

## OPERATION & MAINTENANCE MANUAL

### REVIEW AND APPROVAL

#### I. Function

The Rhode Island Department of Environmental Management (RIDEM) will review and approve the above-cited document pursuant to the requirement specified in 250-RICR-150-10-4.

#### II. Procedures

- A. A checklist is included which outlines pertinent regulations and guidance for review and approval of this document.
- B. Upon determining that the document is approvable the RIDEM will stamp a copy with the accepted approval stamp and transmit it with an approval/transmittal, letter to the grantee or grant applicant.
- C. A copy of the approved document, the approval letter, the completed checklist, and any other supporting documents and/or correspondence shall be filed.

#### III. Legal/Administrative Authority

250-RICR-150-10-4

## O & M MANUAL REVIEW CHECKLIST

FACILITY \_\_\_\_\_ REVIEWER \_\_\_\_\_

DATE \_\_\_\_\_

### Minimum Information Required by Regulations:

- 1. Operation procedures for all treatment processes and major and essential Equipment, including sampling and monitoring equipment. These procedures must include target ranges and alarm setpoints.
- 2. A periodic maintenance plan for all major and essential equipment.
- 3. A staffing plan for WWTF including position descriptions (including if position is part-time or full-time), managerial and staffing hierarchy organizational chart, minimum qualifications and training requirements, and required Grade of Licensure..
- 4. A staffing analysis for the WWTF, submitted to the Department no less than every five (5) years.
- 5. A listing of supplies necessary to be kept in stock on-site or certification that all essential spare parts are managed in the facility's asset management software.
- 6. A risk management plan that must identify the facility's Risk and Resiliency Coordinator, and shall include documentation for threat prevention, protection, mitigation, response, and recovery, including emergency procedures for equipment failures or natural disasters.
- 7. Provision for records keeping.
- 8. Seasonal operation requirements (where applicable).
- 9. A schedule of self-monitoring of treatment plant operations to be reported on forms required by the Director.
- 10. A description of operational funding mechanisms; should be submitted when there is a revision to the adopted plan.
- 11. Copy of NPDES Permit effluent limitations.

### Additional Information Required:

- 1. Copy of current Town Sewer Use Ordinance.

Use Construction Grant Checklist as guideline for review of major WWTF.

Use package plant format to review minors and industries.

**OPERATION AND MAINTENANCE MANUAL CHECKLIST**

A. APPLICANT: \_\_\_\_\_

FACILITY NAME: \_\_\_\_\_

RIPDES NUMBER: \_\_\_\_\_

DATE OF RECEIPT: \_\_\_\_\_

CONSULTING ENGINEER: \_\_\_\_\_

REVIEWER: \_\_\_\_\_

REVIEW DATE: \_\_\_\_\_

B. EPA GUIDANCE FOR OPERATION & MAINTENANCE MANUALS

YES, NO Or NA

1. Introduction

- a. Operation and Managerial Responsibility \_\_\_\_\_
- b. Description of Plant Type and Flow Pattern \_\_\_\_\_
- c. Percent Efficiency Expected and How Plant Should Operate \_\_\_\_\_
- d. Principal Design Criteria \_\_\_\_\_

2. Process Description (Functions, Relation to Other Plant Units, Schematic Diagrams)

- a. Pumping \_\_\_\_\_
- b. Screening and Comminution \_\_\_\_\_
- c. Grit Removal \_\_\_\_\_
- d. Sedimentation (Primary) \_\_\_\_\_
- e. Aeration \_\_\_\_\_
- f. Sedimentation (Secondary) \_\_\_\_\_
- g. Trickling Filters \_\_\_\_\_
- h. Rotating Biological Contactors \_\_\_\_\_
- i. Sand Filters \_\_\_\_\_
- j. Sludge Digestion \_\_\_\_\_
- k. Sludge Conditioning and Dewatering \_\_\_\_\_
- l. Sludge Disposal \_\_\_\_\_
- m. Gas Control and Use \_\_\_\_\_
- n. Disinfection \_\_\_\_\_
- o. By-Pass Controls and Excess Flow Treatment Facilities \_\_\_\_\_
- p. Lagoons \_\_\_\_\_
- q. Septage \_\_\_\_\_
- r. Odor Control \_\_\_\_\_
- s. Other \_\_\_\_\_

3. Detailed Operation and Controls (Routine, Alternate, Emergency, Description of Various Controls, Recommended Settings, Reference to Schematic Diagrams, Failsafe Features, Target Ranges, Alarm Setpoints)

- a. Pumping \_\_\_\_\_
- b. Screening and Comminution \_\_\_\_\_
- c. Grit Removal \_\_\_\_\_
- d. Sedimentation (Primary) \_\_\_\_\_
- e. Aeration \_\_\_\_\_
- f. Sedimentation (Secondary) \_\_\_\_\_
- g. Trickling Filters \_\_\_\_\_
- h. Rotating Biological Contactors \_\_\_\_\_
- i. Sand Filters \_\_\_\_\_
- j. Sludge Digestion \_\_\_\_\_
- k. Sludge Conditioning and Dewatering \_\_\_\_\_

YES, NO or NA

3. Detailed Operation and Controls (Con't)

- l. Sludge Disposal \_\_\_\_\_
- m. Gas Control and Use \_\_\_\_\_
- n. Disinfection \_\_\_\_\_
- o. By-Pass Controls and Excess Flow Treatment  
Facilities \_\_\_\_\_
- p. Lagoons \_\_\_\_\_
- q. Septage \_\_\_\_\_
- r. Odor Control \_\_\_\_\_
- s. Other \_\_\_\_\_

4. Laboratory Controls (What and Why Tests are Made, Interpretation of Results, and How Samples Are Obtained)

- a. For Each Process Unit:
  - (1) Sampling \_\_\_\_\_
  - (2) Flow Controls \_\_\_\_\_
  - (3) Analysis \_\_\_\_\_
- b. Monitoring of Effluent and Receiving Waters \_\_\_\_\_

5. Records (Importance of Records, Graphing Test Results, Example and Sample Forms)

- a. Process Operations \_\_\_\_\_
- b. Laboratory \_\_\_\_\_
- c. Maintenance \_\_\_\_\_

6. Maintenance (Schedule - Daily, Weekly, Monthly, Etc.)

- a. Manufacturers' Recommendations \_\_\_\_\_
- b. Preventative Maintenance Summary Schedule \_\_\_\_\_
- c. Special Tools and Equipment \_\_\_\_\_
- d. Housekeeping Schedule \_\_\_\_\_

7. Safety

- a. Sewers \_\_\_\_\_
- b. Electrical Equipment \_\_\_\_\_
- c. Mechanical Equipment \_\_\_\_\_
- d. Explosion and Fire Hazards \_\_\_\_\_
- e. Health Hazards \_\_\_\_\_
- f. Chlorine Handling \_\_\_\_\_
- g. Recommended Safety Equipment \_\_\_\_\_

YES, NO or NA

8. Utilities (Source, Reliability, Cost)

- a. Electrical \_\_\_\_\_
- b. Gas \_\_\_\_\_
- c. Water \_\_\_\_\_
- d. Heat \_\_\_\_\_

9. Staffing and Training (Detail of Job Requirements, Task Plan Estimating Manhours Per Month and Year, Org Chart)

- a. Personnel Requirements \_\_\_\_\_
- b. Qualifications and Background \_\_\_\_\_
- c. Certifications \_\_\_\_\_
- d. Administration and Supervision \_\_\_\_\_
- e. Laboratory \_\_\_\_\_
- f. Staffing analysis \_\_\_\_\_
- g. Risk and Resiliency Coordinator \_\_\_\_\_

10. Emergency Operating Plans and Procedures

- a. Emergency Conditions and Response Plans  
(Describe Effective Automatic Response for Probable Emergency Situations)
  - (1) Power Failure
    - (a) Entire Plant \_\_\_\_\_
    - (b) Treatment Process \_\_\_\_\_
    - (c) Pumping Stations \_\_\_\_\_
  - (2) Flood, Hurricane, Earthquake, Fire, Windstorms, Freezing, Explosions \_\_\_\_\_
  - (3) Contamination of Potable Water Supply \_\_\_\_\_
  - (4) Hydraulic Overloading, Ruptures and Stoppages \_\_\_\_\_
  - (5) Bypassing \_\_\_\_\_
  - (6) Equipment Breakdowns and Process Failures \_\_\_\_\_
  - (7) Failure of Emergency Warning Equipment \_\_\_\_\_
  - (8) Labor Strikes \_\_\_\_\_
  - (9) Spills of Oils, Toxic or Hazardous Materials Into Sewers or at Treatment Works \_\_\_\_\_
  - (10) Personnel Injury \_\_\_\_\_
  - (11) Substantial Cyber Incident \_\_\_\_\_
  - (12) Other Types of Emergency Situations \_\_\_\_\_

YES, NO or NA

b. General Pattern of Response Actions for Each Type of Emergency

- (1) Early Warning Report \_\_\_\_\_
- (2) Investigate \_\_\_\_\_
- (3) Assess Severity of the Situation (Including Threat to Public Health, Water Supplies, Other Water Uses, Etc.) \_\_\_\_\_
- (4) Determine Response Course of Action (Minor, Moderate, or Major Emergency) and Implement Appropriate Emergency Plan \_\_\_\_\_
- (5) Follow Appropriate Notification Schedule (Local - State - Federal) Depending on Type of Emergency \_\_\_\_\_

c. Emergency Readiness Program (Describe System or program for Maintaining Readiness)

- (1) Equipment and Parts Inventory and Chemical Supplies \_\_\_\_\_
- (2) Personnel Training on Emergency Operating Procedures \_\_\_\_\_
- (3) Charts on Location of Facilities (For Example):
  - (a) Sewers \_\_\_\_\_
  - (b) Pump Stations \_\_\_\_\_
  - (c) Sewer Overflow Points \_\_\_\_\_
  - (d) Flow Regulators, Valves & Controls \_\_\_\_\_
  - (e) Wastewater Storage \_\_\_\_\_
  - (f) Other Pertinent Items \_\_\_\_\_
- (4) Alert and Response System for Each Type of Emergency \_\_\_\_\_
- (5) Early Warning Systems Where Applicable to Warn Downstream Water Users of Spills, Etc. \_\_\_\_\_
- (6) Industrial Waste Monitoring and Warning System Within Sewer Networks to Alert Plant Operators of Spills and Changes in Waste Consistency or Hydraulic Conditions That May Adversely Affect Waste Treatment \_\_\_\_\_

YES, NO or NA

11. Appendix

- a. Schematics \_\_\_\_\_
- b. Valve Indices \_\_\_\_\_
- c. Sample Forms \_\_\_\_\_
- d. Chemicals Used in Plant \_\_\_\_\_
- e. Chemicals Used in Laboratory \_\_\_\_\_
- f. Water Quality Standards \_\_\_\_\_
- g. Detailed Design Criteria \_\_\_\_\_
- h. Equipment Suppliers \_\_\_\_\_
- i. Suppliers' Manuals (May be Bound Separately) \_\_\_\_\_
- j. Risk Management Plan \_\_\_\_\_

C. Deficiencies:

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Approved By: \_\_\_\_\_ Approval Date: \_\_\_\_\_