

## EVALUATION OF METHODS AND PROTOCOLS FOR OPERATION OF A CERMS AT A MUNICIPAL WASTE COMBUSTOR

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### ABSTRACT

Regional Waste Systems (RWS) evaluated protocols and methods for operation of a continuous emission rate monitoring system (CERMS) for its municipal waste combustor (MWC) located in Portland, Maine. This continuous measurement of mass emissions (lb/hr) would be in addition to the existing continuous monitoring of the concentration (ppm) of NO<sub>x</sub>, SO<sub>2</sub>, and CO emissions using a continuous emissions monitoring system (CEMS) as required of RWS and all other MWC facilities under federal and state rules. The study of CERMS protocols and methods identified the individual components required for a CERMS, evaluated existing methods of measuring MWC unit load and of ensuring "good combustion", identified and evaluated the existing continuous monitoring regulatory requirements for MWCs and other major sources, evaluated the state of the practice for the use of CERMS, evaluated CERMS data quality, and identified and evaluated existing protocols for CERMS. Finally, a protocol was developed for trial operation of the CERMS considering the above evaluations.

### BACKGROUND AND APPROACH

The work presented herein provides technical documentation for the Maine Department of Environmental Protection (MEDEP) to consider in determining the appropriate use, if any, of CERMS for measuring mass emission rates and for

specifying the methods and protocols for the operation of the monitors as part of RWS' Part 70 Air Emission License.

While it may be desirable that a single instrument be available to continuously monitor mass emission rates of NO<sub>x</sub>, SO<sub>2</sub> and CO, this is not the case. Rather, a number of instruments are collectively required to provide measurements that allow mass emission rates to be calculated. By United States Environmental Protection Agency (USEPA) convention (specifically 40 CFR Part 60), these instruments are referred to as a *continuous emission rate monitoring system*, or CERMS. This manuscript has adopted the following conventions to be consistent with USEPA nomenclature:

1. "CEMS" refers to the continuous emissions monitoring system which measures and reports pollutant concentrations in units of parts per million (ppm),
2. "CERMS" refers to the continuous emissions rate monitoring system which consists of the integrated flow rate monitor and CEMS with other parameter monitoring equipment and a data acquisition and handling system (DAHS) which can compute mass emission rates per unit of time or per unit of heat input. The instruments which comprise the CERMS are shown in Figure 1. In addition to the flow monitor and existing CEMS components at RWS, the CERMS includes a wet oxygen analyzer.