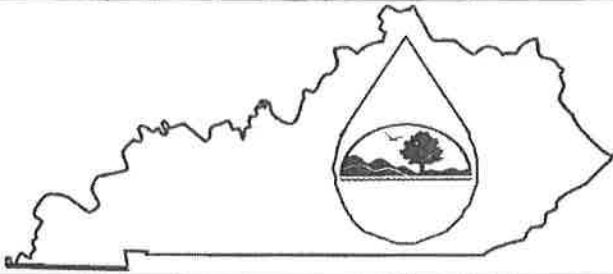


ASSET INVENTORY REPORT FORM



Kentucky Division of Water's Asset Inventory Report, as required by 401 KAR 5:006

In accordance with 401 KAR 5:006, regional planning agencies are required to submit an asset inventory report to the Cabinet, if: (a) It has been ten (10) years since the regional planning agency submitted a regional facility plan or asset inventory report; and (b) the regional planning agency does not meet the requirements established in Section 2(2) of the regulation. The asset inventory report requires regional planning agencies to take inventory of the physical assets of their wastewater system(s), assess their condition, prioritize capital needs, and develop a plan for funding those needs. By incorporating this planning tool into their daily operations, the Cabinet expects regional planning agencies to achieve the following benefits:

- a. Reduce overall cost of system operation and maintenance;
- b. Target capital investments toward critical assets;
- c. Improve compliance record and remediate or correct illegal overflows or bypasses;
- d. Acquire a better understanding of treatment and/or collection system components;
- e. Reduce borrowing costs. Funding agencies prefer lending to municipalities which properly manage and operate their assets;
- f. Potentially improve bond credit ratings;
- g. Make a sound case for rate increases to local governing boards and rate payers;
- h. Prolong the useful life of their assets. Knowing the condition of assets allows regional planning agencies to make timely repairs; and
- i. Reduce duplication of efforts and improve the allocation of staff time and other resources.

A complete report consists of this form and copies of supporting documentation. All regional planning agencies that wish to use this report to demonstrate compliance with the requirements of 401 KAR 5:006, Section 4 must complete all seven sections of the report and provide copies of the supporting documentation required under section VI. This report form consists of seven (7) sections:

- I. REGIONAL PLANNING AGENCY DATA
- II. REVENUES AND EXPENSES
- III. ASSET INVENTORY
- IV. PROJECT PRIORITIZATION
- V. FUNDING PLAN
- VI. COPIES OF SUPPORTING DOCUMENTATION
- VII. CERTIFICATION

Most of the information required in the form is self-explanatory. The instructions in some of the sections are given to highlight some of the information that may require interpretation or additional clarification. You may add extra pages for entering additional asset inventory information especially if you are a regional planning agency with multiple treatment plants. If you need to include additional information, attach the extra pages and put the question number next to your answers and/or copy and paste the asset inventory tables on the additional pages. It's quite likely that all of the details of the asset inventory presented in this report will not apply to every wastewater system. If the parameter does not apply then indicate by entering N/A in the blank or modify the worksheets so they conform to the particular needs of your system. For additional information or assistance, contact the Kentucky Division of Water, Wastewater Planning Section (502) 564-3410.

III. ASSET INVENTORY. This is the most extensive section of the report and will allow the Division of Water to evaluate the types of assets, anticipated failure and replacement or rehabilitation costs. The data items required should be readily available to most operators or managers. Most systems already have some form of inventory established but not centralized. The following asset inventory is designed to collect data and information into a centralized format. The inventory provides a format where information and data will be listed in the categorized asset tables and include corresponding characteristics, assigned assessment and failure mode ratings, and assigned strategies to renew or maintain the assets. Taking an initial inventory of assets can be a labor intensive job. Systems should start by identifying their critical assets to prepare the initial inventory. The collection of assessment data and information can be done through the direct inspection, observation, repairs, operation and maintenance routines, investigation/ monitoring/reporting, and analysis of data. Because systems need to continue to collect new data and information and build upon initial inventories, an ongoing, organized, and systematic collection of data should be established so the process develops. One of the most important outcomes of the assessments is determining the remaining useful life of an asset. A number of factors can affect the useful life of assets, including routine service and proper maintenance, excessive use, and environmental conditions such as topography, soil, or climate.

1. What is the State of My Assets? Assessing the state of assets is one of the core components of developing an asset inventory. It provides the critical information needed to assess condition, performance and reliability of system components. The measure of performance for a wastewater system can be based on four critical areas: customer service level, regulatory compliance, risk to public health and safety, and environmental protection. Conduct assessments on the condition, performance and reliability of current wastewater system assets using the definitions and tables below and assign the ratings to the following tables. Assessments are to be evaluated on a scale of 1 to 5.

- **Current Condition-** Rates the condition of the asset. The higher the number the better the condition of the asset.
- **Current Performance-** Rates whether the asset meets capacity requirements now and in the future. The higher the number the better the performance of the asset.
- **Current Reliability-** Rates the asset based on its frequency of breaking down. The higher the number the better the reliability of the asset.

a. Current Condition Assessment

<u>Rating</u>	<u>Remaining Useful Life</u>	<u>Maintenance Level</u>
5	New or Excellent Condition	Normal Preventative Maintenance
4	Minor Defects Only	Normal Preventative Maintenance, Minor Corrective Maintenance
3	Moderate Deterioration	Normal Preventative Maintenance, Major Corrective Maintenance
2	Signification Deterioration	Major repair, rehabilitate
1	Beyond Useful Life	Unit Must Be Replaced

b. Current Performance Assessment

<u>Rating</u>	<u>Description</u>
5	Exceeds/Meets all Performance Targets
4	Minor Performance Deficiencies
3	Considerable Performance Deficiencies
2	Major Performance Deficiencies
1	Fails to Meet Performance Targets

c. Current Reliability Assessment

<u>Rating</u>	<u>Remaining Life</u>	<u>Frequency of Failure</u>
5	New	Almost Negligible
4	Seldom Breakdown	More than 10 years
3	Occasional Breakdown	Every 5 Years
2	Periodic Breakdown	Every 2 Years
1	Continuous Breakdown	1 Year or Less

2. Which Assets are the Most Critical? Critical assets have high failure risks (old, poor condition, etc.) and/or major consequences if they do fail (major expense, system failure, safety concerns, environmental damage, water quality impacts, etc.). Some components of a system should take precedence for investment based on risk due to age, condition, and importance or consequence. Components found to be in poor condition, or with severe defects and high failure modes, should be addressed as soon as possible after they are discovered. Less severe defects can be prioritized for more frequent inspection or cleaning, repair, rehabilitation, or replacement. Conduct critical rating assessments of current wastewater system assets using the definitions and tables below and assign the ratings to the following tables:

- **Consequence of Failure-** Rates the asset based on the consequences of failure. Failure of some assets could be detrimental to the total system or facility components. The lower the number the lower the risk.
- **Probability of Failure-** Rates the asset based on the percentage of effective life consumed- as an asset ages the likelihood of failure increases. The lower the number the lower the probability of failure. **Enter the percentage shown.**
- **Redundancy-** Rates the criticality of the assets based on the availability of backup. Available backup reduces risk.

a. Consequence of Failure

Rating	Description	Percentage (%) Affected	Level
1	Minor Component Failure	0-25%	Asset
2	Major Component Failure	25-50%	Asset
3	Multiple Asset Failure	25-50%	Facility/Sub-system
4	Major Facility Failure	50-100%	Facility
5	Minor Sanitary System Failure	20-40%	Total System
6	Medium Sanitary System Failure	40-60%	Total System
7	Intermediate Sanitary System Failure	60-80%	Total System
8	Significant Sanitary System Failure	80-90%	Total System
9	Total	90-100%	Total System

b. Probability of Failure

Rating	Percentage (%) of Effective Life Consumed
1	20%
2	40%
3	60%
4	80%
5	100%

c. Current Redundancy Assessment

Rating	Level of Redundancy	Reduce Probability of Failure by:
1	50% Backup	50%
2	100% Backup	90%
3	200% Secondary Backup	98%

3. Renewal and Maintenance Strategy: This asset inventory report will help regional planning agencies acquire a better understanding of their systems and make more informed decisions about future capital investments. An important part of conducting an inventory is determining a strategy of how to manage assets through renewal and maintenance. At some point, continuing to repair the asset will no longer be cost-effective and it will need to be rehabilitated or replaced. A preventive maintenance program will enable you to maximize the useful lives of your assets and can help you avoid problems and cut down or delay replacement costs. Conduct assessments on strategies to renew or maintain assets using the definitions and tables below and assign the options to the following tables:

- **Renewal Strategy-** Record decisions on what will be done with each asset.
- **Maintenance Strategy-** Record decisions on the type of maintenance tactics to perform based on the selected renewal strategy.
- **Recommended Renewal Date-** Renewal date is equivalent to the end of useful life date of an asset per the manufacturer. You may enter a different date based on your renewal strategy. This can be used in calculating the future value of the renewal strategy.
- **Costs of Renewal Option-** For this example assume all assets will be replaced. Enter your estimate of what the renewal strategy will cost in today's dollars

a. Renewal Strategies

<u>Option</u>	<u>Description</u>	<u>Type</u>
1	Do Nothing	Non-Capital
2	Continue with Status Quo	Non-Capital
3	Maintain Differently	Non-Capital
4	Operate Differently	Non-Capital
5	Repair	Capital
6	Refurbish/Rehabilitate	Capital
7	Replace Asset with Similar Asset	Capital
8	Replace with a New or Improved Asset	Capital
9	Reduce Levels of Service or Cause of Failure	Non-Asset

b. Maintenance Strategy

<u>Option</u>	<u>Maintenance Tactic</u>
1	PM - Preventive Maintenance
2	CBM - Condition based maintenance
3	UBM - Usage based maintenance
4	RTF - Run to Failure
5	CM - Corrective Maintenance

Asset Inventory Table Instructions:

Putting together the inventory requires organization of assets and decisions regarding what level of asset should be included. This format allows for any level of detail desired, and is capable of classifying a great deal of information about the assets. Key points are to (1) organize the asset inventory from large to small units; (2) gather information and insert into the appropriate categories; (3) after basic hierarchy is established, additional information can be added as it is obtained (Refer to the table of Examples of Asset Categories and Category Hierarchy).

List as many assets within each categorized table as you can and as many characteristics of each asset. Characteristics will vary by asset type. Use the assessment and strategy ratings defined above while taking into account the current condition of each asset, its service history, and your experience based on the characteristics of your system (e.g., weather conditions, operation and maintenance routines). Get the best information you can, but use estimates if you need to. For the collection system tables (Tables 4 through 7), grouping of collection lines is recommended. For example, if collection lines were put into place in the same area during the same period of time and are composed of the same diameter and material, then enter the total linear footage of the same group instead of segmenting them (e.g., downtown, 10,000 feet, 8 inch diameter, Cast Iron, circa 1950).

Examples of Asset Categories and Category Hierarchy

Asset Categories	Asset Category Hierarchy
Headworks	Screening- Bar Screens, Screens
	Grit Removal- Blower, Auger, Grit Pumps, Pipes/Valves
	Electrical- Motor Control
Raw Sewage Pumping	Pumps- Pump #1, Pump #2, Pipes/Valves
	Electrical- Motor Control Center, Generator
	Instrumentation- Flow Meter, Level Sensors
Pump Stations	
Building and Grounds	
Panels- Alarm/Electrical	
Collection Structure	Manholes, Low Pressure Sewer, and Vacuum Sewer
Collection Pipe (Ductile Iron, Cast Iron, Steel, RCP, PCCP, Brick, Vetrified Clay Pipe [VCP], Polyvinyl Chloride [PVC], High-density Polyethylene [HDPE])	Gravity
	Force Main- Air-Relief Valves
Collection Pump Station	Pumps- Pump 1,2,3, etc., Valve and Piping
	Instrumentation- Flow Meter
	Electrical- Motor Control, Standby Generator
Treatment Unit Processes	