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| I. PWS Information: | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **PWSID#:** | | | | |  | | | | | **PWS Name:** | | | | |  | | | | | | | | | | | | | | | **PWS Town:** | | | |  | | | |
|  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Phone:** | | |  | | | | | | | | |  | **Treatment Plant Name:** | | | | | |  | | | | | | | | | | **Reporting Period:** | | | | | |  | | | |
| Must also complete page 2 of this form – “Dose Monitoring Equation” | | | | | | | | | | | | | | | | | | | | | | | |  | | | | | | | | | | | | | |
| **II. Reactor Information:** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (Additional validation information must be submitted on page 2) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Maximum Validated Flow Rate (MGD):** | | | | | | | | | | | | | | | | | | | | | | | | |  | | | | | | | | | | | | |
| **Minimum Validated Transmittance – UVT (%):** | | | | | | | | | | | | | | | | | | | | | | | | |  | | | | | | | | | | | | |
| **Lamp Power Validated Range – Minimum and Maximum (% or kW):** | | | | | | | | | | | | | | | | | | | | | | | | |  | | | | | | | | | | | | |
| **Reactor ID Number1:** | | | | | | | | | | | | | | | | | | | | | | | | |  | | | | | | | | | | | | |
| **III. Daily Reactor Reporting1** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | | | | | | |  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | Operational Data | | | | | | | | | | | | | Data at Time2 of Minimum UV Dose | | | | | | | | | | | | | | | | | | | | | | | | |
| **Day** | **Run**  **Time (hrs)** | | | | | **Total Production (MG)** | | **Max.**  **Flow Rate2**  **(MGD)** | | | **Min. UVT2**  **(%)** | | | **Min. Power2**  **(% or kW)** | | | | **Flow (MGD)** | | | **UVT (%)** | | **Min. Dose Applied2**  **(mJ/cm2)** | | | | | **UV Sensor Intensity**  **Reading – S**  **(mJ/cm2)** | | | **S/S03** | | **Lamp Banks**  **In Operation** | | | | **Instrument**  **Calibration4**  **(“S”,”T”,“Q”)** | |
| 1 |  | | | | |  | |  | | |  | | |  | | | |  | | |  | |  | | | | |  | | |  | |  | | | |  | |
| 2 |  | | | | |  | |  | | |  | | |  | | | |  | | |  | |  | | | | |  | | |  | |  | | | |  | |
| 3 |  | | | | |  | |  | | |  | | |  | | | |  | | |  | |  | | | | |  | | |  | |  | | | |  | |
| 4 |  | | | | |  | |  | | |  | | |  | | | |  | | |  | |  | | | | |  | | |  | |  | | | |  | |
| 5 |  | | | | |  | |  | | |  | | |  | | | |  | | |  | |  | | | | |  | | |  | |  | | | |  | |
| 6 |  | | | | |  | |  | | |  | | |  | | | |  | | |  | |  | | | | |  | | |  | |  | | | |  | |
| 7 |  | | | | |  | |  | | |  | | |  | | | |  | | |  | |  | | | | |  | | |  | |  | | | |  | |
| 8 |  | | | | |  | |  | | |  | | |  | | | |  | | |  | |  | | | | |  | | |  | |  | | | |  | |
| 9 |  | | | | |  | |  | | |  | | |  | | | |  | | |  | |  | | | | |  | | |  | |  | | | |  | |
| 10 |  | | | | |  | |  | | |  | | |  | | | |  | | |  | |  | | | | |  | | |  | |  | | | |  | |
| 11 |  | | | | |  | |  | | |  | | |  | | | |  | | |  | |  | | | | |  | | |  | |  | | | |  | |
| 12 |  | | | | |  | |  | | |  | | |  | | | |  | | |  | |  | | | | |  | | |  | |  | | | |  | |
| 13 |  | | | | |  | |  | | |  | | |  | | | |  | | |  | |  | | | | |  | | |  | |  | | | |  | |
| 14 |  | | | | |  | |  | | |  | | |  | | | |  | | |  | |  | | | | |  | | |  | |  | | | |  | |
| 15 |  | | | | |  | |  | | |  | | |  | | | |  | | |  | |  | | | | |  | | |  | |  | | | |  | |
| 16 |  | | | | |  | |  | | |  | | |  | | | |  | | |  | |  | | | | |  | | |  | |  | | | |  | |
| 17 |  | | | | |  | |  | | |  | | |  | | | |  | | |  | |  | | | | |  | | |  | |  | | | |  | |
| 18 |  | | | | |  | |  | | |  | | |  | | | |  | | |  | |  | | | | |  | | |  | |  | | | |  | |
| 19 |  | | | | |  | |  | | |  | | |  | | | |  | | |  | |  | | | | |  | | |  | |  | | | |  | |
| 20 |  | | | | |  | |  | | |  | | |  | | | |  | | |  | |  | | | | |  | | |  | |  | | | |  | |
| 21 |  | | | | |  | |  | | |  | | |  | | | |  | | |  | |  | | | | |  | | |  | |  | | | |  | |
| 22 |  | | | | |  | |  | | |  | | |  | | | |  | | |  | |  | | | | |  | | |  | |  | | | |  | |
| 23 |  | | | | |  | |  | | |  | | |  | | | |  | | |  | |  | | | | |  | | |  | |  | | | |  | |
| 24 |  | | | | |  | |  | | |  | | |  | | | |  | | |  | |  | | | | |  | | |  | |  | | | |  | |
| 25 |  | | | | |  | |  | | |  | | |  | | | |  | | |  | |  | | | | |  | | |  | |  | | | |  | |
| 26 |  | | | | |  | |  | | |  | | |  | | | |  | | |  | |  | | | | |  | | |  | |  | | | |  | |
| 27 |  | | | | |  | |  | | |  | | |  | | | |  | | |  | |  | | | | |  | | |  | |  | | | |  | |
| 28 |  | | | | |  | |  | | |  | | |  | | | |  | | |  | |  | | | | |  | | |  | |  | | | |  | |
| 29 |  | | | | |  | |  | | |  | | |  | | | |  | | |  | |  | | | | |  | | |  | |  | | | |  | |
| 30 |  | | | | |  | |  | | |  | | |  | | | |  | | |  | |  | | | | |  | | |  | |  | | | |  | |
| 31 |  | | | | |  | |  | | |  | | |  | | | |  | | |  | |  | | | | |  | | |  | |  | | | |  | |
| TOTAL |  | | | | |  | |
| (1) This form is for reactors that automatically adjust UV intensity based on changes in flow and transmittance. Use a separate form for each reactor.  (2) Flow rate, Transmittance, UV Intensity and Power must be monitored and recorded continuously (at least every 5 minutes). The maximum and minimum values for this reporting form are for those recorded at least every 5 minutes. The ‘Min. Dose Applied’ is that calculated using the dose algorithm in the PLC (also called the Reduced Equivalent Dose (RED)), and is summarized on the Dose Monitoring Equation on page 2 of this report.  (3) S = the actual UV intensity sensor reading; S0 = the UV intensity at 100% lamp power.  (4) Use the following letters to denote days when UV equipment has been calibrated: “S” = Intensity Sensors, “T” = UV Transmittance Analyzers, “Q” = Reactor Flow Meters. Equipment Calibration Records must be reported to MassDEP on Form UV-CAL. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| IV. Dose Monitoring Equation | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| The purpose of this section is to be able to verify the UV dose by means of hand calculating the dose using the daily recorded values from the monthly reporting form, and the unique UV reactor validation information described below. All boxes must be completed. It is only necessary to submit one copy of this page to MassDEP each month. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **V. UV Reactor Information** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Type of Reactor (e.g.) medium or low pressure:** | | | | | | | | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | |
| **Reactor Manufacturer:** | | | | | | | | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | |
| **Number of Reactors at Facility** | | | | | | | | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | |
| **MassDEP Validation Approval Date:** | | | | | | | | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | |
| **Date Reactor(s) went on line:** | | | | | | | | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | |
| **Target Organism:** | | | | | | | | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | |
| **Target Log Inactivation:** | | | | | | | | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | |
| **Action Spectrum Correction Factor:** | | | | | | | | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | |
| **Number of lamps/bank:** | | | | | | | | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | |
| **Number of banks/reactor:** | | | | | | | | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | |
| **Number of lamps/reactor:** | | | | | | | | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | |
|  | | | | | | | | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | |
| **VI. General Equation** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| RED = 10a X A254b X (S/S0)c X (1/Q)d X Be | | | | | | | | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | |
| RED is the Reduced Equivalent Dose, also called the ‘Calculated Dose’ (mJ/cm2)  a, b, c, d and e are constants derived from the validation study for various configurations of lamps and lamp power. The following table must be completed with the appropriate constants and lamp configurations from the validation study: | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | | | | **Lamp Banks in Operation** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Coefficients** | | | |  | | | | |  | | | | | | |  | | | | | |  | | | | |  | | | | |  | | | |  | |
| **a** | | | |  | | | | |  | | | | | | |  | | | | | |  | | | | |  | | | | |  | | | |  | |
| **b** | | | |  | | | | |  | | | | | | |  | | | | | |  | | | | |  | | | | |  | | | |  | |
| **c** | | | |  | | | | |  | | | | | | |  | | | | | |  | | | | |  | | | | |  | | | |  | |
| **d** | | | |  | | | | |  | | | | | | |  | | | | | |  | | | | |  | | | | |  | | | |  | |
| **e** | | | |  | | | | |  | | | | | | |  | | | | | |  | | | | |  | | | | |  | | | |  | |
|  | | | | | | | | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | |
| A254 is the UV absorbance at 254nm. UV absorbance can be related to the measured UV Transmittance - UVT (%) by the following equation: A254 = -log10 (UVT/100). | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| S/S0 where S = the actual UV sensor reading, and S0 is the UV intensity at 100% lamp power. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Q is the flow rate (MGD) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| B is the number of operating banks of lamps within the UV reactor. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *I certify under penalties of law that I am the person authorized to fill out this form and the information contained herein is true, accurate and complete to the best extent of my knowledge.* | | | | | | | | | | | | | | | | | **PWS Authorized Signature:** | | | | | | | | | | | |  | | | | | | | | |
| **Date:** | | |  | | | | | | **Title:** | | |  | | | | | | | | |
| **Phone:** | |  | | | | | | | | | | | | | | | **Fax:** | | |  | | | | | | **Email:** | | |  | | | | | | | | |
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