MINNESOTA POLLUTION CONTROL AGENCY

Wastewater Facility & Collection System
Class D Exam Description

Introduction:

The Minnesota Pollution Control Agency in conjunction with a Steering Team and Sounding Board has developed a Need to Know (N2K) document to identify the criteria for knowledge and skills which Wastewater Facility & Collection System Operators are expected to know. The N2K document was then cross-referenced the current MPCA operator exams in order to provide a comprehensive description of each exam. The percentages provided in this document are intended to serve solely as a study guide for operator exams and should not be used as a weight of the importance or complexity of each knowledge or skill. As the N2K continues to expand, the exams and their descriptions will also be updated.

How to use this document:

The exam questions are first split into two groups: questions testing your management skills (Table I) or questions testing your treatment process knowledge (Table II). Within these groups, questions are organized by learning objectives identified in the N2K. To provide further description, questions testing your treatment process knowledge are also sorted by the treatment process they reference (Table III).

Suggested Study Materials

Manual of Practice No. 11, Operation of Wastewater Treatment Plants
Operation of Wastewater Treatment Plants, Vol 1 & 2, Sacramento State University
Advanced Waste Treatment, Sacramento State University
Recommended Standards for Wastewater Facilities (10-State Standards)
MPCA Wastewater Math Workbook
MPCA Wastewater Treatment Technology Manual

If you have questions or comments on the Exam Description, please contact Matt Rotz, State Program Administrator, at 651-296-6300 or matthew.rotz@state.mn.us.

Table 1: Management Skills Sorted by Learning Objectives

Address Emergency Situations	**TOTAL:**	**4%**
Coordinate mutual aid agreements		
Develop emergency plan		
Direct implementation of emergency plan		
Respond to auto dialers/alarms		
Notify regulatory agencies of public health issues (e.g., MPCA, local health department, DNR)		
Repair broken blocked gravity lines		
Repair broken blocked force mains		
Mitigate chlorine spill		
Coordinate emergency equipment repairs (e.g., generators, blowers, pumps)		
Participate in System Improvements	**TOTAL:**	**0%**
Address inflow/infiltration issues		
Plan upgrades to existing infrastructure		
Develop construction contract		
Participate in new construction design process		
Inspect new construction (e.g., mains, lift stations, plant)		
Inspect new service connections		
Test new installations (e.g., vacuum, mandrel, pressure)		
Perform Administrative Functions	**TOTAL:**	**0%**
Develop facility/collection system budget		
Address customer issues (e.g., backups, odor complaints)		
Address industry user issues (e.g., contributed load, shock loads)		
Manage resources		
Administer grants & loans		
Participate in employee selection and promotion process		
Maintain personnel timesheets		
Maintain personnel files		
Counsel employees		
Complete employee performance evaluations		
Train subordinates		
Participate in meetings (e.g., public, department)		
Maintain replacement parts inventory		
Maintain plant security		
Schedule contract maintenance		
Conduct plant tours		
Manage public relations		
Prepare expense reimbursement reports		
Purchase operational supplies (e.g., office, lab, chemicals)		
Assist in development of sewer use ordinance		
Assist in development of local wastewater rules & regulations		
Enforce local wastewater rules & regulations		
Enforce state wastewater rules & regulations		
	Management Skills TOTAL:	**4%**

Table II: Treatment Process Knowledge Sorted by Learning Objectives

Understand Purpose of Treatment	13%
Understand Method of Treatment	12%
Identify Advantages and Disadvantages vs Other Treatment Options	1%
Describe Position of Treatment Unit in Treatment Process	0%
Identify Types of Treatment Units	1%
Describe Parts of Treatment Unit	2%
Identify Design Modifications of Treatment Unit	0%
Execute Process Control and Operation of Treatment Unit	9%
Employ Treatment Process Control Formulas	14%
Complete Recommended Maintenance Protocol for Treatment Unit	11%
Describe Flow Patterns of Treatment Process	4%
Analyze Factors which Influence Treatment Process	6%
Describe Biological Life and Processes as Part of Treatment	7%
Execute Sampling Methods, Lab Tests and Protocol of Treatment Process	9%
Identify Personal Health and Safety Hazards of Treatment Process	6%
Describe Methods and Purpose of Keeping Records of Treatment Process	1%
Identify Applicable Regulations of Treatment Process	2%
Treatment Process Knowledge TOTAL:	**97%**

Table III: Treatment Process Knowledge Sorted by Process

Preliminary Treatment TOTAL	**8%**
Chemical pretreatment	0%
Grinding & disposal	0%
Grit separation & removal	4%
Pre-Aeration	0%
Screening	2%
Primary Treatment TOTAL	**1%**
Primary clarification	1%
Secondary Treatment TOTAL	**41%**
Aerated pond stabilization	5%
Biological aerated filtration	1%
Oxidation ditch	1%
Pond stabilization	26%
Rapid infiltration basin	1%
Rotating biological contactors	1%
Secondary clarification	2%
Activated sludge	1%
Submerged batch reaction	1%
Subsurface disposal	1%
Trickling filtration	1%
Tertiary Treatment TOTAL	**0%**
Filtration	0%
Nutrient Removal TOTAL	**0%**
Nitrogen removal	0%
Phosphorus removal	0%
Disinfection TOTAL	**8%**
Chlorination / Dechlorination	6%
UV disinfection	2%
Biosolids Digestion & Handling TOTAL	**0%**
Aerobic sludge digestion	0%
Anaerobic sludge digestion	0%
Biosolids dewatering	0%
Biosolids removal	0%
Biosolids reuse	0%
Biosolids stabilization	0%
Collection System Pumps & Valves TOTAL	**26%**
SSTS TOTAL	**8%**
Spray Irrigation TOTAL	**4%**
Treatment Process Knowledge TOTAL:	**97%**