



Operations and Maintenance Assessment Guide for Wastewater Treatment Plants

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New Jersey Department of Environmental Protection
Division of Water Quality
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Purpose of this document

This document and WWTP O&M Assessment Form are intended to provide wastewater treatment plant (WWTP) system personnel with tools to evaluate and improve the accuracy and completeness of the facility's Operation & Maintenance (O&M) Manual. This document is intended to be a resource to WWTP personnel regarding components that they should consider including in the O&M Manual as well as to help identify areas of the Manual that are in need of updating. Each WWTP is unique and system personnel should use their expertise and knowledge of their system to determine what is needed in the Manual. This document is a resource only and does not supersede or replace statutory, regulatory, or permit O&M requirements.

This WWTP O&M Assessment Form is intended to assist personnel in identifying whether each topic is in the O&M manual and if the information included is current. The information contained in EPA's "Considerations for Preparation of Operation and Maintenance Manuals" was used as a starting point for this form, but has been supplemented with New Jersey specific information. Additional resources are listed below as well, in addition to relevant New Jersey regulations on O&M.

Overview

A WWTP O&M Manual should provide system operators with comprehensive guidance, procedures, and the necessary technical references to efficiently operate their facility. The O&M Manual should be a dynamic document that is written to be easily understood. It must be organized in a manner so that plant personnel can readily locate necessary information and so that it can be easily modified to reflect changes to the treatment system operation and maintenance. NJPDES regulations 7.14A-6.12(c) require that an O&M manual for the treatment works and related appurtenances and collection systems be completed. Additionally, NJPDES regulations require that "the operation and maintenance manual shall be amended whenever there is a change in the treatment works design, construction, operations or maintenance which substantially changes the treatment works operations and maintenance procedures" (7.14A-6.12 (c) 2). It is important that the O&M Manual is also routinely updated to reflect changes in personnel and contact information, particularly with regard to the Emergency Response Plan. When changes are made to the O&M Manual it is suggested that these changes be logged so that plant personnel can see the last date that different sections of the Manual have been updated.

Electronic manuals have several benefits to hard copies:

1. easily searchable by keyword, which allows the plant personnel to quickly locate the sections they are interested in,
2. not limited by size, so all relevant documents can be incorporated or linked to without concern for space
3. easily reorganized to accommodate changes to the plant operations and maintenance,
4. allows for multiple personnel to have access to the O&M Manual.
5. Ease in keeping track of last update.

Electronic O&M Manuals should be securely stored and backed up so that the document can still be accessed if power is lost or access to the facility is limited, perhaps a copy shall be kept off-site should the facility become inaccessible.

The provisions of the O&M Manual should provide the necessary detail to assist in the development of specific Standard Operating Procedures and Standard Operating Guidance (SOP's or SOG's) for various systems within the plant. Combined, the O&M Manual along with SOP's and SOG's should become the reference book for the entire system. Once completed, the O&M Manual may serve as the building block for other WWTP plans such as an Asset Management Plan and an Emergency Response Plan.

The O&M Manual can provide the WWTP with a level of security during times of crisis and staff turnover, by providing consistent guidance to responsible operators. A well run WWTP should depend on their O&M Manual as a "Go To" or "text book" reference document that clearly details the everyday happenings at the facility.

New Jersey Regulatory References

This is a courtesy copy of this rule, should there be any discrepancies between this text and the official version of the rule, the official version will govern. All of the Department's rules are compiled in Title 7 of the New Jersey Administrative Code. Note: these rules are subject to revision, the attached version was in force as of January 5, 2009.

New Jersey Pollutant Discharge Elimination System Rules (N.J.A.C. 7:14A)

N.J.A.C. 7:14A-6.12 Operation, Maintenance and Emergency Conditions

- (a) A permittee shall, at all times, maintain in good working order and operate the treatment works and facilities which are installed by the permittee to achieve compliance with the terms and conditions of the discharge permit. Proper operation and maintenance, includes, at a minimum:
 - 1. Effective performance based upon treatment levels for which the treatment works was designed;
 - 2. Adequate funding;
 - 3. Effective management;
 - 4. Adequate operator staffing and training;
 - 5. Regularly scheduled inspection and maintenance programs; and
 - 6. Adequate laboratory and process controls including appropriate quality assurance procedures as described in 40 CFR Part 136 and applicable State laws and rules.
- (b) Any permittee who operates a treatment works shall satisfy the licensing requirements of the "Water Supply and Wastewater Operators' Licensing Act," N.J.S.A. 58:11-64 et. Seq., and promulgated pursuant thereto. This subsection requires the operation of back-up or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the NJPDES permit or where required by applicable law or regulation.
- (c) All permittees shall submit written verification to the Department that an operation and maintenance manual for the treatment works, including the related appurtenances and collection system, has been or will be completed [per the permit].... by the effective date or a compliance date included in a new or renewed NJPDES permit issued subsequent to May 5, 1997. A permittee does not need to submit the operation and

maintenance manual to the Department, unless specifically directed to do so. When the Department directs a permittee to submit the operation and maintenance manual, the Department shall state the reasons for requiring the submittal in a letter requesting the submittal. In the case of a NJPDES permit for stormwater discharges or separate storm sewers which expressly exempts permittees from this provision, the exemption shall apply only to discharge authorized by the permit. Any affected permittee shall comply with the following operation and maintenance manual requirements.

1. The operation and maintenance manual shall be made available for inspection upon request by an authorized representative of the Department.
2. The operation and maintenance manual shall be amended whenever there is a change in the treatment works design, construction, operations, or maintenance which substantially changes the treatment works operations and maintenance procedures.
3. An operation and maintenance manual shall describe, at a minimum, the following:
 - i. Operator and staff responsibilities;
 - ii. Staff guidance for emergency situations;
 - iii. Identification of NJPDES permit requirements and the obligation to meet these requirements;
 - iv. Operating procedures including a detailed description of each major treatment unit/process with relationship to related units, safe operating procedure for normal operation, including common operating problems, safe operating procedures for operating during emergency conditions, and any fail-safe features;
 - v. A program of regularly scheduled inspection and maintenance; and
 - vi. An emergency plan in accordance with (d) below.

(d) An emergency plan shall be included as part of the operation and maintenance manual, except for those operations issued permits under N.J.A.C. 7:14A -20.

1. When a person has prepared an emergency plan required by regulations other than this chapter, such plans or plan and any amendments necessary to meet the requirements of this section will satisfy the requirements of this section provided the plan is labeled to identify the requirements listed in this section.
2. An emergency plan shall be amended whenever:
 - i. There is a modification, including expansion, of the treatment works; or
 - ii. Any other conditions related to the plan have changed.
3. The emergency plan shall be designed to ensure effective operation of the treatment works under emergency conditions, and shall consist, at a minimum, of the following elements:
 - i. A vulnerability analysis which shall estimate the degree to which the treatment works would be adversely affected by each type of emergency situation which could reasonably be expected to occur, including but not limited to those emergencies caused by natural disaster, civil disorder, strike, sabotage, faulty maintenance, negligent operation or accident;

ii. The vulnerability analysis shall include, but is not limited to, an estimate of the effects of such an emergency upon the following:

- (1) Power supply;
- (2) Communication;
- (3) Equipment;
- (4) Supplies;
- (5) Personnel;
- (6) Security; and
- (7) Emergency procedures to be followed.

iii. An evaluation of the possible adverse effects on public health and the environment due to such an emergency; and

iv. An emergency operation plan for ensuring, to the maximum extent possible, uninterrupted treatment works operation and a manual of procedures for the implementation of such plan, including procedures for the notification of any appropriate regulatory agency, affected water supply purveyors, and any other municipal authority or agency. The plan and manual shall address each of the emergency situations described in the vulnerability analysis.

4. The Department shall not individually review and approve an emergency plan as part of the permit issuance process. The Department's decision not to review and approve an emergency plan shall not exempt a person from liability for violations arising from an emergency situation. A person shall take all necessary actions to mitigate the damage to the waters of the State arising from an emergency situation. Such actions shall not be limited by the emergency operating plan and the operation and maintenance manual.

5. Failure to have on file any part of the operation and maintenance manual in compliance with (c) above and failure to implement the emergency plan pursuant to this subsection shall each constitute a violation of this chapter.

6. In emergency situations, a permittee shall implement the requirements of the emergency plan to the fullest extent possible. In addition, any conditions of the emergency plan that the permittee can implement prior to an emergency situation to reduce the potential for an emergency situation, shall be implemented.

(e) A municipality or sewerage authority who is not a permittee (for example, does not have a direct surface or groundwater discharge) but who owns and operates a treatment works used only for the collection or transportation of domestic sewage is not required to prepare an operations and maintenance manual. However, the municipality or sewerage authority shall be responsible for the proper operation and maintenance of that treatment works. The criteria for proper operations and maintenance and an emergency plan pursuant to (a) and (d) above, may be used as a guideline and implemented as applicable.

Licensing of Water Supply and Wastewater Treatment System Operators

N.J.A.C. 7:10A-1.12 Duties, records and reports

(a) At a minimum, all licensed operators shall perform the following duties and maintain the following information for each system operated:

1. Each licensed operator shall have readily available written detailed operations and maintenance (O&M) procedures. The O&M procedures shall be designed to maximize preventive maintenance and operating techniques that will ensure that the system operates in a manner that satisfies all laws, rules, regulations, license conditions and orders relating to this chapter. The written O&M procedures shall be updated within 30 days after any substantial change to the system that warrants a change in the operation and maintenance of the system. The written O&M procedures shall include, at a minimum:

- i. Standard operating procedures, including a description of each major treatment unit and/or process;
- ii. A plan for monitoring system process controls;
- iii. An emergency operations plan, which addresses facility and system security, and includes a list of names and telephone numbers of facility personnel to be contacted in the event of emergency;
- iv. A schedule of routine inspections and preventive maintenance;
- v. For a public wastewater collection system (C class) or a public water distribution system (W class), a system map;
- vi. A sampling and/or water quality monitoring plan, if applicable to the facility;
- vii. A schedule of routine meter readings, tests, and chemical use, if applicable to the facility; and
- viii. An inventory of equipment and supplies necessary to operate and maintain the system.

2. Each licensed operator shall:

- i. Properly operate and maintain the system, including, but not limited to, the following duties, as applicable:
 - (1) Monitor chemical feed and other system components;
 - (2) Monitor effectiveness of treatment;
 - (3) Develop a preventive maintenance plan consistent with the schedule specified in the O&M procedures;
 - (4) Read meters and gauges, making adjustments as needed;
 - (5) Make all process control and/or system component integrity decisions;
 - (6) Assist the system owner in resolving any problems complying with applicable regulations and permits;
 - (7) Collect or oversee the collection of samples in accordance with O&M procedures;
 - (8) Store chemicals in locked areas with proper safety equipment;
 - (9) Inform the system owner of any technical or equipment needs of the system;
 - (10) Assess the efficiency of system components (such as pumps and valves); and
 - (11) Respond in a timely manner to customer complaints;
- ii. Schedule routine inspections and preventive maintenance tasks which will be undertaken to preserve the physical integrity of the system;
- iii. Establish and implement a routine recordkeeping system designed to incorporate all O&M procedures that relate to the system;
- iv. Develop a protocol for the system designed to ensure that each employee associated with the system is acquainted with his or her particular responsibilities and obligations, including the

protocol to be followed in the event of an emergency within the system or an intervening factor which mandates deviation from routine O&M procedures; and

v. Ensure that health and safety measures related to the O&M procedures are followed by the licensee, employees and agents of the system so as to protect human health, safety, welfare, and the environment.

3. Each licensed operator shall be responsible for conducting inspections of the system(s) and appurtenances in accordance with the schedule specified in the O&M procedures, and as otherwise indicated by operating requirements, and/or directed by the Department.

i. Such inspections shall ensure that the system is operated and maintained properly and complies with all laws, rules, regulations, license conditions and orders relating to this chapter;

ii. The results of all mechanical equipment and appurtenance inspections essential to the proper O&M of the system shall either be recorded in ink and maintained in bound inspection log books or be maintained in secured-access computer databases or files or other equivalent method of recordkeeping. The log books or computer databases, or file or equivalent shall also include:

(1) Time, date and subject of all system inspections;

(2) A report of all breaks, breakdowns, problems, bypasses, pump failures, occurrences, emergencies, complaints and/or intervening factors within the system that result in or necessitate deviation from the routine O&M procedures, and any situations that have the potential to affect public health, safety, welfare, or the environment or have the potential to violate any permits, regulations or laws relating to this chapter;

(3) A record of the remedial or follow up action and protocol taken to correct all breakdowns, problems, bypasses, pump failures, occurrences, emergencies and/or intervening factors within the system that result in or necessitate deviation from the routine O&M procedures, and any situations that have the potential to affect public health, safety, welfare, or the environment or have the potential to violate any permits, regulations or laws relating to this chapter; and

(4) The date and time of each entry.

4. Each licensed operator shall be familiar with and shall ensure compliance with all laws, rules, regulations, license conditions and orders relating to this chapter.

5. System records, current permits, written O&M procedures, log books, computer databases or files or other equivalent records, pertinent documents and correspondence shall be made available upon request by the Department or other controlling agency, and shall be kept in a safe and secure area for a period of five years.

(b) Each licensed operator shall immediately report any system deficiencies, breaks, breakdowns, problems, bypasses, pump failures, occurrences, emergencies, complaints and/or intervening factors within the system that result in or necessitate deviation from the routine O&M procedures and any situations that have the potential to affect public health, safety, welfare, or the environment or have the potential to violate any permits, regulations or laws relating to this chapter. All reports shall be made to the owner or permittee of the system to or from which treatment is provided. All violations shall be reported by the owner or permittee, as appropriate, to the Department.

1. Each licensed operator shall submit to the Department, upon request, a report summarizing any event described in (b) above and the remedial action taken.

2. Each Public Wastewater Collection System operator shall submit to the receiving system a monthly report summarizing all events described in (b) above and the remedial action taken, by the 10th day of the month following each month for which the data is collected.

(c) Each licensed operator of a public wastewater treatment system (S class) or a public wastewater collection system (C class) shall maintain a record of all industrial and commercial dischargers into such system which could exert a deleterious effect on either the collection system or the receiving treatment system. The collection system operator shall provide a list of all such industrial and commercial dischargers to the owner or permittee of the receiving system by the 10th day of the month following each month for which the data is collected.

Additional Resources

- A) Considerations for Preparation of Operation and Maintenance Manuals; Operation and Maintenance Programs, Office of Water Programs, U.S. Environmental Protection Agency, Washington, D.C.
- B) Reference Guide for Asset Management Tools; May 2014, USEPA
- C) Operation, Maintenance and Management of Wastewater Treatment Facilities; A Bibliography of Technical Documents, U.S. Environmental Protection Agency
- D) Effective Utility Management A Primer for Water and Wastewater Utilities, June 2008, USEPA, AWWA, APWA, NACWA, NAWC, WEF, AMWA
- E) Infrastructure Flood Protection Guidance and Best Practices, 2014, NJDEP
- F) Asset Management Guidance and Best Practices, 2014, NJDEP
- G) Auxiliary Power Guidance and Best Practices, 2014, NJDEP
- H) Emergency Response Preparedness/Planning Guidance and Best Practices, 2014, NJDEP
- I) Domestic Security Best Practices Report Wastewater Group For The Infrastructure Advisory Committee, New Jersey Domestic Security Preparedness Task Force; Prepared under the direction of: The New Jersey Department of Environmental Protection And The Association of Environmental Authorities, October 15, 2003.

Operations and Maintenance (O&M) Manuals will vary in size and level of detail from one wastewater treatment plant to the next. The below “Appendices” outlines the documents that should accompany a well written O&M Manual. Many of these documents (schematics, maps, forms, sample reports, lists, etc.) are essential to operating a treatment plant day to day while some documents are vital for maintenance planning purposes or in times of emergency.

APPENDICES

Table of Contents

A) Schematics

- 1) Basic flow diagram
- 2) Process flow sheets
- 3) Bypass piping diagrams
- 4) Hydraulic profile
- 5) SCADA system
- 6) Other

B) Valve Indices – Describe all major valves

- 1) Function
- 2) Type/size
- 3) Location
- 4) Identification

C) Sample Forms

- 1) Daily Operating Log
- 2) Equipment Inventory
- 3) Maintenance Work Order
- 4) Purchase Order
- 5) Accident Report Form
- 6) State Reports
- 7) Other

D) Chemicals Used in Plant

- 1) List all chemicals
- 2) Give safety precautions and outline storage considerations
- 3) List suppliers
- 4) Provide reorder schedule

E) Chemicals Used in Laboratory

- 1) Give common name
- 2) Give chemical formula
- 3) List suppliers

- F) Emergency Operation, Preparedness and Response
 - 1) Provide Emergency Plan Template
 - 2) Sample Forms
- G) Detailed Design Criteria – Tabulate Data
 - 1) Population served
 - 2) Wastewater volume/strength
 - 3) Quantities of screenings, grit and sludge removed per million gallons of wastewater treated
 - 4) Unit sizes and capacities
 - 5) Hydraulic and organic loadings per treatment units
 - 6) Treatment Units' Detention times
 - 7) Pumping characteristics
 - 8) Sludge treatment and disposal
- H) Equipment Suppliers
 - 1) Give name
 - 2) List all operational equipment
 - 3) Give equipment details and references
- I) Manufacturers' Manuals
 - 1) Bound with periodic updates
 - 2) Provide operating and maintenance instructions
 - 3) Manuals should be indexed and cross-referenced
- J) Sources for Service and Parts
 - 1) List service organizations for all equipment
 - 2) List local repair services
 - 3) List local parts sources
- K) As-Built Drawings as Engineer approved
 - 1) Ensure drawings are complete and accurate
 - 2) Cross-referenced with shop drawings
- L) Approved Shop Drawings
 - 1) Index adequately
 - 2) Cross-referenced with engineering drawings and construction specifications
- M) Dimension Prints
 - 1) Provide when necessary to show units relation to other units, adjacent walls, etc.
 - 2) Use to tie shop drawings to engineering drawings
- N) Construction Photos
 - 1) Label and date all photos
 - 2) Outline photo indexing system
- O) Warranties and Bonds
 - 1) Provide copies

- 2) Index properly
- P) Copies of State Reporting Forms
 - 1) Monthly Operating Report
 - 2) Bypass Report
 - 3) Disinfection Failure Report
 - 4) Other
- Q) Copies of Federal Inspection Forms – provide as required
 - 1) USEPA Form
 - 2) Other
- R) Inflow and Infiltration Controls, as applicable
 - 1) Provide copy of existing ordinance
 - 2) Provide model ordinance, if none exists
 - 3) I&I Reduction Plan
- S) Industrial Waste Controls
 - 1) Provide copy of existing ordinance
 - 2) Provide model ordinance, if none exists
- T) Piping color codes
 - 1) List color for each piping system
 - 2) State if directional flow arrows and/or labeling required
- U) Painting
 - 1) Give type coating required for each unit
 - 2) Give painting frequency schedule
 - 3) Provide a copy of WEF MOP-17, Paint and Protective Coatings
- V) References to be maintained at Treatment Facility
 - 1) WEF MOP #1
 - 2) WEF MOP #11
 - 3) USEPA & NJDEP, etc.

Wastewater Treatment Plant Operations and Maintenance Manual Assessment Form

O&M Page Number	Operations and Maintenance (O&M) Manual Evaluation Criteria	Yes	No	N/A	Remarks
I. Wastewater Treatment Plant (WWTP) General Overview					
<i>Operating and Managerial Responsibility</i>					
	1. What is the last revision date of the O&M Manual?				
	2. Are operator and staff responsibilities listed and discussed?				
<i>Treatment</i>					
	1. Are all major components of the WWTP described in the O&M Manual?				
	2. Is there a general flow pattern/chart of facility and is it clearly labeled?				
<i>Integration of Asset Management Plan (AMP) and Operating Budget</i>					
	1. Does the O&M Manual include an Asset Management Plan?				
	2. Does the operating entity represent that the AMP is complete? Briefly describe status in the remarks column.				
	3. Does the owner of the system prepare an annual operating budget?				
	4. Is the budget developed considering maintenance history, major alterations and preplanned maintenance tasks, equipment lifespan and all other costs associated with proper operation of the plant?				
	5. Has an anticipated schedule been developed, and funding made available, for future overhaul or replacement of major equipment?				
<i>Flood protection and resiliency of critical wastewater treatment systems</i>					
	1. Is the WWTP in a flood prone area?				
	2. What flood protection measures are in place? List in remarks column.				
	3. Is there a flood event resiliency plan to quickly restore efficient operation of critical wastewater treatment system components after a flood?				
<i>Security practices as recommended by the Domestic Security Best Practice Report</i>					
	1. Are security concerns for WWTP identified in the O&M Manual?				
	2. Are security measures in place for the facility?				
	3. Are access points to the facility, property, and facility's resources discussed?				
Additional Comments:					

Wastewater Treatment Plant Operations and Maintenance Manual Assessment Form

O&M Page Number	Operations and Maintenance (O&M) Manual Evaluation Criteria	Yes	No	N/A	Remarks
I. Wastewater Treatment Plant (WWTP) General Overview (Continued)					
<i>Water and energy conservation efforts implemented.</i>					
	1. Have water conservation efforts been implemented?				
	2. Have energy conservation efforts been implemented?				
II. Permits and Standards					
<i>Discharge Permit and Permit Requirements</i>					
	1. Are all active permits associated with this location as well as stays, adjudications, ACOs, JCOs, and major/minor modifications included in the O&M Manual?				
	2. Has the O&M Manual been updated to include any treatment works approvals or modifications?				
<i>Reporting Procedure for Spills of Raw or Inadequately Treated Wastewater</i>					
	1. Is the reporting procedure for a spill/bypass/exceedance clearly outlined per NJAC 7:14A-6.10?				
	2. Are the phone numbers and email addresses of the NJDEP Hotline and the Regional Field Office contacts listed and current?				
	3. Are all potable (surface/ground) water intakes in your service area identified?				
	4. Does the O&M Manual identify environmentally sensitive areas/resources downstream of discharge points? (e.g. shell fish beds, primary contact recreation facilities)				
III. Description, Operation and Control of Wastewater Treatment Facilities					
<i>Major wastewater unit/process</i>					
	1. Does the general description explain the entire treatment process?				
	2. Are all treatment units and components described in detail?				
	3. Have reoccurring operating problems at the WWTP been identified, and have any solutions been implemented?				
	4. Is there a description of treatment process controls? (e.g. bench scale/pilot test)				
	5. Does the facility have Start Up procedures/techniques for each major unit?				
	6. Are normal operations/procedures detailed or clarified?				
	7. Are alternate/emergency operations detailed?				
	8. Is there a wet weather operating plan?				
	9. Is there a plan to evaluate and reduce I/I? effectiveness?				
Additional Comments:					

Wastewater Treatment Plant Operations and Maintenance Manual Assessment Form

O&M Page Number	Operations and Maintenance (O&M) Manual Evaluation Criteria	Yes	No	N/A	Remarks
IV. Description, Operation and Control of Sludge Handling Facilities					
<i>Major sludge handling unit/process</i>					
	1. Does the general description explain the sludge handling and process controls?				
	2. Are sludge handling and operation problems identified?				
	3. Does the facility have Start Up procedures/techniques for sludge handling components?				
	4. Are normal sludge handling operations/procedures described in detail?				
	5. Are alternate sludge handling operations available?				
	6. Are contingency plans in place should the preferred sludge management option not be available?				
	7. Are routine and emergency sludge management sites identified?				
	8. Are emergency operations detailed for the sludge handling equipment?				
V. Personnel					
<i>Manpower/Personnel Requirements</i>					
	1. Does the facility have a licensed operator succession plan?				
	2. Does the O&M Manual include a current personnel organizational chart?				
	3. Are job responsibilities and major tasks listed for each titled position at the WWTP?				
	4. Has the licensed operator determined how many operations staff are required to effectively operate the WWTP? How many operations staff are employed? How many staff are licensed/certified?				
	5. Have appropriate backup operators been identified?				
	6. Does the O&M include a protocol designed to ensure that each employee associated with the system is acquainted with his or her particular responsibilities and obligations, including the protocol to be followed in the event of an emergency with the system or an intervening factor which mandates deviation from routine O&M procedures?				
Additional Comments:					

Wastewater Treatment Plant Operations and Maintenance Manual Assessment Form

O&M Page Number	Operations and Maintenance (O&M) Manual Evaluation Criteria	Yes	No	N/A	Remarks
V. Personnel (continued)					
<i>Manpower/Personnel Requirements</i>					
	7. Does the facility have an OSHA/PEOSHA/RTK officer that is responsible for ensuring that each employee is properly trained in all aspects of safety commensurate with their particular responsibilities and obligations?				
	8. Are training opportunities available to and used by staff?				
VI. Laboratory Testing					
<i>Wastewater Analyses</i>					
	1. Does the O&M Manual discuss why wastewater analyses are essential to effective treatment process control?				
	2. Does the O&M Manual explain that lab data can aid in problem awareness, analysis, and prevention?				
<i>Sampling</i>					
	1. Are types of required samples defined? (e.g. grab samples vs. composite samples)				
	2. Are sampling SOPs in place for the treatment system that conform to the Department's Field Sampling Manual or other method approved by the Department in writing?				
	3. Are calibration frequencies and techniques discussed for laboratory measurement devices? (flow meters, pH meters, residual chlorine meters, etc.)				
	4. Does the facility have instructions/guidance for obtaining daily quality control sample results?				
<i>Laboratory References</i>					
	1. Does the O&M Manual reference the onsite certified lab's O&M & SOPs and the location?				
<i>Interpretation of Laboratory Tests</i>					
	1. Does the O&M Manual describe the interpretation of laboratory test results and how they relate to plant operation?				
VII. Records					
<i>Process Operations / Daily Operations Logs</i>					
	1. Does the O&M Manual indicate that a log will be maintained for process operations/daily operations, identify which staff will maintain those logs and identify where the logs are located?				
Additional Comments:					

Wastewater Treatment Plant Operations and Maintenance Manual Assessment Form

O&M Page Number	Operations and Maintenance (O&M) Manual Evaluation Criteria	Yes	No	N/A	Remarks
VII. Records (continued)					
<i>Process Operations / Daily Operations Logs</i>					
	2. Do the logs cover the following that apply: weather conditions; facility influent flow; recirculation rate; grit removed; sludge handling data; status of primary and secondary treatment processes; operators on duty; complaints received; plant visitors; chemicals used; unusual conditions (operation and maintenance); and routine maintenance duties?				
<i>Compliance Reporting to State Agency</i>					
	1. Does the O&M Manual contain sample Monitoring Report Forms (MRFs)?				
	2. Does the O&M Manual provide instructions for completing MRFs in accordance with latest NJDEP MRF guidance document?				
VIII. Preventative Maintenance					
	1. Is preventative maintenance thoroughly discussed in the O&M Manual?				
	2. Does the O&M Manual define the tasks required for preventative maintenance?				
	3. Does the O&M Manual specify that a maintenance log be established for each piece of equipment?				
	4. Does the O&M Manual note that each piece of equipment will have its own inspection schedule and service record?				
	5. If so, does the O&M Manual indicate that each service record include the following: original start up date; manufacturer's name; model; serial number; special accessories; manufacturer's contact information to obtain spare parts; dates of regular inspections; problems; breakdowns; and emergency repairs?				
<i>Planning/Scheduling</i>					
	1. Does the O&M manual discuss preventative maintenance planning and scheduling to avoid idle time and peak workload periods?				
	2. Does the planning and scheduling involve time, personnel, equipment, cost, work orders and priorities?				
	3. Does the O&M Manual discuss scheduling maintenance according the weather, flow rate and other variables?				
Additional Comments:					

Wastewater Treatment Plant Operations and Maintenance Manual Assessment Form

O&M Page Number	Operations and Maintenance (O&M) Manual Evaluation Criteria	Yes	No	N/A	Remarks
VIII. Preventative Maintenance (continued)					
Equipment					
	1. Does the O&M Manual include equipment and manufacturers' manuals?				
	2. Does the O&M Manual include a spare parts inventory and identify where all spare parts will be stored?				
Housekeeping					
	1. Are housekeeping practices detailed in the O&M Manual for the following aspects of the facility: general appearance of the treatment plant (e.g. yard work, painting, general cleaning); general maintenance of building, both interior and exterior (e.g. plumbing, lighting, fixtures, painting)?				
Tools					
	1. Is a system instituted for availability of proper tools for standard usage and emergency conditions?				
IX. Emergency Operating and Response Program - Preparedness and Response Plan					
	1. Does the O&M Manual include an emergency response plan? What is the date of last revision?				
Vulnerability of the Plant					
	1. Has a vulnerability analysis been conducted as specified in NJAC 7:14A-6.12(d) 3 and noted in the O&M Manual?				
	2. Are the most vulnerable aspects of the plant identified?				
	3. Are methods to reduce the plant's vulnerability described in the O&M Manual?				
Emergency Equipment					
	1. Has an inventory of emergency equipment been listed in the O&M Manual?				
	2. Are procedures in place to obtain additional emergency equipment in the O&M Manual?				
	3. Does the O&M Manual outline any mutual aid agreements? If yes, explain.				
Coordination/Personnel					
	1. Does the O&M Manual clarify responsibilities assigned to plant staff for emergency events?				
	2. Does the O&M Manual address emergency preparedness procedures for additional staff for emergencies?				
Additional Comments:					

Wastewater Treatment Plant Operations and Maintenance Manual Assessment Form

O&M Page Number	Operations and Maintenance (O&M) Manual Evaluation Criteria	Yes	No	N/A	Remarks
IX. Emergency Operating and Response Program - Preparedness and Response Plan (continued)					
<i>Coordination/Personnel</i>					
	3. Has the most recent emergency response plan been shared with the local police and fire departments? If so, when?				
<i>Additional Emergency Concerns</i>					
	1. Does the O&M Manual contain methods of preserving treatment system records during an emergency?				
	2. If hazardous materials are on-site how will the plant ensure there are no releases of these materials?				
	3. How frequently is the emergency response plan updated?				
X. Safety					
<i>General Plant Safety</i>					
	1. Does the O&M Manual include a protocol to ensure that health and safety measures related to the O&M procedures are followed by the licensee, employees and agents of the system so as to protect human health, safety, welfare, and the environment in accordance with NJAC 7:10A?				
	2. Are emergency telephone numbers and email addresses posted? Is emergency plan readily available and accessible?				
	3. Are local hospitals identified? (name, address, & directions)				
	4. Is first aid available for the care of minor cuts, minor chemical accidents or other minor injuries and has staff been appropriately trained?				
	5. Does the O&M Manual specify that electrical repairs shall be performed only by designated and qualified personnel?				
	6. Does the O&M Manual specify protective clothing, respirators and hard hat requirements for staff and visitors?				
	7. Does the O&M Manual discuss procedures for the safe handling of all chemicals in use?				
XI. Utilities					
<i>General</i>					
	1. Are all utility companies servicing the facility identified in the O&M Manual and are phone numbers/after hours numbers posted?				
	2. Is there a utility outage contingency plan?				
	3. Are the locations of electric panels, utility shut offs and plans of utility services identified?				
Additional Comments:					

Wastewater Treatment Plant Operations and Maintenance Manual Assessment Form

O&M Page Number	Operations and Maintenance (O&M) Manual Evaluation Criteria	Yes	No	N/A	Remarks
XI. Utilities (continued)					
<i>Telecommunications</i>					
	1. Does the O&M Manual include contingency plans for operations, communication, security and alarms?				
	2. Are the locations of service panels, modems, routers, Wi-Fi, etc. identified?				
<i>Natural Gas</i>					
	1. Are the locations of gas meters, sizes of lines, location of gas shut offs and plans of gas service lines identified?				
<i>Water and Backflow Prevention</i>					
	1. Are water service lines sizes, shut offs and locations identified?				
	2. Is normal operating pressure identified?				
	3. Are backflow prevention systems identified?				
	4. Does the O & M Manual include physical connection permits for all backflow devices?				
	5. Is a backflow preventor testing schedule and log included?				
<i>Fuel Oil</i>					
	1. Are the location(s), fuel type and capacity of fuel storage tanks identified?				
	2. Does the O&M Manual include a Spill Prevention Control and Countermeasures Plan?				
	3. Is there a program in place to ensure adequate supplies of fuel are always on hand?				
Section XII – Electrical Systems					
<i>General</i>					
	1. Does the O&M Manual discuss the primary source and onsite power generating systems?				
	2. Are updated schematic diagrams of the WWTP's electrical system included in the O&M Manual?				
	3. Are manufacturer's literature, shop drawings, and any designer's notes maintained in the O&M Manual?				
<i>Power Source</i>					
	1. Are replacement parts for the WWTP electrical system on hand with the storage location identified?				
	2. Is there an electrician on staff or is one available on a contract basis?				
	3. Does the O&M Manual provide the name of a contract electrician and/or is contact information readily available?				
Additional Comments:					

Wastewater Treatment Plant Operations and Maintenance Manual Assessment Form

O&M Page Number	Operations and Maintenance (O&M) Manual Evaluation Criteria	Yes	No	N/A	Remarks
Section XII – Electrical Systems (continued)					
Power Distribution System					
	1. Are all motor control centers and control panels identified and described in the O&M Manual?				
	2. Does the O&M Manual indicate how much power is required to both start up and run major WWTP components?				
Control and Monitoring System - SCADA					
	1. Are schematic diagrams of controls and monitoring systems included in the O&M Manual?				
Alternate Power Source					
	1. Are back up power sources identified in the O&M Manual?				
	2. Does the O&M Manual contain a description of any duplicate equipment in the power distribution system?				
	3. How frequently is the back up source exercised?				
Section XIII) Appendices					
	1. Are all charts, tables, lists, forms, maps, schematics, manuals, warranties, etc. referenced in the O&M Manual included in an Appendices Section?				
Section XIV) Resources					
	A) <i>Considerations for Preparation of Operation and Maintenance Manuals</i> ; Operation and Maintenance Programs, Office of Water				
	B) <i>Reference Guide for Asset Management Tools</i> ; May 2014, USEPA				
	C) <i>Operation, Maintenance and Management of Wastewater Treatment Facilities</i> ; A Bibliography of Technical Documents, U.S.				
	D) <i>Effective Utility Management A Primer for Water and Wastewater Utilities</i> , June 2008, USEPA, AWWA, APWA, NACWA, NAWC, WEF, AMWA				
	E) <i>Infrastructure Flood Protection Guidance and Best Practices</i> , 2014, NJDEP				
	F) <i>Asset Management Guidance and Best Practices</i> , 2014, NJDEP				
	G) <i>Auxiliary Power Guidance and Best Practices</i> , 2014, NJDEP				
	H) <i>Emergency Response Preparedness/Planning Guidance and Best Practices</i> , 2014, NJDEP				
	I) <i>Domestic Security Best Practices Report Wastewater Group For The Infrastructure Advisory Committee, New Jersey Domestic Security Preparedness Task Force</i> ; Prepared under the direction of: The New Jersey Department of Environmental Protection And The Association of Environmental Authorities, October 15, 2003.				
Additional Comments:					