

Manuals Related To

# **Operation and Maintenance**

of Wastewater Treatment

December 1975



Office of Water Program Operations  
Municipal Operations Branch  
U.S. Environmental Protection Agency  
Washington, D.C. 20460

The documents described on the next two pages are available free from all EPA Regional Offices; an order blank for them follows their descriptions. Descriptions of seven documents available from the Government Printing Office are followed by an order blank addressed to the Superintendent of Documents.

PUBLICITY PAMPHLET AVAILABLE:

"O&M - MAKING WASTEWATER TREATMENT WORK IN YOUR COMMUNITY"

This pamphlet, dated May 1974, is now available in quantity from all EPA Regional Offices. It can be given to public-interest groups interested in passing copies along to members and others in an effort to increase public awareness; but most copies will be distributed to visitors at individual plants.

The pamphlet introduces the citizen to the need for wastewater treatment plants, and to the importance of their operation and maintenance. The NPDES permit system is briefly explained, and the permit mentioned as a source of information. The citizen is urged to support better salaries and working conditions for plant operators and other personnel, since this will mean better personnel, who in turn will improve O&M. This is seen as a more efficient use of money than the building of new plants to replace plants already physically adequate to community needs. A list of questions the citizen can ask his local officials, to help him evaluate plant O&M, is included.

## EPA REVISES GUIDELINES ON PLANT OPERATION & MAINTENANCE

The EPA has published a supplement to the Federal Guidelines for Design, Operation, and Maintenance of Wastewater Treatment Facilities, revising the portion of the Guidelines dealing with O&M. The supplement replaces pp. 31-46, expanding that information to include sections on Staffing and Training, Safety, Emergency Operation, Maintenance Management, and Budget.

The additions address those responsible for compliance with grant requirements, effluent permit criteria, and related water quality standards. They are intended to ensure consideration of all aspects of O&M, both in improving the work of existing plants and in developing new ones. Early consideration of the Guidelines in design will optimize the long-range capability of new plants.

Copies of the supplement are available free from EPA Regional Offices.

PUBLICATIONS AVAILABLE FROM EPA REGIONAL OFFICES

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Please send the following free publications:

\_\_\_\_\_ copies of the supplement to the Federal Guidelines

\_\_\_\_\_ copies of "O&M - Making Wastewater Treatment Work in  
Your Community"

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Me., Mass., N.H., R.I., Vt.

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Air & Water Programs Division  
Environmental Protection Agency  
Region I  
JFK Federal Bldg.  
Boston, Massachusetts 02203

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For the States of N.J., N.Y.,  
Puerto Rico, Virgin Islands

Operation & Maintenance Section  
Municipal Facilities Branch  
Facilities Technology Division  
Environmental Protection Agency  
Region II  
26 Federal Plaza  
New York, New York 10007

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For the States of: Del., Md.,  
Penn., Va., W.Va., D.C.

Operation & Maintenance Section  
Office of Grants Coordination  
Environmental Protection Agency  
Region III  
6th & Walnut Streets  
Philadelphia, Pennsylvania 19106

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For the States of: Ala., Fla.,  
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1421 Peachtree Street, N.E.  
Atlanta, Georgia 30309

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Air & Water Programs Division  
Environmental Protection Agency  
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230 S. Dearborn St.  
Chicago, Illinois 60604

For the States of: Ark., La., N.M.,  
Oka., Tex.

Operation & Maintenance Chief  
Municipal Waste Water Systems  
Office of Grants Coordination  
Environmental Protection Agency  
Region VI  
1600 Patterson Street  
Dallas, Texas 75201

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For the States of: Io., Ks.,  
Mo., Ne.

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Division of Surveillance & Analysis  
Environmental Protection Agency  
Region VII  
25 Funston Road  
Kansas City, Kansas 66115

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N.D., S.D., Utah., Wy.

Operation & Maintenance Section  
Control Technology Branch  
Air & Water Programs Division  
Environmental Protection Agency  
Region VIII  
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Denver, Colorado 80203

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Water Investigation Section  
Technical Support Branch  
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Environmental Protection Agency  
Region IX  
100 California Street  
San Francisco, California 94111

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For the States of: Ak., Id., Or., Wa.

Operation & Maintenance Unit  
Municipal Section, Water Branch  
Air & Water Programs Division  
Environmental Protection Agency  
Region X  
1200 Sixth Ave.  
Seattle, Washington 98101

## NEW MANUAL AVAILABLE ON EMERGENCY PLANNING

The source document "Emergency Planning for Municipal Wastewater Treatment Facilities" was prepared by Wiley & Wilson, Inc., Lynchburg, Virginia, under contract with the Municipal Operations Branch of the EPA's Office of Water Program Operations.

The new manual will assist those responsible for developing comprehensive emergency operating procedures and systems for wastewater treatment facilities, including consulting engineers, regulatory agencies, and municipal managers and their staffs:

1. Consulting engineers may find it a useful guide in writing the emergency operating program portion of any municipal treatment system O&M manual. The information offered applies to all treatment systems.
2. Regulatory agencies and EPA can use it in evaluating the emergency operation programs of O&M manuals.
3. Municipal department heads and staffs will use it in developing plans suited to the peculiarities of their plants.
4. Treatment plant staffs may use it to explain to local governing bodies the need for additional funds to remedy difficulties at their plants.

This manual has been prepared to help ensure that each plant's discharge of pollutants does not exceed the effluent limitations written into the plant's discharge permit. It is available from the U.S. Government Printing Office at \$1.25 per copy.

NEW MANUAL AVAILABLE:

"ESTIMATING LABORATORY NEEDS FOR MUNICIPAL  
WASTEWATER TREATMENT FACILITIES"

This document was prepared by Cornell, Howland, Hayes & Merrifield-Clair A. Hill & Associates under contract with the Municipal Operations Branch of the EPA's Office of Water Program Operations.

Because treatment processes and combinations of processes vary widely, laboratory needs must be specifically tailored to each installation. This manual provides data to make possible the rough estimation of laboratory needs for municipal wastewater treatment plants. Criteria for physical facilities, staffing, and laboratory services are included. Considerations for sampling and testing needs are presented for individual processes, and include the minimum and the best testing requirements. The testing programs are designed to meet the needs of each process.

Guidelines for equipment and supplies are divided into six categories: Major Equipment; Miscellaneous Equipment; Expendable Supplies; Glass and Plasticware; Test Kits; and Chemicals. The guidelines for Major Equipment and Chemicals are based on testing requirements, while the others are usually general and indicate items needed at any laboratory.

Estimates for staffing needs are given as the annual base man-hours for laboratories serving the several types of treatment facilities, and include methods for adjusting the number of man-hours for local conditions. The manual describes two ways of optimizing laboratory services: regional laboratories serving several facilities, and local laboratories serving both water and wastewater facilities.

Copies of the manual are available at \$1.35 each from the Government Printing Office.



NEW MANUAL AVAILABLE ON  
START-UP OF MUNICIPAL WASTEWATER TREATMENT FACILITIES

A new manual completed in December 1973, "Start-up of Municipal Wastewater Treatment Facilities," is available from the Government Printing Office. It was prepared for the Municipal Operations Branch of the EPA's Office of Water Program Operations by Wiley & Wilson, Inc., Lynchburg, Virginia.

The manual is a guide for putting into initial operation a new municipal wastewater treatment plant, a new addition to an existing plant, or a change in the mode of a plant's operation. Proper operation of the plant or process will ensure that the wastewater is treated in compliance with the specific conditions established for each treatment facility.

Information is given on preparing for actual treatment plant start-up, including: staffing the plant; developing standard operating procedures; establishing procedures when construction is continued during start-up; dry- and wetrun testing of equipment; on-site operator training; and safety training.

Start-up procedures are described for some of the more common pre-treatment and primary treatment units; for the specific secondary treatment processes of activated sludge, trickling filters, stabilization ponds and aerated lagoons; and for sludge handling units and the anaerobic digestion process. The start-up procedures for advanced wastewater treatment units and processes are beyond the scope of this manual.

The manual can be bought from the U.S. Government Printing Office for \$1.40 per copy.

NEW MANUAL AVAILABLE:

"MAINTENANCE MANAGEMENT SYSTEMS FOR MUNICIPAL WASTEWATER FACILITIES"

This document was prepared by Wiley & Wilson, Inc., Lynchburg, Virginia, for the Municipal Operations Branch of the EPA's Office of Water Program Operations.

The basic information for the manual came from individuals experienced in maintenance management systems at facilities of many different types and sizes. A wide range of existing maintenance management systems--for municipal wastewater treatment facilities, industry, and the Department of Defense--were reviewed also.

The manual includes recommendations covering each of the basic elements required to develop an effective maintenance management system. These are not intended to be rigidly applied, but should be tailored to specific equipment and plant types. The procedures are comprehensive and complete and will aid the development of effective systems.

Copies are available at \$1.60 each from the Government Printing Office.

NEW MANUAL AVAILABLE:

"CONSIDERATIONS FOR PREPARATION OF  
OPERATION AND MAINTENANCE MANUALS"

This document was prepared by Wiley & Wilson, Inc., Lynchburg, Virginia, for the Municipal Operations Branch of the EPA's Office of Water Program Operations. It will be helpful to anyone who prepares or reviews municipal wastewater treatment plant O&M manuals. It aids in preparing such manuals in accordance with the eligibility requirements of the EPA's Construction Grants Program.

The principal background for this work came from the existing guide for O&M manuals, in the appendix of the "Federal Guidelines for Design, Operation and Maintenance of Wastewater Treatment Facilities" (1970). Existing manuals now being used in municipal plants were surveyed for information, and persons experienced in the preparation of plant O&M manuals contributed to the finished product.

The manual includes separate sections on each major heading recommended for inclusion in the O&M manual. Each section contains a detailed discussion of the type of information that should be included. A suggested manual outline is presented for treatment plants, and another for pumping stations and pipelines. The manual is not meant to present a rigid format; each manual must be suited to the case at hand. But following a national format should speed manual review procedures.

The manual is available at \$2.85 per copy, from the Government Printing Office.

NEW MANUAL AVAILABLE:

"ESTIMATING STAFFING FOR  
MUNICIPAL WASTEWATER TREATMENT FACILITIES"

This document, dated March 1973, was prepared by CH M/Hill, San Francisco, California, for the Municipal Operations Branch of the EPA's Office of Water Program Operations. It provides a four-step method for preparing staffing estimates for municipal wastewater treatment plants ranging from 0.5 to 25 mgd capacity. Primary, secondary, and advanced treatment processes are covered.

The staff estimating steps feature a "Table of Adjustment for Local Conditions" which makes it possible to vary, according to individual need, the average staffing requirements listed. Annual man-hour staffing estimates are given for six basic types of work: supervisory, clerical, laboratory, yard work, operation, and maintenance.

Applicable to existing as well as new plant designs, the manual will assist consulting engineers, plant management, State regulatory agencies, and others responsible for assessing staffing needs.

Copies are available at \$1.00 each at GPO Bookstores, or by mail (domestic, post-paid) from the Government Printing Office, at \$1.25 each.

NEW MANUAL AVAILABLE:

"A PLANNED MAINTENANCE MANAGEMENT SYSTEM FOR  
MUNICIPAL WASTEWATER TREATMENT PLANTS"

This source document was prepared by EnviroPlan, Inc., of College Park, Maryland, under contract to the County of Fairfax, Virginia, and under the sponsorship of EPA.

This system was developed and successfully demonstrated at the 18-mgd Lower Potomac Wastewater Treatment Plant of Fairfax County, to establish a model maintenance management system generally applicable to treatment plants of various types throughout the country. It provides for the specific maintenance needs of each item of plant equipment and reduces the maintenance of complex equipment to simple procedures. For each procedure the system details the methods, materials, tools, and personnel required; schedules the task; and provides for data recording and feedback.

During the 12-month demonstration, the system caused a steady downward trend in the frequency of malfunctions in various mechanical equipment. In many cases the detection of danger signs led to corrective action which prevented breakdowns.

This report describes the system in technical detail; thoroughly describes the installation of the system, including acceptance by the mechanics and coordination with plant operations; and outlines an application of the system to other wastewater treatment facilities.

Copies are available at \$1.55 each from the Government Printing Office.

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Superintendent of Documents, U.S. Government Printing Office  
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Remittance is enclosed. Please send copies of the following documents as listed.

\_\_\_\_ copies of "Emergency Planning for Municipal Wastewater  
Treatment Facilities" (EP 2.8: W 28/6) @ \$1.25..... \$ \_\_\_\_\_

\_\_\_\_ copies of "Estimating Laboratory Needs for Municipal  
Wastewater Treatment Facilities" (EP 2.2: W 28/3)  
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