BOILER NUMBER ONE
1st QUARTER 2017
HYDROGEN CHLORIDE
EMISSIONS TEST REPORT

22 MARCH 2017

L.W.E.C.

BRINGING GREEN TO MICHIGAN

L'ANSE WARDEN ELECTRIC COMPANY, LLC.
157 South Main Street
L'Anse, Michigan 49946

RECEIVED
MAY 11 2017
AIR QUALITY DIV.

May 2017

W.O. No. 14464.007.006

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION

RENEWABLE OPERATING PERMIT
REPORT CERTIFICATION

Authorized by 1994 P.A. 451, as amended. Failure to provide this information may result in civil and/or criminal penalties.

Reports submitted pursuant to R 336.1213 (Rule 213), subrules (3)(c) and/or (4)(c), of Michigan's Renewable Operating (RO) Permit program must be certified by a responsible official. Additional information regarding the reports and documentation listed below must be kept on file for at least 5 years, as described in General Condition No. 22 in the RO Permit and be made available to the Department of Environmental Quality, Air Quality Division upon request.

Source Name L'Anse Warden Electric Company LLC County Baraga

Source Address 157 S. Main Street City L'Anse

AQD Source ID (SRN) B4260 RO Permit No. MI-ROP-B4260-2011 RO Permit Section No. _____

Please check the appropriate box(es):

☐ **Annual Compliance Certification (General Condition No. 28 and No. 29 of the RO Permit)**

Reporting period (provide inclusive dates): From _____ To _____

☐ 1. During the entire reporting period, this source was in compliance with **ALL** terms and conditions contained in the RO Permit, each term and condition of which is identified and included by this reference. The method(s) used to determine compliance is/are the method(s) specified in the RO Permit.

☐ 2. During the entire reporting period this source was in compliance with all terms and conditions contained in the RO Permit, each term and condition of which is identified and included by this reference, **EXCEPT** for the deviations identified on the enclosed deviation report(s). The method used to determine compliance for each term and condition is the method specified in the RO Permit, unless otherwise indicated and described on the enclosed deviation report(s).

☐ **Semi-Annual (or More Frequent) Report Certification (General Condition No. 23 of the RO Permit)**

Reporting period (provide inclusive dates): From _____ To _____

☐ 1. During the entire reporting period, **ALL** monitoring and associated recordkeeping requirements in the RO Permit were met and no deviations from these requirements or any other terms or conditions occurred.

☐ 2. During the entire reporting period, all monitoring and associated recordkeeping requirements in the RO Permit were met and no deviations from these requirements or any other terms or conditions occurred, **EXCEPT** for the deviations identified on the enclosed deviation report(s).

☒ **Other Report Certification**

Reporting period (provide inclusive dates): From _____ To _____

Additional monitoring reports or other applicable documents required by the RO Permit are attached as described:
Emissions Test Report

I certify that, based on information and belief formed after reasonable inquiry, the statements and information in this report and the supporting enclosures are true, accurate and complete.

James R. Richardson	Technical Manager	907-885-7187
Name of Responsible Official (print or type)	Title	Phone Number
James R. Richardson	Consultant to LWEC	9-May-2017
Signature of Responsible Official		Date

1. INTRODUCTION

Weston Solutions, Inc. (WESTON) has been retained by L'Anse Warden Electric Company, LLC (LWEC) to perform an emissions testing program on the Boiler No. 1 exhaust duct at the LWEC facility located in L'Anse, Baraga County, Michigan. Boiler No. 1 was previously a coal, oil, and gas-fired steam generating station and has been converted to burn biomass. The objective of this test program is to satisfy the requirements set forth by the Michigan Department of Environmental Quality (MDEQ) Air Quality Division (AQD) Consent Order (AQD No. 35-2016). The Consent Order contains provisions requiring four successive quarters of emission stack testing for hydrogen chloride (HCl) on EUBOILER No. 1, followed by two semi-annual HCl emission stack tests for HCl, followed by one further HCl emission stack test within the succeeding three years thereafter. Boiler No. 1 is identified as EUBOILER No. 1, and the facility currently operates under the State of Michigan Renewable Operating Permit (ROP) No. MI-ROP-B4260-2011 and Permit to Install (PTI) 67-16.

WESTON's Integrated Air Services (IAS) group completed the first quarter 2017 required testing on 22 March 2017. Mr. Tom Gasloli of the MDEQ was present throughout the testing.

1.1 PLANT INFORMATION

L'Anse Warden Electric Company, LLC
157 South Main Street
L'Anse, Michigan 49946
Mr. JR Richardson
Phone: 906-885-7187

1.2 TESTING FIRM INFORMATION

Weston Solutions, Inc.
1400 Weston Way
West Chester, PA 19380
Mr. Ken Hill
Phone: 610-701-3043

1.3 SUMMARY OF TEST PARAMETERS

Table 1-1 provides the test parameters, associated test methods, and reporting units for this test program.

Table 1-1
Summary of Test Parameters

Test Parameter[1]	Test Method[2]	Reporting Units
Volumetric Flow Rate (VFR)	EPA M1-4	dscfm
Hydrogen Chloride (HCl)	EPA M26A (modified)	ppmvd, lb/hr

1. VFR measurements were performed in conjunction with each HCl test run.
2. EPA Method 26A modified by collecting a non-isokinetic sample from a single traverse point similar to EPA Method 26.

Following this introduction, Section 2 provides a summary of the test results. Section 3 provides a description of the process and sampling locations. Section 4 provides a description of the sampling and analytical procedures. Section 5 outlines the fuel processing, fuel sampling and analytical procedures used during the test program. Section 6 provides quality assurance and quality control procedures (QA/QC). Detailed test results, raw test data, boiler operating data, laboratory reports, fuel sample results, quality control records, example calculations, and a list of project participants are provided in Appendices A through H, respectively.

2. SUMMARY OF TEST RESULTS

2.1 TEST RESULTS DISCUSSION

Table 2-1 provides a summary of the hydrogen chloride (HCl) test results. Any differences in the test results summary tables and detailed test results shown in the appendices are due to rounding the results for presentation purposes.

As discussed in the Test Protocol (Revision 1, November 2016), WESTON conducted testing to measure the stack gas moisture, temperature, and velocity measurements concurrent with the HCl sampling at the ESP outlet duct. The measurements were used to calculate stack gas volumetric flow rates and hydrogen chloride mass rates. Detailed results tables are presented in Appendix A.

As an additional quality assurance measure, LWEC conducted fuel sampling and analysis during the test program. The chlorine results for each fuel sample collected can be found in Appendix E.

There were no sampling or operational issues that impacted the field testing and the results presented are believed to be representative of the emissions encountered during the test periods.

Table 2-1

Summary of 1st Quarter 2017 HCl Test Results

Parameter	Date	Time	Unit of Measure	Result	PTI 168-07D Emissions Limit
HCl (EPA 26A)	03/22/17	0900-1000	lb/hr	1.56	2.17
	03/22/17	1015-1115	lb/hr	1.63	2.17
	03/22/17	1130-1230	lb/hr	1.81	2.17
Average				**1.67**	**2.17**