

Clean Water 2020 Program

WASTEWATER TREATMENT PLANT TRAINING PROGRAM

Updated May 2016

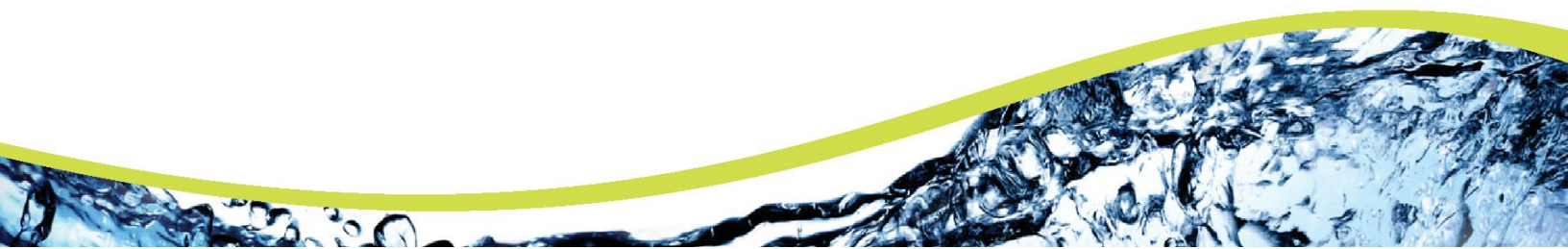


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Program Summary and Intent

Introduction and Objectives

The City of Columbia (City) has updated its Wastewater Treatment Plant (WWTP) Training Program in accordance with the requirements of Paragraph 11 of the Consent Decree entered by order dated May 21, 2014 in *The United States of America and State of South Carolina by and through the Department of Health and Environmental Control (SCDHEC) vs. the City of Columbia*, Civil Action No. 3:13-2429-TWL, DOJ Case Number 90-5-1-1-00954. The WWTP Training Program addresses the specific requirements of the Consent Decree (CD) as outlined in **Table 1**, and was developed based on the specific needs of the City's WWTP.

Table 1 - CD Requirements for the WWTP Training Program

CD Section	CD Requirements	WWTP Training Program Section
11.c.	<p><u>WWTP Training Program.</u> Columbia currently has a training program in place at the WWTP.</p> <p>Within twenty-four (24) months after the Date of Entry of this Consent Decree, Columbia shall submit to EPA and DHEC for review, comment, and approval an updated WWTP Training Program. Columbia shall update the Program by evaluating the personnel, tasks, equipment, and facilities associated with the operation and maintenance of the Columbia Metro WWTP.</p> <p>The updated Program shall include the following:</p>	
11.c.(i).	<p><u>WWTP Maintenance Training Program.</u> A training program to tasks necessary for the maintenance of the Equipment. At minimum, the WWTP Maintenance Training Program shall be updated to include:</p>	Section 1 WWTP Maintenance Training Program
11.c.(i).(A)	Training to be provided to maintenance supervisors and personnel regarding the MMS in Paragraph 11.a. above;	Section 1.1 MMS Training for WWTP Personnel
11.c.(i).(B)	Schedules for the training of maintenance supervisors and personnel; and	Section 3 Training Schedule
11.c.(i).(C)	A system for tracking the training activities described in (A) and (B) above.	Section 4 Tracking
11.c.(ii).	<p><u>WWTP Operations Training Program.</u> Columbia shall provide training to address the methods, processes, procedures, and techniques required to perform the duties and tasks necessary for the proper operation of the Equipment. At minimum, the WWTP address the methods, processes, procedures, and techniques required to perform the duties and Operations Training Program shall be updated to include:</p>	Section 2 WWTP Operations Training Program
11.c.(ii).(A)	Training for operations supervisors and personnel regarding the use of the Operations Program in Paragraph 11.b. above;	Section 2.1 Personnel Training

CD Section	CD Requirements	WWTP Training Program Section
11.c.(ii).(B)	Training that ensures operations personnel are knowledgeable about the Standard Operating Procedures and how to implement each task of the Standard Operating Procedures assigned to them or their subordinates efficiently and effectively on a day-to-day basis;	Section 2.2 Personnel Training on SOPs and COPs
11.c.(ii).(C)	Training that ensures all operations personnel are knowledgeable about the Contingency Operating Procedures and how to respond efficiently and effectively to atypical operational situations; and	Section 2.2 Personnel Training on SOPs and COPs
11.d.(ii).(D)	A system for tracking the training activities described in (A) through (C) above; and	Section 4 Tracking
11.c.(iii).	An implementation schedule specifying dates and actions.	Section 5 Implementation Schedule

Acronyms & Abbreviations

ABC – Association Boards of Certification

AP – Apprenticeship Program

CD – Consent Decree

CERP – Contingency and Emergency Response Plan

City – City of Columbia

Cityworks® – Cityworks® (CMMS) from Azteca Systems, Inc.

CMMS – Computerized Maintenance Management System

COP – Contingency Operating Procedure

COT – Comprehensive Operating Training Program

CSUS – California State University

CW2020 – City’s program to manage consent decree compliance

EPA – United States Environmental Protection Agency

IMS – Inventory Management System

MMS – Maintenance Management System

Operators – Operations personnel

PMTAP – Plant Maintenance Technologist Apprenticeship Program

SCDHEC – South Carolina Department of Health and Environmental Control

SCE&G – South Carolina Electric & Gas

SMP – Standard Maintenance Procedure

SOP – Standard Operating Procedure

SSO – Sanitary Sewer Overflow

TargetSolutions – Employee training and tracking software

WEASC – Water Environment Association of South Carolina

WWTP – Wastewater Treatment Plant

Section 1 WWTP Maintenance Training Program

The WWTP Maintenance Training Program addresses the following training requirements of the Consent Decree.

- Subparagraph 11.c.(i) – WWTP Training Program. A training program to tasks necessary for the maintenance of the Equipment (as defined in Subparagraph 11.a.(i) of the CD. At minimum, the WWTP Maintenance Training Program shall be updated to include:
 - A. Training to be provided to maintenance supervisors and personnel regarding the MMS.
 - B. Schedules for the training of maintenance supervisors and personnel;
 - C. A system for tracking the training activities described in (A) and (B) above.

1.1 MMS Training for WWTP Personnel

The Maintenance Management System (MMS) contains the following procedures that require training:

- Standard Maintenance Procedures (SMPs) for performing Preventive and Corrective Maintenance
- Procedures for recognition of indicators that corrective maintenance on Equipment is necessary
- Procedures to ensure that failures of Equipment and/or loss of power supply during abnormal and emergency conditions are corrected in a timely fashion so as to limit downtime of the facility or component
- Procedures for the generation of work orders associated with preventive and corrective maintenance of the Equipment.
- Procedures for maintaining and updating the information in the Inventory Management System (IMS)
- Procedures for the generation of purchase orders associated with preventive and corrective maintenance of the Equipment

1.1.1 Preventive and Corrective Maintenance Procedure Training

A Plant Maintenance Technologist Apprenticeship Program (PMTAP) has been submitted for approval to the Department of Labor. The Association of Boards of Certification (ABC) Need-To-Know criteria (comprehension, application, analysis) were used to develop the PMTAP.

This PMTAP program is being used currently to train maintenance personnel at the WWTP with the following position descriptions:

- Maintenance Assistant
- Maintenance Assistant Senior
- Maintenance Technician
- Maintenance Technician Senior
- Maintenance Technician Lead
- Maintenance Technician Specialist

The PMTAP provides training for the skills and knowledge necessary to perform the following components of the MMS:

- SMPs to conduct periodic preventive maintenance of the Equipment .
- Procedures for recognition of indicators that corrective maintenance on Equipment is necessary. In addition, procedures for performing the typical corrective maintenance on the Equipment is also included.

1.1.2 Emergency Condition Procedure Training

The procedures in place to respond to equipment failures during abnormal and emergency conditions are the same as those to respond to emergencies that may occur during normal operating conditions. Training for these procedures are handled as explained in **Section 1.1**.

Section 2.1 of the CERP (Contingency and Emergency Response Plan, September 2015) addresses loss of power supply as an abnormal or emergency condition. While restoration of power is provided by SCE&G, Plant personnel will coordinate these activities. An SMP will be developed for the response by electrical personnel within maintenance for actions and training will occur.

The following positions will receive this training:

- WWTP Maintenance Specialist
- WWTP Electrical/Instrumentation Technician

1.1.3 Work Order Procedure Training

A Standard Operating Procedure (SOP) for use of the CMMS (Cityworks®) will be developed. Training on this SOP will be given to new employees in both Operations and Maintenance. The program will include the generation of work orders in addition to the proper procedures for completion of the work orders by personnel performing activities.

1.1.4 Purchase Order Procedure Training

The City is currently migrating from a manual system for inventory management to Cityworks® Storeroom for parts management. As part of this implementation, an SOP for inventory management and generation of purchase orders associated with preventive and corrective maintenance of the Equipment will be developed. Training on these SOPs will be given to the following positions:

- Material Inventory Control Clerk, Senior Material Inventory Control Clerk
- Administrative Specialist, Administrative Specialist Lead

1.1.5 MMS Training for Maintenance Supervisors

Supervisor positions within the maintenance section include the following:

- WWTP Maintenance Manager
- WWTP Maintenance Supervisor
- Lift Station Supervisor

- WWTP Planner/Scheduler

Supervisors will be expected to have a high level of knowledge regarding all of the training areas included in **Section 1.1**. It is also expected that supervisors will be the trainers for many of the training components. Of course, on entry an evaluation will be made of any area that a supervisor is unfamiliar with and training on that area will be included.

Section 2 WWTP Operations Training Program

The WWTP Operations Training Program addresses the following training requirements of the Consent Decree.

- Subparagraph 11.c.(ii) – WWTP Operations Training Program. Columbia shall provide training to address the methods, processes, procedures, and techniques required to perform the duties and tasks necessary for the proper operation of the Equipment. At minimum, the WWTP address the methods, processes, procedures, and techniques required to perform the duties and Operations Training Program shall be updated to include:
 - A. Training for operations supervisors and personnel regarding the use of the Operations Program in Paragraph 11.b. above;
 - B. Training that ensures operations personnel are knowledgeable about the Standard Operating Procedures and how to implement each task of the Standard Operating Procedures assigned to them or their subordinates efficiently and effectively on a day-to-day basis;
 - C. Training that ensures all operations personnel are knowledgeable about the Contingency Operating Procedures and how to respond efficiently and effectively to atypical operational situations; and
 - D. A system for tracking the training activities described in (A) through (C) above; and
- Subparagraph 11 c. (iii) – An implementation schedule specifying dates and actions.

2.1 Personnel Training

The WWTP Operations Program consists of the following three sections:

- Section 1 Operations Plan
- Section 2 Process Control Plan
- Section 3 Compliance Monitoring Plan

All of the procedures contained in the WWTP Operations Program consist of either Standard Operating Procedures (SOPs) or Contingency Operating Procedures (COPs). Training for SOPs and COPs is covered in **Section 2.2**.

2.2 Personnel Training on SOPs and COPs

Operations personnel (Operators) Training consists of three components:

- Wastewater Operator Apprenticeship Training Program
- SOP and COP training
- Comprehensive Operator Training (COT)

2.2.1 Apprenticeship Program

The City has developed a *Wastewater Operator Apprenticeship Training Program*, which provides a method to prepare newly hired operators for required certification examinations, as required by SCDHEC and the City. The program includes correspondence courses provided by California State University, Sacramento (CSUS) Office of Water Programs wastewater operator program. The City’s Wastewater Operator Apprenticeship Training Program is registered with the U.S. Department of Labor and meets the requirements of the United States Department of Labor Apprenticeship Program. All personnel with the position of “Operator” at the WWTP will be required to participate in this program until they achieve their “A” certification from the South Carolina Department of Labor, Licensing and Regulations. The program provides a path for advancement to all of the operators and is intended to solidify the knowledge and skill set necessary to be considered subject matter experts. An Operator’s failure to achieve “A” certification within the deadlines established by the City is grounds for termination or re-assignment to another position.

2.2.2 SOP and COP Training

There are several SOPs and COPs noted within the Operation Program and listed in **Table 2** that delineate the procedures to be followed. **Table 2** also lists the positions required to be familiar with that SOP or COP.

Table 2 - SOP and COP Summary within Operations Program

SOP / COP	Plan Component	Position Required Training
Influent Pump Station SOPs	Operations Plan	All Operators
Preliminary Treatment Facilities SOPs	Operations Plan	All Operators
Train 1 Primary and Secondary Treatment SOPs	Operations Plan, Process Control Plan	All Operators
Train 2 Primary and Secondary Treatment SOPs	Operations Plan, Process Control Plan	All Operators
Disinfection SOPs	Operations Plan, Process Control Plan	All Operators
Solids Handling SOPs	Operations Plan, Process Control Plan	All Operators
Metro WWTP Organizational Chart SOP	Operations Plan	Administration Staff
Operating information for new Equipment SOP	Operations Plan	All Operators
Peak Flow Operations COP	Process Control Plan	All Operators
Loss of Power COP	Process Control Plan	All Operators

SOP / COP	Plan Component	Position Required Training
Cold Weather COP	Process Control Plan	All Operators
High River Level COP	Process Control Plan	All Operators
Loss of Chemical Feed COP	Process Control Plan	All Operators
Grab and Composite Sampling SOP	Compliance Monitoring Plan	All Operators, All Lab analysts
Performing Preventive Maintenance on Composite Sampler SOP	Compliance Monitoring Plan	All Maintenance Technicians, All Operators
Contract Laboratory Monitoring SOP	Compliance Monitoring Plan	All Lab analysts, Operators who are involved in sampling process
Grab and Composite Sampling SOP	Compliance Monitoring Plan	All Lab analysts, Operators who are involved in sampling process
Laboratory Procedure SOP	Compliance Monitoring Plan	All Lab analysts, Operators who are involved in sampling process

Training on each of the noted SOPs or COPs is given to the noted position. Training is carried out by supervisory personnel or the designee.

2.2.3 COT Program

Comprehensive Operating Training is included in the Wastewater Operator Apprenticeship Training Program and is covered in **Section 2.1.1**. In addition, for those who have successfully completed the apprenticeship program, a refresher version of the COT is provided within a 2-year cycle.

2.2.4 MMS Training for Operations Supervisors

Supervisor positions within the Operations section include the following:

- Assistant Wastewater Plant Superintendent
- Chief Operators
- Lead Operators
- Laboratory Manager

Supervisors will be expected to have a high level of knowledge regarding all of the training areas included in **Section 2.2**. Internal promotions to supervisor positions require completion of the Wastewater Operator Apprentice Training Program. It is also expected that supervisors will be the trainers for many of the training components. Of course, on entry an evaluation will be made of any area that a supervisor is unfamiliar with and training on that area will be included.

Section 3 Training Schedule

Each applicable training element noted in **Sections 1 and 2** above will be provided to new employees for each specific element applicable to their position.

3.1 Apprentices Programs

The apprentice programs allow up to 6 years for completion, however, progress measurement does occur and is required. The apprentice programs have several deadlines based on enrollment date.

3.2 SMP, SOP, and COP Training

Applicable SMP, SOP and COP training is provided to new personnel within the first year of employment. Refresher training for SOPs and SMPs are provided on an as-needed basis.

For infrequently executed procedures, SOP review is required prior to performing procedures.

Refresher training for all COPs will occur annually.

Section 4 Tracking

The WWTP Training Program addresses the following tracking requirements of the Consent Decree.

- Subparagraph 11.c.(i).(C) – A system for tracking the training activities described in (A) and (B) above. (WWTP Maintenance Training Program)
- Subparagraph 11.c.(ii).(D) – A system for tracking the training activities described in (A) through (C) (WWTP Operations Training Program)

The WWTP is currently using TargetSolutions, an employee training and tracking software. The training and tracking software allows management to track training events, link documents to training requirements, and also enables management and employees to see an employee's overall training progress. The system can:

- Create course profiles for repeat training activities
- Load course-specific requirements and add any training material
- Schedule and complete collection and transmission system refresher training
- Automatically schedule training events identifying staff who need the training

TargetSolutions has the ability to provide reports on completed courses, expired training for individuals, and several other management reports on the status of the overall program.

Section 5 Implementation Schedule

The purpose of this section is to identify an implementation schedule, outlined in **Table 3**, which will be implemented within two years of EPA approval of the WWTP Training Program.

- Subparagraph 11c.(iii) – Implementation Schedule. The Training Program shall include an implementation schedule specifying dates and actions.

Table 3 - WWTP Training Program Implementation Schedule

Implementation Schedule	Task	Action Description
Implemented 12 months after EPA approval of this WWTP Training program	Develop CMMS SOP	Develop SOP for the CMMS including generation of work orders and the proper procedures for completing work orders
Implemented 12 months after EPA approval of this WWTP Training program	Develop SOP and Training Program for Inventory Management	Develop SOP and training program for inventory management and generation of purchase orders associated with preventive and corrective maintenance of the Equipment
Implemented 12 months after EPA approval of this WWTP Training program	Develop SMP for Emergency Power Coordination	Develop SMP for coordination of Emergency Power connection and begin training of personnel for the SMP