** is the period over which the payments may be spread. It is financially advantageous for industries to stretch the payment period out as long as possible due to the fact that there are no interest charges to the firm for ICR payments. The regulations allow a maximum of 30 years or the estimated useful life of the facility, whichever is less. For most PL 92-500 grants, the planning efforts are so extensive that it is almost a certainty that some parts of the facilities will be used at the end of a 30-year period unless it is known that they will be abandoned. Any changes to the wastewater plant made during the 30-year period can be incorporated into the ICR system thereby retaining its integrity. It is, therefore, reasonable that the 30-year period allowable in the regulations will be the ICR period. The savings to an industry by using a 30-year period rather than a lump-sum payment in the first year of operation are substantial. For example, every $30.00 of payment, i.e., for every $1.00 paid each year for 30 years, is the equivalent of about $8.00 of present cost to a firm assuming a discount rate of 12%. This requirement is handled by Section IV of the sample ordinance.

2. Reserve Capacity, Discontinuance of Use, Upgrading and Expansion.

   a. **Reserve Capacity.** The regulations specify that any firm which contracts or otherwise obligates the city to reserve a certain capacity for the industry's sole use must pay the grant amount associated with that capacity even if less is actually used. Of course, if more than the reserved capacity is used, then ICR would apply to the larger amount.
b. Discontinuance of Use. Any firm discontinuing use of a funded facility is no longer required to pay ICR charges.

c. Upgrading and Expansion. If the wastewater treatment plant is upgraded or expanded with subsequent grants from PL 92-500 the charges for ICR must be adjusted proportionately. The only exception to the rule is for a firm which has reserved capacity. In this case, any expansion to the system would not change such a firm's ICR charges until they exceed their reserved capacity. At such time, the firm would be charged at the new (post-expansion) rate for anything above the usage levels originally reserved.

These requirements (a, b & c above) are handled by Section VI of the Sample Ordinance.

3. Cost Basis for ICR rate Calculations.

The cost basis for ICR rates is the total step 1, step 2 and step 3 grant amounts of the project with the following exclusions:

a. Grant amounts relating to infiltration/inflow (I/I) correction or treatment including any I/I analysis, sewer system evaluation studies, or rehabilitation work, are excluded from the cost basis.

b. Grant costs for correction of combined sewer overflows and collection or treatment of stormwaters are similarly excluded.

In addition to the above exclusions, it is optional that non-process i.e., domestic waste flows, from industrial users may also be excluded. This analysis assumes that domestic water will be excluded for all eligible industries at a rate of 40 gallons per employee per eight-hour shift or, equivalently, five gallons per employee-hour.
4. **ICR Payment Formulas**

ICR payments must reflect the proportional contribution to the grant portion of construction cost. All factors contributing to construction cost must be considered, including volume, flow rate characteristics (if applicable) and strength factors such as biochemical oxygen demand (BOD) and suspended solids (SS). A particular firm's ICR payment would be calculated by multiplying the appropriate waste parameter for the firm by the unit cost of providing treatment for that parameter. The first step is, therefore, to calculate the unit costs by parameter.

The procedure to calculate the unit costs is as follows:

a. First, you must apportion the grant costs of constructing each major wastewater system component by wastewater parameter. This is accomplished by completing worksheet #1 as follows:

1) The major plant components should be listed in column 1. The most common components are pre-printed. If any of them are not applicable to your system they should be scratched out. You will note that the components fall into two groups i.e., those that are a function of wastewater characteristics (for example, Influent Pumping) and those which are not (for example, Control Building). Additional components listed should be grouped similarly as per the example.

2) Estimate the total cost for each component from current supplies prices or from available cost curves and insert in column 2.

3) Calculate the grant amount for each component by multiplying the total cost by .75 for column 3.

4) Estimate the percentage of the construction cost attributable to each significant wastewater parameter for the group 1 components. Some of the percentages are obvious such as Influent Pumping which is 100% attributable to
to flow. Other items such as "Secondary Clarifiers" are not so obvious. In the Loganville ICR example, the secondary clarifier was attributed 50% to flow and 50% to suspended solids (SS). There is nothing magic about the percentages given for the different components - they should be whatever you and your consultant think reasonable for your particular situation. The Loganville example may help you in deciding what the percentages should be. Please note that for Loganville the parameters of flow, BOD, and SS were sufficient. The parameters you list may include more items, such as nitrates, but the three done for Loganville are a minimum.

The percentages cannot be filled in for the Group II components at this time. They will be dependent on the Group I component calculation.

5) Multiply the percentage times the grant amount listed in column 3 and enter into the "b" column for each listed parameter.

6) Total the amounts in column b for each Group I components Total cost and Grant Amount and enter in 'Sub-Total for Group 1 Components'. In the Loganville example, this yielded, for example, $1,243,612 for the Grant Amount and $958,612 for the BOD subtotals. (NOTE: you can check your addition by adding all the column 'b' subtotals - this should equal the Grant Amount subtotal which, in turn, should be 75% of the Total Cost subtotal, keeping in mind that they may be off a dollar or two because of rounding errors).

7) Calculate the overall percentage for each parameter by dividing the column "b" subtotals by the Grant Amount subtotal and enter in the Group I subtotal row under the applicable 'a' column. For Loganville, this yielded 77% for flow, 13% for BOD and 10% for SS. These percentages are then used to allocate the grant costs for the Group II components as follows.
8) Add the Grant Amounts for the Group II components. For Loganville, this sum was $676,200. The Group II subtotal is then multiplied by the overall percentage calculated from the Group I components for each parameter. In the Loganville case, for BOD, for example, the $676,200 was multiplied by 13% to yield a Group II subtotal for BOD of $87,906.

9) The Group I and Group II subtotals are then added for each parameter to complete the "Total Assigned Cost" row under column 1, 2 and the 'b' column for each parameter. These totals for Loganville for Flow, BOD and SS were $1,478,256, $249,576 and $191,981 respectively. You can check your calculation by dividing the totals assigned cost for each parameter by the Total Assigned Cost-Grant Amount. The percentages for each should agree with the percentages calculated for the Group I components.

The final row containing the overall cost disaggregation and percentages are what this whole exercise was about and represent the cost basis. They form the core of the ICR rates you will be calculating.

b. The second step to developing the ICR rate formulas is to calculate the capacity loadings of the plant. Capacity loadings must be calculated for each of the wastewater parameters important to your plant. The method used in this guidance calculates and uses average monthly capacity.

Flow monthly capacity is calculated by:

\[(\text{Plant MGD}) \times 30440 = \text{monthly flow capacity}\]

The strength parameter capacity is calculated by multiplying the flow figure from above by a conversion factor of .00841 times the design concentration (in mg/l or PPM) for that parameter, i.e.:

\[(\text{monthly flow capacity}) \times .00841 \times \text{(design concentration)} = \text{monthly capacity in lbs.}\]
For example, the BOD domestic strength definition was 250 mg/l and the monthly flow capacity was 18,264 thousand gallons for Loganville. Therefore the BOD monthly lbs. capacity was:

\[(18,264) \times (0.00841) \times (250) = 38,400 \text{ lbs.}\]

The other parameters are calculated similarly. The only difference between them would be the concentration definition. As calculations are done they should be inserted into the Data Summary section of Page 2 of the worksheet.

c. The third step is to calculate the ICR Rate formulas. This is done by filling in the second page of the worksheet. Items I-A.1 through I-A.6 come from the table completed on worksheet page 1. Items I-B.1 through I-B.6 are calculated as described above. The ICR rate formulas are derived by plugging these numbers into the spaces as described under II on page 2 of the worksheet. The '.00841' in the formulas is simply a conversion factor for expressing industry mg/l in lbs./thous. gal.

The final items indicated with squares around them are to be inserted into the ordinance in Section II.
<table>
<thead>
<tr>
<th>Column 1</th>
<th>Column 2</th>
<th>Column 3</th>
<th>Column 3</th>
<th>Column 4</th>
<th>Column 5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Cost</td>
<td>Grant Amount</td>
<td>(a) Flow %</td>
<td>(a) BOD %</td>
<td>(a) SS %</td>
</tr>
</tbody>
</table>

**Group I - Items related to wastewater flow and/or strength**

- Influent Pumping
- Preliminary Treatment
- Secondary Clarifier
- Recirculating Pumping
- Digester
- Chlorination
- Sludge Drying Beds
- Sewers

Sub total - Group I

**Group 2 - Items not related to wastewater flow or strength**

- Control Building, Lab
- Yard Piping, Sitework
- Standby Power
- Contingencies, Inspection, Legal Fees

Step 1 Cost
Step 2 Cost

Sub total - Group II

Total Assigned Cost
## Worksheet Page 1

Loganville Example

<table>
<thead>
<tr>
<th>Group I - Items related to wastewater flow and/or strength</th>
<th>Column 1</th>
<th>Column 2</th>
<th>Column 3</th>
<th>Column 4</th>
<th>Column 5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
<td>Grant</td>
<td>(a)</td>
<td>(a)</td>
<td>(a)</td>
</tr>
<tr>
<td></td>
<td>Cost</td>
<td>Amount</td>
<td>Flow (b)</td>
<td>BOD (b)</td>
<td>SS (b)</td>
</tr>
<tr>
<td>Influent Pumping</td>
<td>90,000</td>
<td>67,500</td>
<td>100</td>
<td>67,500</td>
<td>50</td>
</tr>
<tr>
<td>Preliminary Treatment</td>
<td>35,000</td>
<td>26,250</td>
<td>50</td>
<td>13,125</td>
<td>50</td>
</tr>
<tr>
<td>Emergency Holding Pond</td>
<td>50,000</td>
<td>37,500</td>
<td>100</td>
<td>37,500</td>
<td>50</td>
</tr>
<tr>
<td>Aeration Basin</td>
<td>55,000</td>
<td>41,250</td>
<td>50</td>
<td>20,625</td>
<td>50</td>
</tr>
<tr>
<td>Aerators</td>
<td>110,000</td>
<td>82,500</td>
<td>50</td>
<td>41,250</td>
<td>50</td>
</tr>
<tr>
<td>Secondary Clarifier</td>
<td>70,000</td>
<td>52,500</td>
<td>50</td>
<td>26,250</td>
<td>50</td>
</tr>
<tr>
<td>Recirculating Pumping</td>
<td>75,000</td>
<td>56,250</td>
<td>50</td>
<td>28,125</td>
<td>50</td>
</tr>
<tr>
<td>Aerobic Digester</td>
<td>85,000</td>
<td>63,750</td>
<td>50</td>
<td>31,875</td>
<td>50</td>
</tr>
<tr>
<td>Chlorination</td>
<td>30,000</td>
<td>22,500</td>
<td>100</td>
<td>22,500</td>
<td>50</td>
</tr>
<tr>
<td>Alum Addition</td>
<td>25,000</td>
<td>18,750</td>
<td>25</td>
<td>4,688</td>
<td>75</td>
</tr>
<tr>
<td>Sludge Drying Beds</td>
<td>60,000</td>
<td>45,000</td>
<td>25</td>
<td>11,250</td>
<td>75</td>
</tr>
<tr>
<td>Sewers</td>
<td>973,150</td>
<td>729,862</td>
<td>100</td>
<td>729,862</td>
<td>10</td>
</tr>
<tr>
<td>Sub total-Group I</td>
<td>1,658,150</td>
<td>1,243,612</td>
<td>77</td>
<td>958,612</td>
<td>13</td>
</tr>
<tr>
<td>Group 2 - Items not related to wastewater flow or strength</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control Building, Lab</td>
<td>110,000</td>
<td>82,500</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yard Piping, Sitework</td>
<td>60,000</td>
<td>45,000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Standby Power</td>
<td>60,000</td>
<td>45,000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contingencies, Inspection, Legal Fees</td>
<td>509,800</td>
<td>382,350</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 1 Cost</td>
<td>20,000</td>
<td>15,000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 2 Cost</td>
<td>141,800</td>
<td>106,350</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sub total-Group II</td>
<td>901,600</td>
<td>676,200</td>
<td>77</td>
<td>520,671</td>
<td>13</td>
</tr>
<tr>
<td>Total Assigned Cost</td>
<td>2,559,750</td>
<td>1,919,812</td>
<td>1,478,255</td>
<td>249,576</td>
<td>191,981</td>
</tr>
</tbody>
</table>

-12-
I. DATA SUMMARY

A. COST DATA
1. Total assigned flow cost  $__________
2. Total assigned BOD cost  $__________
3. Total assigned SS cost  $__________
4. Total assigned _____ cost  $__________
5. Total assigned _____ cost  $__________
6. Total assigned _____ cost  $__________

B. PLANT CAPACITY DATA
1. Monthly flow capacity  ____________ thou. gal.
2. Monthly BOD capacity  ____________ lbs.
3. Monthly SS capacity  ____________ lbs.
4. Monthly _____ capacity
5. Monthly _____ capacity
6. Monthly _____ capacity

II. ICR RATE FORMULAS

A. FLOW FORMULA
1. Flow Cost Factor:
   \[
   \frac{(I-A.1)/360}{(I-B.1)} = \frac{($ \quad )/360}{(\quad \text{thou. gal.})}
   \]
   \[
   = $ \quad \text{per thou. gal.}
   \]
2. Flow Charge Formula:
   \[
   (\text{flow}_i)(\text{flow cost factor}) = (\text{flow}_i)(\quad\text{per thou. gal.})
   \]

B. BOD FORMULA
1. BOD Cost Factor:
   \[
   \frac{(I-A.2)/360}{(I-B.2)} = \frac{($ \quad )/360}{\quad \text{lbs.}}
   \]
2. BOD Charge Formula:
   \[
   (\text{BOD}_i)(\text{flow}_i)(\text{Flow cost factor})(.00841) = (\text{BOD}_i\text{Flow}_i)(\quad)(.00841) = \quad\text{per}
   \]
   \[
   \quad\text{thous. gal.}
   \]
C. SS Charge Formula
1. SS Cost Factor:
   \[
   \frac{(I-A.3)}{360} = \frac{($\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_) / 360}{(I-B.3)}\]
   \[
   = \frac{\text{per lb.}}{\text{lbs.}}
   \]
2. SS Charge Formula:
   \[
   (SS_I)(\text{flow}_I)(SS \text{ Cost Factor})(.00841)
   \]

D. ___________ charge formula (specify parameter)
1. Cost Factor:
   \[
   \frac{(I-A.4)}{360} = \frac{($\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_) / 360}{(I-B.4)}\]
   \[
   = \frac{\text{per lb.}}{\text{lbs.}}
   \]
2. Charge Formula:
   \[
   (\text{Parameter}_I)(\text{flow}_I)(\text{Cost Factor})(.00841)
   \]

E. ___________ charge formula (specify parameter)
1. Cost Factor:
   \[
   \frac{(I-A.5)}{360} = \frac{($\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_) / 360}{(I-B.5)}\]
   \[
   = \frac{\text{per lb.}}{\text{lbs.}}
   \]
2. Charge Formula:
   \[
   (\text{Parameter}_I)(\text{flow}_I)(\text{Cost Factor})(.00841)
   \]

F. ___________ charge formula (specify parameter)
1. Cost Factor:
   \[
   \frac{(I-A.6)}{360} = \frac{($\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_) / 360}{(I-B.6)}\]
   \[
   = \frac{\text{per lb.}}{\text{lbs.}}
   \]
2. Charge Formula:
   \[
   (\text{Parameter}_I)(\text{flow}_I)(\text{Cost Factor})(.00841)
   \]
WORKSHEET PAGE 2
LOGANVILLE EXAMPLE

I. DATA SUMMARY

A. COST DATA

1. Total assigned flow cost $1,478,256
2. Total assigned BOD cost $249,576
3. Total assigned SS cost $191,981
4. Total assigned cost
5. Total assigned cost
6. Total assigned cost

B. PLANT CAPACITY DATA

1. Monthly flow capacity 18,264 thou. gal.
2. Monthly BOD capacity 38,400 lbs.
3. Monthly SS capacity 38,400 lbs.
4. Monthly ___ capacity
5. Monthly ___ capacity
6. Monthly ___ capacity

II. ICR RATE FORMULAS

A. FLOW FORMULA

1. Flow Cost Factor:
   \[
   (I-A.1)/360 = \frac{($1,478,256)}{360} = \frac{(18,264 \text{ thou. gal.})}{360} = $0.2248 \text{ per thou. gal.}
   \]
2. Flow Charge Formula:
   \[
   \text{Flow Charge} = \text{Flow} \times (\text{Flow Cost Factor}) = \text{Flow} \times (0.2248 \text{ per thou. gal.})
   \]

B. BOD FORMULA

1. BOD Cost Factor:
   \[
   (I-A.2)/360 = \frac{($249,576)}{360} = \frac{(38,400 \text{ lbs.})}{360}
   \]
2. BOD Charge Formula:
   \[
   \text{BOD Charge} = \text{BOD} \times \text{Flow} \times (\text{Flow Cost Factor})(0.00841) = \text{BOD} \times \text{Flow} \times (0.0181)(0.00841) = $\_ \text{ per thou. gal.}
   \]
C. SS Charge Formula

1. SS Cost Factor:

\[(I-A.3)/360 = \frac{($191,981)}{360} \]
\[(I-B.3) \quad \frac{38,400 \text{ lbs.}}{}\]
\[= \frac{.0139}{\text{per lb.}}\]

2. SS Charge Formula:

\[(SS_i)(\text{flow}_i)(SS\text{ Cost Factor})(.00841)\]

\[= \frac{(SS_i)(\text{flow}_i)(.0139)(.00841)}{}\]

D. ________ charge formula (specify parameter)

1. Cost Factor:

\[(I-A.4)/360 = \frac{($\quad)}{360} \]
\[(I-B.4) \quad \frac{\quad}{360} \text{ lbs.}\]
\[= \frac{\quad}{\text{per lb.}}\]

2. Charge Formula:

\[(\text{Parameter}_i)(\text{flow}_i)(\text{Cost Factor})(.00841)\]

\[= \frac{(\quad_i)(\text{flow}_i)(\quad)(.00841)}{}\]

E. ________ charge formula (specify parameter)

1. Cost Factor:

\[(I-A.5)/360 = \frac{($\quad)}{360} \]
\[(I-B.5) \quad \frac{\quad}{360} \text{ lbs.}\]
\[= \frac{\quad}{\text{per lb.}}\]

2. Charge Formula:

\[(\text{Parameter}_i)(\text{flow}_i)(\text{Cost Factor})(.00841)\]

\[= \frac{(\quad_i)(\text{flow}_i)(\quad)(.00841)}{}\]

F. ________ charge formula (specify parameter)

1. Cost Factor:

\[(I-A.6)/360 = \frac{($\quad)}{360} \]
\[(I-B.6) \quad \frac{\quad}{360} \text{ lbs.}\]
\[= \frac{\quad}{\text{per lb.}}\]

2. Charge Formula:

\[(\text{Parameter}_i)(\text{flow}_i)(\text{Cost Factor})(.00841)\]

\[= \frac{(\quad_i)(\text{flow}_i)(\quad)(.00841)}{}\]
How to Adjust Rate Formulas After the Construction Costs are Known.

The first submittal to the regulatory agencies is based on estimated construction costs, as per the Worksheet page 1. Before the wastewater plant can be put into operation the final ICR rates must be submitted, also based on the final construction costs. Undoubtedly, these costs will have changed. It can generally be assumed that the cost change (usually an increase) applies to all plant components equally. Therefore, the total final costs can be distributed among the various wastewater parameters by the same percentages derived in the Worksheet page 1. For example, if the final grant amount for Loganville turned out to be $1,500,000 instead of the $1,364,962 estimated, then the assigned cost for each parameter would be:

- **flow**: ($1,500,000)(77%) = $1,155,000
- **BOD**: ($1,500,000)(13%) = $195,000
- **SS**: ($1,500,000)(10%) = $150,000

These data would then become the cost basis for the ICR system and the formulas would be re-figured as per Section II of Worksheet page 2.

5. Monitoring Procedures

A trade off exists between accuracy of quantifying a given firm's wastewater and the cost of that information. It is generally acceptable for industries ruled subject to ICR to be placed into two categories:

1. Large industries with flows or strengths likely to vary from month to month.
2. All others.

For all industries in group 1, a monthly sampling program is recommended consisting of a 24 hour composite sample. The group 2 industries would require only annual sampling or less. ICR industries must be so classified prior to implementation of the system. This requirement is handled by Section III in the Sample Ordinance.
6. Appeals Procedure

Industries must have recourse should they disagree with the payments they are assessed. Procedures for dealing with, for example, disagreement of waste flows or strengths, should include both technical and administrative steps to resolve disputes. This requirement is handled by Section VIII in the Sample Ordinance.

7. Record Keeping

City records must contain the following information:

a. Documentation of final grant amount.

b. Copy of originally approved ICR system plus any subsequent revision.

c. List of industries and their loading.

d. Total loading on system.

e. Notification to EPA of implementation of system.

f. Approvals of the use of retained funds.

g. Payments made to EPA.

h. Record of funds retained.

This requirement is handled by Section IX in the Sample Ordinance.

8. Funds Management

The ICR system and ordinance must specify a funds management system that reflects the regulatory restriction on the use of collected funds. These restrictions include:

a. Fifty percent of all collected funds must be returned to the U. S. Treasury.

b. Of the 50% retained, any increased costs of administration due to the ICR system can be deducted if these costs are segregated and identified.
c. Eighty percent of the remainder can be used only to expand or upgrade the facilities. Any expenditures of this sort must be approved by the EPA Regional Administrator or his designated representative.

d. The other 20% of funds not returned to the Treasury can be used for anything except rebates to industries or installation of industrial pretreatment equipment.

e. All retained funds can only be invested in U. S. government securities or securities that are fully collateralized. This requirement is handled by Section V in the Sample Ordinance.

9. Implementing the System

The ordinance implementing the ICR system must address all of the previously mentioned requirements either explicitly or by reference to other documents. Additionally, it must be approved by the EPA Regional Administrator or his designated representative prior to placing the treatment works into operation. The final ICR rates must be included in the ordinance.
ORDINANCE IMPLEMENTING
ICR SYSTEM

SECTION I
INDUSTRIAL COST RECOVERY

(A) The intent of this section is to implement an industrial cost recovery (ICR) program wherein the City of , Georgia, shall have the authority to collect from eligible industrial users of the city's sewage system, all or any part of the construction costs of such wastewater transport and treatment system reasonably attributed to such industrial user's waste. The apportionment of such costs shall be as provided herein and such costs shall be collected monthly or by special agreement but not less often than annually.

(B) An eligible user is defined as any non-governmental, non-residential user of the treatment works which discharges, after deduction for domestic wastes or discharges from sanitary convenience, more than 25,000 gallons per day of flow, or 52.25 pounds per day BOD or 52.25 pounds per day suspended solids and which is identified in the Standard Industrial Classification Manual, 1972, Office of Management and Budget, as amended and supplemented, under one of the following divisions:

- Division A. Agriculture, Forestry and Fishing
- Division B. Mining
- Division D. Manufacturing
- Division E. Transportation, Communication, Electric, Gas and Sanitary Service
- Division I. Services

Additionally, any non-governmental user which discharges wastewater which contains toxic pollutants in sufficient quantity to interfere with or injure the normal treatment process either singly or in interaction with
other wastes shall be classified as an eligible industry for ICR purposes regardless of flow quantity or strength of the discharge.

SECTION II
PAYMENT CALCULATION

The payment formulas as presented below are calculated in accordance with the guidance entitled "ICR System for Small Communities" prepared by the Georgia Institute of Technology, Engineering Experiment Station. The total payment is the sum of these charges applicable to flow, BOD and SS as follows:

Flow:

\[ \text{Flow charge} = (\text{flow}_I) (\text{Flow cost factor}) = (\text{flow}_I) ( ) \]

BOD:

\[ \text{BOD charge} = (\text{flow}_I) (\text{BOD}_I) (\text{BOD cost factor}) = (\text{flow}_I) (\text{BOD}_I) ( ) \]

SS:

\[ \text{SS charge} = (\text{flow}_I) (\text{SS}_I) (\text{SS cost factor}) = (\text{flow}_I) (\text{SS}_I) ( ) \]

(*NOTE: any additional parameters required should be inserted here)

TOTAL CHARGE:

\[ \text{Total charge} = \text{flow charge} + \text{BOD charge} + \text{SS charge} (+ \text{others, if needed}) \]

Where: \( \text{flow}_I \) = individual industry flow in thousands of gallons.

\( \text{BOD}_I \) = industry 5-day biochemical oxygen demand in mg/L.

\( \text{SS}_I \) = industry suspended solids in mg/L.

Industry flow shall be measured water usage less estimated domestic usage. Domestic usage shall be estimated to be 5 gallons per employee hour. Further deductions shall be considered as per the APPEALS PROCEDURES described herein.
SECTION III
MONITORING

Industries shall be divided into two groups for monitoring purposes. Group I industries are those eligible for ICR charges characterized by variable waste strengths; industries in this group shall be monitored monthly. Group II ICR eligible industries are all those industries not classified as Group I; Group II industries will be sampled initially to determine the basis for ICR charges and sampled periodically thereafter as necessary to verify the original results.

SECTION IV
COST RECOVERY PERIOD

A cost recovery period of 30 years is hereby established. Payments will be collected no less frequently than annually.

SECTION V
FUNDS MANAGEMENT PROCEDURE

Funds collected under the ICR program shall be deposited into the following accounts as follows:

1. Fifty percent (50%) shall be deposited into the "ICR Federal Reimbursement" account. Such funds are to be returned to the Federal Treasury annually.

2. Forty percent (40%) shall be deposited into the "Future Wastewater Needs" account. Such funds shall be expended only after the applicable regulatory agency has approved the disbursement.

3. Ten percent (10%) shall be deposited into the water and sewer operating account. Pending use, the amounts retained in the "ICR Federal Reimbursement" and "Future Wastewater Needs" accounts shall be invested in:
1. Obligations of the U. S. Government; or
2. obligation guaranteed as to principal and interest by the U. S. Government or any agency thereof; or
3. shall be deposited in accounts fully collateralized by obligations of the U. S. Government or by obligation fully guaranteed as to principal and interest by the U. S. Government or any agency thereof.

SECTION VI
RESERVE CAPACITY, DISCONTINUANCE OF USE, EXPANSION AND UPGRADING

A. Reserve Capacity

Any industry entering into an agreement with the city to reserve any portion of the treatment works for the use of that industry shall be assessed ICR charges on the amount reserved if actual flow is less than that amount. If the actual flow is larger than the reserved amount, ICR charges shall be assessed on the actual amount.

B. Discontinuance of Use

Any industry discontinuing use of the facility will cease to be charged ICR charges at the time of discontinuance provided written notice is received by the city.

C. Upgrading and Expansion

All ICR charges will be adjusted proportionally in the event that additional grants requiring ICR are secured by the city to upgrade or expand the wastewater treatment facilities except that industries with reserve capacity agreements who are not exceeding their reserve will not be assessed additional ICR charges in the event of an expansion.

SECTION VII
NOTIFICATION

All industries shall be notified of their particular ICR charges.
Included in such notification will be the monitoring results, the applicable ICR wastewater parameter rates, and the charges resulting from the monitoring results and rates specified.

SECTION VIII
APPEALS PROCEDURE

Any industry which disagrees with the ICR rates assessed to it shall follow these procedures to resolve the issue.

1. Informal appeal may be made either orally or in writing to the mayor or his designated representative to review the rate calculation procedure and verify the accuracy of the assessed rates. Copies of the ICR system will be made available on request.

2. If the industry wishes to provide additional monitoring data, these must be accompanied by a detailed written description of the monitoring procedures including time and place and certification that analyses were conducted in accordance with Standard Methods for the Examinations of Water and Wastewater, 14th ed. Test results not in accordance with recommended sampling or analysis procedures may be disqualified. It is therefore strongly recommended that sampling procedures be approved prior to initiation of sampling programs.

3. If the industry wishes further deduction from measured water use to calculate wastewater discharge the industry may so petition the mayor or his appointed representative either on the basis of actual flow monitoring results or by describing in writing the quantity and uses of water not returned to the wastewater system.

4. If the questions regarding ICR assessment of charges cannot be resolved satisfactorily by informal discussion, a written petition will be accepted for full Council consideration at the first regularly scheduled
meeting that does not have a full agenda. The City Council will consider all issues raised in the petition and, with any necessary consultation, rule on the petition within 30 days from the date of its consideration by Council.

5. If the industry chooses not to accept the final judgement by the City Council, additional recourse may be pursued through the court system.

SECTION IX
RECORD KEEPING

The city shall maintain records as described in the previously referenced evidence entitled "ICR System for a Small Community". These records shall be available for inspection upon written notice.
WHAT NEEDS TO GET SENT TO WHOM AND WHEN - A SUMMARY

As previously mentioned, the ICR requirements must be satisfied before you can get the step 3 grant. If you have no industry, the requirements can be satisfied by passing the resolution in Appendix I and transmitting it to EPD. (A sample transmittal letter is also included in Appendix I).

You do not have to do anything more with ICR UNLESS an industry (as defined in the sample ordinance) does begin discharging to the plant. If that happens you must complete the worksheets and pass the sample ordinance, then send them to EPD.

If you do, or expect to, have industry then Page 1 and 2 of the worksheet must be completed and the appropriate spaces in the ordinance filled in including the ICR formulas. The ordinance is not passed, but is sent to EPD with the worksheet. A sample transmittal letter to do this is included in Appendix II. Close to the end of construction, the cost figures must be updated and the ICR formulas adjusted as per the procedures described. This gives you the final ICR rates which are inserted into the ordinance and passed. The passed ordinance is then sent to EPD. A sample transmittal letter for the passed ordinance is included in Appendix III.
HOW DOES THE INDUSTRIAL COST RECOVERY SYSTEM RELATE TO THE USER CHARGE SYSTEM

A great deal of confusion has been expressed over the relationship of the industrial cost recovery system requirements and the user charge system requirements. Both systems result in charges for the use of federally funded wastewater treatment plants and both use more common data in their development, but there, the similarity ends. The ICR system collects CONSTRUCTION COSTS: the UC system collects OM & R costs. Funds collected under the UC system insure that the wastewater treatment system is kept up, while the funds collected from industry under the ICR pay back to the U. S. Treasury and the city, a portion of the grant which built the facility. An industry will pay both user charges and industrial cost recovery. The city utilizes the funds thus collected in completely different ways.

Both systems use the data on wastewater quantity and strength in their calculation procedures - but those procedures are completely different. The UC system uses the strength data to calculate surcharges. The ICR system uses the data to calculate the portion of construction costs attributable to each industry. Once the construction cost is known, and as long as the industry wastewater flow does not change, his ICR charge would not change. The UC charge will change whenever the costs to the city of treating the wastes changes, even if the wastewater characteristics do not change. Neither the UC system nor the ICR system in any way addresses the collection of funds for the retirement of city bonded indebtedness.
APPENDIX 1

Sample Transmittal Letter and Sample Resolution for Satisfying the ICR Requirements When No Industry Is Present or Expected
Environmental Protection Division
270 Washington Street, SW
Atlanta, GA 30334

ATTN: Mr. Michael Akins

RE: ICR Requirements
   C130

Dear Mr. Akins,

Please find enclosed the resolution satisfying the ICR requirements for the referenced grant. As stated in the resolution, we do not now have or expect to have ICR-eligible industries discharging into our wastewater treatment system currently being funded. As further stated in the resolution, an approved ICR system will be implemented should eligible industry begin to discharge into the system.

Please notify us as soon as possible if ICR requirements remain to be satisfied.

Sincerely,

Mayor, City of __________________________
SAMPLE RESOLUTION - NO INDUSTRY

WHEREAS the City of ____________________ is applying for step 3 grant funds under PL 92-500, as amended, for the construction of a wastewater treatment standard acceptances, and

WHEREAS, a requirement for accepting said grant funds in the satisfaction of Industrial Cost Recovery regulations, and

WHEREAS, the City of ____________________ does not now have any industries which would qualify as subject to Industrial Cost Recovery,

BE IT RESOLVED that if and when industries subject to Industrial Cost Recovery begin to receive beneficial use of the wastewater treatment plant and appurtenances, the City of ____________________ will develop and implement an Industrial Cost Recovery System in accordance with 40 CFR part 35 dated September 27, 1978 and EPA publication MCD - 45 dated February, 1976.
APPENDIX 2

Sample Transmittal Letter for ICR System
Dear Mr. Akins:

Please find enclosed documents to satisfy the Industrial Cost Recovery requirements for the referenced grant. The documents consist of an ordinance including estimated ICR rates and the completed worksheets describing the calculation of rates.

The ordinance will be passed implementing the ICR system and submitted to you prior to start-up of the funded facilities.

Sincerely,

Mayor, City of
APPENDIX 3

Sample Letter Transmitting Final ICR System Implementing Ordinance
Dear Mr. Akins:

Please find enclosed the passed ordinance implementing the ICR system for the referenced grant for approval of final rates. The final construction costs are reflected in the rates described in the ordinance.

Sincerely,

Mayor, City of ___________________
APPENDIX 4

Extra Worksheets
<table>
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<th>Column 2</th>
<th>Column 3</th>
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<th>Column 4</th>
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<tr>
<td></td>
<td>Total</td>
<td>Grant</td>
<td>(a) Flow (b)</td>
<td>(a) BOD (b)</td>
<td>(a) SS (b)</td>
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<tr>
<td></td>
<td>Cost</td>
<td>Amount</td>
<td>% Cost</td>
<td>% Cost</td>
<td>% Cost</td>
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<tr>
<td>Influent Pumping</td>
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<td>Preliminary Treatment</td>
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<td>Recirculating Pumping</td>
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<td>Digestor</td>
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<td>Chlorination</td>
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<tr>
<td>Sludge Drying Beds</td>
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<tr>
<td>Sewers</td>
<td></td>
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<tr>
<td>Sub total-Group I</td>
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<td>Group 2 - Items not related to wastewater flow or strength</td>
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<td>Contingencies, Inspection, Legal Fees</td>
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</tr>
<tr>
<td>Total Assigned Cost</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
I. DATA SUMMARY
A. COST DATA
1. Total assigned flow cost $__________
2. Total assigned BOD cost $__________
3. Total assigned SS cost $__________
4. Total assigned ______ cost $__________
5. Total assigned ______ cost $__________
6. Total assigned ______ cost $__________

B. PLANT CAPACITY DATA
1. Monthly flow capacity ____________ thou. gal.
2. Monthly BOD capacity ____________ lbs.
3. Monthly SS capacity ____________ lbs.
4. Monthly ______ capacity ____________
5. Monthly ______ capacity ____________
6. Monthly ______ capacity ____________

II. ICR RATE FORMULAS
A. FLOW FORMULA
1. Flow Cost Factor:
   \[
   \frac{I-A.1}{360} = \frac{($\phantom{000})}{360} \\
   I-B.1 = \frac{______}{\text{thou. gal.}} \\
   \frac{=}{} = $__________ per thou. gal.
   \]

2. Flow Charge Formula:
   \[
   (\text{flow}_i)(\text{flow cost factor}) = \\
   \]

   (flow_i)($__________ per thou. gal.)

B. BOD FORMULA
1. BOD Cost Factor:
   \[
   \frac{I-A.2}{360} = \frac{($\phantom{000})}{360} \\
   I-B.2 = \frac{______}{\text{lbs.}} \\
   \frac{=}{} = $__________ per thou. gal.
   \]

2. BOD Charge Formula:
   \[
   (\text{BOD}_i)(\text{flow}_i)(\text{Flow cost factor})(.00841) = \\
   \]

   (BOD_i(Flow_i)(_______)(.00841) = $______ per 
   thous. gal.
C. SS Charge Formula
1. SS Cost Factor:
\[
\frac{(I-A.3)}{360} = \frac{(I-B.3)}{360}
\]
\[
\text{lbs.)} = \frac{\text{lb.}}{360}
\]
2. SS Charge Formula:
\[
(SS_I)(\text{flow}_I)(\text{SS Cost Factor})(0.00841)
\]
\[
= (SS_I)(\text{flow}_I)(\text{lb.})(0.00841)
\]

D. Charge formula (specify parameter)
1. Cost Factor:
\[
\frac{(I-A.4)}{360} = \frac{(I-B.4)}{360}
\]
\[
\text{lbs.)} = \frac{\text{lb.}}{360}
\]
2. Charge Formula:
\[
(\text{Parameter}_I)(\text{flow}_I)(\text{Cost Factor})(0.00841)
\]
\[
= (\text{Parameter}_I)(\text{flow}_I)(\text{lb.})(0.00841)
\]

E. Charge formula (specify parameter)
1. Cost Factor:
\[
\frac{(I-A.5)}{360} = \frac{(I-B.5)}{360}
\]
\[
\text{lbs.)} = \frac{\text{lb.}}{360}
\]
2. Charge Formula:
\[
(\text{Parameter}_I)(\text{flow}_I)(\text{Cost Factor})(0.00841)
\]
\[
= (\text{Parameter}_I)(\text{flow}_I)(\text{lb.})(0.00841)
\]

F. Charge formula (specify parameter)
1. Cost Factor:
\[
\frac{(I-A.6)}{360} = \frac{(I-B.6)}{360}
\]
\[
\text{lbs.)} = \frac{\text{lb.}}{360}
\]
2. Charge Formula:
\[
(\text{Parameter}_I)(\text{flow}_I)(\text{Cost Factor})(0.00841)
\]
\[
= (\text{Parameter}_I)(\text{flow}_I)(\text{lb.})(0.00841)
\]