



# STATE OF CONNECTICUT

DEPARTMENT OF PUBLIC HEALTH

## WATER TREATMENT PLANT CLASSIFICATION FORM

Public Water System (PWS) Name: \_\_\_\_\_

Date: \_\_\_\_\_

PWS Identification Number (PWSID): CT \_\_\_\_\_

Water Treatment Plant Name: \_\_\_\_\_

Population served: \_\_\_\_\_

Form completed by: \_\_\_\_\_ Title: \_\_\_\_\_

Phone number: ( ) - \_\_\_\_\_

SDWIS State Asgn No.: \_\_\_\_\_ **For State Use Only**

ITEM	VALUE	POINTS
<b>Size (2 to 20 points)</b>		
Maximum population served, peak day (1 to 10) _____	1/10,000	_____
	or part	_____
Design flow average day or peak month's average _____	1/MGD	_____
day, whichever is greater (1 to 10)	or part	_____
<b>Water Supply Sources</b>		
Groundwater _____	3	_____
Groundwater under the direct influence of surface water _____	5	_____
Surface water _____	5	_____
Average raw water quality varies enough to require _____	0-10	_____
treatment changes 10% of the time		
Little or no variation _____	0	_____
High variation. Raw water quality subject to serious _____	10	_____
industrial waste pollution		
Raw water quality is subject to or has elevated:		
Taste and/or odor levels _____	3	_____
Color levels _____	3	_____
Iron and/or manganese levels _____	5	_____
Turbidity levels _____	5	_____
Coliform and/or fecal counts _____	5	_____
Algal growths _____	5	_____
Raw water quality is subject to periodic:		
Industrial and commercial waste pollution _____	5	_____
Agricultural pollution _____	5	_____
Urban runoff, erosion and storm water pollution _____	3	_____
Recreational use (boating, fishing, etc.) _____	2	_____
Urban development and residential land use pollution _____	2	_____



Phone: (860) 509-7333  
 Telephone Device for the Deaf (860) 509-7191  
 410 Capitol Avenue - MS # 51WAT  
 P.O. Box 340308 Hartford, CT 06134  
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Note: Each unit process should have points assigned only once

### Chemical Treatment/Addition Process

Fluoridation_____	5	_____
Disinfection		
Ultraviolet (UV)_____	2	_____
Gaseous chlorine_____	5	_____
Liquid or powdered chlorine_____	5	_____
Chlorine dioxide_____	5	_____
Ozonation (on-site generation)_____	5	_____
PH adjustment (calcium carbonate, carbon dioxide, _____ hydrochloric acid, calcium oxide, calcium hydroxide, sodium hydroxide, sulfuric acid, other)	10	_____
Stability or Corrosion Control (calcium oxide, calcium _____ hydroxide, sodium carbonate, sodium hexametaphosphate, other)	10	_____

### Coagulation & Flocculation Process

Chemical addition (1 point for each type of chemical _____ coagulant added, maximum 5 points) (aluminum Sulfate, bauxite, ferrous sulfate, ferric sulfate, calcium oxide, bentonite, calcium carbonate, carbon dioxide, Sodium silicate, other)	1-5	_____
Rapid mix units		
Mechanical mixers_____	3	_____
Injection mixers_____	2	_____
In-line blender mixers_____	2	_____
Flocculation tanks		
Hydraulic flocculators_____	2	_____
Mechanical flocculators_____	3	_____

### Clarification/Sedimentation Process

Horizontal flow (rectangular basins)_____	5	_____
Horizontal flow (round basins)_____	7	_____
Upflow solids contact sedimentation_____	15	_____
Inclined plate sedimentation_____	10	_____
Tube sedimentation_____	10	_____
Dissolved air flotation_____	20	_____

### Filtration Process

Single media filtration		
Calcite chip_____	5	_____
Granular activated carbon (GAC)_____	5	_____
Other_____	5	_____
Dual or mixed media filtration_____	5	_____
Microscreens_____	5	_____
Diatomaceous earth filters_____	5	_____
Cartridge filters_____	5	_____
Slow sand filters_____	5	_____
Direct filtration_____	10	_____
Pressure or greensand filtration_____	15	_____

**Other Treatment Processes**

Aeration_____	3	_____
Packed tower aeration_____	5	_____
Ion exchange/softening_____	5	_____
Lime-soda ash softening_____	20	_____
Copper sulfate treatment_____	5	_____
Powdered activated carbon_____	5	_____

**Special Processes (reverse osmosis, electro dialysis, other)\_\_\_\_\_** 15 \_\_\_\_\_

**Residuals Disposal**

Discharge to lagoons_____	5	_____
Discharge to lagoons and then raw water source_____	8	_____
Discharge to raw water_____	10	_____
Disposal to sanitary sewer_____	3	_____
Mechanical dewatering_____	5	_____
On-site disposal_____	5	_____
Land application_____	5	_____
Solids composting_____	5	_____

**Facility Characteristics**

Instrumentation		
The use of SCADA or similar instrumentation systems_____ to provide data with no process operation	0	_____
The use of SCADA or similar instrumentation systems_____ to provide data with limited process operation	2	_____
The use of SCADA or similar instrumentation systems_____ to provide data with moderate process operation	4	_____
The use of SCADA or similar instrumentation systems_____ to provide data with extensive or total process operation	6	_____
Clearwell size less than average day design flow_____	5	_____

**TOTAL (sum of all POINTS) \_\_\_\_\_**

**CLASSIFICATION TYPE**

**CLASSIFICATION LEVEL (for Treatment Plants only) \_\_\_\_\_**

**Types**

•**SMALL WATER SYSTEM** means a community water system or a non-transient non-community water system that serves less than 1000 persons and has no treatment or has only treatment which does not require any chemical treatment, process adjustment, backwashing or media regeneration by an operator.

•**TREATMENT PLANT**

**LEVEL**

- Class I            30 points or less
- Class II          31 - 55 points
- Class III        56 - 75 points
- Class IV         76 points or greater

## WATER TREATMENT DEFINITIONS

### **Aeration**

The process of adding air to water. Air can be added to water by passing air through water or passing water through air.

### **Diatomaceous earth filters**

Filter technology using a thin layer of diatomaceous earth (a fine, siliceous material) that is deposited on a porous plate to serve as a filter. Good technology for smaller systems because of its relative simplicity of units and maintenance requirements.

### **Direct filtration**

Filtration process where the sedimentation stage of conventional filtration is omitted. Filtration is performed directly after the flocculation stage of treatment. Filter aid is usually added before filtration.

### **Dissolved air flotation**

Process of solids removal where dissolved air is added to the clarifier from the bottom of the basin and the air raises suspended particles to the top of the water where the particles are removed by skimming.

### **Electrodialysis**

Process where brackish water flows between alternating cation-permeable and anion-permeable membranes. A direct electronic current provides the motive force to cause ions to migrate through the membranes and either react to create a gas or remain in a separate solution as brine wastewater.

### **Horizontal-flow**

Flow of water in a horizontal direction through a rectangular or round sedimentation/clarification basin as opposed to a vertical or upward flow that would be found in a solids-contact clarifier.

### **Injection mixers**

Use of perforated tubes or nozzles to disperse the coagulant into the water being treated. Provides uniform distribution of the coagulant over the entire basin. Generally sensitive to flow changes and may require frequent adjustments to produce the proper amount of mixing.

### **In-line blender mixers**

Used for coagulant mixing where coagulant is added directly to water being treated through a diffuser in a pipe. Provides rapid dispersion of the coagulant without significant head loss. Energy consumption is less than a comparable mechanical mixer.

### **Mechanical dewatering**

The use of mechanical devices such as centrifuges and rotational mechanisms to force the separation of solids (sludge) from liquids (water).

### **Mechanical mixers**

Paddles, turbines, and propellers frequently used in coagulation facilities. Uses electrical energy for mixing the coagulant with the water being treated.

### **pH adjustment**

The alteration of the pH of the raw water or prefinished water by mechanical or chemical procedures to enhance the performance of the treatment process.

### **Reverse osmosis**

Passage of water from a concentrated solution through a semipermeable membrane to fresh water with the application of pressure.

### **SCADA instrumentation**

The Supervisory Control And Data Acquisition system is a computer-based system that monitors and controls remote water facility sites. A SCADA master control is typically located in a dedicated control center or treatment plant control room. Remote sites are equipped with remote terminal units to gather information and issue controls from the master station.

### **Solids composting**

Mixing of sludge with decaying organic material for eventual use as fertilizer.

**Stability or corrosion control**

The removal of dissolved gases, treatment of the finished water to make it noncorrosive, and building of protective coating inside the pipe.

**Tube sedimentation**

Tube settlers or high rate settlers are placed in rectangular or circular basins. Water enters the inclined settler tubes and is directed upward through the tubes. Each tube functions as a shallow settling basin. Particles collect on the inside surfaces of the tubes or settle to the bottom of the basin.

**Upflow solid-contact sedimentation**

Unit which combines the coagulation, flocculation, and sedimentation processes into a single basin, which is either rectangular or circular in shape. Flow is an upward direction through a sludge blanket or slurry of flocculated, suspended solids.

**Urban runoff**

During dry periods, oil, grease, gasoline, and other residues accumulate on paved surfaces. When storms begin, this material is washed into local receiving water from roadway storm drainage systems. Urban runoff also contains animal droppings from pets and fertilizers used for landscaping. Contributes to taste and odor complaints.

6/5/96

Rev. 2/13/97 - Changed points for pressure or greensand filtration 20->15

Rev. 7/22/98 - Corrected point range for Class III

Rev. 7/26/04 – Included Small Water System Classification and changes to format