



Managing Small Domestic Wastewater Systems: Introduction

Who should use this guide?

This guide is for any person involved in the management or operation of a small wastewater system, including:

- utility board members
- utility owners
- system operators
- council members
- utility managers

How will this guide help?

This utility-management guide is not intended to be exhaustive but—used correctly—it will guide you in the right direction. It will help you, the owner or operator:

- understand the rules
- comply with the rules
- develop plans to manage and operate a sustainable utility

This guide also contains worksheets and tables that you can keep in a file or binder and add to as things change at the utility.

Note: This publication is not a substitute for the actual rules. To obtain the most current, official copy of state rules, contact the Secretary of State's office at 512-305-9623. The rules are also available online at [<texreg.sos.state.tx.us/public/readtac\\$ext.ViewTAC?tac_view=2&ti=30>](http://texreg.sos.state.tx.us/public/readtac$ext.ViewTAC?tac_view=2&ti=30).

How is this guide organized?

It is organized into five parts, each available as a separate document.

Part A. Asset Management

Part A includes worksheets and instructions to help you conduct an inventory of the wastewater system's resources, prioritize repairs and replacements, plan for future needs, and develop a budget.

Part B. Sustainable Systems

Part B has information and resources for managing your system more efficiently through energy assessments and energy-efficiency improvements, water conservation, and public-participation programs. It includes information about managing your influent through pretreatment, and a roadmap to help ensure sustainability.

Part C. Operation and Maintenance

Part C includes worksheets that help you create your own operation-and-maintenance manual for your utility and maps out a program for scheduling and performing preventive and general maintenance.

Part D. Compliance

Part D emphasizes the importance of achieving and maintaining compliance with requirements for record keeping, reporting, and monitoring. It discusses how to get started and includes multiple compliance checklists and charts for keeping track of your requirements. It also discusses wastewater violations and includes an enforcement scenario to help you understand how the process works.

Part E. Resources

Part E lists resources that may help you as you create and carry out your asset management plan and conduct everyday operations at your facility.

Where can I go for more help?

For one-on-one compliance assistance, contact the Small Business and Local Government Assistance specialist in the TCEQ office for the region where you are located by calling the SBLGA hotline at 800-447-2827.

How can I obtain TCEQ publications?

Publications produced by the TCEQ are available for online ordering or download at <www.tceq.texas.gov/publications/search_pubs.html>. To order copies of a publication, please contact the Publications Section at 512-239-0028, or by mail:

TCEQ Publications, MC 118
PO Box 13087
Austin TX 78711-3087

For More Information

For confidential assistance with environmental compliance, contact the Small Business and Local Government Assistance Hotline at 800-447-2827, or visit <www.TexasEnviroHelp.org>.



Managing Small Domestic Wastewater Systems: Part A, Asset Management

Contents

Introduction..... 2

Asset Management: The Basics 2

1. Inventory Your System and Prioritize Your Assets 5

Worksheet 1. System Inventory and Prioritization..... 11

2. Develop a Comprehensive Plan13

Worksheet 2. Comprehensive Planning15

3. Calculate Your Budget17

Worksheet 3. Annual Budget..... 19

4. Implement Your Asset-Management Plan..... 21

Need more help? 22

Introduction

This publication is Part A of a five-part series *Managing Small Domestic Wastewater Systems* (TCEQ publication series RG-530) and includes worksheets and instructions to help you conduct an inventory of your utility's resources, prioritize repairs and replacements of assets, plan for future needs, and develop a budget. An electronic version of Part A is available at the TCEQ Small Business and Local Government Assistance section's Wastewater Compliance Tools at <www.tceq.texas.gov/goto/rg-530>.

As you work through Part A, you may find it beneficial to review other parts of the series to help you prepare a comprehensive asset-management plan. To view or download the complete series go to the Web page <www.tceq.texas.gov/goto/rg-530>. If you do not have Internet access, call the SBLGA's hotline number 800-447-2827 for a paper copy of the complete series *Managing Small Domestic Wastewater Systems* (RG-530).

Note: This publication is not a substitute for the actual rules. To obtain the most current, official copy of state rules, contact the Secretary of State's office at 512-463-2827. The rules are also available online at <www.sos.state.tx.us/tac/index.shtml>.

Asset Management: The Basics

What is asset management?

Asset management can be defined as “a planning process that ensures that you get the most value from each of your assets and have the financial resources to maintain, repair, or replace them when necessary.” This includes “developing a plan to reduce costs while increasing the efficiency and the reliability of your assets.”* For a wastewater utility, an “asset”

* *Asset Management: A Handbook for Small Water Systems*. U.S. Environmental Protection Agency, 2003, page 5.

includes the treatment facility, along with any building, tool, piece of equipment, furniture, pipe, and machinery used in the operation of the system.

Asset management can help you get the most out of the assets that make up your system by prioritizing repairs and budgeting for equipment replacement. It can also help you maintain the financial capacity to make scheduled repairs and planned replacement of assets *before* there is a crisis.

When planning to replace assets, you should consider upgrading to energy-efficient and water-saving equipment and processes. Including these upgrades in your proposed plans may assist you in finding funding for your project. Part B of this series, *Sustainable Systems* (RG-530b), further discusses making energy assessments and choosing more efficient equipment.

This guide includes instructions and worksheets to help you complete each of the four steps of asset management. You should adjust your plan based on your own experience and the particular characteristics of your system. You should also reevaluate your plan every year, updating each of the worksheets in this booklet. Your plan is useful only as long as it reflects the current conditions of your wastewater utility.

To ensure that your system is sustainable for the next 5 to 30 years, it is important to evaluate immediate needs along with future needs. For successful asset management planning to occur, you must consider:

- potential growth or decline in population served
- inflation
- overall age and life span of the infrastructure within your system
- overall plant performance
- equipment and installation costs
- engineering costs

If you have not evaluated the sustainability of your utility and you are not maintaining compliance with your permit, you should refer to Part B of this series, *Sustainable Systems* (RG-530b), to ensure that you consider energy reduction and water conservation, as well as functional wastewater

treatment in your upgrades. You may find it necessary to adjust your budget if you need to modify your existing system or build a new one.

For help with evaluating the effectiveness of your treatment processes, refer to Appendix A, Treatment Assessment Tool, in Part E of this series, *Resources* (RG-530e). This tool can help you track trends that may lead to additional financial planning for modifications to current treatment processes. Also, Tables 2 and 3 in Part E illustrate pros and cons of different treatment technologies which may help with making decisions about your treatment processes.

How do I practice asset management?

Step 1. Take an inventory of your system and prioritize your assets.

Document what assets you have and prioritize each asset based on how critical it is to your plant operations. This will help you make informed decisions to ensure that you have funds available for the maintenance, repair, or replacement of the vital parts of the system.

Step 2. Develop a comprehensive plan for managing your assets.

Based on your prioritization in Step 1, identify the maintenance, repairs, and replacements you expect to make in the next five years. Estimate how much money your system needs to set aside or reserve for these expenses.

Step 3. Develop a budget for managing your assets.

Based on your comprehensive plan from Step 2, identify your expected revenues for the next five years—and compare them to your expected expenses. This may involve a rate study.

Step 4. Implement your asset-management plan.

Once you complete the initial three steps of your asset-management plan, you need to implement it. Work with your management team—including council and board members, if appropriate—to complete your identified repairs and maintenance and to make sure that you have the technical and financial means to ensure reliable service.

1. Inventory Your System and Prioritize Your Assets

Use Worksheet 1, System Inventory and Prioritization, at the end of this section to create a comprehensive inventory of your system and to prioritize your assets. Developing an accurate inventory of your system's assets is important to their overall management, as all other steps will refer to the data gathered during this step. It will also help you to establish the relative importance or criticality of the equipment and components of your system. A utility's assets include the facilities that make up the wastewater system as well as all the equipment and supplies that are used to operate the plant.

Fill Out the System Inventory and Prioritization Worksheet

Before you begin to fill in the columns on Worksheet 1, fill in the date and check the appropriate box to indicate whether you are making the first inventory of your system or updating an existing inventory. You should update this worksheet at least once a year. You can either make minor adjustments to the worksheet as the condition of your assets change, or start a new worksheet each year.

1. Identify your assets.

List each of your utility's assets, including emergency generators, electrical systems, sewer pumps, blowers, aerators, meters, buildings, vehicles, structures, and all other physical assets and their year of installation. Be as specific as possible by including the location, manufacturer, material composition, horsepower (hp), gallon-per-minute (GPM) capacity, or other identifying characteristics for each asset, or refer to your operations and maintenance manual. This information will be useful when calculating replacement costs in step 7. For example, you might list a piece of equipment as "Totalizing flow meter 1, 0.90 PSI, 2003."

2. Describe the redundancy.

Briefly describe the redundancy of each of the system's assets. Are there backups? Are there different assets that can do the same job? Keep in mind: some redundancy may be required by rule.

3. Fill in the expected useful life.

Use the manufacturer's recommendations, if available, or the information in Table 1, Estimated Useful Life Span for Standard Equipment, to enter the expected useful life for each asset. Table 1 provides the estimated useful life span for many standard pieces of equipment, assuming proper maintenance has been conducted. For new equipment, use the higher end of the expected useful life.

Keep in mind the current condition of each asset as well as historical routine maintenance, repairs, and rehabilitation. If you don't have a recordkeeping system, refer to the Repair Work Order Worksheet in Part C of this series, *Operations and Maintenance* (RG-530c), to keep track of future maintenance and repairs. Focus on conditions that may affect the asset's useful life (e.g., rust or broken parts). If your asset is in poor condition, has not been maintained according to the manufacturer's recommendations, or operates under challenging circumstances (varying wastewater concentrations, extreme climate changes, proximity to coastal areas, etc.), then the expected useful life is likely to be on the lower end of the range. If the asset is in good condition and has been properly maintained according to the manufacturer's recommendations, use the higher end of the expected useful life. Choosing the lower end of the useful-life range will produce a more conservative estimate, which will help to ensure that you are prepared to replace the asset in a worst-case scenario.

4. Record the age.

For each asset, fill in how long it has been in use. If an asset has been previously used by another system, you should list the total age, not just the length of time your system has used it.

Table 1. Estimated Useful Life Span for Standard Equipment

Asset	Expected Useful Life (years)
Buildings	~30
Chlorination equipment	5–7
Computers	~5
Collection pipes	40–50
Conveyors	10–15
Electrical systems	10–12
Fencing	10–20
Generators	15–20
Lab and monitoring equipment	7–10
Landscaping and grading equipment	30–40
Meters	7–10
Office furniture and supplies	~10
Other treatment equipment	8–12
Pond transfer pipes	30–40
Screening systems	10–20
Sewer pumps	5–10
Storage cylinders	~5
Storage tanks, chemical	25–30
Tools and shop equipment	10–15
Transportation equipment	~10
Valves	35–40
Weirs	20–25

5. Calculate the remaining useful life.

For each asset, calculate the remaining useful life by subtracting its age (column 4) from its adjusted useful life (column 3).

6. Calculate the expected replacement year.

For each asset, calculate the expected replacement year by adding the remaining useful life (column 5) to the current year.

7. Calculate the cost to replace.

You can estimate the cost of buying and installing a new piece of equipment, based on your knowledge from completing similar projects, on information from a neighboring system that has done similar work, or on bids from vendors.

When estimating the cost of replacing each asset, take into account the expected replacement year, because inflation can affect replacement costs. It is a challenge to place a specific value on future costs because we cannot predict changes in the economy. For assets that have a remaining useful life of more than 10 years, the utility should consider the average inflation rate over a 10-year period, or set aside some reserve funding to account for inflation.

Generally the best way to obtain an estimate of the inflation cost per year is to use a federal, state, or locally established inflation rate, if available. Local economic-development corporations, along with local universities, are a good source for local inflation rates. The Texas comptroller's website at <www.window.texas.gov> has information on inflation rates, as does the U.S. Bureau of Labor Statistics, on its Consumer Price Index Web page at <www.bls.gov/cpi>.

If you are unable to obtain this information from your local economic-development corporation or those government sources, we suggest you use an average inflation rate of 5 percent per year.

Costs for larger asset improvement projects are hard to verify due to the complexity of the project and you will most likely need assistance from a consultant. Illustration 1, Capital Cost Estimates, shows how these costs are typically structured.

Illustration 1. Capital Cost Estimates

Factor	Capital Cost
Equipment Cost	Technology-Specific Cost
Installation*	25 to 55 percent of Equipment Cost
Piping	31 to 66 percent of Equipment Cost
Instrumentation and Controls	6 to 30 percent of Equipment Cost
Total Construction Cost	Equipment + Installation + Piping + Instrumentation and Controls
Engineering	15 percent of Total Construction Cost
Contingency	15 percent of Total Construction Cost
Total Indirect Cost	Engineering + Contingency
Total Capital Cost	Total Construction Cost + Total Indirect Cost

*Installation costs could be higher, based on the complexity of the installation.

8. Set the priority level.

For each asset, consider how critical it is to the operation of your system, its remaining useful life, the availability of other assets to replace it or be used as a backup for it, its maintenance history, and any other factors important in evaluating its priority for receiving funding. Rank each asset from “1” to “5,” where “1” is the highest priority and “5” is the lowest. Use the information in Table 2, Prioritization Rating, to determine how each asset should be rated. Because there are only five priority levels, some assets will have the same priority.

When ranking assets, keep in mind that assets in the following three categories should be assigned a higher priority:

- Assets with a shorter remaining useful life, because you will need to rehabilitate or replace them relatively soon. How likely is it that the asset will fail? Base this evaluation on the asset’s age, condition, and failure history.
- Assets that are *critical* to your operation, because of the system’s responsibility for protecting public health and the environment.
- Assets for which your system has less redundancy, because the system would have trouble operating without them.

Table 2. Prioritization Rating

Description	Priority
<p>Effective life exceeded and/or excessive maintenance cost incurred. A high risk of breakdown or imminent failure with serious impact on performance. No additional life expectancy; immediate replacement or rehabilitation needed. Asset is highly critical to infrastructure of system and in providing adequate treatment and maintaining compliance.</p>	1
<p>Very near end of physical life. Substantial ongoing maintenance with short, recurrent maintenance levels required to keep the asset operational. Unplanned corrective maintenance is common. Renewal (refurbishment or replacement) is expected within the next year or two.</p>	2
<p>Asset functions but requires a sustained high level of maintenance to remain operational. Shows substantial wear and performance is likely to deteriorate significantly. Renewal (refurbishment or replacement) is expected within the next two to three years.</p>	3
<p>Asset is sound and well-maintained but may be showing some signs of wear. Delivers full efficiency with little or no performance deterioration. Virtually all maintenance is planned and preventive. At worst, only minor repair might be needed at this time.</p>	4
<p>Asset is like new, fully operable, and well-maintained, and performs consistently at or above current standards. Little wear shown and no further action required.</p>	5

MANAGING SMALL DOMESTIC WASTEWATER SYSTEMS: ASSET MANAGEMENT
Worksheet 1. System Inventory and Prioritization

This worksheet is designed to help you inventory and prioritize your utility's assets.
 Make copies if you need additional pages.

Date _____ **Initial Inventory** **Update**

1. Asset and Year Installed	2. Redundancy	3. Expected Useful Life (years)	4. Age (years)	5. Remaining Useful Life (years)	6. Expected Replacement Year	7. Cost to Replace (\$)	8. Priority (1 to 5, high-low)
<i>Example: Totalizing flow meter (0.90 PSI), 2003</i>	<i>None</i>	<i>15</i>	<i>12</i>	<i>3</i>	<i>2018</i>	<i>\$5000</i>	<i>2</i>

1. Asset and Year Installed	2. Redundancy	3. Expected Useful Life (years)	4. Age (years)	5. Remaining Useful Life (years)	6. Expected Replacement Year	7. Cost to Replace (\$)	8. Priority (1 to 5, high-low)

2. Develop a Comprehensive Plan

Use the Comprehensive Planning Worksheet (Worksheet 2) at the end of this section to generate a cost-management plan for your system's assets.

Adapted from an EPA worksheet, our Worksheet 2 is a tool to assist in identifying the funding and other resources required for long-term, continued operation.

Fill Out Worksheet 2: Comprehensive Planning

Before you begin to fill in the columns on the worksheet, fill in the date, and check the appropriate box to indicate whether you are generating the first comprehensive plan for your utility's assets or updating an earlier plan. You should update this worksheet at least once a year. You can either make minor adjustments to the worksheet as the condition of your assets change, or start a new worksheet each year.

1. List your prioritized assets.

List the assets from Worksheet 1, with the highest-priority (lowest-numbered) assets first.

2. List maintenance, repair, and replacement activities.

For each asset, list the maintenance, repair, and replacement activities that you expect to perform over the next five years. If you plan to add a new clarifier, state, "add new clarifier." Include enough detail for each activity so that you can determine its cost. Be sure to include anticipated employee costs.

3. Estimate years until action is needed.

For each activity, fill in the number of years before you will need to perform that task. For annual activities, enter "1." For replacement activities, enter the remaining useful life you estimated in column 5 of Worksheet 1.

4. Estimate cost.

Fill in the estimated cost for each activity. Make sure it's the complete cost, including preparation, cleanup, removal, and disposal of any waste.

If you expect to sell an asset at the end of its useful life, subtract the estimated sale price from the cost of a new item, and enter the difference.

5. Calculate the financial reserve required per year.

For each asset, calculate the reserve required by dividing the cost by the years until the action will be needed. This is the estimated amount of money that your utility needs to set aside each year ("Reserve Required per Year" on the worksheet) for that asset.

6. Calculate the total financial reserve required in the current year.

Add the reserves required per year for each item to calculate the total reserve required in the current year. This is the estimated amount of money that your system needs to set aside, starting this year, in order to pay for all of the maintenance, repair, and replacement.

7. Repeat the process for the next four years.

To create a five-year plan, you should complete a separate comprehensive planning worksheet for each of the next four years. This will allow you to compare how much reserve money will be required if the cost is spread out over a longer period of time.

You can then use this information to determine whether a potential rate increase, customer surcharge, state or federal grant or loan, or other source of funding will be required.

MANAGING SMALL DOMESTIC WASTEWATER SYSTEMS: ASSET MANAGEMENT

Worksheet 2. Comprehensive Planning

This worksheet is designed to help you generate a comprehensive plan for maintaining your utility's assets. Make copies if you need additional pages.

Date _____ **Initial Plan** **Update**

1. Asset (list from highest to lowest priority)	2. Activity	3. Years until Action Is Needed	4. Cost (\$)	5. Reserve Required per Year (\$) (No. 4 / No. 3)
Example: 1. Collection pipe between 1st and 2nd Streets 2. Collection pipe between 3rd and 4th Streets	Replace	2	\$60,000	\$30,000
	Replace	3	\$60,000	\$20,000

6. Total Reserve Required in the ____* Year: *Fill in the blank as to whether this is the reserve required for the 1st, 2nd, 3rd, 4th, or 5th year of your comprehensive plan.				

3. Calculate Your Budget

Use the Annual Budget worksheet (Worksheet 3) at the end of this section to calculate an annual budget for your utility.

Fill Out the Budget Worksheet

Before you begin to fill in the columns on the worksheet, fill in the date, indicate the fiscal year that the budget covers, and check the appropriate box to indicate whether you are generating the first budget for your utility or updating an earlier budget. You should update this worksheet at least once a year. You can either make minor adjustments to the worksheet as the condition of your assets changes, or start a new worksheet each year.

1. List your revenues.

In the “Revenues” column, list all your utility’s revenue sources and the dollar amount each source is expected to provide in the coming fiscal year. In the space labeled “Sewer Charges,” enter the revenue you expect to collect for sanitary-sewer services. For “Fees and Service Charges,” list all late fees, fees for establishing and transferring service, impact fees, and other fees. In the “Interest” space, enter any interest you expect to accrue on the system’s investments. If your utility has other sources of income not listed on the worksheet, enter them in the blank lines below “Other.” Calculate your total annual revenue by adding all the revenues you listed. Enter this number in the box labeled “1. Total Annual Revenue.”

2. List your expenses.

In the “Expenses” area, list the sources of your utility’s expenses and the dollar amount each source is expected to draw in the coming fiscal year. If your utility has other general expenses not listed on the worksheet, enter them in the blank lines below “Other.” Calculate your total annual expenses by adding all the expenses you listed. Enter this number in the box labeled “2. Total Expenses.”

3. Calculate your net income.

Calculate your net income by subtracting your expenses from your revenue. Enter this number in the box labeled “3. Net Income.”

4. Enter your net income.

Transfer the result of box 3 to the box labeled “4. Net Income.”

5. Enter your total required reserves.

In the “Total Required Reserves” (box 5), insert the amount of total reserves in the current year from Worksheet 2, Comprehensive Planning (line 6).

6. Calculate additional reserves needed now and into the future.

Subtract your total required reserves (box 5) from your net income (box 4). Enter this number in the box labeled “6. Additional Reserves Needed.”

If the result is a positive number, you have no shortfall to make up for and can set aside the required funds in a reserve account. If the result is a negative number, you should start planning ways to make up for the shortfall.

To make up for the needed resources, you might increase rates, charge customers a surcharge, or seek state or federal funding through grants or loans. The Texas Water Infrastructure Coordination Committee, described in Part E of this series, *Resources* (RG-530e), can help your system identify appropriate funding sources

7. Plan for the future.

To get a picture of future financial needs, complete the budget worksheet for the next four years—or longer, depending on the system’s needs. This will allow you to forecast expenditures for expensive repairs or replacement items. Therefore, you can avoid drastic increases in rates, surcharges, or loans that the system may have to pay back for many years to come.

MANAGING SMALL DOMESTIC WASTEWATER SYSTEMS:
ASSET MANAGEMENT

Worksheet 3. Annual Budget

This worksheet is designed to help you identify your utility's revenues and expenses and calculate your budget. Make copies if you need additional pages.

Date _____ **Fiscal Year of Budget** _____

Initial Budget **Update**

Revenues (Operating Income)		Description
Sewer Charges		Revenue from the sewer utility—include all customers (actual or projected receipts)
Usage Fees and Service Charges		Include late payments, forfeited deposits, surcharges, impact fees, etc.
Reserve Interest Earned		Interest accrued from reserve accounts or other investments
Other Income:		Itemize other income not elsewhere classified
1. Total Annual Revenue	\$	
Expenses (Operating Costs)		
Regular Maintenance and Repair		Cost of performing regular or routine maintenance and repair on equipment
Utilities, Rent, and Other Overhead		Other overhead may include billing, building maintenance, cleaning, etc.
Salaries and Benefits		Include administrative and operations staff
Operating Supplies		Operating supplies not classified elsewhere
Equipment Leases		Include all equipment leases
Chemicals		Chemicals expensed in prior years, but not used, should be included for initial budgets

Monitoring and Testing		Include laboratory fees for projected monthly and annual sampling requirements
Insurance and Bonds		Costs of insuring buildings, equipment, etc.
Professional Services		Accounting, legal, engineering & other professional (not related to capital projects)
Training and Licenses		Cost of operator training courses and license renewal fee
Security		Cost of maintaining security related items (i.e., fencing, alarms, etc.)
Debt Repayment		Include interest paid on debt
Transfer to Reserved Funds		For capital expenditures
Other:		Itemize other expenses not classified elsewhere
2. Total Expenses	\$	
3. Net Income (Revenue – Expenses)	\$	
Additional Reserves Needed		
4. Net Income (from 3. Net Income)		\$
5. Total Required Reserves (from Comprehensive Planning Worksheet 2)		\$
6. Additional Reserves Needed (Net Income – Total Required Reserves)		\$

4. Implement Your Asset-Management Plan

Congratulations! You have completed the initial three steps of your asset-management plan: inventory development and asset prioritization, comprehensive planning, and budget building. Now you must work with your management team, including council and board members, if appropriate, to implement the plan. This process should help ensure you have the technical and financial means necessary to offer reliable service. Ideally, you should create a plan for at least the next five years.

Hold a Meeting

Arrange a meeting with your management team. Give the following items to each member.

- a map of the system
- a list of current assets, identifying for each the value, or cost to replace, and the remaining useful life (from Worksheet 1)
- a list of priority asset maintenance, repairs, and replacements (from Worksheet 1)
- a list of costs associated with the expected repairs or replacements (from Worksheet 2)
- the current budget allotment as well as the projected budgetary requirements (from Worksheet 3)

Prioritize

You may find that your current budget will cover only one or two of your priority needs. Explain why these items are priorities and the manner in which you plan to take care of them. Discuss each of the items on the priority list and how you plan to address them, creating an action timeline with a projected budget. If the current budget is lower than what you need to take care of priority items, discuss potential funding options for management input and approval, and develop a plan to obtain needed funding.

Communicate Regularly

Keep your management team updated with quarterly progress reports. This will reinforce your dedication to the plan and help make certain that your system is functioning optimally. It will also ensure that you maintain management support throughout the implementation process.

Update Changes

Keep up with the changes that occur as your plan is implemented, including changes in the system's equipment, finances, and personnel. This will help ensure that you successfully manage your utility's assets.

Conduct a Rate Study

If you determine that your utility is not bringing in enough money to be sustainable or to complete necessary improvements, you may need to raise your rates. You should conduct a rate study before raising your rates.

Rate studies are very complicated and may require professional help. You may decide to hire a consultant; apply for financial, managerial, or technical assistance through the TCEQ; or request the assistance of an EnviroMentor through the TCEQ's SBLGA section.

Regardless of how you conduct your rate study, you will need to contact the Public Utilities Commission (PUC) of Texas for information and assistance with rate increase applications. You can contact the PUC at 888-782-8477 or 512-936-7120 or by e-mail at <customer@puc.texas.gov>.

Need more help?

The TCEQ's Financial, Managerial and Technical Assistance Program offers free contractor on-site assistance to help you analyze your planning options, conduct rate studies, and help you with all aspects of running and funding your wastewater system. For more information about the program, visit the Web page <www.tceq.texas.gov/utilities/fmt>, call the Water Supply Division at 512-239-4691, or contact the SBLGA representative in

your region by calling our toll-free, confidential compliance hotline, 800-447-2827.

Many state and federal funding agencies have grants and loans available for planning and development of new wastewater treatment plants and infrastructure improvements. The Texas Water Infrastructure Coordination Committee (TWICC) is a group of local, state, and federal agencies that collaborate to identify issues with water and wastewater infrastructure and compliance, and to seek affordable, sustainable, and innovative funding strategies for the protection of public health and efficient use of government resources in Texas. You can contact TWICC by phone at 512-463-7870, by e-mail at <TWICC@twdb.state.tx.us>, or by fax at 512-475-2086 or visit the website at <www.twicc.org> to learn more information about the program.

For More Information

For confidential assistance with environmental compliance, contact the Small Business and Local Government Assistance Hotline at 800-447-2827, or visit <www.TexasEnviroHelp.org>.



Managing Small Domestic Wastewater Systems: Part B, Sustainable Systems

Contents

Introduction.....	2
What is sustainability?.....	2
Sustainable Systems: Best Management Practices	3
Review Your Energy Use.....	4
Energy Audits.....	4
Energy Assessments.....	5
Energy-Efficiency Improvements.....	7
Water Conservation	7
Know Your Operation	8
Pretreatment	9
Making Changes to Your System.....	10
Public-Participation Programs	10
Fats, Oils, and Grease	11
“Flushable” Products	11
Drug Take-Back Programs.....	12
Need more help?	12
References	13
Sustainability	13
Energy Assessments.....	13
Operation Guidance	14
Energy Audit Checklist	15
For More Information.....	16

Introduction

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As you work through Part B, you may find it beneficial to review other parts of the series, particularly Part A, *Asset Management* (RG-530a), to help you prioritize your upgrades. To view or download the complete series, go to the TCEQ Small Business and Local Government Assistance section's Web page at <www.tceq.texas.gov/goto/rg-530>. If you do not have Internet access, call the SBLGA's toll-free hotline number 800-447-2827 for a paper copy of the complete series *Managing Small Domestic Wastewater Systems* (RG-530).

What is sustainability?

If your system is “sustainable,” that means it is well-managed—using energy and water responsibly, preparing to meet projected population changes through financial planning and technical know-how, and meeting compliance with the rules—while providing good service and encouraging communication with your customers. Many small wastewater systems are taken for granted by customers, and it's possible that you can improve your image by simple outreach to your customers directly and to the community at large.

There are many resources to help make your system more sustainable. The USDA and EPA have prepared the *Rural and Small Systems Guidebook to Sustainable Utility Management*, and you can use it to improve several management areas, including product quality, customer satisfaction, employee and leadership development, financial viability, infrastructure stability, and others. The guidebook also has a self-assessment worksheet

to help you find areas for improvement. It is available online at www.tceq.texas.gov/goto/PartBResources.

We will walk you through some components of sustainability. These are all best management practices that you can incorporate into your existing management plans. Some funding sources will want to see that you are considering the long-term management of your system before they offer you a loan.

Sustainable Systems: Best Management Practices

- **Develop an asset-management plan.** In Part A of this guide, *Asset Management* (RG-530a), we discuss developing an asset-management plan—which is a good place to start. The worksheets and instructions will help you conduct an inventory of the treatment system’s resources; prioritize repairs and replacements, plan for future needs, and develop a budget.
- **Prepare an operation-and-maintenance plan.** In Part C, *Operation and Maintenance* (RG-530c), we detail the requirements for creating an operation-and-maintenance plan for your system. You can also create a program for scheduling and performing preventive and general maintenance.
- **Conduct an energy audit.** Consider changing equipment and processes, referring to your energy-audit results and asset-management plan.
- **Evaluate your effluent and influent.** You need to make changes to your treatment process or upgrade your pretreatment ordinances if you determine your current treatment system is not adequate. Worksheets in Part E, *Resources* (RG-530e), will help you identify trends in monthly sampling results.
- **Conduct inflow and infiltration analyses.** Capacity needs change over time. The EPA *Guide for Estimating I&I* and *Quick Guide for Estimating I&I* are available at www.tceq.texas.gov/goto/PartBResources.
- **Develop a water conservation plan.** Work with the water provider in your area to reduce water use by installing more efficient fixtures, encouraging reuse, and conducting water-use audits.

Review Your Energy Use

You should conduct an annual energy survey to determine where you can conserve energy or improve efficiency. This survey should review all energy-consuming processes, such as aeration and pumping. Through the results of the survey, combined with your asset-management plan, you should see what equipment upgrades will benefit your system.

Energy Audits

You can have a staff member who is knowledgeable about the process conduct your energy audit, or you may decide to hire a consultant. Monitoring the activities of the consultant takes time, but you may find it less time consuming than conducting the audit in-house. An in-house audit will require your staff member, as opposed to a contractor, to follow through with recommendations he or she identifies before your facility sees positive results.

There are three types of audits, ranging from simple to complex: preliminary, single-purpose, and comprehensive. A simplified audit will contain less detail and result in less money saved than a more comprehensive audit. A preliminary audit will indicate whether a more extensive review is required, whereas a single-purpose audit analyzes one aspect or function, such as lighting, motors, HVAC, etc. A comprehensive audit is facility-wide and evaluates all major energy-using systems.

Audit forms are available online to help guide you through an internal audit. We have modified a checklist created by the Consortium for Energy Efficiency and included it at the end of this publication. Once you've completed the checklist, you can discuss possible upgrades with your asset-management team. The team will have prioritized maintenance and replacement schedules and will be able to use the results of your audit to make more energy-efficient choices. For help creating an asset-management plan, see Part A of this series, *Asset Management* (RG-530a).

Energy Assessments

Energy assessments are a more intense energy audit. Some funding sources, like the Texas Water Development Board (TWDB) Clean Water State Revolving Fund, can fund energy efficiency projects, including the energy assessment, if the assessment is reasonably expected to lead to a capital project. Tools to assist you with your energy assessment are available through the EPA and the New York State Energy Research and Development Authority (NYSERDA). We will guide you through the general concepts.

Step 1: Conducting an energy assessment will help you determine your baseline power use, evaluate your plant, and identify opportunities to save energy. The first step to conducting an in-house assessment is to **form an energy team** to develop an energy management plan, establish goals, define resource needs for the team, and serve as an information clearinghouse. The energy team should consist of many layers of the facility staff and may include the manager, operator, mayor, and an accountant. The size of the team will depend on the size and complexity of the system.

Step 2: Your team will **develop baseline energy use** from historical records. By looking at the last 12 months of energy bills, you will begin to understand where and when energy is used most. You'll also better understand your energy costs, such as changes in rates during peak and non-peak hours. Determining baseline energy use will require organizing treatment processes by functional area, evaluating energy bills and understanding rate structures, assessing the energy use difference with hydraulic loading, and organizing data in a useful way.

Step 3: Once your baseline energy use is established, you're ready to **evaluate the system and collect current data**. This includes conducting a system walk-through to verify the equipment specifications and operations, performing staff interviews to determine operational history, identifying conservation opportunities, conducting measurements and collecting data on run times of motors, or calculating the energy used for millions of gallons of wastewater treated per day or biochemical oxygen demand (BOD) removed. You will create a benchmark to compare future data. You might start with the largest pieces of equipment or more energy-consuming processes.

Step 4: Identify opportunities for energy conservation. This can include capital improvement or replacement of equipment, a change in process or operations, automation or change of controls, or improving maintenance. You might talk to neighboring facilities, associations, or consultants to help identify ways to improve efficiency at your plant.

Step 5: Prioritize implementation of your changes. Evaluate the areas where upgrades will improve energy efficiency the most. Some equipment may be due for replacement as part of your asset-management plan. When choosing new equipment, consider your energy goals. The most efficient equipment may have a higher cost up-front, but it may be easier to maintain and less expensive to operate for the long-term. This will require a cost-benefit analysis to evaluate the costs of buying and operating less expensive equipment that uses more energy as compared with more expensive energy-efficient equipment.

As you prioritize your changes, you will be developing an implementation plan. This plan should communicate what you plan to do, what resources (staff, time, and money) you will need, and what the results will be. Implementing an energy program can be difficult for several reasons, including cost, space, staff, engineering constraints, changes in chemical use, and changes in operations. The more effort you put into the assessment, the stronger your plan will be. A clear plan will help you inform stakeholders of your decisions.

Once new equipment and processes are put into place, keep track of how the change affected the system, staff, and energy use. More information is available in the *Best Practices Handbook* from the NYSERDA, including best management practices for energy conservation and spreadsheets for conducting your own energy assessment: www.tceq.texas.gov/goto/PartBResources.

Here are resources to help you conduct an audit, all available at www.tceq.texas.gov/goto/PartBResources:

- The EPA's Energy Use Assessment Tool can help you evaluate equipment and create a baseline of energy use.
- The Texas comptroller's State Energy Conservation Office can conduct preliminary energy assessments for you. This service is available to public utilities.

- The Department of Energy Industrial Assessment Centers conducts audits.

Energy-Efficiency Improvements

Some energy-efficiency improvements are easier to make than others. For example, you can make energy-saving changes by:

- modifying lighting, updating HVAC, or making other building improvements
- reducing facility loading by using equalization basins to minimize peak flow and investigating inflow and infiltration
- using supervisory-control and data-acquisition (SCADA) software to monitor processes and use data to create a table of expected results for the system
- implementing an energy-management program by creating an energy team, monitoring power use, and reducing peak power demand

The EPA's *Evaluation of Energy Conservation Measures for Wastewater Treatment Facilities* details equipment replacement, operational changes, and process-control enhancements to improve energy efficiency, including increasing efficiency of pumping systems, modification and control of aeration systems and blower types, and conservation measures for treatment processes. You can download the report at www.tceq.texas.gov/goto/PartBResources >.

If you want to streamline the assessment and audit phases, you might consider contracting an energy services company. Resources are available to help you choose a contractor, including *How to Hire an Energy Services Company* from the California Energy Commission, available online at www.tceq.texas.gov/goto/PartBResources>.

Water Conservation

To qualify for Clean Water State Revolving Fund funds greater than \$500,000 from the TWDB, you must have a water-conservation plan. The goal is to reduce water use, which will ultimately reduce flow to the wastewater system. This may involve collaborating with your water provider and could be accomplished in several ways:

- **Water-saving fixtures.** Install or retrofit plumbing fixtures, such as shower heads, toilets, and faucets. Consider education and incentives to conserve water.
- **Water meters.** Make sure meters are functioning properly and consider upgrading meters that are old.
- **Water audits and conservation plans.** Assess large water users to determine ways they can conserve.
- **Develop a conservation program.** The TWDB has tools to create a water-conservation program at www.tceq.texas.gov/goto/PartBResources >.
- **Use reclaimed water.** You can reuse treated water at your facility without authorization [30 TAC 210.4(c)¹]. Your community can consider using reclaimed water for irrigation at parks, golf courses, and residential developments. Other uses include crop irrigation, dust control, and fire suppression. The analytical requirements and authorization levels vary. You can find more information at: www.tceq.texas.gov/goto/PartBResources >.

More information is available from the TWDB, including what to include in your conservation plan, conservation-plan checklists, and fact sheets.

Know Your Operation

In order to maintain your system and meet permit requirements, you need to understand a few things about your system:

- know your influent
- understand the effects of inflow and infiltration
- control influent from lift stations
- maintain optimal solids

These topics and others are included in our publication *Troubleshooting Bacteria Levels at Wastewater Treatment Plants* (RG-515), wherein we discuss meeting bacteria limits, which are new to some permits.

¹ Short for 'Title 30, Texas Administrative Code, subsection 210.4(c).'

Pretreatment

Wastewater plants are designed to handle five conventional pollutants: BOD, total suspended solids, fecal coliform, pH, and oil and grease.

Industrial and commercial facilities that discharge toxic or non-conventional pollutants to your system could harm your plant in several ways:

- by causing damage to the infrastructure through corrosion
- by killing your microorganisms and disrupting the system
- by contaminating your sludge and affecting your ability to dispose normally
- by exceeding your permitted effluent

The national pretreatment program was designed to protect **publicly owned** wastewater systems from toxic or non-conventional pollutants, and the TCEQ has the delegated authority to run the pretreatment program in Texas.

To establish a pretreatment program at your facility, you must perform a survey to determine what types and amounts of pollutants industrial users will discharge. You will also develop a program for sampling, inspection, and reporting in accordance with Title 40, Code of Federal Regulations, Sections 403.8 and 403.12. There are other requirements, and the TCEQ can help you. More information is available online at www.tceq.texas.gov/goto/PartBResources >.

Your city should have specific ordinances to establish its pretreatment program, and you can make your program as stringent as you need to protect your plant and infrastructure.

The EPA has prepared an *Introduction to the National Pretreatment Program*, available at: www.tceq.texas.gov/goto/PartBResources>. It includes a good background on pretreatment and the requirements for your wastewater system and industrial users.

If you have a privately owned or investor-owned wastewater system, you can follow the federal guidelines and create a local program. You will want to incorporate user agreements into your program. Privately owned pretreatment programs are not regulated by the TCEQ.

Making Changes to Your System

Remember that your facility's permit is written specifically for the processes at your plant. You may determine that you need to make changes to your plant. Before you consider making changes, consult a permit writer on the Municipal Permits Team at the TCEQ to determine how you will need to amend your permit.

If the changes are not urgent, you may consider waiting to make them until your permit is scheduled for renewal. Depending on the type of changes you want to make, you may be able to renew your permit with a minor amendment. Extensive changes (e.g., potential modifications to address buffer-zone issues for a new treatment unit) will require a major amendment. Major amendments require mailed public notices to affected landowners in addition to the published notices. Your permit writer will be able to advise you on application timelines. You can contact the Municipal Permits Team at 512-239-4671.

Public-Participation Programs

Much of the wastewater that is received at your plant is likely from homes, apartment buildings, or commercial businesses. You have an opportunity to improve the wastewater coming into your plant through education and outreach.

We know that starting with young children is an effective way to improve behaviors of adults at home. Once you decide what message you want your customers to hear, you might consider going to the elementary schools to tell the kids where their toilet and sink waters go. You might also consider teaming up with apartment management companies to supply them with outreach materials to be posted in a central location. The TCEQ's Small Business and Local Government Assistance section and Take Care of Texas Program may have some resources that suit your needs.

Here are several issues that you might consider talking about: fats, oils and grease; "flushable" products; and drug disposal.

Fats, Oils, and Grease

Fats, oils, and grease (FOG) can damage your system in a few ways. FOG can cause sanitary sewer overflows (SSOs); it can affect your ability to treat and disinfect your wastewater; and it can result in wear on your collection system.

When you have an SSO, not only do you have requirements to report the overflow to the TCEQ and remediation to conduct, you also have a public-relations problem. This costs you money in resources (equipment use, personnel, overtime pay), and it affects your image with the community. The best way to prevent SSOs is to reduce FOG in the system. The best way to reduce FOG is to let people know it's a problem.

There are many examples of FOG outreach. The most notable is the City of Dallas' Cease the Grease program. It's a complex combination of television ads, flyers, bill inserts, stickers, door hangers, and direct mail-outs. They also have locations where customers can have their used grease and cooking oil recycled into gas to run the wastewater plant. You may not be able to create a recycling program or multimedia outreach campaign, but the Galveston Bay Foundation has created materials that you can use to improve outreach in your area. Additionally, the TCEQ has a Web page devoted to FOG. See <www.tceq.texas.gov/goto/PartBResources>.

"Flushable" Products

Wastewater systems have encountered problems with items that should not be flushed (paper towels, personal hygiene items, cat litter, baby wipes, etc.). Within the last few years, use of "flushable" wipes has increased the number of clogs and amount of maintenance needed in collection systems. You can consider outreach or you can consider installing grinder pumps to address the issue.

Some slogans for outreach include "wipes clog pipes" and "no wipes in the pipes, only toilet paper down the toilet." King County, Washington, created a public-outreach video called *Flushing Awesome* that ran on local stations. You view the video via a link at <www.tceq.texas.gov/goto/PartBResources>. You could also consider

contacting the local news to do a story on your plant and the issues with flushable products.

In addition, the San Jacinto River Authority has created a “Patty Potty” campaign that has generic outreach materials you can use. More information is available on the authority’s website, linked at <www.tceq.texas.gov/goto/PartBResources>, including the “don’t flush list” and “no wipes in the pipes.” The Galveston Bay Foundation is working to combine Patty Potty with its Cease the Grease campaign to create a one-stop shop for outreach.

Drug Take-Back Programs

Pharmaceuticals in wastewater are a growing water quality concern. You can let customers know not to flush medication. Resources are available to locate drug take-back programs, including the American Medicine Chest Challenge—see <www.tceq.texas.gov/goto/PartBResources>.

Customers should know about alternatives to flushing medication. These are some tips for proper disposal:

1. Pour medication into a sealable plastic bag. If the medication is solid (pill, liquid capsule, etc.), add water to dissolve it.
2. Add cat litter, sawdust, coffee grounds to the bag (or any material that mixes with the medication and makes it less appealing for pets and children to eat).
3. Seal the bag and put it in the trash.
4. Remove and destroy all identifying personal information (usually on the prescription label) from all medication containers before recycling them or throwing them away.

Need more help?

The TCEQ’s Financial, Managerial and Technical Assistance Program offers free on-site assistance from a contractor to help you analyze your planning options, conduct rate studies, and help you with all aspects of running and funding your wastewater system. For more information about the program, visit <www.tceq.texas.gov/goto/PartBResources>, call the Water Supply Division at 512-239-4691, or contact the SBLGA representative in your

region by calling our toll-free, confidential compliance hotline: 800-447-2827.

Many state and federal funding agencies make grants and loans available for planning and development of new wastewater-treatment plants and infrastructure improvements. The Texas Water Infrastructure Coordination Committee (TWICC) is a group of local, state, and federal agencies that collaborate to identify issues with water and wastewater infrastructure and compliance, and to seek affordable, sustainable, and innovative funding strategies for the protection of public health and efficient use of government resources in Texas. You can contact TWICC by phone at 512-463-7870, by e-mail at <TWICC@twdb.state.tx.us>, or by fax at 512-475-2086 or visit <www.tceq.texas.gov/goto/PartBResources> to learn more about the program or the TWDB's financial assistance to wastewater systems.

References

Publications and Web pages referenced throughout this module are available at <www.tceq.texas.gov/goto/PartBResources> and are listed in the order in which they appear in Part B.

Sustainability

USDA and EPA: *Rural and Small Systems Guidebook to Sustainable Utility Management*

Energy Assessments

California Energy Commission: *How to Hire an Energy Services Company*

Department of Energy Industrial Assessment Centers: EPA Energy Use Assessment Tool

EPA: *Evaluation of Energy Conservation Measures for Wastewater Treatment Facilities*

NYSERD: *A Best Practices Handbook*

The State Energy Conservation Preliminary Energy Assessment

Operation Guidance

American Medicine Chest Challenge: drug take-back programs

EPA: *Guide for Estimating I&I and Quick Guide for Estimating I&I*

EPA: *Introduction to the National Pretreatment Program*

Galveston Bay Foundation: “Cease the Grease” materials

King County, Washington: *Flushing Awesome*

San Jacinto River Authority: “Patty Potty” Campaign

TCEQ: Requirements for reclaimed water

TCEQ: Developing a new pretreatment program

TWDB: Conservation-plan checklists

TWDB: Tools to create a water-conservation program

TCEQ: Fats, oils, and grease

TCEQ Financial, Managerial and Technical Assistance Program

Texas Water Infrastructure Coordination Committee

Energy Audit Checklist

Many wastewater facilities could save 20 to 40 percent of energy use by making energy-efficiency upgrades. You should conduct an energy survey every year to determine where you can conserve energy or improve efficiency. This survey reviews energy-consuming processes, such as aeration and pumping. Use the results of the survey and your asset-management plan to determine what equipment upgrades will most benefit your system.

Answer only the questions that apply to your system. For each section, include additional comments or notes about past or planned upgrades. **More than five responses in the shaded boxes indicates potential for energy savings.**

Table 1. Influent and Effluent Pumps

	Yes	No
a. Do you have influent or effluent pumps?		
b. For influent pumps: do they have variable speed control?		
c. For influent pumps: are premium-efficiency motors currently installed?		
d. For effluent pumps: do they have variable speed control?		
e. For effluent pumps: are premium-efficiency motors currently installed?		

Notes:

Table 2. Aeration

	Yes	No
a. Does your plant use aeration blowers or compressors for pre-aeration, post-aeration or other aerated channels?		
b. If yes, can you adjust the air output?		

Notes:

Table 3. Intermediate Pumping

	Yes	No
a. Do you have intermediate pumps to convey flow from primary to secondary processes or from secondary to tertiary treatment processes?		
b. If yes, do you have variable speed control on these pumps?		
c. Are premium-efficiency motors currently installed on these pumps?		

Notes:

Table 4. Activated-Sludge Processes

	Yes	No
a. Does your plant use aeration blowers or compressors as part of the activated sludge process?		
b. If yes, can you adjust the air output?		
c. Are premium-efficiency motors currently installed?		
d. Does your plant use mechanical aerators (including mixers in pure oxygen systems)?		
e. If yes, do the aerators have variable speed control?		
f. Is your aeration system controlled via dissolved-oxygen levels or pressure differentials?		
g. If yes, are dissolved-oxygen or pressure sensors located within the aeration basins?		
h. Do you currently use a fine-bubble aeration system?		
i. If you have a pure oxygen system, do you have a vacuum–pressure-swing adsorption (VPSA) O ₂ -generation system?		
j. Do you currently have variable-speed return-activated sludge (RAS) pumps?		
k. Do you currently have variable-speed waste-activated sludge (WAS) pumps?		

Notes:

Table 5. Biological Treatment Processes

	Yes	No
a. Does your plant use supplemental aeration blowers or compressors as part of a fixed-film process?		
b. If yes, are there currently means to throttle the amount of air delivered or otherwise adjust output?		
c. Are premium-efficiency motors currently installed?		
d. Do you pump to convey flow to the trickling filters?		
e. If yes, do you have variable speed control on these pumps?		
f. Are your trickling-filter distribution arms mechanically driven?		

Notes:

Table 6. Disinfection Systems

	Yes	No
a. Do you currently use an ultraviolet disinfection system?		
b. If yes, does the UV system use low-pressure, high-output lamps?		
c. Is the system operated via flow pacing or a dosing set point based on water quality?		

Notes:

Table 7. Sludge Pumping

	Yes	No
a. Do you process sludge on intermittently (less than 24 hours per day)?		
b. If yes, do you currently process sludge during off-peak hours?		
c. Do you currently have any equalization capacity within your existing process for handling sludge?		
d. If no, do you have variable speed capability on your sludge-transfer pumps?		

Notes:

Table 8. Sludge Stabilization

	Yes	No
a. Does your plant use aerobic digestion?		
b. If yes, has there been any discussion of switching to anaerobic digestion or other stabilization method (e.g., lime stabilization)?		
c. Do you currently have the capability to produce biogas (methane) from anaerobic digestion?		
d. Is biogas currently flared or vented?		
e. Is biogas currently being used for thermal or electrical power generation?		
f. Does your plant currently accept hauled waste at its headworks?		
g. If yes, is there equalization to allow hauled wastes to be introduced gradually or during low-loading periods?		

Notes:

Table 9. Sludge Processing

	Yes	No
a. Does your thickening or dewatering equipment run intermittently (less than 24 hours per day on average)?		
b. Do you use centrifuges for thickening, dewatering, or both?		
c. Do you currently use sludge-drying beds for dewatering?		
d. Does your plant currently haul sludge to another location for processing?		
e. Does your plant use incineration for sludge stabilization or disposal?		

Notes:

Table 10. Other Projects

	Yes	No
a. Has your plant undergone any energy improvement projects in the last five years?		
b. If yes, have any of these projects involved switching to more efficient lighting?		
c. If yes, have any of these projects involved load shedding or off-peak load shifting?		
d. If yes, have any of these projects involved installation of new or improved HVAC equipment?		
e. Is your plant or will your plant be undergoing capacity expansion to comply with 30 TAC 217?		
f. If yes, are energy-conservation measures included within the capacity improvements?		

Notes:

If you plan to make changes to your system, verify that a permit amendment or design approval isn't required by calling the TCEQ wastewater permitting staff at 512-239-4971.

This form has been adapted from forms created for Efficiency Vermont and the New York State Energy Research and Development Authority by the Consortium for Energy Efficiency.

For More Information

For confidential assistance with environmental compliance, contact the Small Business and Local Government Assistance Hotline at 800-447-2827, or visit <www.TexasEnviroHelp.org>.



Managing Small Domestic Wastewater Systems: Part C, Operation and Maintenance

Contents

Introduction	2
Implementing an Operation-and-Maintenance Program	2
The Benefits of an O&M Program	3
Common O&M Violations	3
Your O&M Manual	4
Operation-and-Maintenance Manual	5
1. Facility Permit and Permit Modifications.....	7
2. TCEQ, EPA, and Emergency Contacts	8
3. Discharge Monitoring Report (DMR) Address and Signatory Authority	10
4. Process-Control Tests.....	13
5. Domestic Reuse Monthly Effluent Reports	22
6. Soil Monthly Effluent Report	26
7. Plant Information—Summary.....	38
8. Startup and Operating Procedures	39
9. Sludge Maintenance	41
10. Lab Analyses and References	43
11. Routine Maintenance	44
12. Spare-Part Inventory and Equipment Suppliers	46
13. Safety	46
For More Information	47

Introduction

This publication is Part C of a five-part series, *Managing Small Domestic Wastewater Systems* (TCEQ publication series RG-530), and contains worksheets to help you:

- create your own operation-and-maintenance manual for your utility
- map out a program for scheduling and performing preventive and general maintenance
- develop a process-control program to help keep your system in compliance with state and federal environmental rules

As you work through this module, you may find it beneficial to review other parts of the series to help you prepare a comprehensive operation-and-maintenance plan. To view or download the complete series go to www.tceq.texas.gov/goto/rg-530. If you do not have Internet access, call the SBLGA's hotline at 800-447-2827 for a paper copy of the complete series *Managing Small Domestic Wastewater Systems* (RG-530).

Note: This publication is not a substitute for the actual rules. To obtain the most current, official copy of state rules, contact the Secretary of State's office at 512-305-9623. The rules are also available online at [texreg.sos.state.tx.us/public/readtac\\$ext.ViewTAC?tac_view=2&ti=30](http://texreg.sos.state.tx.us/public/readtac$ext.ViewTAC?tac_view=2&ti=30).

Implementing an Operation-and-Maintenance Program

In Part A, *Asset Management* (RG-530a), you developed an asset management plan for your facility. This document (Part C) is designed to help you—the manager or operator of a small domestic wastewater system put together an operation-and-maintenance (O&M) manual to keep the system's infrastructure and equipment (assets) in good working condition, extend their useful life, and avoid some of the common O&M violations.

Benefits of an O&M Program

An effective O&M program can save you money by increasing the useful life of assets. It can also help you estimate the expenses that may be incurred during future repairs and replacement of equipment as you implement your asset-management plan. Finally, an O&M program can help keep your system in compliance with state and federal environmental rules.

Common O&M Violations

As the operator, you must ensure that the facility and its collection, treatment, and disposal systems are properly operated and maintained. This includes regular, periodic examination of wastewater solids to maintain an appropriate quantity and quality of solids inventory. Records of process control, maintenance, and operations must be retained at the facility site or be readily available for review by a TCEQ representative for three years.

Frequent O&M violations to the TCEQ's rules for wastewater facilities include failure to:

- Employ an operator with the appropriate level of license. [30 TAC 30.350(d),* 30 TAC 305.125(1)]
- Maintain compliance with permitted effluent limits. [Texas Water Code 26.121(a)(1), 30 TAC 305.125(1) and (5)]
- Measure the flow according to permit requirements. [30 TAC 319.4, 305.125(1) and (5)]
- Install the flow-measuring devices as required. [30 TAC 217.33(c), 319.11(d)]

* Short for "Title 30, Texas Administrative Code, Subsection 30.350(d)."

- Properly preserve effluent samples. [30 TAC 319.11(b)]
- Maintain all monitoring and reporting records at the facility. [30 TAC 319.7(c); 305.125(1)]
- Comply with the operational requirements of standard permit conditions [30 TAC 305.125]

Other frequent violations include pond erosion, equipment deterioration from lack of maintenance, no records of meter calibrations, and—for those systems that perform land application—failing to submit annual soil sample results to both the regional and Austin TCEQ offices.

Your O&M Manual

A comprehensive O&M manual will help you keep track of your inspections, equipment, operations, staff, and the maintenance you've done—or need to do—on your system. Additionally, your manual will help ensure that the plant and equipment are properly operated and maintained. That will help you maintain compliance with rules, regulations, and permit requirements to protect water quality.

Owners of new treatment facilities designed under 30 TAC 217 are responsible for developing an O&M manual with the assistance of an engineer. The following pages form a basic template for an O&M manual. When using the template keep in mind: your manual must be facility specific.

A current copy of your O&M manual must be maintained on-site, and a copy must be made available within 30 days when requested by an investigator. Your manual should be updated regularly and any time personnel, equipment, or processes and procedures have changed.

Operation-and-Maintenance Manual

for

(Facility Name)

Water Quality Permit Number

TCEQ Regulated Entity Number (RN)

TCEQ Customer Reference Number (CN)

EPA ID Number TX _____

(If this is a new facility, include the supervising engineer's name and PE license number.)

Date _____

Operation-and-Maintenance Manual

Contents

1. Facility Permit and Permit Modifications
2. TCEQ, EPA, and Emergency Contacts
3. Discharge Monitoring Report (DMR) Address and Signatory Authority
4. Process-Control Tests
5. Monthly Effluent Report
6. Soil Monthly Effluent Report
7. Plant Information—Summary
8. Startup and Operating Procedures
9. Sludge Maintenance
10. Lab Analyses and References
11. Routine Maintenance
12. Spare-Part Inventory and Equipment Suppliers
13. Safety

1. Facility Permit and Permit Modifications

Insert a copy of the permit, with drawings, followed by any approved modifications. Identify where the originals are kept.

2. TCEQ, EPA, and Emergency Contacts

TCEQ Region _____ Phone _____

Region Director _____

Water Section Manager _____

SBLGA Representative(s)

SBLGA Hotline 800-447-2827

EPA Region 6—Dallas

General Information 800-887-6063

NPDES Compliance 214-665-7521

Other Contacts

Police _____

Fire _____

Ambulance _____

Local Emergency-Planning Committee _____

DPS, Emergency Management _____

Licensed Operators

Please fill in the name and license number with the license expiration date in the table below.

Operators

Name	Type of License and License Number	Expiration Date

3. Discharge Monitoring Report (DMR) Address and Signatory Authority

Form TCEQ-20431 appears on the following pages. It can also be downloaded at www.tceq.texas.gov/assets/public/assistance/sblga/20431.pdf.



TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Discharge Monitoring Report (DMR)
Address and Signatory Authority Form

If you have questions about completing this form, please contact the Compliance Monitoring Team at 512-239-2545.

Individuals are entitled to request and review their personal information that the agency gathers on its forms. They may also have any errors in their information corrected. To review such information, contact us at 512-239-2545.

Permit Information:

EPA ID NUMBER: TX _____ TPDES PERMIT NUMBER (if applicable): _____

PERMITTEE AND/OR FACILITY NAME: _____

DMR MAILING ADDRESS: _____ (Street Address)
_____ (City, State and Zip Code)

Note: If your primary mailing address has changed, please submit the revised address in writing to the Applications Review and Processing Team (MC 148). Please call 512-239-4671 to request the form for this purpose.

Signatory Information:

INDIVIDUAL(S) DELEGATED AUTHORITY TO SIGN DISCHARGE MONITORING REPORTS (DMRs):
(Other than person delegating authority- Delegation of signatory authority must meet the requirements in 30 TEX. ADMIN. CODE 305.128. See reverse of this form for rule citation.)

_____/_____. (Name) (Title)

_____/_____. (Name) (Title)

PERSON TO CONTACT BY PHONE: _____/_____. (Name) (Title)
_____. (Phone Number)
_____. (E-mail Address)

RESPONSIBLE CORPORATE OFFICER, GENERAL PARTNER, PROPRIETOR, PRINCIPLE EXECUTIVE OFFICER, OR RANKING ELECTED OFFICIAL: (Individual listed below is a person defined in 30 TEX. ADMIN. CODE 305.44(a). See reverse of this form for rule citation.)

I, _____ (Printed name) _____ (Title)

certify that I am a RESPONSIBLE CORPORATE OFFICER, GENERAL PARTNER, PROPRIETOR, PRINCIPAL EXECUTIVE OFFICER, OR RANKING ELECTED OFFICIAL for the above-referenced regulated facility, and I therefore have authority under 30 TAC 305.44 to sign reports. I certify that signatory authority for Discharge Monitoring Reports has been delegated to the above-named individual(s) in accordance with applicable procedures, consistent with 30 TAC 305.44 and 305.128. I also certify that the above-named individual(s) are either individuals or a position having responsibility for the overall operation of the regulated facility or for the environmental matters of the regulated facility. I further certify that I can provide documentation in proof of such delegation upon request.

SIGNATURE: _____ DATE: _____

PHONE NO.: _____

PLEASE RETURN COMPLETED FORM TO:
TCEQ / Compliance Monitoring Team (MC 224)
Enforcement Division
P.O. Box 13087
Austin, Texas 78711-3087

Signatories to Applications

30 TEX. ADMIN. CODE 305.44

(a) All applications shall be signed as follows.

(1) For a corporation, the application shall be signed by a responsible corporate officer. For purposes of this paragraph, a responsible corporate officer means a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation; or the manager of one or more manufacturing, production, or operating facilities employing more than 250 persons or having gross annual sales or expenditures exceeding \$25 million (in second-quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures. Corporate procedures governing authority to sign permit or post-closure order applications may provide for assignment or delegation to applicable corporate positions rather than to specific individuals.

(2) For a partnership or sole proprietorship, the application shall be signed by a general partner or the proprietor, respectively.

(3) For a municipality, state, federal, or other public agency, the application shall be signed by either a principal executive officer or a ranking elected official. For purposes of this paragraph, a principal executive officer of a federal agency includes the chief executive officer of the agency, or a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., regional administrator of the EPA).

(b) A person signing an application shall make the following certification: "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

(c) For a hazardous solid waste permit or a post-closure order, the application must be signed by the owner and operator of the facility.

(d) For radioactive material license applications under Chapter 336 of this title (relating to Radioactive Substance Rules), the applicant or person duly authorized to act for and on the applicant's behalf must sign the application.

Signatories to Reports

30 TEX. ADMIN. CODE 305.128

(a) All reports requested by permits and other information requested by the executive director shall be signed by a person described in §305.44(a) of this title (relating to Signatories to Applications) or by a duly authorized representative of that person. A person is a duly authorized representative only if:

(1) the authorization is made in writing by a person described in §305.44(a) of this title (relating to Signatories to Applications);

(2) **the authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity or for environmental matters for the applicant**, such as the position of plant manager, operator of a well or well field, environmental manager, or a position of equivalent responsibility. (A duly authorized representative may thus be either a named individual or any individual occupying a named position); and

(3) the written authorization is submitted to the executive director.

(b) If an authorization under this section is no longer accurate because of a change in individuals or position, a new authorization satisfying the requirements of this section must be submitted to the executive director prior to or together with any reports, information, or applications to be signed by an authorized representative.

(c) **Any person signing a report required by a permit shall make the certification set forth in §305.44(b) of this title** (relating to Signatories to Applications).

4. Process-Control Tests

Activated-sludge wastewater-treatment facilities (the most common type) are biological processes that require regular monitoring and adjustments. Performing process-control tests will help ensure that your facility does not experience effluent quality violations.

The TCEQ's Licensing Program and the Advisory Committee for Water Utility Operator Licensing developed recommendations for minimum process-control tests, available in *Process Control Tests for Domestic Wastewater Treatment Facilities* (RG-002). This guide has four tables listing the recommended process control tests and appears at <www.tceq.texas.gov/goto/rg-002>. *Note:* Table 4 of the guide applies to facilities with a permitted flow of 1 MGD or less.

Commonly Used Abbreviations

BOD	biochemical oxygen demand
Cl ₂	chlorine gas
COD	chemical oxygen demand
DO	dissolved oxygen
F/M	food-to-microorganism ratio
GPD	gallons per day
GSA	Gould sludge age
MCRT	mean cell-residence time
MGD	million gallons per day
Mg/L	milligram(s) per liter
MLSS	mixed-liquor suspended solids
N	nitrogen
NH ₃	anhydrous ammonia
NH ₃ -N	ammonia nitrogen
RAS	return-activated sludge
SV ₃₀	settleability test, or the 30-minute settling test
SVI	sludge-volume index

TCLP	toxicity characteristic leaching procedure
TSS	total suspended solids
VSS	volatile suspended solids
WAS	waste-activated sludge

Process-Control Daily Activity Report and Operator's Daily Activity Reports

Sample reports for process-control testing and for recording the daily and monthly activities appear in Tables 1 through 3 on the following pages. Refer to your permit and *Process Control Tests for Domestic Wastewater Treatment Facilities* (RG-002), as you may not be required to run all tests daily.

Table 1: Daily Activity Report for Process-Control Tests

As applicable, use this chart for recording process-control tests performed on each unit in your system. Make additional copies as needed for each unit.

Month: _____, **20**_____ **Unit:** _____

Date	Flow	Sludge Temp.	Blanket Level	SV30	SVI	F/M Ratio	MCRT	GSA	WAS Rate	RAS Rate	DO	COD	pH	NH ₃ -N	BOD ₅	TSS/VSS	MLSS
1																	
2																	
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	
11																	
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30																	
31																	

Table 2: Operator’s Daily Log

Use this chart for recording daily flow, sample results, and meter calibration. Make additional copies as needed for each unit.

Month: _____, **20**_____

Date	Effluent Flow (MGD)	DO (mg/L)	pH (SU)	TSS (mg/L)	BOD ₅ (mg/L)	Cl ₂ (mg/L)	NH ₃ (mg/L)	Fecal/ <i>E. coli</i> (CFUs/100) (mL)
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								

Table 3: Sludge-Disposal Record

Use this chart to track sludge-management activities. Make copies as needed.

Date	Passed paint filter test? (yes or no)	Amount disposed of (dry tons)	Disposal-site name and permit number	Transporter name and registration number	Land-application rates and area	TCLP test? (yes or no)

Records (including laboratory test results and quality assurance–quality control) must be maintained according to your permit.

Below are more tables you may choose to use to record your backup-power-supply tests, and your backflow-prevention-device annual testing and certification. We also encourage you to keep a daily log book at the plant to note any weather information, notes and instructions for other staff members or any process or equipment changes.

Table 4: Backup Power Tests

Backup power supplies should be tested regularly to ensure operation when needed. Remember to test under load for accurate operation in an emergency.

Date	Type of Supply	Location of Supply	Length of Test (min.)	Comments

Table 5: Backflow-Prevention Device: Annual Testing and Certification

Date	Device Location	Inspector's License No.	Notes	Initials

5. Domestic Reuse Monthly Effluent Report

Form TCEQ-20709 appears on the following pages. It can also be downloaded at www.tceq.texas.gov/assets/public/assistance/sblga/forms/domestic%20reuse%20MER.xlsx >.



Texas Commission on Environmental Quality

P.O. Box 13087 • Austin, TX 78711-3087

MONTHLY EFFLUENT REPORT

PERMIT NUMBER

SET

YEAR	MO
------	----

EID

This report to be used for _____

Please retain a photocopy for your records.

Parameter Code/ Parameter	Effluent Condition		No. Ex	Frequency of Analysis	Sample Type
	Value	Units			
3101024 BOD ₅	Permitted			2/week	Grab
	Reported				
800821024 CBOD ₅	Permitted			2/week	Grab
	Reported				
820796624 Turbidity	Permitted			2/week	Grab
	Reported				
31643730 E. coli	Permitted			2/week	Grab
	Reported				
316403724 E. coli	Permitted			2/week	Grab
	Reported				
316393724 Enterococci	Permitted			2/week	Grab
	Reported				
316393730 Enterococci	Permitted			2/week	Grab
	Reported				
4006030 pH	Permitted			2/week	Grab
	Reported				
500507124 Flow	Permitted			2/week	Grab
	Reported				
	Permitted				
	Reported				

COMMENTS AND EXPLANATIONS (Reference all attachments here.)

I CERTIFY THAT I AM FAMILIAR WITH THE INFORMATION CONTAINED IN THIS REPORT AND THAT TO THE BEST OF MY KNOWLEDGE AND BELIEF SUCH INFORMATION IS TRUE, COMPLETE AND ACCURATE.

PLANT OPERATOR NAME	PLANT OPERATOR SIGNATURE	MONTH	DAY	YEAR
EXECUTIVE OFFICER NAME	EXECUTIVE OFFICER SIGNATURE	MONTH	DAY	YEAR
Telephone Number				
		Area code	Number	

Texas Commission on Environmental Quality
Monthly Effluent Report Form
Completion Instructions

This Domestic Reuse Monthly Effluent Report is a self-reporting form that shows all the possible parameters that could be reported. Report those required by your permit. Extreme care should be taken to ensure that this report is used for only the plant or outfall described and for the year and month you specify on this the form. Measurements or test results must be reported in the following manner:

1. "Effluent Condition" column - Enter permitted limit in the shaded space and test results in the unshaded space under VALUE for each parameter using the units specified for that parameter in your permit. If the UNITS specifies MGD (million gallons per day), then a measured flow of 100,000 gallons per day should be reported as 0.100 MGD.

2. "NO EX" column - In the unshaded spaces, enter the exact number of times during the month that the given permitted limit was exceeded. If an effluent value reported as daily average is found to exceed the permitted daily average, enter a "1" in the box regardless of the number of single readings above the permitted limit

3. "Frequency of Analysis" and "Sample Type" columns - These columns reflect your permit requirements for the sampling of each parameter. This form includes many possible permit requirements. Use the frequency of analysis and sample type for each parameter as specified in your permit.

4. If no discharge is made during the reporting month enter a "0" under VALUE and enter the PARAMETER as "Discharge Days/Month." Leave the remainder of the form blank, except for reporting requirements under number 5 below.

5. Each form must contain two original signatures, the dates the forms were signed and the telephone number of the executive officer. Send the completed form to the Water Compliance Monitoring Team (MC 224), Enforcement Division, Texas Commission on Environmental Quality, PO Box 13087, Austin, Texas 78711-3087.

PLEASE RETAIN A PHOTOCOPY OF THE REPORT FOR YOUR RECORDS.

The following are definitions of terms and abbreviations used on the report:

DLY. AVG.	Daily Average will be the arithmetic average of all test or measurement results obtained during the reporting period
DLY. MAX.	Daily Maximum will be the largest of all the test or measurement results obtained during the reporting period.
IND. GRAB	Individual Grab will be the largest test or measurement result obtained during the reporting period from a grab sample.
DLY. MIN.	Daily Minimum will be the smallest test or measurement result obtained during the reporting period.
GRAB	A sample collected in less than 15 minutes.
GRAB PKLOAD	Grab sample collected at peak loading.
3 PRT COMP	3-part composite
6 PRT COMP	6-part composite
12 PRT COMP	12-part composite
Parameter	A physical property whose values determine the characteristics or behavior of something (i.e. temperature, BOD, pH)

If you have questions on how to fill out this form or about the self-reporting program, please contact us at 512/239-2545. Individuals are entitled to request and review their personal information that the agency gathers on its forms. They may also have any errors in their information corrected. To review such information, contact us at 512/239-3282.

Parameter Name	Parameter Code	Sample Type/Units
pH	4006030	Ind Grab
Turbidity	820796624	Daily Average
BOD5	3101024	Daily Average
CBOD5	800821024	Daily Average
E. coli	316403730	Ind Grab
E. coli	316403724	Daily Average
Enterococci	316393724	Daily Average
Enterococci	316393730	Ind Grab

6. Soil Monthly Effluent Report

Form TCEQ-20710 appears on the following pages. It can also be downloaded at www.tceq.texas.gov/assets/public/assistance/sblga/forms/Soil%20MER.xlsx.

Texas Commission on Environmental Quality
Monthly Effluent Report Form
Completion Instructions

This Soil Monthly Effluent Report is a self-reporting form for annual soil sampling from 0 to 6 inches. This form is blank, and the parameter names, codes, and sample types are provided in the accompanying spreadsheet file. Extreme care should be taken to ensure that this report is completed accurately. Measurements or test results must be reported in the following manner:

1. "Parameter Code/Parameter" column – Enter the parameter code and parameter name that is specified in your TLAP.
2. "Effluent Condition" column - Enter your permit limit in the shaded space and test results in the unshaded spaces under VALUE for the parameters using the units specified in your permit. If the UNITS specifies MGD (million gallons per day), then a measured flow of 100,000 gallons per day should be reported as 0.100 MGD.
3. "NO EX" column - Enter in the unshaded spaces, the exact number of times during the month that the given permitted limit was exceeded. If an effluent value reported as daily average is found to exceed the permitted daily average, enter a "1" in the box regardless of the number of single readings above the permitted limit
4. "Frequency of Analysis" and "Sample Type" columns - These columns reflect your permit requirements for the sampling of each parameter. If you have previous MER forms, transfer the frequency of analysis and sample type for each parameter.
5. If no discharge is made during the reporting month enter a "0" under VALUE and enter the PARAMETER "Discharge Days/Month." Leave the remainder of the form blank, except for reporting requirements under number 6 below.
6. Each form must contain two original signatures, the dates the forms were signed and the telephone number of the executive officer. Send the completed form to the Water Compliance Monitoring Team (MC 224), Enforcement Division, Texas Commission on Environmental Quality, PO Box 13087, Austin, Texas 78711-3087.

PLEASE RETAIN A PHOTOCOPY OF THE REPORT FOR YOUR RECORDS.

The following are definitions of terms and abbreviations used on the report:

DLY. AVG.	Daily Average will be the arithmetic average of all test or measurement results obtained during the reporting period
DLY. MAX.	Daily Maximum will be the largest of all the test or measurement results obtained during the reporting period.
IND. GRAB	Individual Grab will be the largest test or measurement result obtained during the reporting period from a grab sample.
DLY. MIN.	Daily Minimum will be the smallest test or measurement result obtained during the reporting period.
GRAB	A sample collected in less than 15 minutes.
GRAB PKLOAD	Grab sample collected at peak loading.
3 PRT COMP	3-part composite
6 PRT COMP	6-part composite
12 PRT COMP	12-part composite
Parameter	A physical property whose values determine the characteristics or behavior of something (i.e. temperature, BOD, pH)

If you have questions on how to fill out this form or about the self-reporting program, please contact us at 512/239-2545. Individuals are entitled to request and review their personal information that the agency gathers on its forms. They may also have any errors in their information corrected. To review such information, contact us at 512/239-3282.



Texas Commission on Environmental Quality

P.O. Box 13087 • Austin, TX 78711-3087

MONTHLY EFFLUENT REPORT

PERMIT NUMBER

SET

YEAR	MO

EID

This report to be used for SOIL MON 101 ANN 0-12

Please retain a photocopy for your records.

Parameter Code/ Parameter	Effluent Condition			No. Ex	Frequency of Analysis	Sample Type
		Value	Units			
<i>EXAMPLE</i> 4006080 <i>pH Maximum</i>	Permitted	<i>permitted #</i>	<i>Std Units</i>		<i>1/year</i>	<i>24-hour comp</i>
	Reported	<i>result</i>	<i>units</i>	<i>#</i>		
	Permitted					
	Reported					
	Permitted					
	Reported					
	Permitted					
	Reported					
	Permitted					
	Reported					
	Permitted					
	Reported					
	Permitted					
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	Permitted					
	Reported					
	Permitted					
	Reported					

COMMENTS AND EXPLANATIONS (Reference all attachments here.)

I CERTIFY THAT I AM FAMILIAR WITH THE INFORMATION CONTAINED IN THIS REPORT AND THAT TO THE BEST OF MY KNOWLEDGE AND BELIEF SUCH INFORMATION IS TRUE AND COMPLETE AND ACCURATE

PLANT OPERATOR NAME	PLANT OPERATOR SIGNATURE	MONTH	DAY	YEAR
EXECUTIVE OFFICER NAME	EXECUTIVE OFFICER SIGNATURE	MONTH	DAY	YEAR
Telephone Number				
		Area code	Number	

Texas Commission on Environmental Quality
Monthly Effluent Report Form
Completion Instructions

This Soil Monthly Effluent Report is a self-reporting form for annual soil sampling from 0 to 12 inches. This form is blank, and the parameter names, codes, and sample types are provided in the accompanying spreadsheet file. Extreme care should be taken to ensure that this report is completed accurately. Measurements or test results must be reported in the following manner:

1. "Parameter Code/Parameter" column – Enter the parameter code and parameter name that is specified in your TLAP.
2. "Effluent Condition" column - Enter your permit limit in the shaded space and test results in the unshaded spaces under VALUE for the parameters using the units specified in your permit. If the UNITS specifies MGD (million gallons per day), then a measured flow of 100,000 gallons per day should be reported as 0.100 MGD.
3. "NO EX" column - Enter in the unshaded spaces, the exact number of times during the month that the given permitted limit was exceeded. If an effluent value reported as daily average is found to exceed the permitted daily average, enter a "1" in the box regardless of the number of single readings above the permitted limit
4. "Frequency of Analysis" and "Sample Type" columns - These columns reflect your permit requirements for the sampling of each parameter. If you have previous MER forms, transfer the frequency of analysis and sample type for each parameter.
5. If no discharge is made during the reporting month enter a "0" under VALUE and enter the PARAMETER "Discharge Days/Month." Leave the remainder of the form blank, except for reporting requirements under number 6 below.
6. Each form must contain two original signatures, the dates the forms were signed and the telephone number of the executive officer. Send the completed form to the Water Compliance Monitoring Team (MC 224), Enforcement Division, Texas Commission on Environmental Quality, PO Box 13087, Austin, Texas 78711-3087.

PLEASE RETAIN A PHOTOCOPY OF THE REPORT FOR YOUR RECORDS.

The following are definitions of terms and abbreviations used on the report:

DLY. AVG.	Daily Average will be the arithmetic average of all test or measurement results obtained during the reporting period
DLY. MAX.	Daily Maximum will be the largest of all the test or measurement results obtained during the reporting period.
IND. GRAB	Individual Grab will be the largest test or measurement result obtained during the reporting period from a grab sample.
DLY. MIN.	Daily Minimum will be the smallest test or measurement result obtained during the reporting period.
GRAB	A sample collected in less than 15 minutes.
GRAB PKLOAD	Grab sample collected at peak loading.
3 PRT COMP	3-part composite
6 PRT COMP	6-part composite
12 PRT COMP	12-part composite
Parameter	A physical property whose values determine the characteristics or behavior of something (i.e. temperature, BOD, pH)

If you have questions on how to fill out this form or about the self-reporting program, please contact us at 512/239-2545. Individuals are entitled to request and review their personal information that the agency gathers on its forms. They may also have any errors in their information corrected. To review such information, contact us at 512/239-3282.



Texas Commission on Environmental Quality

P.O. Box 13087 • Austin, TX 78711-3087
MONTHLY EFFLUENT REPORT

PERMIT NUMBER

SET

YEAR	MO

EID

This report to be used for SOIL MON 201 ANN 6-18

Please retain a photocopy for your records.

Parameter Code/ Parameter	Effluent Condition			No. Ex	Frequency of Analysis	Sample Type
	Permitted	Value	Units			
<i>Example 4006080 pH Maximum</i>	Permitted	<i>permitted #</i>	<i>Std Units</i>		<i>1/year</i>	<i>24-hour comp</i>
	Reported	<i>result</i>	<i>units</i>	<i>#</i>		
	Permitted					
	Reported					
	Permitted					
	Reported					
	Permitted					
	Reported					
	Permitted					
	Reported					
	Permitted					
	Reported					
	Permitted					
	Reported					
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	Reported					
	Permitted					
	Reported					

COMMENTS AND EXPLANATIONS (Reference all attachments here.)

I CERTIFY THAT I AM FAMILIAR WITH THE INFORMATION CONTAINED IN THIS REPORT AND THAT TO THE BEST OF MY KNOWLEDGE AND BELIEF SUCH INFORMATION IS TRUE AND COMPLETE AND ACCURATE

PLANT OPERATOR NAME	PLANT OPERATOR SIGNATURE	MONTH	DAY	YEAR
EXECUTIVE OFFICER NAME	EXECUTIVE OFFICER SIGNATURE	MONTH	DAY	YEAR
Telephone Number				
Area code		Number		

Texas Commission on Environmental Quality
Monthly Effluent Report Form
Completion Instructions

This Soil Monthly Effluent Report is a self-reporting form for annual soil sampling from 6 to 18 inches. This form is blank, and the parameter names, codes, and sample types are provided in the accompanying spreadsheet file. Extreme care should be taken to ensure that this report is completed accurately. Measurements or test results must be reported in the following manner:

1. "Parameter Code/Parameter" column – Enter the parameter code and parameter name that is specified in your TLAP.
2. "Effluent Condition" column - Enter your permit limit in the shaded space and test results in the unshaded spaces under VALUE for the parameters using the units specified in your permit. If the UNITS specifies MGD (million gallons per day), then a measured flow of 100,000 gallons per day should be reported as 0.100 MGD.
3. "NO EX" column - Enter in the unshaded spaces, the exact number of times during the month that the given permitted limit was exceeded. If an effluent value reported as daily average is found to exceed the permitted daily average, enter a "1" in the box regardless of the number of single readings above the permitted limit
4. "Frequency of Analysis" and "Sample Type" columns - These columns reflect your permit requirements for the sampling of each parameter. If you have previous MER forms, transfer the frequency of analysis and sample type for each parameter.
5. If no discharge is made during the reporting month enter a "0" under VALUE and enter the PARAMETER "Discharge Days/Month." Leave the remainder of the form blank, except for reporting requirements under number 6 below.
6. Each form must contain two original signatures, the dates the forms were signed and the telephone number of the executive officer. Send the completed form to the Water Compliance Monitoring Team (MC 224), Enforcement Division, Texas Commission on Environmental Quality, PO Box 13087, Austin, Texas 78711-3087.

PLEASE RETAIN A PHOTOCOPY OF THE REPORT FOR YOUR RECORDS.

The following are definitions of terms and abbreviations used on the report:

DLY. AVG.	Daily Average will be the arithmetic average of all test or measurement results obtained during the reporting period
DLY. MAX.	Daily Maximum will be the largest of all the test or measurement results obtained during the reporting period.
IND. GRAB	Individual Grab will be the largest test or measurement result obtained during the reporting period from a grab sample.
DLY. MIN.	Daily Minimum will be the smallest test or measurement result obtained during the reporting period.
GRAB	A sample collected in less than 15 minutes.
GRAB PKLOAD	Grab sample collected at peak loading.
3 PRT COMP	3-part composite
6 PRT COMP	6-part composite
12 PRT COMP	12-part composite
Parameter	A physical property whose values determine the characteristics or behavior of something (i.e. temperature, BOD, pH.)

If you have questions on how to fill out this form or about the self-reporting program, please contact us at 512/239-2545. Individuals are entitled to request and review their personal information that the agency gathers on its forms. They may also have any errors in their information corrected. To review such information, contact us at 512/239-3282.



Texas Commission on Environmental Quality

P.O. Box 13087 • Austin, TX 78711-3087
MONTHLY EFFLUENT REPORT

PERMIT NUMBER

SET

YEAR	MO

EID

This report to be used for SOIL MON 201 ANN 12-24

Please retain a photocopy for your records.

Parameter Code/ Parameter	Effluent Condition			No. Ex	Frequency of Analysis	Sample Type
		Value	Units			
<i>Example 4006080 pH Maximum</i>	Permitted	<i>permitted #</i>	<i>Std Units</i>		<i>1/year</i>	<i>24-hour comp</i>
	Reported	<i>result</i>	<i>units</i>	<i>#</i>		
	Permitted					
	Reported					
	Permitted					
	Reported					
	Permitted					
	Reported					
	Permitted					
	Reported					
	Permitted					
	Reported					
	Permitted					
	Reported					
	Permitted					
	Reported					
	Permitted					
	Reported					
	Permitted					
	Reported					

COMMENTS AND EXPLANATIONS (Reference all attachments here.)

I CERTIFY THAT I AM FAMILIAR WITH THE INFORMATION CONTAINED IN THIS REPORT AND THAT TO THE BEST OF MY KNOWLEDGE AND BELIEF SUCH INFORMATION IS TRUE AND COMPLETE AND ACCURATE

PLANT OPERATOR NAME	PLANT OPERATOR SIGNATURE	MONTH	DAY	YEAR
EXECUTIVE OFFICER NAME	EXECUTIVE OFFICER SIGNATURE	MONTH	DAY	YEAR
Telephone Number				
		Area code	Number	

Texas Commission on Environmental Quality
Monthly Effluent Report Form
Completion Instructions

This Soil Monthly Effluent Report is a self-reporting form for annual soil sampling from 12 to 24 inches. This form is blank, and the parameter names, codes, and sample types are provided in the accompanying spreadsheet file. Extreme care should be taken to ensure that this report is completed accurately. Measurements or test results must be reported in the following manner:

1. "Parameter Code/Parameter" column – Enter the parameter code and parameter name that is specified in your TLAP.
2. "Effluent Condition" column - Enter your permit limit in the shaded space and test results in the unshaded spaces under VALUE for the parameters using the units specified in your permit. If the UNITS specifies MGD (million gallons per day), then a measured flow of 100,000 gallons per day should be reported as 0.100 MGD.
3. "NO EX" column - Enter in the unshaded spaces, the exact number of times during the month that the given permitted limit was exceeded. If an effluent value reported as daily average is found to exceed the permitted daily average, enter a "1" in the box regardless of the number of single readings above the permitted limit
4. "Frequency of Analysis" and "Sample Type" columns - These columns reflect your permit requirements for the sampling of each parameter. If you have previous MER forms, transfer the frequency of analysis and sample type for each parameter.
5. If no discharge is made during the reporting month enter a "0" under VALUE and enter the PARAMETER "Discharge Days/Month." Leave the remainder of the form blank, except for reporting requirements under number 6 below.
6. Each form must contain two original signatures, the dates the forms were signed and the telephone number of the executive officer. Send the completed form to the Water Compliance Monitoring Team (MC 224), Enforcement Division, Texas Commission on Environmental Quality, PO Box 13087, Austin, Texas 78711-3087.

PLEASE RETAIN A PHOTOCOPY OF THE REPORT FOR YOUR RECORDS.

The following are definitions of terms and abbreviations used on the report:

DLY. AVG.	Daily Average will be the arithmetic average of all test or measurement results obtained during the reporting period
DLY. MAX.	Daily Maximum will be the largest of all the test or measurement results obtained during the reporting period.
IND. GRAB	Individual Grab will be the largest test or measurement result obtained during the reporting period from a grab sample.
DLY. MIN.	Daily Minimum will be the smallest test or measurement result obtained during the reporting period.
GRAB	A sample collected in less than 15 minutes.
GRAB PKLOAD	Grab sample collected at peak loading.
3 PRT COMP	3-part composite
6 PRT COMP	6-part composite
12 PRT COMP	12-part composite
Parameter	A physical property whose values determine the characteristics or behavior of something (i.e. temperature, BOD, pH.)

If you have questions on how to fill out this form or about the self-reporting program, please contact us at 512/239-2545. Individuals are entitled to request and review their personal information that the agency gathers on its forms. They may also have any errors in their information corrected. To review such information, contact us at 512/239-3282.



Texas Commission on Environmental Quality

P.O. Box 13087 • Austin, TX 78711-3087
MONTHLY EFFLUENT REPORT

PERMIT NUMBER

SET

YEAR	MO

EID

This report to be used for SOIL MON 301 ANN 18-30

Please retain a photocopy for your records.

Parameter Code/ Parameter	Effluent Condition			No. Ex	Frequency of Analysis	Sample Type
		Value	Units			
<i>Example 4006080 pH Maximum</i>	Permitted	<i>permitted #</i>	<i>Std Units</i>		<i>1/year</i>	<i>24-hour comp</i>
	Reported	<i>result</i>	<i>units</i>	#		
	Permitted					
	Reported					
	Permitted					
	Reported					
	Permitted					
	Reported					
	Permitted					
	Reported					
	Permitted					
	Reported					
	Permitted					
	Reported					
	Permitted					
	Reported					
	Permitted					
	Reported					

COMMENTS AND EXPLANATIONS (Reference all attachments here.)

I CERTIFY THAT I AM FAMILIAR WITH THE INFORMATION CONTAINED IN THIS REPORT AND THAT TO THE BEST OF MY KNOWLEDGE AND BELIEF SUCH INFORMATION IS TRUE AND COMPLETE AND ACCURATE

PLANT OPERATOR NAME	PLANT OPERATOR SIGNATURE	MONTH	DAY	YEAR
EXECUTIVE OFFICER NAME	EXECUTIVE OFFICER SIGNATURE	MONTH	DAY	YEAR
Telephone Number				
		Area code	Number	

Texas Commission on Environmental Quality
Monthly Effluent Report Form
Completion Instructions

This Soil Monthly Effluent Report is a self-reporting form for annual soil sampling from 18 to 30 inches. This form is blank, and the parameter names, codes, and sample types are provided in the accompanying spreadsheet file. Extreme care should be taken to ensure that this report is completed accurately. Measurements or test results must be reported in the following manner:

1. "Parameter Code/Parameter" column – Enter the parameter code and parameter name that is specified in your TLAP.
2. "Effluent Condition" column - Enter your permit limit in the shaded space and test results in the unshaded spaces under VALUE for the parameters using the units specified in your permit. If the UNITS specifies MGD (million gallons per day), then a measured flow of 100,000 gallons per day should be reported as 0.100 MGD.
3. "NO EX" column - Enter in the unshaded spaces, the exact number of times during the month that the given permitted limit was exceeded. If an effluent value reported as daily average is found to exceed the permitted daily average, enter a "1" in the box regardless of the number of single readings above the permitted limit
4. "Frequency of Analysis" and "Sample Type" columns - These columns reflect your permit requirements for the sampling of each parameter. If you have previous MER forms, transfer the frequency of analysis and sample type for each parameter.
5. If no discharge is made during the reporting month enter a "0" under VALUE and enter the PARAMETER "Discharge Days/Month." Leave the remainder of the form blank, except for reporting requirements under number 6 below.
6. Each form must contain two original signatures, the dates the forms were signed and the telephone number of the executive officer. Send the completed form to the Water Compliance Monitoring Team (MC 224), Enforcement Division, Texas Commission on Environmental Quality, PO Box 13087, Austin, Texas 78711-3087.

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Parameter Name	Parameter Code	Sample Type/Units
pH	4006030	Ind Grab
Electrical Conductivity	941830	Ind Grab
Nitrate-Nitrogen	6201430	Ind Grab
Ammonia-Nitrogen	6101430	Ind Grab
Total Kjeldahl Nitrogen (TKN)	6251430	Ind Grab
Total Nitrogen	6001430	Ind Grab
Plant-Available Phosphorus	6641430	Ind Grab
Plant-Available Potassium	9381430	Ind Grab
Plant-Available Calcium	9171430	Ind Grab
Plant-Available Magnesium	9281430	Ind Grab
Plant-Available Sodium	9321430	Ind Grab
Plant-Available Sulfur	801081430	Ind Grab
Plant-Available Manganese	10561430	Ind Grab
Plant-Available Copper	10431430	Ind Grab
Plant-Available Iron	10461430	Ind Grab
Plant-Available Zinc	10931430	Ind Grab
Water-Soluble Sodium	462361030	Ind Grab / mg/L
Water-Soluble Calcium	462341030	Ind Grab / mg/L
Water-Soluble Magnesium	462351030	Ind Grab / mg/L
Water-Soluble Sodium	462361430	Ind Grab / meq/L
Water-Soluble Calcium	462341430	Ind Grab / meq/L
Water-Soluble Magnesium	462351430	Ind Grab / meq/L
Sodium Absorption Ratio (SAR)	9316079	Per Event

7. Plant Information—Summary

Plant Capacity

Maximum GPD _____

Average GPD _____

Flow Capacity (describe)

Number and Locations of Lift Stations

Type of Emergency Power Source

Location of Emergency Power Source

8. Startup and Operating Procedures

Describe startup activities such as the sequence of turning on pumps and equipment. Describe your daily, weekly, and monthly procedures such as testing effluent, checking chemical feeds, and cleaning filters. Describe all emergency procedures such as notification procedures for chemical spills, or threats like an active shooter on the premises. Describe all shut-down procedures for taking the plant off-line. Include a diagram or map of the plant showing details for each piece of equipment. Include a map of the conveyances to the system and any irrigation equipment. Use additional sheets if needed.

Startup Procedures

Daily Procedures

Weekly Procedures

Emergency Operating Procedures

Shut-Down Procedures

Plant Map

Insert a map, or maps if needed, of the plant with all equipment identified.

System Map

Insert a map, or maps if needed, of the system's conveyances, including lift stations, manholes, and irrigation equipment.

Maintenance Work Order
Date of work order ___/___/___

Person making the work order:			
Work assigned to:			
Time of day:		Asset no.:	
Equipment to be repaired:			
Location of repair:			
Describe problem:			
Date, time started:		Date, time finished:	
Total man hours for job:			
Repairs completed:			
Still to be done:			
Parts ordered and used (attach invoices and warranties):			
Employee signature			Date
Supervisor signature			Date

- the names and phone numbers of organizations and individuals to be contacted during emergencies
- emergency operation plans for power outages, flooding, and other site-specific emergency situations that may develop
- curriculum for annual safety training and schedule for all facility personnel
- first-aid precautions, location of first-aid supplies and description of appropriate emergency medical treatment
- chemical disposal in accordance with 30 TAC 217.247(q), if applicable
- ultraviolet light in accordance with 30 TAC 217.299, if applicable
- a description of hazardous tasks in accordance with 30 TAC 217.323(b), if applicable

For More Information

For confidential assistance with environmental compliance, contact the Small Business and Local Government Assistance Hotline at 800-447-2827, or visit www.TexasEnviroHelp.org.



Managing Small Domestic Wastewater Systems: Part D, Compliance

Contents

Introduction	2
Compliance	2
General Compliance: Questions and Answers	3
Monitoring, Reporting, and Record Keeping.....	21
Due Dates and Monitoring Tips	22
SSOs and Unauthorized Discharges: Questions and Answers.....	23
When to Notify the TCEQ or Take Other Action.....	25
I Need More Help with Compliance	26
Wastewater Violations: Questions and Answers.....	27
Example: Wastewater Enforcement Scenario.....	31
For More Information.....	31

Introduction

The State of Texas has numerous regulations regarding the operation of wastewater utilities, primarily to safeguard the health and welfare of the people. This publication is Part D of a five-part series, *Managing Small Domestic Wastewater Systems* (TCEQ publication series RG-530) and is designed to help you—the manager or operator—understand the importance of maintaining compliance with the rules and your permit. It also explains investigation and enforcement, and the violations that can lead to fines and enforcement.

This document covers:

- monitoring, reporting, and record-keeping requirements
- due dates and monitoring tips
- when to notify the TCEQ
- investigations and the enforcement process
- enforcement scenario for a wastewater system

To view or download the complete series of this guide, go to the TCEQ Web page Wastewater Compliance Tools at www.tceq.texas.gov/goto/rg-530, maintained by the Small Business and Local Government Assistance (SBLGA) Section. If you do not have Internet access, call the SBLGA's hotline number 800-447-2827 for a paper copy of the complete series *Managing Small Domestic Wastewater Systems* (RG-530).

Note: This publication is not a substitute for the actual rules. To obtain the most current, official copy of state rules, contact the Secretary of State's office at 512-463-5561. The rules are also available online at [texreg.sos.state.tx.us/public/readtac\\$ext.ViewTAC?tac_view=2&ti=30](http://texreg.sos.state.tx.us/public/readtac$ext.ViewTAC?tac_view=2&ti=30).

Compliance

All owners of wastewater-discharge permits are required to periodically report the status of their compliance with the terms and conditions of their permits. Reports must contain results of flow measurements and sample analyses. All records of monitoring and reporting activities required by your permit must be retained at the plant site or be easily available for review by a TCEQ representative. This is one way an investigator evaluates compliance.

General Compliance: Questions and Answers

There's so much to do. Where do I start?

1. **Obtain a copy of your permit.** Keep a copy in your official records and a working copy readily available. It's your permit—make notes on it, highlight important information, and use it to help you achieve and maintain compliance.
2. **Become the expert.** Know what your permit requires and keep track of those requirements using charts, logs, or other methods. Tables 1–3 in the “Monitoring, Reporting, and Record-Keeping Guidance” section of this module will help you get off to a good start, or you can develop your own system for tracking your requirements.
3. **Develop and maintain a filing system.** Keep all records of monitoring and reporting activities—including supporting documents—in a file by month and year. Be diligent in maintaining your filing system.
4. **Train your staff.** Once you have your filing system in place, train other personnel on how it is organized. Periodic refresher training is advisable—especially when new employees come on board.
5. **Seek help.** If you need help to get organized or help with compliance, read the section “I Need More Help with Compliance” later in this module.

What are some of the records I need to keep?

Operation-and-maintenance records

Part C of this series, *Operations and Maintenance*, contains useful tools and tables to assist with some of the following record-keeping requirements:

- operational or process-control records, such as records of mixed-liquor suspended solids, results of 30-minute settling tests, sludge volume index, mean cell residence time, food-to-microorganism ratio, Gould sludge age, waste activated sludge rate, return activated sludge rate, sludge blanket levels, and influent sampling data
- operator daily logs, recording the date and time of activities, operator's initials, and other information such as flow, total chlorine residual (including manganese correction), influent and effluent pH, influent and effluent dissolved oxygen, solids wasted, volume of solids processed, rainfall records, and comments about exceptions or incidents
- maintenance records for equipment such as pumps, motors, blowers, rotors, and on-site and off-site lift stations

Laboratory and sampling records

- sampling records, noting the date, time, and location of sampling; the name of the individual who took the sample or measurement; the sample type; and any preservation information
- laboratory reports, noting the analyst's name, the date and time of analysis, the method of analysis or measurement, quality-assurance data for each sample set, and a copy of the completed chain-of-custody form
- calibration records for lab instruments, such as readings of pH meters, dissolved-oxygen meters, chlorine meters, and thermometers, and analytical balances
- records of in-house lab analyses, if applicable

Self-monitoring records

- monitoring forms, such as Discharge Monitoring Reports (DMRs) and Monthly Effluent Reports (MERs), with copies of supporting data by month and year
- copies of noncompliance notifications for bypasses, unauthorized discharges, sanitary sewer overflows, and any effluent violation that deviates from the permitted effluent limitation by more than 40 percent
- sludge-disposal records including analytical data such as results of the Toxicity Characteristic Leaching Procedure (TCLP), paint-filter tests, amounts of sludge disposed of, dates of disposal, the method or methods of disposal, the name of the disposal site and its owner, the name and registration number of the sludge hauler, manifests, the application rate, and the alternatives selected for reducing (1) pathogens and (2) vector attraction
- certifications for backflow prevention assembly, if applicable
- irrigation application records and soil analysis results, if applicable
- calibration records for flow meters and flowcharts, if applicable
- loading-calculation records, if applicable
- operator-certification records

How long must records be retained?

All records required by the permit must be retained for at least three years. However, monitoring information related to the permittee's use of sewage sludge and disposal activities must be retained for at least five years. The TCEQ may, however, request that records be retained for a longer period.

What are some of the reports I may need to submit?

- Discharge Monitoring Reports
- Monthly Effluent Reports

- notifications of water quality noncompliance
- irrigation-application records and soil analysis results
- reports of any sanitary-sewer overflows and unauthorized discharges

Where can I find help with submitting reports?

Discharge monitoring reports can be submitted online. NetDMR is a Web-based tool that allows Texas Pollutant Discharge Elimination System permittees to electronically sign and submit water quality DMRs to the TCEQ. NetDMR can be accessed at <www.tceq.texas.gov/goto/netdmr-portal>. To find out more about the program, you can call 512-239-3367 or e-mail <NetDMR@tceq.texas.gov>.

Among the benefits of using NetDMR, it:

- reduces the paperwork burden
- improves data quality by automatically error-checking and validating data before submission to the TCEQ
- aids in the timeliness of DMR submissions
- sends an immediate confirmation of submission
- allows access to five years of electronic copies
- allows data import for multiple outfalls at the same time
- accepts electronic signatures
- allows submission of attachments such as lab data, photographs, or other documentation relevant to the DMR

There may be times where you can't access NetDMR. It may be down for maintenance, or you may be having trouble accessing the Internet at your facility. In these situations, you can submit a paper form. It's a good idea to keep a blank copy of the DMR on-hand in case it's needed. Paper forms can be accessed at <www.tceq.state.tx.us/assets/public/compliance/netdmr/EPA_dmr_form_3320-1_rev_03-99.pdf>. If your facility is registered to submit data electronically, paper forms should only be used temporarily.

Monthly effluent reports cannot be submitted online. The TCEQ prepares MER forms for facilities required to report, such as wastewater-reuse and land-application facilities. In the event you do not have a prepared MER form and you need to submit a report, you can use the blank MER at <www.tceq.texas.gov/assistance/water/wastewater/reporting-on-monthly-effluent-report-mer-forms>. Be sure that the parameters in the MER match the requirements in your permit or authorization.

Water quality noncompliance notifications can be submitted using form TCEQ-00501, located at <www.tceq.texas.gov/assets/public/compliance/enforcement/forms/00501.pdf>.

If **public notification for wastewater discharges** is required, you can download form TCEQ-20627 at <www.tceq.texas.gov/goto/forms>.

I am scheduled for an investigation by our regional investigator. What should I do?

Often, investigations of compliance issues can create a stressful time for you—the owner or operator. There are several things you can do prior to and during an investigation to help you overcome unnecessary anxiety. By following these simple suggestions, you will promote a more positive and relaxed environment for the investigation.

- **Allocate time.** Schedule the investigation when you can devote uninterrupted time with your investigator. It isn't always possible to attend meetings without outside distractions, but it is always best to avoid unnecessary interruptions if at all possible.
- **Ask questions.** If you have questions or concerns about the investigation procedure, ask the investigator prior to the meeting. The investigator will be most helpful in answering your questions, allowing you to better prepare. Ask about the extent of the investigation. Some investigations are focused on specific processes or areas. During the exit interview, ask about potential violations, if any, and try to correct them as soon as possible.
- **Be prepared.** Record keeping is one of the most important elements of maintaining and demonstrating compliance with regulatory requirements. Make sure your records are readily available and in good order prior to the investigator's arrival.
- **Be helpful.** Answer all of the investigator's questions honestly and thoroughly. If any information you provide is proprietary or if any areas of your facility contain proprietary information, let the investigator know. Otherwise, the information becomes part of the agency's public record. The same applies to photographs of your facility or operations.

The investigator plans to sample. What are my options?

At times, during routine investigations, sampling is required. When the investigator calls to schedule an investigation, ask if sampling will be conducted. You may have the option to split samples with the investigator. If you plan to conduct sample splits, make sure you have the necessary equipment and tools available for sampling the specified medium.

Can I get copies of the TCEQ's investigation checklists?

You can select from multiple water quality investigation checklists online at www.tceq.texas.gov/goto/wqlists or you can use Checklists 1–7 on the following pages. If any of the questions do not apply to your facility, indicate so by marking “NA” on the checklist.

Note: These checklists may not include all your facility's requirements—you should always follow your permit and the rules.

Checklist 1: WWTP Operation and Maintenance

Reference	Plant Operation and Maintenance	Yes	No	NA
217.330 (a) and (b)	If the facility is connected to a public drinking water supply, are backflow-prevention devices installed and tested as required?			
217.327	Are “non-potable water” signs posted at all hydrants and outlets?			
See permit: Operational Requirement No. 1, Monitoring Requirement No. 5, and 319.11(d)	Are all chart recorders and flow meters calibrated properly?			
See permit: Operational Requirement No. 1	Are the chlorine scales functioning properly?			
See permit: Operational Requirement No. 1	Is the ultraviolet system operating properly?			
See permit: Operational Requirement No. 1	Is there vector control for all screening receptacles?			
See permit: Operational Requirement No. 1 and No. 4	Are there functional generators?			
See permit: Operational Requirement No. 1	Is there a properly functioning clarifier-skimmerwiper?			
217.328	Is the plant secured in an intruder-resistant manner with appropriate signs?			
TWC Chapter 26.121(a)	Does the facility prevent unauthorized discharges at the plant (no evidence of unauthorized discharge)?			
See permit: Operational Requirement No. 1	Is the clarifier sawtooth weir functioning properly (even flow with no short-circuiting)?			
See permit: Operational Requirement No. 1	Is flow consistent throughout the aeration basin (no notable dead spots)? Are there two functioning rotors?			
See permit: Operational Requirement No. 1	Are the flow-measuring devices functioning properly?			
See permit: Operational Requirement No. 1	Are bar screens properly maintained?			
See permit: Operational Requirement No. 4 and Permit Condition No. 2.g.	Does the facility maintain adequate safeguards to prevent the discharge of untreated or inadequately treated wastes during electrical power failures by means of alternate power sources, standby generators, or retention of inadequately treated wastewater?			

Checklist 2: Self-Reported Data

Reference *	Sampling for Self-Reported Data	Yes	No	NA
319.11(a) and (b)	Are thermometers certified by the National Institute of Standards and Technology present and checked for accuracy every year?			
319.11(a) and (b)	Is there a NIST-certified thermometer in the sample-storage refrigerator and the composite sampler?			
319.11(a) and (c)	Are all reagents in acceptable condition (unexpired, contained properly, etc.)?			
319.11(d)	Have the flow meter and chart recorder been calibrated within the last 12 months?			
319.11(b)	Are sample holding times being met?			
319.11(a)	Are all monitoring instruments (e.g., DO and pH meters) being properly calibrated?			
319.11(b)	Are samples properly preserved?			
319.11(c)	Are approved methods used for analyses?			
319.11(e) and (f)	Are the chain-of-custody documents properly completed?			
See permit: Definitions and Standard Permit Conditions	Are loading calculations correct?			
319.11(d)	Is flow measuring performed properly (e.g., not stabbing the weir)?			
319.11(c)	Are pH and DO monitored appropriately?			
319.11(c)	Is chlorine monitored appropriately?			
319.11(e) and (f)	Are quality-assurance and quality-control procedures implemented properly?			
319.7	Are records of equipment calibration, accuracy checks and maintenance maintained and available for review?			

Use this section to make notes about your findings. If a question does not apply to your facility, mark "NA." Describe all deficiencies or items needing attention and correct them as soon as possible. If reporting is required, see the requirements in the permit.

* Numbers refer to subsections of Title 30, Texas Administrative Code.

Checklist 3: Texas Pollutant Discharge Elimination System Permits

Reference*	Monitoring and Reporting Requirements	Yes	No	NA
319.4–12	Are effluent sampling and reporting conducted as specified in the permit or in accordance with 30 TAC 319.4–12?			
See permit: Monitoring and Reporting Requirement No.1	Are monthly effluent reports submitted to the Enforcement Division by the 20th day of the following month for each discharge whether or not a discharge is made for that month?			
305.128	Are monitoring results reported on an approved self-report form that is signed and certified as required by 30 TAC 305.128 (relating to Signatories to Reports)?			
319.11–12	Are test procedures for the analysis of pollutants in compliance with procedures specified in 30 TAC 319.11–319.12 or the permit?			
See permit: Monitoring and Reporting Requirement No. 1	Are measurements, tests, and calculations accurate and representative?			
305.125(11)(A)	Are monitoring samples and measurements taken at times and in a manner so as to be representative of the monitored activity?			
305.125(11)(B)	Are all monitoring and reporting records, including strip charts and records of calibration and maintenance, copies of all records required by the permit, records of all data used to complete the application for the permit, and the certification required by 40 CFR† 264.73(b)(9), retained for a period of three years and readily available for review by a TCEQ representative?			
305.125(11)(C) See permit: Monitoring Requirement No. 3.c	Do all records of monitoring activities include the following: <ul style="list-style-type: none"> a. the date, time, and place of sample measurement; b. the identity of the person who collected the sample or made the measurement; c. the date and time of analysis; d. the identity of the individual and laboratory who performed the analysis; e. the technique or method of analysis; and f. the results of the analysis or measurement and quality assurance–quality control records? 			
See permit: Monitoring Requirement No. 4	Does the permittee include additional monitoring (more monitoring than required by the permit) results in the calculation and reporting of the values submitted on the approved self-report form?			

* Numbers refer to chapters, subchapters, subsections, or paragraphs of Title 30, Texas Administrative Code.

† 40 CFR = 'Title 40, Code of Federal Regulations.'

Reference *	Monitoring and Reporting Requirements	Yes	No	NA
See permit: Monitoring Requirement No. 5	Are all automatic flow measuring or recording devices and all totalizing meters for measuring flows calibrated by a trained person at least annually? If yes, a. does the person verify in writing that the device is operating properly and giving accurate results, and b. are copies of the verification retained and made readily available for review by a TCEQ representative for a period of three years?			
See permit: Monitoring Requirement No. 7.a	Are written reports submitted to the regional office and the Enforcement Division within five days of the time the permittee becomes aware of the noncompliance?			
See permit: Monitoring Requirement No. 7.a	Do written reports contain a description of the noncompliance and its cause; the potential danger to human health or safety, or the environment; the period of noncompliance, including exact dates and times; if the noncompliance has not been corrected, the time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance, and to mitigate its adverse effects?			
See permit: Monitoring Requirement No. 7.c	Are all effluent violations that deviate from the permitted effluent limitations by more than 40 percent reported in writing to the regional office and the Enforcement Division within five working days of becoming aware of the noncompliance?			
See permit: Monitoring Requirement No. 7.b	Does the permittee submit prior notice by applying for authorization for any needed bypass?			
See permit: Monitoring Requirement No. 9	Does the permittee notify (orally or by fax) within 24 hours, and both the Regional Office and the Enforcement Division in writing within five working days, after becoming aware of or having reason to believe that any activity has occurred or will occur that would result in the discharge of any toxic pollutant listed in 40 CFR* Part 122, Appendix D, Tables II and III?			
305.128	Are all reports and other information requested by the TCEQ signed by the person and in the manner required by 30 TAC 305.128?			
See permit: Monitoring Requirement No. 9 and 40 CFR 122.42(b)	If the facility is a publicly owned treatment works, does the permittee provide adequate notice to the TCEQ of the following: <ul style="list-style-type: none"> • any new introduction of pollutants into the POTW from an indirect discharger which would be subject to Section 301 or 306 of the federal Clean Water Act if it were directly discharging those pollutants; • any substantial change in the volume or character of pollutants being introduced into the POTW by an identified source when the permit was issued; and • the quality and quantity of effluent introduced into the POTW, and any anticipated impact of the change on quality or quantity of effluent to be discharged from it? 			

* 40 CFR = 'Title 40, Code of Federal Regulations.'

Reference *	Monitoring and Reporting Requirements	Yes	No	NA
	Operational Requirements			
See permit: Operational Requirement No. 1	Does the permittee ensure that the facility and all of its systems of collection, treatment, and disposal are properly operated and maintained?			
See permit: Operational Requirement No. 1	Are process control, maintenance, and operations records retained readily available for review by a TCEQ representative, for three years?			
See permit: Operational Requirement No. 2	Does the permittee take appropriate samples and provide proper analysis in order to demonstrate compliance with TCEQ rules?			
312 Subchapters A–F	Does the permittee comply with all applicable provisions of 30 TAC 312 concerning sewage-sludge use and disposal?			
319.21–319.29	Does the permittee comply with all applicable provisions of 30 TAC 319.21–29 concerning the discharge of certain hazardous metals?			
See permit: Operational Requirement No. 5	Does the permittee provide a readily accessible sampling point and, where applicable, a device measuring effluent flow or other acceptable means by which effluent flow may be determined?			
Chapter 21	Does the permittee remit an annual water quality fee to the TCEQ as required by 30 TAC 21?			
See permit: Operational Requirement No. 8.a	Does the permittee initiate engineering and financial planning for expansion or upgrading of the domestic wastewater treatment or collection facilities whenever flow measurements reach 75 percent of the permitted daily average or annual average flow for three consecutive months?			
See permit: Operational Requirement No. 8.a	Does the permittee obtain necessary authorization from the TCEQ to begin building necessary additional treatment or collection facilities whenever the flow reaches 90 percent of the permitted daily average or annual average flow for three consecutive months?			
See permit: Operational Requirements	If the facility is a publicly owned treatment works, does it achieve at least 85 percent removal of biochemical oxygen demand and total suspended solids (based on a 30-day average)?			
See permit: Operational Requirement No. 9	Is the facility operated and maintained by an operator holding a valid license at the required level?			
	Sludge Provisions (Land Application)			
See permit: Sludge Provisions, Section I.A.1, and Chapter 312	Does the permittee handle and dispose of sewage sludge in accordance with 30 TAC 312 and all other applicable state and federal regulations in a manner which protects public health and the environment from any reasonably anticipated adverse effects due to any toxic pollutants that may be present in the sludge?			
See permit: Sludge Provisions, Section I.A.2	Does the permittee (who prepares the sludge for another person for land application) supply necessary information to the parties who receive the sludge to assure compliance with these regulations?			

Reference *	Monitoring and Reporting Requirements	Yes	No	NA
See permit: Sludge Provisions, Section I.A.3	Does the permittee provide prior notice (180 days) to the TCEQ of any change planned in sewage sludge disposal?			
See permit: Sludge Provisions	Has the permittee tested the sewage sludge (using the TCLP) at least once during the term of its permit?			
See permit: Sludge Provisions, Section I.B.1	Is sewage sludge failing the TCLP test managed according to standards of the Resource Conservation and Recovery Act for generators of hazardous waste?			
See permit: Sludge Provisions, Section I.B.1	If a TCLP test fails, does the permittee submit a written report to the Registration and Reporting Section within seven days?			
See permit: Sludge Provisions, Section I.B.1	Does the permittee prepare and submit an annual report on the results of all sludge-toxicity testing by September 30 of each year?			
312.82	Is all sewage sludge that is applied to agricultural land, forest, a public contact site, or a reclamation site treated to ensure that the sludge meets either the Class A or Class B pathogen requirements?			
312.83	Is all bulk sewage sludge that is applied to agricultural land, forest, a public contact site, or a reclamation site treated to reduce vector attraction?			
312.46(a)(1)	Are metal constituents and fecal coliform or <i>Salmonella</i> bacteria monitored according to 312.46(a)(1)?			
312.7	Are representative samples of sewage sludge collected and analyzed according to the methods in 30 TAC 312.7?			
See permit: Sludge Provisions, Section II, C.1	Does the permittee prevent bulk sewage sludge from being applied to agricultural land, forest, a public contact site, or a reclamation site that is flooded, frozen, or snow covered?			
See permit: Sludge Provisions, Section II, C.3	Is bulk sewage sludge applied at or below the agronomic rate of the cover crop?			
See permit: Sludge Provisions, Section II, C.4	If the permittee supplies the sludge to another person who land applies the sludge, does the permittee notify the land applier of the requirements for record keeping found in 30 TAC 312.47 for persons who apply it to land?			
312.48	Does the permittee report to the TCEQ by September 30 of each year the information required in 30 TAC 312.48?			
See permit: Sludge Provisions, Section II, E	Are records maintained monthly and made available to the TCEQ upon request?			
	Requirements Applying to All Sewage Sludge Disposed in an MSW Landfill			
See permit: Sludge Provisions, Section III, A	Does the permittee ensure that the sewage sludge meets the requirements in 30 TAC 330 concerning the quality of the sludge disposed in an MSW landfill?			

Reference *	Monitoring and Reporting Requirements	Yes	No	NA
See permit: Sludge Provisions, Section III, B	Does the permittee provide the owner or operator of the MSW landfill appropriate information needed for the facility to comply with the provisions of the permit (e.g., TCLP test results)?			
See permit: Sludge Provisions, Section III, F	Does the permittee retain the following information for five years: <ul style="list-style-type: none"> • a description (including procedures followed and the results) of all Paint Filter Liquids Tests (U.S. EPA Method 9095B) performed, and • a description (including procedures followed and results) of all TCLP tests performed? <i>Note:</i> These records must be maintained on-site monthly and be made available to the TCEQ upon request.			
See permit: Sludge Provisions, Section III, G	Does the permittee report annually to the TCEQ by September 30 of each year the following information: <ul style="list-style-type: none"> • TCLP results; • annual sludge production in dry tons/year; • amount of sludge disposed in an MSW landfill in dry tons/year; • amount of sludge transported interstate in dry tons/year; • a certification that the sewage sludge meets the requirements of 30 TAC 330 concerning the quality of the sludge disposed in an MSW landfill; • the identity of each hauler and the transporter registration number; • the owner of the disposal site; • the location of the disposal site; and • each date of disposal? 			
	Pretreatment Requirements			
40 CFR* Part 403	If the facility is required to have an approved pretreatment program, does the permit include specific prohibitions and notification requirements?			
	If the facility is a publicly owned treatment works, has it developed a local pretreatment program?			

Use this section to make notes about your findings. If a question does not apply to your facility, mark "NA." Describe all deficiencies or items needing attention and correct them as soon as possible. If reporting is required, see the requirements in the permit.

* 40 CFR = 'Title 40, Code of Federal Regulations.'

Checklist 4: Process Control for Activated-Sludge Facilities

Reference	Process Control (activated sludge)	Yes	No	NA
See permit: Operational Requirement No. 1	Is the quality of the mixed liquor within the recommended range?			
See permit: Operational Requirement No. 1	Is the depth of the clarifier sludge blanket within the recommended range?			
See permit: Operational Requirement No. 1	Is the dissolved-oxygen level in the aeration basin within the recommended range?			
See permit: Operational Requirement No. 1	Are the results of the 30-minute settleability test within the recommended range?			
See permit: Operational Requirement No. 1	Are the pH, chlorine, and dissolved oxygen levels in the effluent compliant with the permitted limitations on effluents?			
See permit: Operational Requirement No. 9	Does the system have enough adequately licensed operators?			
See permit: Operational Requirement No. 1	Does the facility prevent solids from entering the chlorine contact chamber?			
See permit: Operational Requirement No. 1	Does the facility prevent solids from discharging into the receiving waters?			

Use this section to make notes about your findings. If a question does not apply to your facility, mark "NA." Describe all deficiencies or items needing attention and correct them as soon as possible. If reporting is required, see the requirements in the permit.

Checklist 5: Texas Land-Application Permits

Reference *	Land-Application Permits	Yes	No	NA
See permit: General Description	Is the irrigated area the same area described and listed in the permit?			
See permit: Special Provisions	Are irrigation practices designed and managed to prevent ponding of final effluent or contamination of ground and surface waters?			
See permit: Special Provisions	Are irrigation practices designed and managed to prevent nuisance conditions in the area?			
See permit: Special Provisions	If necessary, to prevent the discharge of any treated wastewater from the irrigated land, are sufficient, well-maintained tail-water-control facilities available at the irrigation field?			
See permit: Special Provisions	Is treated wastewater applied to the irrigation field only when there is no rainfall or when the ground is not frozen or saturated?			
See permit: Special Provisions	Is treated wastewater applied to the irrigation field at or below the permitted application rate?			
See permit: Special Provisions	Has the permittee installed equipment that measures application rates and maintained accurate records of the volume of final effluent applied to the irrigation field?			
See permit: Special Provisions	Does the permittee maintain records of the application rates for three years?			
See permit: Special Provisions	Do the holding ponds conform to the requirements for stabilization ponds under "Design Criteria for Sewerage Systems" with regard to construction and levee design?			
See permit: Special Provisions	Do holding ponds have at least 2 feet of freeboard?			
See permit: Special Provisions	Are the holding ponds well maintained with regard to erosion control?			
See permit: Special Provisions	Are the holding ponds well maintained with regard to weed and tree control?			
See permit: Special Provisions	Are annual soil samples collected and analyzed each year?			
See permit: Special Provisions	Is each soil boring separated into three samples according to the following depth zones: 0 to 6 inches, 6 to 18 inches, and 18 to 30 inches below the ground surface?			
See permit: Special Provisions	Are the soil samples analyzed for pH, total nitrogen, potassium, phosphorus, and conductivity?			
See permit: Special Provisions	Are the results of the soil samples submitted to the TCEQ regional office and to the Water Quality Compliance Monitoring Team of the Enforcement Division during September of each year?			
See permit: Special Provisions	Does the permittee maintain a long-term contract with the owner of the land-application site that is authorized in the permit, or own the land authorized for application of treated effluent to the land?			
See permit: Special Provisions	If rechlorination of the final effluent (before it enters the irrigation system) is required in the permit, does the permittee maintain a trace chlorine residual in the final effluent at the point of irrigation?			

* Numbers refer to subsections or subparagraphs of Title 30, Texas Administrative Code.

Checklist 6: Sludge Management

Reference *	Sludge Management	Yes	No	NA
312.142(a)	Is the sludge being hauled by a properly authorized transporter?			
312.145(a)	Are transporter manifests complete and available for review?			
See permit: Sludge Provisions	Does the facility complete annual sludge report(s) (with attachments) and submit them by September 30 each year?			
See permit: Sludge Provisions, Section III	Have TCLP analyses been completed if sludge is being disposed at an authorized landfill? If yes, are TCLP results available for review?			
See permit: Operational Requirement No. 1	Is the sludge contained within its drying beds (no spills at the centrifuge, belt press or roll-off)?			
See permit: Operational Requirement No. 1	Are the drying beds free from excessive vegetation?			
See permit: Operational Requirement No. 1	Do floor drains discharge to the head of the plant?			
See permit: Operational Requirement No. 1	Do the digesters appear to be properly maintained?			
305.125(4)	Does the facility prevent sludge from entering the receiving stream?			

Use this section to make notes about your findings. If a question does not apply to your facility, mark "NA." Describe all deficiencies or items needing attention and correct them as soon as possible. If reporting is required, see the requirements in the permit.

* Numbers refer to subsections of Title 30, Texas Administrative Code.

Monitoring, Reporting, and Record Keeping

Table 1: Monitoring and reporting

Reports, Manuals, Registrations	Parameter	Monitoring Frequency	Reporting Frequency
DMRs*	With copies of supporting data by month	As specified in the permit	Monthly
Monthly effluent reports (MERs)	If applicable, with copies of supporting data by month—form provided by the TCEQ	Monthly	Monthly
Noncompliance notifications†	Bypasses, unauthorized discharges, sanitary sewer overflows, and any effluent violation that deviates from the permitted effluent limitation by 40 percent	As necessary	Orally within 24 hours to the regional office, written within five working days
Soil analysis results	If applicable	Annually on MER form	Annually

Additional requirements:

* TCEQ NetDMR Reporting Requirement Guide: www.tceq.state.tx.us/assets/public/compliance/netdmr/reportinghelp.pdf. NetDMR can be accessed at: www.tceq.texas.gov/goto/netdmr-portal>. Blank DMR form: www.tceq.texas.gov/assets/public/compliance/netdmr/EPA_dmr_form_3320-1_rev_03-99.pdf>

† Noncompliance notification: *Unauthorized Discharges and Sanitary Sewer Overflows* (RG-395) www.tceq.texas.gov/publications/rg/rg-395.html>.

Due Dates and Monitoring Tips

Table 2: Wastewater-permit due dates

Month	Action
January	<ul style="list-style-type: none"> • Complete sampling by January 31. • Submit December DMR by January 20. • Submit biomonitoring DMR by January 20, if applicable.
February	<ul style="list-style-type: none"> • Complete sampling by February 28. • Submit January DMR by February 20.
March	<ul style="list-style-type: none"> • Complete sampling by March 31. • Submit February DMR by March 20.
April	<ul style="list-style-type: none"> • Complete sampling by April 30. • Submit March DMR by April 20. • Submit biomonitoring DMR by April 20, if applicable.
May	<ul style="list-style-type: none"> • Complete sampling by May 31. • Submit April DMR by May 20.
June	<ul style="list-style-type: none"> • Complete sampling by June 30. • Submit May DMR by June 20.
July	<ul style="list-style-type: none"> • Complete sampling by July 31. • Submit June DMR by July 20. • Submit biomonitoring DMR by June 20, if applicable.
August	<ul style="list-style-type: none"> • Complete sampling by August 31. • Submit July DMR by August 20.
September	<ul style="list-style-type: none"> • Complete sampling by September 30. • Submit August DMR by September 20. • Submit annual sludge report by September 30, including addenda.
October	<ul style="list-style-type: none"> • Complete sampling by October 31. • Submit September DMR by October 20. • Submit biomonitoring DMR by October 20, if applicable.
November	<ul style="list-style-type: none"> • Complete sampling by November 31. • Submit October DMR by November 20.
December	<ul style="list-style-type: none"> • Complete sampling by December 31. • Submit November DMR by December 20.

Table 3: Stormwater-permit due dates

You must have stormwater coverage if your design flow is 1 million gallons per day or more. For specific requirements, see the *TPDES Multi-Sector General Permit, TXR050000* at <www.tceq.state.tx.us/goto/ind-sw>.

Quarter	Action
First quarter— January, February, March	<ul style="list-style-type: none"> • Complete quarterly visual monitoring before March 31. • Check rain gauge weekly or daily during storms. • File your annual hazardous-metals numeric effluent results in your SWP3 for previous year by March 31. • Submit benchmark results for the previous year by March 31. • Conduct periodic or annual inspection as required in your SWP3 by March 31.
Second quarter— April, May, June	<ul style="list-style-type: none"> • Complete quarterly visual monitoring before June 30. • Check rain gauge weekly or daily during storms. • Conduct periodic or annual inspection as required in your SWP3 by June 30.
Third quarter— July, August, September	<ul style="list-style-type: none"> • Complete quarterly visual monitoring before September 30. • Check rain gauge weekly or daily during storms. • Conduct periodic or annual inspection as required in your SWP3 by September 30.
Fourth quarter— October, November, December	<ul style="list-style-type: none"> • Complete quarterly visual monitoring before December 31. • Check rain gauge weekly or daily during storms. • Collect annual metal numeric effluent limitation sample by December 31. • Conduct periodic or annual inspection as required in your SWP3 by December 31.

SSOs and Unauthorized Discharges: Questions and Answers

What is an SSO?

A sanitary-sewer overflow is a type of unauthorized discharge of untreated or partially treated wastewater from a collection system or its components

(e.g., a manhole, lift station, or cleanout) before it reaches a wastewater treatment facility [Texas Water Code, Paragraph 26.049(e)(4)].

SSOs can occur if there is significant inflow or infiltration; the collection system is poorly maintained; there is blockage due to grease, roots, items such as diapers and wipes that should not be flushed, etc.; or the system lacks adequate capacity to collect, store, or treat increased influent.

What is an unauthorized discharge?

Any discharge of wastewater into or adjacent to any water in the state at a location not permitted as an outfall [Clean Water Act, Section 301(a) or Texas Water Code, Section 26.121].

What do I do if our system has an SSO or unauthorized discharge?

Any unauthorized discharge or SSO must be reported, regardless of volume, as federal and state regulations have no minimum reportable volume. In addition, any discharge that meets the criteria for volume specified in 30 TAC 319.302 must also be reported to the appropriate local government officials and local media.

Report SSOs or unauthorized discharges (regardless of the volume) to your regional TCEQ office orally or by fax during normal business hours (8 a.m. to 5 p.m. Monday through Friday) as soon as possible, but no later than 24 hours after the discharge. To locate your TCEQ regional office online, go to <www.tceq.texas.gov/goto/regioncounty>. If the unauthorized discharge or SSO occurs after normal business hours, you must notify your local regional office by phone. (Be sure to note the date and time of your call in your records.) Recorded messages at each regional office explain how to notify us.

Facilities are required to follow up by submitting a written report to the regional office and the TCEQ's Enforcement Division in Austin within five days. Although not required, you can use form TCEQ-00501 if you need help with submitting a written report. The form is available at <www.tceq.texas.gov/assets/public/compliance/enforcement/forms/00501.doc>.

Where can I find guidance on SSOs and unauthorized discharges?

The TCEQ has developed publication RG-395, *Unauthorized Discharges and Sanitary Sewer Overflows*, to help you understand

the reporting and record-keeping requirements. It is available online at <www.tceq.gov/goto/rg-395>. You can also find reporting forms, resources for developing an SSO plan, and funding information on our website at <www.tceq.texas.gov/goto/ssoinitiative>.

What is the TCEQ SSO Initiative?

The SSO initiative is a voluntary program initiated in 2004 to address increases in SSOs due to aging collection systems throughout the state and encourage corrective action before there is harm to human health, safety, or the environment. For more information on the program, go to <www.tceq.texas.gov/goto/ssoinitiative>.

When to Notify the TCEQ or Take Other Action

As an owner or operator of a domestic wastewater system, there are times when you are required to notify the TCEQ or take other action. Reporting within specified time frames or taking action as specified in your permit is critical to compliance. Failing to notify the TCEQ or failing to take necessary actions can be violations in themselves.

- If 75 percent of the permitted daily or annual average flow occurs for three consecutive months, initiate engineering and financial planning for expansion or upgrading (or both) or obtain a waiver [30 TAC 305.126(a)].
- If 90 percent of the permitted daily or annual average flow occurs for three consecutive months, obtain authorization from the TCEQ to commence construction of the necessary additions. You may also seek a variance at this time, if necessary [30 TAC 305.126(a)].
- At least 180 days before the date your wastewater permit expires, you must submit a renewal application to the TCEQ for the agency to extend your coverage administratively while it processes the renewal (30 TAC 305.63).
- If you have any noncompliance that endangers human health or the environment, notify the TCEQ regional office orally or by fax within 24 hours, and send a written report within five working days to both your TCEQ regional office and the Enforcement Division. Violations that must be reported under this requirement include:
 - a discharge from an unauthorized location
 - any sanitary-sewer overflow
 - an unanticipated bypass at your plant that exceeds any effluent limitation

- a violation of the daily maximum permitted limit for a toxic or organic parameter
- If you deviate 40 percent or more from any permitted effluent limitation, report it in writing to the TCEQ regional office and the Enforcement Division within five working days of becoming aware of the noncompliance. EPA referral criteria are defined for pollutants listed in Appendix A of the EPA's General Design for Significant Noncompliance Redefinition Enhancement, revised December 16, 1996: <www.tceq.texas.gov/goto/eic>.
- Report any corrections, missing data, or omissions promptly to the Enforcement Division (30 TAC 305.125).
- If signatory authority for DMRs or other reports is delegated to someone other than the principal executive officer, notify TCEQ in writing or through the NetDMR system (30 TAC 305.44). To notify the TCEQ in writing the signatory authority form appears at <www.tceq.state.tx.us/assets/public/assistance/sblga/20431.pdf>.
- Notify the Water Quality Division if you have pretreatment requirements and you find any new industrial users, or a change in the quality or quantity of industrial pollutants, or if there is a new introduction of pollutants into the plant from an indirect discharger subject to pretreatment rules.
- Check the "Other Requirements" section of your TPDES wastewater permit and submit any required reports, notification, or other information as required.
- Before any change to treatment, equipment, or disposal of effluent or sludge, consult with the Water Quality Division or the TCEQ regional office (or both), as the change may require a permit amendment [30 TAC 305.62(a)].

I Need More Help with Compliance

You can find more help at our Wastewater Treatment Plants: Compliance Resources Web page at <www.tceq.texas.gov/goto/wwtp-compliance> for small-business owners and local governments that operate wastewater-treatment facilities in Texas. Some of these resources include:

- wastewater compliance spreadsheets for discharge and land-application permits
- information on bacteriological testing and reporting
- troubleshooting bacteria effluent
- reports and forms
- information on permits
- information on funding sources
- information on in-house and on-site laboratories

SBLGA assists small businesses and local governments through its EnviroMentor Program. This assistance is free and confidential and does not lead to inspections, citations, or fines.

EnviroMentors are qualified professionals with technical or legal expertise on environmental issues who volunteer to help small businesses, local governments, and independent school districts with state environmental rules. Many EnviroMentors are private-sector consultants—some are engineers; others are successful professionals (for example, a wastewater-system operator) who provide peer-to-peer advice.

To receive free, confidential help from environmental professionals, you must:

- be a small business with 100 or fewer employees, or a local government
- be committed to complying with state rules to protect the environment, and to correcting violations as soon as possible
- be unable to afford to hire a consultant

Call the SBLGA's confidential hotline at 800-447-2827 to see if you qualify for help from one of our EnviroMentors.

Wastewater Violations: Questions and Answers

I received a Notice of Violation for my wastewater-treatment plant. Is it serious?

It depends on the type of violation. An NOV means your facility is out of compliance with one or more rules. Violations are categorized based on the severity of their threat to human health or the environment. Category A violations are the most serious, while category B and C violations pose a less severe threat.

I received a Notice of Enforcement instead of an NOV, what does that mean?

If we identify Category A or consecutive repeat B violations during an inspection or a records review, we will send you an NOE instead of an NOV. Note that an NOE is **associated with a penalty**.

How do I respond to an NOV or an NOE?

You (the regulated entity or “respondent”) must respond to the NOV or NOE, preferably in writing, within a set compliance period. The NOV or NOE will let you know that you may request a meeting to discuss your case if you believe the violations were cited in error or have new information that was not previously evaluated. If violations issued under an NOV are not resolved within the requested time frame, you may then be issued an NOE and assessed a financial penalty.

What does “enforcement” mean?

“Enforcement” is the process we use to respond to serious or continuing environmental violations by requiring corrective actions and by assessing monetary penalties against businesses or individuals for those violations.

What is an “enforcement action”?

An “enforcement action” is an action we take to obtain a legally binding obligation from a person or organization to achieve and maintain compliance.

How does the TCEQ determine whether an enforcement action is warranted?

The TCEQ conducts three different types of investigations. Any of these may prompt the agency to initiate enforcement action:

- on-site field investigations including
 - comprehensive compliance investigations
 - focused investigations
 - reconnaissance investigations
- investigations based on citizen complaints
- investigations through record reviews

I haven’t had an investigation, but I got an NOV. How did that happen?

The third type of investigation involves a review of records to evaluate compliance. These investigations do not include an on-site investigation. If the records review determines that reports sent in to the TCEQ are missing information or have not been submitted at all, you may receive a violation.

Where can I find examples of the different types of violations for wastewater: A, B, and C?

The Enforcement Initiation Criteria comprise a system for classifying violations by severity (A, B, or C), so we can determine the appropriate level of enforcement for each violation. You may review the entire EIC online at <www.tceq.texas.gov/goto/eic>.

I have a fine. What are my options?

Pay the fine. Sometimes the TCEQ will defer part of the fine for prompt response. If you can't pay all or part of the proposed fine, you may speak with your enforcement coordinator about "claiming financial inability to pay" and what documents are needed for evaluating your claim. A payment plan may be another option. Payment plans are frequently worked out between respondents and their enforcement coordinator if they indicate that they cannot pay the entire penalty in one payment. You can also participate in a Supplemental Environmental Project.

What is a Supplemental Environmental Project?

A SEP is a project that prevents pollution, reduces the amount of pollution reaching the environment or enhances its quality, or contributes to public awareness of environmental matters. You may negotiate an agreement to perform a SEP in return for an offset of the administrative penalty; local governments may be able to offset 100 percent. It is extremely important to contact your enforcement coordinator to see if you are eligible for a SEP project. Visit the SEP Web page for more information at <www.tceq.texas.gov/legal/sep>.

When is an agreement made?

An agreed order is used when you agree to the terms and conditions of the administrative order, including the penalty. Once you agree with the terms and conditions set forth in the proposed agreed order and the penalty amount, the case is set for approval at either the TCEQ commissioners' or the executive director's agenda meeting, held monthly in our central office. The commissioners or the executive director makes a final decision about the penalty the respondent must pay. After the agenda meeting, you can settle the case by paying the penalty and signing the order within 60 days of receiving it.

Can I contest the enforcement action?

Yes, if you contest the enforcement action or do not settle the case within 60 days of the date on the letter, the case is referred to our Litigation Division. You may request an administrative hearing, which is held in front of an administrative law judge with the State Office of Administrative Hearings. However, a settlement could still occur at any time before a final decision on the enforcement order. You will receive an Executive Director's Preliminary Report and Petition (EDPRP), notifying you of the violations and the penalty assessed and of any corrective actions needed to come into compliance with the regulations. This document is not an order, but a petition filed with our Chief Clerk's Office to start the administrative-hearing process. After the hearing, the judge makes a recommendation to the TCEQ commissioners about an enforcement order. At an agenda meeting, the commissioners consider this recommendation and then make the final decision whether to issue, deny, or modify the judge's decision.

What is a default order?

If a respondent does not file a timely answer to the EDPRP, the commissioners may issue a default order. If the respondent fails to comply with the default order, then the executive director may refer the case to the Office of the Attorney General for civil enforcement in a court of law.

When does the process end for an enforcement case with an agreed order?

Once the respondent complies with the enforcement order, including payment of any penalty and compliance with all technical requirements of the order, the TCEQ will send a letter to the respondent indicating that the requirements of the enforcement order have been fulfilled. The respondent is responsible for meeting the terms of the agreed order for five years after its effective date.

Where can I get more information about investigations, violations, and enforcement?

The publications *The TCEQ Has Inspected Your Business. What Does This Mean to You?* (RG-344) and *Penalty Policy* (RG-253) discuss the investigation and enforcement process. These publications can be viewed or downloaded at <www.tceq.texas.gov/publications/search_pubs.html/#number> by entering the publication number in the search box. You may also call 512-239-0028 to get a copy.

Example: Wastewater Enforcement Scenario

Purpose

The purpose of this scenario is to show how a small domestic wastewater system can go to enforcement for reporting violations found during a TCEQ records review, even when no major violations are discovered during an investigation.

Background on the wastewater system

Coldwater Creek Wastewater Treatment Plant is a fictitious wastewater treatment system that serves 5,000 customers on the outskirts of Medium City. While the regional investigator conducted a comprehensive compliance investigation, the TCEQ's central office staff conducted a records review.

Violations found during a comprehensive compliance investigation

The wastewater system underwent a routine compliance investigation by regional TCEQ personnel, which uncovered the following violations:

- The grass around the wastewater-treatment plant had not been mowed and was overgrown to the point that it might restrict the observation of any discharge or structural problem.
- The effluent flow meter had not been calibrated within the last year.

Actions taken to resolve the violations

Within a week of the investigation, the wastewater system corrected the violations and documented its compliance **in writing** by submitting photographs of the freshly mowed grass around the plant and a certificate of calibration for the meter.

Did the wastewater system receive a formal notice of violation from the investigation?

Because the system resolved the violations so quickly, it may not be issued a formal NOV; however, the regional office may still send a letter detailing the violations, noting them as resolved, and informing the system that no further corrective action is needed.

Was an enforcement action initiated due to the investigation findings?

No. The investigation didn't result in an NOE. However, during the records review of DMRs, the facility exceeded the monthly average effluent limit by more than 40 percent during the first two quarters of the year. The wastewater system received an NOE from the TCEQ's Enforcement Division for violating the monthly average limits specified in the permit, a Category A violation. The NOE resulted in an agreed order.

The system resolved the violations—why is it in enforcement?

Enforcement actions can be initiated either as a result of an on-site investigation **or** from a records review conducted by the TCEQ's regional or central office. In this scenario, the system resolved the violations noted by the regional investigator, but still received an NOE because of the records review by the central office.

How were the violations resolved?

The system agreed to an order requiring the wastewater system to pay a penalty and maintain and report compliance with its monthly DMR. This requirement will be satisfied when the system signs and returns the order, pays the penalty or initiates a SEP, and submits two consecutive quarters of compliant reporting.

Conclusion

A records review conducted by the regional or central office in Austin can generate its own set of enforcement actions.

For More Information

For confidential assistance with environmental compliance, contact the Small Business and Local Government Assistance Hotline at 800-447-2827, or visit <www.TexasEnviroHelp.org>.



Managing Small Domestic Wastewater Systems: Part E, Resources

Contents

Introduction	3
Resources: I need assistance with	3
Conducting Utility-Board and Council Meetings	3
Reporting and Record Keeping.....	3
NetDMR Reporting	3
Wastewater Disinfection	4
Nutrient-Removal Technologies.....	4
Using Engineering Services.....	4
Funding	5
Operator Licensing.....	6
Domestic Wastewater Permitting	6
Management Training.....	6
Technical Assistance	6
Helpful Contacts.....	11
TCEQ Contacts	11
Other State Agencies	11
Trade Associations and Nonprofit Organizations	12
Useful Tools.....	13
Appendix A. Treatment Assessment Tool.....	13

Technologies: Pros and Cons 13
Managing Small Domestic Wastewater Systems: Resources..... 14
For More Information..... 16

Introduction

This publication is Part E of a five-part series *Managing Small Domestic Wastewater Systems* (TCEQ publication series RG-530) and lists resources that may help you as you create and carry out your asset-management plan and conduct everyday operations at your utility.

To view or download the complete *Managing Small Domestic Wastewater Systems* series (RG-530), go to <www.tceq.texas.gov/goto/rg-530>. If you do not have Internet access, call the SBLGA's hotline number 800-447-2827 for a paper copy.

Note: This publication is not a substitute for the actual rules. To obtain the most current, official copy of state rules, contact the Secretary of State's office at 512-463-5561. The rules are also available online at <[texreg.sos.state.tx.us/public/readtac\\$ext.ViewTAC?tac_view=2&ti=30](http://texreg.sos.state.tx.us/public/readtac$ext.ViewTAC?tac_view=2&ti=30)>.

Resources: I need assistance with ...

Conducting Utility-Board and Council Meetings

- Call the Open Government Hotline, 877-673-6839, and request the publication *The 2008 Open Meetings Act Made Easy*.
- Order the *Open Meetings Handbook*, an in-depth publication about the *Act* and its interpretation, by calling 512-936-1730. It is also available in a downloadable PDF format on the Attorney General's website at <www.texasattorneygeneral.gov>.

Reporting and Record Keeping

Refer to the table on record keeping in Part D: *Compliance*, for an outline of the records and reports your utility must prepare. Requirements for record keeping and reporting also appear in your permit. You must follow your permit.

NetDMR Reporting

NetDMR is a Web-based tool that allows TPDES permittees to electronically sign and submit their discharge monitoring reports (DMRs). NetDMR is designed to make reporting easier; improve data quality; provide a cost savings; and expand the ability of both states and the U.S. Environmental Protection Agency in targeting their limited resources to

meet environmental goals. To view the TCEQ's NetDMR Reporting Guide go to: <www.tceq.state.tx.us/assets/public/compliance/netdmr/reportinghelp.pdf>.

Beginning on page 43 of the guide, you can find help with:

- DMR reporting definitions
- calculations and reporting
- daily operations logs
- reporting concentrations
- reporting loadings
- flow-weighted averages
- flow
- calculating the geometric mean of fecal coliform bacteria (*E. coli* or *Enterococci*)
- annual reporting on sewage sludge
- completing sewage-sludge DMRs
- common sludge calculations

Wastewater Disinfection

RG-515, *Troubleshooting Bacteria Levels at Wastewater Treatment Plants*, contains information and tools to help wastewater-system operators and utility managers minimize bacteria in effluent. It appears at: <www.tceq.texas.gov/assets/public/comm_exec/pubs/rg/rg-515.pdf>.

Nutrient-Removal Technologies

The U.S. EPA discusses nutrient-removal technologies including:

- nitrification and denitrification
- denitrification filters
- oxidation ditch processes
- fixed-film processes
- sequencing batch reactors

You can find this information in Volumes 1 and 2 of *Municipal Nutrient Removal Technologies* at <water.epa.gov/scitech/wastetech/upload/mnrt-volume1.pdf> and <water.epa.gov/scitech/wastetech/upload/2008_10_06_mtb_mnrt-volume2.pdf>.

Using Engineering Services

There are many times you may require engineering services:

- If you are receiving funding from a state or federal program, contact the funding authority for its specific requirements before hiring an engineer.
- Contact other domestic wastewater systems in your area and ask them which engineering company they use and if they are satisfied with its work.
- Look in the phone book or search online for civil engineers who have experience with domestic wastewater systems in your area.
- Contact a registered professional engineer listed on the State Board of Registration for Professional Engineers' website at <www.tbpe.state.tx.us/>.
- Look for a firm experienced with the TCEQ's design criteria for domestic wastewater systems in Title 30, Texas Administrative Code, Chapter 217.
- Call the TCEQ's Water Quality Division, Wastewater Permitting, at 512-239-4671 with questions on review of plans and specifications for wastewater systems.

Funding

The Clean Water State Revolving Fund provides low-cost financial assistance for planning, design, and construction of wastewater infrastructure. It offers loans at below-market interest and loan forgiveness. For more about who can borrow, the types of projects funds may be used for, and special requirements, go to <www.twdb.texas.gov/financial/programs/CWSRF/>.

The Economically Distressed Areas Program provides grants or a combination grant and loan for water and wastewater services in economically distressed areas where services do not exist, or existing systems do not meet state standards.

The Texas Water Development Board offers attractive-interest-rate loans with long-term finance options. Its Rural Water Assistance Fund <www.twdb.texas.gov/financial/programs/RWAF/> provides small rural water utilities with low-cost financing for water and wastewater construction projects. Both the TWDB and the Texas Water Infrastructure Coordination Committee offer other funding options for water and wastewater systems. More information appears below under "Other State Agencies."

For more information on funding options, refer to the TCEQ's guide *Resources for Texas Water and Wastewater Utilities* (RG-220) at <www.tceq.texas.gov/goto/rg-220>.

Operator Licensing

- Find out how to become a licensed wastewater operator at www.tceq.texas.gov/licensing/licenses/wwlic.
- See what applicants for wastewater operator licenses need to know at www.tceq.texas.gov/licensing/licenses/wastewater_rtk.html
- Check how many credit hours you currently have on file at www2.tceq.texas.gov/lic_dpa/.
- Renew your license using the Texas Online Web page at www.tceq.texas.gov/goto/renew.
- Renew your license on paper by contacting the TCEQ Licensing Section at LICENSES@tceq.texas.gov or 512-239-0170 to request a hard copy of the renewal application.
- Find approved wastewater-operator courses and training providers at www.tceq.texas.gov/licensing/training/water-operator-courses-and-providers.

Domestic Wastewater Permitting

For help obtaining a new domestic wastewater permit or to renew, modify, or amend your existing permit, go to: www.tceq.texas.gov/goto/dom-ww-permits.

Management Training

Running a wastewater-treatment system requires a varied skill set. Utility managers, including city-council members, mayors, public works directors, and board members, can benefit from training to learn how to manage a utility. Use Table 1 to find training specific to utility operations, finances, and management.

Technical Assistance

Wastewater and public water systems can receive free technical assistance by a professional contractor through our financial, managerial, and technical program. For more information on the program, and to view some of the services offered, go to www.tceq.texas.gov/drinkingwater/fmt.

MANAGING SMALL DOMESTIC WASTEWATER SYSTEMS: RESOURCES

Table 1. Management Training

This list is intended to help managers of water and wastewater treatment systems, including city-council members, mayors, public-works directors, and board members, find training specific to running a utility. *Training and contact information in this table is subject to change and may not be available every year.*

Program	Provider	URL	Phone	Comments
American Management Association	AMA	www.amanet.org/training/live-online-seminars.aspx	877-566-9441	Online communication, management, business, and financial-planning courses
American Water Works Association and Water Environment Federation	AWWA, WEF	www.awwa.org www.wef.org/	800-666-0206; 877-WEF-4REG	Annual AWWA-WEF Utility Management Conference; topics include: <ul style="list-style-type: none"> • business-practice optimization • benchmark data and analysis • customer service • employee development • finance, accounting, rates • leadership and management development • legal, regulatory, political issues
American Water Works Association	AWWA	www.awwa.org	800-926-7337	Public Officials Program at AWWA's Annual Conference and Exhibition. It educates water and sewer wastewater-board commissioners, mayors, council members. Includes: <ul style="list-style-type: none"> • introduction to water and sewer operating environments • plan and fund your capital infrastructure • water and sewer infrastructure, O&M

Program	Provider	URL	Phone	Comments
American Water Works Association	AWWA	www.awwa.org/conferences-education.aspx	512-238-9292	Basic Water Utility Management Institute courses for new managers: <ul style="list-style-type: none"> • environmental issues • infrastructure • operations and maintenance • utility sustainability • public involvement and affairs • security and emergency preparedness • stakeholder communication • succession planning
Communities... Unlimited	CRG	www.crg.org	806-763-9515	Training for managers, board members, decision makers, and utility personnel
Rural Community Assistance Partnership	RCAP	www.rcap.org/rcaptraining	800-321-7227	Technical, managerial, financial training for board members, utility personnel, and elected officials
Environmental Protection Agency	EPA	water.epa.gov/learn/training/dwatrain/calendar.cfm	800-887-6063	Webinar: Asset Management 101 for Systems (check the Drinking Water Academy training calendar)
Public Utilities Commission (PUC)	PUC	www.puc.texas.gov/	888-782-8477 512-936-7120	<ul style="list-style-type: none"> • rate or tariff changes • CCN-related applications • sale, transfer, and merger applications

Program	Provider	URL	Phone	Comments
TCEQ and Texas Rural Water Association	TCEQ, TRWA	www.tceq.texas.gov/drinkingwater/fmt	512-239-4671	Financial, managerial, and technical assistance to help public water and wastewater systems comply with regulations
Texas Engineering Extension Service	TEEX	www.teex.org	800-723-3811	Technical assistance for small water and wastewater systems: <ul style="list-style-type: none"> • on-site assessment of system needs and recommendations on best practices • mock inspection • training for managers and leaders • troubleshooting water-quality, treatment, capacity, and treatment-process issues • assistance via phone
Texas Engineering Extension Service	TEEX	www.teex.org/Pages/infrastructure-and-safety.aspx	979-458-9188	Training for managers of water and wastewater utilities: <ul style="list-style-type: none"> • management functions • reporting and regulations • interacting with governing bodies • planning for growth, budget, finance • using engineers • safety, security, emergency response
Texas Rural Water Association	TRWA	trwa.org/	512-472-8591	On-site training and technical assistance: <ul style="list-style-type: none"> • water and wastewater treatment, distribution, and storage • management and operations • rate calculations and budget management

Program	Provider	URL	Phone	Comments
Texas Rural Water Association	TRWA	www.trwa.org/?182	512-472-8591	TRWA conference schedule
Texas Rural Water Association	TRWA	www.trwa.org/?62	512-472-8591	Courses about the Public Funds Investment Act
Texas Rural Water Association	TRWA	www.trwa.org/?61	512-472-8591	Water University: utility-management certification <ul style="list-style-type: none"> • rates, finances, accounting • capacity • water operations

Helpful Contacts

Use this list to contact personnel at the Texas Commission on Environmental Quality and to identify utility trade associations and other state agencies. The list is not all-inclusive.

TCEQ Contacts

TCEQ Central-Office Contacts

Small Business and Local Government Assistance	800-447-2827
Wastewater Permitting Section	512-239-4671

TCEQ Regional Offices

Region 1	Amarillo	806-353-9251
Region 2	Lubbock	806-796-7092
Region 3	Abilene	325-698-9674
Region 4	Dallas–Fort Worth	817-588-5800
Region 5	Tyler	903-535-5100
Region 6	El Paso	915-834-4949
Region 7	Midland	432-570-1359
Region 8	San Angelo	325-655-9479
Region 9	Waco	254-751-0335
Region 10	Beaumont	409-898-3838
Region 11	Austin	512-339-2929
Region 12	Houston	713-767-3500
Region 13	San Antonio	210-490-3096
Region 14	Corpus Christi	361-825-3100
Region 15	Harlingen	956-425-6010
Region 16	Laredo	956-791-6611

Other State Agencies

Texas Department of Agriculture	512-463-7476
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A state agency that offers state and federal loans and grants for qualifying utilities.

Texas Water Development Board	512-463-7847
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The state agency charged with administration of cost-effective financing programs for water and wastewater-related infrastructure, state water planning, data collection and dissemination, and technical assistance. You

can find more information about the Clean Water State Revolving Fund on its Web page <www.twdb.texas.gov/financial/programs/cwsrf>.

Texas Water Infrastructure Coordination Committee

512-463-7870

TWICC is a committee of local, state, and federal agencies that collaborate to identify issues with water and wastewater infrastructure and compliance, and to seek affordable, sustainable, and innovative funding strategies for the protection of public health and the efficient use of government resources in Texas. TWICC may be able to assist with funding. You can complete a profile form online at <www.twicc.org>.

Trade Associations and Nonprofit Organizations

American Water Works Association

512-238-9292

AWWA promotes management and treatment of water through training, professional development, educational publications, consumer education, and efforts to influence policy. AWWA's Texas Section—or community group—stays current and active on local issues. More information is available at <www.tawwa.org>.

Communities...Unlimited

903-793-0109

A nonprofit corporation providing on-site technical assistance, training, and financial assistance for small towns and rural communities (with populations less than 10,000) with water-supply and waste-disposal problems or needs. For more information on the Water/Wastewater Program, visit the Web page <www.communitiesu.org/index.php/How-We-Help/water-wastewater-programs.html>.

Independent Water and Sewer Companies of Texas

512-346-4011

A nonprofit educational trade association of privately owned water and sewer utilities in Texas. Membership information, news, and meeting dates are available at <www.iwscot.org>.

Texas Public Works Association

214-444-9596

A nonprofit educational and professional association of public agencies, private companies, and individuals dedicated to high-quality public works. Resources and information are available at <www.tpwa.org>.

Texas Rural Water Association

512-472-8591

A statewide nonprofit educational and trade association dedicated to the improvement of water quality and supply. Information available at <www.trwa.org>.

Texas Water Utilities Association

888-367-8982

An organization providing training programs, technical publications, and mutual problem-solving opportunities to water utilities. Membership, training, and online classes available at <www.twua.org>.

Texas Water Quality Association

361-573-6707

A trade association for water-quality professionals and suppliers for the water-treatment industry. Information about meetings, training, event registration, suppliers, and more is available at <twqa.org>.

Water Environment Association of Texas

512-693-0060

A nonprofit technical and educational organization helping to innovate, design, and implement wastewater technologies and water programs: <www.weat.org>.

Useful Tools

Appendix A. Treatment Assessment Tool

This tool will help you paint a picture of your plant's treatment performance over time. Using this chart will help you identify trends, such as permit exceedances, changes in the influent, or seasonal variations that may involve making changes to the collection or treatment system for ensuring efficient wastewater treatment and permit compliance.

Technologies: Pros and Cons

Table 2, Aquatic Treatment Technologies, and Table 3, Mechanical Treatment Technologies, list several treatment technologies and the pros and cons associated with each type of system.

Managing Small Domestic Wastewater Systems: Resources

APPENDIX A. TREATMENT ASSESSMENT TOOL

You submit DMRs each month to report effluent sample results and flow. To paint a picture of your plant’s treatment performance over time, use this chart to track monthly data. You should be able to identify trends, such as permit exceedances, changes in the influent (inflow or infiltration), or seasonal variations that may involve making changes to the collection or treatment system for ensuring efficient wastewater treatment.

Month	Effluent									Influent*				
	Flow MGD	pH High	pH Low	DO mg/L	BOD ₅ mg/L	TSS mg/L	Cl ₂ mg/L	NH ₃ mg/L	<i>E. coli</i> CFU/100 mL	Flow MGD	BOD ₅	TSS	(other)	(other)
Jan														
Feb														
Mar														
Apr														
May														
Jun														
Jul														
Aug														
Sep														
Oct														
Nov														
Dec														
Permit Limits														

*Use this portion of the chart to track additional information about the wastewater coming into the plant. You may be able to identify problems such as excessive inflow and infiltration, which may be the cause of permit exceedances.

For information on microbiological and chemical testing for troubleshooting lagoons go to:
www.lagoonsonline.com/trouble-shooting-wastewater-lagoons.htm.

Table 2. Aquatic Treatment Technologies: Pros and Cons

Aquatic Systems	Pros	Cons
Stabilization Lagoons	<ul style="list-style-type: none"> • low capital cost • low operation and maintenance costs • low technical manpower requirement 	<ul style="list-style-type: none"> • require a large area of land • may produce undesirable odors
Aerated Lagoons	<ul style="list-style-type: none"> • require relatively little land • produce few undesirable odors 	<ul style="list-style-type: none"> • require mechanical devices to aerate basins • produce effluents with high suspended solids

Table 3. Mechanical Treatment Technologies: Pros and Cons

Mechanical Systems	Pros	Cons
Filtration Systems	<ul style="list-style-type: none"> • minimal land requirements; can be used for household-scale treatment • relatively low cost • easy to operate 	<ul style="list-style-type: none"> • require mechanical devices
Vertical Biological Reactors	<ul style="list-style-type: none"> • highly efficient treatment method • require little land • applicable to small communities for local-scale treatment and to big cities for regional-scale treatment 	<ul style="list-style-type: none"> • high cost • complex technology • require skilled manpower for operation and maintenance • need spare-parts inventory • high energy requirement
Activated Sludge	<ul style="list-style-type: none"> • highly efficient treatment method • requires little land area • applicable to small communities for local-scale treatment and to big cities for regional-scale treatment 	<ul style="list-style-type: none"> • high cost • requires sludge disposal area (sludge is usually spread on land) • requires technically skilled manpower for operation and maintenance

For More Information

For confidential assistance with environmental compliance, contact the Small Business and Local Government Assistance Hotline at 800-447-2827, or visit <www.TexasEnviroHelp.org>.